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**TESIS DOCTORAL/ DOCTORAL
DISSERTATION**

**Financial Crises, Organizational Response and Financial
Reporting Quality**

Claudia Imperatore

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Doctoral Thesis Advisor: Marco Trombetta

Abstract

The thesis addresses two research questions: i) how transparency moderates the impact of financial crisis on corporate financing and ii) how firms adjust their accounting practices in response to financial turmoil. First, I show that transparent firms used more debt financing and equity financing than more opaque firms during the 2007/2008 financial crisis. This is less likely for firms relying upon arm's length debt. The higher information sensitivity of arm's length debtholders makes them more reluctant to finance firms with informational problems triggering them to look for equity as an alternative. In the second chapter, I analyse the relation between earnings management and financial crises in US for the period 1996-2011. I argue and document that, as distress in financial markets increases, firms manage earnings less because of greater outsiders' monitoring and higher litigation risk during a financial turmoil. Yet, when financial crisis becomes acute, the threat to firms' survival leads firms to manage earnings more as the last attempt to save the firm. Lastly, I study whether firms' incentives to manage earnings are different depending on the type of financial crisis (banking vs equity crisis) and country's institutional environment. I build a country-specific indicator of banking and equity crisis for 5 European countries for the period 2001-2011. Empirical evidence suggests that firms smooth earnings more when a banking crisis occurs. As a key source of finance is impaired, firms exert accounting discretion to facilitate the access to alternative types of financing. Moreover, I find that the effect is stronger in countries with stricter institutional regime where the alternative external funds are easier to access. Taken together, the work adds to accounting studies investigating the association between financial reporting quality and capital markets highlighting the importance of considering markets' dynamics in examining both the effects and the determinants of transparency.

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Introduction

The financial crisis of 2007/2008 was a major macroeconomic event. Started in August 2007 in the US subprime market, it spread out to banking sector and equity markets with important real implications both in US and worldwide. The impact that the financial crisis had for financial markets and the economy generated an ample debate among practitioners and academics about its origins, consequences and remedies. Accounting information was part of this debate because many blamed the low reliability of financial statements as a potential cause of the financial crisis (Whalen, 2008; Katz, 2008). Even if there is no consensus upon the role that accounting information played in the financial crisis, the occurrence of the financial crisis highlighted the scant attention that financial markets' dynamics received in the accounting literature.

The relation between capital markets and accounting information has been repeatedly investigated in the accounting literature. Given the information asymmetries between insiders and outsiders, capital providers rely upon accounting information at moment of taking and evaluating their investment decision. As pointed out by Beyer et al. (2010), investors use accounting numbers to evaluate their investments both *ex ante* (at moment of choosing the investment) and *ex post* (to assess whether the investment is profitable). Likewise, Armstrong et al. (2010) reminds us that lenders and creditors are interested in accounting information to assess the probability of bankruptcy and the ability of the firm to fulfil its obligations. Yet, managers can reduce the reliability of accounting information by engaging in earnings management practices through which accounting numbers deviate from the true performance of the firm (Healy and Wahlen, 1999).

Given that, in the first chapter of the thesis, I investigate whether more transparent firms are less affected by the deterioration in credit supply (e.g. financial crisis). When credit supply conditions worsen, financiers become more risk averse and bear higher uncertainty

around firm's value. Because of the higher uncertainty, capital providers will be more reluctant to finance firms and will require a greater return from their investment. Moreover, they will prefer more liquid and less risky firms so that flight to quality and flight to liquidity phenomena are likely to occur. Both factors will hinder firms' access to external financing and affect firms' preferences for external funds. Indeed, in an attempt to minimize the cost of financing, firms will look for less information-sensitive type of financing (i.e. debt) and use more information-sensitive ones (i.e. equity) only if necessary. I contend that financial reporting quality will play an important role in both cases by determining the extent to which capital providers are uncertain around firms' type and firms' preference for less information-sensitive types of financing. In particular, I argue that opaque firms are more exposed to the increase in uncertainty and, hence, use more debt financing and less equity financing. Yet, this is less likely to be the case if they rely upon arm's length debt. Arm's length debtholders are more vulnerable to information frictions than banks as they do not have access to private information and they cannot directly monitor borrowers. In this case, opaque firms have more difficulties to get debt financing and will look for equity financing as a substitute. I test my prediction in the context of the 2007-2008 financial crisis by using a research design akin to a diff-in-diff where debt and equity financing of more and less transparent firms are compared before and after the occurrence of crises. Empirical evidence supports my predictions showing that financial reporting quality played a role in firms' access to finance during the crisis and the effect was contingent upon firms' reliance upon arms' length debt.

Once I document the role of financial reporting quality in shielding firms against negative consequences of the financial crisis, I analyse whether and how firms adjust earnings in response to financial crisis. There is ample evidence that most of managers' incentive to manipulate earnings comes from financial markets (Dechow et al.; 2010). Nevertheless, prior studies almost overlooked the dynamics of financial markets implicitly

assuming that financial market conditions are stable over time. Few studies have analysed the effect of macroeconomics factors on accounting discretion's choices (Liu and Ryan 2006; and Aboody et al., 1999) and the few exceptions (Johnson, 1999; Jenkins et al., 2009; Balakrishnan et al., 2014; Chang et al., 2006; 2009) adopted a broad definition of financial crisis without considering potential heterogeneity in the intensity and characteristics of the crisis. I fill these gaps in the second and third chapter.

In the second part of thesis, I analyse whether managers are more or less likely to manipulate earnings when a financial crisis occurs. Building on the work of Hakkio and Keeton (2009) I define financial crisis as an interruption in the normal functioning of the markets leading to higher uncertainty about fundamental values of the firm. The greater uncertainty increases the scrutiny of regulators, auditors and media over firms' financial reporting. Thus, earnings management is more likely to be detected reducing managers' incentives to engage in it ex ante (Zang, 2012). At the same time, the deterioration of financial market conditions deteriorate makes managers more concerned about the survival of the firm so that they will do everything they can to save it (March and Shapira, 1987; 1992). Earnings management can be one way to achieve this goal: by artificially increasing accounting numbers, firm will appear as more profitable attracting new capital providers (Graham et al., 2005) in a period of difficulties to access new finance. Thus, I expect a U-shaped curvilinear relation between earnings management and financial crisis. Regression analyses based on a sample of US firms for the period 1996-2011 by using the index of financial stress developed by Hakkio and Keeton (2009) and discretionary accruals as measure of financial crisis and earnings management (Jones, 1991) support my hypothesis.

The last step is to consider whether the incentive to adjust accounting numbers is the same across types of crises and it is contingent upon firm's ability to access alternate sources of financing. Hence, in the third chapter, I consider a different type of earnings

management firms can engage in (income smoothing) and exploit heterogeneity in financial crises analysing whether managers are more likely to adjust accounting practices if financial crisis has a stronger banking component. Contrary to other types of crises, banking crises has a stronger impact on the real economy as a key source of finance (bank loans) is impaired. As I already argued, difficulties to access bank financing trigger firms to look for alternative sources of financing and this creates incentive for firms to smooth earnings in attempt to dampen perceived risk. Thus, I expect a positive association between income smoothing and the level of distress in the banking system. Furthermore, I posit that the association is stronger in countries where the movement towards alternative sources of financing is facilitated by the existence of an effective institutional environment. In countries with better institutional features, alternative sources of financing are more available and accessible so that incentives to smooth earnings as banking conditions worsen will be stronger. I test my predictions using an international sample of companies drawn from five European countries (Germany, Italy, France, Switzerland and United Kingdom) for the period 2001-2011. I develop a country-specific index of financial crisis that allows me to distinguish between a banking and equity component. Results show a positive association between income smoothing and banking distress and the relation is stronger in countries with stricter institutional environment.

I believe the study provides several contributions. Firstly, by explicitly considering financial market dynamics and their characteristics, my work add to earnings management literature showing that financial market dynamics play an important role in shaping financial reporting decisions. Hence, neglecting financial market dynamics can limit our understanding of the relation between financial markets and accounting information. Along the same lines, the thesis might suggest potential advantages of high financial reporting quality under conditions of uncertainty.

Moreover, from a methodological point of view, I use and develop a different measure of financial crisis that goes beyond the simple dummy used by prior works. Economists (Claessens et al., 2012) tend to consider financial crisis as part of financial cycle. As such they are not rare events and differ in intensity, length and characteristics. The use of financial stress indicator allows to better capture these features and the overall dynamics of the market. Consistently with this idea, I compute a country specific indicator of financial stress. To the best of my knowledge, I am among the first to use and compute this type of indices in the accounting literature.

Lastly, the crisis has relevant policy implications. Given the important role accounting information plays for the well-functioning of the market and the dramatic negative consequences financial crisis has for firms and overall economy, my results might be of interest to regulators, accounting standard setters and financial markets participants.

Introducción

La crisis financiera de 2007/2008 fue un gran suceso macroeconómico que comenzó en agosto de 2007 en el mercado de las hipotecas *subprime* o de alto riesgo y se extendió al sector bancario y los mercados de valores, repercutiendo realmente tanto en los EE.UU. como en todo el mundo. El impacto que tuvo la crisis financiera sobre los mercados financieros y la economía generó un amplio debate sobre sus orígenes, consecuencias y soluciones entre los profesionales y académicos. La información contable estaba presente en este debate ya que muchos señalaban la carencia de fiabilidad de los balances financieros como una causa potencial de la crisis (Whalen, 2008; Katz, 2008). Incluso sin existir un consenso sobre el papel que la información contable desempeñó en la crisis financiera, la aparición de la crisis subrayó la escasa atención que se le estaba prestando a la dinámica de los mercados financieros en la literatura contable.

La relación entre los mercados de capital y la información contable se ha investigado en repetidas veces en la literatura contable. Dada la asimetría de información entre los que cuentan con información privilegiada y los que no, los proveedores de capital se basan en la información contable a la hora de tomar y valorar una decisión de inversión. Como señala Beyer et al. (2010), los inversores utilizan las cifras contables a la hora de evaluar sus inversiones, tanto las *ex ante* (en el momento de elegir la inversión) como *ex post* (para evaluar si la inversión es rentable). Asimismo, Armstrong et al. (2010) nos recuerda el interés de los prestamistas y acreedores en evaluar la probabilidad de bancarrota y la capacidad de la empresa de cumplir con sus obligaciones. Aun así, los gerentes pueden reducir la fiabilidad de la información contable llevando a cabo prácticas de gestión de beneficios con las que las cifras contables se desvían de su verdadero comportamiento en la empresa (Healy y Wahlen, 1999).

Considerando esto, investigo en el primer capítulo de las tesis si las empresas más transparentes se ven menos afectadas por el deterioro de la oferta de crédito (Ej., la crisis financiera). Cuando las condiciones de la oferta de crédito empeoran, los financieros se vuelven más reacios al riesgo y sienten más incertidumbre sobre el valor de la empresa. Debido a este aumento de incertidumbre, los proveedores de capital serán más reacios a financiar empresas y exigirán un mayor rendimiento de su inversión. Además, se decantarán por empresas con más liquidez y menos riesgo para que sucedan los fenómenos de “huida hacia la calidad y la liquidez”. Ambos factores impedirán el acceso de las empresas a la financiación externa y afectarán a las preferencias de estas empresas en cuanto a los fondos externos. De hecho, en un intento de minimizar el coste de financiación, las empresas buscarán menos financiación que sea sensible a la información (p. Ej., deuda) y más de la que no es sensible a la información (p. Ej., capital propio), solo si es necesario. Sostengo que la calidad de los informes financieros desempeñará un papel significativo en ambos casos, a la hora de determinar hasta qué punto se sienten inseguros los proveedores de capitales sobre el tipo de empresa y la preferencia de las empresas por tipos de financiación menos sensible a la información. En particular, argumento que las empresas menos transparentes estén más expuestas al aumento de la incertidumbre y por lo tanto, hacen uso de más financiación por deuda y menos de financiación de capital propio. No obstante, es poco probable que esto suceda si se basan en deudas neutrales. Los accionistas neutrales son más vulnerables a las disputas de información que los bancos ya que no tienen acceso a la información privada y no pueden monitorizar a los prestatarios directamente. En este caso, las empresas menos transparentes tienen más dificultad para conseguir financiación de deuda y buscarán la financiación de capital como sustituto. He puesto a prueba mi predicción en el contexto de la crisis financiera de 2007-2008 utilizando un diseño de investigación semejante a un “diferencias en diferencias” en el que la financiación con deuda y capital de empresas más o menos transparentes se compara

antes y después de la crisis. La evidencia empírica sostiene mis predicciones mostrando que la calidad de los informes financieros desempeñó un papel en el acceso de las empresas a la financiación durante la crisis y que el efecto fue contingente sobre la confianza de las empresas en la deuda neutral.

Una vez que me he documentado del papel que desempeña la calidad de los informes financieros a la hora de proteger a las empresas de las consecuencias negativas de la crisis, analizo si las empresas ajustan los beneficios en respuesta a esta crisis o no y cómo lo hacen. Existe una amplia evidencia de que la mayor parte del impulso de los gestores de manipular los beneficios proviene de los mercados financieros (Dechow et al.; 2010). No obstante, los estudios previos casi han ignorado el dinamismo de los mercados financieros y han asumido implícitamente que las condiciones del mercado financiero permanecen estables en el tiempo. Pocos estudios han analizado el efecto de los factores macroeconómicos sobre las elecciones discrecionales de contabilidad (Liu y Ryan 2006; Aboody et al., 1999) y las pocas excepciones (Johnson, 1999; Jenkins et al., 2009; Balakrishnan et al., 2014; Chang et al., 2006; 2009) adoptaron una definición amplia sin tener en cuenta la heterogeneidad potencial de la intensidad y características de la crisis. He completado esos vacíos en el segundo y tercer capítulo.

En la segunda parte de la tesis, he analizado si existe más o menos probabilidad de que los gerentes manipulen los ingresos si hay una crisis financiera. Partiendo del trabajo de Hakkio y Keeton (2009), he definido la crisis financiera como la interrupción del funcionamiento normal de los mercados que desemboca en mayor incertidumbre sobre los valores fundamentales de la empresa. La gran incertidumbre aumenta el escrutinio de los reguladores, auditores y medios de comunicación sobre los informes financieros de las empresas. Por lo tanto, es más probable que se detecte que la gestión de beneficios reduce el impulso de los gerentes en comprometerse con dicha gestión *ex ante* (Zang, 2012). Al

mismo tiempo, el deterioro de las condiciones de los mercados financieros, hace que los gerentes se preocupen por la supervivencia de la empresa y por lo tanto, harán todo lo que esté en sus manos para salvarla (March y Shapira, 1987; 1992). La gestión de beneficios puede ser un medio para alcanzar este objetivo: al incrementar artificialmente las cifras contables, la empresa parecerá más rentable y atraerá a nuevos proveedores de capital (Graham et al., 2005) en tiempos de dificultades para acceder a nueva financiación. Por lo tanto, me espero una relación curvilínea en forma de U entre la gestión de beneficios y la crisis financiera. Los análisis de regresión basados en una muestra de empresas estadounidenses del periodo entre 1996-2011, utilizando el índice de estrés financiero que Hakkio y Keeton (2009) desarrollaron así como los devengos discrecionales como medida para la crisis financiera y la gestión de ingresos (Jones, 1991), apoyan mi hipótesis.

El último paso es considerar si el impulso para modificar las cifras contables es el mismo en todos los tipos de crisis y es contingente sobre la habilidad de la empresa para acceder a fuentes alternativas de financiación. Por lo tanto, en el tercer capítulo, he tratado sobre el hecho de que las empresas puedan optar por un tipo distinto de gestión de beneficios (nivelación de ingresos) y explotar la heterogeneidad de las crisis financieras, analizando si es más probable que los gerentes modifiquen o no sus prácticas contables en caso de darse una crisis financiera con un alto componente bancario. Al contrario que otros tipos de crisis, las crisis bancarias presentan un impacto más fuerte sobre la economía real ya que una fuente clave de financiación (préstamos bancarios) se ve perjudicada. Como ya he argumentado, las dificultades de acceso a la financiación bancaria lleva a las empresas a buscar fuentes de financiación alternativas y esto impulsa a dichas empresas a nivelar los ingresos en un intento de amortiguar el riesgo percibido. Por esta razón, supongo que habrá una asociación positiva entre la nivelación de ingresos y el nivel de estrés del sistema bancario. Además, supongo que la asociación es más fuerte en países en los que se facilita

el movimiento hacia las fuentes de financiación alternativas mediante la existencia de un ambiente institucional efectivo. En países con mejores características institucionales, las fuentes de financiación alternativas están más disponibles, por lo que el impulso de equilibrar los beneficios, a medida que las condiciones bancarias empeoran, será mucho más fuerte. He comprobado mis predicciones utilizando una muestra de empresas internacionales tomada de cinco países europeos (Alemania, Italia, Francia, Suiza y el Reino Unido) durante el periodo 2001-2011. He desarrollado un índice de crisis financiera específico por país que me permite distinguir entre el componente bancario y el de capital. Los resultados muestran una asociación positiva entre el equilibrio de ingresos y el estrés bancario y la relación es más fuerte en países con un ambiente institucional más estricto.

Creo que el estudio proporciona varias contribuciones. En primer lugar, considerando explícitamente el dinamismo de los mercados financieros y sus características, mi trabajo se añade a la literatura sobre gestión de beneficios y muestra el papel importante que desempeña la dinámica de mercado financiero en cuanto a darle forma a las decisiones sobre informes financieros. Por consiguiente, negar la dinámica de Mercado financiero puede limitar nuestro entendimiento de la relación existente entre los mercados financieros y la información contable. Del mismo modo, puede que la tesis proponga algunas ventajas potenciales sobre los informes financieros de gran calidad en tiempos de incertidumbre.

Además, desde una perspectiva metodológica, he utilizado y desarrollado una medida diferente de crisis financiera que va más allá del simple formato utilizado en trabajos previos. Los economistas (Claessens et al., 2012) tienden a considerar las crisis financieras como parte de un ciclo financiero. Como tales, no son sucesos extraños ni difieren en intensidad, duración y características. La utilización del indicador de estrés financiero permite capturar mejor estas características y la dinámica general de mercado. Siendo

consistente con esta idea, he calculado un indicador específico por país de estrés financiero. Hasta donde yo sé, soy una de las pioneras en el uso y cálculo de este tipo de índices en la literatura contable.

Por último, la crisis supone implicaciones políticas significativas. Dado el papel tan importante que desempeña la información contable en cuanto al buen funcionamiento del mercado y las consecuencias negativas dramáticas que una crisis tiene sobre las empresas y sobre la economía en general, los resultados que he obtenido podrían interesarle a los reguladores, a los que establecen los estándares contables y a los participantes en los mercados financieros.

Chapter 1: Financial reporting quality and corporate financing: Evidence from the financial crisis

1.1. Introduction

The information frictions between companies and capital providers are an important factor in firms' financing policies. In the presence of information asymmetries, outsiders do not know firms' type so they can ask for a greater premium on their investment or, to an extreme, decide not to finance firms. Difficulties in obtaining external financing have undesirable consequences because this can lead firms to forego relevant investment opportunities or seek suboptimal funds with a subsequent drop in firm performance. Financial reporting quality can moderate such negative impacts by determining the amount of information frictions between insiders and outsiders, but its effect is unlikely to remain the same over time because information frictions and their implications can change depending on capital supply conditions. Given the negative consequences that limited access to finance have at the corporate level, it is important to understand how accounting quality affects corporate financing as capital supply conditions deteriorate. I address this issue by analyzing the role of transparency on financing when a negative shock in the supply of capital occurs.

Even if theoretical works repeatedly emphasize the role of information asymmetries in firms' financing decisions, the effect of financial reporting quality under adverse capital supply conditions is unclear *ex ante*. Finance literature proposes a supply-side and a demand-side argument to explain financing outcomes when capital supply conditions deteriorate. According to a supply-side explanation, the higher uncertainty associated with negative external conditions reduces capital providers' willingness to finance firms, especially if they are perceived as risky. Conversely, following a demand-side logic, greater uncertainty increases adverse selection costs. Hence, firms prefer less information-sensitive types of financing (e.g., debt) and use more information-sensitive ones (e.g., equity) when forced (Choe et al., 1993; Myers and Majluf, 1984).

Financial reporting quality plays a role in both cases by shaping the extent to which firms are affected by the increased uncertainty around firms' type, but in a different manner. Following a supply-side argument, opaque firms will bear a greater reduction in all types of financing because they are more likely to be perceived as risky. Demand-side logic suggests that differences occur depending on the type of financing, and opaque firms will use more debt financing and less equity financing than transparent ones.

I reconcile the two views by considering the extent to which debtholders are affected by the uncertainty and thereby sensitive to informational problems. In particular, I expect that opaque firms use more debt financing because of the lower information-sensitivity of debtholders. This is less likely if the debtholders are more exposed to the uncertainty around firm's type as in the case of arm's-length debt. In this case, debtholders are more vulnerable to informational problems and, hence, are more likely to avoid opaque firms. Likewise, I contend that opaque firms use less equity financing because of higher information-sensitivity of equity holders. Yet the effect is weaker when the firm resorts to arm's-length debt because difficulties in accessing debt will trigger firms to seek alternative funds like equity, consistently with pecking order theory (Myers and Majluf, 1984).

I test the predictions in the context of the 2007-2008 financial crisis and find empirical support for them. I use firms' access to bond markets to proxy for diverse debtholders' exposure to uncertainty. The focus on firms' bond markets provides two advantages. The 2007-2008 financial crisis was a systemic shock affecting all firms and all financial markets with relevant, real-economy implications. Given that, there is not a natural control group of firms, and the access to financing is shaped by capital supply conditions but also by a lower demand for financing. By considering firms' access to bond markets, I identify a treated and a control group of firms diversely exposed to the adverse capital supply conditions, but they show a similar demand for financing.

I use Compustat quarterly data to measure debt and equity financing to consider all types of funding, and I adopt the presence of credit rating to proxy for firms' access to bond markets. Financial reporting quality is measured before the start of the sample period (i.e., 2006Q2) through well-known measures of accounting quality (i.e., accounting quality as computed by Dechow and Dichev (2002), absolute value of discretionary accruals (Jones, 1991) and performance-matched discretionary accruals (Kothari et al., 2005)) as well as the occurrence of non-timely (NT) filing and restatements. Because firms with and without access to bond markets have diverse characteristics, I use a propensity score matching procedure to attenuate the differences, especially in their need for financing.

Consistent with my predictions, I find that opaque firms use more debt financing after the financial crisis, but this is less likely if firms have access to bond markets. This is consistent with the idea that bondholders, as arms'-length investors, are more sensitive to the quality of accounting information and more exposed to uncertainty around firms' type following the crisis. As a result, they are more likely to avoid less transparent firms. Likewise, I find that opaque firms use less equity financing in line with the high information-sensitivity of equity holders. Yet opaque firms with access to bond markets use more equity consistently with a pecking order theory argument, according to which firms use equity under conditions of duress as they encounter difficulties in accessing debt.

To shed better light on the mechanism underlying the substitution between debt and equity, I replicate my analyses by using SDC data to identify the public component of equity financing (e.g., seasoned equity offering). Public equity investors are more sensitive to informational problems and, hence, are more susceptible to the uncertainty due to the crisis. Thus, the substitution to equity should be less likely if this source of equity is used. My findings are in line with this claim, suggesting that alternative and less information-sensitive types of equity (e.g., conversion of stock options, warrants, convertibles and private

placements) play an important role in the use of equity financing under conditions of uncertainty.

Additional tests show that the effects are stronger for firms with lower credit rating and are different depending on the phase of the financial crisis. Moreover, I find that the substitution effect is not limited to equity financing, as opaque firms can also use internal sources of financing. Lastly, I replicate my previous analyses using a period of stability (2003Q1-2004Q4) and an alternative episode of crisis in bond markets (the Ford/GM crisis of 2005). Both analyses attenuate the concern that the effect of financial reporting quality is due to other factors rather than an informational problem. Along the same lines, I document that firms are more likely to issue managers' forecasts in an attempt to promptly improve their information environment and the incentive is greater for firms with credit rating.

The study bridges accounting literature on the real effects of financial reporting quality with finance studies investigating the role of capital supply conditions in firms' corporate financing decisions. In particular, the contribution of the study is threefold.

First, I provide new empirical evidence on the role of financial reporting quality in firms' access to financing by considering its impact under adverse external conditions. Several theoretical studies highlight the role of accounting information in firms' corporate financing, but few studies provide empirical evidence for this association (Armstrong et al., 2010). Balakrishnan et al. (2014) document that firms with greater financial reporting quality are less sensitive to changes in firms' financing capacity while Chang et al. (2006; 2009) show that equity issuances of transparent firms are less vulnerable to firms' capital market conditions. I add to this strand of literature by showing the role of financial reporting quality in firms' access to financing when capital supply conditions deteriorate.

In this way, I find a better understanding of the mechanisms behind corporate financing outcomes and the role of financial reporting quality in the process. Theoretical models analyzing the role of information frictions in firms' corporate financing and capital structure choices consider the impact of information asymmetries on capital providers' choices and firms' preferences for financing in isolation. I complement the two views, showing that firms' preferences for a particular type of financing can be offset by capital providers' sensitivity to informational problems and, hence, their willingness to finance firms. Therefore, the role of financial reporting quality on corporate financing is not so straightforward and is contingent upon capital providers' sensitivity to informational problems and the extent to which they are affected by the uncertainty.

Second, I add to the literature investigating the benefits of financial reporting quality when external conditions are not favorable. Lang and Maffett (2011), Lang et al. (2012) and Ng (2011) show that transparent firms have higher liquidity and lower liquidity risk when market uncertainty is high, but they do not consider the real impact of such improvements. Mitton (2002) shows that firms with better disclosure enjoy higher market returns during the Asian financial crisis. However, the association can be due to diverse benefits of transparency rather than the financing channel (e.g., reduction of moral hazard problems and better governance, among others). I complement their evidence by documenting the real effects of financial reporting quality on corporate financing. Francis et al. (2013) and Balakrishnan et al. (2015) also document that conservatism mitigates the negative consequences of financial crisis on market performance, corporate investments and financing. Nevertheless, if conservatism reflects the extent to which earnings reflect bad news in a timely manner, financial reporting quality is a broader concept as it captures the ability of financial statements to truthfully reflect firms' business operations and not only negative news.

Third, I speak finance literature interested in corporate financing outcomes under negative external conditions. Prior studies document that firms are diversely exposed to a decline in capital supply conditions depending on their credit quality (Erel et al., 2012), ability to access alternate funds (Leary, 2009), bank relationships (Kahle and Stulz, 2013; Chava and Purnanandam, 2011), debt maturity (Almeida et al., 2012), cash reserves (Duchin et al., 2010) and political connections (Leuz and Oberholzer-Gee, 2006). I identify an additional factor represented by financial reporting quality. In this way, I enrich the understanding of firms' financing decisions under adverse external conditions and add to the debate on whether or not informational frictions matter in corporate financing in general (Fama and French, 2005) and under bad external conditions, in particular (Hakkio and Keeton, 2009).

Lastly, the study has relevant practical and policy implications. Financial crises are not rare events, as upturns and downturns normally occur in financial cycles (Claessens et al., 2012). Moreover, the reduction in external finance has adverse effects on the level of aggregate investment in the economy (Mishkin, 1991). Thus, understanding which factors attenuate or sharpen the negative consequences of adverse capital supply conditions at the corporate level is critical and of interest to managers and regulators.

1.2. Hypotheses Development

1.2.1. Adverse capital supply conditions, financial reporting quality and debt financing

Several theoretical studies examine the relevance of information frictions in firms' financing choices (Stiglitz and Weiss, 1981; Choe et al., 1993; Chang et al., 2009). The presence of information frictions between insiders and outsiders implies that outsiders do not know firms' type. Because they do not firms' type, they can decide not to finance the firm or ask for a greater premium for the risk they bear. Consistent with this argument, Biddle and Hilary (2006) and Biddle et al. (2009) document that transparent firms undertake more

efficient investments because of better access to external financing. The existence of information asymmetries also affects the type of financing that firms seek. Firms with greater information problems tend to use external funds that are less vulnerable to information problems like debt. For instance, Chen et al. (2013) show that after restatements, firms are more likely to issue debt rather than equity and, within debt financing, private debt is preferred to public one. Likewise, Bharath et al. (2008) document that opaque firms are more likely to use private debt than public one.

Recent finance literature recognizes that firms' corporate financing and capital structure choices are shaped by firms' characteristics but also by capital supply conditions (Leary, 2009; Erel et al., 2012). When capital supply conditions decline, an increase in uncertainty around firms' type and a loss in confidence among capital providers occur. The increased uncertainty has implications for capital suppliers' decision to finance firms and firms' preferences for financing.

On one hand, higher uncertainty around firms' type implies that capital providers face more difficulties in distinguishing between good and bad type firms. Given the difficulties in identifying firms' type, capital providers may prefer not to finance the firm due to the risk of a bad type investment. Indeed, Ivashina and Scharfstein (2010) demonstrate that after the financial crisis of 2007-2008, banks cut their corporate loans while Campello et al. (2010) show an increase in firms' financial constraints in the aftermath of the crisis. At the same time, the loss in confidence triggers capital providers to move away from risky and illiquid firms and towards less risky and more liquid ones, giving rise to so-called flight-to-quality and flight-to-liquidity phenomena (Vayanos, 2004; Caballero and Krishnamurthy, 2008; Guerrieri and Shimer, 2014). Thus, capital supply conditions determine the ease with which firms can access financing and meet their preferences for financing by affecting capital providers' willingness to finance firms.

At the same time, greater uncertainty exacerbates adverse selection problems, with negative implications for the overall cost of external financing for firms. For instance, Santos (2011) shows that, after the 2007-2008 financial crisis, banks increased their spread on loans. Given that, firms will prefer less information-sensitive types of financing like debt with respect to more information-sensitive types of funds like equity. Financial reporting quality plays an important role in both cases because it determines the extent to which financial statements truthfully reflect firms' operations and intrinsic value and, hence, the amount of uncertainty around firms' type.

When opaqueness is high, capital providers face more difficulties in identifying firms' type. They perceive higher estimation (Francis et al., 2004) and liquidity risk (Lang et al., 2012; Lang and Maffett, 2011; Ng et al., 2011) that reduce their willingness to finance firms and increase the cost of external financing. Given that, firms with lower financial reporting quality will seek less information-sensitive types of financing, like debt (Choe et al., 1993). Yet, the greater suspicion due to negative external conditions leads debt providers to strengthen their lending requirements (Ruckes, 2004) and deny financial resources to firms that they perceive as riskier, preferring less risky ones (Gelos and Wei, 2005; De Haas and Van Horen, 2013). Thus, even if opaque firms look for debt, the adverse circumstances preclude them to access debt financing. In particular, the more debtholders are exposed to uncertainty around firms' type, the more likely they will flee from opaque firms, preferring more transparent ones. Indeed, firms with high financial reporting quality are less likely to be hit by flight-to-quality and flight-to-liquidity phenomena because the lower uncertainty around their type diminishes estimation and liquidity risk. Thus, I expect that as capital supply conditions deteriorate, opaque firms use more debt financing, but this is less likely if debtholders are more hit by the uncertainty about firms' type.

1.2.2. Adverse capital supply conditions, financial reporting quality and equity financing

Debt financing is not the only type of financing that is affected by a deterioration in capital supply conditions. Equity holders also experience an increase in uncertainty about firms' type and will avoid risky and illiquid firms preferring less risky and more liquid ones. Once again, accounting quality can shield firms against such negative effects by mitigating the estimation and liquidity risk perceived by equity holders. Consistently, Ng (2011), Lang and Maffett (2011) and Lang et al. (2012) show that transparency ameliorates firms' liquidity and the effect is particularly pronounced under periods of market turbulence. Given that, opaque firms should suffer a greater reduction in equity financing as capital supply conditions deteriorate. Moreover, the greater sensitivity of equity holders to informational problems also increases the cost of equity financing so that opaque firms avoid using equity financing.

Nevertheless, the effect is likely to be different if firms cannot access debt financing. As I argued before, opaque firms use more debt financing but this is less likely if debtholders are more exposed to the uncertainty about firms' type. In this case, opaque firms cannot obtain debt funds and they look for alternatives. Becker and Ivashina (2014) show that under bad macroeconomic conditions, firms will substitute private loans with bond issuances. Along the same lines, Leary (2009) document that under bad banking circumstances, bank-dependent firms prefer other types of funds (i.e., internal sources and equity financing) to debt. Indeed, pecking order theory suggests that firms prefer debt financing but move towards equity financing when they experience conditions of duress (Myers and Majluf, 1984; Bolton and Freixas, 2000). Difficulties to access debt funds can be reasonably considered as a condition of duress for firms leading them to seek equity financing to replace debt funds. In this case, the access to debt funds is impeded and less transparent firms are forced to utilize equity financing (Bolton and Freixas, 2000). Thus, following a pecking order

theory logic, I expect that as opaque firms use less equity financing than transparent firms as capital supply conditions worsen but this is less likely if debtholders are more hit by the uncertainty.

1.3. Research Design and Sample Selection

1.3.1. Research design

I test my predictions by comparing debt and equity financing for opaque and more transparent firms before and after the 2007-2008 financial crisis. In particular, I define financial crisis as the period starting from 2007Q3 (i.e., the collapse of the subprime market in August 2007) to 2009Q2 while the pre-crisis period is identified as one year before the effective start of the financial crisis (2006Q2-2007Q2) to account for potential seasonality patterns. Using the financial crisis as a context enables me to consider a decline in capital supply conditions that firms did not anticipate and that was associated with a loss in confidence among capital providers. Moreover, I exploit firms' reliance upon arm's-length debt to account for debtholders' different exposure to uncertainty. In particular, I distinguish between firms with and without access to bond markets. There are two main advantages of this distinction.

First, contrary to other lenders, bondholders are arms'- length investors. They are less able to access private information and directly monitor borrowers than bankers, so they must rely more on financial statements to make their decisions. Indeed, Bharath et al. (2008) suggest that transparent firms are more likely to choose public rather than private debt. Furthermore, Plummer and Tse (1999) demonstrate that the relation between earnings and equity returns is stronger in the case of profits than in the presence of losses while the reverse occurs for bond returns. Along the same lines, Shivakumar et al. (2011) show that the CDS market reaction to managers' forecasts is stronger in a period of crisis. To the

extent that bondholders use accounting information and that their sensitivity to accounting information is stronger under periods of crisis, the access to bond markets is suitable to proxy the extent to which debtholders are exposed to the higher uncertainty.

Second, I reduce the identification challenges associated with the adoption of financial crisis as a context. In an ideal experiment, the effect of adverse capital supply conditions would be detected by comparing firms with a similar demand for external financing but diverse capital supply conditions. Then, I would investigate whether differences are affected by the level of transparency. The use of the financial crisis as a context implies a deviation from an ideal experiment along two dimensions. As the financial crisis was a systemic shock affecting all firms, I do not have a “natural” control group. Moreover, the financial crisis led to a contraction in the real economy so that deterioration in capital supply conditions coexisted with a reduction in demand for financing (Campello et al., 2010), hindering the possibility of disentangling a supply and a demand channel.

The exploitation of cross-sectional variation in firms’ access to financial markets helps to reduce these concerns. Even if the financial crisis affected several segments of financial markets, not all firms resort to all financial markets. If firms do not access a specific financial market segment, they will not be affected by the consequences of the financial crisis in that market. Friewald et al. (2012) show that corporate bond markets experience high illiquidity during the 2007-2008 financial crisis, and the negative effects were pronounced for bonds with high credit risk. In particular, in the aftermath of the financial crisis, bondholders faced difficulties in estimating firms’ default risk and their ability to pay interests and principal. The uncertainty further hindered bond trading. Thus, if all firms were hit by banks’ difficulties and turbulence in equity markets, only firms with access to bond markets were affected by the additional shock in bond markets. In this way, I identify a treatment and a control group of

firms with a diverse exposure to capital supply conditions but a similar demand for financing (Kahle and Stulz, 2013).

Following prior studies (Lemmon and Roberts, 2010), I use the presence of credit rating as an indicator of a firm's access to the bond market¹. Because firms that access the bond market are different from the ones that do not access it, I have to assure that differences between the two groups are due to the diverse exposure to the financial crisis rather than the inherent characteristics of firms choosing to access bond markets. To reduce this concern, I match firms with and without credit rating on the basis of firm characteristics such as size, profitability, leverage, growth opportunities and industry by using a propensity score matching procedure (Lemmon and Roberts, 2010; Kahle and Stulz, 2013; Almeida et al., 2012) before the start of the sample period (2006Q2). The matching procedure allows me to reduce differences between the two groups and make them as similar as possible in their need to obtain external financing. Yet the two groups still differ in their exposure to the shock on the capital supply side².

After identifying the period of financial crisis and firms with and without access to bond markets, I investigate whether the level of financial reporting quality attenuates or exacerbates firms' exposure to the crisis. I use the level of financial reporting quality at 2006Q2, namely before the starting period of the financial crisis and before managers envisage the deterioration in capital supply conditions. The level of financial reporting quality at time (t) depends upon firms' characteristics and growth opportunities at time (t) as well as

¹ My choice to use access to bond market as a proxy for the exposure to crisis is similar to Kahle and Stulz (2013)'s strategy to distinguish among firms with a diverse level of bank dependence. Yet their distinction is only based on debt dependence without considering the type of debt financing. The focus on credit rating is finer in capturing the exposure of debtholders to uncertainty. In robustness analyses, I use different criteria to proxy for the differential exposure to financial crisis, such as listing in OTC markets or the presence of convertibles. I do not find evidence for these alternative criteria, suggesting that the financial crisis was mainly a credit shock.

² In additional analyses, I use alternative matching procedures considering additional firms' characteristics, alternative distances and algorithms. Moreover, as firms can lose ratings during the crisis period, I consider firms that had a rating for the full sample period. Results are robust to these alternative matching procedures.

expected future growth opportunities that determine their need for external financing. Thus, as the financial crisis occurs, the decision to be more or less transparent at time (t) can also be affected by the impact that the financial crisis had on firms' business operations. Instead, decisions relative to financial reporting quality taken before the financial crisis are less likely to be tied to actual macroeconomic conditions. Thus, by using them, I can better capture the mitigating role of financial reporting quality when unexpected changes in capital supply conditions occur³.

The use of financial reporting quality before the starting of the sample period can cast doubts on the ability of accounting information to reduce uncertainty around firms' type when the crisis occurs. Yet, accounting choices made in the past can still dampen information frictions in the future for two reasons. First, because the level of financial reporting quality at time ($t-1$) is based on firms' characteristics at time ($t-1$), it is not necessarily optimal when capital supply conditions worsen. For instance, because of the chosen level of transparency at time ($t-1$), firms can reveal information about their future prospects that become detrimental during the crisis. Moreover, Sadka (2006) argues that earnings manipulation is effective if there is a correspondence between what firms disclose and how they operate. Hence, by considering past accounting choices, I assume that capital providers had enough time to evaluate whether the information reported by the firm corresponded to reality. Both factors make accounting information disclosed at time ($t-1$) more credible and able to reduce information asymmetries at time (t).

1.3.2. Regression specifications

I test my predictions by running the following regression models:

³ Duchin et al. (2010), Almeida et al. (2012) and Balakrishnan et al. (2015) adopt a similar approach respectively, using the level of cash reserves, maturity of debt and conservatism at time 2006Q2. Likewise, Balakrishnan et al. (2014) consider financial reporting quality before changes in financing capacity occur.

$$\text{Debt Financing}_{it} = \alpha_1 + \alpha_2 \text{Crisis}_t + \alpha_3 \text{Crisis}_t * \text{Rating}_i + \alpha_4 \text{Crisis}_t * \text{Opacity}_i + \alpha_5 \text{Crisis}_t * \text{Rating}_i * \text{Opacity}_i + \sum \text{Controls}_{it} + \varepsilon_{it} \quad (1)$$

$$\text{Equity Financing}_{it} = \beta_1 + \beta_2 \text{Crisis}_t + \beta_3 \text{Crisis}_t * \text{Rating}_i + \beta_4 \text{Crisis}_t * \text{Opacity}_i + \beta_5 \text{Crisis}_t * \text{Rating}_i * \text{Opacity}_i + \sum \text{Controls}_{it} + \varepsilon_{it} \quad (2)$$

Following Bradshaw et al. (2006), I measure debt financing as the net cash received from (paid for) the issuance (reduction) of long-term debt (Compustat variable DLTIS minus DLTR) in a given year scaled by the lagged value of assets (Leary and Roberts, 2005; Lemmon and Roberts; 2010)⁴. Net equity financing is measured as the net cash received from the sale (repurchase) of equity (Compustat variable SSTK minus PRSTKC) scaled by the lagged value of assets. Contrary to studies in the capital structure literature, I do not use changes in debt or equity above a threshold (Leary, 2009) or only public issues (Erel et al., 2012) as measures of corporate financing, but I focus on the funding obtained from all sources⁵.

Crisis is a dummy variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. Rating is also a dichotomous variable equal to 1 if the firm has a bond rating as of 2006Q2⁶. I use Compustat to identify the presence of a credit rating. I acknowledge that Compustat only holds S&P ratings. Thus, in additional tests, I replicate the analyses by using FSID Mergent as an alternative source of data. FSID Mergent provides credit rating information

⁴ I use cash flow data rather than balance sheet items (Kahle and Stulz, 2013) because I am interested in the effective cash flows related to the issuance of external financing. The use of cash flow data implies that in certain cases, I have information for equity issues, but not for debt and vice versa. I modify the measures by setting the missing value of one item to 0 if the other item is present. I replicate the results using the original measures and results are robust.

⁵ Given that, I cannot disentangle the effects within debt and equity financing. This is particularly relevant for firms issuing bonds, as they could use bank loans as an alternative to bonds. However, this possibility is against my findings.

⁶ The use of the presence of a rating before the sample period is consistent with Duchin et al. (2010) and Kahle and Stulz (2013).

for all three rating agencies (S&P, Moody's and Fitch) and a broader array of credit instruments. I obtain similar evidence using this alternative source of data. Because firms can obtain or lose their credit rating over time, I also consider the presence of credit rating at time (t)⁷.

I gauge opaqueness by using standard measures of accounting quality: accounting quality computed following Dechow and Dichev (2002) (AQ), absolute value of discretionary accruals computed according to modified Jones Model (Jones, 1991) (abs_DA) and absolute value of performance-matched discretionary accruals (Kothari et al., 2005) (abs_PDA). Because accrual-based measures of accounting quality are related to the firm's risk profile, I use alternative measures that are less affected by measurement concerns. In particular, I use a non-timely (NT) filing⁸ ($Late_filing$) and the number of restatements in the last calendar year ($Rest$) as additional measures of opacity. Both measures are retrieved from Audit Analytics⁹. As variations in the financial reporting quality are likely to occur and can confuse my inferences, I include the level of opacity at time (t) ($Current_Opacity$)¹⁰.

I include a set of control variables to account for firm-level characteristics that can affect the level of financing such as firm size (natural logarithm of total assets), performance (ROA), cash flow from operations (cash flow divided by lagged total assets), leverage ratio

⁷ During my sample period, 40 firms (out of 287) lose their credit rating, while 36 firms gain a rating. In additional tests, I repeat my matching procedure while only considering firms that maintain the rating for the full sample period.

⁸ US firms must redact 10-Ks and 10-Qs according to deadlines established by the SEC (90 days for 10-K and 45 days for 10-Q, even if variations occur depending upon the filing status of the company). If the firm is not able to comply with the rule, the SEC should be notified of the delay through an NT filing within 15 days. The delay in redacting financial statements is often due to difficulties related to or changes in the accounting system. Thus, it is a signal of potential errors in financial statements that reduce the extent to which financial reporting truthfully reflects underlying firms' operations.

⁹ I exclude that results are due to "temporary" financial reporting quality by considering the ranked values of the accrual-based measures for one year before the start of the sample and take the average value. Results are unchanged by using this alternative measure.

¹⁰ Results are not affected by the inclusion or exclusion of current rating and financial reporting quality except for restatements whose coefficient loses significance when debt financing is used as dependent variable. Given the low likelihood of restatements, I include a control for current value of abs_DA in the specifications where restatement is used. In sensitivity tests, I use lagged values of control variables rather than actual values, and conclusions are similar.

(long term debt divided by total assets), tangibility (Almeida and Campello, 2007), growth (percentage change in sales), managerial ability as measured by Demerjian et al. (2012)¹¹, distress taking value equal to 1 if Altman Z-score (Altman, 1968) is lower than 2.9 and 0 otherwise and Tobin's Q. I also control for the demand for debt financing as computed in the Senior Loan Officer Opinion Survey on Banking Lending Practices conducted by the Federal Reserve Board (FED)¹². I include firm and time fixed effects¹³ to account for time-invariant unobservable characteristics and time factors, respectively. The inclusion of firm fixed effects implies a drop of the main effect for rating, financial reporting quality and their interaction because they are measured once in the sample period. I cluster standard errors at firm and time level (Petersen, 2009)¹⁴. All variables are winsorized at 1% to mitigate the effects of outliers.

My coefficients of interest are α_4 and α_5 in model (1) and β_4 and β_5 in model (2). I expect α_4 to be positive and α_5 to be negative and statically significant in model (1) suggesting that debt financing after the financial crisis is higher in opaque firms without access to bond markets and lower in opaque firms with access to bond markets, respectively. On the other hand, I posit that β_4 is negative and β_5 is positive and statistically significant in model (2) consistent with the idea that opaque firms use less equity financing if they do not access bond markets but are less likely to do so if they have a credit rating¹⁵.

¹¹ The MA-Score data are available at <https://community.bus.emory.edu/personal/PDEMERJ/Pages/Home.aspx> for the period 1980-2010 and 1980-2011 at annual level.

¹² <http://www.federalreserve.gov/boarddocs/snloansurvey/>. The measure captures the net percentage of domestic banks reporting stronger demand for loans from last year so that negative values indicate a perceived drop in demand.

¹³ Because of the inclusion of time-fixed effects, the coefficient of financial crisis does not always survive the inclusion of time fixed effects. However, my coefficient of interest is the interaction term of crisis with rating and financial reporting quality. Hence, the inclusion of time fixed effects is a conservative way to control for other features of the quarter. If I exclude time fixed effects, the results are robust.

¹⁴ Conclusions are qualitatively the same using robust standard errors and standard errors clustered at firm level.

¹⁵ Because my coefficients of interest are the triple interactions of financial crisis with credit rating and financial reporting quality, I also consider the triple interactions with control variables. Results hold by including such

1.3.3. Sample selection

Data are collected from Compustat North America quarterly data for the period 2006Q3 - 2009Q2. I prefer to use quarterly data rather than annual because the crisis occurred in 2007Q3, and it is important to consider infra-annual dynamics¹⁶. I use data at the consolidated level and exclude private firms, non-US firms, financial firms (SIC 6000-6999) and firms in regulated industries (SIC 4400-5000) (Zang, 2012). Furthermore, I exclude firms that adopt non-GAAP standards and firms with accounting changes in order to assure comparability in accounting numbers and firms with a periodicity different from quarterly¹⁷. After removing these firms, the sample is equal to 46,901 firm-quarter observations, which is further reduced to 5,596 firm-quarter observations after the matching procedure.

1.4. Empirical Results

1.4.1. Descriptive evidence

I start my analysis by investigating capital market conditions in my sample period. Graph 1 shows the trend of credit spread for the period of interest. Credit spread is computed as the difference between the average yield to maturity of high-yield US corporate bonds¹⁸

additional controls. However, their inclusion can create a multicollinearity problem that can decrease the efficiency of estimator. Thus, I do not include them in the main analyses.

¹⁶ Given the use of quarterly data, there could be a fourth-quarter issue. Brown and Pinello (2008) point out that the stronger monitoring of auditors in the fourth quarter leads to higher financial reporting quality in the last quarter with respect to the other three. Sixty-four percent of firms in my sample do not end their fiscal year in December, and 11% placed 2006Q2 as their fourth quarter. I repeat my analyses by excluding these firms and/or creating a control for different fiscal-year endings. Conclusions are unaffected. Moreover I do not exclude firms with different fiscal year-endings because firms with a non-December fiscal-year end are usually smaller, riskier and face more difficulties to access financial resources. Thus, they are more likely to be hit by the negative consequences of the financial crisis. Given that, my time-definition is based on a calendar rather than a fiscal year.

¹⁷ I do not drop firms with M&A and discontinued operations because M&A and discontinued operations are likely to be related with the drop in financing; therefore, I do not create a bias.

¹⁸ I use the FINRA - BLP Active HY US Corporate Bond Index Average Yield to Maturity as reported in Bloomberg.

and US government bonds¹⁹. Graph 2 displays the time-trend for the financial stress indicator developed by the Federal Reserve of Kansas City²⁰. Both indicators suggest the existence of turmoil in financial markets starting from 2007Q3 (i.e., panic in subprime market) and achieve their peak in 2008Q3 and 2008Q4, namely after the bankruptcy of Lehman Brothers, when credit markets de facto ceased to function properly.

Table 1, Panel A reports the descriptive statistics for the firms in the sample. Relative to the overall population of Compustat firms for the sample period, firms in the sample are larger (average value for size is 7.13), more profitable (average value of ROA is 0 while cash flow from operations is equal to 2.6%), with lower growth (average value for growth is 3.16% while average value for Tobin's Q is 1.7) and higher leverage ratio (the average value of leverage ratio is 28%)²¹. The average value for tangibility is 44% while 76% of firms have Altman_Z scores lower than 2.9. They are run by relatively good managers with an average value of the *Managerial Ability* equal to .019. Thus, they appear as relatively mature, profitable but with a high level of leverage. Moreover, they exhibit higher financial reporting quality than other firms excluded from the sample. Lastly, the average value of net debt financing is 0.75% (the median value is 0) while the average value for net equity financing is -0.12% (the median value is 0)²². The negative value seems to suggest that firms in the sample are net repurchases²³.

¹⁹ I use US Generic Govt. 30 Year Yield provided in Bloomberg. I use the US government bond with 30 year maturity because prior works computing financial stress indicators use long-term government yield to compute spreads with respect to corporate bond yield as an indicator of a low-risk security (Hakkio and Keeton, 2009).

²⁰ The data for the financial stress indicator are taken from <https://www.kansascityfed.org/research/indicatorsdata/kcfsi>.

²¹ As I expect, the matching procedure retained firms with characteristics akin to rating firms. For instance, firms are more leveraged, consistent with the findings of Faulkender and Petersen (2006).

²² As I am interested in the magnitude of financing flows during the crisis with respect to more normal times, negative and zero net issuances are noteworthy to me (Kahle and Stulz, 2013).

²³ As share repurchases can signal low growth opportunity and, hence, low need to access external financing, I replicate my analyses by separately using equity sales and equity purchases. Results hold in the first case, but I do not find similar evidence using equity purchases. The coefficient for the triple interaction is not statistically significant in all model specifications except for *Late_filing*. Yet the interaction between crisis and opacity is positive and statistically significant, suggesting that after a crisis, opaque firms are more likely to

Because firms with and without access to bond markets are matched on the basis of firm characteristics to make them as comparable as possible, I expect that firms are similar at the inception of the sample period. I assess the goodness of the matching procedure in Table 1, Panel B. I do not find significant differences between the two groups of firms at the beginning of the sample period, thus supporting the goodness of the matching procedure²⁴. In particular, firms with and without credit rating do not exhibit differences in debt and equity financing at the start of the sample period. Likewise, there is no evidence of a different level of opacity. The only variables for which a difference occurs is *Managerial Ability* and *Cash Flow*.

Table 1, Panel C reports the correlation matrix. As we might expect, crisis is negatively correlated with equity and debt financing as well as with performance, growth and distress.

1.4.2. Financial crisis and financial reporting quality

In a first set of analyses, I consider the moderating role of financial reporting quality in the association between financial crisis and corporate financing without distinguishing between firms with and without credit rating. Table 2 reports the results. Panel A shows the results for debt financing while Panel B exhibits the results for equity financing.

Looking at Table 2, Panel A, I observe that larger firms, firms with higher tangible assets and firms with better managers issue more debt given the lower difficulties in accessing external financing. High-growth firms, highly levered firms and distressed firms also use more debt while well-performing firms and firms with high cash flow issue less debt because of a lesser need to obtain external financing. Above all, the coefficient for financial

repurchase, but there is no difference between firms with and without credit rating. Thus, the differential effect I observe for the overall measure of equity is not due to the different repurchasing policies.

²⁴ The two groups do exhibit differences along the sample period, consistent with the diverse exposure to the financial downturn.

crisis is negative and statistically significant in all model specifications consistently with a reduction in debt financing after the occurrence of the crisis (Erel et al., 2012). Yet, I do not find evidence for a statistically significant moderating effect of financial reporting quality. The interaction term between a financial crisis and financial reporting quality is only significant in Column (4), using *Late_filing* as a measure. Firms that do not redact financial statements in a timely manner have lower reduction in debt financing after the crisis with respect to transparent firms. The positive interaction term is consistent with the preference of opaque firms for debt when uncertainty around their type is higher.

Table 2 Panel B, relative to equity financing, shows a different pattern. Regarding control variables, firms with more tangible assets issue more equity financing in line with the idea that more capital-intensive firms need more capital. Moreover, firms with high cash flow use less equity because greater internal sources reduce the need for external financing. Lastly, the presence of a credit rating at time (t) has a positive and statistically significant effect on equity financing. Indeed, the higher visibility and monitoring to which firms with a credit rating are exposed make firms with credit rating more attractive to equity investors²⁵. I do not observe a statistically significant effect for financial crisis while the interaction term with financial reporting quality is negative and statistically significant in Column (1), (2) and (3). After the financial crisis, firms with low financial reporting quality use less equity financing than firms with high financial reporting quality. The negative interaction term is consistent with higher information-sensitivity of equity financing. Yet it can also be consistent with a demand-side explanation, according to which firms with low financial reporting quality raise less equity financing because they do not need external financing.

²⁵The low significance of control variables is due to the matching procedure used to make firms with and without credit rating as similar as possible as well as to the use of firm fixed effects. If I use industry fixed effects instead of firm fixed effects, the significance slightly improves. The matching procedure also reduces the statistical significance of the interaction term of crisis and credit rating at a 10% significance level.

The findings reported in Table 2 reflect the identification challenges of using the financial crisis as a proxy for adverse capital supply conditions. First, the reduction in demand associated with the crisis implies that the evidence of a negative effect of the crisis on financial reporting quality is due both to a lower need for external financing and greater difficulties in accessing external funds because of overall turmoil. Second, as all firms are affected by the crisis, the mere comparison of firms before and after the crisis might not be enough to capture capital supply dynamics and, hence, the effect of financial reporting quality. Both factors highlight the importance of exploiting heterogeneity in firms' access to financial markets, in general, and the extent to which debtholders are hit by the uncertainty, in particular. Given that, I run models (1) and (2) by comparing firms with and without access to bond markets.

Table 3 reports the results for debt financing²⁶. Financial crisis is still negative and statistically significant in almost all model specifications. It is worth noting that the interaction between credit rating and financial crisis is negative and statistically significant in Columns (4) and (5). Hence, firms with credit rating issue less debt after the crisis because of the higher exposure to turbulence in financial markets. The interaction of crisis with measures of opacity is positive even if it is not always statistically significant. This suggests that among firms with no access to bond markets, the negative effect of crisis is lower for more opaque firms. Instead, the triple interaction is negative and statistically significant, showing that opaque firms with access to bond markets are more exposed to the drop in debt financing following the crisis — in line with my expectations. In particular, firms without credit rating and a value of *AQ* equal to .01 experience a 0.97% drop in debt financing while firms with access to bond markets and equal level of opacity bear a 1.96% reduction in debt.

²⁶ The sample size changes across model specifications depending on the measure of financial reporting quality used in the model.

The diverse results for firms with and without access to the bond market are consistent with the different demands for accounting information of bankers and bondholders (Bharath et al., 2008). Banks have better acquisition and processing abilities, so they rely upon accounting information less than bondholders. Thus, their uncertainty around firms' type will be lower, justifying the positive effect of opacity on debt financing for firms without access to bond markets. Instead, difficulties to access private information and directly monitor borrowers imply that bondholders are more exposed to the higher uncertainty due to the crisis and, hence, more reluctant to finance opaque firms.

The results for equity financing in Table 4 are quite different. Control variables are not affected by the inclusion of the triple interaction. The interaction between financial crisis and credit rating is positive and statistically significant. Firms with credit rating use more equity financing in line with a pecking order theory argument according to which firms experiencing conditions of duress move towards equity financing²⁷. If I consider the role of financial reporting quality, the interaction term of financial crisis and opacity is negative and statistically significant while the triple interaction with credit rating is positive and statistically significant. Assuming a value of *AQ* equal to 0.01, firms without a credit rating report a 0.23% drop in equity financing while firms with a credit rating show an increase of 0.105%.

Thus, in the case of firms with no credit rating, opacity is negatively associated with equity financing, which is consistent with the idea that opaque firms are less likely to use equity financing given the greater demand of equity holders for high-quality accounting information. Yet, this is less likely for firms with credit rating because the stronger exposure to negative credit market conditions raises the need to search for alternative types of financing.

²⁷ In Columns (1) and (3), the coefficient for financial crisis is not statistically significant and positive. The change in sign is once again due to the inclusion of firm fixed effects. Indeed, if I use industry effect controls, the sign does not change.

Because debt and equity financing outcomes are unlikely to be independent, the standard errors of OLS regressions can be correlated. To confront this issue, I run seemingly unrelated regressions. In order to estimate the seemingly unrelated regressions, I include additional controls in the equity regression model that are more likely to affect equity rather than debt decisions like the type of exchange market in which firms' shares are traded, market performance and number of shares. Furthermore, I substitute firm fixed effects with industry fixed effects. To confront this issue, I run seemingly unrelated regressions. The results for the seemingly unrelated regressions are not reported for the sake of parsimony but they are available from the author upon request.

Concerning debt financing, I still observe that triple interaction of crisis, credit rating and opacity is negative and statistically significant in all model specifications except for *Late_Filing*, consistent with Table 3. Interestingly, the interaction term between opacity and credit rating is positive and statistically significant, suggesting that before the crisis, firms with access to credit rating use more debt as their financial reporting quality decreases. The positive effect can be justified by the stronger reliance of opaque firms on private debt and the higher visibility and monitoring due to the presence of credit rating.

In the case of equity financing, the coefficient of interest (i.e., triple interaction of crisis, credit rating and opacity) is positive and statistically significant at the 10% level for all measures of opacity except for *abs_DA*. Of note, the main effect of opacity is positive and statistically significant²⁸ while the interaction term of opacity and rating is negative and statistically significant, suggesting that the presence of credit rating attenuates the use of equity financing for opaque firms likely because these firms might prefer to use alternative

²⁸ Balakrishnan et al. (2014) also find evidence of a positive association between low financial reporting quality and equity financing. Firms reporting lower financial reporting quality tend to be more risky, and the higher level of risk can trigger them to use equity financing.

sources of financing. Overall, results for the seemingly unrelated regressions are similar to those discussed so far, thus further supporting my predictions.

1.5. Additional Analyses

1.5.1. Public equity vs private equity

The evidence so far shows that opaque firms exposed to credit market turbulence (i.e. firms with credit rating) use more equity financing than comparable firms that do not access credit markets (i.e. firms without credit rating). The observed positive effect can be at odds with anecdotal evidence according to which the 2007-2008 financial crisis lead to an general deterioration in capital markets' conditions (Gorton, 2010) and the great informational problems associated with equity financing. I exploit this issue by considering the diverse equity components of my measure of equity financing.

My measure of equity financing includes public equity financing, but also private placements and conversion of convertibles, warrants and stock options. Such sources of equity financing are less exposed to adverse selection problems and, hence, less likely to be affected by uncertainty (Fama and French, 2005). To deepen the role of these alternative sources of equity, I collect data relative to public equity issuance from SDC Platinum. Similar to Fama and French (2005), my measure of equity financing is on average larger than the equity issued through public placements as reported by SDC Platinum. In particular, the average value of equity sales for my sample period is 0.6% while the average value of public equity issuance is 0.2%.

I replicate the seemingly unrelated regressions I report so far with the measure of public equity issuance collected from SDC. Table 5 reports the results for this additional set of analyses. Panel A shows the results for debt financing while Panel B documents the evidence for the new measure of equity financing. Findings for Table 5, Panel A are

consistent with those previously reported. Alternatively, in Table 5, Panel B, the triple interaction of financial crisis, credit rating and opaqueness is statistically significant and positive only for *abs_DA* (Column 1) and *Late_filing* (Column 4). Thus, by using this alternative measure of equity financing, I find weaker evidence for a positive effect of financial reporting quality for firms with credit rating after the financial crisis. Lower evidence for public equity can suggest that alternative sources of equity are relevant in explaining the evidence thus far. Above all, the findings suggest that equity holders are not equally hit by the uncertainty due to the crisis and that the substitution to equity is less likely to occur when equity investors are more sensitive to information problems, as in the case of public equity financiers.

1.5.2. Credit rating classes

In previous analyses, I considered the presence or absence of the credit rating without weighing the evaluation of the credit agency. In this section, I exploit cross-sectional variation in the exposure to corporate bond markets by using the credit rating class at 2006Q2. The focus on credit rating classes allows for a better accounting of firms' decisions to tap bond markets.

Firms can decide to tap bond markets because they have greater and better investment opportunities. If that is the case, the differential effect I observe is not due to diverse capital supply dynamics rather by diverse investment opportunities. Indeed, one can argue that firms without access to bond markets have worse investment opportunities than those with access to bond markets so that the differential effect is due to the impact of the financial crisis on a diverse pool of investment opportunities. According to this explanation, the effects would be pronounced for firms with higher credit. However, firms can choose to use bond markets because of difficulties in accessing other funds. In this case, according to Holmstrom and Tirole (1997), I expect that bad firms are the first to be cut when capital

supply conditions deteriorate. Thus, the moderating effects of financial reporting quality should be pronounced for firms with lower credit evaluation. I replicate my analyses by distinguishing three major classes of credit rating: high-grade firms (firms with a A credit rating), non-investment grade (firm with a B credit rating) and junk bonds (firms with a C credit rating)²⁹. Results are not reported for the sake of parsimony but they are available from the author upon request.

I find that that the negative effect of financial crisis over debt financing is stronger for firms with non-investment bonds whereas I find weak evidence that the negative effect of crisis is different for firms with high-grade and junk bonds. When the moderating role of financial reporting quality is considered, I observe that the positive effect of financial reporting quality on debt financing is reduced for non-investment firms except for *Late_filing*. Thus, evidence suggests that the moderating role of financial reporting quality I observe so far is due to non-investment firms — namely to firms that are neither “bad” nor “good” investments. As for the main effects, I find weak evidence of a moderating effect of financial reporting quality for high-grade and junk bonds. The triple interaction for junk bond firms is only significant for restatements, whereas the triple interaction for high-grade firms is only statistically significant for *AQ* but with a positive sign. Because of their higher credit quality, these firms should be better able to access new debt financing, and lenders should be more willing to finance them despite the low financial reporting quality.

Regarding results for equity financing, I observe a negative interaction term of crisis with financial reporting quality. Yet these negative effects are weaker for firms with non-investment and junk bonds in line with my expectations and results reported so far.

²⁹ According to this classification, high-grade firms represent 3% of firms with credit rating, non-investment grade 90% and junk bonds 2%. Given the uneven distribution, I use the following alternative categorization: high grade (class AAA-BBB), non-investment grade (BB-B) and junk bonds (C). Findings are similar to this alternative specification.

Interestingly, the positive effect of triple interaction tends to be stronger for firms with junk bonds. Thus, taken together, results exclude that the effects are due to a diverse pool of investment opportunities that firms with credit rating have rather than capital supply factors corroborating the idea that the moderating role of financial reporting quality depends upon capital providers' exposure to uncertainty about firms' type and sensitivity to informational problems.

1.5.3. Different phases of financial crisis: before and after Lehman's failure

In the main analyses, I consider the full period of the 2007-2008 financial crisis. This raises two concerns. First, the crisis period is longer than the non-crisis period. Second, the crisis period includes several events that can have diverse effects on firms' access to financing. Thus, in additional tests, I distinguish between the first stage of the crisis (i.e., August 2007 – September 2008) and the most severe phase following the Lehman Brothers collapse (i.e., September 2008 – August 2009) (De Haas and Van Horen, 2013; Mishkin, 2010). I create two dummy variables: *Pre_Lehman* (equal to 1 for the period 2007Q3-2008Q3 and 0 otherwise) and *Post_Lehman* (equal to 1 for the period 2008Q4-2009Q2 and 0 otherwise). The base period is 2006Q3-2007Q2.

The Post-Lehman Brothers' failure period was very turbulent, with many relevant events occurring in a short period of time. From October 2008, the US government attempted to restore confidence in markets by establishing the Troubles Asset Relief Program (TARP), through which it injected money in the banking sector. Moreover, there was a serious drop in demand due to the reduction in consumption, leading to the recession. Lastly, a severe deterioration of both equity and credit market conditions occurred, as illustrated by the dramatic increase in credit spreads and financial stress indicators following the failure of Lehman Brothers (Mishkin, 2010), shown in Graph 1 and 2. Therefore, it is

important to distinguish between the two phases and investigate whether the moderator effect of financial reporting quality is diverse depending on the phase of crisis.

Table 6 Panel A reports the results for debt financing. Firms experience a reduction in debt financing both in the period before and after the bankruptcy of Lehman Brothers even if the reduction is stronger in the second phase. In particular, considering the results in Column (1), the reduction in debt financing before the Lehman Brothers' failure is 0.94% while the reduction after the bankruptcy of Lehman is 1.3%. I still find a positive interaction term with financial reporting quality both before and after the collapse of Lehman, suggesting that when firms do not access bond markets, opaque firms use more debt financing than transparent firms. Nevertheless, the effect is weaker for firms with credit rating given the higher uncertainty to which bondholders are exposed. The effect seems to be stronger after the collapse of Lehman Brothers (after 2008Q3)³⁰, consistent with the increase in the credit spreads observed in Graph 1. Specifically, opaque firms without access to bond markets experience a 1.04% reduction in debt financing after the failure of Lehman while the reduction for similar firms accessing bond markets is 1.9%.

Results are different if equity financing is considered. In Table 6 Panel B, the interaction term of financial reporting quality in the two phases of the financial crisis are still negative even if they are not always statistically significant. Above all, the triple interaction terms with credit rating are positive and statistically significant when considering the Pre-Lehman period. I do not find similar evidence for the Post-Lehman period. Thus, the effects I observe in Table 4 appear more prevalent in the period before the bankruptcy of Lehman Brothers. The evidence might be at odds with a substitution effect between equity and debt financing, yet after the bankruptcy of Lehman Brothers, equity markets were highly turbulent,

³⁰ These findings are further supported when I consider different sample periods (2006Q3-2008Q2; 2006Q3-2008Q4). I do observe a drop in financing before the collapse of Lehman Brothers, but the effect of accounting quality begins to be significant and gain magnitude after the collapse.

rendering the access to equity to be further impaired and the use of equity less attractive. This supports the idea that the substitution between sources of financing is influenced by equity holders' exposure to uncertainty.

1.5.4. Internal sources of financing

Thus far, I have focused on external financing. Nevertheless, Duchin et al. (2010) demonstrate that internal sources (i.e., cash reserves) played an important role in the last financial crisis. Firms with high cash holdings before the crisis experienced a lower drop in capital expenditures because of the minimal need to access external financing. Likewise, Leary (2009) shows that firms experiencing bad capital supply conditions will prefer equity and internal resources to debt financing. Thus, I consider internal resources as an alternative source of financing that firms can use when access to external financing is hindered³¹.

Following Leary (2009) and Erel et al. (2012), I use a multinomial logistic regression. I create a discrete variable taking a value of 1 in the case of equity issuance (equity issue occurs if equity financing is greater than 1% of lagged assets); 2 in the case of debt issue (debt issue occurs if debt financing is greater than 1% of lagged assets); 3 if both equity and debt issue occur; and 0 if there is a reduction in cash reserves greater than 1%³². Debt issuance is used as a benchmark case to remain consistent with prior studies³³.

Table 7 shows the results for the models. Panel A refers to the probability of using cash, Panel B reports the findings for equity while Panel C refers to both debt and equity. In all cases, the probability must be interpreted in relative terms with respect to debt issuance. Panel A suggests that firms with credit rating and high levels of opacity are more likely to

³¹ However, Kahle and Stulz (2013) and Bliss et al. (2015) suggest that, given higher uncertainty about the future supply of credit, firms might prefer to hoard cash and build cash reserves for future investments.

³² In alternative specifications, the variable takes value equal to 0 if there is no equity and/or debt issuances and the results are largely unchanged.

³³ The use of multinomial logistic regression also reduces demand-side concerns. Because the focus is on the choice among types of financing rather than quantity, the results are less likely to be explained by a low demand for financing.

use cash over debt after the financial crisis. Noteworthy the interaction term between opacity and crisis is not statistically significant suggesting that firms with low financial reporting quality and without access to bond markets do not use cash reserves as an alternative source to debt. Panel B also suggests that opaque firms that access bond markets are more likely to use equity over debt when the financial crisis occurs, even if the statistical significance is weak. Conversely, I do not find evidence that these firms use both more debt and equity than just debt under negative capital supply conditions (Panel C). Overall, the evidence is consistent with the idea that opaque firms are more likely to experience a drop in financing and, hence, are more likely to look for alternatives. Moreover, even if the evidence for internal resources does not support a pecking order theory logic, it still indicates a role for information frictions as differences occur, depending on firms' accounting quality.

1.5.5. Falsification test and the Ford/GM crisis

An important concern of my identification strategy is the role of unobservables in determining accounting quality. The use of opaqueness at time 2006Q2 implies that the level of financial reporting quality is unlikely to be related to variations in business operations following the financial crisis. Nevertheless, these choices can be associated with firms' characteristics that shape their exposure to the crisis. As long as these characteristics are time-invariant, they should be captured by firm fixed effects. However, if they vary over time, they can bias my results. Given the difficulties to find a valid instrumental variable, I run two additional analyses.

First, I conduct a falsification test by considering a period of relative stability: 2003Q1-2004Q4. I replicate the analyses previously conducted by using the credit rating and opacity in the quarter before (2002Q4) the sample period begins. Firms with and without credit rating are matched simultaneously on the basis of firms' characteristics as in the main analyses. Given the shorter sample period, I substitute firm fixed effects with industry fixed effects.

Crisis_placebo is equal 1 for the period 2004Q1-2004Q4 and 0 otherwise. Model specifications are those reported for models (1) and (2). Because it is a period of stability on the supply-side, I should not observe a significant effect for credit rating and financial reporting quality. Yet if some unobservables drive the moderating effect of financial reporting quality in the main analyses, I might observe an effect.

Table 8 Columns (1) and (2) report the results for debt financing. For the sake of brevity, I report only the results for *AQ* and *abs_DA*³⁴. As expected, I do not find evidence of a significant effect for financial reporting quality after the placebo crisis both for firms with and without access to bond markets. Interestingly, the interaction term between rating and opacity is positive and statistically significant as I observed so far for the seemingly unrelated regressions. However, Table 8, Columns (3) and (4) display that the findings for equity financing show no effect for all main effects and interaction terms.

Secondly, I consider the Ford/GM crisis in 2005 as an additional deterioration in capital supply conditions that specifically hit corporate bond markets. In May 2005, credit rating agencies downgraded GM and Ford from investment grade to junk bonds. Following the downgrade, illiquidity increased in corporate bond markets, and investment banks faced a higher inventory risk because of difficulties in trading risky securities. The downgrade also generated uncertainty about the true value of assets and suspected credibility of credit ratings exacerbated the situation in the market (Acharya et al., 2015; Friewald et al., 2012). Despite the short length (markets recovered in a few quarters), the episode was quite relevant because it led to a change in the criteria adopted by hedge funds to invest in bond markets. Moreover, contrary to the 2007-2008 financial crisis, the Ford/GM crisis was less exposed to confounding events as it mainly affected corporate bond markets with little effect

³⁴Results are the same for the other measures.

on other segments of financial markets, and it was not associated with a contraction in real economy.

I replicate models (1) and (2) for debt and equity financing using the period 2004Q3-2006Q1. The Ford/GM crisis is defined as the period 2005Q2-2006Q1, according to Friewald et al. (2012). As for the previous analyses, credit rating and level of transparency refer to the period before the stated sample period (i.e., 2004Q2). Likewise, firms with and without credit rating are matched before the beginning of the sample period on the basis of the same firms' characteristics used in the previous analyses. Given the short period of time, I use industry fixed effects and cluster errors at firm level. Again, I report only the results for *AQ* and *abs_DA*.

Results are reported in Table 9. Columns (1) and (2) show the results for debt financing while Columns (3) and (4) refer to equity financing. Despite the short period of time the episode lasted and its limited impact, I find evidence of a negative interaction term of the Ford crisis, rating and financial reporting quality in Column (1), suggesting that opaque firms with access to bond markets reported lower debt financing after the Ford/GM crisis. Likewise, the triple interaction term is positive and statistically significant in Column (3), suggesting that opaque firms with credit rating used more equity after the Ford/GM crisis³⁵. Thus, I find some evidence consistent with the findings reported in Tables 3 and 4. The lower statistical significance for the coefficients of interest is reasonable given that the episode lasted a short period of time and it did not have the dramatic impact of the financial crisis. Both factors limit the power of the tests. Despite that, I still observe some evidence that low financial reporting quality exacerbates the difficulties in obtaining debt when markets are impaired and moves firms towards alternative sources of financing, like equity.

³⁵ I do find evidence for a negative effect for debt financing when I use *Late_filing* and a positive effect for equity financing when *abs_PDA* is adopted. However, I do not find evidence for restatements.

Overall, the comparison of more than one crisis episode attenuates the concern for alternative explanations. Indeed, the suspected unobservables should justify the differential role of opacity for the two groups of firms in a crisis period and a non-crisis period within the 2007-2008 financial crisis (before and after Lehman) and the similar results for two different episodes of crisis (2007-2008 financial crisis and the Ford/GM episode).

1.5.6. Adjustments in financial reporting quality

A key assumption of my tests is that financial reporting quality decisions in time ($t-1$) have implications in the future because they shape the credibility of firms' accounting information. Yet when capital supply conditions deteriorate, firms can rationally anticipate the benefits of transparency and improve their information environment. Indeed, Lo (2014) and Gormley et al. (2012) show that firms adjust their accounting practices following changes in financing environment (e.g., deteriorations in banks' health or increase in bank competition). Along the same lines, I expect that during the financial crisis firms are more likely to issue managers' forecasts and the incentives is stronger for firms more exposed to the turbulence (i.e., firms with a credit rating).

I identify managers' forecasts from I/B/E/S Guidance and create a dummy variable equal to 1 if the firm issued a manager forecast in the quarter and 0 otherwise. Forty-seven percent of firms in the sample issue managers' forecasts in the period of study. I use different specifications to estimate the probability of issuing managers' forecasts following the crisis. Results are reported in Table 10. In Column (1), I adopt a probit model including time and industry fixed effects. In Column (2), I use a logistic regression model with time and firm fixed effects for the full sample. Column (3) shows the results for the logistic regression model with firm fixed effects for firms that did not issue managers' forecasts before the sample period. In all model specifications, I find that firms are more likely to issue forecasts

after the financial crisis, and the incentive is stronger for firms with a credit rating³⁶ in line with my expectations. In untabulated analyses, I also find that these firms are more likely to access equity markets, thus complementing previous evidence.

1.6. Conclusions

I examine how financial reporting quality mitigates the negative consequences of adverse capital supply conditions on corporate financing. In particular, I analyse whether opaque firms were more or less affected by the financial crisis of 2007-2008. Consistent with the diverse capital providers' sensitivity to informational problems, I find that opaque firms use more debt financing and less equity financing after the financial crisis. Yet, these effects are weaker if firms access to bond markets. Bondholders are less able to exploit private information channels and directly monitor borrowers. Thus, they are more exposed to the higher uncertainty about firms' type due to the crisis and are more reluctant to finance opaque firms. The impaired access to debt triggers less transparent firms to look for equity in line with the pecking order theory (Myers and Majluf, 1984). Indeed, I find that opaque firms with a credit rating use less debt and more equity consistently with a substitution effect between the two sources.

I corroborate my findings by running seemingly unrelated regressions to account for interrelatedness of the two choices and by considering the public component of equity financing using SDC data. Moreover, I document that the effect of financial reporting quality is different depending on the credit rating of the firm and the phase of the financial crisis. Opaque firms also use internal sources to deal with the difficulties to access debt funds. I also replicate the analyses during the Ford/GM crisis and a period of stability to exclude that the findings are due to factors other than transparency. Lastly, consistent with an

³⁶ If I distinguish among the credit rating classes, I observe that the effect is stronger for non-investment firms consistently with prior findings. Of note, I also find that the effect is limited to the period before the failure of Lehman.

informational problem story, I document that firms with credit rating are more likely to issue managers' forecasts after the crisis.

The study adds to accounting literature by analyzing the association between accounting quality and corporate financing under bad capital supply conditions. Furthermore, it speaks to finance literature interested in which factors can shape firms' exposure to financial downturn. Above all, I demonstrate that the effect of financial reporting quality on corporate financing ultimately rests upon capital providers' vulnerability to informational problems and exposure to uncertainty. In particular, my evidence suggests that firms' preferences for financing can be offset by capital providers' reluctance to finance risky firms. Likewise, the impact of transparency is not the same for all types of financing, as firms will substitute one type for another.

Despite its contribution, the study is subject to limitations. First, although I attempted to reduce demand-side concerns, the study is descriptive in nature so that alternative explanations cannot be completely ruled out. Similarly, the endogeneity of financial reporting quality can remain an issue despite the falsification tests and additional analyses I run. Second, the use of a matching approach implies that firms in my sample are relatively large, profitable and leveraged so that my conclusions cannot apply to smaller and growing firms. Third, I overlook potential substitution effects within equity and debt categories by mainly focusing on the interrelationships between the two types of financing. Further research might address these issues.

References

- Acharya, V., Schaefer, S., and Zhang, Y., 2015. Liquidity risk and correlation risk: A clinical study of the General Motors and Ford downgrade of May 2005. *Quarterly Journal of Finance* 5(2): 1550006- 1550057.
- Almeida, H., Campello, M., Laranjeira, B., Weisbenner, S., 2012. Corporate debt maturity and the real effects of the 2007 credit crisis. *Critical Finance Review* 1(1): 3-58.
- Almeida, H., and Campello, M., 2007. Financial constraints, asset tangibility, and corporate investment. *Review of Financial Studies* 20(5): 1429-1460.
- Altman, E., 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance* 23(4): 589-609.
- Armstrong, C.S., Guay, W.R. and Weber, J.P., 2010. The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics* 50(2-3): 179-234.
- Balakrishnan, K., Watts, R.L., and Zuo, L., 2015. The effect of accounting conservatism on corporate investment during the global financial crisis. Working Paper.
- Balakrishnan, K., Core, J.E., and Verdi, R., 2014. The relation between reporting quality and financing and investment: Evidence from changes in financing capacity. *Journal of Accounting Research* 52(1): 1-36.
- Becker, B., and Ivashina, V., 2014. Cyclicity of credit supply: Firm level evidence. *Journal of Monetary Economics* 62: 76-93.
- Bharath, S.T., Sunder, J., and Sunder, S.V., 2008. Accounting quality and debt contracting. *The Accounting Review* 83(1): 1-28.
- Biddle, G., and Hilary, G., 2006. Accounting quality and firm-level capital investment. *The Accounting Review* 81(5): 963-982.
- Biddle, G., Hilary, G., and Verdi, R., 2009. How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics* 48(2-3): 112-131.
- Bliss B., Cheng, Y., and Denis, D., 2015. Corporate payout, cash retention, and the supply of credit: Evidence from the 2008-2009 credit crisis. *Journal of Financial Economics* 115(3): 521-540.
- Bolton, P., and Freixas, X., 2000. Equity, bonds, and bank debt: Capital structure and financial market equilibrium under asymmetric information. *Journal of Political Economy* 108(2): 324-351.
- Bradshaw, M., Richardson, S., and Sloan, R., 2006. The relation between corporate financing activities, analysts' forecasts and stock returns. *Journal of Accounting and Economics* 42(1-2): 53-85.

Brown, L., and Pinello, S.A., 2007. To what extent does the financial reporting process curb earnings surprise games? *Journal of Accounting Research* 45(5): 947-981.

Caballero, R.J., and Krishnamurthy, A., 2008. Collective risk management in a flight to quality episode. *Journal of Finance* 63(5): 2195-2230.

Campello, M., Graham, J.R., and Harvey, C.R., 2010. The real effects of financial constraints: Evidence from a financial crisis. *Journal of Financial Economics* 97(3): 470-487.

Chang, X., Dasgupta, S., and Hilary, G., 2009. The effect of auditor quality on financing decisions. *The Accounting Review* 84(4): 1085-1117.

Chang, X., Dasgupta, S., and Hilary, G., 2006. Analyst coverage and financing decisions. *Journal of Finance* 61(6): 3009-3048.

Chava, S., and Purnanandam, A., 2011. The effect of banking crisis on bank-dependent borrowers. *Journal of Financial Economics* 99(1): 116-135.

Chen, X., Cheng, Q., and Lo, A.K., 2013. Accounting restatements and external financing choices. *Contemporary Accounting Research* 30(2): 750-779.

Choe, H., Masulis, R., and Nanda, V., 1993. Common stock offerings across the business cycle: Theory and evidence. *Journal of Empirical Finance* 1(1): 3-31.

Claessens, S., Ayhan Kose, A., and Terrones, M., 2012. How do business and financial cycles interact? *Journal of International Economics* 87(1): 178-190.

De Haas, R., and Van Horen, N., 2013. Running for the exit? International bank lending during a financial crisis. *Review of Financial Studies* 26(1): 244-285.

Dechow, P.M., and Dichev, I., 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77(s1): 35-59.

Demerjian, P., Lev, B., and McVay, S., 2012. Quantifying managerial ability: A new measure and validity tests. *Management Science* 58(7): 1229-1248.

Duchin, R., Ozbas, O., and Sensoy, B., 2010. Costly external finance, corporate investment, and the subprime mortgage credit crisis. *Journal of Financial Economics* 97(3): 418-435.

Erel, I., Julio, B., Kim, W., and Weisbach, M., 2012. Macroeconomic conditions and capital raising. *Review of Financial Studies* 25(2): 341-376.

Fama, E.F., and French, K.R., 2005. Financing decisions: who issues stock? *Journal of Financial Economics* 76(3): 549-582.

Faulkender, M., and Petersen, M.A., 2006. Does the source of capital affect capital structure? *Review of Financial Studies* 19(1): 45-79.

Francis, J., LaFond, R., Olsson, P.M., and Schipper, K., 2004. Costs of equity and earnings attributes. *The Accounting Review* 79(4): 967-1010.

Francis, B., Hasan, I., and Wu, Q., 2013. The benefits of conservative accounting to shareholders: Evidence from the financial crisis. *Accounting Horizons* 27(2): 319-346.

Friewald, N., Jankowitsch, R., and Subrahmanyam, M.G., 2012. Illiquidity or credit deterioration: A study of liquidity in the US corporate bond market during financial crises. *Journal of Financial Economics* 105(1): 18-36.

Gelos, G., and Wei, S., 2005. Transparency and international portfolio holdings. *Journal of Finance* 60(6): 2987-3020.

Gormley, T.A., Kim, B.H., and Martin, X., 2012. Do firms adjust their timely loss recognition in response to changes in the banking industry? *Journal of Accounting Research* 50(1): 159-196.

Gorton, G., 2010. *Slapped by the invisible hand: The panic of 2007*. Oxford University Press, USA.

Guerrieri, V, and Shimer, R., 2014. Dynamic adverse selection: A theory of illiquidity, fire sales, and flight to quality. *American Economic Review* 104(7): 1875-1908.

Hakkio, C.S., and Keeton, W.R., 2009. Financial stress: What is it, how can it be measured, and why does it matter? *Economic Review*, Federal Reserve Bank of Kansas City, Q2.

Holmstrom, B., and Tirole, J., 1997. Financial intermediation, loanable funds, and the real sector. *Quarterly Journal of Economics* 112(3): 663-691.

Ivashina, V., and Scharfstein, D., 2010. Bank lending during the financial crisis of 2008. *Journal of Financial Economics* 97(3): 319-338.

Kahle, K. M., and Stulz, R. M., 2013. Access to capital, investment, and the financial crisis. *Journal of Financial Economics* 110(2): 280-299.

Kothari, S., Leone, A., and Wasley, C., 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39(1): 163-197.

Jones, J.J., 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29(2): 193-228.

Lang, M., Lins, K., and Maffett, M., 2012. Transparency, liquidity, and valuation: International evidence on when transparency matters most. *Journal of Accounting Research* 50(3): 729-774.

Lang, M., and Maffett, M., 2011. Transparency and liquidity uncertainty in crisis periods. *Journal of Accounting and Economics* 52(2-3): 101-125.

Leary, M., 2009. Bank loan supply, lender choice, and corporate capital structure. *Journal of Finance* 64(3): 1143-1185.

Leary, M., and Roberts, M., 2005. Do firms rebalance their capital structures? *Journal of Finance* 60(6): 2575-2619.

Lemmon, M., and Roberts, R., 2010. The response of corporate financing and investment to changes in the supply of credit. *Journal of Financial and Quantitative Analysis* 45(3): 555-587.

Leuz, C., and Oberholzer-Gee, F., 2006. Political relationships, global financing, and corporate transparency: Evidence from Indonesia. *Journal of Financial Economics* 81(2): 411-439.

Lo, A.K., 2014. Do declines in bank health affect borrowers' voluntary disclosures? Evidence from international propagation of banking shocks. *Journal of Accounting Research* 52(2): 541-581.

Mishkin, F.S., 2010. Over the cliff: From the subprime to the global financial crisis. NBER Working Paper.

Mishkin, F.S., 1991. Asymmetric information and financial crises: A historical perspective. In *Financial Markets and Financial Crises*, Glenn R. Hubbard (Ed.), University of Chicago Press, pp. 69-108.

Mitton, T., 2002. A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis. *Journal of Financial Economics* 64(2): 215-241.

Myers, S.C., and Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13(2): 187-221.

Ng, J., 2011. The effect of information quality on liquidity risk. *Journal of Accounting and Economics* 52(2-3): 126-143.

Petersen, M., 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22(1): 435-480.

Plummer, C., and Tse, S., 1999. The effect of limited liability on the informativeness of earnings: Evidence from the stock and bond markets. *Contemporary Accounting Research* 16(3): 541-574.

Puri, M., Rocholl, J., and Steffen, S., 2011. Global retail lending in the aftermath of the US financial crisis: Distinguishing between supply and demand effects. *Journal of Financial Economics* 100(3): 556-578.

Ruckes, M., 2004. Bank competition and credit standards. *Review of Financial Studies* 17(4): 1073-1102.

Sadka, G., 2006. The economic consequences of accounting fraud in product markets: Theory and a case from the US telecommunication industry (WorldCom). *American Law and Economics Review* 8(3): 439-475.

Santos, J., 2011. Bank corporate loan pricing following the subprime crisis. *Review of Financial Studies* 24(6): 1916-1943.

Shivakumar, L., Urcan, O., Vasvari, F., and Zhang, L., 2011. The debt market relevance of management earnings forecasts: Evidence from before and during the credit crisis. *Review of Accounting Studies* 16(3): 464-486.

Stiglitz, J.E., and Weiss, A., 1981. Credit rationing in markets with imperfect information. *American Economic Review* 71(3): 393-410.

Sufi, A., 2007. Information asymmetry and financing arrangements: Evidence from syndicated loans. *Journal of Finance* 62(2): 629-668.

Vayanos, D., 2004. Flight to quality, flight to liquidity, and the pricing of risk. Working Paper 10327, NBER.

Zang, A.Y., 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review* 87(2): 675-703.

Appendix A: Skewness of dependent variables

A possible concern for the validity of my results is related to the distribution of my dependent variables. Given the way I construct the variable, I have values equal to 0 which can occur if the firm reports a value of 0 or, the difference between issuance and repurchase is 0. In the distribution of the variables, 0 is the median value. Moreover, there is a concentration of observations around 0. Lastly, the distributions are skewed on the right. Given that, the OLS regression models I use can be misspecified. In an attempt to manage this issue, I run a set of additional analyses.

First, I run tobit regressions. Tobit regressions allow me to account for a distribution with many zeros and few positive (negative values). I replicate the analyses by using tobit regressions by censoring data at 0. Results are robust to such alternative model specifications. Since one assumption of tobit models is the normality of the distribution (which is likely to be violated in my case), I also replicate the results by using the logarithmic value of the dependent variable. The use of the logarithmic value does not solve the issue of normality but reduces the excess kurtosis and skewness, especially in the case of equity financing.

Second, I use probit models to estimate the probability of issuing debt and/or equity. I define debt (equity) issuance as 1 if net debt (equity) financing is greater than 1% of lagged assets. In alternative specifications, a debt (equity) issuance occurs if net debt (equity) financing is greater than 0. I do find evidence for debt issuance consistent with my previous conclusions. I also estimate the probability of issuing debt conditional on raising new external financing (either debt and /or equity) by using a logistic regression model. Results

are reported in Table A1 with industry fixed effects and in Table A2 with firm industry effects³⁷.

In both cases, evidence supports my main conclusions: Opaque firms are more likely to issue debt than equity when a financial crisis occurs, but this is less likely to be the case when firms resort to bond markets. Indeed, opaque firms with low financial reporting quality with credit rating are less likely to issue debt than equity financing.

Table A1: Probit models of debt issuance over financial crisis, credit rating and financial reporting quality

VARIABLES	(1) AQ	(2) abs_DA	(3) abs_PDA	(4) Late_filing	(5) Rest
Crisis	0.94 (0.61)	0.58 (0.56)	0.48 (0.55)	0.73 (0.53)	1.12* (0.66)
Rating	-0.68 (0.49)	-0.42 (0.39)	-0.61 (0.39)	-0.81** (0.40)	-0.69 (0.43)
Crisis * Rating	-0.09 (0.50)	-0.53 (0.43)	-0.29 (0.43)	-0.73** (0.32)	-0.90** (0.37)
Opacity	-0.23 (11.52)	1.45 (2.11)	1.28 (1.71)	0.02 (0.41)	0.18 (0.42)
Crisis * Opacity	17.74** (7.31)	4.72 (5.37)	10.23 (7.76)	4.37*** (0.54)	-0.89 (0.68)
Opacity * Rating	-7.25 (16.72)	-3.55 (2.88)	-0.70 (2.34)	-0.98 (0.75)	-0.52 (0.56)
Crisis * Opacity * Rating	-56.85** (26.10)	-7.26 (7.04)	-15.69* (9.25)	-5.08*** (0.96)	-0.19 (0.85)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Constant	0.42 (1.35)	-1.15 (1.22)	-0.91 (1.10)	-0.80 (1.21)	-0.69 (1.31)
Sample	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing

³⁷ I estimate the probability of using external financing (debt and/or equity financing) with respect to internal resources as a function of crisis, credit rating and financial reporting quality. I do find evidence that opaque firms with access to credit markets are less likely to use external financing.

Observations	516	609	609	561	485
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This table shows the results of a probit model of debt issuance over financial crisis, credit rating, opacity, their interaction terms and control variables conditional on external financing issuance for the period 2006Q3-2009Q2. *Debt issuance* is a dummy variable equal to 1 if debt issuance is greater than 1% of lagged total assets and 0 otherwise. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time 2006Q2 in Column (4) and the number of restatements occurring one year before 2006Q2 in Column (5). Control variables are defined as in Table 1. Time and industry fixed effects are included and robust standard errors are used. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A2: Logistic regression models of debt issuance over equity issuance

VARIABLES	(1) AQ	(2) abs_DA	(3) abs_PDA	(4) Late_filing	(5) Rest
Crisis	-0.0612 (0.0924)	-0.0940 (0.0938)	-0.0986 (0.0891)	-0.0678 (0.0903)	-0.0085 (0.0946)
Crisis * Rating	0.0109 (0.0955)	-0.0757 (0.0874)	-0.0672 (0.0704)	-0.0806 (0.0602)	-0.1060 (0.0693)
Crisis * Opacity	4.8500*** (1.4780)	2.0520** (0.9190)	1.8280*** (0.5810)	0.3100* (0.1710)	0.1420 (0.1890)
Crisis * Opacity * Rating	-11.4100 (8.2450)	-0.9650 (2.0420)	-1.4070 (1.3800)	-0.7680*** (0.2620)	-0.4050* (0.2370)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Sample	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financin g
Observations	682	756	756	726	608
R-squared	0.667	0.644	0.644	0.647	0.648

This table shows the results of logistic regression models of debt issuance over financial crisis, credit rating, opacity, their interaction terms and control variables conditional on external financing issuance for the period 2006Q3-2009Q2. *Debt issuance* is a dummy variable equal to 1 if debt issuance is greater than 1% of lagged total assets and 0 otherwise. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time 2006Q2 in Column (4) and the number of restatements occurred one year before 2006Q2 in Column (5). Control variables are defined as in Table 1. Time and firm fixed effects are included and robust standard errors are used. Constant is not reported because of the inclusion of firm fixed effects. Moreover, because of the inclusion of firm fixed effects, the main effects for rating and opacity as well as their interaction term are subsumed. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The evidence reported so far reduces both the concerns relative to the skewness of the distribution as well as the concern that firms do not issue financing because of lower demand for financing because the sample is limited to firms that use external financing. These results, coupled with the multinomial logistic regressions, corroborate my main conclusions. Indeed, if I consider all three sources of financing, I observe that opaque firms with access to credit markets are less likely to use debt financing relative to both equity financing and internal resources.

Regarding equity issuance, it is interesting to note that a relevant difference occurs with respect to the size of the issue. Chang et al. (2006) contend that firms with low financial reporting quality issue less equity but when they do so, they raise a larger amount. Following their argument, I distinguish between small equity issues (equalling 1 if net equity financing is between 1% and 10% of lagged value of assets) and large equity issues (equalling 1 if net equity financing is greater than 10% of lagged assets). Large equity issuances represent almost 35% of equity issuances in my sample. Then, I estimate the probability of small equity issues and large equity issues over debt financing as a function of crisis, credit rating and financial reporting quality. Model specifications are similar to those adopted before. Time and industry fixed effects³⁸ are included, and standard errors are corrected for heteroscedasticity. Table A3 reports the results for small equity issues, and Table A4 shows the results for large equity issues.

Of note, I do not find evidence consistent with my findings of small equity issues, but I do find consistent evidence if large equity issues are considered³⁹. Moreover, if I exclude the large equity issues in the multinomial logistic regressions, I still find that internal resources are more likely to be used by opaque firms with credit rating, but the evidence for

³⁸ Given the small sample size, firm fixed effects are not included and I do not cluster standard errors.

³⁹ I replicate the probit analyses reported so far by considering the stability period (2003Q1-2004Q4) and the Ford/GM crisis. I do not find consistent evidence in the stability period but I still find some evidence for the Ford/GM crisis.

the equity financing disappears⁴⁰. Interestingly, I do not find evidence that financial reporting quality plays a role in firms' choice between equity and internal resources.

⁴⁰ This evidence can suggest that the findings are due to extreme observations. Yet, if I reduce the large equity issues in the OLS regressions, I still find evidence consistent with my conclusions.

Table A3: Probit models of small equity issuances over financial crisis, credit rating and financial reporting quality

VARIABLES	(1) AQ	(2) Abs_DA	(3) abs_PDA	(4) Rest
Crisis	-2.22*** (0.81)	-2.25*** (0.66)	-1.71*** (0.64)	-2.16** (0.98)
Rating	-0.39 (0.60)	0.21 (0.46)	0.39 (0.44)	0.39 (0.49)
Crisis * Rating	0.86 (0.57)	0.49 (0.53)	0.62 (0.42)	0.31 (0.40)
Opacity	-12.94 (14.49)	-3.74 (2.39)	-3.96* (2.04)	0.11 (0.48)
Crisis*Opacity	8.06 (11.22)	10.18** (4.39)	5.79 (3.71)	0.29 (0.67)
Opacity * Rating	42.75** (19.36)	4.58 (3.12)	2.24 (2.59)	0.10 (0.60)
Crisis*Opacity*Rating	13.34 (29.66)	4.93 (7.69)	0.43 (6.26)	0.39 (0.84)
Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Constant	-1.74 (1.50)	-0.328 (1.166)	-0.43 (1.23)	-1.70 (1.38)
Sample	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing
Observations	470	544	544	450

This table shows the results of probit models of small equity issuance over financial crisis, credit rating, opacity, their interaction terms and control variables conditional on external financing issuance for the period 2006Q3-2009Q2. *Small equity issuance* is a dummy variable equal to 1 if equity issuance is between 1% and 10% of lagged total assets and 0 otherwise. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time 2006Q2 in Column (4) and the number of restatements occurring one year before 2006Q2 in Column (5). Control variables are defined as in Table 1. Time and firm fixed effects are included and robust standard errors are used. Constant is not reported because of the inclusion of firm fixed effects. Moreover, because of the inclusion of firm fixed effects, the main effects for rating and opacity as well as their interaction term are subsumed. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A4: Probit models of small equity issuances over financial crisis, credit rating and financial reporting quality

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDa	(4) Late_filing	(5) Rest
Crisis	-1.16 (0.72)	-0.48 (0.76)	-0.98 (0.71)	-1.31* (0.76)	-1.54** (0.76)
Rating	-0.31 (0.64)	-0.71 (0.49)	-0.76 (0.49)	-0.82 (0.51)	-0.75 (0.57)
Crisis * Rating	-0.61 (0.67)	-0.14 (0.50)	0.29 (0.49)	0.63 (0.39)	1.07** (0.42)
Opacity	2.21 (14.06)	2.85 (2.36)	0.24 (2.15)	0.01 (0.65)	0.17 (0.46)
Crisis * Opacity	-14.61 (9.26)	-17.91* (9.37)	-9.24 (7.22)	-3.75*** (0.67)	0.35 (0.77)
Opacity * Rating	-29.38 (25.04)	-1.75 (3.18)	-1.57 (2.62)	0.22 (0.77)	0.01 (0.67)
Crisis * Opacity* Rating	95.76*** (33.48)	21.75** (10.47)	12.60 (9.90)	5.31*** (0.97)	0.86 (1.06)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Constant	1.02 (1.45)	1.44 (1.49)	2.05 (1.40)	1.22 (1.45)	1.05 (1.64)
Sample	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing	Only firms issuing external financing
Observations	387	448	448	390	340

This table shows the results of probit models of large equity issuance over financial crisis, credit rating, opacity, their interaction terms and control variables conditional on external financing issuance for the period 2006Q3-2009Q2. *Large equity issuance* is a dummy variable equal to 1 if equity issuance is greater than 10% of lagged total assets and 0 otherwise. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time 2006Q2 in Column (4) and the number of restatements occurring one year before 2006Q2 in Column (5). Control variables are defined as in Table 1. Time and firm fixed effects are included and robust standard errors are used. Constant is not reported because of the inclusion of firm fixed effects. Moreover, because of the inclusion of firm fixed effects, the main effects for rating and opacity as well as their interaction term are subsumed. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** p<=0.01, ** p<=0.05, * p<=0.1

Appendix B: Leverage and deviation from optimal level of leverage

In the main analyses, I focus on the effect of financial reporting quality on debt and equity issuances. Issuance activity should have implications for companies' debt ratio. Leary (2009) uses leverage ratio to investigate the impact of banking conditions on corporate financing, arguing that leverage ratio is less likely to be affected by demand for financing than debt and equity financing. It is not clear *ex ante* why firms with a diverse demand for financing due to different growth opportunities should differ in their leverage ratio. Instead, it is reasonable to expect differences based on the access to external financing and the preferences for financing. Thus, to further exclude demand-related concerns and further support my conclusions, I replicate my analyses by using leverage ratio (measured as long-term debt divided by total equity to keep consistency with the financing measures) as a dependent variable. Model specifications are the same as previously reported except that I consider leverage ratio at time $(t+1)$. Results are reported in Table A5.

I observe that firms with high financial reporting quality exhibit a higher leverage ratio after the crisis in line with the higher use of debt and lower use of equity. This is less likely if firms access bond markets. In this case, firms with low financial reporting quality reporting have lower leverage ratio after the crisis. The lower debt ratio can be explained by the greater use of equity with respect to debt of opaque firms with access to credit markets. Taken together, the evidence is aligned with prior results for debt and equity financing. Moreover, given the lower vulnerability of debt ratio to changes in growth opportunities, the results further validate my prior conclusions that financial reporting quality affects corporate financing when capital supply conditions deteriorate, and the effect is contingent upon firms' reliance upon information-sensitive capital providers.

Table A5: Firm fixed effects models of leverage on financial crisis, credit rating and financial reporting quality

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_filing	(5) Rest
Crisis	-0.3850 (0.2870)	-0.4160 (0.2680)	-0.3080 (0.2640)	-0.1290 (0.2670)	-0.3200 (0.2820)
Crisis*Rating	0.0117 (0.2370)	1.0610*** (0.2940)	1.0350*** (0.2270)	-0.0834 (0.1810)	0.0771 (0.1940)
Crisis*Opacity	2.0420 (2.5380)	4.2700** (1.8790)	2.2070 (1.6560)	0.2110 (0.2620)	0.7580** (0.3620)
Crisis*Rating*Opacity	-6.8330 (18.8400)	-26.0700*** (6.4830)	-32.3300*** (4.9230)	-0.1490 (1.2700)	-1.1770** (0.5290)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	3,263	3,567	3,567	3,439	2,850
R-squared	0.472	0.494	0.501	0.452	0.468

This table shows the results of firm fixed effect models of leverage over financial crisis, credit rating, opacity, their interaction terms and control variables conditional on external financing issuance for the period 2006Q3-2009Q2. *Leverage* is measured as long-term debt divided by common equity. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time 2006Q2 in Column (4) and the number of restatements occurring one year before 2006Q2 in Column (5). Control variables are defined as in Table 1. Time and firm fixed effects are included and robust standard errors are used. Constant is not reported because of the inclusion of firm fixed effects. Moreover, because of the inclusion of firm fixed effects, the main effects for rating and opacity as well as their interaction term are subsumed. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.1$

I observe that firms An implicit assumption of my tests is that equity financing is a suboptimal source of financing for opaque firms because of greater adverse selection costs associated with the use of equity. Because of the crisis, firms are not able to access their preferred sources of financing and are forced to seek alternative and suboptimal ones. Even if it is not clear whether firms do follow a target capital structure in a close manner, it is reasonable to expect that a financial crisis is likely to lead firms to deviate from their optimal value. To the extent that a financial crisis is considered as shock in capital supply conditions that disturbs firms' equilibrium, I should expect that financial reporting quality has implications for firms' deviation from their optimal leverage ratio. In particular, I expect that

opaque firms with access to bond markets are more underleveraged with respect to their optimal value. I follow the literature on optimal leverage and adjustment costs (Leary and Roberts, 2005), and I compute the deviation from the optimal leverage determined before the sample period. Then, I use tobit regressions to investigate the deviation below and above the optimal leverage.

Results are reported in Table A5. Columns (1), (3), (5), (7) and (9) show the results for the upper deviation from the optimal value while Columns (2), (4), (6), (8) and (10) report evidence for the lower deviation. In this case, more negative values imply greater deviation from the optimal value, suggesting more underleverage. I do find evidence that opaque firms without access to credit markets have lower leverage than their optimal value. This is consistent with their lower use of debt financing and higher use of equity financing and/or internal sources⁴¹.

⁴¹ In both cases, I observe a lower leverage with respect to the optimal one.

Table A6: Tobit regression models of deviation from optimal leverage on financial crisis, credit rating and financial reporting quality

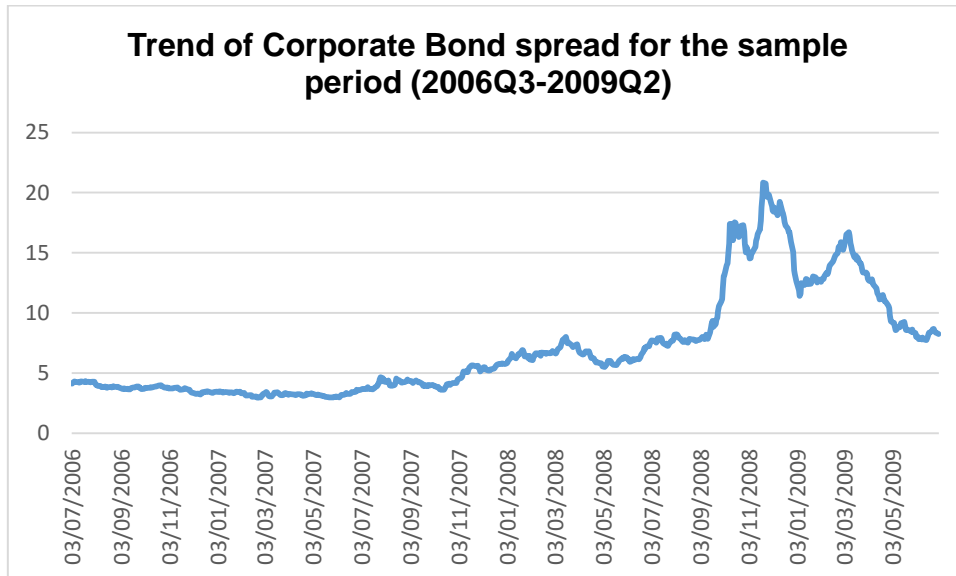
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Over Leverage	Under Leverage	Over Leverage	Under Leverage	Over Leverage	Under Leverage	Over Leverage	Under Leverage	Over Leverage	Under Leverage
	AQ		Abs_DA		Abs_PDA		Late_filing		Rest	
Crisis	-1.09 (1.08)	-1.08** (0.53)	-1.20 (0.98)	-1.14** (0.53)	-1.28 (0.97)	-1.06** (0.53)	-0.63 (0.96)	-0.95* (0.54)	-0.42 (1.13)	-0.89 (0.58)
Rating	-0.89 (0.88)	2.02*** (0.39)	-0.17 (0.85)	1.65*** (0.46)	-0.58 (0.81)	1.27*** (0.44)	1.15 (0.75)	1.77*** (0.46)	1.28 (0.87)	2.06*** (0.48)
Crisis * Rating	-0.50 (0.83)	0.03 (0.43)	2.43*** (0.75)	0.38 (0.42)	2.249*** (0.69)	0.46 (0.38)	-0.09 (0.57)	-0.52* (0.30)	-0.18 (0.67)	-0.42 (0.33)
Opacity	-51.60*** (17.49)	-12.37** (5.92)	-7.41 (6.59)	3.73** (1.51)	-22.47*** (7.92)	3.98*** (1.48)	-0.37 (0.88)	0.28 (0.42)	-1.19 (0.89)	-0.95** (0.43)
Crisis * Opacity	21.48 (20.17)	7.53 (6.43)	10.77 (8.02)	6.09** (2.59)	15.11 (9.64)	5.72** (2.55)	1.09 (1.08)	1.01** (0.49)	0.39 (1.12)	0.96* (0.56)
Opacity * Rating	115.40*** (30.98)	-43.83** (21.48)	42.99*** (9.65)	3.53 (4.71)	64.10*** (9.97)	15.26*** (4.56)	5.26*** (1.69)	0.58 (0.90)	2.07* (1.14)	-0.02 (0.59)
Crisis * Opacity * Rating	1.50 (52.21)	-56.22* (32.72)	-66.38*** (12.82)	-25.53*** (7.78)	-76.20*** (13.10)	-37.31*** (7.92)	-3.59 (2.64)	-3.04* (1.62)	-1.62 (1.49)	-1.41 (0.86)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,048	3,048	3,412	3,412	3,412	3,412	3,253	3,253	2,730	2,730

This table shows the results of tobit regression models of deviation from optimal leverage over financial crisis, credit rating, opacity, their interaction terms and control variables conditional on external financing issuance for the period 2006Q3-2009Q2. *Deviation from optimal leverage* is measured as the difference between leverage at time (t) and optimal leverage. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time 2006Q2 in Column (4) and the number of restatements occurring one year before 2006Q2 in Column (5). Control variables are defined as in Table 1. Time

and firm fixed effects are included and robust standard errors are used. Constant is not reported because of the inclusion of firm fixed effects. Moreover, because of the inclusion of firm fixed effects, the main effects for rating and opacity as well as their interaction term are subsumed. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.1$

Graphs and Tables

Graph 1



Graph 2

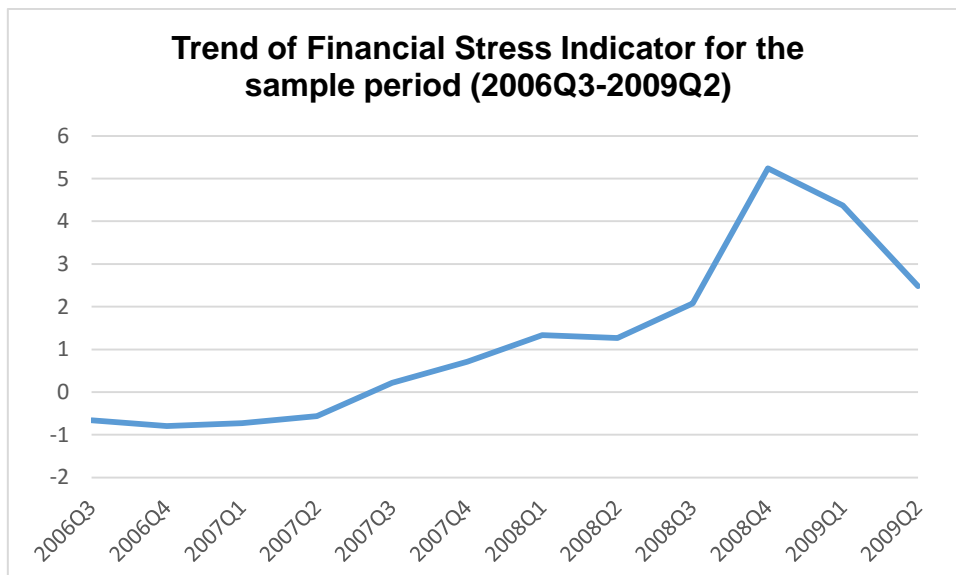


Table 1: Summary Statistics*Panel A: descriptive statistics*

Variable	N	Mean	sd	p25	p50	p75
Debt_financing	4976	0.0075	0.0654	-0.0051	0	0.0001
Equity_financing	4972	-0.0012	0.0441	-0.0005	0	0.0006
AQ	4222	0.0148	0.0168	0.0058	0.0100	0.0177
Abs_DA	4864	0.0437	0.0484	0.0132	0.0295	0.0612
Abs_PDA	4864	0.0346	0.0459	0.0105	0.0233	0.0429
Late_filing	4743	0.0630	0.2431	0	0	0
Rest	3952	0.1670	0.4086	0	0	0
Current_rating	4976	0.4743	0.4994	0	0	1
Distress	4578	0.7588	0.4278	1	1	1
Tobin_q	4965	1.7349	1.0017	1.1489	1.4709	1.9831
Size	4976	7.1288	1.0347	6.4767	7.1509	7.7658
ROA	4972	0	0.0731	-0.0014	0.0098	0.0209
Tangibility	4807	0.4449	0.1407	0.3570	0.4587	0.5336
Demand for bank financing	4976	-15.8233	17.3117	-19.2	-16.7	-1.8
Managerial Ability	4781	0.0187	0.1523	-0.0709	-0.0011	0.0973
Leverage	4966	0.2847	0.2735	0.1011	0.2389	0.3834
Growth	4958	0.0317	0.3216	-0.0605	0.0097	0.0823
Cash flow	4976	0.0266	0.0471	0.0076	0.0264	0.0463
Mef	4976	0.4787	0.4996	0	0	1

Panel B: Goodness of matching procedure at time 2006Q2

Variable	No Rating	Rating	Difference (no rating-rating)	Matching variable
Debt_financing	0.0161	0.0099	0.0061	
Equity_financing	-0.0046	-0.0003	-0.0043	
AQ	0.0152	0.0139	0.0013	
Abs_DA	0.0458	0.0408	0.0051	
Abs_PDA	0.0365	0.0318	0.0047	
Late_filing	0.0800	0.0534	0.0266	
Rest	0.1563	0.1983	-0.0421	
Distress	0.6730	0.7222	-0.0492	
Tobin_q	1.8964	1.8507	0.0457	Y
Size	7.0172	7.0069	0.0102	Y
ROA	0.0104	0.0112	-0.0008	Y
Tangibility	0.4495	0.4417	0.0078	
Managerial Ability	0.0172	0.0431	-0.0259**	
Leverage	0.2864	0.2849	0.0015	
Growth	0.0661	0.0832	-0.017	
Cash flow	0.0197	0.0283	-0.0086**	
Mef	0.3869	0.4192	-0.0323	

Panel C: Correlation matrix

	Crisis	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2. Debt_financing	-0.05																		
3. Equity_financing	-0.03	0.13																	
4. AQ	0.01	0.01	0.11																
5. Abs_DA	0.01	0.03	0.07	0.21															
6. abs_PDA	0.01	0.05	0.09	0.23	0.81														
7. Late_filing	0	-0.01	0.08	0.1	0.04	0.04													
8. Rest	-0.01	0	0.05	0.03	0.06	0.05	0.2												
9. Current_Rating	-0.02	0.06	0	-0.05	-0.05	-0.03	-0.06	0.03											
10. Distress	0.1	0.05	0.13	0.13	0	0.01	0.03	0.06	0.07										
11. Tobin_q	-0.15	0.01	-0.05	0.04	0.05	0.03	-0.07	-0.08	-0.02	-0.46									
12. Size	0.03	0.05	-0.1	-0.31	-0.12	-0.19	-0.1	-0.03	0.11	-0.21	0.16								
13. ROA	-0.11	-0.03	-0.09	-0.14	-0.04	-0.09	-0.04	-0.04	0.03	-0.2	0.12	0.19							
14. Tangibility	0.01	-0.03	0	0.1	0.14	0.05	-0.01	-0.04	-0.06	-0.23	0.18	0.14	-0.01						
15. Demand for bank	-0.44	0.05	-0.01	-0.01	0	0	0	0	0.03	-0.05	0.11	0.03	0.05	-0.05					
16. Managerial Ability	-0.06	0.03	-0.03	-0.02	-0.02	-0.04	-0.05	-0.06	0.06	-0.19	0.22	0.11	0.18	0.07	0.09				
17. Leverage	0.01	0.12	0.14	0.3	0.15	0.19	-0.02	0	0.07	0.37	0.04	0.35	-0.22	-0.05	-0.01	-0.09			
18. Growth	-0.06	0.12	-0.01	0.02	0.03	0.05	-0.01	0	0.01	-0.01	0.06	0.02	0.1	-0.02	0.06	0	0.03		
19. Cash Flow	0.04	-0.11	-0.14	-0.13	-0.07	-0.09	-0.04	-0.04	0.05	-0.21	0.12	0.18	0.27	0.05	-0.02	0.19	-0.23	0.03	
20. Mef	0.11	-0.02	-0.08	-0.13	-0.08	-0.06	-0.03	-0.04	0.08	-0.09	0.02	0.19	0.04	-0.08	-0.04	0.02	-0.16	-0.02	0.07

Table 1, Panel A shows descriptive statistics for dependent variables, variables of interest and control variables. Table 1, Panel B reports t-tests for firms without and with credit rating to assess the goodness of matching procedure. Table 1, Panel C shows the correlation matrix for the variables of interest. Bold numbers denote correlations significant at 5% level. *Debt financing* is measured as the difference between debt issuance and debt repurchase, scaled by lagged total assets. *Equity financing* is computed as the difference between equity sale and equity purchase scaled by lagged total assets. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *AQ* is accounting quality computed following Dechow and Dichev (2002) at time 2006Q2. *Abs_DA* is the absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) at time 2006Q2. *Abs_PDA* is the absolute value of performance matched accruals computed according to Kothari et al. (2005) at time 2006Q2. *Late_filing* is equal to 1 if the firm filed an NT at time 2006Q2 and 0 otherwise. *Rest* is the number of restatements occurring one year before 2006Q2. *Current Rating* is a dummy variable equal to 1 if the firm has a credit rating at time (*t*). *Distress* is equal to 1 if the Altman-Z score (Altman, 1968) is lower than 2.9 and 0 otherwise. *Tobin's q* is the ratio of market value of equity and debt divided by the book value of assets. *Size* is the logarithm of total assets. *ROA* is income before extraordinary items divided by total assets. *Tangibility* is tangibility of assets computed according to Almeida and Campello (2007). *Demand for bank financing* is the demand for bank financing reported in the FED survey. *Managerial Ability* is managerial ability as computed by Demerjian et al. (2012). *Leverage* is long-term debt divided by total assets. *Growth* is percentage change in sales. *Cash flow* is cash flow from operations divided by lagged total assets. *Mef* is equal 1 if the firm issued a manager's forecast at time (*t*).

Table 2: Corporate Financing, financial reporting quality and financial crisis

Panel A: Debt financing

VARIABLES	(1) AQ	(2) abs_DA	(3) abs_PDA	(4) Late_filing	(5) Rest
Crisis	-0.0157** (0.0068)	-0.0231*** (0.0066)	-0.0226*** (0.0068)	-0.0198*** (0.0063)	-0.0169** (0.0071)
Crisis * Opacity	0.0507 (0.146)	0.0380 (0.0533)	0.0320 (0.0688)	0.0222*** (0.0073)	0.0526 (0.0340)
Current_Opacity	-0.1670 (0.1280)	0.0479 (0.0384)	0.0749** (0.0357)	0.0036 (0.0056)	-0.0073 (0.0061)
Current_Rating	0.0084 (0.0082)	0.0065 (0.0078)	0.0069 (0.0079)	0.0069 (0.0081)	0.0084 (0.0084)
Distress	0.0093** (0.0043)	0.0109** (0.0044)	0.0109** (0.0044)	0.0088* (0.0046)	0.0091* (0.0050)
Tobin_q	-0.0044 (0.0029)	-0.0035 (0.0027)	-0.0035 (0.0027)	-0.0045* (0.0027)	-0.0055* (0.0029)
Size	0.0574*** (0.0106)	0.0568*** (0.0096)	0.0577*** (0.0097)	0.0580*** (0.0098)	0.0562*** (0.0111)
ROA	-0.0594*** (0.0214)	-0.0461** (0.0221)	-0.0381* (0.0216)	-0.0488** (0.0207)	-0.0434* (0.0241)
Tangibility	0.0716** (0.0354)	0.0658* (0.0350)	0.0612* (0.0355)	0.0679* (0.0358)	0.0701* (0.0394)
Demand for bank financing	0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)	0.0001 (0.0001)
Managerial Ability	0.0539** (0.0258)	0.0676*** (0.0250)	0.0687*** (0.0248)	0.0680*** (0.0251)	0.0682** (0.0293)
Leverage	0.0770*** (0.0170)	0.0730*** (0.0162)	0.0728*** (0.0162)	0.0799*** (0.0179)	0.0739*** (0.0182)
Growth	0.0248*** (0.0072)	0.0249*** (0.0064)	0.0246*** (0.0064)	0.0308*** (0.0078)	0.0274*** (0.0089)
Cash scaled	-0.2080*** (0.0408)	-0.199*** (0.0414)	-0.204*** (0.0405)	-0.197*** (0.0454)	-0.2020*** (0.0533)
Time FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	3,781	4,144	4,144	4,005	3,328
R-squared	0.204	0.208	0.209	0.209	0.198

This table shows the results of firm fixed effect regression of debt financing over financial crisis, opacity, their interaction terms and control variables for the period 2006Q3-2009Q2. *Debt financing* is measured as the difference between debt issuance and debt repurchase, scaled by lagged total assets. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time 2006Q2 in Column (4) and the number of restatements occurring one year before 2006Q2 in Column (5). *Current_Opacity* is the value of opacity at time (*t*). Other control variables are defined as in Table 1. Time fixed effects are included and standard errors are clustered at firm and time level. Constant is omitted because the inclusion of firm fixed effects makes it uninterpretable. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** p<=0.01, ** p<=0.05, * p<=0.1

Table 2: Corporate Financing, financial reporting quality and financial crisis

Panel B: Equity financing

VARIABLES	(1) AQ	(2) abs_DA	(3) abs_PDA	(4) late_filing	(5) Rest
Crisis	0.0017 (0.0026)	0.0007 (0.0025)	0.0004 (0.0024)	-0.0023 (0.0023)	-0.0037 (0.0026)
Crisis * Opacity	-0.1970** (0.0943)	-0.0701** (0.0317)	-0.0807** (0.0392)	-0.0011 (0.0058)	0.0112 (0.0169)
Current_Opacity	0.1430 (0.1040)	0.0129 (0.0147)	0.0197 (0.0174)	0.0004 (0.0024)	0.0013 (0.0030)
Current_Rating	0.0066** (0.0029)	0.0048* (0.0027)	0.0053* (0.0027)	0.0049* (0.0028)	0.0034 (0.0028)
Distress	0.0007 (0.0028)	0.0017 (0.0028)	0.0017 (0.0028)	0.0028 (0.0026)	0.0046* (0.0027)
Tobin_q	0.0003 (0.0018)	-0.0001 (0.0016)	-0.0001 (0.0016)	0.0004 (0.0015)	0.0004 (0.0017)
Size	0.0065 (0.0041)	0.0055 (0.0035)	0.0053 (0.0035)	0.0067* (0.0035)	0.0051 (0.0039)
ROA	0.0021 (0.0068)	0.0060 (0.0085)	0.0074 (0.0091)	-0.0050 (0.0066)	-0.0003 (0.0083)
Tangibility	0.0560*** (0.0150)	0.0507*** (0.0143)	0.0491*** (0.0143)	0.0524*** (0.0148)	0.0530*** (0.0158)
Demand for bank financing	-0.0001*** (0.0001)	-0.0001*** (0.0001)	-0.0001*** (0.0001)	-0.0001*** (0.0001)	-0.0001*** (0.0001)
Managerial Ability	-0.0076 (0.0106)	-0.0074 (0.0104)	-0.0076 (0.0104)	-0.0047 (0.0101)	-0.0038 (0.0117)
Leverage	-0.0115 (0.0072)	-0.0074 (0.0065)	-0.0075 (0.0064)	-0.0105 (0.0073)	-0.0085 (0.0073)
Growth	0.0009 (0.0018)	0.0018 (0.0019)	0.0018 (0.0019)	0.0022 (0.0023)	0.0011 (0.0027)
Cash scaled	-0.0637*** (0.0201)	-0.0528*** (0.0179)	-0.0541*** (0.0181)	-0.0448** (0.0186)	-0.0557** (0.0238)
Time FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	3,781	4,144	4,144	4,005	3,328
R-squared	0.327	0.313	0.314	0.320	0.331

This table shows the results of firm fixed effect regression of equity financing over financial crisis, opacity, their interaction terms and control variables for the period 2006Q3-2009Q2. *Equity financing* is measured as the difference between equity issuance and equity repurchase, scaled by lagged total assets. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time 2006Q2 in Column (4) and the number of restatements occurring one year before 2006Q2 in Column (5). *Current_Opacity* is the value of opacity at time (*t*). Other control variables are defined as in Table 1. Time fixed effects are included and standard errors are clustered at firm and time level. Constant is omitted because the inclusion of firm fixed

effects makes it uninterpretable. Standard errors are reported in parentheses. Statistical significance is denoted as follows:
*** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.1$

Table 3: Corporate financing, financial reporting quality, financial crisis and credit rating - debt financing

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_Filing	(5) Rest
Crisis	-0.0112 (0.0068)	-0.0234*** (0.0065)	-0.0221*** (0.0069)	-0.0126** (0.0061)	-0.0105 (0.0069)
Crisis * Rating	-0.0031 (0.0053)	0.0004 (0.0054)	-0.0006 (0.0053)	-0.0143*** (0.0044)	-0.0136*** (0.0051)
Crisis * Opacity	0.1540 (0.1620)	0.1800*** (0.0598)	0.1930** (0.0879)	0.0169* (0.0087)	0.0068 (0.0065)
Crisis * Rating * Opacity	-0.6830* (0.3640)	-0.3400*** (0.1070)	-0.3970*** (0.1290)	0.0093 (0.0152)	-0.0217* (0.0112)
Current_Opacity	-0.2090 (0.1300)	0.0495 (0.0382)	0.0745** (0.0356)	0.0041 (0.0056)	0.0568* (0.0338)
Current_Rating	0.0028 (0.0086)	0.0007 (0.0081)	0.0027 (0.0081)	0.0023 (0.0084)	0.0021 (0.0086)
Distress	0.0092** (0.0043)	0.0115*** (0.0045)	0.0114** (0.0044)	0.0090** (0.0046)	0.0096* (0.0051)
Tobin_q	-0.0044 (0.0029)	-0.0036 (0.0027)	-0.0033 (0.0026)	-0.0044* (0.0027)	-0.0053* (0.0029)
Size	0.0585*** (0.0106)	0.0586*** (0.0096)	0.0595*** (0.0096)	0.0591*** (0.0098)	0.0580*** (0.0111)
ROA	-0.0598*** (0.0217)	-0.0477** (0.0223)	-0.0382* (0.0217)	-0.0490** (0.0210)	-0.0429* (0.0243)
Tangibility	0.0769** (0.0356)	0.0716** (0.0350)	0.0706** (0.0357)	0.0710** (0.0359)	0.0739* (0.0394)
Demand for bank financing	0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)
Managerial Ability	0.0498* (0.0257)	0.0639*** (0.0248)	0.0633** (0.0246)	0.0638** (0.0250)	0.0640** (0.0291)
Leverage	0.0786*** (0.0170)	0.0761*** (0.0162)	0.0771*** (0.0163)	0.0822*** (0.0179)	0.0758*** (0.0182)
Growth	0.0246*** (0.0072)	0.0246*** (0.0063)	0.0238*** (0.0063)	0.0306*** (0.0077)	0.0270*** (0.0088)
Cash Flow	-0.2090*** (0.0408)	-0.1990*** (0.0411)	-0.2040*** (0.0401)	-0.1980*** (0.0454)	-0.2000*** (0.0532)
Time FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	3,781	4,144	4,144	4,005	3,328
R-squared	0.207	0.213	0.215	0.211	0.203

This table shows the results of firm fixed effect regression of debt financing over financial crisis, credit rating, opacity, their interaction terms and control variables for the period 2006Q3-2009Q2. *Debt financing* is measured as the difference between debt issuance and debt repurchase, scaled by lagged total assets. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing at time

2006Q2 in Column (4) and the number of restatements occurring one year before 2006Q2 in Column (5). *Current_Opacity* is the value of opacity at time (*t*). Other control variables are defined as in Table 1. Time fixed effects are included and standard errors are clustered at firm and time level. Constant is omitted because the inclusion of firm fixed effects makes it uninterpretable. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.1$

Table 4: Corporate financing, financial reporting quality, financial crisis and credit rating - equity financing

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_Filing	(5) Rest
Crisis	0.0004 (0.0028)	-0.0002 (0.0029)	0.0006 (0.0028)	-0.0034 (0.0024)	-0.0053* (0.0027)
Crisis * Rating	-0.0013 (0.0025)	0.0017 (0.0027)	-0.0006 (0.0025)	0.0024 (0.0019)	0.0035 (0.0024)
Crisis * Opacity	-0.2720** (0.1140)	-0.0945** (0.0460)	-0.1410** (0.0620)	-0.0117* (0.0067)	-0.0058 (0.0053)
Crisis * Rating * Opacity	0.4570*** (0.1750)	0.0607 (0.0641)	0.1480** (0.0703)	0.0326*** (0.0118)	0.0114* (0.0063)
Current_Opacity	0.1680 (0.1050)	0.0123 (0.0148)	0.0200 (0.0173)	0.0004 (0.0023)	0.0098 (0.0169)
Current_Rating	0.0091*** (0.0031)	0.0064** (0.0028)	0.0065** (0.0028)	0.0066** (0.0029)	0.0054* (0.0028)
Distress	0.0008 (0.0028)	0.0016 (0.0028)	0.0015 (0.0028)	0.0024 (0.0026)	0.0045* (0.0027)
Tobin_q	0.0003 (0.0018)	-0.0001 (0.0016)	-0.0001 (0.0016)	0.0003 (0.0015)	0.0004 (0.0016)
Size	0.0059 (0.0041)	0.0049 (0.0035)	0.0047 (0.0035)	0.0063* (0.0035)	0.0045 (0.0039)
ROA	0.0023 (0.0068)	0.0063 (0.0086)	0.0074 (0.0090)	-0.0039 (0.0067)	-0.0006 (0.0083)
Tangibility	0.0532*** (0.0149)	0.0493*** (0.0140)	0.0458*** (0.0137)	0.0507*** (0.0146)	0.0517*** (0.0156)
Demand for bank financing	-0.0002*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0002*** (0.0000)
Managerial Ability	-0.0056 (0.0106)	-0.0062 (0.0104)	-0.0058 (0.0104)	-0.0048 (0.0101)	-0.0025 (0.0116)
Leverage	-0.0120* (0.0071)	-0.0082 (0.0065)	-0.0089 (0.0065)	-0.0103 (0.0072)	-0.0092 (0.0073)
Growth	0.0011 (0.0017)	0.0019 (0.0019)	0.0020 (0.0019)	0.0022 (0.0023)	0.0013 (0.0027)
Cash Flow	-0.0632*** (0.0198)	-0.0529*** (0.0179)	-0.0541*** (0.0179)	-0.0462** (0.0184)	-0.0562** (0.0237)
Time FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	3,781	4,144	4,144	4,005	3,328
R-squared	0.330	0.314	0.316	0.324	0.333

This table shows the results of firm fixed effect regression of equity financing over financial crisis, credit rating, opacity, their interaction terms and control variables for the period 2006Q3-2009Q2. *Equity financing* is measured as the difference between equity issuance and equity repurchase, scaled by lagged total assets. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing in Column (4) at time 2006Q2 and number of restatements occurring one year before 2006Q2 in Column (5).

Current_Opacity is the value of opacity at time (*t*). Other control variables are defined as in Table 1. Time fixed effects are included and standard errors are clustered at firm and time level. Constant is omitted because the inclusion of firm fixed effects makes it uninterpretable. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5: Seemingly unrelated regressions – SDC data

<i>Panel A: debt financing</i>					
VARIABLES	(1) AQ	(3) Abs_DA	(5) Abs_PDA	(7) Late_filing	(9) Rest
Crisis	0.0031 (0.0067)	-0.0077 (0.0069)	-0.0044 (0.0068)	0.0003 (0.0065)	0.0008 (0.0076)
Rating	-0.0170*** (0.0060)	-0.0069 (0.0056)	-0.0058 (0.0053)	-0.0026 (0.0051)	-0.0065 (0.0057)
Crisis * Rating	0.0001 (0.0057)	0.0021 (0.0053)	0.0013 (0.0049)	-0.0113*** (0.0041)	-0.0092* (0.0048)
Opacity	-0.0237 (0.1180)	-0.0158 (0.0392)	0.0168 (0.0376)	0.0002 (0.0080)	-0.0069 (0.0068)
Crisis * Opacity	-0.0029 (0.1310)	0.1670*** (0.0546)	0.1450*** (0.0564)	0.0073 (0.0103)	0.0087 (0.0088)
Rating * Opacity	0.8000*** (0.2300)	0.1170* (0.0639)	0.1150* (0.0685)	-0.0200 (0.0129)	0.0115 (0.0089)
Crisis * Rating * Opacity	-0.5990** (0.2980)	-0.2870*** (0.0857)	-0.3440*** (0.0921)	0.0181 (0.0171)	-0.0189* (0.0115)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Constant	-0.0332 (0.0609)	-0.0630 (0.0448)	-0.0655 (0.0448)	-0.0526 (0.0451)	-0.0610 (0.0460)
Observations	3,781	4,144	4,144	4,005	3,328
R-squared	0.083	0.086	0.086	0.085	0.079

This table shows the results of seemingly unrelated regressions of debt financing over financial crisis, credit rating, opacity, their interaction terms and control variables for the period 2006Q3-2009Q2. *Debt financing* is measured as the difference between debt issuance and debt repurchase, scaled by lagged total assets. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing in Column (4) at time 2006Q2 and number of restatements occurring one year before 2006Q2 in Column (5). Control variables are omitted for brevity and are defined as in Table 1. Time and industry fixed effects are included. Standard errors are clustered at firm and time level and are reported in parentheses. Statistical significance is denoted as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5: Seemingly unrelated regressions – SDC data

Panel B: equity financing according to SDC

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_filing	(5) Rest
Crisis	-0.0019 (0.0020)	-0.0001 (0.0025)	-0.0009 (0.0024)	-0.0019 (0.0024)	-0.0032 (0.0026)
Rating	-0.0032** (0.0014)	0.0011 (0.0014)	-0.0006 (0.0013)	-0.0013 (0.0012)	-0.0017 (0.0012)
Crisis * Rating	0.0029* (0.0018)	-0.0009 (0.0019)	0.0003 (0.0018)	0.0014 (0.0015)	0.0016 (0.0016)
Opacity	-0.0144 (0.0373)	0.0584*** (0.0142)	0.0282** (0.0136)	0.0087*** (0.0029)	0.0016 (0.0023)
Crisis * Opacity	-0.0082 (0.0414)	-0.0676*** (0.0196)	-0.0454** (0.0203)	-0.0094** (0.0039)	-0.0017 (0.0029)
Rating * Opacity	0.0486 (0.0733)	-0.0565** (0.0231)	-0.0268 (0.0248)	-0.0130*** (0.0048)	-0.0037 (0.0030)
Crisis * Rating * Opacity	-0.0033 (0.0941)	0.0602* (0.0308)	0.0421 (0.0332)	0.0168*** (0.0064)	0.0063 (0.0039)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Constant	0.0043 (0.0196)	-0.0083 (0.0167)	-0.0040 (0.0167)	-0.0023 (0.0174)	-0.0033 (0.0165)
Observations	3,781	4,144	4,144	4,005	3,328
R-squared	0.033	0.031	0.027	0.030	0.035

This table shows the results of seemingly unrelated regressions of equity financing as reported in SDC Platinum over financial crisis, credit rating, opacity, their interaction terms and control variables for the period 2006Q3-2009Q2. *Equity financing* is the amount of public equity issued by firm (j) in US markets as recorded in SDC scaled by lagged total assets. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing in Column (4) at time 2006Q2 and number of restatements occurring one year before 2006Q2 in Column (5). Control variables are omitted for brevity and are defined as in Table 1. Time and industry fixed effects are included. Standard errors are clustered at firm and time level and are reported in parentheses. Statistical significance is denoted as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 6: Pre-Lehman vs Post Lehman

Panel A: Debt financing

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_Filing	(5) Rest
Pre_Lehman	-0.0094* (0.0049)	-0.0166*** (0.0051)	-0.0164*** (0.0052)	-0.0099** (0.0049)	-0.0059 (0.0053)
Pre_Lehman * Rating	-0.0049 (0.0059)	-0.0015 (0.0060)	-0.0021 (0.0059)	-0.0147*** (0.0048)	-0.0156*** (0.0055)
Post_Lehman	-0.0130* (0.0068)	-0.0252*** (0.0065)	-0.0217*** (0.0068)	-0.0131** (0.0063)	-0.0125* (0.0072)
Post_Lehman * Rating	0.0008 (0.0069)	0.0045 (0.0064)	0.0022 (0.0063)	-0.0135** (0.0055)	-0.0095 (0.0064)
Pre_Lehman * Opacity	0.0877 (0.2090)	0.1640** (0.0747)	0.1960* (0.1110)	0.0144 (0.0113)	0.0032 (0.0084)
Pre_Lehman * Rating * Opacity	-0.5580 (0.4090)	-0.2930** (0.1240)	-0.3500** (0.1470)	0.0128 (0.0205)	-0.0147 (0.0129)
Post_Lehman * Opacity	0.2650** (0.1210)	0.2240*** (0.0777)	0.1860** (0.0749)	0.0212** (0.0098)	0.0144* (0.0085)
Post_Lehmann * Rating * Opacity	-0.9520** (0.4080)	-0.4480*** (0.1200)	-0.4950*** (0.1280)	0.0027 (0.0189)	-0.0380*** (0.0132)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	3,781	4,144	4,144	4,005	3,328
R-squared	0.207	0.214	0.215	0.211	0.204

This table shows the results of firm fixed effect regression of debt financing over financial crisis, credit rating, opacity, their interaction terms and control variables for the period 2006Q3-2009Q2. *Debt financing* is measured as the difference between debt issuance and debt repurchase, scaled by lagged total assets. *Pre_Lehman* is a dichotomous variable equal to 1 for the period 2007Q3-2008Q3 and 0 otherwise. *Post_Lehman* is a dichotomous variable equal to 1 for the period 2008Q4-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing in Column (4) at time 2006Q2 and number of restatements occurring one year before 2006Q2 in Column (5). Control variables are omitted for brevity and are defined as in Table 1. Constant is omitted because the inclusion of firm fixed effects makes it uninterpretable. Time fixed effects are included. Standard errors are clustered at firm and time level and are reported in parentheses. Statistical significance is denoted as follows: *** p<=0.01, ** p<=0.05, * p<=0.1

Table 6: Pre-Lehman vs Post Lehman

Panel B: Equity financing

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_Filing	(5) Rest
Pre_Lehman	0.0017 (0.0024)	0.0011 (0.0026)	0.0016 (0.0024)	-0.0015 (0.0021)	-0.0023 (0.0024)
Pre_Lehman * Rating	-0.0031 (0.0027)	0.0009 (0.0028)	-0.0007 (0.0025)	0.0013 (0.0020)	0.0026 (0.0024)
Post_Lehman	0.0002 (0.0028)	0.0005 (0.0034)	0.0022 (0.0036)	-0.0042 (0.0026)	-0.0058** (0.0029)
Post_Lehman * Rating	0.0035 (0.0031)	0.0029 (0.0036)	-0.0009 (0.0036)	0.0048* (0.0025)	0.0055* (0.0031)
Pre_Lehman * Opacity	-0.2570** (0.1210)	-0.0848** (0.0431)	-0.1220** (0.0595)	-0.0122* (0.0064)	-0.0060 (0.0052)
Pre_Lehman * Rating * Opacity	0.5590*** (0.1890)	0.0677 (0.0626)	0.1370** (0.0677)	0.0411*** (0.0138)	0.0148** (0.0065)
Post_Lehman * Opacity	-0.2960** (0.1340)	-0.1220* (0.0690)	-0.1990** (0.0994)	-0.0106 (0.0078)	-0.0054 (0.0066)
Post_Lehman * Rating * Opacity	0.1760 (0.2100)	0.0548 (0.0875)	0.1890* (0.1070)	0.0127 (0.0105)	0.0033 (0.0078)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Observations	3,781	4,144	4,144	4,005	3,328
R-squared	0.331	0.315	0.317	0.326	0.334

This table shows the results of firm fixed effect regression of equity financing over financial crisis, credit rating, opacity, their interaction terms and control variables for the period 2006Q3-2009Q2. *Equity financing* is measured as the difference between equity issuance and equity repurchase, scaled by lagged total assets. *Pre_Lehman* is a dichotomous variable equal to 1 for the period 2007Q3-2008Q3 and 0 otherwise. *Post_Lehman* is a dichotomous variable equal to 1 for the period 2008Q4-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing in Column (4) at time 2006Q2 and number of restatements occurring one year before 2006Q2 in Column (5). Control variables are omitted for brevity and are defined as in Table 1. Constant is omitted because the inclusion of firm fixed effects makes it uninterpretable. Time fixed effects are included. Standard errors are clustered at firm and time level and are reported in parentheses. Statistical significance is denoted as follows: *** p<=0.01, ** p<=0.05, * p<=0.1

Table 7: Multinomial Logistic Regressions

Panel A: Internal sources

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_Filing	(5) Rest
Crisis	0.44 (0.42)	0.44 (0.40)	0.36 (0.39)	0.39 (0.39)	0.62 (0.44)
Rating	1.03*** (0.38)	0.98*** (0.32)	0.91*** (0.29)	0.58** (0.29)	0.82*** (0.31)
Crisis * Rating	-0.96*** (0.36)	-0.68** (0.33)	-0.34 (0.29)	-0.17 (0.25)	-0.31 (0.29)
Opacity	-3.09 (5.04)	0.88 (2.24)	-1.79 (1.69)	0.25 (0.49)	0.64 (0.49)
Crisis * Opacity	4.23 (7.61)	-3.60 (3.14)	-2.74 (2.91)	-0.59 (0.62)	-0.57 (0.63)
Rating * Opacity	-21.93* (12.32)	-3.17 (3.66)	-1.21 (2.96)	-0.04 (0.84)	-0.77 (0.59)
Crisis * Rating * Opacity	60.71*** (19.55)	13.23** (5.26)	5.66 (4.37)	0.072 (1.03)	1.65*** (0.79)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Constant	3.44*** (0.69)	4.04*** (0.66)	4.29*** (0.66)	4.56*** (0.65)	4.01*** (0.71)
Observations	2,144	2,345	2,345	2,256	1876

Table 7: Multinomial Logistic Regressions*Panel B: Equity financing*

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_Filing	(5) Rest
Crisis	-2.16 (1.63)	-2.29 (1.62)	-2.17 (1.55)	-2.35 (1.66)	-2.84 (1.76)
Rating	0.71 (0.73)	0.67 (0.70)	1.07 (0.72)	0.62 (0.68)	0.57 (0.71)
Crisis * Rating	0.35 (0.79)	0.85 (0.78)	0.39 (0.74)	0.93 (0.63)	1.457* (0.81)
Opacity	1.96 (6.52)	1.72 (3.91)	0.89 (2.83)	0.71 (0.89)	1.47** (0.68)
Crisis * Opacity	-18.12 (12.33)	-8.43 (10.75)	-9.66 (8.35)	-14.93*** (1.04)	0.68 (1.15)
Rating * Opacity	-7.16 (18.21)	2.015 (5.56)	-7.12 (10.21)	-14.78*** (1.09)	-0.81 (0.89)
Crisis * Rating * Opacity	55.96* (33.04)	5.625 (12.43)	17.65 (13.51)	28.69*** (1.75)	0.46 (1.44)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Constant	-0.43 (1.72)	0.59 (1.63)	0.70 (1.68)	0.35 (1.73)	0.65 (1.83)
Observations	2,144	2,345	2,345	2,256	1876

Table 7: Multinomial Logistic Regressions*Panel C: Debt and Equity Financing*

VARIABLES	(1) AQ	(2) Abs_DA	(3) Abs_PDA	(4) Late_Filing	(5) Rest
Crisis	-23.14*** (3.47)	-20.52*** (1.26)	-21.26*** (1.31)	-19.62*** (1.04)	-20.84*** (4.83)
Rating	-4.39*** (1.31)	-1.51 (1.17)	-1.78* (1.05)	-1.90* (1.05)	-1.48 (1.18)
Crisis * Rating	1.61 (1.49)	0.89 (1.28)	1.45 (1.12)	-0.10 (1.01)	-0.11 (1.16)
Opacity	-39.53 (34.01)	0.57 (11.53)	-11.67 (15.33)	0.19 (1.90)	1.57 (1.03)
Crisis * Opacity	59.53* (35.28)	9.12 (12.19)	17.42 (13.27)	0.39 (2.09)	-0.69 (1.34)
Rating * Opacity	38.84 (36.29)	1.075 (12.33)	9.34 (15.07)	-14.79*** (1.75)	-16.05*** (1.29)
Crisis * Rating * Opacity	8.874 (56.40)	-2.078 (14.05)	-17.29 (14.26)	16.05*** (2.39)	2.14 (1.78)
Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Constant	-3.21 (3.03)	-3.84 (2.86)	-3.42 (3.01)	-4.33 (2.88)	-7.45** (3.47)
Observations	2,144	2,345	2,345	2,256	1876

This table shows the results of multinomial logistic regressions for the period 2006Q3-2009Q2. The dependent variable takes 4 values: 0 if there is a reduction in cash greater than 1%, 1 if variation in equity financing is higher than 1%, 2 if variation in debt financing is greater than 1%, and 3 if both variations in equity and debt are greater than 1%. Panel A reports the results for the probability of using cash respect to debt, Panel B reports the evidence for the probability of using equity over debt, and Panel C shows the findings for the probability of using both debt and equity over just debt. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Column (1), absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Column (2), absolute value of performance matched accruals computed according to Kothari et al. (2005) in Column (3), presence of an NT filing in Column (4) at time 2006Q2 and number of restatements occurring one year before 2006Q2 in Column (5). Control variables are omitted for brevity and are defined as in Table 1. Time fixed effects are included. Standard errors are reported in parentheses. Statistical significance is denoted as follows: *** $p <= 0.01$, ** $p <= 0.05$, * $p <= 0.1$

Table 8: Falsification Test

VARIABLES	<i>Debt Financing</i>		<i>Equity Financing</i>	
	(1) AQ	(2) Abs_DA	(3) AQ	(4) Abs_DA
Crisis_placebo	-0.0396 (0.0427)	-0.0301 (0.0411)	0.0267 (0.0183)	0.0275 (0.0174)
Rating	-0.0127** (0.0061)	-0.0075 (0.0060)	-0.0035 (0.0032)	-0.0053 (0.0033)
Crisis_placebo * Rating	0.0022 (0.0042)	0.0033 (0.0045)	0.0009 (0.0019)	-0.0021 (0.0027)
Opacity	-0.0517 (0.0949)	0.0117 (0.0252)	-0.0413 (0.109)	-0.0093 (0.0068)
Crisis_placebo * Opacity	0.0726 (0.0850)	0.0202 (0.0324)	0.0776 (0.0970)	-0.0007 (0.0173)
Rating * Opacity	0.2790** (0.1170)	0.0164 (0.0413)	-0.0734 (0.0776)	0.0196 (0.0192)
Crisis_placebo * Rating * Opacity	-0.1010 (0.1460)	-0.0602 (0.0583)	-0.0273 (0.1070)	0.0373 (0.0372)
Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Constant	-0.0319 (0.0247)	-0.0390 (0.0244)	-0.0125 (0.0108)	-0.0119 (0.0102)
Observations	3,808	4,037	3,808	4,038
R-squared	0.049	0.042	0.059	0.057

This table shows the results of OLS regression models of financing over placebo crisis, credit rating, financial reporting quality and their interactions for the period 2003Q1-2004Q4. Columns (1) and (2) report the results for debt financing while Columns (3) and (4) show the results for equity financing. *Debt financing* is measured as the difference between debt issuance and debt repurchase, scaled by lagged total assets. *Equity financing* is measured as the difference between equity issuance and equity repurchase, scaled by lagged total assets. *Crisis_Placebo* is a dichotomous variable equal to 1 for the period 2004Q1-2004Q4 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2002Q4 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Columns (1) and (3) and absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Columns (2) and (4) at time 2002Q4. Control variables are omitted for brevity and are defined as in Table 1. Time and industry fixed effects are included. Standard errors are clustered at firm and time level and are reported in parentheses. Statistical significance is denoted as follows: *** p<=0.01, ** p<=0.05, * p<=0.1

Table 9: Ford GM Crisis

VARIABLES	Debt Financing		Equity Financing	
	(1) AQ	(2) Abs_DA	(3) AQ	(4) Abs_DA
Ford	0.0143 (0.0301)	0.0091 (0.0305)	0.0034 (0.0221)	-0.0002 (0.0208)
Rating	-0.0085** (0.0036)	0.0012 (0.0039)	0.0033** (0.0017)	0.0015 (0.0019)
Ford * Rating	0.0021 (0.0043)	-0.0102** (0.0048)	-0.0013 (0.0019)	0.0016 (0.0021)
Opacity	-0.3440* (0.1820)	-0.0028 (0.0525)	-0.0557 (0.0858)	0.0059 (0.0142)
Ford * Opacity	0.0436 (0.1340)	-0.0974* (0.0554)	-0.0327 (0.0868)	0.0053 (0.0148)
Rating * Opacity	0.5070*** (0.1770)	-0.0353 (0.0667)	-0.1320 (0.0801)	0.0045 (0.0237)
Ford * Rating * Opacity	-0.3670* (0.2160)	0.1240 (0.0809)	0.2550* (0.1410)	0.0159 (0.0280)
Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Constant	-0.0650 (0.0594)	-0.0363 (0.0610)	0.0063 (0.0459)	0.0103 (0.0443)
Observations	3,338	3,522	3,340	3,524
R-squared	0.042	0.036	0.062	0.057

This table shows the results of OLS regression for the period 2004Q3-2006Q1. Columns (1) and (2) show the results for debt financing while Columns (3) and (4) report the findings for equity financing. *Debt financing* is measured as the difference between debt issuance and debt repurchase, scaled by lagged total assets. *Equity financing* is measured as the difference between equity issuance and equity repurchase, scaled by lagged total assets. *Ford* is a dichotomous variable equal to 1 for the period 2005Q2-2006Q1 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2004Q2 and 0 otherwise. *Opacity* refers to accounting quality computed according to Dechow and Dichev (2002) in Columns (1) and (3) and the absolute value of discretionary accruals computed following modified Jones model (Jones, 1991) in Columns (2) and (4). Control variables are omitted for brevity and are defined as in Table 1. Industry and time fixed effects are included. Standard errors are clustered at firm level and are reported in parentheses. Statistical significance is denoted as follows: *** p<=0.01, ** p<=0.05, * p<=0.1

Table 10: Managers' forecasts, financial crisis and credit rating

VARIABLES	(1) Prob (Mef=1)	(2) Prob (Mef=1)	(3) Prob (Mef=1)
Crisis	0.4760*** (0.1220)	0.1490*** (0.0297)	0.2150*** (0.0377)
Rating	0.0654 (0.0619)	(dropped)	(dropped)
Crisis * Rating	0.1620* (0.0830)	0.0572*** (0.0177)	0.0733*** (0.0237)
Distress	-0.0876 (0.0639)	-0.0172 (0.0213)	-0.0372 (0.0334)
Tobin_q	-0.0258 (0.0289)	0.0509*** (0.0127)	0.0326** (0.0164)
Size	0.2650*** (0.0247)	0.0912*** (0.0306)	0.1240*** (0.0386)
ROA	0.0831 (0.3070)	-0.0430 (0.0725)	-0.0306 (0.0885)
Tangibility	-0.2100 (0.1860)	0.0169 (0.1060)	0.1670 (0.1070)
Demand for bank financing	0.0027 (0.0027)	0.0014** (0.0006)	0.0018** (0.0008)
Managerial Ability	0.3680** (0.1620)	-0.2170** (0.0991)	-0.3450*** (0.1130)
Leverage	-0.2750** (0.1070)	0.0068 (0.0494)	0.0873 (0.0533)
Growth	-0.1550** (0.0720)	-0.0465*** (0.0163)	-0.0455** (0.0201)
Cash scaled	0.5290 (0.5330)	0.0076 (0.1130)	-0.0870 (0.1310)
Time FE	Yes	Yes	Yes
Industry FE	Yes	No	No
Firm FE	No	Yes	Yes
Constant	-1.6320*** (0.2710)	-0.2890 (0.2430)	-0.8720*** (0.2960)
Sample	Full	Full	Only firms without Mef before the sample period
Observations	4,220	4,283	2,452
R-squared		0.739	0.593

This table shows the results of probit model (1) and OLS regressions (2 and 3) of managers' forecasts over financial crisis, credit rating, its interaction term and control variables for the period 2006Q3-2009Q2. The dependent variable is equal to 1 if the firm issues a managers' forecast in the quarter and 0 otherwise. *Crisis* is a dichotomous variable equal to 1 for the period 2007Q3-2009Q2 and 0 otherwise. *Rating* is a dummy variable equal to 1 if the firm has a credit rating at time 2006Q2 and 0 otherwise. *Distress* is equal to 1 if the Altman-Z score (Altman, 1968) is lower than 2.9 and 0 otherwise. *Tobin's q* is the ratio of market value of equity and debt divided by book value of assets. *Size* is the logarithm of total assets. *Roa* is income before extraordinary items divided by total assets. *Tangibility* is tangibility of assets computed according to Almeida and Campello (2007). *Demand for bank financing* is the demand for bank financing reported in the FED survey. *MA_score* is managerial ability as computed by Demerjian et al. (2012). *Leverage* is long-term debt divided by total assets. *Growth* is

percentage change in sales. *Cash flow* is cash flow from operations divided by lagged total assets. In Column (1), time and industry fixed assets are included. In Column (2), time and firm fixed effects are included for the full sample while Column (3) is limited to firms that did not issue managers' forecasts before the sample period. Standard errors are clustered at firm and time level and reported in parentheses. Statistical significance is denoted as follows: *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.1$

Chapter 2: The Dynamic of financial crises and its non-monotonic effects on earnings quality

2.1. Introduction

Recent research has analysed the role played by financial reporting in the economic downturn. Whalen (2008), Katz (2008) and Kothari and Lester (2012) concur that financial reporting directly contributed to the turmoil and uncertainty by inducing artificial market volatility and instability through the use or misapplication of Fair Value Accounting. A theoretical argument in favor of this claim is presented by Plantin et al. (2008) and this would in turn benefit from further empirical support (Laux and Leuz, 2010). On the other hand Barth and Landsman (2010) and Magnan and Markarian (2011) contend that financial reporting experienced several shortcomings during the crisis, it did not properly account for uncertainty, and did not adequately monitor, measure and disclose the impact of risk-taking on financial statements, thus hindering the reliability and relevance of financial statements. Finally, Badertscher et al. (2012), Laux and Leuz (2009), Ryan (2008) and Turner (2008) argue that regulators and financial institutions exerted a stronger effect than accountants on the stability of financial markets.

Notably lacking from this literature is the examination of how accounting quality may react during a period of financial distress and especially the extent to which financial instability, once in place, may affect managers' accounting choices and, especially, earnings manipulation behaviors. One exception is the work by Choi et al. (2011) investigating the effects of the Asian Crisis of 1997-1998. According to their data earnings management increased during and after this crisis. However, their focus is on value relevance and not on earnings management directly. Moreover, they analyse a single crisis assuming that it was happening during those years, but they do not use a systematic way to measure the intensity of the crisis. My aim is to extend their analysis by using a direct measurement of the intensity of the financial crisis and to characterize the association between this measure and earnings

management directly and on a longer period of time including more than one episode of crisis. I am able to show that the intensity of the crisis affects earnings management activities.

Although earnings quality and earnings management have long been an important area of interest in the accounting literature, few studies analyse the effect of macroeconomics factors on accounting discretion's decisions (see Liu and Ryan 2006; and Aboody et al., 1999 as two significant exceptions). More specifically Johnson (1999) and Jenkins et al. (2009) investigate the association between the business cycle and earnings quality and obtained mixed results. My contribution to this literature resides in taking in explicit consideration the role that financial market conditions may play in shaping the relation between macroeconomic factors and earnings quality and accounting choice. As shown by IMF (2008) and Claessens et al. (2012) financial distress and the business cycle are two distinct phenomena. Despite their strong interaction, these two phenomena do not always follow the same dynamic. For example, not all the episodes of financial distress lead automatically to an economic downturn. Hence, the novelty of my approach consists of explicitly adding a proxy for financial distress into the analysis. In particular, I will use the measure of "crisis" as provided by Hakkio and Keeton (2009) which is based on financial markets indicators rather than on more traditional business cycles variables.

As noted above, the existing literature does not provide a clear-cut indication about the direction of the relation between earnings management and macroeconomic factors, making it difficult to predict the direction of the relation between crisis and earnings management. Hansen (2010) has recently drawn the attention to the importance of taking into account the possible existence of different and potentially conflicting benchmarks while studying earnings management. I claim that financial distress could be a missing variable in the analysis of the

effects of macroeconomics factors on this activity and that it could significantly affect the benchmarks of earnings management. By adopting a risk-taking perspective towards earnings management I argue that organizational survival could be considered a target for financial reporting in addition to traditional earnings benchmarks and that this alternative perspective may prompt non-monotonic accounting choices during periods of financial distress (March and Shapira, 1987). During a period of financial turmoil, firms' survival represents more of a critical issue than in normal times. Consequently, the relation between earnings management and financial crisis may be non-linear and vary according to the intensity of the crisis.

My analysis, conducted on a sample of 5.964 U.S. listed companies during the years 1996-2011, provides support for my hypothesis. First of all, I document that financial crises significantly affect earnings management activities over and above the business cycle. However, the direction of the effect is non-monotonic; for moderated levels of financial distress, I find that managers have weaker incentive to manipulate earnings. Arguably, managers are less willing to take risks that could threaten firm's survival in a situation already characterized by difficulties and uncertainty. However, as the financial crisis becomes more intense, I find that managers are more likely to engage in earnings management activities. Hence, the inclusion of financial distress as an element of the analysis provides a way to rationalize the conflicting results reported in prior literature focusing on business cycles only.

The study is organized as follows: in section 2 I review the previous literature and I develop my empirical hypothesis. In section 3 I describe the sample and the methodology used for testing the hypothesis previously defined. Section 4 presents my empirical results, while in section 5 I perform robustness checks and additional analyses. Section 6 draws some

conclusions, discusses the limitations of the analysis and points out some directions for future research.

2.2. Prior literature and hypotheses development

Johnson (1999) and Jenkins et al. (2009) investigate the association between the business cycle and the value relevance of earnings. They provide evidence that the association between earnings and returns (i.e. earnings value relevance) is sensitive to business cycles. Both Johnson (1999) and Jenkins et al. (2009) consider as macroeconomic conditions real economy-based factors by referring to characteristics of the business cycle such as economic growth or production. Thus, they adopt a broad and real-based definition of macroeconomic expansion/recession without directly considering capital market-related factors that could influence managers' incentives to engage in earnings management. Furthermore their results are inconclusive: Johnson (1999) documents that earnings are more persistent and value relevant during periods of economic expansions than during a recession while Jenkins et al. (2009) show that the conservatism and value relevance of current earnings are higher during economic contractions than during economic expansions. In order to explore more deeply the relation between macroeconomics factors and earnings management, I want to expand the previous analysis and to consider also the behavior of financial markets. This will allow me to study financial crises and not just business cycles.

2.2.1. Financial crises and business cycles

In general terms, a financial crisis can be defined as an interruption in the normal functioning of financial markets. However, agreeing on a more specific definition is challenging since no two episodes of financial crisis are exactly the same. For example the Group of Ten (2001) views a (systemic) financial crisis as an event that will trigger a loss of economic value

of a substantial portion of the financial system, together with a decrease in confidence and an increase in uncertainty about the operation of the financial system itself. Nevertheless, economists tend to associate financial crises with certain key phenomena. The relative importance of these phenomena may differ from one episode of financial crisis to another but every episode seems to involve at least one and often all of them. I will follow the work of Hakkio and Keeton (2009) for the definition and measurement of a financial crisis. They single out few fundamental elements of a financial crisis.

The first element is an increase in uncertainty among lenders and investors about fundamental values of assets. This increased uncertainty about fundamental values typically translates into greater volatility in the market prices of the assets by causing investors to react more strongly to new information⁴².

The second element of financial crises is the uncertainty about the behavior of other investors. Keynes noted that the incentive of the individual is to anticipate “what average opinion expects average opinion to be” (Keynes, 1936). This kind of recursive behavior becomes more prevalent when lenders and investors become more uncertain about the fundamental values of assets. Like uncertainty about fundamentals, uncertainty about the behavior of other investors tends to show up in increased volatility of asset prices. In particular when investors base their decisions on guesses about other investors’ decisions, prices of financial assets become less tied to fundamental values.

⁴² Suppose, for example, that the maximum price an investor is willing to pay for a firm’s stock depends on his estimate of the firm’s long-run profitability. Suppose also that the investor revises this estimate whenever he receives new information about the firm’s profit outlook. Then the greater the investor’s initial uncertainty about the firm’s long-run profitability, the more the investor will revise his estimate of the firm’s profitability in response to new information, and thus the more he will change his offer price in response to that information.

A third element of a financial crisis is a sharp decrease in the willingness to hold risky and/or illiquid financial assets⁴³. As a consequence lenders and investors will demand higher expected returns on risky assets and lower returns on safe assets. These shifts in preferences away from risky and/or illiquid assets and toward safe and/or liquid assets are often referred to as “flight to quality” and “flight to liquidity”, respectively.

A final element of financial crisis is an increase in the asymmetry of information between lenders and borrowers or buyers and sellers of financial assets. Mishkin (1991) and Gorton (2008) suggested that such asymmetries of information might worsen during a period of financial distress because the variation in the true quality of borrowers and financial assets might increase or because lenders lose confidence in the accuracy of their information about borrowers. Under these circumstances banks are less available to lend, thus raising the interest rate charged on new loans and/or increasing their minimum credit standards. Then firms have more difficulties to qualify for loans and pay a higher average cost of borrowing. In addition, financial crises cause investors to demand higher returns on equity, making it more expensive for firms to raise funds by issuing new equity and, at the same time, reducing the average price of assets on secondary markets.

A sufficiently high crisis has significant adverse effect on the real economy. However, the relation between real business cycles and financial crises is a complex one. Claessens et al. (2012) reiterate that the existing knowledge about the interactions between business and financial cycles is quite limited. Using a vast global database over the period 1960 to 2007 they are able to document some interesting results. For example, they show that the degree

⁴³ An illiquid asset is defined as one that the owner cannot be confident of selling at a price close to its fundamental value if faced with a sudden and unexpected need for cash.

of synchronization of business and financial crises varies according to the features and the intensity of the financial crisis. Moreover, these features will affect the duration and amplitude of recessions and expansions. These results are in line with IMF (2008) that points out the importance of the area of origin of the financial distress (banking sector vs securities or foreign exchange market) in shaping the severity of the potential downturn associated with the financial distress.

These recent works demonstrate that, despite the complexity of the task, it is possible to develop empirical indicators of the intensity of a financial crisis. Moreover, they stress the importance of looking at business and financial cycles together in order to better capture the macroeconomic dynamics.

2.2.2. Financial crises and earnings management

Under conditions of financial distress where markets are more skeptical and are experiencing a flight to quality, a flight to liquidity and an increase in the asymmetry of information, new potential investors will be more reluctant to invest in the firm and/or might require a higher return for their investment given the higher perceived risk. Existing investors might decide to sell their securities, sending a negative signal to the market and other investors. Also creditors could be more reluctant to lend money because they are expecting a higher likelihood of default. Bartov et al. (2002) show that, when a firm is facing potential financial distress, the market reward for beating or meeting earnings expectation is larger than that for financially sound firms, thus suggesting that beating earnings expectations conveys information about firm's ability to survive and future earnings prospects. For all these reasons managers can use earnings manipulation in order to affect market's evaluation of firm's probability to survive and, hence, reduce the average cost of capital. More generally,

Matsumoto (2002) and Kasznik and McNichols (2002), among others, provide evidence that managers use earnings manipulation to achieve firms' targets and, then, avoid the communication of bad earnings news to the market. Graham et al. (2005) show that, when the overall economy is down, CEOs make choices that boost earnings and delay the reversal of these actions until the economy recovers. On the basis of these works I would expect that during a period of financial distress managers are more willing to undertake earnings manipulation activities.

However, another strand of literature⁴⁴ shows that firms in financial difficulties are likely to engage less in earnings management. This activity is not costless and a financial crisis is likely to increase the costs associated to earnings manipulations thereby discouraging managers to engage in it. Specifically, earnings management costs could arise from the possible actions by auditors (Ronen and Sadan, 1981; Trueman and Titman, 1988; Zang 2012), SEC enforcement and legal liability (Ronen and Sadan, 1981). The scrutiny by auditors and regulators implies a higher probability to be detected with the consequent negative effects on management's reputation (Gow et al., 2016). Moreover, the legal responsibility of the manager, in case misleading accounting practices are discovered, makes earnings management a risky activity for managers and reduces their incentives to manipulate financial statements. Consistently Huijgen and Lubberink (2005) and Willekens and Bauwhede (2003) show that in a situation of stronger litigation risk managers are less likely to manipulate earnings in order to reduce the exposure to the heightened litigation risk. Periods of financial crises are typically characterized by a stronger attention of media and regulators on firms' activities and behaviors and a higher litigation risk. As a consequence, firms should be more

⁴⁴ E.g. Jones (1991) and De Angelo and De Angelo (1991).

exposed to scrutiny from outsiders and managers are likely to perceive a higher risk of being detected if they undertake aggressive earnings management practices.

The inquiry from outsiders and the managers' legal liability are not the only possible sources of costs and risks of earnings manipulation. Managers might be motivated to reduce earnings management practices in order to interrupt the "numbers game" that they started to play with the market when they decided to engage in earnings manipulation in the first place. Jensen (2005) notes that the "numbers game" brings about an overvaluation of the firm's equity, since the firm's stock price is higher than its underlying fundamental value, and consequently an overstatement of firm's assets in the balance sheet. This overvaluation is quite risky for the firm especially if the firm is not able to deliver the performance that justifies the value assigned by the market since "once managers start lying in the earnings management game, it is nearly impossible to stop because the game cascades forward" (Jensen, 2005, page 4). CFOs surveyed by Graham et al. (2005) support this idea, explaining that, as firm's financial conditions do not improve, small earnings management activities can cascade and lead to big write-offs and/or large negative surprises in subsequent periods. In a period of financial crisis the risks associated with the numbers game are higher given the greater difficulties to perform as the market expects, the higher probability of being discovered and the stronger negative consequences if the "game" is detected. For this reason managers might prefer to contain earnings management activities that the firm cannot afford and that could generate further damage in the future.

Therefore, on the basis of prior literature, I can expect either more or less earnings management during a financial crisis. I claim that this inconclusiveness could be due to the

fact that assuming a monotonic linear relation is an oversimplification. Consequently, I explore more deeply this relation.

Incentives to manipulate earnings can be divided into two categories: internal factors such as firm's characteristics (Dechow et al., 2010), bond covenants (DeFond and Jiambalvo, 1994) or management compensation contracts (Healy and Wahlen, 1999; Fields et al., 2001) and external factors such as normative and regulatory setting (Barth et al., 2008; Leuz et al., 2003). Among the external factors, a special emphasis has been put on the role of capital markets in encouraging or discouraging earnings management practices. For example Dechow et al. (1995) and Graham et al. (2005) document that most of the incentives to manipulate earnings derive from the market and its reaction to the disclosure of earnings news. We may identify two types of capital market motivations: 1) "extraordinary incentives", in periods surrounding particular capital market transactions; 2) "ordinary incentives", related to the achievement of specific thresholds of profitability. Examples of situations of extraordinary incentives are management buyouts, equity offers (IPO, raising capital) and stock financed acquisitions. In all these cases, the ultimate purpose of earnings manipulation is to conclude the transaction at more favorable terms for the firm (Teoh et al., 1998a; Teoh et al., 1998b). In the case of ordinary incentives, managers engage in earnings management activities in order to achieve some critical thresholds. Kasznik and McNichols (2002) show that the capital market is particularly sensitive to the ability of the firm to achieve earnings benchmarks and it rewards firms that meet the targets and it penalizes firms that miss them. In particular, if the firm is not able to meet an earnings target, then the market infers that the firm has poor future prospects and, hence, depresses the firm's stock price. Consequently, Healy and Wahlen (1999) and Matsumoto (2002) argue that managers have incentives to engage in earnings management activities in order to meet the expectations of financial analysts or of some

specific type of investors and, hence, to avoid reporting earnings lower than expectations (i.e. negative earnings surprises).

I combine this distinction between ordinary and extraordinary incentives with the view of earnings manipulation as a risky activity for the firm. When managers decide to manipulate earnings, de facto, they decide to take some risks. According to behavioral theories of decision-making and risk taking⁴⁵, managers' risk preferences are affected by the framing of problems. Hence, reference points appear critical in managers' risk taking decisions. I interpret earnings thresholds as risk taking reference points.

Prior studies on earnings management highlighted few potential thresholds: loss avoidance (Burgstahler and Dichev, 1997), previous years' or seasonally lagged quarterly earnings (Barth et al., 1999; Degeorge et al., 1999) or analysts' consensus forecasts (Healy and Wahlen, 1999). Graham et al. (2005) document that CFOs fully acknowledge the importance of meeting these earnings benchmarks and recognize that their attainment represents one of the main motivation for earnings management activities. Nevertheless, in a period of financial distress earnings benchmarks might not be the only reference points that managers take into account. I expect that, as the uncertainty and turbulence within the markets increase, managers become more concerned about firm's survival and would consider it as an additional reference point respect to more "traditional" earnings benchmarks.

March and Shapira (1987, 1992) argue that the threat to survival is going to affect managers' risk-preferences and decisions. Thus, when the intensity of the crisis is low, firms will perceive the survival under threat and, then, will be reluctant to take risks that could further jeopardize the existence of the firm. Hence, I expect firms to undertake less earnings

⁴⁵ e.g. Kahneman and Tversky (1979) and Wiseman and Gomez-Mejia (1998).

management practices. However, when the intensity of financial distress increases, the extraordinary incentive provided by the survival of the firm might encourage risk taking since there is nothing to lose and taking risks could be a way to escape the menace (Bowman, 1982). In this situation, managers will be more inclined to take risk and should be more likely to undertake earnings management practices. Consequently, I state the empirical hypothesis of my analysis as follows.

Hypothesis: The relation between the intensity of a financial crisis and earnings management practices is non-monotonic: when the intensity of the crisis is low we observe less earnings management; when the intensity of the crisis is high we observe more earnings management

2.3. Empirical Methodology

2.3.1. Data and sample description

The analyses are conducted on a sample of U.S. companies listed on the New York Stock Exchange during the period 1996-2011. Contrary to most prior studies on earnings management, I use quarterly data because I have the possibility to compute my indicators of financial distress on quarterly basis and, hence, to obtain a deeper level of analysis. Even if I do not make any specific prediction about the timing of the effects of the financial crisis on earnings management, it is a fact that the monitoring of crises is done on a quarterly basis. The possibility of using quarterly data allows me to be consistent with this procedure and increases the number of observations.

I collect accounting data from Compustat North America database and the Financial Stress Index from the Federal Reserve Bank of Kansas City. Firstly, I obtain from Compustat North America all U.S. firm-quarters observations from 1995 to 2013. I exclude all financial

firms (SIC codes between 6000 and 6999) because they have different earnings management's measurement processes that might affect models' results. Furthermore, I eliminate firms with missing values and I trim all variables used in the earnings management models at the 1st and 99th percentiles in order to mitigate the effect of possible outliers. Finally, I require at least 20 observations in each two-digit SIC grouping per quarter as a condition for computing earnings management metrics. Then my final sample consists of 79,777 firm-quarter observations representing 5,964 U.S. unique firms between 1996 and 2011⁴⁶. Table 1 describes the sample selection process.

2.3.2. Earnings management metrics

There is a wide debate in the accounting literature on how to measure earnings management and there is no agreement upon which measure is the most proper. Among the several models suggested by the literature to estimate the earnings management activities, I adopt as my primary measure the widely-used discretionary accruals computed following the modified Jones model (Jones, 1991). In robustness checks, I use several alternative metrics of earnings management in order to further validate my results.

Discretionary accruals have been computed by adopting the cross-sectional version of the modified Jones model as described in Francis et al. (2008). In particular, I estimate the modified Jones model for each two-digit SIC-quarter grouping as follows:

$$TA_{it}/A_{i(t-1)} = \alpha_0 + \alpha_1(1/A_{i(t-1)}) + \alpha_2 [\Delta REV_{it}/A_{i(t-1)}] + \alpha_3 [PPE_{it}/A_{i(t-1)}] + \varepsilon_{it} \quad (1)$$

Where:

⁴⁶ My sample is deliberately unbalanced in attempt to avoid a survival sample bias.

$TA_{it}/A_{i(t-1)}$ = firm i's total accruals in quarter (t) are change in current assets (ΔCA), net of the change in cash and short term investment ($\Delta Cash$), minus the change in current liabilities (ΔCL), net of the change in short term debt (ΔSTD), and depreciation and amortization (Dep)⁴⁷, divided by total assets at the beginning of quarter (t);

$A_{i(t-1)}$ = firm i's total assets at the beginning of quarter (t);

$\Delta REV_{it}/A_{i(t-1)}$ = firm i's change in revenues between quarter (t-1) and quarter (t), divided by total assets at the beginning of quarter (t);

$PPE_{it}/A_{i(t-1)}$ = firm i's gross value of property, plant and equipment in quarter (t), divided by total assets at the beginning of quarter (t)

Following Kothari et al. (2005), I include a constant term in the estimation model⁴⁸. The industry- and quarter-specific parameter estimates from equation (1) are used to estimate the firm-specific normal accruals (NA_{it}) for my sample firms:

$$NA_{it} = \alpha_0 + \alpha_1(1/A_{i(t-1)}) + \alpha_2 [(\Delta REV_{it} - \Delta REC_{it})/A_{i(t-1)}] + \alpha_3 [PPE_{it}/A_{i(t-1)}] \quad (2)$$

Where ΔREC_{it} is the change in accounts receivable from the preceding quarter.

⁴⁷ Hribar and Collins (2002) suggest that using a balance sheet approach to test for earnings management might induce measurement errors in the accrual estimation and the risk of a measurement error is higher in the case of discontinued operations. In this case researchers might conclude that earnings management exist when it is not the case by introducing a "negative bias to estimated accruals as net current assets tend to decrease when firms divest operations" (Hribar and Collins, 2002, page 108). Hence, they suggest the adoption of a cash flow approach by computing accruals as the difference between the earnings before extraordinary items and discontinued operations minus the operating cash flows reported in the statement of cash flows in quarter t. I believe that the negative bias induced by the balance sheet approach might favor the rejection of the null hypothesis of no earnings management versus a reduction in earnings management but it goes against the rejection of the null hypothesis of no earnings management versus an increase in earnings management.

⁴⁸ The inclusion of a constant has several advantages: 1) it provides an additional control for heteroskedasticity, 2) it mitigates problems arising from the omission of the size variable, and 3) it makes the estimated discretionary accruals measures more symmetric, thereby increasing the power of the tests (Krishnan et al., 2011).

My measure of discretionary accruals is the difference between total accruals and the fitted normal accruals, defined as $DA_{it} = (TA_{it}/A_{i(t-1)}) - NA_{it}$.

Following prior work, I use the absolute value of the discretionary accruals (*ABS_DA*) as proxy for the magnitude of earnings management activities. However, in order to check for possible differences in the purpose of earnings management I also analyse separately positive accruals as proxy for income-increasing earnings management (*Positive_DA*) and negative accruals as proxy for income-decreasing earnings management (*Negative_DA*) (Cohen et al., 2008).

2.3.3. Financial crisis metrics

To identify financial crises, previous academic literature adopted several approaches. One approach relies on historical narratives of well-known systemic banking crises, when bank capital was eroded, lending was disrupted, and there was often the need for significant public intervention. An extension of this approach is to adopt both a chronology of events about banking crises and date currency crises by using quantitative threshold (Kaminsky and Reinhart, 1999; Reinhart and Rogoff, 2009a, 2009b). The implementation of narrative approaches to determine financial crises provides a rich database of episodes but it has some limitations. First of all the episodes of stress identified are usually of considerable length and varying intensity, making it difficult to identify both when the financial stress peaked and whether there was any meaningful causal relation to an economic downturn. Moreover, they focus mainly on banking crises and currency crises and pay little attention to pure securities markets episodes.

Another approach identifies crises through binary variables based on extreme values of one or two underlying financial variables. For instance, currency crises are usually

determined as significant devaluations, losses in reserves and/or defensive interest rate increases. Instead equity crises are defined as a sharp decline in the overall market index where the decline can be indicative of greater expected loss, higher dispersion of potential losses (higher risk), or increased uncertainty about the return of firms (Illing and Liu, 2003). In both cases, crises are treated as banking and/or currency phenomena, rather than system-wide events.

For the purpose of my study, I am interested in a systemic measure and in its dynamic (i.e. how and when it started; how it evolved, etc.). The Financial Stress Index (*Kcfsi*) proposed by Hakkio and Keeton (2009) fulfills my purposes. This index is built using financial market based indicators in real time and of monthly frequency. 11 financial market variables are considered: (1) 3-month LIBOR/3-month T-bill spread (TED), 2) 2-year swap spread, 3) Off-the-run/on the run 10-year Treasury spread, 4) Aaa/10-year Treasury spread, 5) Baa/Aaa spread, 6) High-yield bond/Baa spread, 7) Consumer ABS/ 5-year Treasury spread, 8) Negative value of correlation between stock and Treasury returns, 9) Implied volatility of overall stock prices (VIX), 10) Idiosyncratic volatility (IVOL) of bank stock prices, 11) Cross-section dispersion (CSD) of bank stock returns. Each of these variables is associated to one or more key features of financial crisis. Given these 11 indicators, a composite and unique Index of Financial Stress (*Kcfsi*) is computed by using the method of principal components.

By construction, *Kcfsi* can be both positive and negative. Negative values of *Kcfsi* indicate periods of financial stability while positive values suggest a worsening in financial market conditions. On this basis, I create a dummy variable (i.e. *Dummy_Kcfsi*) that assumes value 1 if the value of *Kcfsi* is positive and 0 otherwise. I use this dummy variable to identify

periods of financial crisis. Then I use the average value of the *Kcfsi* in quarter (t) as my measure of the intensity of the financial crisis.

2.3.4. Models

In order to compare my results to the previous literature that focused on real business cycles, I perform a regression analysis where the dependent variable is earnings management and the main independent variable is the financial crisis's indicator together with real business cycle and some other control variables.

$$DA_{it} = \beta_0 + \beta_1 Crisis_t + \beta_2 Contraction_t + \beta_3 Gdp_t + \beta_4 Sox_t + \beta_5 Time_t + \beta_6 Logta_{it} + \beta_7 Lev_{it} + \beta_8 Growth_{it} + \beta_9 Cfo_t + \beta_{10} Roa_{it} + \beta_{11} Rm_disx_{it} + \beta_{12} Sdcfo_{it} + \beta_{13} Sdrev_{it} + \beta_{14} Lagtac_{it} + \varepsilon_{it} \quad (3)$$

The dependent variable (DA_{it}) has three variants: 1) the absolute value of discretionary accruals (i.e. ABS_DA_{it}); 2) positive discretionary accruals or income-increasing discretionary accruals (i.e. $Positive_DA_{it}$); 3) negative discretionary accruals or income-decreasing discretionary accruals (i.e. $Negative_DA_{it}$). The independent variable ($Crisis_t$) takes two forms: 1) dichotomous variable taking value 1 if *Kcfsi* is positive and 0 otherwise (i.e. $Dummy_Kcfsi_t$); 2) continuous variables represented by the *Kcfsi* index (i.e. $Kcfsi_t$).

Given that my aim is to distinguish the effects of financial distress from the effects of the business cycle, I insert two control variables that capture different aspects of the business cycle. As a proxy for the real business cycle I use business cycle indicator regularly produced by National Bureau of Economic Research (NBER). Thus, the variable *Contraction* is a dummy

variable that takes a value of 1 during a contraction a 0 otherwise. *Gdp* is the quarterly variation of the Gross Domestic Product⁴⁹.

Consistent with prior research, I enter in the model some control variables related to firm characteristics. In particular, I consider firm size, measured by the natural logarithm of total assets (*Logta*), because it is expected that larger firms are more carefully monitored by the market and other stakeholders, which makes implementing earnings management more difficult. Moreover I take in account the firm leverage (*Lev*), measured by the debt ratio, since previous studies show that firms facing financial constraints have an incentive to manipulate earnings in order to avoid a potential loss from disclosing a financial problem. I also introduce a control variable for firm's performance, measured by Return on Assets (*Roa*) and cash flow from operations scaled by total sales (*Cfo*) because they represent potential determinants of earnings management (Marra et al., 2011).

In addition, previous studies (Cohen et al., 2008) show that after the introduction of the Sarbanes-Oxley Act in 2002 I observe a significant decline in accrual-based earnings management. For this reason, I add a dummy variable that takes value 1 after the approval of SOX and 0 otherwise in order to control for the effect of the new law. It has been argued that after the introduction of SOX, real earnings management may have increased. For this reason I also control for real earnings management by introducing abnormal discretionary expenses (*Rm_disx*) calculated using the method proposed by Zang (2012).

⁴⁹ I gather data for *Gdp* from Bureau of Economic Analysis. As robustness checks I substitute *Gdp* with two dummy variables, the first one assuming value 1 if a negative variation in *Gdp* occurred in the quarter and 0 otherwise and the second one taking value 1 after two consecutive quarters with a negative variation in *Gdp*. Results are qualitatively the same by using the two alternative specifications. The inclusion of both contraction and *Gdp* do not create multicollinearity problems (VIF for both variables are below the critical threshold of 10). Furthermore, I run the analyses without including *Gdp* and results are the same. Noteworthy IMF (2008) suggested that recession and contraction represent two different phenomena and one that does not necessarily implicate the other. As a consequence, it is reasonable to include both variables.

According to Hribar and Nichols (2007) unsigned earnings management are particularly sensitive to the firm's operating volatility like volatility of sales and volatility of cash flows. In particular they argue that when the partition variable (in my case financial crisis) is correlated with these characteristics, the exclusion of these variables as control can create an omitted variable bias. Since financial crisis is likely to be correlated to these variables, I included the following variables: a) SDREV namely the standard deviation of sales as proxy for the volatility of sales; b) SDCFO representing the volatility of cash flows and computed as the standard deviation of cash flows from operations; c) GROWTH representative of sales growth measured as the variation in revenues between quarter (t) and quarter (t-1) divided by revenues in quarter (t-1).

In addition I add the lagged value of total accruals in quarter (t-1) (Lag_{tac})⁵⁰ (Krishnan et al., 2011) to control for the possibility that the changes in earnings management practices (both magnitude and purpose) are due to the effect of past accounting choices and not to the current financial market conditions. Finally, I enter a time variable equal to the difference between the fiscal year-quarter and 1996-quarter1 and firm fixed effects to control for time- and firm- period specific effects⁵¹, respectively.

⁵⁰ Consistent with Barton and Simko (2002) and Baber et al. (2011), I used two alternative variables to take into account the possible effects of prior accounting practices and likely to act as constraints for current earnings management activities. Specifically I consider the net operating assets at the beginning of the fiscal year (NOA) and I distinguish current and non-current NOA. I calculate current net operating assets, designated NOA_{WC}, as the difference between current assets net of cash and short-term investment and current liabilities net of short-term debt, deflated by sales. Non-current net operating assets, designated NOA_{NC}, are computed as the difference between total net operating assets (sum of shareholder's equity net of cash and short-term investment, long-term debt and debt in current liabilities) and current NOA_{WC} computed above. Finally, I employ time- and industry-adjusted NOA by partitioning firms in each two-digit SIC codes for each year and then estimating the mean NOA_{WC} and mean NOA_{NC} for each sub-group. The findings do not change.

⁵¹ I run Hausman-test to verify the suitability of firm-fixed effects. The test warrants the adoption of firm-fixed effects.

In order to test my hypothesis concerning a non-monotonic relation between financial crisis and earnings management, I then include in regression (3) a quadratic term (i.e. $Kcfsi^2$) computed as the mean-centered value of $Kcfsi$ in quarter (t) squared. I choose to mean-center $Kcfsi$ in order to avoid multicollinearity issues. Hence the main model used to test my hypothesis is the following:

$$DA_{it} = \beta_0 + \beta_1 Kcfsi_t + \beta_2 Kcfsi_t^2 + \beta_3 Contraction_t + \beta_4 Gdp_t + \beta_5 Sox_t + \beta_6 Time_t + \beta_7 Logta_{it} + \beta_8 Lev_{it} + \beta_9 Growth_{it} + \beta_{10} Cfo_t + \beta_{11} Roa_{it} + \beta_{12} Rm_disx_{it} + \beta_{13} Sdcfo_{it} + \beta_{14} Sdrev_{it} + \beta_{15} Lagtac_{it} + \varepsilon_{it} \quad (4)$$

The dependent variables and the control variables are defined as in equation (3). Specifically I expect the coefficient for the main effect $Kcfsi$ (β_1) to be statistically significant and negative and the quadratic term $Kcfsi^2$ (β_2) to be statistically significant and positive.

Variable description and measurement are summarized in Table 2.

2.4. Results

2.4.1. Descriptive statistics and correlation

Figure 1 plots the trend of my Financial Stress Index ($Kcfsi$) and the periods of contraction as identified by NBER. By looking at the figure, I can identify two episodes of financial distress ($Kcfsi > 0$) in my sample, with a period of relative stability ($Kcfsi < 0$) before and in between them. The first financial instability goes from 1998 to 2002. In fact this period combines two phenomena. For the first part of this period, I can attribute the instability to the bailout of the LCTM fund. In the second part of this period, the persistent instability may be associated with the end of the Internet bubble and the accounting scandals occurred at the beginning of the new millenium that led to the approval of the Sarbanes-Oxley Act in 2002.

During this period of financial crisis I observe a contraction but not a recession with respect to the real business cycle. The second episode corresponds to the last financial crisis that began in 2007. In this case I also observe a recession with respect to the real business cycle.

As we can see from the figure, even though they are somehow correlated, the dynamics of financial crisis and business cycles are different. I have also computed the concordance index used by Claessens et al. (2012). In this case the value of the index is 0.83, showing that the two series are correlated but do not perfectly overlap.

These trends are consistent with the descriptive statistics presented in table 3. This table presents descriptive statistics for the whole sample (Panel A). It also presents descriptive statistics for two sub-samples. The first sub-sample (Panel B) includes all the observations with negative *Kcfsi* (i.e. no crisis), whereas the second sub-sample (Panel C) includes all the observation with positive *Kcfsi* (i.e. crisis).

In panel A it's worth noticing that both the mean (0.2257) and the median value (0.2000) of *Kcfsi* are positive thereby suggesting that the period under consideration is, on average, a time of financial instability.

As we can expect, Table 3 shows a general worsening of firms' fundamentals during a period of financial crisis: most of the differences are negative and statistically significant at 1% level.

Table 4 presents the correlation matrix for all the variables. Noteworthy both *Dummy_Kcfsi* and *Kcfsi* are not significantly correlated with absolute discretionary accruals (*ABS_DA*) while *Kcfsi* is significantly negatively correlated with positive (*Positive_DA*) and

negative discretionary accruals (*Negative_DA*) confirming the suspicion that the relation between earnings management and financial crisis deserves further analysis.

2.4.2. Multivariate results

I begin my analysis by investigating whether there is a monotonic significant relation between earnings management and financial distress. Table 5 exhibits the results of estimating firm fixed-effects model (3) with robust standard errors clustered by firm by adopting *Dummy_Kcfsi* as proxy for financial crisis.

All the models are statistically significant at 1% level. The coefficient for *Dummy_Kcfsi* in the first model (absolute discretionary accruals) is negative and statistically significant at 1% level. This result shows that financial distress appears to have a significant effect on the level of earnings management. This effect turns out to be negative showing a reduced level of overall earnings management when financial markets are in turmoil. When I look at signed discretionary accruals, I see that the effect is statistically stronger for income increasing accruals than for income decreasing accruals.

When I focus on real business cycle variables (i.e. *Contraction* and *Gdp*), I observe that they are both (weakly) significant for absolute discretionary accruals, and not or very weakly significant for positive or negative discretionary accruals. These results provide evidence for financial markets as crucial in determining the effects of macroeconomic factors on earnings management.

Regarding the other control variables, I notice that the coefficients for dichotomous variable *SOX* are consistent with Cohen et al. (2008). Moreover, most of the firm-related controls are statistically significant and in the direction expected by previous works.

Noteworthy the coefficient for Rm_disx is positive and statistically significant for absolute and positive discretionary accruals while it is negative and statistically significant for negative discretionary accruals. Since higher values of Rm_disx indicate lower amounts of discretionary expenditures cut by firms to augment reported earnings, these findings suggest that firms use accrual-based and real-based earnings manipulations as substitutes, consistently with previous works (Cohen et al, 2008; Zang, 2012). Finally, the coefficients for the time variable are significant and positive for ABS_DA as well as for positive discretionary accruals thus suggesting an overall decrease in earnings management over the sample period.

In Table 6 I provide the results of estimating model (3) by using the raw value of $Kcfsi_t$ as my proxy for the intensity of a financial crisis. Also these models are statistically significant at 1%. However, the main findings are not consistent to those described in Table 5 because the coefficient for $Kcfsi$ is not significant in any of the models. In Table 6 the results related to the control variables are similar to those found in Table 5. Overall the findings provided in Table 5 and 6 are in line with the previous literature in the sense that they do not provide conclusive evidence on the role played by macroeconomic factors and in particular by financial distress on earnings management. However, as I argued in the hypothesis development, this inconclusiveness could be due to non-monotonicity in the relation.

Given that, I now shift my attention to the possibility that there exists a threshold in the intensity of financial distress that triggers a change in firm behavior from ordinary to extraordinary benchmarks.

For this purpose, I partition the sample into two sub-groups using the values of Financial Stress Index ($Kcfsi$). In particular, I transform $Kcfsi$ into a binary variable that takes value 1 if the Financial Stress Index is above its mean and 0 if the Financial Stress Index is below its

mean⁵². Then, for each of the two sub-samples, I run regression model (3) using *Kcfsi* as proxy for financial distress. Table 7 (Panel A and B) presents the results related to the two sub-groups (i.e. below and above the mean).

Panel A reports the results of model (3) when the value of *Kcfsi* is below its mean thus representing a period of moderate financial instability or of financial stability. As we can see from the table, *Kcfsi* has a negative and weakly statistically significant coefficient for *ABS_DA* and positive discretionary accruals while it is not significant for negative discretionary accruals. These results imply that in a period of moderate financial turbulence managers are less likely to manipulate earnings upwards.

In Panel B I show the results of the model when the value of *Kcfsi* is above the mean namely for periods of extreme financial distress. In this case, the coefficient for *Kcfsi* is always statistically significant and assumes opposite signs: it is positive for *ABS_DA* and *Positive_DA* and negative for *Negative_DA*. Therefore, when financial distress achieves extreme values, managers are more likely to undertake earnings management practices.

Taken together, the findings reported in Table 7 suggest that financial distress does not have a monotonic effect on managers' incentive to manipulate earnings thus providing preliminary support to my hypothesis of a non-linear relation between earnings management and financial crisis.

In order to fully test this hypothesis I run the quadratic model (4) for the whole sample. Table 8 presents the results.

⁵² Alternatively, I used as partition variable the median value and the third quarter value of *Kcfsi* and results are qualitatively the same.

As expected the coefficient for the quadratic term $Kcfsi^2$ is highly significant (1% level) in all the three models thus supporting my hypothesis that earnings management is not monotonically associated with financial distress⁵³. In particular, consistently with the above findings, the estimated coefficient of $Kcfsi$ is still negative and statistically significant for ABS_DA and positive discretionary accruals. Moreover the coefficient of $Kcfsi^2$ is positive and highly significant for ABS_DA and positive discretionary accruals⁵⁴.

Overall results provide evidence for a U-shaped relation between earnings management and financial crisis. When the intensity of the financial crisis is low, managers prefer to reduce their earnings management practices in particular those that are income-increasing. However, as financial conditions worsen, managers change their attitude and are more likely to manipulate earnings, again with a prevalence of income-increasing activities.

As anticipated above, a possible explanation of this result is that in the initial phase of a financial crisis the main issue is firm's survival and, then, managers are less willing to take risky activities able to jeopardize firm's existence. As a consequence, top management prefers to decrease earnings management practices in attempt to avoid their negative consequences capable to damage the firm that is already facing a situation of uncertainty and distress. Nevertheless, when financial distress exacerbates, firms may find their existence already compromised. Hence, managers have nothing to lose and, therefore, they are more willing to take risks and manipulate earnings. Indeed, by inflating earnings managers might hope to

⁵³ I use a Wald test to verify whether I should include a quadratic term in the model. In all the three cases, the test confirms the validity of including a quadratic element. I also use the `utest` command of Stata in order to test for the existence of a U-shaped relation between my variables of interest. For all the three models the test supports the existence of such a relation.

⁵⁴ In order to take into account the possible bias due to the truncation at 0 of positive (income-increasing) and negative (income-decreasing) discretionary accruals, I re-run my analyses by using truncated regressions. I obtain similar results: I found a U-shaped relation for positive discretionary accruals but not for negative discretionary accruals.

obtain several advantages (i.e. more favorable contractual conditions, lower cost of capital, a less adverse reaction of the market) that could delay or avoid the dismissal of the business. This intuition can be confirmed by using the modified version of Altman's Z_score proposed by Badertscher (2011) and Zang (2012). A higher (lower) value of this score implies less (more) probability of bankruptcy. I computed the value of this score for each observation. Again, I use the mean of *Kcfsi* as the dividing point between low level of crisis and high level of crisis. Then I compare the mean of the Z-score for periods of more intense financial crisis with the average value for period of less intense financial crisis. The results are presented in Table 9 Panel A.

As we can see the mean of the Z-score is statistically lower in periods of intense financial distress than in period of moderate financial distress. I then used the thresholds values proposed by Altman (1968) of 2.99 and 1.8 in order to separate firms into three categories: "safe", "grey" and "distressed". The results presented in Table 9 Panel B show that the proportion of distressed firms is higher in periods of intense financial crisis.

Overall these results provides support for my explanation of the non-monotonic behavior of earnings management during financial distress by showing that on average firms are in significantly worst financial condition in periods of intense financial crisis than in periods of moderate financial crisis.

2.5. Sensitivity analyses

2.5.1. Alternative earnings management proxies

The modified Jones model of discretionary accruals has several limitations often outlined by previous studies (Dechow et al., 2011). For this reason, I re-run my analyses by using four alternative measures of earnings management in order to corroborate my results.

Kothari et al. (2005) suggest that discretionary accrual estimates are likely to be correlated with firm performance. Hence, I use performance-adjusted discretionary accruals as a first alternative proxy for earnings management. I use two different approaches in computing performance-adjusted discretionary accruals. The first approach is to simply include past-quarter ROA in the modified Jones analysis (Kothari et al., 2005; Krishnan et al., 2011). Thus, equation (1) becomes:

$$PTA_{it}/A_{i(t-1)} = \alpha_0 + \alpha_1(1/A_{i(t-1)}) + \alpha_2 [\Delta REV_{it}/A_{i(t-1)}] + \alpha_3 [PPE_{it}/A_{i(t-1)}] + \alpha_4 ROA_{i(t-1)} + \varepsilon_{it} \quad (5)$$

And equation (2):

$$PNA_{it} = \alpha_0 + \alpha_1(1/A_{i(t-1)}) + \alpha_2 [(\Delta REV_{it} - \Delta REC_{it})/A_{i(t-1)}] + \alpha_3 [PPE_{it}/A_{i(t-1)}] + \alpha_4 ROA_{i(t-1)} \quad (6)$$

Where $ROA_{i(t-1)}$ is the return on assets in the previous quarter.

The difference between performance-adjusted total accruals and the fitted performance-adjusted normal accruals (PDA) is my first measure of performance-matched discretionary accruals.

In the second approach, after the estimation of discretionary accruals (i.e. equations (1) and (2)), I partition firms within each two-digit SIC code into deciles based on their prior year's ROA (Kothari et al., 2005; Krishnan et al., 2011). My second measure of performance-matched accruals (KOT_DA) is the difference between firm's DA and the median DA for its ROA decile in quarter (t).

Since I adopt quarterly data, my measure of discretionary accruals may suffer of a seasonality-related bias⁵⁵. In order to take into account this possible bias, I adopt the measure suggested by Barton and Simko (2002) that account for the seasonality. In particular, I add to my estimation model (e.g. equations 1 and 2) fiscal-quarter indicators Q1, Q2, Q3 and Q4. Then my estimation model is modified as follows:

$$BART_TA_{it}/A_{i(t-1)} = \alpha_0 + \alpha_1(1/A_{i(t-1)}) + \alpha_2 [\Delta REV_{it}/A_{i(t-1)}] + \alpha_3 [PPE_{it}/A_{i(t-1)}] + \alpha_4 Q1_{it} + \alpha_5 Q2_{it} + \alpha_6 Q3_{it} + \alpha_7 Q4_{it} + \varepsilon_{it} \quad (7)$$

$$BART_NA_{it} = \alpha_0 + \alpha_1(1/A_{i(t-1)}) + \alpha_2 [(\Delta REV_{it} - \Delta REC_{it})/A_{i(t-1)}] + \alpha_3 [PPE_{it}/A_{i(t-1)}] + \alpha_4 Q1_{it} + \alpha_5 Q2_{it} + \alpha_6 Q3_{it} + \alpha_7 Q4_{it} \quad (8)$$

My measure of seasonality-adjusted discretionary accruals (*BART_DA*) is the difference between *BART_TA* and *BART_NA*.

Finally, because the previous measures of discretionary accruals consider both the short-term and long term items of accruals, I adopt the Abnormal Working Capital Accrual, based on Francis et al.'s (2008) adaptation of Dechow and Dichev's (2002) model thus considering only the short-term component represented by the working capital.

The Dechow and Dichev's (2002) model allows to isolate the "expected" and "unexpected" portion of working capital accruals based on their association with cash flows. In

⁵⁵ Brown and Pinello (2007) provide evidence that the probability to engage in income increasing earnings management is lower in the fourth quarter because of the auditor and board scrutiny on the annual reporting process. Given that, earnings management appears more likely in the interim quarters than in the fourth one.

order to compute the “expected” working capital accruals I estimate the following model for each industry:

$$TCA_{it}/A_{it} = \beta_0 + \beta_1(Cfo_{it}/A_{it}) + \beta_2(Cfo_{i(t-1)}/A_{it}) + \beta_3(Cfo_{i(t+1)}/A_{it}) + \beta_4(\Delta REV_{it}/A_{it}) + \beta_5(PPE_{it}/A_{it}) + \varepsilon_{it} \quad (9)$$

Where:

TCA_{it}/A_{it} = firm i’s working capital accruals in quarter (t) scaled by total assets at the end of quarter (t) computed as the difference among the change in current assets (ΔCA), net of the change in cash and short term investment ($\Delta Cash$), the change in current liabilities (ΔCL), net of the change in short term debt (ΔSTD);

Cfo_{it}/A_{it} = firm’s cash flow from operations in quarter (t), computed as the difference between income before extraordinary items and total accruals, scaled by total assets at the end of quarter (t)

$\Delta REV_{it}/A_{it}$ = firm i’s change in revenues between quarter (t-1) and quarter (t), scaled by total assets at the end of quarter (t)

PPE_{it}/A_{it} = firm i’s gross value of property, plant and equipment in quarter (t), scaled by total assets at the end of quarter (t)

The variation in working capital accruals that is not associated with the cash flow from operations in the current period, prior period and future period, as well as the change in revenues and the level of property, plant and equipment represents the unexplained or discretionary working capital accruals. Thus, I use the firm- and quarter- specific residuals from equation (9) as my last measure of earnings quality (DD).

My main result on the non-monotonic effect of financial crisis on earnings management are presented in Table 10 only for the absolute value of the corresponding dependent variable⁵⁶. They hold for the all the alternative measures of earnings management adopted except for DD.

2.5.2. Alternative financial crisis proxy

As I discussed before, there are various ways of defining a financial crisis. Hence, it could be possible that my results depend on the particular index of financial distress chosen. For this reason I looked for an alternative proxy that could be used to detect periods of financial crisis. So I re-estimated the models using as the dependent variable the financial stress index produced by the Federal bank of St. Louis (*Stfsi*). The results, presented in Table 11, hold and I still find statistically significant evidence of a quadratic effect.

2.5.3. Additional test for survival reference point

I documented a significant change in the likelihood of bankruptcy while moving from less intense financial crisis periods to periods where the crisis is more severe. This result could depend on the threshold used to determine periods of intense and less intense financial crisis. So I repeated the test on the value of the Z-score by using the median instead of the mean. Once again the results suggest that for higher level of crisis the mean percentages of “safe” and “grey” firms is smaller than for lower level of financial distress while the average percentage of “distress” firms is greater in acute phases of crises than in more stable periods.

2.5.4. Industry analyses

⁵⁶ Those for *Positive_DA* and *Negative_DA* are available from the author.

I conducted a coarse industry analysis by focusing on 4 main industries adopting an approach similar to Abarbanell and Bushee (1997). In particular, I distinguish:

- a) Manufacturing (firms with a SIC code beginning with number 3)
- b) Primary products (firms with a SIC code beginning with number 2 or 1)
- c) Service (firms with a SIC code beginning with number 7 or 8)
- d) Wholesale/Retail (firms with a SIC code beginning with number SIC 5)

In this way I have sufficient observations in each sub-sample and, at the same time, I allowed for some basic industry differences. Indeed, I do observe differences across industries. The results (not tabulated) show that the curvilinear relation holds for manufacturing firms and for companies operating in primary products-related industries. However, I do not find a (robust) monotonic trend in service and wholesale/retail industries. In such industries, financial crisis has a positive and significant effect on discretionary accruals. A deeper analysis of firm characteristics operating in the industries showed that firms operating in service and wholesale/retail industries have generally worse financial conditions during my sample period. As a consequence, they could more promptly perceive their survival as compromised.

2.5.5. Asian crisis

The financial distress proxies used so far are centered on the US financial market. Hence, they are not well suited to capture another important phenomenon taking place in the sample period: the Asian financial crisis that started in July 1997. This crisis had important effects on other markets outside Asia such as, for example, the US mini-crash of October 1997.

In order to account for the potential effect of the Asian financial crisis, I created two variables: *Mini_crash* to indicate 1997Q4 and *pre_asian* (1997q4; 1998q1 and 1998q2; 1998q3). By including these variables into my main quadratic model, I obtained similar results to those presented above. However, when I focus on the sub-sample of KFCSI below the mean, once these new variables are included in the analysis, the significance of *Kcfsi* increases. This analysis is presented in Table 12 for the *Mini_crash* variable and it shows the importance of considering the existence of financial crises outside US and their potential implications on US economy and markets⁵⁷.

2.5.6. Real earnings management analysis

In previous analyses, I have included abnormal discretionary expenses as a control variable for real earnings management, while keeping accrual based earnings management as the main dependent variable. I now want to invert this model specification and use real earnings management as the dependent variable and accruals based earnings management as the control variable.

Following prior works (Cohen et al., 2008; Zang, 2012), I consider three types of real earning management: cutting R&D expenses (unexpectedly low levels of R&D expenses), increasing sales by offering price discounts or more lenient credit terms (unexpectedly low cash flow from operations)⁵⁸ and overproducing (unexpectedly high cost of production). All the three measures are computed following the work of Cohen et al. (2008)⁵⁹. The results of these

⁵⁷ The results with the *pre_asian* variable are similar and are not tabulated here but are available from the authors.

⁵⁸ Even if I take into account abnormal cash flows from operations as additional measure of real earnings management, corresponding results should be considered with caution since prior works (Roychowdhury, 2006; Zang, 2012) pointed out that real activities manipulation can impact them in different directions and, then, the net effect is ambiguous. This is even more likely in a period of financial crisis.

⁵⁹ The sample size for *Rm_prod* is smaller than that for the other measures because I lose observations for the computation of the measure. However, I repeated the models for the smaller sample for all the other measures and results are qualitatively the same.

analyses are presented in Table 13. I find a significant effect of crisis for all the three measures of real earnings management.

For abnormal cash flow the effect is curvilinear. In particular as financial crisis increases, I observe higher level of abnormal cash flows (less real earnings management) but, as financial crisis becomes acute, abnormal cash flows are lower suggesting that firms are more likely to accelerate the timing of sales through price discounts and/or more lenient credits (Cohen et al, 2008). These results are consistent with the increasing concern for firm's survival as financial conditions worsen. The acceleration in timing of sales will boost the sales in the current period while reducing the cash flows. In a period of moderate financial distress, firms will not undertake activities able to jeopardize the firm's existence and, hence, they will less likely to accelerate the sales while reducing cash flows because of the negative effects that the reduction in cash flows might have for the firms' survival. However, as the crisis achieves its peak, price discounts and/or more lenient credits could be the last possibility to increase sales and, hence, save the firm. As a consequence, firms would be more likely to engage in these practices.

For both abnormal research and development expenses and abnormal cost of production I found a significant and negative linear effect. The negative effect of *Kcfsi* on abnormal R&D indicates that, as financial crisis increases, the level of abnormal discretionary expenses is lower and, hence, firms are more likely to cut the expenses in order to boost their earnings (higher real earnings management)⁶⁰. Instead the negative effect of *Kcfsi* on abnormal cost of production, suggests that as financial conditions deteriorate, firms are less likely to undertake real earnings management by increasing production. The difference

⁶⁰ I obtain similar results if I consider only abnormal SG&A according to Athanasakou et al. (2011).

between the types of real earnings management can be explained if I take into account the diverse level of feasibility of the practices. Cutting R&D or offering priced discounts or more lenient credit firms are easier and “faster” decisions/activities firms can undertake when financial markets are very turbulent. On the contrary, increasing production more than necessary is a more difficult solution to adopt⁶¹.

2.5.7. Effect of time

Lastly, I run regression models by excluding my time control. In the main analysis I decided to include a control for time-dimension in order to consider phenomena occurred in the quarter that are likely to affect managers’ accounting choices but they are not captured by the other variables in the model such as the higher pressure of the media. However, the presence of time could absorb part of the main effect of interest thus potentially “throwing out the baby with the bathwater”. Results do not change and they are similar to those presented in section 4.2⁶².

2.6. Conclusions

The purpose of the work is to study the association between earnings quality and financial crises and contribute to the current debate on the relation between the current crisis and financial reporting. In particular, my contribution to the existent literature is twofold.

⁶¹ At the same time, I should acknowledge the limitations of adopted real earnings management metrics in capturing real earnings management activities. Indeed the lower level of R&D expenses, production as well as higher likelihood of price discount or lenient firms appear as “economically rational” solutions adopted by managers to face the overall situation of difficulties and, hence, it seems difficult to fully disentangle to what extent the observed effects are the result of an opportunistic behavior of managers or something else.

⁶² Nevertheless I prefer to include in my main results the time variable because it potentially allows me to control for the quarter-related effects and, also, for the trend in the level of earnings management and, then, to better distinguish the effect in earnings management activities due to the changes in financial conditions and the natural non-stationarity of earnings management.

First of all, I add the financial dimension to the analysis of the relation between macroeconomics cycles and earnings management. The previous literature had focused on real business cycles. Building on the fact that the dynamic of financial crises and of real business cycles do not fully overlap, I provide evidence that financial crises significantly influence managers' accounting decisions.

Secondly, I found that the association between earnings management and financial crises is non-monotonic: earnings quality improves during moderate periods of crisis and worsens as financial crisis becomes extreme. I argue that this result can be explained by considering earnings management decisions from a risk taking perspective. Managers evaluate the risks involved in these practices. This evaluation is likely to be done using a reference point. My results suggest that in a period of financial crisis, managers do not have a unique reference point. One reference point is represented by the traditional earnings benchmarks suggested by prior works. However, in a period of financial distress, a second reference point exists: firm's survival. During a financial crisis, managers' decisions to engage in earnings management activities depend not only on the probability of achieving earnings targets but also on the probability of survival/bankruptcy of the firm. When the financial crisis is moderate, firms will feel a higher threat to firm's survival. As a consequence, they will not take risks in order to protect its existence. On the contrary, when financial conditions get worst, firms are more likely to assume risks and engage in earnings management activities, since their survival is already seriously jeopardized. I support my explanation by showing that the likelihood of bankruptcy is significantly higher when the financial crisis is more intense.

However the study has several limitations that could represent a starting point for future research. First I focused only on one country (U.S.) and, hence, I could obtain different results

by considering other settings with different characteristics in terms of regulation, type of economy and culture. Moreover, the analysis might be more complete and provide more interesting insights by examining diverse types of crises.

References

- Abarbanell, J.S. and Bushee, B.J., 1997. Fundamental analysis, future earnings, and stock prices. *Journal of Accounting Research* 35(1): 1-24.
- Aboody, D., Barth, M.E., and Kasznik, R., 1999. Revaluations of fixed assets and future firm performance: Evidence from the UK. *Journal of Accounting and Economics* 26(1-3): 149-178.
- Altman, E. I., 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance* 23(4): 589-609.
- Athanasakou, V., Strong, N. C., and Walker M., 2011. The market reward for achieving analyst earnings expectations: Does managing expectations or earnings matter? *Journal of Business Finance and Accounting* 38(1-2): 58-94.
- Baber, W.R., Kang, S., and Li, Y., 2011. Modeling discretionary accrual reversal and the balance sheet as an earnings management constraint. *The Accounting Review* 86(4): 1189-1212.
- Badertscher, B.A., Burks, J., and Easton, P., 2012. A convenient scapegoat: Fair value accounting by commercial banks during the financial crisis. *The Accounting Review* 87(1): 59-90.
- Badertscher, B.A., 2011. Overvaluation and the choice of alternative earnings management mechanisms. *The Accounting Review* 86(5): 1491-1518.
- Barth, M.E., Elliott, J.A., and Finn, M.W., 1999. Market rewards associated with patterns of increasing earnings. *Journal of Accounting Research* 37(2): 387-413.
- Barth, M., Landsman, W., and Lang, M., 2008. International accounting standards and accounting quality. *Journal of Accounting Research* 46(3): 467-498.
- Barth, M.E., and Landsman, W.R., 2010. How did financial reporting contribute to the financial crisis? *European Accounting Review* 19(3): 399-423.
- Barton, J., and Simko, P., 2002. The balance sheet as an earnings management constraint. *The Accounting Review* 77(s1): 1-27.
- Bartov, E., Givoly, D., and Hayn, C., 2002. The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33(2):173-204.
- Bowman, E.H., 1982. Risk seeking by troubled firms. *Sloan Management Review* 23: 33-42.
- Brown, L., and Pinello, S.A., 2007. To what extent does the financial reporting process curb earnings surprise game? *Journal of Accounting Research* 45(5): 947-981.
- Burgstahler, D., and Dichev, I., 1997. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24(1): 99-126.

Claessens, S., Ayhan Kose, A., and Terrones, M., 2012. How do business and financial cycles interact? *Journal of International Economics* 87(1): 178-190.

Cohen, D., Dey, A., and Lys, T., 2008. Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review* 83(3): 757-787.

Choi, J.H., Kim, J.B., and Lee, J.J., 2011. Value relevance of discretionary accruals in the Asian financial crisis of 1997–1998. *Journal of Accounting and Public Policy* 30(2): 166-187.

De Angelo, H., and De Angelo, L., 1991. Union negotiations and corporate policy: A study of labor concessions in the domestic steel industry during the 1980s. *Journal of Financial Economics* 30(1): 3-43.

De Angelo, H., De Angelo, L., and Skinner, D.J., 1994. Accounting choice in troubled companies. *Journal of Accounting and Economics* 17(1-2): 113-143.

Dechow, P.M., Sloan, R.G., and Sweeney, A.P., 1995. Detecting earnings management. *The Accounting Review* 70(2): 193-225.

Dechow, P., and Dichev, I., 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77(s1): 35-59.

Dechow, P.M., Ge, W., and Schrand, C., 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50(2-3): 344-401.

Dechow, P.M., Ge W., Larson, C.R., and Sloan, R.G., 2011. Predicting material accounting misstatements. *Contemporary Accounting Research* 28(1): 17-82.

DeFond, M.L., and Jiambalvo, J., 1994. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics* 17(1-2): 145-176.

DeGeorge, F., Patel, J., and Zeckhauser, R., 1999. Earnings management to exceed thresholds. *Journal of Business* 72(1): 1-33.

Fields, T., Lys, T., and Vincent, L., 2001. Empirical research on accounting choice. *Journal of Accounting and Economics* 31(1-3): 255-307.

Francis, J., Nanda, D., and Olsson, P., 2008. Voluntary disclosure, earnings quality, and cost of capital. *Journal of Accounting Research* 46(1): 53-99.

Gorton, G.B., 2008. The panic of 2007. Federal Reserve Bank of Kansas City available at <http://www.nber.org/papers/w14358>.

Gow, I.D., Larcker, D.F., and Reiss, P.C., 2016. Causal inference in accounting research. *Journal of Accounting Research*, 54(2): 477-523.

Graham, J., Harvey, C., and Rajgopal, S., 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40(1-3): 3-73.

Group of Ten, 2001. Consolidation in the financial sector. Available at www.bis.org/publ/gten05.html.

Hansen, J.C., 2010. The effect of alternative goals on earnings management studies: An earnings benchmark examination. *Journal of Accounting and Public Policy* 29(5): 459-480.

Hakkio, C.S., and Keeton, W.R., 2009. Financial stress: What is it, how can it be measured, and why does it matter? *Federal Reserve Bank of Kansas City Economic Review*, Q2.

Healy, P., and Wahlen, J., 1999. A review of the earnings management literature and its implications for standard setting. *Accounting Horizons* 13(4): 365-383.

Hribar, P., and Collins, D.W., 2002. Errors in estimating accruals: Implications for empirical research. *Journal of Accounting Research* 40(1): 105-134.

Hribar, P., and Nichols, D.C., 2007. The use of unsigned earnings quality measures in tests of earnings management. *Journal of Accounting Research* 45(5): 1017-1053.

Huijgen, C., and Lubberink, M., 2005. Earnings conservatism, litigation and contracting: The case of cross-listed firms. *Journal of Business Finance and Accounting* 32(7-8): 1275-1309.

Illing, M., and Liu, Y., 2003. An index of financial stress for Canada. Bank of Canada Working Paper, 14.

International Monetary Fund (IMF), 2008. *World Economic Outlook*.

Jenkins, D.S., Kane, G.D., and Velury, U., 2009. Earnings conservatism and value relevance across the business cycle. *Journal of Business Finance and Accounting* 36(9-10): 1041-1058.

Jensen, M.C., 2005. Agency costs of overvalued equity. *Financial Management* 34(1): 5-19.

Johnson, M.F., 1999. Business cycles and the relation between security returns and earnings. *Review of Accounting Studies* 4(2): 93-117.

Jones, J.J., 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29(2): 193-228.

Kahneman, D., and Tversky, A., 1979. Prospect theory: An analysis of decision under risk. *Econometrica* 47(2): 263-292.

Kaminsky, G.L., and Reinhart, C.M., 1999. The twin crises: The causes of banking and balance-of-payments problems. *American Economic Review* 89(3): 473-500.

Kasznik, R., and McNichols, M., 2002. Does meeting earnings expectations matter? Evidence from analyst forecast revisions and share prices. *Journal of Accounting Research* 40(3): 727-759.

Katz, D., Oct 29, 2008. Former FDIC chief: Fair value caused the crisis. *CFO Magazine*. Available at: <http://www.cfo.com/article.cfm/12502908>.

Keynes, J.M., 1936. *General theory of employment interest and money*. Palgrave Macmillan Ed.

Kothari, S., Leone, A., and Wasley, C., 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39(1): 163-197.

Kothari, S.P., and Lester, R., 2012. The role of accounting in the financial crisis: Lessons for the future. *Accounting Horizons* 26(2): 335-351.

Krishnan, J., Su, L., and Zhang, Y., 2011. Nonaudit services and earnings management in the pre-SOX and post-SOX eras. *Auditing: A Journal of Practice & Theory* 30(3): 103-123.

Laux, C., and Leuz C., 2009. The crisis of fair-value accounting: Making sense of the recent debate. *Accounting, Organizations and Society* 34(6-7): 826-834.

Laux, C., and Leuz, C., 2010. Did fair-value accounting contribute to the financial crisis? *Journal of Economic Perspectives* 24(1): 93-118.

Leuz, C., Nanda, D., and Wysocki, P.D., 2003. Earnings management and investor protection: An international comparison. *Journal of Financial Economics* 69(3): 505-527.

Liu, C., and Ryan, S., 2006. Income smoothing over the business cycle: Changes in banks' coordinated management of provisions for loan losses and loan charge-offs from the pre-1990 bust to the 1990s boom. *The Accounting Review* 81(2): 421-441.

Magnan, M., and Markarian, G., 2011. Accounting, governance and the crisis: Is risk the missing link? *European Accounting Review* 20(2): 215-231.

March, J.G., and Shapira, Z., 1987. Managerial perspectives on risk and risk taking. *Management Science* 33(11): 1404-1418.

March, J.G., and Shapira, Z., 1992. Variables risk preferences and the focus of attention. *Psychological Review* 99(1): 172-183.

Marra, A., Mazzola, P., and Prencipe, A., 2011. Board monitoring and earnings management pre- and post-IFRS. *International Journal of Accounting* 46(2): 205-230.

Matsumoto, D., 2002. Management's incentives to avoid negative earnings surprises. *The Accounting Review* 77(3): 483-514.

Mishkin, F.S., 1991. Asymmetric information and financial crises: A historical perspective. In *Financial Markets and Financial Crises*, Glenn R. Hubbard (Ed.), University of Chicago Press, 69-108.

Plantin G., Sapra H., and Shin H.S., 2008. Marking-to-market: Panacea or Pandora's box? *Journal of Accounting Research* 46(2): 435-460.

Reinhart, C.M., and Rogoff, K.S., 2009a. The aftermath of financial crises. *American Economic Review* 99(2): 466-472.

Reinhart, C.M., and Rogoff, K.S., 2009b. This time is different. Eight centuries of financial folly. Princeton NJ: Princeton University Press.

Ronen, J., and Sadan, S., 1981. Smoothing income numbers: Objectives and implications. Addison-Wesley, Reading, MA.

Roychowdhury, S., 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economics* 42(3): 335-370.

Ryan, S.G., 2008. Accounting in and for the subprime crisis. *The Accounting Review* 83(6): 1605-1638.

Teoh S., Welch, I., and Wong, T.J., 1998a. Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics* 50(1): 63-99.

Teoh, S., Welch, I., and Rao, G., 1998b. Are accruals during initial public offerings opportunistic? *Review of Accounting Studies* 3(1-2): 175-208.

Trueman, B., and Titman, S., 1988. An explanation for accounting income smoothing. *Journal of Accounting Research* 26(s): 127-139.

Turner, L., Oct 2, 2008. Banks want to shoot the messenger over fair value rules. *Financial Times* 17.

Whalen, R.C., 2008. The subprime crisis—cause, effect and consequences. *Networks Financial Institute Policy Brief 2008, PB04*.

Willekens, M., and Bauwhede, H., 2003. Auditor reporting conservatism as a defense mechanism against increased post-Enron litigation risk. Working Paper.

Wiseman, R.M., and Gomez-Mejia, L.R., 1998. A behavioral agency model of managerial risk-taking. *Academy of Management Review* 23(1): 133-153.

Zang, A.Y., 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review* 87(2): 675-703.

Tables and Figure

Table 1: Sample Selection procedure

Population of U.S. listed companies in 1995-2013	820.905
(-) Duplicated observations	820.787
(-) Financial Observations (SIC codes: 6000-6999)	604.553
(-) Observations with missing values	312.531
(-) Outliers (1 st and 99 th percentiles)	165.387
(-)Firms-quarter observations with insufficient data to compute accrual-based earnings management metrics	150.175
(-)Firms-quarter observations with insufficient data to compute other variables of interest	
Final sample	79.777

Table 2: Variable Description and measurement

DA	<i>Discretionary accruals</i>
ABS_DA	<i>Absolute value of discretionary accruals computed through cross sectional version of Modified Jones (1991)</i>
Positive_DA	<i>Value of Positive discretionary accruals computed through cross sectional version of Modified Jones (1991)</i>
Negative_DA	<i>Value of Negative discretionary accruals computed through cross sectional version of Modified Jones (1991)</i>
Kcfsi	<i>Quarter-base average value of Financial Stress Index</i>
Dummy_Kcfsi	<i>Dummy variable that takes value 1 if Kcfsi is positive and 0 otherwise</i>
Contraction	<i>Dummy variable that takes value 1 if a contraction occurs in quarter (t) and 0 otherwise</i>
Gdp	<i>Quarter-based percentage change in GDP based on chained 2005 dollars</i>
Sox	<i>Dummy variable that takes value 1 after the approval of Sox and 0 otherwise</i>
Time	<i>Fiscal year-quarter minus 1996-Q1</i>
Logta	<i>Natural logarithm of total assets</i>
Lev	<i>Leverage calculated as the ratio of total debt to total assets</i>
Growth	<i>Change of sales between quarter (t) and (t-1) divided by sales in quarter (t-1)</i>
Cfo	<i>Cash flow from operations over total sales</i>
Roa	<i>Return on Assets calculated as income before extraordinary items over total assets</i>
Rm_disx	<i>Abnormal Discretionary expenses (Zang, 2012)</i>
Sdcfo	<i>Volatility of cash flow (standard deviation of cash flow in previous quarters)</i>
Sdrev	<i>Volatility of sales (standard deviation of sales in previous four quarters)</i>
Lagtac	<i>Total accruals at the beginning of the quarter</i>
Z_score	<i>Modified Altman Z_score computed according to Badertscher (2011) and Zang (2012)</i>

Table 3: Descriptive statistics*Panel A: descriptive statistics for the full sample*

Variable	N	Mean	Sd	Min	p25	p50	p75	Max
ABS_DA	79777	.0278	.0299	0	.0082	.0185	.0364	.4819
Positive_DA	41209	.0276	.0294	0	.0083	.0187	.0363	.4397
Negative_DA	38568	-.0279	.0304	-.4819	-.0365	-.0184	-.0081	0
Kcfsi	79777	.2257	1.0516	-.9033	-.5633	.2000	.5400	5.2433
Logta	79777	5.5819	2.1301	-1.5847	4.0234	5.5653	7.1401	11.3353
Lev	79777	.5106	.3061	-.0294	.2974	.4852	.6569	10.4597
Growth	79777	.3955	89.0419	-156.7500	-.0511	.0246	.1089	25139
Cfo	79777	-.4619	20.9351	-2364	-.0304	.0692	.1712	1425
Roa	79777	-.0028	.0558	-1.1161	-.0064	.0088	.0206	.2553
Rm_disx	79777	-.0034	.0468	-.3652	-.0269	-.0075	.0115	.6029
Sdcfo	79777	36.4457	112.0563	.0029	1.4143	5.7476	23.2614	4102.149
Sdrev	79777	30.1588	93.1948	.0005	1.1252	4.7941	19.5996	3311.431
Lagtac	79777	-.0117	.0412	-.5775	-.0307	-.0115	.0074	.3569

Panel B: descriptive statistics for the pre-crisis period

Variable	N	Mean	Sd	Min	p25	p50	p75	Max
Abs_DA	34937	.0276	.0296	0	.0081	.0185	.0362	.4094
Positive_DA	18177	.0276	.0295	0	.0082	.0186	.0363	.4095
Negative_DA	16760	-.0276	.0297	-.3925	-.0362	-.0185	-.0081	0
Kcfsi	34937	-.5483	.2044	-.9033	-.6933	-.6167	-.3867	-.1300
Logta	34937	5.5678	2.1580	-1.2588	3.9799	5.5696	7.1481	11.0050
Lev	34937	.4999	.2942	.0014	.2943	.4764	.6421	5.8140
Growth	34937	.8012	134.5047	-48.7831	-.0407	.0316	.1119	25139
Cfo	34937	-.5118	22.8554	-1870.001	-.0259	.0688	.1699	1425
Roa	34937	.0007	.0515	-.9095	-.0023	.0107	.0221	.2553
Rm_disx	34937	-.0032	.0461	-.3233	-.0265	-.0074	.0118	.5784
Sdcfo	34937	34.5339	103.3212	.0035	1.3521	5.5133	22.3268	4102.149
Sdrev	34937	28.6760	87.3041	.0006	1.0803	4.6773	19.0419	2281.754
Lagtac	34937	-.0100	.0409	-.4435	-.0293	-.0102	.0089	.3355

Table 3: Descriptive statistics (Continued)*Panel C: descriptive statistics for the crisis period*

Variable	N	Mean	Sd	Min	p25	p50	p75	Max	diff (1)
ABS_DA	44840	.0279	.0302	0	.0083	.0186	.0366	.4819	-.0003
Positive_DA	23032	.0277	.0294	0	.0085	.0188	.0364	.4397	-.0000
Negative_DA	21808	-.0281	.0309	-.4819	-.0368	-.0183	-.0081	0	.0005
Kcfsi	44840	.8287	1.0510	.0500	.2800	.4567	.9033	5.2433	-1.3770***
Logta	44840	5.5929	2.1081	-1.5847	4.0633	5.5604	7.1318	11.3353	-.0251*
Lev	44840	.5189	.3148	-.0294	.3001	.4927	.6697	10.4597	-.0189***
Growth	44840	.0795	3.1572	-156.75	-.0599	.0194	.1059	406.2766	.7217
Cfo	44840	-.4231	19.3071	-2364	-.0342	.0694	.1719	460.5616	-.0887
Roa	44840	-.0056	.0588	-1.1161	-.0096	.0073	.0193	.2064	.0062***
Rm_disx	44840	-.0036	.0474	-.3652	-.0273	-.0077	.0112	.6029	.0004
Sdcfo	44840	37.9353	118.3962	.0029	1.4652	5.9203	24.0396	3356.916	-3.4013***
Sdrev	44840	31.3141	97.5237	.0005	1.1623	4.8897	19.9813	3311.431	-2.6381***
Lagtac	44840	-.0130	.0414	-.5775	-.0318	-.0125	.0061	.3569	.0030***

*(1) difference between pre-crisis and crisis period ; H₀: difference=0**Significance levels: *** p-values<1%; ** p-values<5%; * p-values<10%**Variables defined in table 2*

Table 4: Correlation Matrix

	ABS_DA	Positive_DA	Negative_DA	Dummy_Kcfsi	Kcfsi	Contraction	Gdp	Logta	Lev	Growth	Cfo	Roa	Rm_Disx	Sdcfo	Sdrev	Lagtac
<i>Dummy_Kcfsi</i>	0.0042	0.0008	-0.0076	1												
<i>Kcfsi</i>	0.0006	-0.0126**	-0.0140***	0.6496***	1											
<i>Contraction</i>	-0.0138***	-0.0195***	0.0081	0.3347***	0.5998***	1										
<i>Gdp</i>	0.0481***	0.0518***	-0.0444***	-0.1877***	-0.5880***	-0.6070***	1									
<i>Logta</i>	-0.2616***	-0.2535***	0.2699***	0.0058*	0.0395***	0.0525***	-0.1048***	1								
<i>Lev</i>	0.0032	-0.0217***	-0.0266***	0.0308***	0.0199***	0.0099***	0.0046	0.2143***	1							
<i>Growth</i>	-0.0002	-0.0003	-0.0029	-0.0040	-0.0028	-0.0014	-0.0010	0.0043	0.0007	1						
<i>Cfo</i>	-0.0027	-0.0118**	-0.0087*	0.0021	-0.0023	-0.0003	0.0017	0.0324***	0.0053	0.0001	1					
<i>Roa</i>	-0.1757***	-0.0105**	0.3016***	-0.0554***	-0.0792***	-0.0442***	0.0334***	0.2502***	-0.1174***	-0.0004	0.0819***	1				
<i>Rm_Disx</i>	0.1151***	0.0674***	-0.1623***	-0.0040	0.0028	0.0049	-0.0110 ***	-0.1693***	-0.0389***	0.0014	-0.0265***	-0.2585***	1			
<i>Sdcfo</i>	-0.0373***	-0.0357***	0.0390***	0.0151***	0.0577***	0.0531***	-0.0837 ***	0.4804***	0.1208***	0.0005	0.0076**	0.0224***	-0.0510***	1		
<i>Sdrev</i>	-0.0697***	-0.0657***	0.0739***	0.0140***	0.0570***	0.0479***	-0.0746***	0.4700***	0.0977***	0.0021	0.0086**	0.0789***	-0.0488***	0.6139***	1	
<i>Lagtac</i>	-0.0103***	-0.0294***	-0.0085*	-0.0362***	-0.0306***	-0.0241***	0.0498***	0.0071**	-0.0705***	-0.0010	0.0053	0.1037***	-0.0368***	-0.0007	0.0153***	1

Significance levels: *** *p*-values<1%; ** *p*-values<5%; * *p*-values<10%

Variables defined in table 2

Table 5: Panel regression models of earnings management on financial crisis with Dummy_kcfsi

Variables	ABS_DA	Positive_DA	Negative_DA
	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]
<i>Dummy_Kcfsi</i>	-0.0009*** (0.0002)	-0.0009** (0.0003)	0.0007* (0.0003)
<i>Contraction</i>	0.0008* (0.0004)	0.0008 (0.0005)	-0.0009+ (0.0006)
<i>Gdp</i>	0.0001** (0.0000)	0.0001+ (0.0001)	-0.0001 (0.0001)
<i>Sox</i>	-0.0021*** (0.0005)	-0.0021** (0.0007)	0.0020** (0.0007)
<i>Time</i>	0.0001*** (0.0000)	0.0001*** (0.0000)	-0.0000+ (0.0000)
<i>Logta</i>	-0.0017*** (0.0004)	-0.0010+ (0.0005)	0.0022*** (0.0006)
<i>Lev</i>	0.0097*** (0.0014)	0.0104*** (0.0017)	-0.0090*** (0.0016)
<i>Growth</i>	0.0000** (0.0000)	0.0000* (0.0000)	0.0000 (0.0000)
<i>Cfo</i>	0.0000** (0.0000)	-0.0000 (0.0000)	-0.0000* (0.0000)
<i>Roa</i>	-0.0400*** (0.0059)	0.0717*** (0.0057)	0.0979*** (0.0082)
<i>Rm_disx</i>	0.0954*** (0.0090)	0.0787*** (0.0122)	-0.1038*** (0.0120)
<i>Sdcfo</i>	0.0000*** (0.0000)	0.0000*** (0.0000)	-0.0000*** (0.0000)
<i>Sdrev</i>	0.0000 (0.0000)	0.0000 (0.0000)	-0.0000 (0.0000)
<i>Lagtac</i>	-0.0060+ (0.0035)	-0.0601*** (0.0054)	-0.0519*** (0.0053)
<i>Constant</i>	0.0346*** (0.0023)	0.0310*** (0.0028)	-0.0368*** (0.0029)
N	79777	41209	38568
R-squared	0.0250	0.0294	0.0643

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2

Table 6: Panel regression models of earnings management on financial crisis with Kcfsi: full sample

Variables	ABS_DA	Positive_DA	Negative_DA
	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]
<i>Kcfsi</i>	0.0002 (0.0001)	0.0002 (0.0002)	-0.0003 (0.0002)
<i>Contraction</i>	0.0002 (0.0004)	0.0003 (0.0005)	-0.0003 (0.0006)
<i>Gdp</i>	0.0002** (0.0001)	0.0001+ (0.0001)	-0.0002+ (0.0001)
<i>Sox</i>	-0.0013** (0.0005)	-0.0013* (0.0006)	0.0012+ (0.0007)
<i>Time</i>	0.0001*** (0.0000)	0.0001*** (0.0000)	-0.0001** (0.0000)
<i>Logta</i>	-0.0017*** (0.0004)	-0.0011* (0.0005)	0.0022*** (0.0006)
<i>Lev</i>	0.0096*** (0.0014)	0.0102*** (0.0017)	-0.0088*** (0.0016)
<i>Growth</i>	0.0000** (0.0000)	0.0000* (0.0000)	0.0000 (0.0000)
<i>Cfo</i>	0.0000** (0.0000)	-0.0000 (0.0000)	-0.0000* (0.0000)
<i>Roa</i>	-0.0392*** (0.0059)	0.0727*** (0.0057)	0.0972*** (0.0082)
<i>Rm_disx</i>	0.0959*** (0.0090)	0.0792*** (0.0122)	-0.1045*** (0.0120)
<i>Sdcfo</i>	0.0000*** (0.0000)	0.0000*** (0.0000)	-0.0000*** (0.0000)
<i>Sdrev</i>	0.0000 (0.0000)	0.0000 (0.0000)	-0.0000 (0.0000)
<i>Lagtac</i>	-0.0057 (0.0035)	-0.0599*** (0.0054)	-0.0523*** (0.0053)
<i>Constant</i>	0.0346*** (0.0023)	0.0309*** (0.0028)	-0.0367*** (0.0029)
N	79777	41209	38568
R-squared	0.0248	0.0292	0.0642

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2

Table 7: Panel regression models of earnings management on financial crisis with Kcfsi: Subsamples

Panel A: Panel regression models of earnings management on financial crisis with Kcfsi when Kcfsi is below the mean

Variables	ABS_DA	Positive_DA	Negative_DA
	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]
<i>Kcfsi</i>	-0.0016* (0.0007)	-0.0017+ (0.0010)	0.0016 (0.0010)
<i>Contraction</i>	dropped	dropped	dropped
<i>Gdp</i>	-0.0003** (0.0001)	-0.0004** (0.0002)	-0.0000 (0.0001)
<i>Sox</i>	-0.0024* (0.0010)	-0.0018 (0.0013)	0.0026* (0.0013)
<i>Time</i>	0.0001* (0.0000)	0.0001** (0.0000)	-0.0000 (0.0000)
<i>Logta</i>	-0.0022*** (0.0006)	-0.0009 (0.0008)	0.0035*** (0.0008)
<i>Lev</i>	0.0138*** (0.0017)	0.0156*** (0.0026)	-0.0133*** (0.0022)
<i>Growth</i>	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0002 (0.0002)
<i>Cfo</i>	0.0000 (0.0000)	-0.0000+ (0.0000)	-0.0001* (0.0001)
<i>Roa</i>	-0.0345*** (0.0083)	0.0700*** (0.0113)	0.0934*** (0.0122)
<i>Rm_disx</i>	0.0846*** (0.0115)	0.0831*** (0.0170)	-0.0867*** (0.0175)
<i>Sdcfo</i>	0.0000*** (0.0000)	0.0000*** (0.0000)	-0.0000*** (0.0000)
<i>Sdrev</i>	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
<i>Lagtac</i>	-0.0125* (0.0053)	-0.0723*** (0.0078)	-0.0590*** (0.0084)
<i>Constant</i>	0.0351*** (0.0032)	0.0272*** (0.0044)	-0.0396*** (0.0044)
N	37405	19403	18002
R-squared	0.0251	0.0342	0.0623

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2

Table 7: Continued

Panel B: Panel regression models of earnings management on financial crisis with Kcfsi when Kcfsi is above the mean

Variables	ABS_DA Coefficient [st_error]	Positive_DA Coefficient [st_error]	Negative_DA Coefficient [st_error]
<i>Kcfsi</i>	0.0011*** (0.0002)	0.0012*** (0.0003)	-0.0011*** (0.0003)
<i>Contraction</i>	0.0007+ (0.0004)	0.0009 (0.0006)	-0.0004 (0.0006)
<i>Gdp</i>	0.0004*** (0.0001)	0.0004*** (0.0001)	-0.0003** (0.0001)
<i>Sox</i>	-0.0014* (0.0006)	-0.0018* (0.0008)	0.0014 (0.0009)
<i>Time</i>	0.0001*** (0.0000)	0.0002*** (0.0000)	-0.0001** (0.0000)
<i>Logta</i>	0.0001 (0.0007)	-0.0001 (0.0009)	-0.0003 (0.0008)
<i>Lev</i>	0.0085*** (0.0020)	0.0092*** (0.0024)	-0.0080** (0.0026)
<i>Growth</i>	0.0001 (0.0001)	0.0003*** (0.0001)	0.0000 (0.0000)
<i>Cfo</i>	0.0000* (0.0000)	-0.0000 (0.0000)	-0.0000+ (0.0000)
<i>Roa</i>	-0.0440*** (0.0080)	0.0742*** (0.0069)	0.1030*** (0.0110)
<i>Rm_disx</i>	0.1075*** (0.0132)	0.0739*** (0.0172)	-0.1257*** (0.0181)
<i>Sdcfo</i>	0.0000*** (0.0000)	0.0000*** (0.0000)	-0.0000*** (0.0000)
<i>Sdrev</i>	0.0000 (0.0000)	-0.0000 (0.0000)	-0.0000 (0.0000)
<i>Lagtac</i>	-0.0015 (0.0048)	-0.0656*** (0.0077)	-0.0640*** (0.0071)
<i>Constant</i>	0.0256*** (0.0036)	0.0254*** (0.0049)	-0.0237*** (0.0044)
N	42372	21806	20566
R-squared	0.0250	0.0326	0.0698

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2

Table 8: Panel regression models of earnings management on financial crisis with quadratic effects

Variables	ABS_DA	Positive_DA	Negative_DA
	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]
<i>Kcfsi</i>	-0.0005* (0.0002)	-0.0006* (0.0003)	0.0004 (0.0003)
<i>Kcfsi</i> ²	0.0003*** (0.0001)	0.0003*** (0.0001)	-0.0003*** (0.0001)
<i>Contraction</i>	0.0005 (0.0004)	0.0006 (0.0005)	-0.0006 (0.0006)
<i>Gdp</i>	0.0003*** (0.0001)	0.0003** (0.0001)	-0.0003** (0.0001)
<i>Sox</i>	-0.0020*** (0.0005)	-0.0021** (0.0006)	0.0019** (0.0007)
<i>Time</i>	0.0001*** (0.0000)	0.0001*** (0.0000)	-0.0000+ (0.0000)
<i>Logta</i>	-0.0016*** (0.0004)	-0.0010+ (0.0005)	0.0022*** (0.0006)
<i>Lev</i>	0.0097*** (0.0014)	0.0103*** (0.0017)	-0.0089*** (0.0016)
<i>Growth</i>	0.0000** (0.0000)	0.0000** (0.0000)	0.0000 (0.0000)
<i>Cfo</i>	0.0000** (0.0000)	-0.0000 (0.0000)	-0.0000* (0.0000)
<i>Roa</i>	-0.0392*** (0.0059)	0.0728*** (0.0057)	0.0971*** (0.0082)
<i>Rm_disx</i>	0.0961*** (0.0090)	0.0794*** (0.0122)	-0.1045*** (0.0120)
<i>Sdcfo</i>	0.0000*** (0.0000)	0.0000*** (0.0000)	-0.0000*** (0.0000)
<i>Sdrev</i>	0.0000 (0.0000)	0.0000 (0.0000)	-0.0000 (0.0000)
<i>Lagtac</i>	-0.0061+ (0.0035)	-0.0603*** (0.0054)	-0.0518*** (0.0053)
<i>Constant</i>	0.0335*** (0.0023)	0.0297*** (0.0029)	-0.0357*** (0.0029)
N	79777	41209	38568
R-squared	0.0252	0.0297	0.0646

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2

Table 9: Test Mean Differences Survival

Panel A: Mean comparison Altman Z_score

	Below Mean Kcfsi (N= 35078)	Above Mean Kcfsi (N=39484)	Difference
	4.1287	3.5775	.5512***

Panel B: Proportion test Altman Z_score zones of discrimination

	Below Mean Kcfsi (N= 35078)	Above Mean Kcfsi (N= 39484)	Difference
Safe	.3833	.3133	.0699***
Grey	.2074	.1855	.0218***
Distress	.4093	.5011	-.0917***

*Significance levels: *** p-values<1%; ** p-values<5%; * p-values<10%*

Table 10: Panel regression models of earnings management with alternative earnings measures

	PDA	KOT_DA	BART_DA	DD
Variables	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]
<i>Kcfsi</i>	-0.0006*** (0.0002)	-0.0004* (0.0002)	-0.0007*** (0.0002)	0.0007*** (0.0001)
<i>Kcfsi</i> ²	0.0003*** (0.0000)	0.0002*** (0.0001)	0.0003*** (0.0000)	0.0001 (0.0000)
<i>Contraction</i>	0.0007* (0.0004)	0.0005 (0.0004)	0.0007 (0.0004)	0.0002 (0.0003)
<i>Gdp</i>	0.0002*** (0.0001)	0.0002*** (0.0001)	0.0002*** (0.0001)	0.0002*** (0.0000)
<i>Sox</i>	-0.0018*** (0.0004)	-0.0021*** (0.0005)	-0.0015*** (0.0005)	-0.0001 (0.0003)
<i>Time</i>	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0000 (0.0000)
<i>Logta</i>	-0.0011** (0.0004)	-0.0012** (0.0004)	-0.0016*** (0.0004)	-0.0024*** (0.0003)
<i>Lev</i>	0.0083*** (0.0011)	0.0087*** (0.0013)	0.0100*** (0.0012)	0.0032*** (0.0008)
<i>Growth</i>	0.0000 (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000 (0.0000)
<i>Cfo</i>	0.0000** (0.0000)	0.0000*** (0.0000)	0.0000** (0.0000)	0.0000* (0.0000)
<i>Roa</i>	-0.0446*** (0.0057)	-0.0244*** (0.0057)	-0.0507*** (0.0059)	-0.1344*** (0.0049)
<i>Rm_disx</i>	0.0797*** (0.0078)	0.0897*** (0.0087)	0.0885*** (0.0087)	0.0148** (0.0057)
<i>Sdcfo</i>	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)
<i>Sdrev</i>	0.0000 (0.0000)	0.0000 (0.0000)	0.0000** (0.0000)	0.0000 (0.0000)
<i>Lagtac</i>	-0.0093** (0.0032)	-0.0008 (0.0035)	-0.0098** (0.0034)	0.0063** (0.0021)
<i>Constant</i>	0.0287*** (0.0020)	0.0301*** (0.0022)	0.0307*** (0.0021)	0.0279*** (0.0014)
N	79777	79777	79777	79777
R-squared	0.0263	0.0205	0.0302	0.1259

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2

Table 11: Panel regression models of earnings management with alternative stress index

Variables	ABS_DA	Positive_DA	Negative_DA
	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]
<i>Stfsi</i>	-0.0006*** (0.0002)	-0.0009** (0.0002)	0.0001 (0.0003)
<i>Stfsi</i> ²	0.0003*** (0.0000)	0.0004*** (0.0001)	-0.0002** (0.0001)
<i>Contraction</i>	0.0007+ (0.0004)	-0.0010+ (0.0005)	-0.0006 (0.0006)
<i>Gdp</i>	0.0003*** (0.0001)	-0.0003 (0.0001)	-0.0003** (0.0001)
<i>Sox</i>	-0.0018*** (0.0005)	-0.0020** (0.0006)	0.0017** (0.0007)
<i>Time</i>	0.0001*** (0.0000)	0.0001*** (0.0000)	-0.0000* (0.0000)
<i>Logta</i>	-0.0017*** (0.0004)	-0.0011* (0.0005)	0.0022*** (0.0006)
<i>Lev</i>	0.0097*** (0.0014)	0.0103*** (0.0017)	-0.0089*** (0.0016)
<i>Growth</i>	0.0000** (0.0000)	0.0000** (0.0000)	0.0000 (0.0000)
<i>Cfo</i>	0.0000** (0.0000)	-0.0000 (0.0000)	-0.0000* (0.0000)
<i>Roa</i>	-0.0392*** (0.0059)	0.0727*** (0.0057)	0.0970*** (0.0082)
<i>Rm_disx</i>	0.0960*** (0.0090)	0.0793*** (0.0122)	-0.1046*** (0.0120)
<i>Sdcfo</i>	0.0000*** (0.0000)	0.0000*** (0.0000)	-0.0000*** (0.0000)
<i>Sdrev</i>	0.0000 (0.0000)	0.0000 (0.0000)	-0.0000 (0.0000)
<i>Lagtac</i>	-0.0063+ (0.0035)	-0.0607*** (0.0054)	-0.0519*** (0.0053)
<i>Constant</i>	0.0336*** (0.0023)	0.0298*** (0.0028)	-0.0360*** (0.0029)
N	79777	41209	38568
R-squared	0.0252	0.0300	0.0645

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2 except from *Stfsi*= alternative measure of financial crisis as defined by the Federal Reserve Bank of St. Louis

Table 12: Panel regression models of earnings management on financial crisis with Kcfsi when Kcfsi is below the mean with Asian Crisis indicator

Variables	ABS_DA	Positive_DA	Negative_DA
	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]
<i>Kcfsi</i>	-0.0038 (5.35)**	-0.0040 (3.98)**	0.0034 (3.38)**
<i>Contraction</i>	dropped	dropped	dropped
<i>Gdp</i>	-0.0000 (0.62)	-0.0001 (0.99)	-0.0002 (1.40)
<i>Sox</i>	-0.0026 (2.62)**	-0.0019 (1.47)	0.0027 (2.09)*
<i>Time</i>	0.0000 (0.70)	0.0000 (1.74)	0.0000 (0.86)
<i>Logta</i>	-0.0022 (3.68)**	-0.0009 (1.16)	0.0035 (4.33)**
<i>Lev</i>	0.0139 (7.95)**	0.0155 (6.03)**	-0.0134 (5.99)**
<i>Growth</i>	0.0000 (7.68)**	0.0000 (6.49)**	0.0002 (1.21)
<i>Cfo</i>	0.0000 (1.00)	-0.0000 (1.97)*	-0.0001 (2.05)*
<i>Roa</i>	-0.0329 (3.99)**	0.0702 (6.24)**	0.0916 (7.56)**
<i>Rm_disx</i>	0.0858 (7.46)**	0.0849 (4.99)**	-0.0869 (4.95)**
<i>Sdcfo</i>	0.0000 (6.24)**	0.0000 (5.33)**	-0.0000 (5.97)**
<i>Sdrev</i>	0.0000 (0.42)	0.0000 (1.02)	0.0000 (0.62)
<i>Lagtac</i>	-0.0127 (2.39)*	-0.0723 (9.33)**	-0.0587 (7.01)**
<i>Mini_crash</i>	0.0065 (7.80)**	0.0066 (5.51)**	-0.0057 (4.34)**
<i>Constant</i>	0.0314 (9.66)**	0.0237 (5.33)**	-0.0365 (8.36)**
N	37405	19403	18002
R-squared	0.0277	0.0367	0.0643

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2. *Mini_crash* is equal to 1 if year-quarter is equal to 1997Q4, and 0 otherwise

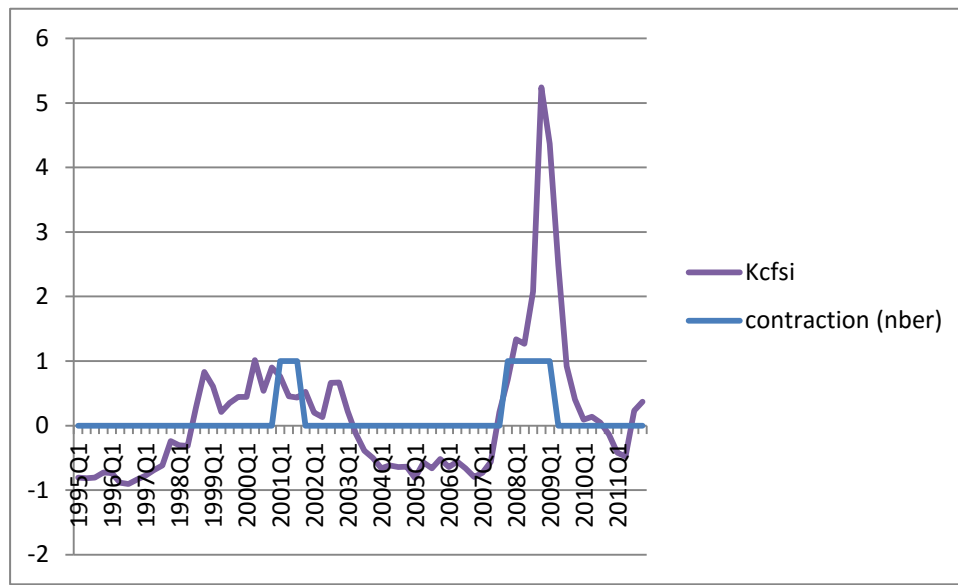
Table 13: Panel regression models of real earnings management on financial crisis with quadratic effects

	Rm_disx	Rm_prod	Rm_cfo
Variables	Coefficient [st_error]	Coefficient [st_error]	Coefficient [st_error]
<i>Kcfsi</i>	-0.0007 (3.08)**	-0.0011 (3.84)**	0.0043 (13.64)**
<i>Kcfsi2</i>	-0.0001 (1.46)	0.0001 (1.47)	-0.0006 (7.77)**
<i>Contraction</i>	0.0016 (4.48)**	-0.0004 (0.74)	-0.0013 (2.03)*
<i>Gdp</i>	-0.0002 (5.22)**	-0.0001 (1.19)	0.0001 (1.06)
<i>Sox</i>	0.0025 (3.59)**	0.0043 (5.37)**	0.0039 (4.93)**
<i>Time</i>	-0.0002 (7.88)**	0.0002 (5.77)**	-0.0001 (4.51)**
<i>Logta</i>	-0.0086 (10.33)**	0.0090 (10.61)**	0.0041 (5.66)**
<i>Lev</i>	0.0002 (0.08)	-0.0004 (0.19)	-0.0018 (0.75)
<i>Growth</i>	0.0000 (17.65)**	0.0000 (6.59)**	-0.0000 (3.27)**
<i>Cfo</i>	-0.0000 (1.12)	-0.0000 (1.68)	0.0001 (3.66)**
<i>Roa</i>	-0.0876 (12.78)**	-0.1519 (18.39)**	0.7297 (68.44)**
<i>Sdcfo</i>	-0.0000 (3.57)**	0.0000 (0.37)	-0.0000 (4.48)**
<i>Sdrev</i>	0.0000 (4.49)**	-0.0000 (0.64)	-0.0000 (1.47)
<i>Lagtac</i>	-0.0076 (3.00)**	0.0004 (0.09)	0.1499 (25.21)**
<i>ABS_DA</i>	0.0559 (9.66)**	0.0570 (5.74)**	-0.0061 (0.41)
<i>Constant</i>	0.0343 (8.49)**	-0.0541 (12.67)**	-0.087 (23.67)**
N	79777	76205	79777
R-squared	0.0729	0.0562	0.3870

Significance levels: *** p-values<0,1%; ** p-values<1%; * p-values<5%; + p-values<10%

Variables defined in table 2. Real earnings management metrics have been computed following the works of Cohen et al. (2008) and Zang (2012)

Figure 1: Comparison of Financial crisis and Business cycle trends over sample period



Chapter 3: Income smoothing, banking crises and the spare tire effect

3.1. Introduction

This paper investigates the association between banking sector distress and income smoothing. Bank loans are a primary source of financing for companies. According to the pecking order theory (Myers and Majluf, 1984), bank loans are the first source of funding that firms will look for when they want to pursue investment opportunities but they lack internal financial resources. In particular, given their information acquisition and processing advantages, banks are fundamental in financing small and more opaque firms that face difficulties to access equity. Given the important role that banks play in the economy, deteriorations in banks' wealth and lending activities have severe real implications.

Finance literature has devoted an increasing effort to investigate the linkage between banking system and country's growth and productivity. Yet, accounting literature is largely silent on the effect of banking system conditions on financial reporting practices. Most of studies analysing the relation between financial reporting practices and macroeconomic variables (i.e., investor sentiment, recessions and financial crises among the others) by considering the presence/absence of the crisis (Jenkins et al. 2009; Johnson, 1999; Choi et al., 2011; Filip and Raffournier et al., 2014) or the intensity of the turbulence overlooking differences in the types of crises. I add to this strand of research by analysing i) whether firms are more likely to exert accounting discretion when they face a banking crisis (respect to other types of crises) and ii) incentives are different depending on the extent to which firms can substitute bank loans with alternative sources of financing.

I rely upon prior studies in macroeconomy that point out the importance of distinguishing among diverse types of crises given their diverse consequences at corporate and systemic level. Specifically, banking crises tend to have a stronger negative impact respect to other types of crises because a relevant source of financing is impaired. As firms face more difficulties to obtain a key financial resources (i.e., bank loans), they will look for

alternatives (e.g. bond and equity markets) to keep pursuing their investment and growth opportunities. The need to seek alternative source of financing generates an incentive to smooth earnings in order to appear less risky and attract new financiers.

Moreover, I contend that the effect would be different depending on countries' institutional characteristics. Prior finance studies document that the negative effect of banking crises on corporate performance and investments is attenuated in countries where the substitution towards alternative sources of financing is more feasible thanks to a better information environment (Levine et al., 2016). Likewise, I expect that the positive association between banking crisis and income smoothing is stronger in countries with stricter regulatory regime because it facilitates the access to alternative funds.

I test my hypotheses on a sample of European firms listed in UK, France, Germany, Italy and Switzerland for the period 2001-2011. In particular, I exploit cross-country variation in the level of distress of country's banking system over time by developing a country-level indicator of banking crisis. Empirical evidence supports my hypotheses showing that income smoothing is positively associated with the level of distress in the banking system and the positive association is weaker in countries with weaker institutional environment.

I corroborate my results by running several robustness tests using a firm-fixed effects structure as well as alternative measures for earnings management, banking crisis and institutional environment. Given the difficulties to disentangle the effect of banking crisis from that of other concurrent events, I separately consider the two crises occurring in the sample period: the crisis at beginning of 2000s and the last financial crisis. The two crises were quite different in length, intensity and the extent to which the banking system was hit. In particular, the 2007/2008 financial crisis had a stronger banking component than the previous one. In line with the diverse nature of the crisis, I find that results are limited to the last episode of crisis.

Furthermore, I exploit cross-sectional variation in firms' exposure to banking crisis. I document that the positive association between income smoothing and banking distress is weaker for larger firms and firms with more tangible assets while it is stronger for firms that are more financially constrained. Thus, the incentive to smooth earnings when banking system is under distress is greater for firms that are more bank-dependent (i.e., small firms) and for firms that have higher need for external financing (i.e., firms with greater financial constraints). Contrariwise, the incentive is lower for firms that hold more tangible assets and can use them as collateral to attenuate the negative effect of the banking crisis. These differences are more pronounced in countries with stronger institutional environment, in line with prior findings that firms smooth earnings more when the country regulatory regime enables the substitution to alternative source of finance.

In an attempt to provide further evidence on the role of alternative sources of financing in explaining my findings, I analyse firms' incentives to smooth earnings during a banking crisis in absence and presence of bond markets. In particular, I consider firms' incentives to smooth earnings in Germany before and after the creation of alternative bond markets for SMEs in 2010. Consistent with my prior arguments, I find evidence that, during the last financial crisis, German SMEs smoothed earnings more once the new markets were introduced namely when alternative sources of financing improved. As a final test, I also consider the consequences of smoothing earnings when a banking crisis occurs by looking at the impact on the probability of bankruptcy. Empirical evidence suggests that firms that smooth earnings more during the crisis are less likely to be distressed in line with the idea that income smoothing facilitates firms' access to financing and, hence, reduces the probability of distress.

The paper adds to diverse strands of research. First, I speak to accounting studies analysing the relation between financial reporting quality and macroeconomic cycles. Prior

studies just considered the occurrence of a financial crisis (i.e., Choi et al., 2011; Filip and Raffournier, 2014) or of a recession (Johnson et al., 2009; Jenkins, 1999) without considering heterogeneity in financial crises' intensity and types. I exploit such source of heterogeneity by explicitly considering the banking component of distress in financial markets. In particular, I argue and provide empirical evidence that the incentives for exercising accounting discretion are different when the crisis has a banking origin respect to other types of crisis because of the negative impact of banking crisis on firms' financing. Furthermore, in an attempt to operationalize banking sector distress, I create a country-based indicator of banking (and equity crisis) thus adding to recent studies interested in the computation of financial stress indices (IMF, 2008).

Second, I document that the incentives to smooth earnings as banking conditions deteriorate are contingent upon countries' institutional characteristics and the actual possibility to tap alternative funds. In other words, firms will adjust their earnings as banking conditions worsen as long as alternative sources of financing are available and accessible to firms. Prior studies investigating financial reporting practices after changes in banking conditions are few. The closest one is Lo (2014) who shows that firms whose banks are more exposed to the Asian financial crisis are more likely to issue managers' forecasts afterwards. However, these studies focus just on one country (i.e., US) without considering the possibility that firms' substitution towards alternative sources may not occur because of weak institutional environment and underdeveloped capital markets. I deepen this idea by considering the case of Germany where new bond markets tailored to SMEs were created to facilitate their access to finance. Noteworthy, the creation of novel bond markets triggered SMEs to smooth earnings more to tap the new markets.

Lastly, the study adds to international literature on earnings management. There is consistent evidence that earnings informativeness is higher in countries with stronger

institutional regime (Leuz et al., 2003; Burgstahler et al., 2006; Gopalan and Jayaraman, 2012) because of the stronger disciplining effect over managers' incentive to manage earnings. My work suggests that the benefits of a better institutional environment can vary over time as a function of the financial cycle. In particular, income smoothing is lower in countries with stricter institutional regime when banking system properly works but this is less likely to be the case when banks face difficulties and bank lending activity is threatened. Further works can investigate the time-variation in the benefits of better institutional environment and its disciplining effect on earnings management.

The paper proceeds as follows. In section 2, I review the relevant literature and develop my hypotheses. Research design and variable measurement are discussed in section 3. Section 4 provides descriptive statistics and results for the multivariate analyses. Additional analyses and robustness analyses are reported in section 5 and section 6 concludes.

3.2. Prior literature and hypotheses development

3.2.1. Heterogeneity in financial crises

The association between changes in macroeconomic conditions and financial reporting practices has received scant attention in the literature. Most of prior works have focused on business cycles (i.e., Jenkins et al., 2009, Johnson, 1999) or investor sentiment (Simpson, 2013) rather than financial crisis. Furthermore, the few exceptions such as Kim et al. (2006) and Choi et al. (2011) just considered the absence or existence of a financial crisis without distinguishing among the different types of crises and which segments of financial markets were involved.

Yet, previous studies in macroeconomy analysing financial crises (IMF, 2008; Claessens and Kose, 2013) pointed out the importance of distinguishing among different types of crises as they tend to have diverse characteristics. Thus, I challenge prior works

investigating the association between financial crises and accounting practices by adopting a more fine-grained perspective that takes into account heterogeneity in financial crises. In particular, I focus on the distinct effect of the banking crises with respect to equity crises.

Crises involving securities markets are associated with a drop in confidence and an increase in information asymmetries which in turn strengthen external scrutiny (thus increasing the cost of exerting accounting discretion). Instead banking crises are episodes during which the capital of the banking sector has been depleted resulting in a negative net worth of the banking sector. Claessens et al. (2012) and IMF (2008) point out that the negative implications of financial crises are particularly severe when banks are involved because an important source of financing is threatened. In particular, Claessens et al. (2012) suggest that, when the burst involves banks, it is more likely to have real consequence because the access to financing is more likely to be impaired. To sum up, banking crises are characterized by a credit-channel impact that is less relevant in other types of crises (e.g. currency crises, sovereign debt crises and asset price bubbles).

As banking conditions deteriorate, firms bear two negative consequences. Firstly, the credit channel associated with banking crises implies a drop in lending due to banking difficulties that hinders firms from pursuing growth and investment opportunities. The impossibility to obtain debt leads firms to look for alternative source of financing in order to keep their business operations.

Secondly, bankers will change their investment decisions as a result of the turmoil. Following the distress, banks become more risk averse preferring less risky firms (i.e. flight to quality) and requiring a higher return from their investment (Hakkio and Keeton, 2009). Indeed Hildebrand et al. (2012) document that, after the financial crisis, German banks changed their investment strategies preferring securities that were eligible as collaterals in operations with central banks in line with a flight to quality phenomena. Above all, lenders

become more information-sensitive and put more attention on accounting information than before (Mitton, 2002). Recent finance theories (Ruckes, 2004; Dell’Ariccia and Marquez, 2006) argue that banks’ lending standards change as a function of credit cycles. During periods of credit expansion, lenders apply low underwriting standards as the high credit demand reduces the benefits of firm specific credit analysis and monitoring. Instead, when credit conditions worsen, lenders are more suspicious about borrowers’ ability to meet obligations so that they will exert stronger monitoring and require more information. Consistent with this idea, Shivakumar et al. (2011) document that the association between bond returns and managers’ forecast is stronger in a period of market turmoil. Likewise Lisowsky et al. (2015) show that, subsequently to 2007-2008 financial crisis, banks collected more unqualified audited financial statements.

Thus, the access to bank financing is hindered by lack of banks’ difficulties to finance firms and stricter lending requirements. These two effects will inevitably affect firms’ incentives to exert accounting discretion, in general, and smooth earnings, in particular.

3.2.2. Income smoothing and banking crisis

Reporting a smooth path of earnings is a common practice among firms. Under normal circumstances, firms have incentives to smooth earnings for two main reasons. First, firms desire to report a smooth path of earnings to dampen the natural fluctuations in the stream of earnings and reduce the perceived risk of the firm. According to Graham et al. (2005), managers prefer to report a steady path of earnings because they believe that “market hates uncertainty” and smoothing earnings can help dampening the risk perceived by capital providers and easing the access to capital. Indeed, firms with smooth earnings are associated with a lower perceived bankruptcy risk (Trueman and Titman, 1988) and lower return volatility (Markarian and Gil-de-Abornoz, 2014). Likewise, smooth earnings enable firms to maintain favourable credit rating (Jung et al., 2013) facilitating the access to

bond markets. Moreover, insiders have personal incentives to smooth earnings to conceal negative performance, protect their job (De Fond and Park, 1997) and keep the consumption of private benefits of control (Leuz et al., 2003)⁶³.

Yet, income smoothing is not costless. As long as the reporting of smooth path of earnings is artificial and does not correspond to reality, it exposes firms to a loss in reputation and litigation risk if the discrepancy is discovered. This is particularly the case when external actors exert a strong monitoring over firms' business operations and financial reporting practices (Dou et al., 2013). Furthermore, when the discrepancy in the smoothing is detected, the loss in reputation can lead to higher cost of capital. Hence, the ultimate choice of smoothing earnings depends on an evaluation of the associated costs and benefits.

As banking conditions deteriorate, income smoothing can help firms to obtain alternative sources of financing by dampening the perceived risk of the firm. Indeed, there is empirical evidence that firms will manage earnings upwards both surrounding seasoned equity offerings (Teoh et al., 1998a, 1998b, Shivakumar, 2000) and debt issuances. Likewise, firms can have incentives to smooth earnings to improve the chances to access new financing in a situation of overall turmoil. Yet, the alternative sources of financing to bank loans are traditionally more information-sensitive than bank loans. Contrary to bankers, bondholders and equity holders bear higher acquisition and processing costs lacking the possibility to directly access information and monitor firms. Consistently, Bharath et al. (2008) show that firms with access to bond markets are more transparent than firms relying upon bank financing. Furthermore, Lo (2014) document that US firms enhanced their disclosure policies when their banking partners were hit by the Asian financial crisis to

⁶³ In line with such contrasting incentives, the evidence on the benefits of income smoothing is mixed. If some studies suggest that income smoothing has a positive effect on cost of debt (Gassen and Fulbier, 2015), credit rating (Jung et al., 2013) and perceived volatility (Markarian and Gil-de-Abornoz, 2014); others show that income smoothing has no effect on cost of equity (McInnis, 2010) and firm value (Rountree et al., 2008) or even a negative effect (Bhattacharya et al., 2003).

improve the access to alternative financial resources. Hence, firms should have lower incentives to exert accounting discretion and smooth earnings.

Thus, firms want to report smooth earnings to appear as less risky and not reveal volatile earnings. External outsiders do prefer firms with smooth earnings but, at the same time, they want that the smooth path is not artificial. Indeed Rountree et al. (2008) find that shareholders do reward lower volatility of cash flows but this is not true when it is associated with income smoothing. Hence, if the benefit of smoothed earnings is a lower perceived risk, the cost is a loss in reputation and negative market effects (i.e., cost of capital, liquidity) when the discovery occurs. Under normal circumstances, banks require a lower demand for accounting information so that firms can report smooth earnings maintaining external appearance to be low-risk. When banking conditions worsen, stronger lending requirements imply that firms might face more difficulties to report smooth earnings. Banks will not only strengthen their requirements but they also have the means to access private information, monitor firms and evaluate the truthfulness of the smooth path of earnings. Yet, given the overall situation of turmoil, firms will do everything they can to keep their operations and will take the risk of smoothing earnings to access the sources of financing that they need. Given that, my first hypothesis is the following one:

H1: As banking conditions worsen, firms are more likely to smooth earnings

3.2.3. The spare tire effect

Prior works point out that the negative consequences of banking crises depend on the ability of firms to substitute towards alternative sources of financing (this is the so-called spare tire effect that was also mentioned by Greenspan, 1999). As long as firms are able to access alternate sources, the negative consequences should be attenuated. Levine et al. (2016) also show that the negative consequences of banking crisis are mitigated in countries

that have a good institutional environment where effective stock markets and/or the legal infrastructure facilitate transactions and, hence, the substitution effect.

At the same time, there is ample literature showing that institutional characteristics shape managers' financial reporting choices, including income smoothing (Leuz, 2010; Leuz and Wysocki, 2016). Strong institutional regimes reduce managers' ability to engage in opportunistic reporting choices. Haw et al. (2012) document that a stricter regulatory regime is related to higher information content of earnings announcement, whereas Ball et al. (2000), Leuz et al. (2003) and Burgstahler et al. (2006) relate it to higher quality of financial reporting. In addition, Burgstahler et al. (2006) argue that the prevalence of market forces to "political" ones increases the demand for high quality disclosure as arm's length investors are more likely to rely upon financial statements to make their decisions. The prevalence of arm's length type of financing raises firms' incentives to improve the credibility of accounting information and make accounting choices that meet capital providers' expectations and facilitate the access to financing. Given that, it is reasonable to expect that the institutional characteristics of the country can affect managers' incentive to smooth earnings as banking conditions worsen.

On one hand, the use of accounting discretion should be more likely in countries with weaker institutional regime where firms have more flexibility and discretion in their accounting choices. Indeed, the negative consequences of dubious accounting practices (e.g. reputational costs and negative markets effects) will be greater in countries with strong regulatory regimes and more developed capital markets. Hence, we should expect that the incentives to smooth earnings during the banking crisis are lower in countries with stronger institutional environment.

On the other hand, the incentives to smooth earnings to access substitutive sources of financing will depend on the extent to which such alternatives are available and can be

accessed by the firm. In countries with weaker institutional environment, the availability of alternatives is weaker and the lax regulatory regimes inhibits the access to alternative markets. In more developed countries, the spare tire effective is more likely to occur because alternative markets do exist and are relatively effective. Moreover, the stronger institutional environment better assures investors that the reported path of earnings is true rather than the result of manipulation. Thus, the presence of effective alternatives increases the likelihood that firms are successful in tapping the market raising the incentives to smooth earnings. Lastly, as countries with weaker institutional regime rely more on relationships and informal contracts, the reliance upon accounting numbers will play a less prominent role in the access to capital lowering incentives to adjust earnings as banking conditions deteriorate. Hence, I contend that the positive association between banking crisis and income smoothing is weaker in countries with worse legal infrastructure where the lower possibility to access alternative sources of financing and greater reliance upon private channels of information reduce firms' incentive to take the risk of smoothing earnings.

H2: The positive association between banking crises and income smoothing is weaker in countries with weaker institutional environment

3.3. Research design

3.3.1. Banking distress index

The measurement of distress in banking systems and financial markets represents a challenge for researchers since we cannot directly observe it. Given that, extant research looked for observable manifestations of financial distress that can be used as its proxy (Kliesen et al., 2012). A first approach is to consider historical narratives and chronology of well-known financial turmoil episodes. Yet, this approach has two main caveats. First, the use of precedents, survey-based and professional consensus to measure financial distress introduces a subjective element that can limit the generalizability of the findings. Second, a

historical-based operationalization of financial turmoil is more consistent with the conception of financial distress as a sporadic and unforeseeable event. Moreover, as pointed out by IMF (2008), the mere focus on the occurrence or absence of the shock overlooks the intensity of the distress, implicitly assuming that episodes are similar. Given that, a historical-based methodology does not appear suitable to capture the peculiar dynamics of financial markets.

An alternative method is to use indexes based on a time series of a wide array of financial indicators able to pick up the variability of financial market conditions (e.g. the financial stress index developed by IMF). The underlying assumption is that financial indicators used to construct the index move together and they are manifestations of a latent factor (i.e., financial distress in the system) (Kliesen et al., 2012). Higher level of indexes are usually associated with increased financial turbulence and extreme values signal the occurrence of a crisis (Illing and Liu, 2006; IMF, 2008). Thus, the index is a continuous and high frequency measure able to depict the dynamics of financial market conditions as well as to assess the severity of the conditions (Claessens et al., 2012). Aftermath the last episode of financial crisis, several works tried to compute an index of financial crisis. I follow this approach and prior works to compute country-level indicators of banking (and equity) distress. In particular, I combine the volatility of banking sector and the banking sector decline to create the indicator of distress in banking system. Instead, stock-bond correlation, stock market decline and time-varying stock volatility are considered for the computation of equity market distress. The procedure for the computation of the two indices are described in detail in Appendix C.

3.3.2. Identification strategy

My main identification strategy relies upon the temporal and cross-country variation of banking distress. In particular, I run the following regression model where income smoothing is regressed upon yearly indicators of banking distress:

$$Smooth_{ijt} = \beta_0 + \beta_1 Banking_Crisis_{jt} + \beta_2 Equity_Crisis_{jt} + \beta_n X_{ijt} + \varepsilon_{ijt} \quad (1)$$

My coefficient of interest is β_1 which is expected to be positive and statistically significant according to hypothesis 1.

Income smoothing ($Smooth_{ijt}$) is measured by using 4 different proxies⁶⁴. The first one ($Icorr$) is the correlation between changes in total accruals⁶⁵ and changes in cash flow from operations⁶⁶, both scaled by total assets (Leuz et al., 2003). $Icorr$ is multiplied by minus one so that larger values correspond to more income smoothing. The second one ($Idev$) is the standard deviation of income before extraordinary items (scaled by lagged total assets) divided by the standard deviation of cash flow from operations (scaled by lagged total assets) (Leuz et al., 2003). Again $Idev$ is multiplied by minus one so that larger values (i.e. values closer to 0) represent more income smoothing. The third proxy is the correlation between discretionary accruals and pre-managed earnings multiplied by minus one (Tucker and Zarowin, 2006) ($Itucker$)⁶⁷. As a final measure, I follow Dou et al. (2013) and use a

⁶⁴ Income smoothing proxies are used in most cross-country studies of earnings management (Leuz et al., 2003; Burgstahler et al., 2006; Gopalan and Jayaraman, 2012). An alternative proxy is the use of discretionary accruals according to the modified Jones model (1991). Both measures suffer of well-known measurement problems. Yet, an additional measurement issue would occur in the case of discretionary accruals as computation requires that the non-discretionary accruals are estimated by country-industry-year so that part of the variability that I am interested it will be stripped out. For this reason, I use the discretionary accruals as a robustness check.

⁶⁵ Total accruals are computed following the balance sheet approach as change in current assets minus change in cash and equivalents minus change in current liabilities (net of short-term debt) minus depreciation.

⁶⁶ Cash flow from operations is defined as the difference between EBIT and total accruals.

⁶⁷ I use a rolling window of 5 years for the main measures. In additional tests, I will also use measures computed on a rolling window of 3 and 4 years.

composite measure through a principal component analysis of the three measures (*Smooth*)⁶⁸.

The indicator of banking and equity distress are computed following the indications of IMF (2008) as reported in section 3.1.⁶⁹ X is a vector of control variables to account for firm-level determinants of income smoothing (Gaio, 2010; Gopalan and Jayaraman, 2012; Dou et al., 2013). I include a control for firm performance proxied with an indicator variable equal to 1 if the firm reports a loss and 0 otherwise (*Loss*); firm size (*Size*) measured as the logarithm of total assets as larger firms have more stable and predictable earnings; firm leverage (*Leverage*) measured as total debt divided by total assets as more leveraged firms are more interested to smooth earnings to dampen their bankruptcy risk (Trueman and Titman, 1988). I also control for sales growth (*Growth*), proxied by change in net sales scaled by beginning-of-year net sales, and cash flow volatility (*Cfo_volatility*), defined as standard deviation of cash flow from operations scaled by lagged total assets, as firms with high growth and more volatile cash flows are characterized by greater uncertainty that could affect their choice to smooth earnings. Lastly, I add the tangibility of assets (*Oplev*), measured as net property, plant and equipment divided by total assets; cash flow from operations (*Cfo*) scaled by total assets; length of the operating cycle (*Cycle*); firm's distress (*Distress*) defined as an indicator variable equal 1 if Altman Z-score (1978) is lower than 2.9 and Tobin's Q (*Tobin_q*) to account for further characteristics of firm's business.

In addition to firm-level determinants, I also include a trend variable to account for time-trend occurring in the sample period (Bergman and Roychodwurry, 2008; Cohen et al., 2008) and an indicator variable equal 1 if firms uses IFRS accounting standards to account

⁶⁸ The principal component analysis identifies one component (eigen value greater than 2) explaining more than 60% of the variance.

⁶⁹ As a robustness test, we use an indicator variable to identify banking crisis taken from Laeven and Valencia (2012). Results do not change if the indicator variable is used. Yet, the use of the indicator variable gives us a more nuanced description of the distress since it captures the intensity of the distress rather than the mere occurrence.

for the introduction of IFRS in 2005 (Barth et al., 2008). Lastly, I include country and industry fixed effects⁷⁰. Standard errors are clustered at firm-level to account for serial correlation in standard errors.

All variables are winsorized at 1% value and are defined in Table 1.

In order to test my second hypothesis, I include interaction terms for countries' institutional characteristics in model (1) so that the model is the following one:

$$Smooth_{ijt} = \beta_0 + \beta_1 Banking_Crisis_{jt} + \beta_2 Banking_Crisis_{jt} * Institutional_regime_j + \beta_3 Equity_Crisis_{jt} + \beta_n X_{ijt} + \varepsilon_{ijt} \quad (2)$$

The coefficient of interest is the interaction term between banking distress and institutional environment (β_2). According to hypothesis 2, it should be negative and statistically significant. *Institutional_regime* is a categorical value defined on the basis of the classification proposed by Leuz (2010). Leuz (2010) identifies three clusters of countries on the basis of institutional and capital market characteristics. Thus, I create a categorical variable taking three values: 1 if the country belongs to the first cluster (i.e., outsider oriented economy), 2 if countries belong to the second cluster (i.e., insider oriented economies with strong institutional regime) and 3 if they are included in the third cluster (i.e., insider oriented economies with weak institutional regime). Model specifications and control variables are defined as in model (1).

3.3.3. Data and sample selection

⁷⁰ Industries are defined on the basis on the industry level 6 subsector code.

I run my analyses on a sample of European listed firms for the period 2001-2011. I focus on the five most important European countries: France, Germany, Italy, Switzerland and United Kingdom (UK)⁷¹. I use a European setting rather than a US one because most of the turbulence in financial systems during my sample period started in US and, then, it spread out to other countries. Hence, the inclusion of US would lead to a comparison between countries where the crisis originated and others that were subsequently affected. Moreover, the analysis of European countries reduces sources of variability due to different types of crises (i.e., emerging vs developed countries) making them more comparable. Lastly, the reduced set of countries enables me to compute banking and equity stress indicators that combine a sufficient degree of precision at country level with enough homogeneity across countries and time⁷².

Financial data are collected from Thomson Reuters Datastream⁷³. Datastream is then combined with Bloomberg to get financial markets related variables to compute the banking and equity distress indicators. I drop foreign firms, firms with missing values for the variables of interest for the full sample period and across the period and firms that changed their fiscal year end during the sample period. I also delete firms in financial industries. The final sample is given by 11598 firm-year observations and it changes across specifications given the diverse requirements to compute the measures. All data have been converted into euro by

⁷¹ 39% of the observations are located in UK, 23% in Germany, 22% in France, 8% in Italy and 7% in Switzerland.

⁷² Although a small set of countries can limit the benefits of cross-country heterogeneity, the five countries exhibit variability in their institutional features. For instance, UK is generally viewed as an outsider economy within Europe where legal institutions and accounting regulations are designed to meet the demand of arm's length investors. Instead, Germany and Italy are typically referred to as insider economies where firms establish close connections with banks and financial institutions and accounting rules are meant to facilitate contracting (Leuz, 2010). In addition, the reduced set of countries should reduce potential issues in the reliability and comparability of data (Dechow et al., 2010).

⁷³ I also replicate the analyses by using Compustat Global and results are unaffected by the choice of source of data.

using the last available WMR exchange rate for the month-year corresponding to the firms' fiscal year end⁷⁴.

3.4. Results

3.4.1. Descriptive evidence

The first step is to inspect the descriptive statistics for the variables of interest. Graph 1 and Graph 2 show the trend of banking index crisis over time. The index ranges between -2.0122 (i.e., 2005) and 2.0356 (i.e., 2008). The index exceeds 0 in two cases: the crisis occurred at the beginning of 2000s (i.e., high-tech bubble coupled with accounting scandals) and the last financial crisis (2007-2008). The index assumes greater value in the last episode of crisis suggesting that the 2007-2008 had a strong banking component. The pattern occurs across all countries even if with diverse timing and intensity. A formal Anova analysis confirms the descriptive evidence suggesting that the value of *Banking_Crisis* is statistically different across countries⁷⁵.

Table 2 Panel A reports the descriptive statistics for the other variables of interest while Table 2 Panel B shows the correlation matrix. Average values of income smoothing are 0.704, -.784, 0.665 and 0.032 for *Icorr*, *Idev*, *Itucker* and *Smooth*, respectively. Hence, income smoothing is quite a pervasive phenomenon in the sample. Firms are quite large (the average value is 12.399 while the median value is 12.212) and 63% of firms can be classified as distressed. Moreover, it seems that firms have low growth opportunities: the

⁷⁴ The conversion is based upon the *accounts_currency* data item in Datastream as well as the currency reported at the moment of downloading the data. If the currency was missing by using one of the two items, I manually inspected them to identify the one. Note that there are missing values for the exchange rates due to firms using Cayman Islands dollars (for which WMR does not provide the exchange rate) and two firms for which the fiscal year end is missing in the merging process. Moreover, the overall variable has 520 missing observations that are concentrated at the beginning of the sample period because the time-series for the exchange rate for most of the currency (excluding those for US dollar and UK sterling) start after 1998. This implies that I do not have a complete time-series and this can affect firms located in Switzerland for the smoothing variables.

⁷⁵ Post-hoc tests suggest that the average value of the index for UK is statistically different with respect to the other countries.

average value of growth, cash flow volatility and Tobin's Q are relatively low. Lastly, firms are quite profitable. Only 20% of firms report losses and the average value for cash flow from operations is 7.9%.

The correlation matrix reported in Table 2 Panel B shows that the four measures of income smoothing are positively correlated among each other. Moreover, they are positively correlated with *Banking_Crisis*, in line with my expectations. *Banking_Crisis* is also positively related with loss, cash volatility and distress while it is negatively correlated with size, growth and cash flow from operations as we should expect.

3.4.2. Multivariate analyses: first hypothesis

Table 3 reports the findings of model (1) in which I regress income smoothing on banking and equity distress indicators. My coefficient of interest is β_1 which I expect to be positive and statistically significant.

The models are statistically significant across all four specifications and R2s range from 12.5% to 15.2%. Control variables are aligned with prior works: loss-making firms smooth earnings less while larger firms are more likely to report a smooth path of earnings. Likewise, firms with greater cash flows from operations and with lower probability of bankruptcy are also more likely to smooth earnings. Lastly, I find that firms with higher Tobin's Q exhibit less smoothed earnings. Greater Tobin's Q suggests presence of greater growth opportunities and, hence, sales and cash flows are more volatile. Given that, firms with greater Tobin's Q are less likely to report a smooth path of earnings.

Above all, the coefficients for equity crisis are not statistically significant while the coefficients for banking crisis are positive and statistically significant at 5% level, in line with my first hypothesis⁷⁶. Thus, as the distress in banking sector increases, firms report

⁷⁶ Filip and Raffournier (2014) document that income smoothing decreased after 2008-2009 financial crisis. They consider the period 2006-2009 as their sample period and compare the average value of income

smoother earnings⁷⁷. The difficulties to obtain debt financing trigger firm to exert accounting discretion to appear as less risky and facilitate the access to alternative sources of financing⁷⁸.

3.4.3. Multivariate analyses: second hypothesis

In order to test my second hypothesis, I compare the association between income smoothing and banking crisis across the five countries. My coefficients of interest is β_2 namely the interaction term between banking crisis and institutional regime. In particular, according to my expectations, the positive association between banking distress and income smoothing should be stronger (weaker) in countries with better (worse) institutional regime (i.e., cluster 1 vs other clusters). The results are reported in Table 4.

All the models are statistically significant at 1% level and R2s go from 12.7% to 15.3%. Control variables are unaffected by the inclusion of the interaction variable. The coefficient for *Equity_Crisis* is still not statistically significant at conventional levels. Consistent with prior works (Leuz et al., 2003), the coefficients for Cluster 2 and Cluster 3 are positive in column (1) and (2) suggesting that income smoothing is greater in countries with weaker institutional environment. The coefficient for banking distress is positive and

smoothing for the crisis period, defined as 2008-2009, with the pre-crisis period (i.e. 2006-2007). I find similar evidence by using their research design. Looking at the trend of income smoothing over the sample period (2001-2011), it is possible to observe an increase in income smoothing in 2007-2008 and a reduction afterwards. Hence, results might be affected by the definition of the crisis and suggests the importance of considering a more nuanced measure of banking crisis that it is better able to capture the dynamics and the intensity of distress.

⁷⁷ In the previous chapter, I provide empirical evidence for a U-shaped relation between earnings management (as proxied by the absolute and signed value of discretionary accruals) and the intensity of the financial crisis. Given that, I replicate the analyses by adding a squared term for banking crisis but I do not find evidence for a non-monotonic association between income smoothing and banking distress. However, I do find evidence that the relation between earnings management and financial crisis is non-linear and U-shaped as in the prior chapter. Furthermore, the association is stronger for countries with weaker institutional environment and it is mainly due to the banking component.

⁷⁸ A formal t-test for the difference between the two coefficients suggests that the coefficients of banking and equity crisis are statistically different at 10% level consistent with the idea that it is the banking component of financial crisis to influence firms' incentives to smooth earnings. Furthermore, I replicate my analyses by using a composite indicator of financial distress that combines the indicators of distress for equity markets, banking system, bond markets, currency markets and money markets. I still find evidence of a positive association between the composite indicator and income smoothing suggesting that the association between financial market dynamics and income smoothing is due to the banking component of the financial stress.

statistically significant across the four specifications indicating, that in countries with stronger institutional features, income smoothing is positively associated with banking distress. Above all, the positive relation between banking crisis and income smoothing is weaker in countries with weaker institutional regimes. Noteworthy the coefficients for the interaction term with Cluster 2 and Cluster 3 are statistically different at 1% level. Hence, in line with my second hypothesis, I find empirical evidence that firms are more likely to smooth earnings as the conditions in the banking system in countries where institutions facilitate the substitution towards alternative sources of financing. Instead, in countries with weaker institutional environment, the incentives are lower because the alternative sources of financing are not easily accessible and private channels of information play a more important role than accounting numbers⁷⁹.

3. 5. Sensitive Analyses

3.5.1. Robustness tests

I corroborate my findings by running a battery of robustness tests. I adopt alternative models specifications using country-trend, country-year fixed effects⁸⁰, additional control variables (i.e., level of capital market development, financial depth and additional indicators of financial markets' distress) and diverse ways of clustering errors. In addition I run firm fixed effects models to account for potential time-invariant unobservable firms' characteristics that can affect firms' responsiveness to banking crisis. Moreover, I also use lagged values of independent and control variables to attenuate reverse causality concerns

⁷⁹ In un-tabulated tests, I re-run the analyses by including the interaction terms between institutional regime and equity crisis. Results largely hold by including the additional interaction terms (except for *Ituker* and *Smooth*). Noteworthy, the interaction terms for equity crisis are positive rather than negative. As a further test, I add interaction terms between the institutional variables and all control variables. I still find evidence that the positive association between banking crisis and income smoothing is weaker in countries with laxer institutional regime.

⁸⁰The inclusion of country-trend and country-year fixed effects is important to attenuate the concerns that the results are due to concurrent events happening in the country. Yet, given the slow-moving nature of the measures, the concerns cannot be definitively ruled out.

(Baker and Wurgler, 2006; Bergman and Roychowdhury, 2008). Findings and conclusions (untabulated) are robust to these alternative specifications. Lastly, I use different proxies for the variables of interest.

First, I adopt diverse measures of earnings management based on discretionary accruals. A potential concern that one might have is that income smoothing is slow moving and it takes time to adjust so that disentangling unrelated economic shocks and institutional changes can be problematic. Given that, I compute discretionary accruals according to the Modified Jones model (Jones, 1991) and performance-matched accruals (Kothari et al., 2005) that should be less slow moving in nature⁸¹. The results for the alternative proxies are reported in Table 5 Panel A. I obtain similar results by using these alternative proxies⁸². Discretionary accruals are greater as banking distress increases but this is less likely for firms located in countries with weaker institutional environment⁸³.

Moreover, I replicate the analyses by using an alternative measure of banking crisis. Rather than using the index for banking crises, I use a dichotomous variable defined on the basis of Laeven and Valencia (2012)⁸⁴. Table 5 Panel B shows the findings. I still find evidence that income smoothing is higher after the occurrence of the banking crisis. Indeed, the coefficient for the dummy variable is positive and statistically significant in model specifications and the interaction terms with the institutional variables are also negative and statistically significant.

⁸¹ I use the balance sheet approach to compute the measures and the models are estimated without intercept in line with Kothari et al. (2005).

⁸² Noteworthy, when I run a principal component analysis on all the measures (both income smoothing and earnings management, I obtain two factors: one for the income smoothing and one for discretionary accruals. This suggests that the measures are capturing different aspects of earnings informativeness. Given that, finding similar evidence for the discretionary accruals reduce concerns for the slow-moving nature of income smoothing.

⁸³ As an additional test, I run tobit regressions in an attempt to distinguish between positive and negative discretionary accruals. I find similar evidence for both positive and negative discretionary accruals.

⁸⁴ The variable is equal 1 after 2008 for all countries except for UK where the crisis started in 2007.

Lastly, I re-run the tests by using two other proxies for institutional regime: the anti-director index developed by Djankov et al. (2008) (who captures the ease with which transactions occur in a country) and the rule of law as computed by Kaufmann (2007). Results are reported in Table 5 Panel C. The evidence using such diverse measures is consistent with the results previously reported. The main effect for *Banking_Crisis* is now negative and statistically significant at 5% level while the interaction terms are positive and statistically significant. According to the new definitions of the institutional variables, greater (lower) values of the variable indicate countries with stronger (weaker) institutional regime. Thus, the negative main effect for *Banking_Crisis* refers to the association between income smoothing and banking crisis for the country with the weakest institutional regime (i.e., Italy) which is in line with the results reported in Table 4⁸⁵.

3.5.2. Banking and equity distress

A key challenge of my research design is to isolate the effect of distress in banking system with respect to other events occurring at the same time and, in particular, the effect of equity crises. So far, I relied upon a cross-country comparison of the two crises. Yet, the correlation between the indicators is particularly high (.90) so that a potential concern is to which extent the banking distress index captures something specific about the banking system.

Given that, I replicate by analyses by splitting the sample period before and after 2006 in order to analyse the two episodes of crisis occurring in the sample period in isolation (i.e., 2001-2002 vs 2007-2008). As I already point out, the value of the banking distress

⁸⁵ The focus on specific aspects of the regulatory regime also helps to shed light on which institutional characteristic is responsible for my evidence. Indeed, the operationalization based on the clusters developed by Leuz (2010) consider both capital market characteristics and regulatory regime. I do not find similar evidence if measures for capital market forces are used. On the contrary, when capital market forces are considered, the interaction terms are only significant for *Icorr* thus suggesting that it is the regulatory regime rather than capital market development to drive the results.

indicator is greater for the second episode of crisis, in line with the definition of the last financial crisis as a banking crisis (Laeven and Valencia, 2012). Results are reported in Table 6. Panel A shows the empirical evidence for the sub-period 2006-2011 while Panel B shows the results for the period 2001-2005.

Consistent with my expectations, the results hold only for the second period (i.e., banking crisis) while they disappear for the first period (i.e., equity crisis)⁸⁶. Although suggestive, this analysis has two main drawbacks. First, the two crises occurred before and after the adoption of IFRS and other EU rules (i.e., European directive on transparency among the others). The passage of the rules can affect the use of the accounting discretion as well as its “value”. Second, the two crises had a different length and real implications other than different nature.

3.5.3. Differential exposure to banking crisis

The ideal research design would imply a comparison of firms that only differ in the exposure to banking crisis. My research design deviates from an ideal one because I exploit variation in banking system conditions across countries and over time (rather than within country) so that I do not have a “pure” control group. Thus, the differences that I identify can be due to different trends occurring and/or other concurrent events happening in each country that can shape the average reaction of firms to banking sector. One way to alleviate these concerns is to include country-year fixed effects. Yet, given the slow-moving nature of my dependent variable, it might not be enough to reduce the concerns. Hence, a further test, I exploit cross-sectional variations in firms’ exposure to the crisis within each country by

⁸⁶ Noteworthy the control variables are statistically significant and with the expected sign in both specifications.

considering three firms' characteristics: firm size, level of financial constraints and asset tangibility⁸⁷.

Small firms are usually associated with a higher degree of bank dependence (Leary, 2009; Kahle and Stulz, 2013) so that they should be more hit by the crisis. Small firms are not only more affected by the banking crisis but they also face lower litigation costs. As I argued before, the use of accounting discretion is costly and can be reduced by the presence of litigation costs and external monitoring. To the extent that firms will exert accounting discretion as long as the expected benefits (i.e., access to finance) exceed potential costs (i.e., manipulation is discovered), I expect that the incentive will be lower for larger firms because these firms are more visible and are exposed to stronger scrutiny so that the cost of smoothing earnings will be greater. I test this prediction by augmenting model 1 with an interaction term between banking crisis and size. The model becomes the following:

$$Smooth_{ijt} = \beta_0 + \beta_1 Banking_Crisis_{jt} + \beta_2 Banking_Crisis_{jt} * Size_{ijt} + \beta_3 Equity_Crisis_{jt} + \beta_n X_{ijt} + \epsilon_{ijt} \quad (3)$$

I expect β_2 to be negative and statistically significant⁸⁸. Table 7 reports the results.

The main effect for banking distress is still positive and statistically significant for *Icorr* and *Smooth*. Consistent with my expectations, the coefficient for the interaction term between size and banking crisis is negative and statistically significant. Hence, empirical evidence suggests that smaller firms are more likely to smooth earnings as banking

⁸⁷ Model specifications are the same as for the main hypotheses. The only difference is the inclusion of country-year fixed effects. However, results are the same if the original specification is used.

⁸⁸ Model specifications and control variables are the same as for model (1) except for the inclusion of country-year fixed effects.

conditions worsen. This result is also consistent with the idea that large firms are more conservative in their financial reporting given the greater litigation costs that they bear⁸⁹.

The second source of variation that I exploit is the level of financial constraints. Firms with greater financial constraints have higher incentives to smooth earnings because they have stronger need to look for financing and are more exposed to the banking crises. I measure the level of financial constraints by using both the level of payout ratio (i.e., firms that distribute dividends are considered as less financially constrained) and the measure of financial constraints developed by Whited and Wu (2006). In particular, I consider firms as financially constrained if the payout ratio (Whited and Wu's measure) is lower (higher) than the country-year median value⁹⁰. In particular, I run the following two regression models:

$$Smooth_{ijt} = \beta_0 + \beta_1 Banking_Crisis_{jt} + \beta_2 Banking_Crisis_{jt} *$$

$$Above_Financial_Constraints_{jit} + \beta_3 Equity_Crisis_{jt} + \beta_n X_{ijt} + \varepsilon_{ijt} \quad (4)$$

$$Smooth_{ijt} = \beta_0 + \beta_1 Banking_Crisis_{jt} + \beta_2 Banking_Crisis_{jt} * Below_Payout_Ratio_{jit} + \beta_3$$

$$Equity_Crisis_{jt} + \beta_n X_{ijt} + \varepsilon_{ijt} \quad (5)$$

⁸⁹ I also replicate the analyses by using a different measure of size based on the definition of Small- and Medium-sized Enterprises (SME) provided by the European Commission. UK is the country with the largest percentage of SMEs (48%) followed by Germany (36%), France (34%), Italy (13%) and Switzerland (10%). Most of differences are statistically significant at 5% level based on ANOVA. Results are the same if I use such alternative measure for size. Moreover, I replicate the analyses by also adding the interaction term between equity crisis and size. Results are largely unaffected by the inclusion of the additional interaction term. Noteworthy, when significant, the interaction term between equity crisis and size is positive and statistically significant suggesting that the negative association between equity crisis and income smoothing is weaker for larger firms.

⁹⁰ 43% of firms are more financially constrained than the country-year median value. 42% have lower payout ratio than the country-year median value while 58% have more tangible assets than the median value at country-year level.

According to my arguments, I expect β_2 to be positive and statistically significant in both models⁹¹. Findings are reported in Table 8, Panel A for the Whited and Wu (2006) measure and Panel B for the payout ratio.

Even if the main effect for *Banking_Crisis* is not statistically significant, the coefficient of interest (i.e., the coefficient for the interaction term) is positive and statistically significant in both cases. Thus, consistent with my expectations, empirical evidence shows that more financially constrained firms smooth earnings more as banking distress increases as these firms are more exposed to the adverse effects of the banking crisis and, hence, they have stronger incentives to smooth earnings⁹².

The last source of variation that I take into account is the level of asset tangibility. Tangible assets are important because they can proxy for the possibility of using firms' assets as collateral. Indeed firms with more tangible assets should be less exposed to the banking stress because they have more assets to be used as collateral and this can increase banks' willingness to finance firms. Balakrishnan et al. (2014) find evidence that firms with higher financial reporting quality are less exposed to a drop in the value of real estate suggesting a substitutive relation between transparency and the value of collateral. I define firms with high (low) tangible assets if *Oplev* is greater than the country-year median value of tangible assets. The new model is the following one:

$$Smooth_{ijt} = \beta_0 + \beta_1 Banking_Crisis_{jt} + \beta_2 Banking_Crisis_{jt} * Above_Oplev_{ijt} + \beta_3 Equity_Crisis_{jt} + \beta_n X_{ijt} + \varepsilon_{ijt} \quad (6)$$

⁹¹ Once again, model specifications are the same as for the model (1) except for the inclusion of country-year fixed effects.

⁹² Results for financial constraints are largely unaffected by the inclusion of the interaction term between equity crisis and financial constraints while those for payout ratio become weaker.

The coefficient of interest is β_2 which I expect to be negative and statistically significant⁹³. Table 9 shows the results.

Although the coefficient for banking distress is not statistically significant, the interaction term between banking crisis and asset tangibility is negative and statistically significant, as I expected. Thus, in line with Balakrishnan et al. (2014), firms with more tangible assets are less likely to smooth earnings as banking conditions worsen as these firms can use their assets to offset the negative impact of banking crises.

As a final test, I repeat the analyses contingent on countries' characteristics. Specifically, I replicate models (3), (4), (5) and (6) for the three clusters. Empirical evidence is reported in Table 10, Panel A for size, Panel B for financial constraints, Panel C for payout ratio and Panel D for tangibility. Column (1), Column (2) and Column (3) report the results for firms belonging to Cluster 1 (i.e., outsider oriented economies with the strongest institutional regime), Cluster 2 (i.e., insider oriented economies with strong regulatory regime) and Cluster 3 (i.e., insider oriented economies with weak regulatory regime), respectively.

Consistent with hypothesis 2, I find that small firms and firms with high financial constraints smooth earnings more in countries with a stronger institutional environment where the access to alternate sources of financing is more feasible. Formal t-test of difference in coefficients across the three sub-samples suggest that the coefficients are statistically different in Table 10 Panel A (i.e., firm size) and B (i.e., financial constraints) at 5% level while I do not find evidence that the coefficients are statistically different in Panel C (i.e., payout ratio). Thus, large firms are less likely to smooth earnings as banking crisis

⁹³ Once again, model specifications are the same as for the model (1) except for the inclusion of country-year fixed effects.

increases in UK but not in other countries. In other words, large firms are less likely to smooth earnings in countries where the litigation risk is higher in line with prior studies analysing conservatism.

Results are slightly different in Table 10 Panel D when asset tangibility is considered. In particular, I find that firms with more tangible assets are less likely to smooth earnings as banking distress increases if they belong to Cluster 2. The coefficients are greater although not statistically significant for firms in other clusters and the differences in coefficients are statistically significant at 1% level. A deeper analysis suggests that coefficients in column (1) and (2) are statistically different at 1% level while it is not the case for the other pairs. This suggests that the proposed substitutive relation between accounting information and collateral is more likely to occur in countries that have strong regulatory regime but less developed markets. Yet, it also indicates that the role of accounting information to obtain alternative funds is less relevant in countries with less developed markets where accounting information can be substituted with collateral.

Taken together, cross-sectional tests corroborate the idea that firms smooth earnings when banking system is distressed when the benefits of smoothing earnings (i.e., greater probability to tap new sources of financing) outweigh the costs (i.e., greater monitoring and litigation risk). When this is not the case, firms are less likely to smooth earnings which can suggest that firms are more likely to be conservative to at least maintain good relationships with banks⁹⁴. Above all, they partially reduce the concern that the results are due to other factors or events rather than banking distress.

⁹⁴Balakrishnan et al. (2015) show that firms that were more conservative before the crisis cut their investments less when the crisis occurred as the conservatism facilitated the access to debt financing. Likewise, Francis et al. (2013) document that more conservative firms performed better during the last crisis. My approach is different with respect to these papers because I investigate how firms adjust their earnings in response to the banking crisis. Moreover, Gassen et al. (2006) argue that income smoothing and conservatism are two distinct aspects of earnings' distribution. Income smoothing reduces the variability (i.e. variance) of earnings per se while conditional conservatism introduces a bias in the distribution of earnings making them left-skewed with respect to operating cash flows. Likewise Francis et al. (2004) contend that earnings variability is an instrument

3.5.4. Alternative markets for SMEs: the case of Germany

A key finding of my analysis is that firms' incentive to smooth earnings in a period of banks' turmoil is contingent upon firms' possibility to access alternative sources of financing. In order to provide further evidence on the association, I run additional analyses focusing on the existence of alternative sources of financing for Small- and Medium-sized Enterprises (SMEs).

There is ample anecdotal evidence that European SMEs were particularly hit by the last financial crisis (Infelise, 2014). SMEs heavily rely upon bank financing so that an interruption in banks' lending is critical for them as they often lack access to equity and bond markets. In an attempt to help SMEs to get sources of financing, EU countries started a number of initiatives. Among those, Germany created in 2010 three bond markets specifically tailored to SMEs. The creation of such bond markets expanded the pool of financing sources available to SMEs so that German SMEs were better able to obtain alternative funds than before. According to my second hypothesis, I should expect that German SMEs were more likely to smooth earnings after the creation of the new bond markets.

I test this conjecture by using a research design akin to a diff-in-diff where income smoothing of German SMEs and non-SMEs firms are compared before and after 2010 (i.e., the year of creation of the new markets). In this case, larger firms act as a control group as the new market was specific for SMEs. The regression model is the following one:

$$Smooth_{it} = \beta_0 + \beta_1 SME_{it} + \beta_2 Post_t + \beta_3 SME_{it} * Post_t + \beta_n X_{it} + \varepsilon_{it} \quad (7)$$

for income smoothing but it is not an instrument for conservatism. Above all, Gassen et al. (2006) provide empirical evidence that income smoothing and conditional conservatism are weakly negatively correlated and have different determinants. Consistent with Gassen et al. (2006), I also find evidence of a negative (although weak in magnitude) correlation between income smoothing and measures of conservatism. Furthermore, I find evidence that firms are more likely to be conservative as banking distress increases in countries with strong regulatory regime but this occurs just for large firms. Thus, large firms are more conservative given the greater litigation cost they bear. Instead, I find weak evidence that the association between conservatism and banking distress is different for diverse levels of financial constraints and tangibility. These findings help to reconcile my results with prior works.

SME is a dummy variable equal to 1 if the firm can be classified as a SME firm and 0 otherwise. Likewise *Post* is an indicator variable equal to 1 for the years 2010 and 2011 and 0 for 2008 and 2009. My coefficient of interest is the interaction term between *SME* and *Post* which is expected to be positive and statistically significant. Other model specifications are the same as for model (1). Results are reported for *Icorr* and *Idev* in Table 11.

Models are statistically significant at 1% level and R2 range from 16.2% to 25%. SMEs smooth earnings less than larger firms in the pre-period. Yet, the interaction term is positive and statistically significant at 10% level, in line with my expectations. Thus, as small firms are more likely to rely upon debt financing, they will be more conservative (i.e. smooth earnings less) to keep bank financing when the banking system is under distress and available sources of financing are not easily accessible. Once alternative sources of financing become available, they are more likely to smooth earnings to tap those markets. Noteworthy the transparency requirements of these new markets were quite low⁹⁵ so that it is reasonable to expect that firms use their accounting discretion to attract new investors⁹⁶.

3.5.5. Consequences

There is ample debate in the literature on whether income smoothing is “good” or “bad” (Tucker and Zarowin, 2006; Graham et al., 2005). On the one hand, managers can use income smoothing to signal their private information about future earnings. In line with this view, Francis et al. (2004) document that firms with smoother earnings are associated with lower cost of equity. On the other hand, managers can opportunistically engage in income smoothing to conceal true performance and keep extracting private control benefits.

⁹⁵ See <http://www.ft.com/intl/cms/s/0/d1b5b21a-a2eb-11e4-ac1c-00144feab7de.html#axzz4AcNJpinL>.

⁹⁶ I replicate the same analysis in other countries and I do not find similar evidence thus further supporting my main findings. Moreover, I use a propensity score matching procedure to eliminate the concern that difference between SMEs and large firms are due to different business operations. Results hold even if the two groups are matched on a set of observables.

Indeed, Leuz et al. (2003) show that income smoothing is lower in countries with stronger institutional regime where private control benefits are lower. So far, I just considered the extent to which managers report a smooth path of earnings in response to a deterioration in banks' conditions without taking into account the "nature" of income smoothing. In an attempt to shed further light on the issue, I look at the consequences of smoothing earnings as banking conditions worsen. In particular, I analyse whether firms that smooth earnings more during a banking crisis are more or less likely to go bankrupt in the future. If income smoothing facilitates the access to alternative financial sources, I should expect that the probability of bankruptcy will be lower for firms that engage more in income smoothing. I test this conjecture by using a 2sls regression. In the first stage, I estimate model (1). Instead, in the second stage the probability of being distressed (*Distress*) is regressed on the fitted value of income smoothing from the first stage and a set of control variables (i.e., performance, size, leverage, growth, tangibility, prior level of distress, trend variable, country and industry fixed effects).

Results (untabulated) show that, in a no-banking crisis period, income smoothing is positively associated with future distress while the relation is negative in a period of crisis. Thus, empirical evidence suggests that, when a banking crisis occurs, income smoothing helps firm to reduce the (increased) probability of bankruptcy by easing the access to diverse sources of finance. The finding of a beneficial side of income smoothing is also consistent with the evidence that the positive association between income smoothing and banking system distress is stronger in countries with a better institutional environment. Indeed Cahan et al. (2008) demonstrate that, although income smoothing is higher in weak institutional environment, managers in strong investor protection countries are more likely to use income smoothing to convey information about future prospects (i.e., "good" income smoothing).

3.6. Conclusion

This paper investigates the association between banking crisis and income smoothing. Using a sample of listed firms in UK, Germany, France, Italy and Switzerland, I document that income smoothing is positively associated with the level of distress in the banking system and the positive association is weaker in countries with weaker institutional environment. Firms smooth earnings more when country's banking system is under threat and the access to bank financing is hindered so that firms need to look for alternative financial resources. This incentive is stronger in countries where the country institutional environment facilitates the access to alternative funds. I corroborate my analyses by running a battery of sensitivity tests using alternative measures of earnings management, banking crisis and institutional environment. Moreover, I exploit cross-sectional variation in firms' exposure to banking crisis to deepen the proposed theoretical mechanism. Likewise, I consider the creation of alternative bond markets for SMEs in 2010 in Germany as a setting where the improved access to alternative financing could raise firms' incentive to smooth earnings. Empirical evidence is consistent with this claim. Lastly, I document that firms that smoothed earnings more during a banking crisis are less likely to go bankrupt consistent with the idea that firms smooth earnings to facilitate the access to financing under a period of turmoil.

The work contributes to literature investigating the association between financial crises and earnings management by taking into account heterogeneity in types of financial crises (i.e., banking vs equity crises). Furthermore, it documents the important moderating role of institutional environment in managers' incentives to smooth earnings as financial markets conditions worsen. In this way, I also add to international studies showing that the disciplining effects of regulatory regime may vary over time.

Despite its contribution, the work is subject to limitations. First, income smoothing is subject to measurement issues as the smooth path of earnings can be the result of natural

business operations rather than the use of accounting discretion. To the extent that banking crisis can also affect firms' earnings and the effects might be different across countries, the empirical evidence might be due to the diverse impact of the crisis on business operations rather than on managers' incentives to smooth earnings. Yet, the cross-sectional analyses and, above all, the findings for SMEs in Germany attenuate the concerns. Future research can further validate my results by considering alternative measures of earnings management and disclosure that are less tied to earnings.

Second, banking crises do not occur in isolation. Yet, concurrent events or changes can happen affect firms' incentives to smooth earnings. Even if I include specific controls (i.e., trend variable, country-trend fixed effects and country-year fixed effects) to deal with the issue, I cannot definitively rule out this possibility. Further works can address this issue. For instance, they can exploit within country variation in firms' exposure to crisis considering the diverse exposure to banking crisis due to different fiscal-year end month.

Lastly, throughout my analyses I did not make any specific assumption about managers' specific incentives to smooth earnings when banking system is threatened. I implicitly assumed that managers smooth earnings to facilitate access to financing without considering personal managers' incentives to smooth earnings in a period turmoil. The evidence that income smoothing has subsequent positive implications reduce the concerns that managers will on average smooth earnings for their own benefit at expense of shareholders. Yet, differences can occur across firms. Future research could address this issue by exploiting heterogeneity in managers' incentives and ability to smooth earnings.

References

- Altman, E., 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance* 23(4): 589-609.
- Baker, M., and Wurgler, J., 2006. Investor sentiment and the cross-section of stock returns. *Journal of Finance* 61(4): 1645-1680.
- Balakrishnan, K., Watts, R.L., and Zuo, L., 2015. The effect of accounting conservatism on corporate investment during the global financial crisis. Working Paper.
- Balakrishnan, K., Core, J.E., and Verdi, R., 2014. The relation between reporting quality and financing and investment: Evidence from changes in financing capacity. *Journal of Accounting Research* 52(1): 1-36.
- Ball, R., Kothari, S.P., and Robin, A., 2000. The effect of international institutional factors on the properties of accounting earnings. *Journal of Accounting and Economics* 29 (1): 1-51.
- Barth, M., Landsman, W., and Lang, M., 2008. International accounting standards and accounting quality. *Journal of Accounting Research* 46(3): 467-498.
- Bekaert, G., Baele, L., and Inghelbrecht, K., 2010. The determinants of stock and bond return comovements. *Review of Financial Studies* 23(6): 2374-2428
- Bergman, N., and Roychowdhury, S., 2008. Investor sentiment and corporate disclosure. *Journal of Accounting Research* 46(5): 1057-1083.
- Bharath, S.T., Sunder, J., and Sunder, S.V., 2008. Accounting quality and debt contracting. *The Accounting Review* 83(1): 1-28.
- Bhattacharya, U., Daouk, H., and Welker, M., 2003. The world price of earnings opacity. *The Accounting Review* 78(3): 641-678.
- Burgstahler, D., Hail, L., and Leuz, C., 2006. The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review* 81(5): 983-1016.
- Cahan, S.F., Liu, G., and Sun, J., 2008. Investor protection, income smoothing, and earnings informativeness. *Journal of International Accounting Research* 7(1): 1-24
- Choi, J.H., Kim, J.B., and Lee, J.J., 2011. Value relevance of discretionary accruals in the Asian financial crisis of 1997-1998. *Journal of Accounting and Public Policy* 30(2): 166-187.
- Claessens, S., and Kose, M., 2013. Financial crisis explanations, types, and implications. IMF Working paper.

Claessens, S., Ayhan Kose, A., and Terrones, M., 2012. How do business and financial cycles interact? [Journal of International Economics](#) 87(1): 178-190.

Cohen, D.A., Dey, A., and Lys, T.Z., 2008. Real and accrual-based earnings management in the pre- and post- Sarbanes-Oxley periods. *The Accounting Review* 83(3): 757-787.

DeFond, M.L., and Park, C.W., 1997. Smoothing income in anticipation of future earnings. *Journal of Accounting and Economics* 23(2): 115-139.

Dechow, P., Ge, W., and Schrand, C., 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50(2-3): 344-401.

Dell'Ariccia, G., and Marquez, R., 2006. Lending booms and lending standards. *The Journal of Finance* 61(5): 2511-2546.

Djankov, S., La Porta, R., Lopez-de-Silanes, F., and Shleifer, A., 2008. The law and economics of self-dealing. *Journal of Financial Economics* 88(3): 430-465.

Dou, Y., Hope, O.K., and Thomas, W., 2013. Relationship-specificity, contract enforceability, and income smoothing. *The Accounting Review* 88(5): 1629-1656.

Filip, A. and Raffournier, B., 2014. Financial crisis and earnings management: The European evidence. *The International Journal of Accounting* 49(4): 455-478.

Francis, B., Hasan, I., and Wu, Q., 2013. The benefits of conservative accounting to shareholders: Evidence from the financial crisis. *Accounting Horizons* 27(2): 319-346.

Francis, J., LaFond, R., Olsson, P.M., and Schipper, K., 2004. Cost of equity and earnings attributes. *The Accounting Review* 79(4): 967-1010.

Gaio, C., 2010. The relative importance of firm and country characteristics for earnings quality around the world. *European Accounting Review* 19(4): 693-738.

Gassen, J., and Fülbier, R.W., 2015. Do creditors prefer smooth earnings? Evidence from European private firms. *Journal of International Accounting Research* 14(2): 151-180.

Gassen, J., Fülbier R.U., and Sellhorn, T., 2006. International differences in conditional conservatism: The role of unconditional conservatism and income smoothing. *European Accounting Review* 15(4): 527-564.

Gopalan, R., and Jayaraman, S., 2012. Private control benefits and earnings management: Evidence from insider controlled firms. *Journal of Accounting Research* 50(1): 117-157.

Graham, J., Harvey, C., and Rajgopal, S., 2005. The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40(1-3): 3-73.

Greenspan, A., 1999. Do efficient financial markets mitigate financial crises? Before the Financial Markets Conference of the Federal Reserve Bank of Atlanta, Sea Island, Georgia.

Hakkio, C.S., and Keeton, W.R., 2009. Financial stress: What is it, how can it be measured, and why does it matter? *Economic Review*, Federal Reserve Bank of Kansas City, Q2.

Haw, I.M., Hu, B., Lee, J., and Wu, W., 2012. The investor protection and price informativeness about future earnings: International evidence. *Review of Accounting Studies* 17(2): 389-419.

Hildebrand, T., Rocholl, J., and Schulz, A., 2012. Flight to where? Evidence from bank investments during the financial crisis. Working paper.

Hollo, D., Kremer, M., and Duca, M., 2012. CISS – A composite indicator of systemic stress in the financial system. ECB, Mimeo.

Illing, M., and Liu, Y., 2006. Measuring financial stress in a developed country: An application to Canada. *Journal of Financial Stability* 2(3):243-265.

Infelise, F., 2014. Supporting access to finance by SMEs: Mapping the initiatives in five EU countries.

International Monetary Fund, 2008. *World Economic Outlook*. October.

Jenkins, D.S., Kane, G.D., and Velury, U., 2009. Earnings conservatism and value relevance across the business cycle. *Journal of Business, Finance and Accounting* 36(9-10): 1041-1058.

Johnson, M.F., 1999. Business cycles and the relation between security returns and earnings. *Review of Accounting Studies* 4(2): 93-117.

Jones, J.J., 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29(2): 193-228.

Jung, B., Soderstrom, N., and Yang, Y., 2013. Earnings smoothing activities of firms to manage credit ratings. *Contemporary Accounting Research* 30(2): 645-676.

Kahle, K. M., and Stulz, R. M., 2013. Access to capital, investment, and the financial crisis. *Journal of Financial Economics* 110(2): 280-299

Kaufmann D., Kraay, A., and Mastruzzi, M., 2007. Governance matters VI: Aggregate and individual governance indicators 1996–2006. Working paper, the World Bank.

Kim, J.B., and Yi, C.H., 2006. Ownership structure, business group affiliation, listing status, and earnings management: Evidence from Korea. *Contemporary Accounting Research* 23(2): 427-464.

Kliesen, K., Michael, L., Owyang, T., and Vermann, E.K., 2012. Disentangling diverse measures: A survey of financial stress indexes. *Federal Reserve Bank of St. Louis Review* 94(5): 369–397.

Kothari, S., Leone, A., and Wasley, C., 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39(1): 163-197

La Porta, R., Lopez-de-Silanes, F., and Shleifer, A., 2006. What works in securities laws? *Journal of Finance* 61(1): 1-32.

Laeven, L., and Valencia, F., 2012. Systemic banking crises database. *IMF Economic Review* 61(2): 225-270.

Leary, M., 2009. Bank loan supply, lender choice, and corporate capital structure. *Journal of Finance* 64(3): 1143-1185.

Leuz, C., Nanda, D.J., and Wysocki, P., 2003. Earnings management and investor protection: An international comparison. *Journal of Financial Economics* 69(3): 505-527.

Leuz, C., 2010. Different approaches to corporate reporting regulation: How jurisdictions differ and why. *Accounting and Business Research* 40(3): 229-256.

Leuz, C., and Wysocki, P., 2016. The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research. *Journal of Accounting Research*, 54(2): 525-622.

Levine, R., Chen, L. and Wensi, X., 2016. Spare tire? Stock markets, banking crises, and economic recoveries. *Journal of Financial Economics* 120(1): 81-101.

Lisowsky, P., Minnis, M., and Sutherland, A.G., 2015. Credit cycles and financial statement verification. *Chicago Booth Research Paper*.

Lo, A.K., 2014. Do declines in bank health affect borrowers' voluntary disclosures? Evidence from international propagation of banking shocks. *Journal of Accounting Research* 52(2): 541-581.

Lo Duca, M., and Peltonen, T., 2013. Assessing systemic risks and predicting systemic events. *Journal of Banking and Finance* 37(7): 2183-2195.

Louzis, D., and Vouldis, A., 2013. A financial systemic stress index for Greece. Presented at the First Conference of the Macro-prudential Research (MaRs) network of the European System of Central Banks in Frankfurt am Main.

Markarian, G., and Gill-de-Albornoz, B., 2014. Income smoothing and idiosyncratic volatility.

McInnis, J.M., 2010. Earnings smoothness, average returns, and implied cost of equity capital. *The Accounting Review* 85(1): 315-341.

Mitton, T., 2002. A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis. *Journal of Financial Economics* 64(2): 215-241.

Myers, S.C., and Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13(2): 187-221.

Patel, S., and Sarkar, A., 1998. Crises in developed and emerging stock markets. *Financial Analysts Journal* 54 (6): 50-59

Rountree, B., Weston J., and Allayannis, G., 2008. Do investors value smooth performance? *Journal of Financial Economics* 90(3): 237-251.

Ruckes, M., 2004. Bank competition and credit standards. *Review of Financial Studies* 17(4): 1073-1102.

Shivakumar, L., 2000. Do firms mislead investors by overstating earnings before seasoned equity offerings? *Journal of Accounting and Economics* 29(3): 339-371.

Shivakumar, L., Urcan, O., Vasvari, F., and Zhang, L., 2011. The debt market relevance of management earnings forecasts: Evidence from before and during the credit crisis. *Review of Accounting Studies* 16(3): 464-486.

Simpson, A., 2013. Does investor sentiment affect earnings management? *Journal of Business Finance & Accounting* 40(7- 8): 869-900.

Stuart, A., and Ord, J.K., 1994. *Distribution Theory. Kendall's Advanced Theory of Statistics, Vol. 1, 6th edition*, London and New York.

Teoh S., Welch, I., and Wong, T.J., 1998a. Earnings management and the underperformance of seasoned equity offerings. *Journal of financial Economics* 50(1): 63-99.

Teoh, S., Welch, I., and Rao, G., 1998b. Are accruals during initial public offerings opportunistic? *Review of Accounting Studies* 3(1-2): 175-208.

Trueman, B., and Titman, S., 1988. An explanation for accounting income smoothing. *Journal of Accounting Research* 26: 127-139.

Tucker, J., and Zarowin, P.A., 2006. Does income smoothing improve earnings informativeness? *The Accounting Review* 81(1): 251-270.

Whited, T., and Wu, G., 2006. Financial constraints risk. *Review of Financial Studies* 19(2): 531-559.

Appendix C: Computation of *Banking_Crisis* and *Equity_Crisis*

My procedure to compute *Banking_Crisis* and *Equity_Crisis* follows prior works interested in the computation of financial stress indicators (see Kliesen et al., 2012 for a comprehensive survey).

As a first step, I identified a group of raw variables for the banking system and equity market. The identification of the raw variables implies several choices. The first one is the level of detail of the index. As pointed out by Lo Duca and Peltonen (2013), the computation of country-level financial stress index implies a trade-off between the degree of precision of the index at the country level and the degree of homogeneity of the index across countries and time (in other words the index should be based on a comparable set of indicators). The issue of comparability is relevant in my case as I am exploiting cross-sectional variation in the indicators so that it is important to assure that value of the indices can be compared across countries. Therefore, I focus on a set of European countries with developed financial systems for which the comparability can be assured. Along the same lines, I consider a reduced set of variables that can be collected for all countries over the full sample period (2001-2011). Thus, credit default swap or pre-determined measures of bank risk for which I could not obtain the data for the whole period were excluded. The inclusion of fewer indicators is unlikely to affect the validity of the measure because, once some crucial segments of the financial systems are included in the index, adding additional components does not substantially change its shape (Hollo et al., 2012).

The second issue is the frequency of the raw indicators. High frequency indicators depict in a more precise way the level of stress in a given time period. Hence, my indices rely upon market data of daily and monthly frequency in attempt to exploit all the information available in high frequency data (Louzis and Vouldis, 2013).

In particular, for the banking distress, I consider the volatility of banking sector as well as the stock decline using monthly data from Thomson Reuters Datastream. Following Hollo et al. (2012), I compute the volatility of the banking sector as the realised volatility of the idiosyncratic equity return of the Datastream⁹⁷ bank sector stock market index over the total market index. Idiosyncratic returns are calculated as the residual from an OLS regression of the daily bank return on the market return over a moving 6 months window (i.e., 180 business days). The realised volatility is calculated as the weekly average of absolute daily idiosyncratic returns.

Instead, for the banking sector decline, I consider the CMAX interacted with the inverse price-book ratio (book-price ratio) for country equity market index. Indeed, some authors use the CMAX transformation to identify periods of sharp declines in the banking sector (Patel and Sarkar, 1998, Illing and Liu, 2006). The CMAX is defined as maximum cumulated losses of the index over a moving 6 month window calculated as $1 - (x / \max[x(x | j 0,1, T)] t$ where x is the stock market index and the moving window is determined by T which is equal to 180 for daily data (Hollo et al., 2012). Both the CMAX and the book-price ratio are first transformed by their recursive sample CDF and then multiplied by each other. The final indicator is obtained by taking the square root of this product⁹⁸.

In the case of equity market distress, three indicators are taken into account. The first one is the time varying correlation coefficient between stock and government bond returns capturing, amongst others, flight-to-liquidity and flight-to-quality phenomena (Bekaert, Baele and Inghelbrecht 2010). Indeed, in times of crises, investors tend to shift funds out of more risky stocks into safer government bonds, thereby driving the return correlation between these two asset classes into negative territory (Hollo et al, 2012). Following Hollo et al.

⁹⁷ If not specified, the source of data is Bloomberg.

⁹⁸ I also consider the $cmax$ per se in an alternative specification of the index.

(2012), I calculate it as the monthly average of the difference between the year and the month correlation coefficients between daily returns of total stock market price index and the 10-year government bond price index, respectively.

The second one is the stock decline. Indeed, most studies use a sharp decline in the overall market index to identify equity crises. The decline can be indicative of greater expected loss, higher dispersion of probable loss (higher risk), or increased uncertainty about the return of firms (Illing and Liu, 2006). Indeed an abrupt and prolonged decrease in equity prices is a symptom of market stress. The stock decline is computed in three ways: a) stock index at $t - 1$ minus stock index at t , then divided by stock index at $t - 1$, and multiplied by -1^{99} ; b) previous values are multiplied by -1 and positive returns are disregarded and set to 0. (Lo Duca and Peltonen, 2013); c) CMAX.

Lastly, I consider the realized volatility of overall stock market index monthly returns since increased stock market volatility reflects increased uncertainty about fundamentals and the behaviour of other investors (Hakkio and Keeton, 2009). As the variable should capture the financial market risk and uncertainty due to stock market volatility, realised volatility has been computed as the monthly average of absolute daily returns (Hollo et al., 2012).

Once the raw variables are detected, the second step is their aggregation. The first choice is the time variation of the indices. The diverse frequency at which the index is calculated (quarterly, monthly, or weekly) has relevant implications for policy-decision making since higher frequency data may facilitate real time assessment of evolving financial conditions while increasing the risk of false signals because they tend to be more volatile (Kliesen et al., 2012). In my case, given the accounting nature of our dependent variable, I

⁹⁹ (t) is the month.

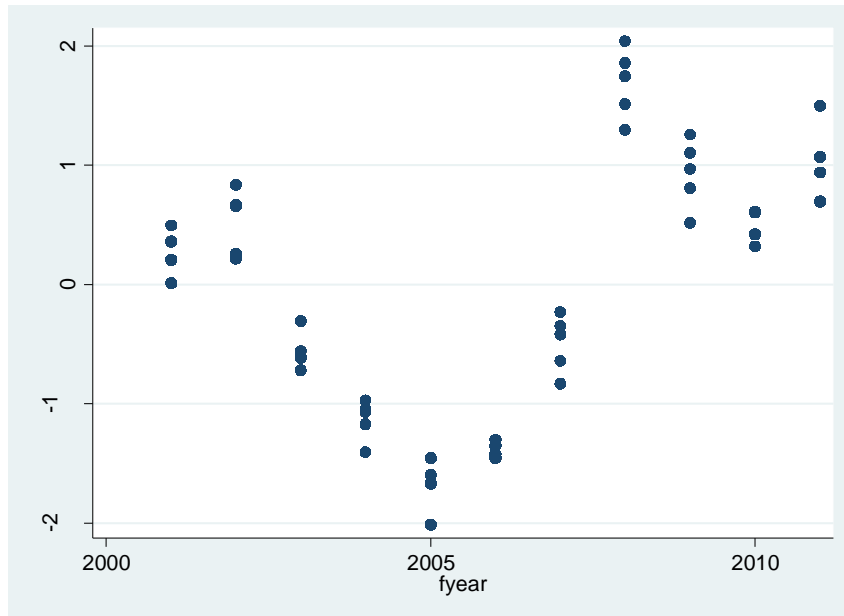
have two possibilities: year or quarter. Because I adopt an international context, quarterly financial reporting are not as diffused as in US. Hence, even if yearly-based measures of financial stress might appear quite coarse limiting the ability to capture the dynamics of the market, they are preferred to quarterly data to keep consistency across countries.

The literature offers several options to aggregate individual stress indicators (Hollo et al., 2012). In most cases, aggregation starts with putting the individual raw stress indicators on a common scale through standardisation (i.e., by subtracting the sample mean from the raw score and dividing this difference by the sample standard deviation) (see IMF, 2008). Hollo et al. (2012) explain how the standardisation implicitly assumes variables to be normally distributed. Yet, many standard stress indicators violate this assumption. Hence, the results are more likely to be sensitive to abnormal observations. Indeed, both the conditional means and the standard deviations can be subject to large revisions if more and more outliers are added to the sample (Hakkio and Keeton 2009) as it is the case when extended periods of distress are considered. As a consequence, the information content of financial distress indicators can be distorted over time. In an attempt to fix this problem, Hollo et al. (2012) suggest a different type of standardization by transforming the raw stress indicators on the basis of location and dispersion measures of their empirical distribution function that are more robust than the mean and the standard deviation (Stuart and Ord, 1994). I follow their approach by transforming the raw stress indicators based on their empirical cumulative distribution function (CDF) involving the computation of order statistics. Then, the standardised indicators are aggregated by using a principal component analysis on a monthly basis for each country and each group of variable to create the overall indicator. Lastly, I take the annual average of the monthly values to obtain my final measures of equity and banking crises.

The last step is the actual validation of the measures. First, I conduct a graphical inspection of the two indicators. The graphical representation suggests a good temporal correspondence between the values and the years and it is similar with that provided by provided by Kliesen et al. (2012). As a second step, I consider the ability of the two indices to detect previous episodes of banking and equity crises. Timelines and narratives are used as a benchmark to verify indices' ability to detect episodes of financial distress. Extreme values of the indices do overlap with documented financial stress episodes (Illing and Liu, 2006; IMF, 2008) so that the ability of the indices is verified.

Graphs and Tables

Graph 1: Trend of *Banking Crisis* over time



Graph 2: Trend of *Banking Crisis* over time by country

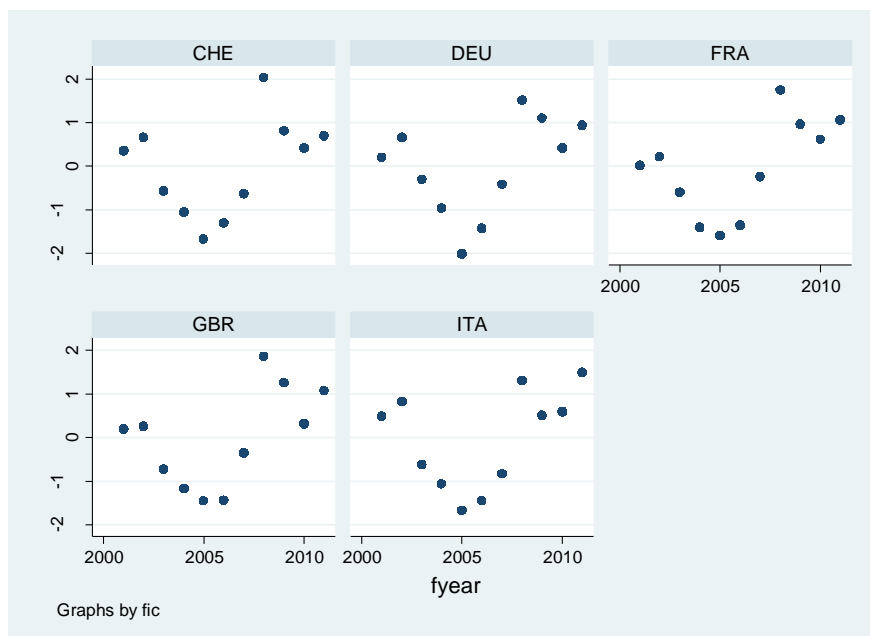


Table 1: Variable Definition

<i>Variable</i>	<i>Definition</i>
<i>Icorr</i>	Pairwise correlation between changes in total accruals and cash flow from operations (both scaled by lagged total assets) over 5-years window multiplied by -1 (Leuz et al., 2003)
<i>Idev</i>	Standard deviation of EBIT scaled by lagged total assets divided by standard deviation of cash flow from operations scaled by lagged total assets, multiplied by -1. Standard deviations are computed over a rolling window of 5 years.
<i>Itucker</i>	Pairwise correlation between changes in discretionary accruals and changes in premanaged earnings over a rolling window of 5 years and multiplied by -1 (Tucker and Zarowin, 2006)
<i>Smooth</i>	Principal component of <i>Icorr</i> , <i>Idev</i> and <i>Itucker</i>
<i>Banking_Crisis</i>	Indicator of distress in banking system as computed in the Appendix
<i>Equity_Crisis</i>	Indicator of distress in equity markets as computed in the Appendix
<i>Cluster 2</i>	Dummy variable equal 1 for France, Germany and Switzerland and 0 otherwise
<i>Cluster 3</i>	Dummy variable equal 1 for Italy and 0 otherwise
<i>Loss</i>	Dummy variable equal 1 if firm reports a loss and 0 otherwise
<i>Size</i>	Natural logarithm of total assets
<i>Leverage</i>	Total debt divided by total assets
<i>Growth</i>	Change in net sales divided by net sales at (t-1)
<i>Cfo_volatility</i>	Standard deviation of cash flow from operations scaled by lagged total assets over 5-years window
<i>Oplev</i>	Net property, plant and equipment divided by total assets
<i>Cfo</i>	Cash flow from operations scaled by total assets
<i>Cycle</i>	Length of the firm's operating cycle, defined as the number of days receivables plus the number of days inventory. Days receivables is computed as 360 divided by the ratio of average receivables to sales. Days inventory is similarly defined as 360 divided by the ratio of average inventory to cost of goods sold
<i>Distress</i>	Indicator variable equal 1 if Altman Z-score is lower than 2.9 and 0 otherwise
<i>Tobin_q</i>	Tobin's Q
<i>Trend</i>	2011-fyear
<i>Ifrs</i>	Dummy variable equal 1 if firm adopts IFRS and = otherwise
<i>Dummy_Crisis</i>	Dummy crisis equal 1 if banking crisis occurs according to Laeven and Valencia (2012)
<i>DA</i>	Discretionary accruals computed according to modified Jones model (1991)
<i>PDA</i>	Performance matched discretionary accruals computed following Kothari et al. (2005)
<i>Antidi</i>	Anti Director Index computed by Djankov et al. (2008)
<i>Ruleoflaw</i>	Rule of Law computed by Kaufmann et al. (2007)
<i>Above_Financial_Constraints</i>	Dummy variable equal 1 if firm's financial constraints computed following Whited and Wu (2006) are greater than the country-year level of financial constraints and 0 otherwise
<i>Below_Payout_Ratio</i>	Dummy variable equal 1 if firm's payout ratio (i.e. total dividend paid divided by EBIT) is below the country-year median value of payout and 0 otherwise
<i>Above_Oplev</i>	Dummy variable equal 1 if firm's tangibility is higher than the country-year median value of tangibility and 0 otherwise
<i>SME</i>	Dummy variable equal 1 if firm fulfils EU requirements to be defined as a Small Medium Enterprise and 0 otherwise
<i>Post</i>	Dummy variable equal 1 for years 2010 and 2011 and 0 otherwise

Table 2: Descriptive Statistics*Panel A: descriptive statistics*

	N	Mean	Sd	Min	p25	p50	p75	Max
Icorr	12446	0.704	0.400	-0.778	0.613	0.876	0.966	0.999
Idev	13978	-0.784	0.499	-2.786	-1.016	-0.706	-0.426	-0.081
Itucker	5281	0.665	0.400	-0.739	0.517	0.833	0.953	0.999
Smooth	5281	0.032	1.400	-8.346	-0.675	0.439	1.098	1.734
Loss	13978	0.205	0.404	0.000	0.000	0.000	0.000	1.000
Size	13978	12.399	2.356	6.503	10.757	12.212	13.905	17.923
Leverage	13978	0.210	0.179	0.000	0.058	0.185	0.317	0.999
Growth	13810	0.094	0.420	-0.772	-0.047	0.050	0.157	4.377
Cfo_volatility	13978	0.122	0.148	0.012	0.045	0.076	0.135	0.991
Oplev	13978	0.237	0.206	0.000	0.069	0.189	0.341	0.893
Cfo	13978	0.079	0.193	-1.238	0.041	0.104	0.163	0.505
Cycle	13524	178.980	187.921	14.415	92.328	139.814	200.345	1876.472
Distress	13452	0.630	0.483	0.000	0.000	1.000	1.000	1.000
Tobin_q	13924	1.582	1.242	0.505	0.997	1.243	1.681	11.791

Variables are defined in Table 1

Panel B: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Icorr															
2. Idev	0.55*														
3. Itucker	0.58*	0.46*													
4. Smooth	0.86*	0.79*	0.82*												
5. Banking_Crisis	0.02*	0.02*	-0.00	0.01											
6. Equity_Crisis	0.04*	0.04*	0.02	0.03*	0.85*										
7. Loss	-0.21*	-0.19*	-0.22*	-0.24*	0.07*	0.07*									
8. Size	0.15*	0.11*	0.17*	0.14*	-0.04*	-0.00	-0.32*								
9. Leverage	0.06*	0.03*	-0.01	0.00	0	0.04*	0.01	0.22*							
10. Growth	-0.02*	0.01	-0.04*	-0.02	-0.03*	-0.06*	-0.05*	-0.03*	-0.04*						
11. Cfo_volatility	-0.11*	0.07*	-0.17*	-0.06*	0.05*	0.04*	0.29*	-0.36*	-0.07*	0.16*					
12. Oplev	0.05*	0.07*	-0.02	-0.01	-0.05*	0.00	-0.10*	0.21*	0.27*	-0.02*	-0.19*				
13. Cfo	0.14*	0.09*	0.18*	0.17*	-0.07*	-0.04*	-0.51*	0.28*	-0.06*	-0.01	-0.32*	0.14*			
14. Cycle	-0.01	-0.01	-0.00	0.01	0.03*	0.02*	0.11*	-0.04*	-0.02*	0.03*	0.09*	-0.15*	-0.22*		
15. Distress	0.02*	0.04*	-0.05*	-0.03*	0.07*	0.09*	0.19*	0.11*	0.44*	-0.07*	-0.03*	0.14*	-0.19*	0.03*	
16. Tobin_q	-0.13*	-0.09*	-0.14*	-0.14*	-0.09*	-0.11*	0.09*	-0.19*	-0.04*	0.12*	0.29*	-0.14*	-0.22*	0.06*	-0.28*

Variables are defined in Table 1

Statistical significance: * p-value<5%

Table 3: Banking Crisis and Income Smoothing

VARIABLES	(1) lcorr	(2) ldev	(3) ltucker	(4) Smooth
Banking_Crisis	0.0261** (0.0120)	0.0346** (0.0149)	0.0360** (0.0181)	0.125** (0.0619)
Equity_Crisis	-0.0037 (0.0119)	-0.0153 (0.0150)	-0.0209 (0.0183)	-0.0479 (0.0636)
Loss	-0.132*** (0.0141)	-0.241*** (0.0163)	-0.126*** (0.0207)	-0.662*** (0.0706)
Size	0.0056 (0.0035)	0.0085** (0.0042)	0.0224*** (0.0051)	0.0552*** (0.0180)
Leverage	0.0772* (0.0433)	-0.0376 (0.0455)	0.0432 (0.0618)	0.219 (0.220)
Growth	0.0077 (0.0129)	-0.0151 (0.0115)	-0.0203 (0.0174)	-0.0168 (0.0598)
Cfo_volatility	0.0923 (0.0625)	0.759*** (0.0580)	-0.225*** (0.0870)	1.010*** (0.300)
Oplev	-0.0546 (0.0409)	0.0127 (0.0421)	-0.0942 (0.0617)	-0.245 (0.220)
Cfo	0.0758** (0.0372)	0.0753** (0.0331)	0.104** (0.0495)	0.331** (0.167)
Cycle	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0002 (0.0002)
Distress	-0.0282** (0.0141)	0.0131 (0.0163)	-0.0471** (0.0198)	-0.179** (0.0704)
Tobin_q	-0.0266*** (0.0069)	-0.0325*** (0.0065)	-0.0264*** (0.0094)	-0.137*** (0.0327)
Trend	0.0068** (0.0029)	0.0083** (0.0034)	0.0077 (0.0048)	0.0366** (0.0171)
lfrs	-0.0098 (0.0141)	-0.0058 (0.0166)	-0.0044 (0.0214)	0.0075 (0.0785)
Constant	0.637*** (0.0609)	-1.028*** (0.0677)	0.193** (0.0938)	-1.386*** (0.321)
Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	11,598	12,936	4,903	4,903
R-squared	0.125	0.152	0.142	0.136

Variables are defined in Table 1

*Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%*

Table 4: Banking Crisis and Income Smoothing – the role of institutional environment

VARIABLES	(1) lcorr	(2) ldev	(3) ltucker	(4) Smooth
Banking_Crisis	0.0298*** (0.0115)	0.0231 (0.0143)	0.0347** (0.0169)	0.115** (0.0567)
Cluster 2	0.0500* (0.0284)	-0.0193 (0.0305)	-0.238*** (0.0603)	-0.657*** (0.192)
Cluster 3	0.126*** (0.0229)	0.127*** (0.0281)	-0.0505 (0.0811)	0.0717 (0.210)
Banking_Crisis*Cluster 2	-0.0181* (0.0096)	0.0101 (0.0109)	-0.0051 (0.0124)	-0.0158 (0.0473)
Banking_Crisis*Cluster 3	-0.0510*** (0.0146)	-0.0257 (0.0162)	-0.0846** (0.0340)	-0.399*** (0.0786)
Equity_Crisis	0.0079 (0.0111)	-0.0067 (0.0145)	-0.0142 (0.0175)	-0.0166 (0.0618)
Loss	-0.131*** (0.0141)	-0.242*** (0.0163)	-0.125*** (0.0207)	-0.656*** (0.0709)
Size	0.0060* (0.0035)	0.0084** (0.0042)	0.0226*** (0.0052)	0.0557*** (0.0180)
Leverage	0.0799* (0.0434)	-0.0354 (0.0455)	0.0474 (0.0618)	0.239 (0.220)
Growth	0.0087 (0.0129)	-0.0154 (0.0115)	-0.0194 (0.0174)	-0.0127 (0.0596)
Cfo_volatility	0.0872 (0.0625)	0.758*** (0.0580)	-0.228*** (0.0871)	0.999*** (0.300)
Oplev	-0.0547 (0.0408)	0.0112 (0.0420)	-0.0964 (0.0615)	-0.256 (0.220)
Cfo	0.0762** (0.0372)	0.0748** (0.0331)	0.103** (0.0495)	0.327* (0.167)
Cycle	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0002 (0.0002)
Distress	-0.0291** (0.0141)	0.0133 (0.0163)	-0.0481** (0.0198)	-0.184*** (0.0706)
Tobin_q	-0.0263*** (0.0069)	-0.0327*** (0.0065)	-0.0264*** (0.0094)	-0.137*** (0.0327)
Trend	0.0042 (0.0029)	0.0071** (0.0035)	0.0062 (0.0048)	0.0300* (0.0172)
lfrs	-0.0177 (0.0141)	-0.0043 (0.0169)	-0.0083 (0.0216)	-0.0075 (0.0780)
Constant	0.605*** (0.0544)	-0.998*** (0.0604)	0.444*** (0.0789)	-0.671** (0.279)
Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	11,598	12,936	4,903	4,903
R-squared	0.127	0.153	0.143	0.139

Variables are defined in Table 1

Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%

Table 5: Robustness checks

Panel A: discretionary accruals

VARIABLES	(1) DA	(2) PDA	(1) DA	(2) PDA
Banking_Crisis	0.0054 (0.0033)	0.0033 (0.0033)	0.0072** (0.0034)	0.0058* (0.0033)
Equity_Crisis	-0.0032 (0.0032)	-0.0017 (0.0031)	-0.0030 (0.0032)	-0.0015 (0.0032)
Cluster 2			0.0055 (0.0041)	0.0063 (0.0039)
Cluster 3			0.0082* (0.0044)	0.0094** (0.0039)
Banking_Crisis*Cluster 2			-0.0034** (0.0017)	-0.0047*** (0.0016)
Banking_Crisis*Cluster 3			-0.0028 (0.0027)	-0.0031 (0.0024)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Observations	8,172	7,782	8,172	7,782
R-squared	0.253	0.222	0.254	0.223

Panel B: Alternative definition of crisis

VARIABLES	(1) Icorr	(2) Smooth	(3) Icorr	(4) Smooth
Dummy_Crisis	0.0546*** (0.0127)	0.176** (0.0701)	0.115*** (0.0220)	0.334*** (0.110)
Cluster 2			0.0952*** (0.0330)	-0.527** (0.215)
Cluster 3			0.201*** (0.0288)	0.744*** (0.250)
Dummy_Crisis* Cluster 2			-0.0772*** (0.0248)	-0.190 (0.128)
Dummy_Crisis*Cluster 3			-0.143*** (0.0362)	-1.207*** (0.214)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country Fe	Yes	Yes	Yes	Yes
Observations	11,598	4,903	11,598	4,903
R-squared	0.124	0.135	0.127	0.140

Panel C: Alternative institutional variables

VARIABLES	(1) Icorr	(2) Smooth	(1) Icorr	(2) Smooth
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Banking_Crisis	-0.0389*	-0.205	-0.0687***	-0.252
	(0.0230)	(0.162)	(0.0230)	(0.164)
Equity_Crisis	0.0056	-0.0288	0.0128	-0.0116
	(0.0118)	(0.0635)	(0.0113)	(0.0615)
Antidi	-0.0746**	-0.633***		
	(0.0303)	(0.235)		
Banking_Crisis*Antidi	0.0138***	0.0717**		
	(0.0047)	(0.0316)		
Ruleoflaw			-0.0602**	-0.514***
			(0.0237)	(0.185)
Banking_Crisis* Ruleoflaw			0.0449***	0.188**
			(0.0115)	(0.0832)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Observations	11,598	4,903	11,598	4,903
R-squared	0.127	0.138	0.127	0.138
<i>Variables are defined in Table 1</i>				
<i>Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%</i>				

Table 6: Sub-period analyses

Panel A: After 2006

VARIABLES	(1) lcorr	(2) ldev	(3) ltucker	(4) Smooth
Banking_Crisis	0.0465*** (0.0113)	0.0259* (0.0150)	0.0233 (0.0163)	0.123** (0.0573)
Cluster 2	0.0438 (0.0303)	0.0031 (0.0314)	-0.246*** (0.0660)	-0.723*** (0.199)
Cluster 3	0.110*** (0.0263)	0.0947*** (0.0333)	-0.118 (0.0860)	-0.202 (0.224)
Banking_Crisis*Cluster 2	-0.0033 (0.0093)	0.0153 (0.0109)	-0.0006 (0.0126)	0.0141 (0.0457)
Banking_Crisis*Cluster 3	-0.0355** (0.0139)	-0.0124 (0.0171)	-0.0514 (0.0345)	-0.282*** (0.0837)
Equity_Crisis	-0.0274** (0.0118)	-0.0159 (0.0157)	-0.0046 (0.0181)	-0.0657 (0.0634)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Ye	Yes	Yes	Yes
Observations	7,858	8,579	3,744	3,744
R-squared	0.117	0.142	0.150	0.142

Panel B: Before 2006

VARIABLES	(1) lcorr	(2) ldev	(3) ltucker	(4) Smooth
Banking_Crisis	0.0319 (0.0335)	0.0391 (0.0439)	0.0705 (0.0642)	0.255 (0.222)
Cluster 2	0.0334 (0.0532)	-0.111* (0.0592)	-0.143 (0.107)	-0.306 (0.460)
Cluster 3	0.190*** (0.0362)	0.192*** (0.0429)	0.143 (0.166)	0.936* (0.503)
Banking_Crisis* Cluster 2	-0.0003 (0.0201)	0.0075 (0.0228)	0.0242 (0.0379)	0.0973 (0.126)
Banking_Crisis*Cluster 3	-0.0119 (0.0235)	0.0077 (0.0290)	0.0037 (0.0376)	-0.0600 (0.149)
Equity_Crisis	0.0037 (0.0228)	-0.0260 (0.0311)	-0.0431 (0.0425)	-0.156 (0.148)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Observations	3,740	4,357	1,159	1,159
R-squared	0.212	0.230	0.166	0.203

Variables are defined in Table 1

*Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%*

Table 7: Moderating role of size

VARIABLES	(1) lcorr	(2) ldev	(3) ltucker	(4) Smooth
Banking_Crisis	0.157* (0.0934)	-0.255 (0.701)	0.0807 (0.0983)	0.511** (0.254)
Size	0.0074** (0.0036)	0.0101** (0.0043)	0.0255*** (0.0053)	0.0688*** (0.0189)
Banking_Crisis*Size	-0.0058*** (0.0019)	-0.0067*** (0.0022)	-0.0048 (0.0031)	-0.0242* (0.0124)
Equity_Crisis	-0.112 (0.0902)	0.0424 (0.357)	-0.165 (0.125)	-0.591** (0.288)
Loss	-0.131*** (0.0142)	-0.241*** (0.0164)	-0.123*** (0.0212)	-0.648*** (0.0721)
Leverage	0.0800* (0.0435)	-0.0328 (0.0457)	0.0516 (0.0612)	0.258 (0.218)
Growth	0.0075 (0.0132)	-0.0174 (0.0115)	-0.0178 (0.0181)	-0.0173 (0.0622)
Cfo_volatility	0.0793 (0.0625)	0.750*** (0.0579)	-0.234*** (0.0868)	0.969*** (0.297)
Oplev	-0.0495 (0.0408)	0.0128 (0.0422)	-0.0869 (0.0619)	-0.248 (0.222)
Cfo	0.0737** (0.0370)	0.0753** (0.0334)	0.0993** (0.0498)	0.317* (0.167)
Cycle	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0002)
Distress	-0.0285** (0.0141)	0.0148 (0.0164)	-0.0490** (0.0201)	-0.186*** (0.0712)
Tobin_q	-0.0271*** (0.0069)	-0.0336*** (0.0066)	-0.0264*** (0.0096)	-0.138*** (0.0330)
lfrs	-0.0318* (0.0172)	-0.0300 (0.0200)	-0.0405 (0.0261)	-0.140 (0.0940)
Constant	0.592*** (0.0657)	-0.737 (0.452)	0.0493 (0.121)	-1.688*** (0.368)
Industry FE	Yes	Yes	Yes	Yes
Year FE*Country FE	Yes	Yes	Yes	Yes
Observations	11,598	12,936	4,903	4,903
R-squared	0.133	0.158	0.153	0.151

Variables are defined in Table 1

Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%

Table 8: Moderating role of financial constraints

Panel A: Financial constraints according to Whited and Wu (2006)

VARIABLES	(1) lcorr	(2) ldev	(3) ltucker	(4) Smooth
Banking_Crisis	0.0736 (0.0922)	-0.621 (0.727)	0.0170 (0.0950)	0.166 (0.194)
Above_Financial_Constraints	0.0253* (0.0135)	0.0205 (0.0154)	0.0320 (0.0195)	0.147** (0.0727)
Banking_Crisis*Above_Financial_Constraints	0.0173** (0.0081)	0.0262*** (0.0093)	0.0026 (0.0116)	0.0535 (0.0441)
Equity_Crisis	-0.113 (0.0909)	0.179 (0.368)	-0.167 (0.126)	-0.591** (0.283)
Loss	-0.128*** (0.0143)	-0.237*** (0.0166)	-0.122*** (0.0217)	-0.643*** (0.0736)
Size	0.0101** (0.0042)	0.0129*** (0.0048)	0.0295*** (0.0062)	0.0869*** (0.0220)
Leverage	0.0800* (0.0445)	-0.0386 (0.0466)	0.0482 (0.0629)	0.252 (0.223)
Growth	0.0109 (0.0136)	-0.0139 (0.0120)	-0.0123 (0.0188)	0.0050 (0.0660)
Cfo_volatility	0.0832 (0.0627)	0.752*** (0.0591)	-0.202** (0.0872)	1.072*** (0.301)
Oplev	-0.0513 (0.0414)	0.0118 (0.0429)	-0.0952 (0.0631)	-0.267 (0.225)
Cfo	0.0901** (0.0381)	0.0847** (0.0347)	0.117** (0.0526)	0.387** (0.175)
Cycle	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0002)
Distress	-0.0278* (0.0143)	0.0181 (0.0165)	-0.0488** (0.0202)	-0.188*** (0.0720)
Tobin_q	-0.0262*** (0.0070)	-0.0323*** (0.0066)	-0.0254*** (0.0097)	-0.134*** (0.0335)
lfrs	-0.0382** (0.0173)	-0.0310 (0.0205)	-0.0421 (0.0275)	-0.136 (0.0969)
Constant	0.547*** (0.0752)	-0.618 (0.472)	-0.0183 (0.134)	-1.992*** (0.419)
Industry FE	Yes	Yes	Yes	Yes
Year FE*Country FE	Yes	Yes	Yes	Yes
Observations	11,389	12,682	4,793	4,793
R-squared	0.133	0.157	0.154	0.153

Panel B: payout ratio

VARIABLES	(1) Icorr	(2) Idev	(3) Itucker	(4) Smooth
Banking_Crisis	0.0814 (0.0893)	-0.555 (0.733)	0.0273 (0.0918)	0.234 (0.189)
Below_Payout_Ratio	-0.145*** (0.0133)	-0.185*** (0.0161)	-0.140*** (0.0199)	-0.664*** (0.0716)
Banking_Crisis*Below_Payout_Ratio	0.0290*** (0.0087)	0.0332*** (0.0094)	0.0214* (0.0120)	0.0903* (0.0470)
Equity_Crisis	-0.127 (0.0883)	0.140 (0.372)	-0.169 (0.122)	-0.596** (0.275)
Loss	-0.0544*** (0.0158)	-0.144*** (0.0179)	-0.0517** (0.0244)	-0.313*** (0.0824)
Size	-0.0013 (0.0036)	-0.0001 (0.0043)	0.0160*** (0.0052)	0.0218 (0.0176)
Leverage	0.106** (0.0436)	-0.0028 (0.0458)	0.0754 (0.0616)	0.378* (0.216)
Growth	0.0148 (0.0137)	-0.0078 (0.0120)	-0.0124 (0.0180)	0.0038 (0.0632)
Cfo_volatility	0.134** (0.0611)	0.808*** (0.0599)	-0.167** (0.0841)	1.249*** (0.294)
Oplev	-0.0769* (0.0410)	-0.0246 (0.0427)	-0.107* (0.0618)	-0.315 (0.221)
Cfo	0.0903** (0.0371)	0.0915*** (0.0345)	0.116** (0.0522)	0.376** (0.174)
Cycle	-0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0002)
Distress	-0.0093 (0.0140)	0.0407** (0.0161)	-0.0289 (0.0200)	-0.0936 (0.0708)
Tobin_q	-0.0301*** (0.0069)	-0.0368*** (0.0067)	-0.0290*** (0.0098)	-0.152*** (0.0339)
lfrs	-0.0427** (0.0171)	-0.0369* (0.0204)	-0.0459* (0.0272)	-0.147 (0.0954)
Constant	0.757*** (0.0656)	-0.406 (0.472)	0.221* (0.122)	-0.848** (0.353)
Industry FE	Yes	Yes	Yes	Yes
Year FE*Country FE	Yes	Yes	Yes	Yes
Observations	11,387	12,681	4,792	4,792
R-squared	0.151	0.175	0.168	0.179

Variables are defined in Table 1

*Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%*

Table 9: Moderating role of asset tangibility

VARIABLES	(1) lcorr	(2) ldev	(3) ltucker	(4) Smooth
Banking_Crisis	0.100 (0.0908)	-0.328 (0.702)	0.0249 (0.0944)	0.239 (0.200)
Above_Oplev	-0.0201 (0.0144)	-0.0189 (0.0169)	-0.0316 (0.0219)	-0.0959 (0.0784)
Banking_Crisis*Above_Oplev	-0.0226*** (0.0085)	-0.0188* (0.0100)	-0.0197* (0.0118)	-0.107** (0.0450)
Equity_Crisis	-0.119 (0.0898)	0.0383 (0.357)	-0.158 (0.126)	-0.564** (0.287)
Loss	-0.130*** (0.0142)	-0.240*** (0.0164)	-0.121*** (0.0212)	-0.640*** (0.0719)
Size	0.0069** (0.0035)	0.0095** (0.0042)	0.0241*** (0.0052)	0.0622*** (0.0179)
Leverage	0.0794* (0.0431)	-0.0226 (0.0451)	0.0497 (0.0603)	0.261 (0.216)
Growth	0.0075 (0.0132)	-0.0178 (0.0115)	-0.0171 (0.0182)	-0.0158 (0.0625)
Cfo_volatility	0.0864 (0.0620)	0.747*** (0.0575)	-0.231*** (0.0871)	0.978*** (0.299)
Cfo	0.0727* (0.0371)	0.0801** (0.0332)	0.102** (0.0495)	0.336** (0.167)
Cycle	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0002)
Distress	-0.0300** (0.0141)	0.0144 (0.0163)	-0.0512** (0.0200)	-0.194*** (0.0708)
Tobin_q	-0.0270*** (0.0069)	-0.0342*** (0.0066)	-0.0264*** (0.0096)	-0.138*** (0.0330)
lfrs	-0.0286* (0.0172)	-0.0285 (0.0200)	-0.0356 (0.0260)	-0.120 (0.0941)
Constant	0.588*** (0.0640)	-0.723 (0.452)	0.0617 (0.121)	-1.614*** (0.361)
Industry FE	Yes	Yes	Yes	Yes
Year FE*Country FE	Yes	Yes	Yes	Yes
Observations	11,598	12,936	4,903	4,903
R-squared	0.133	0.158	0.154	0.152

Variables are defined in Table 1

Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%

Table 10: Income Smoothing, Banking Crisis, Institutional Environment and Firms' characteristics

<i>Panel A: size</i>			
VARIABLES	(1) Cluster 1	(2) Cluster 2	(3) Cluster 3
Banking_Crisis	-0.414 (2.087)	-1.161 (5.341)	-1.382 (0.976)
Size	0.0688*** (0.0174)	0.0810*** (0.0154)	-0.239*** (0.0524)
Banking_Crisis*Size	-0.0466*** (0.0126)	0.0035 (0.0131)	0.0539 (0.0418)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE*Country FE	Yes	Yes	Yes
Difference in coefficients		0.0045***	
Observations	2,239	2,494	170
R-squared	0.17	0.17	0.44
<i>Panel B: financial constraints</i>			
VARIABLES	(1) Cluster 1	(2) Cluster 2	(3) Cluster 3
Banking_Crisis	-0.855 (2.067)	-1.003 (5.323)	-0.549 (0.715)
Above_Financial_Constraints	0.154* (0.0828)	0.101 (0.0726)	0.0422 (0.198)
Banking_Crisis*Above_Financial_Constraints	0.125** (0.0533)	-0.0179 (0.0490)	-0.252* (0.129)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE*Country FE	Yes	Yes	Yes
Difference in coefficients		0.0117**	
Observations	2,237	2,388	168
R-squared	0.17	0.17	0.45
<i>Panel C: Payout ratio</i>			
VARIABLES	(1) Cluster 1	(2) Cluster 2	(3) Cluster 3
Banking_Crisis	-1.299 (2.075)	0.368 (5.332)	-0.418 (0.698)
Below_Payout_Ratio	-0.704*** (0.0945)	-0.685*** (0.0632)	0.257 (0.157)
Banking_Crisis*Below_Payout_Ratio	0.101	0.0636	-0.0614

	(0.0616)	(0.0505)	(0.124)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE*Country FE	Yes	Yes	Yes
Difference in coefficients		0.5020	
Observations	2,235	2,389	168
R-squared	0.19	0.21	0.44

Panel D: Tangibility

VARIABLES	(1) Cluster 1	(2) Cluster 2	(3) Cluster 3
Banking_Crisis	-1.015 (2.074)	-0.930 (5.266)	-0.542 (0.705)
Above_Oplev	-0.129 (0.0915)	-0.101 (0.0892)	0.223 (0.317)
Banking_Crisis*Above_Oplev	0.0049 (0.0514)	-0.205*** (0.0491)	-0.0230 (0.129)
Controls	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE* Country FE	Yes	Yes	Yes
Difference in coefficients		0.0104***	
Observations	2,239	2,494	170
R-squared	0.17	0.18	0.43

Variables are defined in Table 1

*Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%*

Table 11: Alternative Markets for SMEs in Germany

VARIABLES	(1) lcorr	(2) ldev
Sme	-0.112** (0.0537)	-0.151** (0.0606)
Post	-0.0622 (0.0489)	-0.0768 (0.0599)
Sme*Post	0.0934* (0.0563)	0.101* (0.0551)
Loss	-0.170*** (0.0360)	-0.225*** (0.0388)
Size	0.0039 (0.0093)	-0.0176 (0.0129)
Leverage	0.135* (0.0800)	-0.0558 (0.0980)
Growth	0.0159 (0.0321)	-0.0032 (0.0290)
Cfo_volatility	0.345*** (0.0903)	0.953*** (0.118)
Oplev	-0.0501 (0.0913)	0.0713 (0.0994)
Cfo	0.0001 (0.0001)	0.0001 (0.0001)
Cycle	0.0632 (0.0851)	0.0038 (0.0820)
Distress	-0.0401*** (0.0148)	-0.0516*** (0.0164)
Tobin_q	-0.0146 (0.0324)	-0.0230 (0.0358)
Trend	-0.0556 (0.0448)	-0.0605 (0.0424)
lfrs	0.0034 (0.0214)	0.0062 (0.0255)
Constant	0.778*** (0.177)	-0.454** (0.223)
Industry FE	Yes	Yes
Observations	1,223	1,294
R-squared	0.162	0.248

Variables are defined in Table 1

*Statistical significance: * p-value<10%; ** p-value<5%; *** p-value<1%*

Conclusions

Financial crises are not rare events hitting firms' operations. The occurrence of a financial crisis arises uncertainty around firms' value and exacerbates information asymmetries between insiders and outsiders. The objective of the thesis is twofold. The first objective is to document that financial reporting quality can influence firms' exposure to the negative consequences of the financial crisis. The second aim is to investigate whether and how firms adjust their accounting practices as financial market conditions in an attempt to reduce adverse impact of the crisis. In this way, the thesis sheds new light on the interrelationships between financial markets and financial reporting practices by explicitly considering the dynamics of financial markets. In particular, the thesis adopted a comprehensive perspective by analysing both the *ex ante* effect of transparency on the adverse effects of financial crisis and the changes in financial reporting quality once the deterioration in financial reporting practices.

Above all, contrary to prior studies focusing on the mere presence/absence of financial downturn, I explicitly considering heterogeneity of financial crises by focusing on their intensity (i.e. second chapter) and type (i.e. third chapter). In particular, I develop a country-specific indicator of banking and equity distress in an attempt to separately investigate the association between banking crisis and accounting quality, on the one hand, and between equity crisis and financial reporting quality, on the other hand. The acknowledgment of differences in episodes of financial crises has important implications to understand firms' incentives to be more or less transparent as financial market conditions worsen that can be limited when a simple dichotomous variable is used. Indeed, I provide empirical evidence that firms use accounting discretion in a different way when a financial crisis occurs depending on the intensity and the type of crisis. Firms are more likely to manage earnings when the crisis is severe and it involves banks because, under these

circumstances, their survival is more under threat. In this case, the need to save the firm and look for new sources of financing trigger firms to use accounting discretion to achieve these aims. I also document that these incentives are different depending on the institutional environment in which the firm operates. In the third chapter, I provide empirical evidence that firms' incentives to smooth earnings when a banking crisis is in place are greater in countries with a stronger regulatory regime that facilitates the access to financing.

Throughout the work, I used several proxies for financial reporting quality to attenuate well-known measurement concerns with measures of transparency. Despite differences in measurement of accounting quality, institutional settings and definitions of financial crisis, findings are largely consistent and suggest four conclusions. First, transparency plays an important role in firms' access to finance when a financial crisis occurs. Second, firms recognize the advantages of being more and less transparent by adjusting their accounting practices but their financial reporting choices are also driven by survival considerations so that firms will manage earnings if they realize that they have nothing to lose as in the cases of acute and banking crises. In particular, banks experience a situation of distress, firms' difficulties to get a key source of finance trigger them to manage earnings to attract new financiers. This is especially the case if countries' institutional environment and regulatory regime allow the substitution from bank financing to alternative types of external finance like equity or bonds.

Conclusiones

Las crisis financieras no son sucesos extraños que afectan a las operaciones empresariales. La aparición de una crisis financiera incrementa la incertidumbre sobre el valor de las empresas y empeora las asimetrías informativas entre los que poseen información privilegiada y los que no. Esta tesis tiene un objetivo doble. El primer objetivo es documentar que la calidad de los informes financieros puede influir en la exposición de las empresas a las consecuencias negativas de una crisis financiera. El segundo es investigar si las empresas modifican o no sus prácticas contables en función de las condiciones de mercado y cómo lo hacen para intentar reducir el impacto adverso de la crisis. De esta forma, esta tesis esclarece las interrelaciones entre los mercados financieros y las prácticas de informes financieros al considerar explícitamente la dinámica de los mercados financieros. En particular, la tesis adoptó una perspectiva integral al analizar tanto el efecto *ex ante* de la transparencia sobre los efectos adversos de la crisis como los cambios en la calidad de los informes financieros en cuanto al deterioro de las prácticas de informes financieros.

Sobre todo, al contrario que otros estudios previos que solo se centran en la mera presencia/ausencia de una crisis financiera, yo he tenido en cuenta explícitamente la heterogeneidad de las crisis financieras centrándome en su intensidad (p. Ej., en el segundo capítulo) y en el tipo (p. Ej., en el tercer capítulo). Particularmente, he desarrollado un indicador por país de estrés bancario y de capital en un intento de investigar por separado la asociación entre, por un lado, las crisis bancarias y la calidad contable y por otro, entre las crisis de capital y la calidad de los informes financieros. Se reconocen las implicaciones importantes que tienen las diferencias en los episodios de crisis sobre el entendimiento de los impulsos empresariales de ser más o menos transparentes, a medida que las condiciones del mercado financiero empeoran y que pueden limitarse con el uso de una

simple variable dicotómica. De hecho, he proporcionado evidencia empírica de que las empresas utilizan la discreción contable de diferente forma cuando aparece una crisis, dependiendo de su intensidad y tipo. Es más probable que las empresas gestionen sus beneficios si la crisis es grave e implica a los bancos porque su supervivencia se ve amenazada bajo tales circunstancias. En este caso, la necesidad de salvar la empresa y buscar nuevas fuentes de financiación impulsa a las empresas a utilizar la discreción contable para conseguir sus objetivos. También he documentado que tales incentivos son distintos en función del ambiente institucional en el que la empresa opere. En el tercer capítulo, he proporcionado evidencia empírica de que los impulsos empresariales de equilibrar los beneficios cuando existe una crisis bancaria son mayores en países con un régimen regulador más fuerte que facilita el acceso a la financiación.

A lo largo de todo el trabajo, he utilizado varios sustitutos de calidad de informe financiero para atenuar la conocida medida que concierne a las medidas de transparencia. A pesar de las diferencias en la medición de la calidad contable, los marcos institucionales y las definiciones de crisis financiera, los hallazgos son muy consistentes y sugieren cuatro conclusiones: la primera, la transparencia desempeña un papel importante en el acceso de las empresas a la financiación en caso de haber una crisis financiera; la segunda, las empresas reconocen las ventajas de ser más y menos transparentes a la hora de modificar sus prácticas contables aunque la elección del informe financiero dependa de las consideraciones de supervivencia. Por lo tanto, las empresas gestionarán los beneficios si se percatan de que no tienen nada que perder como en casos de crisis bancaria grave. En particular, si los bancos experimentan una situación de estrés, las dificultades de las empresas para conseguir una fuente de financiación clave las lleva a gestionar los beneficios para atraer a nuevos financieros. Esto se da especialmente si el entorno

institucional del país y el régimen regulador permiten la sustitución de la financiación bancaria por otros tipos de financiación alternativa como el capital propio y los títulos.