

THE RELATIONSHIP BETWEEN FINANCIAL CRISIS AND EARNINGS MANAGEMENT: SOME EVIDENCE FROM THE ITALIAN CONTEXT

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Abstract

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The aim of this research is to investigate the relationship between the financial crisis and earnings management. Despite the wealth of research examining earnings management, we still have much to learn about the effects of macroeconomic factors on accounting discretionary decisions; the recent financial crises may be one of such factors. Particularly, this study aims at investigating whether, in the Italian context, the precarious macroeconomic conditions and the consequent difficulties suffered by listed companies have constituted an incentive to implement earnings management or not. The research is based on a sample of 89 non-financial listed Italian companies and an investigation period (2005-2016) split out into three different sub-periods: a pre-crisis period (2005-2008), a crisis period (2009-2012) and a post-crisis period (2013-2016). The research is conducted using the Beneish Model, due to its capability to identify, although on the basis of likelihood, companies that potentially adopt earnings management. The results of this study suggest an overall low presence of companies at risk of manipulation throughout the period under investigation; however, the most consistent number of such companies is recorded during the pre-crisis period.

Keywords: Financial Crisis, Earnings Management, Beneish Model, Italian Listed Companies

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1. INTRODUCTION

The numerous cases of business disruptions arising from opportunism and from accounting fraud by directors and managers that have occurred in different countries over the past two decades have refocused the attention of academics, professionals, regulators, and policymakers on the reliability and relevance of financial reporting and on earnings management (Grimaldi & Muserra, 2017). The centrality of the above-mentioned topic has also been highlighted by the occurrence of institutional and contextual phenomena, the outbreak of the 2008 financial crisis being not the least of which.

Recent research has analysed the role and the reliability and relevance of financial statements in the economic downturn, pinpointing diverging positions. On the one hand, some researchers (Katz,

2008; Whalen, 2008; Kothari & Lester, 2012) observe 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 (Trombetta & Imperatori, 2014). On the other hand, other researchers observe that financial reporting experienced several shortcomings during the crisis, hindering the reliability and relevance of financial statements (Barth & Landsman, 2010; Magnan & Markarian, 2011). The latter phenomenon might be consequent to the role less determinant that accountants exerted compared with policymakers, regulators and financial institutions on the stability of financial markets (Ryan, 2008; Laux & Leuz, 2009; Badertscher, Burks, & Easton, 2012).

In the last decades, numerous researchers have analysed the determinants and consequences of

earnings management (Healy & Wahlen, 1999; Dechow & Skinner, 2000; McNichols, 2000; Garcia Osma, Noguer, & Clemente, 2005; Ronen & Yaari, 2008; Garcia-Meca & Sanchez-Ballesta, 2009; Mechelli & Cimini, 2012; Tiscini & di Donato, 2012; Grimaldi & Muserra, 2017) but only in the last ten years have several studies examined how earnings quality may react during a period of financial or/and economic crisis, and especially the extent to which economic and financial instability, once in place, may affect managers' accounting choices and, especially, earnings manipulation behaviors (Trombetta & Imperatori, 2014).

Until these studies, which entail that changes in the macroeconomic context have an impact on the companies propensity to manipulate earnings and/or the sign of these manipulations, the macroeconomic conditions are held constant or are supposed not to influence the incentives for earnings management (Filip & Raffournier, 2014).

The aim of this paper is to explore the influence of significant changes in the economic environment by comparing the earnings management practices of Italian listed companies, using the Beneish Model (Beneish, 1999; Beneish, 2001; Beneish & Vargus, 2002; Beneish, Lee, & Nichols, 2013) during the years of financial crisis and in the previous and subsequent years.

According to the accounting literature (Prencipe, 2006), it is observed that earnings management policies which affect financial statement disclosure are put in place, either jointly or separately, to achieve multiple functional objectives: 1) to confirm or achieve certain income levels; 2) to meet the expectancies of external investors and/or analysts; 3) to get individual economic benefits; 4) to achieve certain profit levels and their related individual economic benefits.

Previous literature (Dechow, Sloan, & Sweeney, 1995; Healy & Wahlen, 1999) substantially agrees in classifying the incentives underlying manipulation policies into two macro-types: capital market incentives and contractual incentives.

Capital market incentives include all those situations in which the implementation of earnings management policies is functional to the change in the share price trend. According to the different situations, such policies may operate in view of both an increase and a decrease in the share trends. They are functional to the achievement of some prearranged profitability thresholds and act with relative continuity (Dechow et al., 1995). Market incentives can be divided into two sub-typologies: 1) ordinary incentives, which are linked to the achievement of particular profitability thresholds, which are considered as critical, to avoid disappointing the expectations of both the stock market and analysts (DeGeorge, Patel, & Zeckhauser, 1999); 2) extraordinary incentives, which are relevant when the company plays an active and/or passive part in extraordinary transactions involving the sale and purchase of shares on the market, such as the increases in share capital accomplished through the issuing of new paid shares (Teoh, Wong, & Rao, 1998); extraordinary operations in the strict sense of the word (Easterwood, 1998); initial share prices on the stock market, the so-called Public Offering - IPO (DuCharme, Malatesta, & Sefcik, 2001).

Contractual incentives, on the other hand, include all the situations where the implementation of earnings management policies is functional to the

achievement of certain objectives, depending on particular contracts or contractual constraints, to avoid incurring costs, or to obtain benefits of various kinds.

The first type can be ascribed to management remuneration contracts, especially with regards to their variable component. These contracts, by entailing the payment of a bonus upon achieving a pre-set performance which in most cases is related to a company's profitability or share price, induce the management to manipulate reference values in such a way as to maximize their remuneration (Holthausen, Larcker, & Sloan, 1995; Guidry, Leone, & Rock, 1999). Management incentives of the second type are those that can be ascribed to the existence of covenants, i.e. clauses parameterized to accounting and/or market values which are provided for in the loan agreements entered into by companies. These clauses, if not complied with, expose companies to repercussions, both in terms of income and finance and in terms of reputation. Therefore, it is evident that, when approaching the risk of not complying with such clauses, management will be induced to manipulate the quantities of reference in many ways (DeFond & Jiambalvo, 1994; Dichev & Skinner, 2002).

Further contractual incentives exist, although they are less widespread than those mentioned above: first and foremost, the incentives that characterise mainly the regulated sectors (especially insurance and banking). These incentives, which derive from law and regulatory restrictions, relate to limits in terms of capital, payable financing, risks that can be taken or pre-set indices or accounting and/or financial statement figures (Schrand & Wong, 2003).

Secondly, there are tax incentives. Ordinary management is naturally focused on minimising the tax levy. This propensity is even more developed when changes in tax regulations or significant changes in terms of rates are expected (Scholes, Wilson, & Wolfson, 1992).

Finally, although more marginal than the four types of the above-mentioned incentives, there are political incentives. DeAngelo and DeAngelo (1991) indicate that in some specific moments in history and in some specific sectors, companies are encouraged to implement manipulation policies, especially minimisation policies, in order to avoid the application of less favourable taxes or to avoid the issuing of more stringent laws and regulations.

However, despite the different areas of research that developed around the issues of earnings management, a few studies emerged from the analysis of literature, that examined the effect of macroeconomic factors on accounting discretionary decisions. These studies examined the association between the business cycle and earnings quality and obtained conflicting results (Johnson, 1999; Jenkins, Kane, & Velury, 2009). On the one hand, Johnson (1999) extends prior research on the determinants of earnings response coefficients by using the macroeconomic theory to predict how changes in the aggregate investing and financing opportunity sets affect earnings persistence and, in turn, the earnings-returns relation. In other words, Johnson (1999) examines business cycle variations in the earnings-returns relation. Empirical results support the hypothesis that earnings persistence varies with business conditions. Specifically, consistent with an increase in the availability of investment opportunities during expansionary periods, earnings

persistence is significantly greater during expansions than during recessions. In other words, greater earnings persistence implies larger earnings response coefficients. Accordingly, earnings response coefficients are larger in expansions than in recessions.

On the other hand, Jenkins et al. (2009) analysed the impact of business cycles on the value relevance of earnings, by examining the value relevance of current and expected future earnings as a function of the business cycle. Specifically, they find that current earnings are relatively more value-relevant in contractionary economic periods and that expected future earnings are relatively more value-relevant in expansionary periods.

These conflicting results (Johnson, 1999; Jenkins et al., 2009) highlight the need for contextual earnings management studies, i.e., for research that would take into account the macroeconomic conditions in which firms operate. The 2008 financial crisis provides a unique setting for this analysis (Filip & Raffournier, 2014; Trombetta & Imperatore, 2014).

The results of previous studies investigating the relationship between the financial crisis and earnings management show that there is a lack of consensus on the direction and magnitude of earnings management in times of recession. In other words, previous studies that hypothesise financial crisis as a major cause of earnings management show conflicting results, depending on the choice of corporate governance context, firm type, and on the start date of the financial crisis (Franceschetti, 2018).

This study aims at investigating whether, in the Italian context, the precarious macroeconomic/financial conditions and the consequent difficulties suffered by listed companies have constituted an incentive to implement earnings management or not.

To measure the impact of the financial crisis on accounting manipulation, a sample of 89 non-financial listed Italian firms from 2005 to 2016 was analysed. The choice of a long period of time (from 2005 to 2016) allows for a mapping of the phenomenon that extends from the period before and after the crisis. The beginning of the period under observation (2005) is functional for obtaining homogenous data. Actually, European-listed companies, and therefore also the companies which make the object of our sample, have been called to comply with IAS-IFRS since 2005.

To measure the impact of the financial crisis on accounting manipulation, it is necessary to choose a measurement method. Among the various methods utilised in previous analyses, the Beneish Model was selected (Beneish, 1999; 2001; Beneish et al., 2013; Beneish & Vargus, 2002), as it is well known and widespread both in the academic and in the corporate world, due to its capability to identify, although on the basis of likelihood, companies that potentially adopt earnings management.

The study results suggest that there is an overall low presence of companies at risk of manipulation throughout the period under investigation; however, the most consistent number is recorded in the pre-crisis period. Later on, during the intense financial crisis, the number of potentially manipulative companies decreases and, finally, in the last years of the post-crisis period, there is again an increase in the number of companies that have probably adopted earnings management policies,

without however reaching the same number as in the pre-crisis period.

The study is organized as follows. In Section 2, previous literature is revised and our own empirical hypothesis is developed. The methodology and the sample are described in Section 3. Section 4 presents our empirical results and discusses them, while Section 5 draws some conclusions, discusses the limitations of the analysis and points out some directions for future research.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

In the last twenty years, earnings management has received considerable attention from academics, professionals, regulators, and policymakers, to the point that there is now an extensive body of research on the determinants and consequences of the manipulation of earnings.

The centrality of earnings management has grown with the onset of the financial crisis, which has led to a decline in the confidence towards financial statements as a tool for representing value relevance of reported financials and it has drawn investors' attention to the financial statement values reliability and to earnings management.

Nonetheless, as observed by Trombetta and Imperatore (2014), "Despite the wealth of research examining earnings management, we still have much to learn about the effects of macroeconomic factors on accounting discretion's decisions; the recent financial crises may be one of such factors" (p. 1). Indeed, Filip and Raffournier (2014), remarked that "it can be assumed that dramatic changes in the economic climate have an impact on the firm's propensity to manipulate earnings and/or the sign of these manipulations" (pp. 1-2).

2.1. Financial crisis and earnings management in the European context

In this sub-section, considering that the aim of this paper is to explore the relationship between financial crises and earnings management, by comparing the earnings management practices of Italian companies during the period of financial crisis and in the previous and subsequent periods, we observe those papers that analyse the aforementioned relationship only in the European context.

Several scholars have examined the relationship between earnings management and the 2008 financial crisis, within a sample of financial and non-financial companies that show a tendency to the increase in accounting policies, due to specific accruals manipulations (Bornemann, Kick, & Memmel, 2012; Balasubramanyan, Zaman, & Thomson, 2013; Mari, Terzani, Agnello, & Iorio, 2016; De Luca & Paolone, 2019).

When analyzing financial statements of listed and non-listed German banks for the 1997-2009 period, Bornemann et al. (2012) investigated the use of 340f reserves. These reserves, provided by the German Commercial Code, allow banks to provision against the special risks inherent to the banking business by building hidden reserves. Bornemann et al. (2012) found an increase in earnings management by the use of these hidden reserves to avoid: 1) a negative net income; 2) a drop in net income compared to the previous year; 3) a shortfall in net

income compared to a peer group and reduce the variability of banks' net income over time.

Similar findings have been achieved by Balasubramanian et al. (2013). While studying loan-loss provisioning in the annual reports of 469 commercial banks listed in 27 European countries, over the credit cycle (2005-2010) looking at the three distinct phases of the financial crisis: the pre-crisis period (from 1997:Q1 to 2007:Q4), the crisis period (from 2008:Q1 to 2009:Q2) and the post-crisis period (from 2009:Q3 to 2011:Q3), these researchers found an increase in earnings management directed to the manipulation of book value of equity and regulatory capital.

Mari et al. (2016), when using a sample of non-financial companies listed at the London Stock Exchange in the 2005-2012 period, analysed the relationship between earnings management and economic trends in order to verify if companies had changed management accounting policies over the last years as a result of the financial crisis. In order to eliminate any distortive effects deriving from the different size of the companies in the sample, based on the observation of the relationship between earnings and total assets, the 2005-2012 period was divided into three different periods: 2005-2007 as pre-crisis period; 2008-2009 as crisis period and 2010-2012 as after-crisis period. The results achieved by using the Burgstahler and Dichev Model (1997) as a model of reference and the Beneish Model (Beneish, 1999) as a control model, show a relevant change in the accounting policies of the firm. In particular, results show the existence of earnings management in the more acute crisis period (2008-2009) with figures gradually decreasing in the following period.

Contrarily to what remarked by Bornemann et al. (2012), Balasubramanian et al. (2013) and Mari et al. (2016), many researchers have observed a trend to reduction in earnings management in periods of crisis in their studies focusing on various samples of non-financial listed companies (Filip & Raffournier, 2014; Cimini, 2015; Paolone, De Luca, & Prater-Kinsey, 2015).

Filip and Raffournier (2014) examine the impact of the 2008-2009 financial crisis on the earnings management behaviour of European-listed firms. To measure the impact of the financial crisis on accounting manipulations, they analyse the level and sign of earnings management by European companies, from 16 countries, over the 2006-2009 period, leading to a sample of 8266 firm-year observations. The earnings management is measured by two metrics of income smoothing and three accrual quality measures. Firstly, their findings suggest an earnings management decrease over the crisis years, in most of the 16 countries under exam, while an increase in earnings management is found in Austria, Belgium, France, Norway, and Portugal. Secondly, the findings report a link between the level of earnings management and the economic growth rate. Finally, the results provide evidence suggesting that national characteristics and market forces affect the propensity of income smoothing but not accruals quality.

Cimini (2015) analysed a sample of 11844 non-financial companies-year observations of listed in 15 European countries over the 2006-2012 period, investigating whether and how the financial crisis in the European Union (EU) affected misrepresentation of financial information due to earnings management. The use of event study

methodology allows him to calculate and compare country-by-country abnormal accruals, by a modified Jones Model (1991) over the estimation period (years 2006 and 2007), assumed as pre-crisis years and over the event period (years 2008-2012), assumed as the crisis years. Cimini uses a nonparametric Wilcoxon (1945) sign-rank test, to compare abnormal accruals estimated before and after such an event. The findings suggest a decrease of misrepresentation in the large majority of the European countries after the outburst of the financial crisis.

Paolone et al. (2015) used a sample of the top 5000 non-listed Italian companies ranked by revenues during the 2005-2012 period and the Beneish Model of eight performance ratios (1999), to investigate the existence of earnings management within the companies of the sample through a comparison between the pre-crisis period (2005-2008) and the crisis period (2009-2012). The results show that the number of firms with a higher likelihood of earnings manipulation decreased by 4.53% between the pre-crisis and the crisis period.

Finally, are observed the positions of other scholars that, using a country-by-country approach, obtain contradictory results in terms of increasing or decreasing earnings management, depending on the country analysed (Cimini, 2015).

Iatridis and Dimitras (2013) examine the change in value relevance and earnings management over the period 2005-2008 and 2009-2011 in a sample of Greek, Irish, Italian, Portuguese and Spanish non-financial listed companies audited by one of the 4 big auditors. The findings of the relation between being audited by one of the 4 big auditors and earnings management are mixed. While Irish companies exhibit less evidence of earnings manipulation, Greek, Italian, Portuguese companies display a stronger tendency towards earnings management. For Spanish companies, instead, findings are quite conflicting.

Also, Kousenidis, Ladas, & Negakis (2013) verify in their study, with a sample of 552 non-financial companies listed in Greece, Ireland, Italy, Portugal, and Spain over the period 2008-2011, whether and to what extent the recent crisis in the EU had an impact on the quality of financial reporting of the above-listed companies. Findings show a reduction in manipulations after the financial crisis, due to greater interest of entities in disclosing less smoothed and less managed earnings because firms that rely on external financing and struggle with liquidity problems have very strong incentives for increasing their financial reporting quality in order to attract prospective investors.

2.2. Hypotheses development

The results of previous studies to investigate the relationship between financial crisis and earnings management show, as observed by Franceschetti (2018), "that there is a lack of consensus on the direction and magnitude of earnings management in times of recession" (p. 103).

In other words, previous studies that hypothesize that financial crisis as a major cause of earnings management show several and conflicting results, depending on the choice of corporate governance context, company type, company size, the start date of the financial crisis and on the

period of investigation and by earnings management detection models employed.

Therefore, considering the results emerging from previous research on the subject in question, following Franceschetti's approach (2018), a non-directional test was chosen to examine whether the number of companies classified as manipulators found in crisis periods differs from the amount found in pre-crisis.

Furthermore, differently from what was observed in previous research (Franceschetti, 2018), in addition to the previous and concomitant period to the financial crisis, the afore-mentioned verification is extended also to the post-crisis period.

Based on prior considerations, it was developed the following non-directional alternative hypotheses:

H1: Financial crisis has no consistent effect on earnings management, in term of the number of companies classified as manipulators, when financially healthy high earnings management companies are measured before, during and after the crisis period.

H2: Financial crisis affects earnings management, in term of more/fewer companies classified as manipulators, when financially healthy high earnings management companies are measured before, during and after the crisis period.

3. METHODOLOGY AND DATA

To estimate the probability of manipulation in the firms of the sample, Beneish's (1999) unweighted model is used in this research, as revised in 2013 (Beneish et al., 2013).

$$M\text{-Score (8)} = -4.84 + 0.920 \times DSRI + 0.528 \times GMI + 0.404 \times AQI + 0.892 \times SGI + 0.115 \times DEPI - 0.172 \times SGAI - 0.327 \times LVGI + 4.679 \times TATA \quad (1)$$

The composition and meaning of each variable are indicated as follows:

- *Days Sales in Receivables Index (DSRI)*: the ratio between the average collection time in the year and the corresponding measure in the previous year. The average collection time is calculated as the ratio between receivables and sales. A disproportionate increase in the average collection time may be indicative of revenue inflation or may reflect a change in credit policy to support sales, therefore, a considerable increase in the average collection time is associated with a greater probability of earnings manipulation.

- *Gross Margin Index (GMI)*: the ratio between the gross margin in the previous year and the gross margin in the current year. To quantify the gross margin, the gross profit rate is calculated as the difference between sales and the costs of the goods sold and is divided by sales. A GMI greater than 1 indicates that gross margins have deteriorated and represents a negative signal on the prospects of companies.

- *Asset Quality Index (AQI)*: the ratio between non-current assets (other than property, plant, and equipment: PPE) and total assets, compared to the previous year. This index highlights the proportion of total assets for which future benefits are potentially less secure. An AQI greater than 1 indicates that the company has probably increased the practice of capitalising and postponing some costs or has increased soft assets affecting the quality of total assets.

The 1999 model stems from an analysis conducted by Beneish, who, analysing the data of a sample of companies that had clearly manipulated their own budgets, first identified their characteristics and subsequently looked for quantitative differences within a sample of non-manipulative companies.

On the basis of this comparison, Beneish developed a probabilistic statistical model (M-Score) that adopts some financial metrics to identify the extent of a manipulation or at least the preconditions that could push companies to engage in this activity, choosing explanatory variables mainly related to:

- the signals on future prospects that appear in academic literature, that is, the manipulation of profits is more probable when future prospects of the companies are insecure (Fridson & Alvarez, 2011; Lev & Thiagarajan, 1993);

- the variables based on cash flows and accruals proposed by Healy (1985) and Jones (1991);

- the variables taken from the research of positive theory, which hypothesizes incentives based on contracts for the management of profits (Watts & Zimmerman, 1986).

The result was an unweighted and probabilistic model able to estimate the tendential likelihood of results manipulation in the period, that includes the eight following variables: Days Sales in Receivables Index (DSRI); Gross Margin Index (GMI); Asset Quality Index (AQI); Sales Growth Index (SGI); Depreciation Index (DEPI); Sales, General, and Administrative Expenses Index (SGAI); Leverage Index (LVGI); Total Accruals to Total Assets (TATA). The model is as follows:

- *Sales Growth Index (SGI)*: the ratio between sales in the year and those in the previous one. In itself, an increase in sales does not imply that there is manipulation, but growing companies are considered as more potentially at risk of committing book frauds as capital requirements put pressure on managers to achieve certain goals. An SGI greater than 1 indicates that sales are growing compared to the previous year.

- *Depreciation Index (DEPI)*: the depreciation rate in the previous year compared to the current one, where those rates are calculated as the ratios between depreciation and the sum between depreciation and fixed assets (PPE). A DEPI greater than 1 indicates that the rate at which assets have been written off has decreased, which increases the possibility that the company has raised its estimates regarding the useful life of multi-year assets or has adopted a new and more congenial method of measurement.

- *Sales, General, and Administrative Expenses Index (SGAI)*: the ratio between selling, general and administrative expenses and sales in the year, compared to the corresponding measure for the previous year. An SGAI greater than 1 means that SGA expenses increase more than proportionally with respect to sales, indicating a slowdown in business activity that risks worsening future prospects.

- *Leverage Index (LVGI)*: the ratio between the total debts of a company and the total assets in the year compared to the previous year and measures

the change in debt from one year to another. An LVGI greater than 1 is equivalent to an increase in leverage, or an increase in the debt component in the financial structure of the company. This index captures the incentives linked to debt contracts that can lead to manipulating profits.

- *Total Accruals to Total Assets (TATA)*: calculated as the difference between current assets and liabilities other than liquidity (working capital) and by subtracting depreciation, compared to total assets. For this index, an absolute value is measured and not the change between one year and another in the items taken into consideration. Since the accruals are not a material resource existing in the company, the higher the TATA index is, the less the profits will be based on real entities, and therefore the higher the risk of manipulation. The value of this index can be negative when the operating cash flow exceeds the net profits abundantly, that is the accruals are negative.

In other words, DSRI, ADI, DEPI, and TATA are useful to capture either distortion due to earnings manipulations while GMI, SGI, SGAI and LEVI are functional to engage in earnings manipulation due to deteriorating economic conditions.

Table 1 summarises the maximum likelihood of unweighted Probit estimation results (coefficients of the model, their statistical significance and the observed average values of the companies) based on a sample of 50 manipulators and 1708 non-manipulators, explained in the aforesaid model (Beneish, 1999) with significant log-likelihood ratio test ($2 = 129.2$, $p\text{-value} < 0.001$) and a descriptive validity with pseudo- $R^2 = 0.371$:

Table 1. Coefficients, significance and average values of the eight variables of the M-Score (8) model taken from Beneish Model (1999)

Variables	Coefficients	T-statistics	Manipulators	Non-manipulators
Constant	-4.840	-11.01	-	-
DSRI	0.920	6.02	1.465	1.031
GMI	0.528	2.2	1.193	1.014
AOI	0.404	3.20	1.254	1.039
SGI	0.892	5.39	1.607	1.134
DEPI	0.115	0.70	1.077	1.001
SGAI	-0.172	-0.71	1.041	1.054
LVGI	-0.327	-1.22	1.111	1.037
TATA	4.679	3.73	0.031	0.018

Source: Beneish (1999, p. 27)

For the company on which the potential manipulation is to be investigated, it is possible to calculate an M-Score (8) value after having replaced, for each model variable, the indexes calculated with the specific balance sheet values of the company in question. The interpretation of the results obtained by the Beneish Model of 1999 is the following:

- if M-Score (8) > -1.78 there is a high probability of manipulation;
- if M-Score (8) < -1.78 there is a low probability of manipulation.

This threshold is the most widely used and accepted value in the literature that has adopted this model, but it is not the only one proposed, since, in order to discriminate manipulative companies, it is fundamental to choose the cut-off value (threshold value). This choice depends on the cost and consistency of the probabilistic type 1 (to consider as not altered a financial statement that is altered indeed) and 2 (to consider as altered a financial

statement that is not altered indeed) errors of the model: lowering the cut-off value reduces type 1 and increases type 2 errors and certainly, for investors, it is more expensive to consider as not altered a financial statement that is altered indeed (Beneish et al., 2013; Giunta, Bini, & Dainelli, 2014).

In this analysis, therefore, after considering the limits embedded in the Beneish Model (Beneish, 1999; Beneish et al., 2013) and highlighted in various researches (Giunta et al., 2014), as already done in other researches that examined companies operating in different country settings, we adopted a threshold (cut-off) value for M-Score (8) of -2.22 (Muntari, 2015). In other words, if M-Score (8) > -2.22 there is a high probability of manipulation, while if M-Score (8) < -2.22 there is a low probability of manipulation.

3.1. Data, investigation period and financial crisis starting cut-off years

The study has been designed around a peculiar setting of investigation which is marked by a low presence of listed companies, by a high ownership concentration and by the prevalence of family businesses, as the case of Italy (Magli & Nobolo, 2014). In particular, the analyses are conducted on a sample of Italian non-financial listed companies on the Milan Stock Exchange during the period 2005-2016.

According to Trombetta and Imperatore (2014), by focusing on a single country setting, we limit possible confounding effects linked to different environments (i.e. the level of development of the market, regulation, culture among the others).

Our sample consists of non-financial companies that were active in the 2005-2016 period. The initial sample included companies covering all sectors, but the final one deals with 89 companies, because financial and insurance companies, banks and public utility companies have been excluded. Banks, financial and insurance companies have been excluded because they have different and specific regulations and different earnings management measurement processes that might affect model results (Klein, 2002; Peasnell, Pope, & Young, 2005). Public utilities have been excluded because they are subjected to regulatory and political cost motivations that influence earnings management (Arkan, 2015).

Furthermore, we eliminate companies with missing values, and we trim all the variables used in the earnings management models at the 1st and 99th percentiles in order to mitigate the effect of possible outliers. Accounting and financial data were collected from DataStream (last accessed on September 7, 2019) while the macroeconomic data were collected from the Dataset of the World Bank (last accessed on September 3, 2019).

The choice of the investigation period and of the financial crisis starting cut-off point is a very critical aspect, one not without consequences in terms of influence on the results and on the consequent theoretical and practical implications.

As a matter of fact, with respect to global financial crises, the previous research has used a different investigation period and a different starting year. Habib, Uddin Bhuiyan, and Islam (2013), when using the 2000-2010 investigation period and a cut-off of 2008, found evidence of income-decreasing earnings management techniques

and those negative discretionary accruals dropped during the financial crisis. Rusmin, Scully, and Tower (2013), when using the 2006-2009 investigation period and a cut-off of 2007 showed that in periods of economic downturn, managers engage in a “less aggressive income-increasing discretionary accruals strategy” (p. 7).

Even with specific reference to the studies about the European context, some different choices of the investigation period can be noticed: 2005-2012 (Vladu, 2013), 2005-2011 (Iatridis & Dimitras, 2013) and 2008-2011 (Kousenidis, Ladas, & Negakis, 2013) and of financial crisis starting cut-off point: 2008 (Vladu, 2013), 2009 (Iatridis & Dimitras, 2013), 2010 (Kousenindis et al., 2013).

Thus, to test the non-directional alternative hypotheses previously formulated, the present study has used 2009, consistent with Iatridis and Dimitras (2013), as the starting year of a period of crisis. Actually, observing the annual growth of Italy, similar to that of the countries of reference (Portugal, Ireland, Italy, Greece and Spain) of the listed companies analysed by Iatridis and Dimitras (2013), we can see that in 2008 a 1% contraction is observed compared to 2007, whereas in 2009 a 5.3% contraction is recorded, compared to 2008, which is a strong sign of crisis.

The peculiarity of the present analysis consists in the fact that, compared to other similar analyses, it extends the investigation period to three different sub-periods, that is to say: the pre-crisis period, the crisis period and the post-crisis period. (Habib et al., 2013; Rusmin et al., 2013; Vladu, 2013; Iatridis & Dimitras, 2013; Kousenidis et al., 2013)

According to Iatridis and Dimitras (2013) and Vladu (2013), 2005 was chosen as the observation starting year, as Italian listed companies, just like all the other European listed companies, started drawing their financial statements according to IFRS's that very year.

In order to define the structure of each sub-period on an objective basis, the trend of the ratio between profits and the total activities of the sampled companies in the period from 2005 to 2018 (last year of data availability) was observed. Subsequently, assuming 2005 as the point of reference, the calculation of the changes in the aforementioned ratio was performed.

Consequently, from the joint analysis of the trend of the ratio between profits and total assets and annual changes, given that 2005 is the starting year of the analysis, and that the crisis period began in 2009, it was possible to define a homogeneous time (four years) for each sub-period: 2005-2008 (the pre-crisis period); 2009-2012 (the crisis period) and 2013-2016 (the post-crisis period).

4. RESULTS AND DISCUSSION

The M-Score (8) model has been adopted and all the indexes representing independent variables, have been calculated for each company and for each of the 12 years. The main descriptive statistics, as calculated on the huge amount of the data collected and processed for each year (Panel A, B, C) and for the three sub-reference periods (Panel D), are shown in Table 2.

Table 2. Beneish Model indexes, mean values depending on the year by period 2005-2016 (Panels A, B, C) and on the phase of the financial crisis (Panel D)

Panel A	Pre-crisis period			
	2005	2006	2007	2008
DSRI	1.1081	1.0146	0.9733	0.9303
GMI	1.0117	1.0666	0.9725	1.0520
AQI	1.1393	1.0933	1.1202	1.1951
SGI	1.0926	1.1346	1.1022	1.0839
DEPI	1.4245	1.1767	1.0247	0.9888
SGAI	1.1558	1.1269	0.9642	0.9450
LVGI	1.1159	1.0518	1.0594	1.1448
TATA	-0.0159	-0.0122	-0.0318	-0.0683
Panel B	Crisis period			
	2009	2010	2011	2012
DSRI	1.1256	1.1315	1.0369	1.0117
GMI	1.0476	0.9557	0.9297	0.8589
AQI	1.2343	1.0856	0.9977	1.0013
SGI	0.8417	1.0463	1.0688	1.0162
DEPI	1.0166	1.0532	0.9883	0.9574
SGAI	1.0351	1.0342	1.0565	0.9696
LVGI	0.9991	1.0013	1.2065	1.0172
TATA	-0.0863	-0.0002	-0.0804	-0.0368
Panel C	Post-crisis period			
	2013	2014	2015	2016
DSRI	1.0349	1.0170	0.9679	1.1407
GMI	0.9179	0.8758	0.9621	1.0066
AQI	1.0607	1.2086	1.1553	1.0202
SGI	0.9710	1.0308	1.0400	1.0379
DEPI	1.0246	1.0985	1.0811	1.0629
SGAI	1.0956	0.9910	0.9666	1.1113
LVGI	1.0038	1.0667	1.0638	1.1081
TATA	-0.0497	-0.0333	-0.0696	-0.0172
Panel D	Pre-crisis period (2005-2008)		Crisis period (2009-2012)	Post-crisis period (2013-2016)
DSRI	1.0066	1.0764	1.0401	
GMI	1.0257	0.9480	0.9406	
AQI	1.1370	1.0797	1.1112	
SGI	1.1033	0.9933	1.0199	
DEPI	1.1537	1.0039	1.0668	
SGAI	1.0480	1.0238	1.0411	
LVGI	1.0930	1.0560	1.0606	
TATA	-0.0320	-0.0509	-0.0424	

It becomes interesting to examine the individual variables to understand which specific parameters, compared with the values estimated by Beneish (1999), determine the risk of potential manipulation. Starting from DSRI, we note that this value increases in time of crisis and slightly decreases in the following period. It should be highlighted that an increase in this index is associated with a greater probability of manipulation; the calculated values of DSRI are closer to the index average value of Beneish (1999) for non-manipulating companies (1.031), therefore, it cannot allow us to understand whether it means a suspected revenue inflation or a change in credit policy.

With reference to GMI, we can observe that this index is more deteriorated in the pre-crisis period and this puts pressure on the management and therefore the risk of manipulation raises. Actually, in this period the value of GMI (1.0257) is higher than the average value of the index for non-manipulative companies (1.014), but it is in every case far from the average value of manipulating companies (1.193).

AQI is above the value 1 in all periods. The quality of the activities is particularly affected in the pre-crisis period, where the average value of the index (1.1370) is, however, on a lower level than that of manipulative companies (1.254).

SGI shows average values closer to those of non-manipulative companies in all the periods considered. Therefore, considering that this index measures the evolution of revenues, it is believed that, during the entire period observed, there were no particular pressures to increase revenues.

DEPI shows particularly significant average value in the pre-crisis and post-crisis periods: in particular, the average pre-crisis value (1.1537) is above the average value of manipulative companies (1.077); this means that managers seem to have leveraged the depreciation rate to inflate profits.

SGAI shows a value greater than 1 in all periods, but it is particularly significant in the

pre-crisis (1.0480) and post-crisis (1.0411) periods.

LVGI values are above the unit for the years 2005-2016, while in the pre-crisis period (2005-2008) the index reaches 1.0930, lightly lower average of the manipulators (equal to 1.111). In the two subsequent periods, it shows values closer to the average of the non-manipulators (1.037), albeit slightly higher, 1.0560 (crisis-period) and 1.0606 in the post-crisis period. The particular contraction of this index in the period of crisis reflects the difficulty in accessing credit for companies, therefore the incentives related to debt contracts, which can lead to the manipulation of profits, are limited.

TATA is always negative in the three periods under observation; this happens when the operating cash flow exceeds the net profits. The component of the accruals is negative, therefore, the risk that the profits have been forged is relatively low.

On the basis of what has emerged so far, a greater tendency towards earnings management policies in the pre-crisis period is evident.

All the values of variables are then used to calculate the M-Score, which is the value determining whether the probability of manipulation is high or low.

To test the two-directional hypotheses, M-Score has been explored with eight variables and the coefficients estimated by Beneish (1999) and a cut-off value of -2.22 have been used (Muntari, 2015).

To specifically highlight the risk of manipulation, in Table 3 is reported the number and the percentage value of potentially manipulative (M-Score \geq -2.22) and non-manipulative (M-Score \leq -2.22) companies per period, obtained by calculating the M-Score (8) value for each company of the sample for each of the 12 years.

Panels A, B, and C reports the companies classified as potentially manipulative and non-manipulative companies per each year of the three different sub-periods while Panel D reports them per each sub-period.

Table 3. M-Score (8), number of potentially manipulative companies and potentially non-manipulative companies

Panel A	All years	Pre-crisis period			
		2005	2006	2007	2008
M-Score \leq -2.22	249 (69.94%)	51 (57.30%)	57 (64.04%)	68 (76.40%)	73 (82.02%)
M-Score \geq -2.22	107 (30.06%)	38 (42.70%)	32 (35.96%)	21 (23.60%)	16 (17.98%)
n	356	89	89	89	89
Panel B	All years	Crisis period			
		2009	2010	2011	2012
M-Score \leq -2.22	291 (81.74%)	76 (85.39%)	69 (77.53%)	70 (78.65%)	76 (85.39%)
M-Score \geq -2.22	65 (18.26%)	13 (14.61%)	20 (22.47%)	19 (21.35%)	13 (14.61%)
n	356	89	89	89	89
Panel C	All years	Post-crisis period			
		2013	2014	2015	2016
M-Score \leq -2.22	266 (74.72%)	77 (86.52%)	58 (65.17%)	70 (78.65%)	61 (68.54%)
M-Score \geq -2.22	90 (25.28%)	12 (13.48%)	31 (35.17%)	19 (21.35%)	28 (31.46%)
n	356	89	89	89	89
Panel D	All years (2005-2016)	Pre-crisis period (2005-2008)	Crisis period (2009-2012)	Post-crisis period (2013-2016)	
M-Score \leq -2,22	806 (75.47%)	249 (69.94%)	291 (81.74%)	266 (74.72%)	
M-Score \geq -2,22	262 (24.53%)	107 (30.06%)	65 (18.26%)	90 (25.28%)	
n	1068	356	356	356	

Firstly, throughout the period of investigation, a low presence of companies at a high risk of manipulation is found (24.53%) compared to the high presence of companies at low risk (75.47%).

Secondly, the M-Score classified 107 companies as potential manipulators in 2005-2008. In the pre-crisis period, the number of companies classified as potential manipulators was higher than that in the crisis (65 companies) and the post-crisis period (90 companies). In other words, I detect that in the Italian context, the precarious macroeconomic conditions and the consequent difficulties suffered by listed companies did not constitute an incentive to implement earnings management during the crisis period.

This result has several interpretations and implications for policymakers, regulators and professionals who could learn how financial crises may positively affect the quality of financial reporting, through the low use of earnings management.

First, the greater level of attention aroused by the unfavorable economic situation may have discouraged the managers of Italian companies from implementing earnings management, due to the greater litigation risk of being exposed, given that a more thorough and judicious reading of financial statements was underway.

Second, it is possible that managers have fewer incentives to manipulate earnings in crisis periods, due to a higher market tolerance for poor performance.

Third, it is possible that the monitoring activity scrutiny of auditors contributes to an increase in the quality of financial reporting, which leads to a low level of earnings management (Chia, Lapsley, & Lee, 2007; LaFond & Watts, 2008; Francis, Hasan, & Wu, 2013; Iatridis & Dimitras, 2013).

Fourth, a decrease occurred in earnings management after 2008, probably due to common incentives, especially during a crisis, to attract potential investors through a high-quality financial reporting (Kousenidis et al., 2013; Cimini, 2015).

5. CONCLUSION

The present research has investigated the relationship between the financial crisis and earnings management in the 2005-2016 period in the Italian context.

The outbreak of the financial crisis (2008-2009) has led to a decline in the confidence towards financial statements as a tool for representing value relevance of reported financials and it has drawn investors' attention to the financial statement values reliability.

The research has been motivated by a lack of studies, with reference to the Italian context, on the relation between financial crisis and earnings management, which distinguishes the observation period in three sub-periods: 2005-2008 (the

pre-crisis period); 2009-2012 (the crisis period); 2013-2016 (the post-crisis period).

The research has aimed to contribute to such a debate, and therefore, the study has been designed around a peculiar setting of investigation which is marked by a low presence of listed companies, by a high ownership concentration and by the prevalence of family businesses, as the case of Italy (Magli & Nobolo, 2014).

Through the model developed by Beneish, for each of the 89 the companies listed on the stock exchange selected in the sample, the so-called manipulation score was calculated; if this value exceeds a threshold (M-Score: -2.22), it indicates the risk of earnings management.

The Beneish Model adopted in this paper leads to the following conclusion: there is an overall low presence of companies at risk of manipulation throughout the period under investigation; however, the most consistent number is recorded in the pre-crisis period. Later, during the intense financial crisis, the number of potentially manipulative companies decreases and, finally, in the last years of the post-crisis period, there is again an increase in companies that have probably adopted earnings management policies, without however reaching the same number as in the pre-crisis period.

However, the study has several limitations that could represent a starting point for future research. First, we focused only on one country (Italy) and, hence, we could obtain different results by considering other settings with different characteristics in terms of the corporate governance system, regulation, type of economy and culture.

Second, the study has not considered any other model of analysis. Using an alternative model to the one utilized in this research might be functional to avoid the conditioning deriving from the variables which characterize the Beneish Model, to test the reliability of the results obtained and to confirm or deny the hypotheses of this research.

Moreover, the analysis might be more complete and provide more interesting insights by examining different types of crises.

Though this analysis contributes to filling the observed gap in research, future research is highly encouraged to fruitfully enrich such a debate and to further improve this stream of research. Future research could be directed towards: 1) the utilization of different methods of measurement of earnings management, in order to compare the results emerging from the utilization of various methods; 2) the comparison of samples of businesses operating in different country systems and under different paradigms of corporate governance, in order to understand how the influence of the legal and regulatory environment and the market forces may affect the accounting behaviour of companies in terms of earnings management under critical macroeconomic conditions.

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