



Dissertação

Mestrado em Finanças Empresariais

“Financial Numbers Game”

Evidence to the DJ Stoxx 50 Euro Index

Marta Sofia Gomes da Costa

Leiria, Fevereiro de 2011



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Dissertação de Mestrado realizada sob a orientação da Doutora Natália Maria Prudêncio Rafael Canadas, Professora da Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Leiria e co-orientação da Mestre Liliana Marques Pimentel, Professora da Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Leiria.

Leiria, Fevereiro de 2011

À memória do meu pai

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Resumo

A reacção do mercado de capitais ao anúncio dos resultados há muito que tem sido estudada pela literatura. O objectivo deste trabalho centra-se na reacção do mercado aos anúncios de resultados cujos valores sejam similares ou estejam acima das previsões dos analistas, proxy para a expectativa do mercado.

Assim, depois de aferirmos a relevância e actualidade do conceito de concretizar ou superar as expectativas, sobretudo o efeito no valor da acção ao apresentar uma surpresa de resultados positiva, debruçamo-nos sobre os mecanismos utilizados pela gestão de forma a relatar resultados acima das expectativas.

Seguidamente, e baseados numa abordagem sobre a linha do tempo das expectativas do mercado sobre os resultados, desenvolvemos as nossas hipóteses e definimos as nossas variáveis. Para reforçar a consistência dos nossos testes, consideramos duas métricas para calcular a rendibilidade anormal acumulada: o modelo de mercado e a rendibilidade ajustada ao mercado. Analisamos a existência de um prémio de mercado para as empresas que constituem o índice DJ Stoxx 50 E, que concretizam ou superam as expectativas. De seguida, através da análise da trajectória das expectativas, inferimos o uso de gestão das expectativas na amostra obtida, considerando 636 trimestres de empresas.

Finalmente, analisamos a associação entre o prémio de mercado e a existência de manipulação de expectativas que se baseou em 48 observações nas quais existia a probabilidade de existência de manipulação de expectativas.

Os resultados relativamente ao prémio de mercado são consistentes com estudos anteriores, e apesar de a nossa amostra ter um tamanho bastante reduzido relativamente aos estudos anteriores, apuramos a existência de um prémio de mercado para as empresas que concretizam ou superam as expectativas. Especificamente, obtivemos uma rendibilidade superior em 3,1% para as empresas que concretizam e superam as expectativas. Também

podemos concluir que a magnitude da surpresa dos resultados influencia a rendibilidade anormal da empresa.

No que respeita à presença de gestão de expectativas verificamos que existe uma diferença significativa entre casos onde é provável a existência de gestão de expectativas e os casos onde é menos provável que exista gestão de expectativas. Deste modo, podemos afirmar que existe gestão de expectativas nas empresas e no período da amostra.

No que concerne à associação entre a gestão das expectativas e o prémio de mercado, os resultados mostram evidência empírica de que o prémio de mercado existe quando as empresas superam ou concretizam as expectativas através da gestão das expectativas. No entanto, não foi possível concluir se o prémio é significativamente diferente para os casos em que o MBE é genuíno do que para os casos em que a gestão das expectativas influencia o facto de as empresas concretizarem ou superarem as expectativas.

Palavras-chave: Gestão das expectativas; Gestão dos resultados; Previsões dos analistas; Surpresa nos resultados; Concretizar ou superar as expectativas.

Abstract

The capital market reaction to the earnings announcement has been studied in the literature. This work focuses on market reaction to earnings announcement, whose values are similar or above analysts' forecasts, *proxy* for market expectations.

Consequently, after assess the relevance and timeliness of the concept to meet or beat expectations, especially the value-effect in which we present a positive earnings surprise, we have looked at the mechanisms used by management in order to report earnings above expectations.

Subsequently, and based on an approach of the earnings expectations time line, we develop our hypotheses and design our variables. To enhance the consistency of our tests, we consider two metrics to calculate the cumulative abnormal returns: the market model and market adjusted return. We analyze the existence of a market premium for firms of the DJ Stoxx 50 E, which meet or beat expectations. Then, and analyzing expectations path, we infer expectations management in the sample obtained in 636 firms-quarters.

Finally, we analyzed the association between the market premium and the existence of expectations management, based on 48 observations in which there was the likelihood of manipulation of expectations.

The results for the market premium are consistent with previous studies, and although our sample has a very small size in relation to previous studies, establish the existence of a market premium for companies that meet or beat expectations. Specifically, we obtained a higher return at 3.1% for firms that realize and exceed expectations. We can also conclude that the earnings surprise magnitude affects the return of the company.

Regarding the presence of expectations management, we detect that there is a significant difference between cases likely to exist expectations management and cases where it is less

likely that there is expectation management. Thus, we can say that there is expectation management in firms and sample period.

Concerning the association between the expectations management and the market premium, the results show empirical evidence that the market premium exists when companies meet or beat expectations through expectations management. However, we could not conclude if the premium is significantly different for cases in which the MBE is genuine from those cases where the expectations management influences the fact that companies meet or beat expectations.

Key Words: Expectations management; Earnings management; Analysts' forecasts; Earnings surprise; Meet or beat expectations.

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List of Acronyms

BLUE – Best Linear Unbiased Estimators

CEO – Chief Executive Officer

CFO – Chief Financial Officer

DJ – Dow Jones

EMH – Efficient Market Hypothesis

EPS – Earnings per Share

ERC – Earnings Response Coefficient

FNG – Financial Numbers Game

GLS – Generalized Least Squares

GRETLM - Gnu Regression, Econometrics and Time-series Library

IBES – Investor Brokerage Estimates System

LSDV – Least Squares Dummy Variables

MBE – Meet or Beat Expectations

OLS – Ordinary Least Squares

SEC - Securities and Exchange Commission

SOX – Sarbanes Oxley

SPSS - Statistical Package for the Social Sciences

TMI – Total Market Index

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Chapter 1

Introduction

Prior literature suggests that earnings benchmarks play an important role in capital markets. Moreover, recent evidence shows that analysts' forecast as became an important earnings benchmark and a reasonable *proxy* to market expectations. Furthermore, capital market participants watch carefully the earnings release and investors reward firms that meet or beat analysts' forecasts. In contrast, report earnings that fail the market expectations are costly to the firms.

Accounting and finance literature survey capital market reaction to earnings announcements, particularly the capital market reaction to earnings that meet or beat expectations (hereafter MBE). However, a market reaction to the earnings release is inconsistent with the market efficiency hypothesis, and, unless the earnings are surprising there should be no market reaction to earnings announcement. Nevertheless, empirical evidence shows that there is a positive market reaction to positive earnings surprise¹.

Managers recognize the value-relevance of reporting earnings above market expectations. Subsequently, further evidence suggests that they are not merely observes in "expectations game". Rather, they endeavor to report earnings that meet or beat expectations, managing reported earnings or guiding market expectations. Prior literature refers to manager's earnings management and expectations management as an effort to meet or beat earnings benchmarks, as the Financial Numbers Game (hereafter FNG). The motivations regularly

¹ The concept of positive earnings surprise is consistent with cases of MBE.

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suggested for such actions are the maximization of the share price, the enhanced of management credibility with shareholders and creditors and the prevention of litigation costs associated with an unfavorable earnings surprise. Managers often use inside information to misinform the market about firms' future performance and lead to a positive reaction surround the earnings release. This managers' action is only possible due the information asymmetry between them and investors.

Alternatively, earnings analysts' forecasts had gain importance as earnings benchmarks, in the academic and practical field. Empirical literature documented a higher accuracy in analysts' forecasts relatively to other metrics such as earnings time-series. On the other hand, it is documented that analysts' coverage increased in recent years, leading to more comprehensive and accurate forecasts. The evidence on the efficacy of analysts' forecasts reveals that they are used by investors and, moreover, can perform as a reasonable proxy to the unobservable market expectations.

Additionally, empirical evidence suggests a decrease on the managers' effort to achieve market expectations through earnings management. In fact, after the financial scandal in the beginning of the last decade, firms seem to apply expectations downward guidance instead of manipulating accounting numbers.

Although, the remarkable importance and relevance of the analysts forecasts and the market reaction to firms that report earnings meeting or beating market expectations, in a European context the study on this issue are scarce. In particular, no empirical study relies in a specific index and market.

In summary, due the relevance and actuality of the phenomena of MBE allied to the stringency on the subject in European companies, we focused at capital market reaction to the earnings surprise, along with the existence of firms' expectations management to MBE. Specifically, we focused on the incentives given by the capital market, in particular the increase of price shares in the days surrounding the earnings announcement using a sample of firms of the DJ Stoxx 50 Euro.

As documented in previous research, managing earnings upward or guiding analysts' forecast downward are the two forms to managers avoid a negative earnings surprise. Our purpose is to test the existence of expectations management and their impact in the market premium to MBE, in a European context.

Our research is related to Bartov *et al.* (2002) model and we assess expectations management concerning the earnings information paths over the quarter. As a result, the work has as its main objectives:

- Test whether there is, in companies that comprise the DJ Stoxx 50 Euro, any market reward to firms that meet or beat expectations, after controlling for the magnitude of the earnings forecasts errors;
- Identify the expectations management through the paths of earnings information;
- Analyze if investors assign any reward to firms that meet or beat analysts' forecasts, even when they manage analysts forecasts downward, (i.e., management expectations);
- Test if the market premium differs in cases in which MBE is genuine, from those that are achieved with the use of expectations management.

To fulfill the above stated objectives, this dissertation is organized as follows.

After this brief introductory chapter, Chapter 2 provides some general theoretical background on the financial numbers game, in particular, in the meeting or beating analysts' forecasts and their implications in the capital market. We also outline the evidence of the two mechanisms used by managers to achieve the MBE, expectations and earnings management, focusing on the expectations management. The chapter provides some support to embody the empirical research. Finally, we outline some of the relevant studies on the MBE and the main research questions that they address.

Chapter 3 presents the research design. Specifically, we denote the purpose of the study and the hypotheses that we propose to test. To that matter we develop the timeline of earnings information and the events needed to perform the empirical work, as long as the expectations paths arising from the earnings information. After that, we formalize the

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hypotheses to test and present our sample. Finally, we develop our methods and tests based on an event study approach.

Chapter 4 is devoted to expose empirical results and their subsequent analysis. We begin to present the results of the market premium tests, focusing on the regression approach. After that, we denote our results on the presence of expectations management, looking at the expectations paths. Finally, we present empirical results on the association between the market premium and the managers' intervention through expectations guidance.

Chapter 5 conclude this dissertation summarizing the main empirical achievements in this work, pointing same limitations and outline same future work directions as a continuation of this research.

Chapter 2

Theoretical Background

2.1 Introduction

In this chapter we outline some accounting and financial literature essential to the foundations of our empirical work. Accordingly, we begin with the definition of our investigation framework. Specifically, we delineate the concerns about Financial Numbers Game, clarifying the participants, incentives and formal rehearsals.

In order to taper our investigation problem we bordered the magnitude of the meet or beat expectations phenomena, as long as the strategies used to achieve the expectations, earnings and expectations management. In particular, we exploit the disclosure environment, the use of analysts' forecasts as a proxy to the market expectations and the strategy of expectations management as a tactic used by firms to meet or beat analysts' forecasts.

Finally, we summarize some of the relevant empirical work on MBE, screening different approaches to test the existence of MBE and their implications, focusing on the capital market reaction to the MBE.

2.2 Investigation problem

2.2.1 Financial numbers game

The reaction of the capital markets to the firm's financial and business information has gain a growing importance in the last decades. In 1998, Arthur Levitt, a former Chairman

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of Securities Exchange Commission (SEC), raised the question about earnings and expectations management taking place in North American firms:

“...through conference calls or embargoed press releases, analysts and institutional investors often hear about material news before it made. In the interval, there is a great deal of unusual trading... This is the pattern earnings management creates: companies try to meet or beat Wall Street earnings projections... their ability to do so depend on achieving earnings expectations of analysts. And analysts seek constant guidance from companies to frame those expectations.”

Executives realize the importance of capital markets reaction and try to report earnings that corrugate with market expectations. Further it is well documented that missing earnings expectations is costly to the companies. Skinner and Sloan (2002) found that the stock market reaction to negative earnings surprises tends to be large and asymmetric, particularly for growth stocks, suggesting a high cost to missing analysts' expectations. Prior literature refers to the Chief Executive Officers' (CEOs) perception of market reaction and the strategies they used to influence market participants behavior, as financial numbers game. The game is a phenomenon in which firms engage in management of earnings and expectations to meet or beat earnings benchmarks. The game could have different forms and names depending on the tactics applied to change firm's image.

Beaver (1968) studied the common stock investors' reaction and how they perceive value surround the earnings announcement date, analyzing the price movements and the transaction volume of the common stock. Results suggest that the earnings announcement gives an important signal to the market, and managers realize that positive earnings are an important benchmark to achieve. Degeorge *et al.* (1999) identified a hierarchy of earnings benchmarks and posited that managers seek, (i) reporting positive earnings, (ii) sustaining recent performance and (iii) meeting or beating analysts' forecasts. More recently, Brown *et al.* (2005) have shown that since the mid 90's Degeorge's hierarchy is no longer valid and investors penalized firms for reporting quarterly earnings missing analyst's estimates more than they do for missing the other two benchmarks. Degeorge *et al.* (2005) extended the prior study and found that higher growth expectations are associated to a higher

tendency to exactly meet or beat the analyst forecast and this phenomenon has been more prevalent since 1996. Therefore, managers are aware of the importance of reporting results that exceed expectations and will translate it into a premium market. Recent literature suggests that companies have an active role in the game by altering reported earnings or managing expectations (see for example, Vickers (1999); McGee (1997); Lacina and Karim (2004)).

The stock price reflects the market expectations about the future company performance. Therefore, a negative earnings surprise gives an important signal to the market, decreasing expectations and causing subsequent devaluation. This issue was early focused in the 30's by Dodd and Graham (1934: 552):

“The effect of announcement of earnings on value is likely to be insignificant, unless earnings announcement itself signals a change in the outlook of the future.... Since the past cannot be changed, it is not an issue in the purchase decision in the future of earnings that the investors will obtain by buying stocks. It is the ability of the existing assets and liabilities to create future earnings that determine the value of the equity position.”

Consequently, unless the result is a surprise it should not be expected any market reaction to the earnings announcement. This line of thought can raise the pertinent question regarding the efficiency of markets. A prominent earlier work on capital markets provided by Ball and Brown (1968:160) state that capital market efficiency offers “justification for selecting the behavior of security prices as an operational test of usefulness” of information in financial statements.

The Efficient Market Hypothesis (EMH) is an important concept, and it has become increasingly widely accepted since interest in it was reborn in the late 1950's and early 1960's under the rubric of the “theory of random walks” in the finance literature and “rational expectations theory” in the mainstream economics literature. The random walks theory suggests that earnings are close to a random walk and the growth rate is predictable only one or two years in the future as cited by La Porta *et al.* (1997). Fama (1965:3) noted that this theory says that the “future path of the price level of a security is no more predictable than the path of a series of cumulated random numbers”. However, the ideal is

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a market in which prices provide accurate signals for resource allocation, i.e., the stock price at any time fully reflect all available information, Fama (1970).

The semi-strong form of market efficiency posits that investors should not be able to trade profitably on the basis of publicly available information, such as analyst estimates, Barber *et al.* (2001). On the other hand, research departments of brokerage houses spend large sums of money on security analysis, presumably because these firms and their clients believe its use can generate superior returns. Conversely, managers have private information and use this advantage to alter the market participants' perception about firms' financial numbers, this way engaging in voluntary disclosures to downward expectations about firm's future performance to ensure that reported earnings exceed these expectations. Thus, because of inefficient markets and information asymmetry between investors, analysts and managers, further evidence suggests that there is a game played by companies in order to change the expectations about future performance and reward the future growth in the days that surround the earnings announcement date².

This is one of the images that the game could have, expectations manipulation, but firms engage in some activities of accounting manipulations to achieve earnings benchmarks. Accordingly, firms use the flexibility in accounting principles and "manufacture" earnings that meet these benchmarks. In Table 1 we present a resume of the labels that FNG could have when firms engage in earnings manipulation, Mulford and Comiskey (2002:3).

As mentioned in the introduction of this dissertation, the main objective of this work is to provide evidence of the expectations management. So, although the earnings management is an extremely important subject we will focus our study only on managers' voluntary disclosures in order to manipulate earnings expectations and meet or beat expectations.

² Brown *et al.* (2005) and Koh *et al.* (2008) suggest that the reported earnings "game" between analysts, investors, and firms has evolved over time and the frequency of meeting or beating expectations increased in the last decade.

Table 1 - Common labels for the financial numbers game

Name	Definition
Aggressive accounting	A forceful and intentional choice and application of accounting principles done in an effort to achieve desired results.
Earnings management	The active manipulation of earnings toward a predetermined target.
Income smoothing	A form of earnings management designed to remove peaks and valleys from a normal earnings series, including steps to reduce and store profits during good years for use in bad years.
Fraudulent financial reports	Intentional misstatements or omissions of amounts or disclosures in financial statements, done to deceive financial statement users, that are determined to be fraudulent by an administrative, civil, or criminal proceeding
Creative accounting practices	Any and all steps used to play the FNG, including the aggressive choice and application of accounting principles, fraudulent financial reporting, and any steps taken toward earnings management

Source: adapted from Mulford and Comiskey (2002: 3)

2.2.2 Rewards of the game

The game is played by those who expect that there will be a reward. The reward can be the increased demand of the shares and their subsequent valorization. For others, the objective is to improve debt ratings, to reduce the amount of interest and diminish the constraint to increased debt. When CEOs are paid with bonus-option plans they have an increased motivation to meet or beat expectations. Finally, we can observe another motivation, mainly in high-profile firms, that will be the reduction of political costs, including avoiding more regulation or higher taxes.

The expectations or earnings management could affect managers' reputation and could trigger into law suits. Therefore they must recognize that will be a compensation in this actions. In this chapter we will point some incentives (see Table 2) focused on accounting literature.

Table 2 - Rewards of the game

Category	Rewards	Surveys
Market	Higher shares prices Reduced share price volatility Increased corporate valuation Lower the cost of capital Increased value of stock options	Sadique <i>et al.</i> (2008); Bartov <i>et al.</i> (2002); Dopuch <i>et al.</i> (2008); Venkatachalam and Wang (2000)
Borrowing cost effects	Improved credit quality Higher debt rating Lower borrowing costs Less stringent financial covenants	Jiang 2008; Melgarejo (2010); Crabtree and Maher (2005)
Bonus plan effects	Increased profit-based bonuses	Bauman <i>et al.</i> (2005); Bauman and Shaw (2006); Healy (1985); Watts and Zimmerman (1978); Matsunaga and Park (2001); Bolliger and Kast (2004)
Political cost effects	Decreased regulation Avoidance of higher taxes	Moses (1987); Hagerman and Zmijewski (1979); Morse and Richardson (1983); Mergenthaler Jr <i>et al.</i> (2010)

Source: Adapted from Mulford and Comiskey (2002:4)

Contractual incentives

FNG rewards, specifically, contractual incentives, implies that we recognize that firms is a set of contracts. Fama and Jensen (1983: 302) define organization as:

“... the nexus of contracts, written and unwritten, among owners of factors of production and customers. These contracts or internal "rules of the game" specify the rights of each agent in the organization, performance criteria on which agents are evaluated, and the payoff functions they face.”

This image of the firm leads us to the agency theory which presents the firm as a set of contracts and defend that the financial information plays an important role to relieve the conflicts between the several agents (Watts and Zimmerman, 1978). Jensen and Meckling (1976: 309) defined agency relationship as:

“...as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent”.

As the agent has the power to make decisions for the principal he may be tempted to pursue their own interests rather than trying to maximize the principal value (so-called conflicts of interests). Therefore, the remuneration contracts and the debt agreements may induce the managers into earnings or expectations manipulation to increase remuneration, improve job insurance and mitigate the potential contractual breaches with the debt owners.

Due the conflict of interests between managers (control) and shareholders (property), bonus-plan compensation is often defined. This bonus-based compensation is indexed to performance measures, i.e., balance spreadsheet results and/or stock price. When managers' remuneration is associated with accounting measures, they have increasing incentives to manipulate earnings based on the *accruals*. On the other hand, if managers' remuneration is based on stock price, they had a higher incentive to meet or beat expectations. Healy (1985) argued that accounting choices should be studied along with the managers' compensation plans.

A substantial body of theoretical works shows that stock-based compensation plays an important role in aligning the managers' incentives with shareholders and reducing agency costs³. Equity incentives and stock-based compensation became more usual in contracts between executives and shareholders, as especially since the 1990s (Murphy, 1999). Due to the significant equity based holdings, managers' wealth becomes sensitive to their firm's stock prices. From a perspective of risk diversification managers will be motivated to sell stocks of their firms. That gives them a plus ground to increase short-term stock price by manipulating earnings or expectations. Matsunaga and Park (2001) showed empirical evidence that CEOs' bonus payments provide them with economic incentives to meet market expectations and to achieve earnings from the same quarter of the previous year. However, the authors did not find any evidence of a relationship between CEOs' bonus

³ For representative surveys and discussion on executive compensation with emphasis on equity-based compensation, see Bushman and Smith (2001); Brickley *et al.* (1985); Core *et al.* (2003).

payments and loss quarters⁴. Besides earnings management, which has had a strong focus in literature, a widespread way to meet analysts forecast is to provide analysts with pessimists' disclosures (the so-called downward guidance). Bolliger and Kast (2004) gave an important contribution on executive compensation making the link between expectations management and executive compensation. They documented a strong connection between expectations management and relevant components of CEO option compensation, such as bonus plan payments and the value of firm's shares (owned by CEOs). Rogers and Stocken (2003) found that when managers are more likely to face litigation, release less optimistic forecasts than managers less likely to face litigation, and this incentive is dampened when it is more difficult to detect whether managers have misrepresented their forward-looking information.

A different perspective is related to the restrictions in lending contracts. There is a dearth of research on managerial propensities to engage in benchmark beating behavior to affect the cost of debt. When there is a violation of the clauses of the financing contract, the company incurs costs that can take the form of higher interest rates or demand immediate debt. Therefore managers had a strong incentive to manipulate earnings⁵. Jiang (2008) finds that firms beating earnings benchmarks have: (i) better one-year ahead credit ratings; and (ii) a smaller initial bond yield spread.

Political costs incentives

Large firms may have the motivation to manage their earnings downward or give a pessimist image about the quarterly earnings to the market because they crave not be noticed by regulators. So the accounting choices are dependent on company political visibility⁶. Several studies emphasize the earnings reduction to minimize the political

⁴ Similar results in Gaver and Gaver (1998) show that cash compensation is significantly related with positive earnings but are not related to in the cases of losses.

⁵ In this case there is no expectations management because these clauses are based only in accounting measures, and therefore less relevant to this study.

⁶ This matter is not a purpose of this study, however it is important refer political costs reduction is an important incentive and that they affects accounting choices.

attention and adverse actions by public powers (Hagerman and Zmijewski (1979); Morse and Richardson (1983)). In a different perspective Moses (1987) considered the hypothesis of smoothing earnings in order to minimize risk and the political visibility. According to the author, the earning's fluctuations are the main variable that influences political visibility.

Capital markets incentives

Many studies were conducted in order to infer the accounting disclosure impact. Generally, the conclusions lead to the evidence that capital market react significantly to the unexpected new information. The earnings relevance assigned by market participants constrains companies' decisions to maximize certain indicators. Graham *et al.* (2005) conducted a survey and interview more than 400 executives. They found that 51% of CFOs state that earnings are the most important financial metric. This finding reflects superior informational content in earnings over the other metrics, such as revenues and cash-flows. Several benchmarks are proposed in literature, such as earnings the same quarter last year, analysts forecasts and profits (Degeorge *et al.* (1999); Degeorge *et al.* (2005); Brown *et al.* (2005). Further literature suggests that the market cares about earnings benchmarks. (Barth *et al.* (1999) found that, all else constant, firms that report continuous growth in annual earnings are priced at a premium relative to other firms. Bartov *et al.* (2002) found that the "habitual betterers"⁷ report superior future operating performance.

It is well known that earnings benchmarks are the main objective of managers, and meeting or beating these benchmarks is an important issue in view of the fact that it materializes in a market premium. Executives believe that hitting earnings benchmarks builds credibility with the market and helps to maintain or increase their firm's stock price. On the other hand, missing these benchmarks (such as analyst's forecasts) results in adverse consequences such as the increase of uncertainty about future performance and

⁷ They define "habitual beaters" as firms that report earnings higher or equal to analysts forecasts.

prospects, and also highlights firm's financial problems⁸. In the next section we describe concept of meeting or beating expectations, as well as its importance in relation to the reactions of capital market.

2.3 Meet or beat expectations

The concept of meeting or beating expectations for quarterly earnings is now well embedded in corporate culture and gives an important measure to evaluate managers' performance. The accounting literature has documented an increased interest by companies to meet or beat expectations, especially since the early 90s. Therefore, the companies employ a variety of strategies to achieve the MBE.

Empirical evidence shows that meeting or beating expectations results in a significant market premium, increasing the share price (Bartov *et al.* (2002); Dopuch *et al.* (2008); Athanasakou *et al.* (2008); Kasznik and McNichols (2002)). Brown (2001) and Matsumoto (2002) documented a disproportionate number of cases that meet or beat analysts' expectations. Koh *et al.* (2008) concluded that there was a change in the expectations and earnings management to beat analysts' forecasts, after the financial scandals of 2000 and 2001 and the entry into force of SOX (Sarbanes-Oxley) regulation. Specifically, they found an increase in the manipulation of expectations. In contrast, Bartov and Cohen (2008) conclude that there is a decrease in the MBE in the post SOX. The difference is mainly due to the sample chosen.

The existence of market incentives for companies to be able to meet or beat expectations has had a high importance in the literature on accounting and finance. The empirical literature faces the MBE from different perspectives with regard to their incentives,

⁸ When a company is unable to provide results which corroborate with the predictions, it is because the company is facing serious financial problems.

focusing on the characteristics of firms that achieve the MBE and the mechanisms used for the MBE (earnings and expectations management).

Consequences of failure to MBE

When market participants recognize that firms engage in expectations manipulation, they penalize such firms. Graham *et al.* (2005) in their survey inquired the CEOs about the consequences of failure to meet expectations. They showed that the two top consequences⁹ of a failure to meet earnings benchmarks¹⁰ are an increase in the uncertainty about future prospects, and a perception among outsiders that there are deep previously unknown problems at the firm¹¹. Brown *et al.* (2005) provided evidence that investors penalize firms for reporting quarterly earnings missing analyst's estimates.

Dechow *et al.* (1996) found empirical evidence that firms who have committed irregularities in financial statements witnessed the lowering in their stock prices by 9%. After the financial scandals in 1990s the market participants reduced their confidence in the financial information reported. This lack of credibility increase firms cost of capital because investors perception of firm value.

In the next two sections we will delineate the two mechanisms most often cited in literature to achieve MBE. Then we present some relevant empirical studies on MBE.

⁹ Optional answers that occupied the third, fourth, fifth and sixth position respectively were: (i) “we have to spend a lot of time explaining why we missed rather than focus on future prospects”(58,2%); (ii) “it leads to increased scrutiny of all aspects of our earnings release”(37,6%); (iii) “outsiders might think that our firms lacks the flexibility to meet the benchmark”(28,1%); and (iv) “ it increases the possibility of lawsuits”(25,7%).

¹⁰ They survey evidence that indicates four important metrics for earnings: (1) same quarter last year; (2) analysts' consensus estimate; (3) reporting a profit; and (4) previous quarter EPS.

¹¹ The authors compare these responses with the earnings guidance and the importance of these concerns increases with the degree of guidance.

2.3.1 Earnings management as a device to MBE

Although our study will not focus on the identification of earnings management, we will consider it an important issue, and thus we will present a brief remark.

Identifying empirically the management of earnings is not a simple process. Because managers want to avoid lawsuits, loss of reputation and credibility, they camouflage such practices (Kasznik, 1999). Despite this, the hypothesis of earnings management has been admitted in the financial and accounting field. In fact, there has been growing concern about the earnings management, not only in practical level as at the academic level.

The earnings management is interpreted differently by scholars and by practical and regulatory entities. Until the late 1990s, earning's management was seen by academics as a form of personal incentives for managers. However, before the start of the decade it has never been studied how earning's management could be used as a tool to meet or beat analysts' forecasts and to create a favorable reaction of capital markets. Dechow and Skinner (2002) showed a literature review on the different perspectives of earnings management and on the reasons why it is viewed differently by academics and practitioners. One of the reasons to scholars consider earnings management as ineffective, is the hypothesis of efficient markets. If markets are efficient, earnings management are deduced by investors and reflected on share prices.

From the vast literature on the earnings management we can refer to this practice as the use of the existing flexibility in accounting rules to change released information. To fit these practices, the disclosed information will change the perception of users about company performance. Earnings management only encompasses practices using the flexibility of standards and therefore not fraudulent. To be considered earnings management there has to be an intention by management to change the perception about the company's performance. The use of judgments in financial reporting is useful if it is used only with the purpose of informing. The problem arises when these judgments are used to deceive and help companies to achieve a higher perceived value.

To identify the management of earnings is important to recognize the *accruals* component of accounting results, which are easier to manipulate than cash flows. Brown and Pinello (2008) found empirical evidence that analysts' accruals forecasts are more easily achieved or exceeded by management than the analysts' cash flows forecasts. Cash flows can only be changed based on real decisions, namely the manipulation of actual results. This mechanism (Bartov and Cohen, 2008), could also be used by management to achieve desired results. DeFond and Park (1997) showed that managers are motivated to smooth the income between periods, to meet or beat market expectations. They found that if managers of firms experiencing a "poor" performance in the current period and expecting a "good" performance in the next period, utilize their discretionary *accruals* to increase income in the period. Conversely, they use discretionary *accruals* to reduce income in the periods experiencing a good performance.

According to Dechow and Skinner (2002), manipulation of the results will only be effective if it distort the assessment that investors make about the company, and this distortion is only possible because there is information asymmetry.

Abarbanell and Lehavy (2003) tested whether the direction and magnitude of earnings management of firms is affected by the sensitivity of their stock prices to earnings news, and conclude that firms with higher price sensitivity¹² are more likely to engage in income-increasing or income-decreasing earnings management to report earnings equal or above analysts' forecasts.

Many studies give a definition on earnings management. All of them agree that the concept encompasses changing the perception of stakeholders¹³ about the performance of the company, and it is limited to practices that use accounting standards flexibility and

¹² They use the analysts' stock recommendation as a proxy to stock price sensitivity. They argue that firms with higher growth expectations and glamour designations have stronger incentives to manage earnings to meet or beat analysts' earnings forecasts than other firms.

¹³ Stakeholders include current or potential providers of debt and equity capital, providers of labor, financial intermediaries (e.g., auditors, financial analysts, and bond rating agencies), regulators, suppliers, and customers.

therefore are not fraudulent. In the Table 3 we present same earnings management definitions found in literature.

Table 3 - Definitions on earnings management

Author	Definition
Schipper (1989:104)	“... a purposeful intervention in the external financial reporting process, with the intend of obtaining some private gain (as the opposed to, say, merely facilitating the neutral operation of the process...”
Healy and Wahlen (1999:368)	“Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers.”
Mulford and Comiskey (2002:3)	“The active manipulation of earnings toward a predetermined target, which may be set by management, a forecast made by analysts, or an amount that is consistent with a smoother, more sustainable earnings stream.”
Leuz <i>et al.</i> (2003:506)	“The alteration of firms’ reported economic performance by insiders to either mislead some <i>stakeholders</i> or to influence contractual outcomes.”

Vast literature refers to earnings and expectations management as instruments to achieve earnings benchmarks. We do not extend our study on earnings management, even though it is an important aspect in FNG and a mechanism to meet or beat earnings market expectations. In the next section we will present the other instrument to meet or beat expectations, which is the expectations guidance.

2.3.2 Expectations management as a device to MBE

Before development of expectations guidance we expose the disclosure context in which forecasts are made, the impacts of disclosure of informal information and management

behavior. We also explain how analysts forecast could be a reasonable *proxy* to market expectations.

Disclosure environment

Managers make disclosures to investors and analysts through a variety of channels using both formal and informal disclosures (Rao and Sivakumar, 1999)¹⁴. The main purpose of accounting research is the formal disclosure, such as financial accounting reports. However, formal disclosures represent only a portion of the disclosure process. On the other hand, informal disclosures have increasingly become the main instrument to release relevant and timely information to the market. Anilowski *et al.* (2007) found in their sample that there has been a substantial increase in earnings guidance over the 1994 to 2003 period, increasing from 10% in mid 1990s to 25% in 2001-2003. They also found that earnings guidance is majority quarterly and provide information about economic aggregates¹⁵. They also considered the timing of guidance during the quarter and concluded that, in relative terms, managers tend to deliver neutral guidance early in the quarter, downward guidance toward the end of the quarter, and upward guidance after the end of the quarter. They also found that guidance informativeness increase as the quarter progresses. Also, Richardson *et al* (2004) found that analysts tend to issue optimistic forecasts early and slightly pessimistic forecast late in the forecasting period. Therefore, many companies disclose information with informal means, such as press releases, promotional materials, speeches, and conversations with analysts (Brown and Higgins, 2005). Given the role of informal disclosures, research on forecast guidance is important because it improves our understanding about the reasons and the vehicles to firms publicize informal disclosures.

¹⁴ To an extensive revision on empirical corporate disclosure literature see: Healy and Palepu (2001) Ramnath *et al.* (2008)

¹⁵ If managers have stronger incentives to disclose bad news than good news, aggregate guidance is less likely to be informative. Still, if these incentives are relatively constants over quarters, rational markets participants will deduce market's overall earnings news from the relative extent of downward guidance.

The issue of expectations management is important to understand the earnings surprise games and their implications in public policies. In the majority of countries, it has a heightened concern about the regulation of formal disclosures, while public policies regulating informal disclosures are practically not in attendance. Never the less, informal disclosures, such as press releases and communications to shareholders remain almost unbound of regulation. The US has almost no direct regulation regarding informal disclosure (Brown, 2005). In Continental Europe, EC Listing and Reporting Directives regulating disclosures hold on to the principles of materiality, clear disclosure, current information, standard format, advisory statements in advanced statements, and equal treatment of investors. However, the substance and timeliness of informal disclosures are not issued to regulatory supervision (Baums, 2002).

Kaszniak (1999) focused on the costs associated with voluntary disclosure made by managers. Many public corporations fearing the costly consequences of earnings forecasts errors did not disclose earnings projections. Such costs can be the litigation costs and loss of reputation for accuracy¹⁶. Brown and Higgins (2005) provided evidence on earnings forecast guidance by UK firms. The authors argued that in strong investor protection environments, characterized by common law and market orientation, managers have greater incentives to avoid missing earnings forecasts. A higher level of regulation increases the tendency to managers engage in forecast guidance instead of earnings management, due to tighter financial reporting and less rigorous disclosure regulation.

A relevant conclusion by Bowen *et al.* (2002) predicts that the impact of informal information, such as conference calls, on reducing the information asymmetry and improving accuracy in analysts forecast. Dye (2001) cited by Beyer *et al.* (2008: 301) predicted that “conditions under which firms voluntarily disclose all their private information. These conditions include: (i) the disclosure is costless to the firm; (ii) investors know that the firm has, in fact, private information; (iii) all investors interpret the firm’s

¹⁶ The level of investors’ protection regulation is correlated with litigation costs. Shareholders may be motivated to lawsuits when managers fail their predictions and claim that managers are not to disclose the true financial information.

disclosure in the same way and the firm knows how investors will interpret the firm's disclosure; (iv) the firm can credibly disclose its private information; and (v) the firm cannot commit ex-ante to a certain disclosure policy".

Analysts forecasts as a proxy to market expectations

As noted, analysts' earnings forecast are an important benchmark that managers try to achieve (Degeorge *et al.*, 1999; Degeorge *et al.*, 2005; Graham *et al.*, 2005; Brown *et al.*, 2005) and a representative proxy for earnings market expectations O'Brien (1988)¹⁷. Givoly and Lakonishok (1984) also found evidence that financial analysts' forecasts of earnings are significantly more accurate than predictions made by naïve models that simply extrapolate the past earnings trends. Fried and Givoly (1982) compared the accuracy of analysts' earnings per share forecasts with two naïve models: (i) a simple time-series model¹⁸ (which assumes that next earnings per share is equal to the last earnings per share plus a constant drift term); and (ii) a cross sectional model¹⁹ (which projects earnings per share of individual companies based on their association with market wide changes in earnings). Their results, which were based on about 100 mean forecasts in each of the 11 years 1969 to 1979, showed analysts' forecasts to be more accurate, on average, than the two naïve models. The analysts' forecasts have a mean relative error of 16,4% over the test period, which is significantly lower than the mean error of either, the time series model (19,3%) or cross-sectional model (20,3%).

Earnings also represent an important variable in stock valuation and selection and their forecasts are considered, therefore, important for predicting future returns. The evidence on the usefulness of analysts' forecasts indicates that they are used by investors and, in fact,

¹⁷ She concluded that the most current available forecasts are more accurate than mean or median of all forecasts available. This suggests forecast timelessness as a characteristic for distinguish better forecast. She also found that forecasts are more accurate than time series models.

¹⁸ $P_t = A_{t-1} + C_t$, where A_t and P_t are the actual and predicted earnings per share at time t , respectively, and C_t is the arithmetic past growth in earnings per share.

¹⁹ $P_t = A_{t-1} + \alpha + \beta_t A_{mt}$, where A_t and P_t are the actual and predicted earnings per share at time t , respectively, α and β are regression coefficients, and A_{mt} is the change in market index of earnings.

can serve as a reasonable proxy for the unobservable market expectations of earnings, because investors behave in a way which is more consistent with analysts' forecasts. The main reason for analysts' earnings forecasts accuracy is that they are not limited to the information from the past and capture both the time-series property and cross-sectional dependence of the earnings series.

In conclusion, unless models rely on private information, the accuracy of analysts' forecasts over predicting value models (defined above) is valid due to market inefficiency. Givoly (1985) predictive that investor tend to act according to analysts' forecasts, which are surrogate for market expectations of earnings.

Expectations guidance

The academic literature generally focuses on managing reported earnings upward as a way to avoid negative earnings surprises, (Healy and Wahlen, 1999), but the business press considers downward forecast guidance as crucial to the earnings surprise game (McGee, 1997; Vickers, 1999). We focus on downward forecast guidance as a way managers avoid negative earnings surprises. The expectations' management can be achieved through public disclosures that have only intention to change the earnings expectations of a particular company. The expectations guidance is one of the mechanisms, along with earnings management, that management has at its disposal to establish or alter market expectations about future corporate performance.

After the financial scandals in the beginning of the decade, increased regulation on the reported financial information changed management behavior in order to report earnings that exceed expectations. Empirically, evidence shows that managers prefer to engage in expectations management over earnings management. Koh *et al.* (2008) and Bartov and Cohen (2008), showed that after the financial scandals early in the decade there was a decrease in earnings management and higher firms dependence on downward analysts' expectations. Athanasakou *et al.* (2008) found an increase in earnings guidance over earnings management after the beginning of the decade. These results suggest that market became more skeptical on financial information and more vulnerable on market expectations.

Firms' managers typically have more information about expected profitability than outsiders. This information asymmetry makes it difficult for investors to differentiate between investment opportunities with high profitability from those with low profitability. Managers exploit this information asymmetry to change market firms' image and change investment decisions of potential investors. This occurs through public announcements that affect the perception of analysts about the companies' performance and result in an MBE at the time of earnings announcement. Thus, managers can disclose information that does not reflect the companies' real situation to lower market expectations.

Managers with bad news release essentially all of their news at the preannouncement date, while managers with good news release about half of their news, Soffer *et al.* (2000). None of the less, firms with negative earnings announcement surprises have significantly lower excess returns for the period from just before the preannouncement to just after the earnings announcement. This finding is consistent with the observed disclosure strategies, whereby managers attempt to avoid negative earnings announcement surprises, and suggests that how information is presented can affect the market's reaction to that information. Brochet *et al.* (2008) argued that earnings guidance is expected to be informative to the market because it contains management specific knowledge. Further than an objective aggregation of interim financial statement values, much like accruals, earnings guidance can reduce information asymmetry between the manager and investors. Consistent with this, not only have analysts and investors been shown to incorporate the news in the management guidance, management guidance has been shown to reduce information asymmetry and improve a firm's reputation for transparent and credible reporting.

In order to explain the phenomenon in which analysts do not adjust for the general downward bias in earnings guidance issued by management, Tan *et al.* (2010) investigated both cognitive and incentive factors and their interaction. Their results suggested that analysts do not adjust for the general tendency for companies to deliver downward and biased guidance, but may adjust after they learn about a firm's specific bias pattern over time. However, the level of adjustment depends on the interactive effects of analysts' incentives and the reliability and magnitude of bias exposed in its guidance trace. Analysts

with accuracy incentives adjust for management's track record of downward and biased guidance, but those with relationship incentives do not.

In Table 4 we denote some of the common definitions of expectations management present in literature. It is visible the manipulation feature of information disclosure.

Table 4 - Definitions on expectations management

Author	Definition
King and Rebelo (1990:128)	"...management voluntary disclosure predicting results before the release date ..."
Bolliger and Kast (2004:4)	"... public downward information relatively to firm future performance."
Burgstahler and Eames (2003:259)	"...smooth and continuous downward tendency on optimism during a long fiscal period that leads to pessimism in period ending "
Cotter and Martin (2000:226)	"informal disclosure during the fiscal period to progressive downward analysts expectations"

2.4 Empirical works on MBE

Empirical literature embodies the MBE phenomenon and relates it with a set of financial and accounting issues. The vast literature demonstrates the theme relevance. In this section we intend to outline empirical works on MBE and present the diversity of relations between financial aspects and meeting or beating expectations.

2.4.1 MBE and stock recommendations

The beliefs that there are capital market positive reactions to firms that meet or beat expectations are pervasive. Several variables related to stock values are used to substantiate the market reaction. Abarbanell and Lehavy (2003) related the stock price

sensitivity²⁰ to the magnitude of earnings management. They found that firms with high (low) price sensitivity to relatively small earnings surprises are more (less) likely to direct their earnings management towards meeting or beating analysts' earnings. According to findings provided by Healy (1985), they also concluded that firms are more likely to engage in income-increase or income-decrease management to report earnings equal or above the analysts' forecasts. On the other hand, firms with low sensitivity to earnings news are more likely to engage in creation of reserves as earnings management, leading to negative forecast errors. The level of analysts' outstanding stock recommendations is used as a *proxy* for contemporaneous stock price and, hence, firms' sensitivity to earnings news. Their empirical results provide evidence of equity market incentives for firms to manage earnings.

According to the methodology used by Abarbanell and Lehavy (2003), also Das *et al.* (2006) examined whether investor and analysts responses to MBE are conditional on outstanding stock recommendation. They provided evidence that the proportion of firms that meet or beat earnings expectations is greatest for firms with buy recommendations and least for firms with sell recommendation. These results show that managerial incentives to meet analysts earnings forecasts increases with a more favorable recommendation, and this recommendation increases the equity reward (penalty) to meeting (missing) analysts' forecasts. They also found that firms with an unfavorable recommendation that meet analysts' earnings forecasts experience a higher return around the earnings announcement date, which is consistent with an investor surprise hypothesis.

2.4.2 MBE and information asymmetry

Despite the attention of meeting or beating earnings benchmarks, such as analysts' consensus forecasts, MBE plays an important role on diminish information asymmetry between market participants and managers. Brown *et al.* (2009) examined the effect of earnings surprises on changes in investors trading decisions and research activities. They

²⁰ They used the outstanding level of analyst's stock recommendations to capture differences in firm's price sensitivity to earnings news.

found that asymmetry is lower (higher) in the quarter following positive (negative) earnings surprises compared to firms that meet the consensus analysts' earnings forecasts. The relations between earnings surprises and information asymmetry²¹ are stronger when surprises are more likely to capture investors' attention. Examining the source of these changes, they demonstrated that a decreased information search activity is the most important factor for asymmetry declining after positive surprises. They also verified that negative surprises tend to decrease unaware trading, which plays a dominant role increasing asymmetry. Their conclusions suggest that the attention and visibility associated with positive earnings surprises are important attributes that influence investor behavior over long time periods and are consistent with the Investor Recognition Hypothesis (Merton, 1987). In this line of thought Skinner and Sloan (2002) found a large positive response to negative earnings surprises for growth stocks. Their evidence is consistent with investors having naively optimistic expectations about the prospects of growth stocks.

2.4.3 Meet or beat earnings and cash-flows expectations

Financial analysts generate a number of important products, among them, earnings forecasts, stock recommendations, and target stock prices. In recent years, analysts have gradually introduced firm's operating cash flows forecasts. Givoly *et al.* (2008) showed that the percentage of firms receiving earnings forecasts that also receive cash flows forecasts increased from 2,5% in 1993 to 57,2% in 2005. This trend and availability of analysts' cash flows forecasts increase the research on meeting or beating expectations of earnings and cash flows.

Brown and Pinello (2008) investigated firms' propensities to meet or miss earnings and cash flows forecasts in the same fiscal quarter. They concluded that companies are most likely to meet earnings forecasts than cash flows forecasts²². They also identified the main

²¹ They studied the effect of earnings surprise in a long-term period.

²² The study is based on a sample of firm-quarters with the necessary data to measure cash flows surprises, earnings surprise and abnormal returns, during 11 years period, 1997-2007.

causes in which some companies miss earnings forecasts and meet cash flows forecasts, which are:

- Adverse valuation consequences of missing earnings forecasts but meeting cash flows forecasts are relatively less severe;
- The analysts following cash flows are relatively higher than earnings;
- Firms are in financial distress;
- The analysts' forecasts lead to extreme positive accruals;
- Analysts are less optimistic about the cash flows forecasts than earnings forecasts;
- Firms manipulate their financial statements;
- Firms reported decreases in earnings but not cash flows.

They showed evidence that firms experience adverse valuation consequences when they miss earnings and cash flows forecasts. They ranked valuations consequences in four categories²³, and postulated that missing earnings forecasts has the most unfavorable valuation consequence. Givoly *et al.* (2008) examined properties of analysts' cash flows forecasts and compare them to those exhibited by analysts' earnings forecasts. They found that analysts' cash flows forecasts are less accurate than analysts' earnings forecasts. Along with this, they are less frequently revised and improve a lower rate during the forecast period.

²³ Valuation consequences were ranked in the following ways: (i) most favorable when firms achieve both forecasts; (ii) second most favorable when firms achieve earnings but not cash flows forecasts; (iii) third most favorable when firms achieve cash flows but miss earnings forecasts; and (iv) least favorable consequences when firms miss both forecasts.

2.4.4 Meet or beat earnings expectations and the market reaction

The relevance of earnings was reported in several finance literature. In order to measure this impact, empirical studies refer several benchmarks all leading to the same overall results. The most usual measure used is the cumulative abnormal return. However, researches employ other metrics to outline the value relevance of earnings surprise, such as earnings response coefficient (ERC) and price earnings multiple.

As mentioned above, firms' managers recognize the importance of reporting earnings that exceed expectations. So, they engage in income-increasing or income decreasing activities. However, when accounting numbers do not allow them to manipulate earnings, they can manipulate expectations through disclosure of informal information about the firms' performance.

On this subject, we will present empirical studies on meeting or beating analysts' earnings forecasts and the earnings surprise impact on capital market.

Bartov and Cohen (2008) considered the so-called "numbers game", i.e., the earnings or expectations management to meet or beat analysts' forecasts. In their study, the authors tested the changes in strategies used by managers in order to MBE after the accounting scandals of 2001 and 2002 and the period after the reform of market regulation SOX. Using a sample of 262,754 firms quarters observations in the 1987 to 2006 period, the authors concluded that there is a decline in the expectations management in the post-SOX period relatively to the mid-90s, which suggests that managers have reduced their influence in downward forecasts. The reason for this decline is that managers could choose among other mechanisms to meet or beat analysts' forecasts, such as *accruals* based earnings management and real earnings management activities. One of the original contributions of the study is to consider three mechanisms simultaneously: expectations management; accruals-based; and real activities earnings management. The study reveals that the decline in meeting or beating analysts' earnings forecasts is due to the reduced *accruals*-based management and expectations management. Overall real activities earnings management increased in the post-SOX period. Then, capital market participants should

pay more attention to earnings management through real activities as a tool to meet or beat analysts' forecasts.

Koh *et al.* (2008) investigated if stock market rewards meeting or beating analysts' forecasts after the accounting scandals of the early 2000s, and whether earnings management and/or expectations management have changed since the pre-scandals period. In opposition to the evidenced by Bartov and Cohen (2008), they found empirical evidence that there is an increase in the manipulation of expectations after the financial scandals of 2001 and 2002. This difference is mainly due to the sample²⁴ chosen. However, both studies confirmed that there is a decrease of earnings management in the post scandals. The premium market was tested in the period after financial scandals along with expectations and earnings management. They concluded that markets react differently in pos scandals period to the MBE phenomena. The market assigns a lower premium to firms that MBE, in the period after the financial scandals, which shows that the market became more skeptical after the scandals²⁵. Moreover, they concluded that firms focus in expectations management to MBE and became less dependent of earnings management. Thapa and Brown (2007) investigate the market reaction to the implementation of SOX act and provide evidence of a positive market reaction. Specifically, they found a cumulative abnormal return over the three days period surround the approbation and signature of the regulation of 1,35%.

Athanasakou *et al.* (2008) analyzed the mechanisms that UK companies use to meet or beat expectations. They tested expectations guidance and earnings management as mechanisms to MBE. They identified two ways to manage earnings: abnormal positive working capital *accruals* and the classification shifting of core expenses to non-recurring

²⁴ Koh *et al.* (2008) based their analysis in a subsample of firms that meet or beat expectations, whereas Bartov and Cohen (2008) do not condition on firms who meet or beat expectations. That is, they compared firms that use downward expectations management to meet or beat analysts' forecasts with firms who are able to meet or beat expectations without the use of expectations management.

²⁵ They show empirical evidence that the market Premium for small beaters (beat expectations for less than one cent) was disappeared while the market premium for big beaters (beat expectations by more than one cent) was diminished.

items. Thus, the results over the period from 1994 to 2002 evidenced that pessimist expectations guidance increases the likelihood to meet or beat analysts' forecasts. Moreover, they found evidence consistent with the classification shifting small core expenses for non-recurring items, in a subset of large firms²⁶, as a way to meet analysts' forecasts with core earnings. For companies which have resorted to the reclassification of non-recurring items and fail the MBE, is associated an abnormal increase in operating profit in the fiscal period, a decline in operating profits in subsequent fiscal periods and a operating cash outflows in the three following years. The other mechanism used to manage earnings, i.e., working capital and positive abnormal *accruals*, they found no evidence of any association between this mechanism and the likelihood of meeting or beating expectations. Above all, the study concluded that UK' firms are more likely to engage in expectations guidance to achieve their objective than the use of accounting practices to manage earnings, which can generate long-term premium costs.

Matsumoto (2002) tested the hypothesis that to certain firms' characteristics is associated a greater incentive to avoid earnings surprises. He concluded that firms with a large transient institutional ownership, with a high value relevance of earnings and with a high reliance on claims of shareholders, are more likely to meet or beat analysts' forecasts in the announcement date. He also studied the income-increase and expectations decrease in order to avoid reported earnings miss expectations. It was tested the relationship between firms' characteristics and the likelihood of (i) positive abnormal accruals and (ii) forecast lower than expected²⁷. The study shows empirical evidence that both mechanisms are used by companies to achieve or exceed expectations.

Rees and Lopez (2002) established evidence of a higher price to earnings multiple for firms that beat analysts' forecasts than for those that do not. They found that the negative

²⁶ These are 121 firms (around 10% of the entire sample) with average total assets of £1,043m, average total sales of £1,426m and average market capitalization of £1,576m.

²⁷ For each firm i , in industry j , in country k , in year t , guidance is the unexpected portion of the earnings forecast (UEF), measured as the difference between the consensus analyst earnings forecast (CF) and the expected analyst earnings forecast ($E[F]$) for the period: $UEF_{ijkt} = CF_{ijkt} - E[F_{ijkt}]$

response to not meeting forecasts is significantly greater in absolute terms than the response to beating forecasts, after controlling for the level of unexpected earnings. Meeting analysts' forecasts is a more powerful variable in explaining abnormal returns than is the profit or loss position of the firm. Positive earnings surprises have higher ERCs than negative earnings surprises in a regression on abnormal returns, even after employing other earnings persistence proxies. Managers report more positive forecast errors for three market driven reasons: (i) the market attaches a significantly higher multiple to the earnings of firms that beat analysts' forecasts, (ii) the market disproportionately penalizes firms that fail to meet expectations regardless of the size of the forecast error, and (iii) the market attaches a higher earnings multiple to the earnings of firms that consistently beat forecasts.

Dopuch *et al.* (2008) found a market premium for firms that meet or beat time-series forecasts, and also the highest market premium for firms that meet or beat both analysts' and time-series forecasts, relative to firms that meet or beat one or neither forecast. In fact, there is no premium for firms that meet or beat only analysts', or only time-series forecasts. Investors seem to consider both analysts' and time-series forecasts jointly, with the act of meeting or beating both forecasts providing the most credible signal of superior future financial performance. This "credibility" premium to firms that meet or beat time-series forecasts²⁸ is in addition to the premium for meeting or beating analysts' forecasts. This is further evidence that investors view the meeting or beating of both forecasts as the strongest signal of enhanced credibility in reported earnings.

Anilowski *et al.* (2007) investigated whether earnings guidance affects aggregate stock returns through its effects on expectations about overall earnings performance and/or aggregate expected returns²⁹. The intra-quarter timing of guidance varies as a function of

²⁸ Proxied by the Foster model, 1977

²⁹ Their evidence indicates that guidance is increasingly pervasive and representative because there has been a substantial increase in guidance over the 1994 to 2003 sample period, with the proportion of firms issuing guidance increasing from less than 10% in the mid-1990s to around 25% in 2001-2003, and that firms issuing

the earnings news in a systematic way. In relative terms, managers tend to issue neutral guidance early in the quarter, downward guidance toward the end of the quarter, and upward guidance after the end of the quarter. They found more modest evidence that downward guidance is associated with market returns. Market returns appear to respond to guidance toward the end of each calendar quarter, when most earnings preannouncements are released. There is some evidence that firm-level guidance affects market returns in short windows around its release.

Brown and Pinello (2007) investigated the effectiveness of the financial reporting process at restraining earnings surprise games. They documented that, relatively to interim reporting, annual reporting reduces the likelihood of income-increasing earnings management. Annual reporting also reduces, in a lesser extent, the negative surprise avoidance, but increases the magnitude of downward expectations management³⁰. Their conclusions suggest that regulatory attempts to monitor corporations' internal checks and balances are likely to be more effective at curbing upward earnings management than at mitigating negative surprise avoidance.

The results provided by Brown (2001) show that the median earnings surprise has shifted rightward from small negative (miss analyst estimates by a small amount) to zero (meet analyst estimates exactly) to small positive (beat analyst estimates by a small amount) during the 16 years, 1984 to 1999. He documented significant positive temporal trends in both meeting and beating analysts' estimates for both profits and losses, but found a greater frequency of profits that either met or beat analyst estimates in every year. The author consider four internal validity threats, namely temporal changes in: (i) analyst forecast accuracy, (ii) the mix of earnings of one sign preceded by earnings of another sign

guidance now represent approximately 45% of Compustat on a value-weighted basis, up from 10-15% in the mid-1990s.

³⁰ Because the annual reporting process is subject to an independent audit and more rigorous expense recognition rules than interim reporting, it provides managers with fewer opportunities to manage earnings upward.

four quarters ago, (iii) the timeliness of the most recent analyst forecast, and (iv) the IBES definition of actual earnings.

Stock market reactions depend on the creditability of management forecasts of improved earnings expectations. Lacina and Karim (2004) tested whether a negative stock market reaction, associated with a management forecast of near term bad earnings, is lessened by a concurrent management forecast of improved longer term earnings expectations. The results show that the stock market reaction is significantly less negative when management forecasts of bad earnings are followed by management forecasts of improved long run earnings expectations than when management forecasts of bad earnings are not accompanied by management forecasts of improved earnings expectations. Overall results show that the market participants are unable to distinguish management forecasts of improved earnings expectations that come true, from those that do not come true.

Kasznik and McNichols (2002) investigated whether the market rewards firms meeting current period earnings expectations, and whether such reward reflects the implications of meeting expectations in the current period for future earnings, or reflects a distinct market premium. They documented that abnormal annual returns are significantly greater for firms meeting expectations, and found that they have significantly higher earnings forecasts and realized earnings than firms that do not³¹. They also concluded that market assigns a higher value to firms that meet expectations consistently, controlling for an estimate of the firm's fundamental value.

A pertinent study on MBE provided by Bartov *et al.*, (2002) gives us empirical evidence on a market premium to firms that meet or beat expectations, after controlling for the magnitude of forecast error. They also provided results showing that MBE premium in cases of expectations or earnings management is lower but still exists. Expectations management is a result of the information of earnings path during the period. They define the likelihood of expectations management cases in which the quarter began with a

³¹ They find that controlling for higher future earnings, firms meeting expectations in one or two years do not receive a greater valuation than their fundamentals would suggest.

negative error forecast and ends, through an upward revision, in a positive or zero earnings surprise. If the market rewards firms that meet or beat expectations, it will be expected that they experience better future performance. The authors provided empirical evidence that the premium of MBE is a leading indicator of future performance, therefore informative to the market. This premium, and its predictive ability, are only marginally affected by whether the MBE is genuine or result of earnings or expectations management.

Venkatachalam and Wang (2000) examined whether it is cost beneficial for managers to guide analysts' forecasts downward and subsequently meet or beat expectations. They found that the cost of lowering expectations, i.e., market reaction to negative forecast revision, is lower than the benefits from reporting a positive earnings surprise. Thus, they concluded that beating expectations by lowering expectations is cost beneficial. They also found that capital market participants do not reward all firms that meet expectations³².

Invoking recency and prospect theories,³³ Caylor *et al.* (2007) examined the association between quarterly stock returns and total earnings news conditional³⁴ on the timing in which earnings information is revealed to the market. They extended prior research by investigating the descriptive validity of recency theory to a comprehensive set of potential earnings paths. They show evidence that suggests, contrary to conclusions in the prior literature, that investors do not always assign more weight to earnings surprises than to analyst forecast revisions. The market response to earnings news is more consistent with prospect theory. Using a sample of 99,746 firm-quarters from 1985 to 2001, and applying an empirical work based on all possible paths that earnings information could had in

³² Firms that guide analyst forecast downward and subsequently meet expectations experience negative abnormal returns.

³³ Recency theory predicts that when two or more sequential pieces of information are received, greater weight is attached to the most recent piece of information. Prospect theory, developed by Kahneman and Tversky (1979), does not depend on the timing of information but rather, how the pieces of information are broken up and framed to the decision maker. The theory's utility function is concave for positive news and convex for negative news and the loss function is steeper than the gain function.

³⁴ They define total earnings news as the difference between reported earnings for the quarter and the first forecast made in the same period.

quarter, they show different results than previous research. Overall, the study provides news insights on the stock prices effects of different earnings information paths and the benefits of earnings preannouncements that warn investors about negative earnings news.

2.5 Conclusion

In this chapter we have define the subject of this dissertation and state the relevance of the theme. Mainly, we emphasized the timeliness of the market response to the MBE, and denote the motivations and rewards of the financial numbers game, in particular, the increase of price shares to reported earnings which are similar or above the market expectations. We present a summary of the empirical works on MBE regarding the most important metrics to infer the market reaction to earnings surprises. We also related the financial number game with market inefficiency and the information asymmetry between managers and market participants, investors and analysts.

This chapter provides foundations to support our research design. Thus, in the next chapter we develop our methodology regarding the purpose of the work, and we delimitate our hypotheses.

Chapter 3

Research Design

3.1 Introduction

This chapter is intended to provide some insight on the research design and to frame the hypotheses to test. In Section 3.2 we summarize the objectives of the research. Section 3.3 is devoted to the development of the hypotheses beginning with approaching on the timeline of earnings information over the quarter and the intrinsic expectations paths. In Section 3.4 we present the composition of our sample and the databases needed to obtain data. Section 3.5 is dedicated to the methodology applied in our research. In particular, we define the event study approach and the methods to calculate the dependent variable. Finally, we present our methodology to test each one of the hypotheses.

3.2 Purpose and objectives

As seen in the previous chapter, there are several incentives to firms try to achieve market expectations. These incentives could be the increasing of share price, the lowering of political costs, the increasing of CEOs payments and the lowering of the cost of debt. Our study focal point relies on the capital market incentives. Specifically, we intend to test if there is an abnormal return in the period immediately after the MBE.

Managing reported earnings upward and guiding analyst earnings forecasts downward are the two ways that managers can use to avoid negative earnings surprises. Most of the prior literature has focused on earnings management as a mechanism to meet or beat

expectations. We focus on expectations management in a European context. Using a sample of the largest firms in Europe, and also the most coverage firms by analysts, we test for the existence of expectations management and a MBE premium. Our research is related to Bartov *et al.* (2002) model and we measure expectations management regarding the earnings information paths over the quarter. Thus, the work has as its main objectives:

- Test whether there is, in companies that comprise the DJ Stoxx 50 Euro, any market reward to firms that meet or beat expectations, after controlling for the magnitude of the earnings forecast errors;
- Identify the expectations management through the paths of analysts' forecasts;
- Analyze if investors assign any reward to firms that meet or beat expectations, even when managers achieve MBE through expectations management;
- Test if the market premium differs in cases in which MBE is genuine, from those that are achieved using expectations management.

After the delimitation of the objectives, we now develop our hypotheses regarding the main objectives of the study.

3.3 Hypotheses development

Our empirical work is centered on the time that information reaches the capital market. The expectations are formed after new information arrives to the market. Therefore, to better illustrate the hypothesis underlying the empirical work, we present a chronology of quarter earnings information.

Figure 1 shows the events needed to perform the empirical work (i.e., the mainstream events with respect to earnings news during the quarter). The earnings announcement of the quarter $t-1$ is provided early in the quarter t , which gives the first earnings information of the quarter. This information is important to analysts create the first earnings forecast in the quarter (hereafter FF_t). During the quarter new information arrives to the market, and consequently analysts revise their forecasts to generate the latest

forecast in the quarter (hereafter LF_t), made just prior to the earnings announcement date. The forecast error ($ERROR_t$), is defined as the difference between reported earnings and the first available forecast in the quarter issued after the earnings announcement of quarter $t-1$. The information of total earnings news for a quarter can be disaggregated into two different components: (i) the difference between the initial forecast and latest forecast is the forecast revision for the quarter (REV_t); and (ii) the difference between the last forecast in the quarter and the reported earnings per share (EPS_t) leads to the earnings surprise for the quarter ($SURP_t$). As earnings information throughout the quarter is communicated to the market, analysts revise earnings forecasts to reflect their news expectations formed after this new information. The new information received by analysts during the quarter is measured as the difference between LF_t and FF_t . The remaining component of forecast error for the quarter is the earnings surprise, and reflects the difference between the earnings reported and the last forecast of the quarter issued prior to the earnings announcement date.

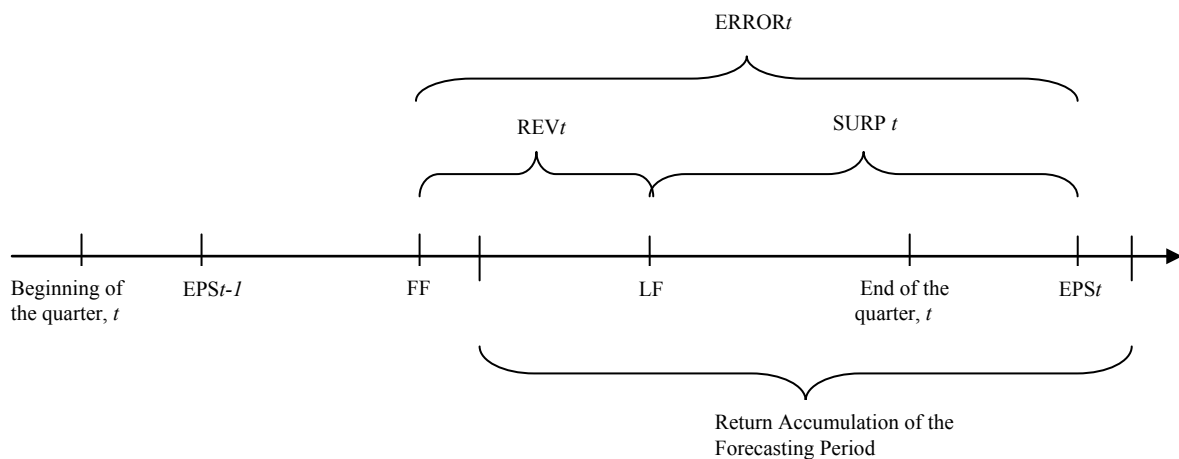


Figure 1 - Earnings disclosure timeline

Source: Adapted from Bartov *et al.* (2002)

Table 5 denotes the primary variables to the empirical work along with their definitions.

Table 5 - Earnings disclosure timeline: variables definition

Variables	Description
FF_t	First forecasts for the quarter - should be at least 3 days after the earnings' announcement for the previous quarter.
LF_t	Last forecast for the quarter – should be at least 3 days before the earnings' announcement for the current quarter.
EPS_t	Earnings per share for the current quarter
$ERROR_t = (EPS_t - FF)$	The overall forecast error for the quarter
$REV_t = (LF - FF)$	The forecast revision for the quarter. Forecast may have at least 20 days between them.
$SURP_t = (EPS_t - LF)$	The earnings surprise for the quarter.

From the Figure 1 we can draw thirteen different earnings information paths resulting during the quarter, presented in Figure 2 and Table 6. The paths began with the signal of the forecast error, which leads to three different categories: positive, negative and zero. Holding the forecast error constant, the earnings information path can differ depending on the sequence of events that occurs during the period. The underlying paths facilitate the understanding and the inferring of expectations management. Management has an active role in the timeline of earnings news, i.e., it can influence how earnings information is communicated to the market by providing earnings preannouncements. In Figure 2 we identify the earnings information paths.

Figure 2 illustrates all the paths that earnings information can have in the quarter. The optimal earnings information path is the one that maximize the share price in the earnings announcement date observed in abnormal return. Whenever there are negative errors, the optimal earnings information path is given by the negative revision and positive surprise, since it is the only one that ends with a positive earnings surprise. The earnings information path that ends with a positive earnings surprise indicates that firms beat the expectations. The second most optimal earnings information path, which began with a

negative error, is the one that ends with a zero earnings surprise. The zero earnings surprise indicates that firms meet the expectations

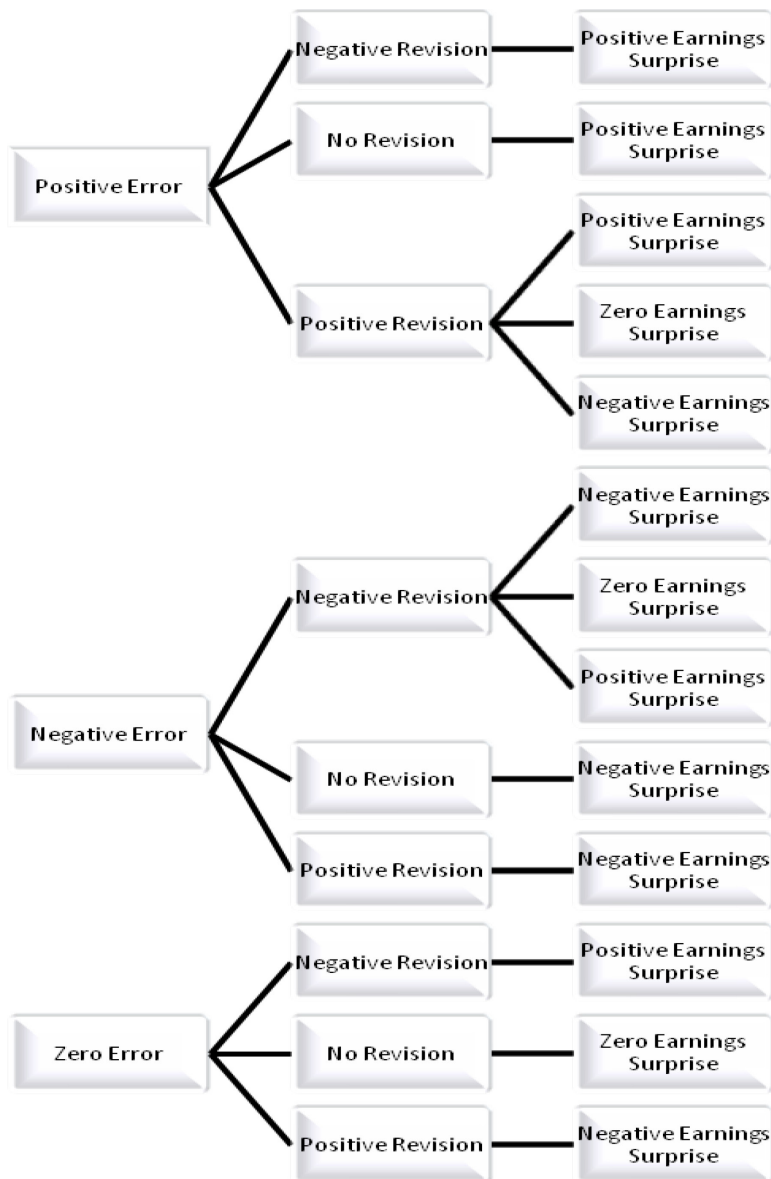


Figure 2 - Possible expectations paths

Source: Adapted from Caylor *et al.* (2007)

Within the three possible information paths in the zero error classification, the only one that ends with a positive earnings surprise is the one with a negative revision. This path is

the most optimal path, which leads to the “beat expectations”. The “meet expectations” happens when the information path ends with a zero earnings surprise.

When earnings error is positive, there are three possible information paths that results in earnings surprise. All these three information paths are possible optimal paths. The least optimal path is a positive revision that exceeds the earnings error resulting in a negative earnings surprise. The information path over the quarter became essential to form market expectations.

Table 6 - Expectations paths

ERROR	REV	SURP	Expectations paths	Expectations path number
Positive	+	+	Up-up	(1)
	+	-	Up-down	(2)
	-	+	Down-up	(3)
	+	0	Up-zero	(4)
	0	+	Zero-up	(5)
Negative	-	-	Down-down	(6)
	-	+	Down-up	(7)
	+	-	Up-down	(8)
	-	0	Down-zero	(9)
	0	-	Zero-down	(10)
Zero	+	-	Up-down	(11)
	-	+	Down-up	(12)
	0	0	Zero-zero	(13)

Source: Adapted from Bartov *et al.* (2002)

Market participants observe the earnings information during the period, and make an opinion about firm quarterly earnings. As noted, analysts’ forecasts are a reliable *proxy* for market expectations. Hence, the expectations path results from the analysts’ forecasts over the quarter. If managers became active in this expectations game, they provide information

to the market in order to condition the market participants' expectations. In Table 6 we denote the "expectation path" explained above.

According to earnings information paths, meeting expectations correspond to the paths that ends with "Zero", and beating expectations correspond to paths that ends with "Up"³⁵. Namely, earnings surprise signal gives us the constraint to the MBE phenomena. The paths that end with "down" show the cases where firms are not able to report earnings³⁶ that corroborate with market expectations.

A common characteristic of prior research in this area is that it associates all individual information paths into aggregate groups, when reporting results. Kasznik and Lev (1995) empirically examined ten unique information paths and aggregated those paths into four groups (warning or no warnings for positive or negative earnings surprise firms). Similarly, Soffer *et al.* (2000) investigated eight information paths but aggregated them into two groups, positive and negative earnings preannouncements. Bartov *et al.*, (2002) examined thirteen paths, but in the statistical tests they aggregated them into three groups based on the earnings surprise signal.

Similarly to Bartov *et al.* (2002), our research is based on all the expectation paths to infer the presence of expectations management. Empirical research on market reward combines all the paths depicted in Figure 2. Therefore, the hypothesis are conducted by: (i) whether there is a market premium associated with MBE, (ii) test whether there is expectations management analyzing analysts forecasts over the quarter, and (iii) test the relationship between the likelihood of expectations management and the reward of MBE.

³⁵ Bartov *et al.* (2002) show that beat expectations is associated with higher return than just meeting expectations.

³⁶ The expectations missing inform the market that managers were unsuccessful in expectations or earnings management. According to Soffer *et al.* (2000) market penalize firms that are unable to meet expectations.

3.3.1 Hypothesis relating to market premium

As well stated by prior literature, investors assign a reward to firms that meet or beat analysts' forecasts (*proxy* to market expectations). If the market is efficient, firms that meet or beat analysts' forecasts do not experience higher shares prices leading to a market premium. In other words, meeting or beating analysts' forecasts do not causes any investors' overreaction, since the prices already reflects these information. Kasznik and McNichols (2002) found that annual market adjusted returns are higher for firms that meet analysts' forecasts, than those that miss them. Skinner and Sloan (2002) documented a market penalty for firms that miss analysts' forecasts. Dopuch *et al.* (2008) reasserted prior research and documented a market reward for firms that meet or beat analysts' forecasts irrespective of whether earnings or expectations are managed.

Bartov *et al.* (2002) found empirical evidence of a market reward for firms that persistently meet or beat market expectation. Similarly to Bartov *et al.* (2002), we intend to hypothesize about the presence of a market premium for firms that report earnings encompass analysts' forecasts. If the expectations path is not informative regarding the firm future performance, and investors are rational, the expectations path should not affect the abnormal return for the quarter. So, there should be no reward for meeting or beating analysts' forecasts.

H1: After controlling for forecast ERROR, there is a premium to MBE.

3.3.2 Hypotheses relating to expectation management

Our tests, related to the expectations management, corroborate with Bartov *et al.* (2002) empirical study. In their sample they found evidence that firms engage in forecast guidance to MBE. To infer expectations management we must observe the expectations paths during the quarter³⁷. To test the presence of expectations management we perform two tests. The

³⁷ See Figures 1 and 2.

first, contrasts earnings surprise distribution with a hypothetical distribution, assuming that there is no mid-term analysts' forecasts review. The hypothetical distribution is consistent with the variable ERROR³⁸. If there is a positive earnings surprise, and the first forecast leads to a negative error, it indicates a presence of downward forecast guidance. On the other hand, if the review only contains new information that reaches the market without there being any effort by management to manipulate the expectations, it will not be registered no difference between the frequency of negative results of surprises and negative forecast errors.

H2: The relative frequency of SURP negative is smaller than the relative frequency of negative ERROR

In the second test we compare the observed signal of earnings surprise with the sign it would have if there were no interim forecast revision. The interim forecast revision can have an important role in earnings surprise signal³⁹. As noted above, if there is no forecast revision the earnings surprise sign would be the same as the sign of the quarterly forecast error. Observing a negative forecast error that ends, through a sufficiently large downward revision, with a positive earnings surprise is thus consistent with expectations management. Then, a positive forecast error that ends, due a sufficiently large upward forecast revision, with a negative earnings surprise is inconsistent with expectations management. Thus, if there was no expectations management, the proportion of observations in which the analysts' revision compensates the prediction error signal to alter the sign of the earnings surprise results should be identical in cases of negative and positive errors.

³⁸ $ERROR_t = EPS_t - FF_t$ – difference between the reported earnings per share for the quarter and the first forecast available for the quarter and $SURP_Q$ is the difference between the earnings per share reported and the last forecast available for the quarter.

³⁹ If there were no forecast revision FF (first forecast for the quarter) is equal to LF (latest forecast for the quarter).

H3: The proportion of cases with negative ERROR that ends with a positive or zero SURP is greater than the proportion of cases of positive or null ERROR ending with a negative SURP.

3.3.3 Hypothesis regarding the association between MBE premium and expectations management

Managers have stronger incentives to achieve MBE. As noted in prior research, managers can achieve MBE toward earnings and expectations management (Bartov *et al.*, 2002; Athanasakou *et al.*, 2008; Bartov and Cohen, 2008; Kasznik, 1999). After the financial scandals in the early 2000s, and due to the increasing regulation, managers fear litigation costs and chose expectations guidance over earnings management. If market participants identify the role of managers in the MBE, they would not assign any reward in cases where that MBE is more likely achieved through expectations management.

H4: The premium of MBE is lower in cases where it is more likely that there is expectations management.

3.4 Sample and data

The sample consists of firm-quarter observations spanning the period from January 2005 to December 2009⁴⁰. The companies included in the sample are the constituents of the DJ STOXX 50 Euro Index, which cover fifty of the European largest companies.

The index provides a representative sample of the Eurozone companies covering twelve countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain. The index also captures approximately 60% of the free float market capitalization of the EURO STOXX Total Market Index (TMI), which in turn covers approximately 95% of the free float market capitalization of

⁴⁰ We made a first analysis beginning on January 2004 and ending on December 2009. However, considering an additional year does not significantly increase the number of observations. To that matter, we decide restring our sample period to 5 years.

the represented countries. Our sample is constituted by 8 markets that encompass 9 countries (France, Germany, Spain, Italy, Netherlands, Finland, Luxembourg, Belgium and Ireland).

The sample choice was based mainly in the analysts' coverage. Only the biggest companies are covered by analysts, i.e., analysts have more incentives to follow firms with higher market capitalization. Appendix A presents the index constituents firms list along with the respectively weighting, market capitalization and market.

Figure 3 shows the market representation in our sample. The larger and liquid markets in Eurozone are represented in our sample. PAR (France) and GER (Germany) are the most represented markets, with 35.58% and 27.53%, respectively. The two less represented markets are BRU (Belgium and Luxembourg) and ISE (Ireland), with 1.70% and 0.97% respectively.

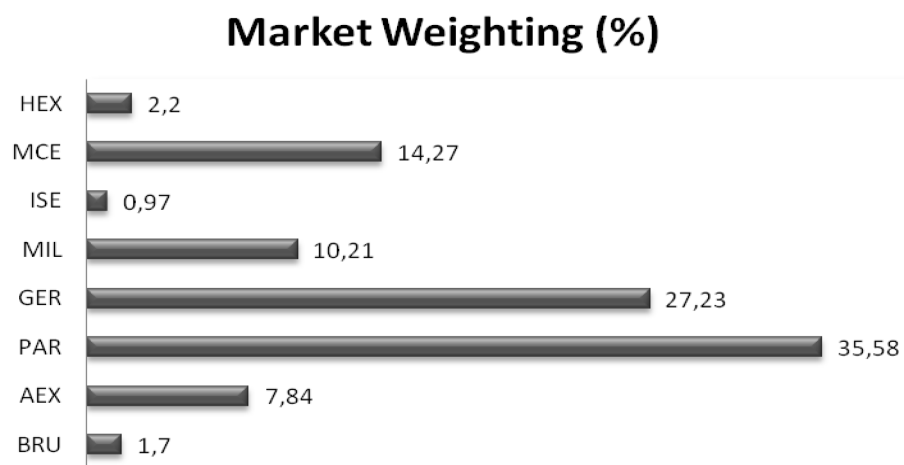


Figure 3 - Market weighting of the sample

Figure 4 represents the sample weighting⁴¹ by sector. The sample encompasses eighteen sectors of large companies in Eurozone. The most represented sector is Banks (19.3%) and the less represented sector is Financial Services (0.73%).

⁴¹ Weighting is compute based on the sector market capitalization over the total index market capitalization.

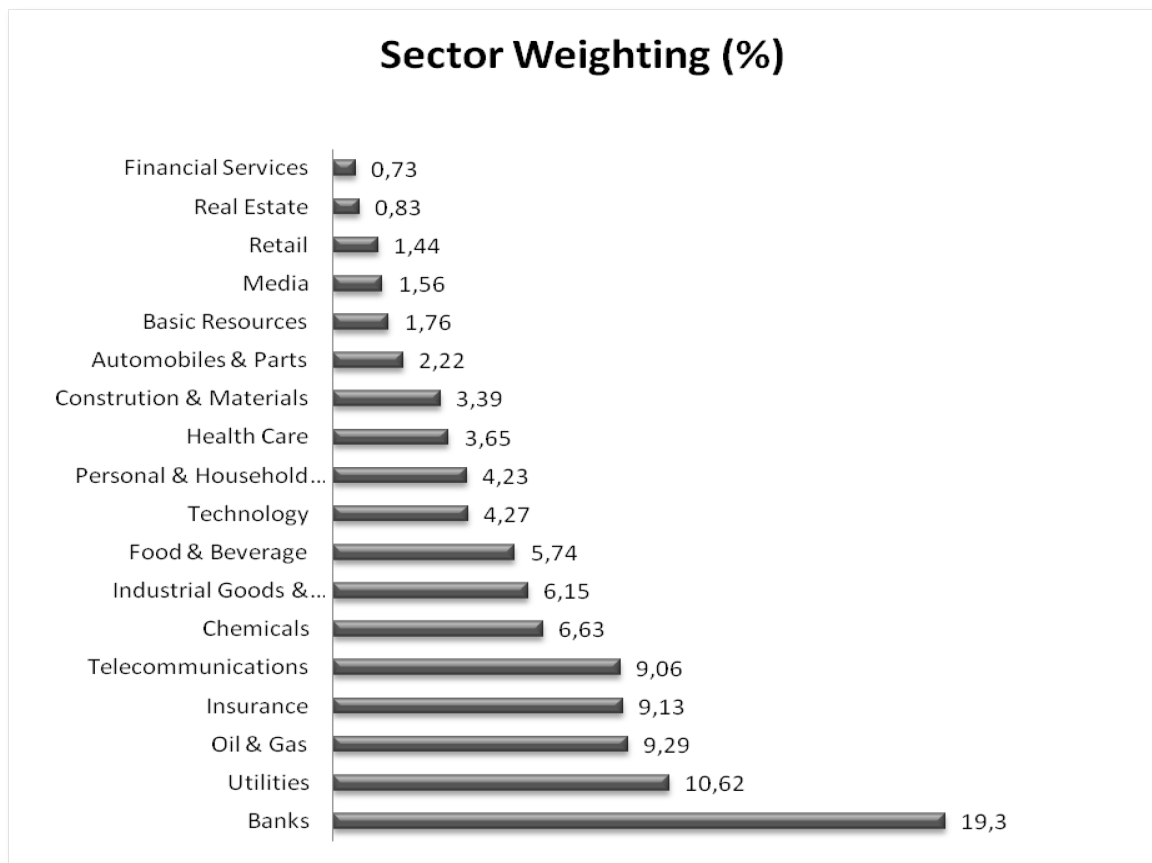


Figure 4 - Sector weighting of the sample

Analysts' earnings forecasts and forecasts dates were obtained in IBES database from Thomson Reuters. Since 1976 to annual data, and since 1984 to quarterly data, IBES database has been the most important forecasts provider. According to Sharpe (1981:336), Nobel Prize, in his classic *"Investments"*:

"While IBES is not the only company collecting earnings expectations data (Zacks Investment and First Call are prominent competitors), it was the firsts and remains the leader in the field.... Before IBES collected such data, consensus earnings estimates were difficult to obtain and highly ambiguous."

IBES database contains estimates from different companies around the world. There are three different sections in IBES database: detail files, summary files and

recommendations⁴². Detail history contains individual analysts' estimates by firm, date, fiscal period and metric. Summary history contains consensus estimates based on detail history. According to Payne and Thomas (2003) IBES has traditionally provided per share data on a split-adjusted basis, rounded to the nearest penny. This allows comparability over time of the amounts per share.

Ramnath *et al.* (2005) found that IBES actual quarterly EPS data are less reliable than Value Line EPS data, and IBES quarterly earnings forecasts significantly outperform Value Line⁴³ in terms of accuracy and as proxies for market expectations. They also show that IBES forecasting superiority can be explained by the combination of IBES's timing advantage and the mitigation of idiosyncratic error through consensus building.

We obtained actual earnings, and respective releases dates, in the database IBES⁴⁴. Each firm-quarter observation is required to satisfy the following criteria:

- The firm is a component of DJ Stoxx 50 Euro Index.
- The firm is covered by the IBES database. Analysts earnings forecasts must follow the requirements in Bartov *et al.* (2002):
 1. For each quarter there are at least two earnings forecasts⁴⁵, which are at least 20 trading days apart;

⁴² Over 1,500 researchers at over 400 institutional worldwide rely in IBES's analysts forecasts data for research.

⁴³ Value Line is a New York corporation founded in 1931 by Arnold Bernhard, best known for publishing The Value Line Investment Survey, a stock analysis newsletter that is updated weekly and kept by subscribers to the print edition in a large black or green binder.

⁴⁴ The IBES earnings number differs from the earnings numbers reported in *Worldscope* (see Abarbanell and Lehavy 2000) for a discussion of the difficulties in comparing EPS figures across databases). To improve accuracy in our sample we use earnings numbers from IBES.

⁴⁵ Bartov *et al.* (2002) conducted their analysis based on individual analysts' forecasts and consensus forecast, which required at least two individual analysts' forecasts. They show that these two analysis lead to the same main results. Brown and Han (1992) also found similar results using consensus forecasts and individual analysts' forecasts.

2. The release date of the first forecast occurs at least three trading days after the release of the previous earnings;
3. The release date of the latest forecast precedes the earnings release by at least three trading days.

The first criterion ensures that there is an initial forecast and a subsequent forecasts revision. The at least 20 days apart requirement ensures that the latest forecast reflects a truly revision made based in new information. Whereby we use consensus forecasts the period between the two forecasts are 30 days apart. The second criterion prevents that first forecast only reflect the information given by the previous earnings. The third criterion is an attempt to ensure that the latest forecast is not contaminated by knowledge of the actual earnings numbers.

The criterion selection resulted in 636 firms-quarters observations⁴⁶.

Table 7 - Distribution of observations by year

Year	Observations	(%) of the sample
2005	101	15,91
2006	116	18,27
2007	126	19,84
2008	143	22,52
2009	150	23,46
Total	636	100,00

Table 6 provides information about the distribution of observations by year on the period of analysis. Recent years had more observations due the increasing in analysts' coverage.

⁴⁶ The missing observations results from the absence of analysts' estimates.

3.5 Methods and tests

3.5.1 Event study

Event study examines the behavior of firms' stock prices around corporate events. The role of event study in accounting and financial research is important to test market efficiency. Ball and Brown (1968) and Beaver (1968) are the pioneers' works attempts to event study and the relevance of earnings announcement. Following works only altered same aspects of the event study, such as quarterly earnings instead of annual earnings and the event window period.

Systematically nonzero abnormal returns that persist after a special event are inconsistency with market efficiency, in view of the fact that they reflect the incapacity of the market to adjust rapidly to new information. Our purpose is to test the presence of abnormal returns after the earnings release in case when expectations are met or beat. This behavior is inconsistency with the efficient market hypothesis.

An event study typically tries to examine the stock price behavior after a common type of event, such as earnings release. The event might take place at different points of calendar time, or be clustered at a particular date. Let $t = 0$ represent the time of the event. For each sample security i , the return on the security for the time period t relative to the event, R_{it} , is

$$R_{it} = K_{it} + e_{it} \quad (1)$$

where K_{it} is the normal or expected ⁴⁷return and e_{it} is the component of returns which is abnormal or unexpected.

Given this return decomposition, the abnormal return, e_{it} , is the difference between return and predicted return. That is to say, e_{it} is the difference between the return conditional on

⁴⁷ This framework is from Brown and Warner (1980) cited in Kothari and Warner (2007).

the event and the expected return unconditional on the event, given by an expected return equilibrium model.

A security's price performance can only be considered "abnormal" relative to a particular benchmark. Thus, it is necessary to specify a model generating normal returns before abnormal returns can be measured.

3.5.2 Dependent variable - cumulative abnormal return

Our method relies in the market reaction to specific event, which is earnings release. The analysis is supported by event study methodology. Therefore, we define two models to infer the return unconditional to the event. According to Brown and Warner (1980), three models could be used to calculate normal or expected return: mean adjusted returns, market adjusted returns and market and risk adjusted returns⁴⁸. We perform our tests using two different models to obtain expected returns, the OLS market model and the market adjusted model. Then, we present the methods used to calculate cumulative abnormal return starting with OLS market model and ending with market adjusted model.

We began to calculate the firm and market return used in the two models.

Observed daily return to each firm, is given by⁴⁹:

$$R_{it} = \ln\left(\frac{P_t}{P_{t-1}}\right) \quad (2)$$

where R_{it} is the observed daily return to individual i and P_t and P_{t-1} represent the stock price in period t and $t-1$, respectively⁵⁰.

To estimate the parameters for measuring abnormal return we perform the following regression,

⁴⁸ Capital Asset Pricing Model

⁴⁹ To obtain daily market return we perform equation (1) using index daily price.

⁵⁰ We use the available closed price to each firm.

$$R_{it} = \alpha_i + \beta_i Rm_{it} + \varepsilon_{it} \quad (3)$$

where Rm_{it} is the daily return on the value-weighted market index DJ STOXX 50 Euro, and α_i and β_i are the single factor market model, where β_i measures the sensitivity of returns of i th stock to changes in returns on the market index. According to Warner and Brown (1985), the estimation period spans from $t = -241$ to $t = -1$, where $t = 0$ denotes the day of first forecast for the firm-quarter.

Daily abnormal return is derived from the deviations from the single OLS factor market model (equation 3),

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i Rm_{it}) \quad (4)$$

where AR_{it} is the abnormal return to security i in the day t , measured by the difference between the daily observed return for the security i and the expected return obtain from OLS market model, and $\hat{\alpha}$ and $\hat{\beta}$ are estimated from the OLS regressions of stock returns against the value weighted market index for each period.

To obtain abnormal return using market adjusted model we measure the difference between daily return of firm i and the market daily return, according to Warner and Brown (1985),

$$AR_{it} = R_{it} - Rm_{it} \quad (5)$$

where AR_{it} is the market adjusted daily abnormal return for firm i .

To obtain cumulative abnormal return we use daily abnormal return from OLS market model and market adjusted model. We show results from each model. The cumulative abnormal return (CAR) over a specific window period is measure by:

$$CAR_{i(t1,t2)} = \sum_{t=t1}^{t2} AR_{it} \quad (6)$$

where t_1 and t_2 are start and ending points of the period over which abnormal returns are cumulated. Similar to Bartov *et al.*(2002) we define t_1 two days after the first forecast and t_2 the day following the earnings release date.

In the next section we will present the methods used to test our hypotheses. We begin to illustrate our research path, and end with the exposition of the regression approach methodology.

3.5.3 Methodology

To better illustrate our methodology path we present Figure 5, showing the research design. Tests are conducted in order to identify MBE cases and to investigate the existence of a MBE market premium. To test hypotheses 1 and 4, we obtain cumulative abnormal return from the OLS market model and market adjusted model. We also use a regression approach to test H_1 and H_4 . To test for the existence of expectations management we perform similar tests to Bartov *et al.* (2002), using expectations paths (H_2 and H_3).

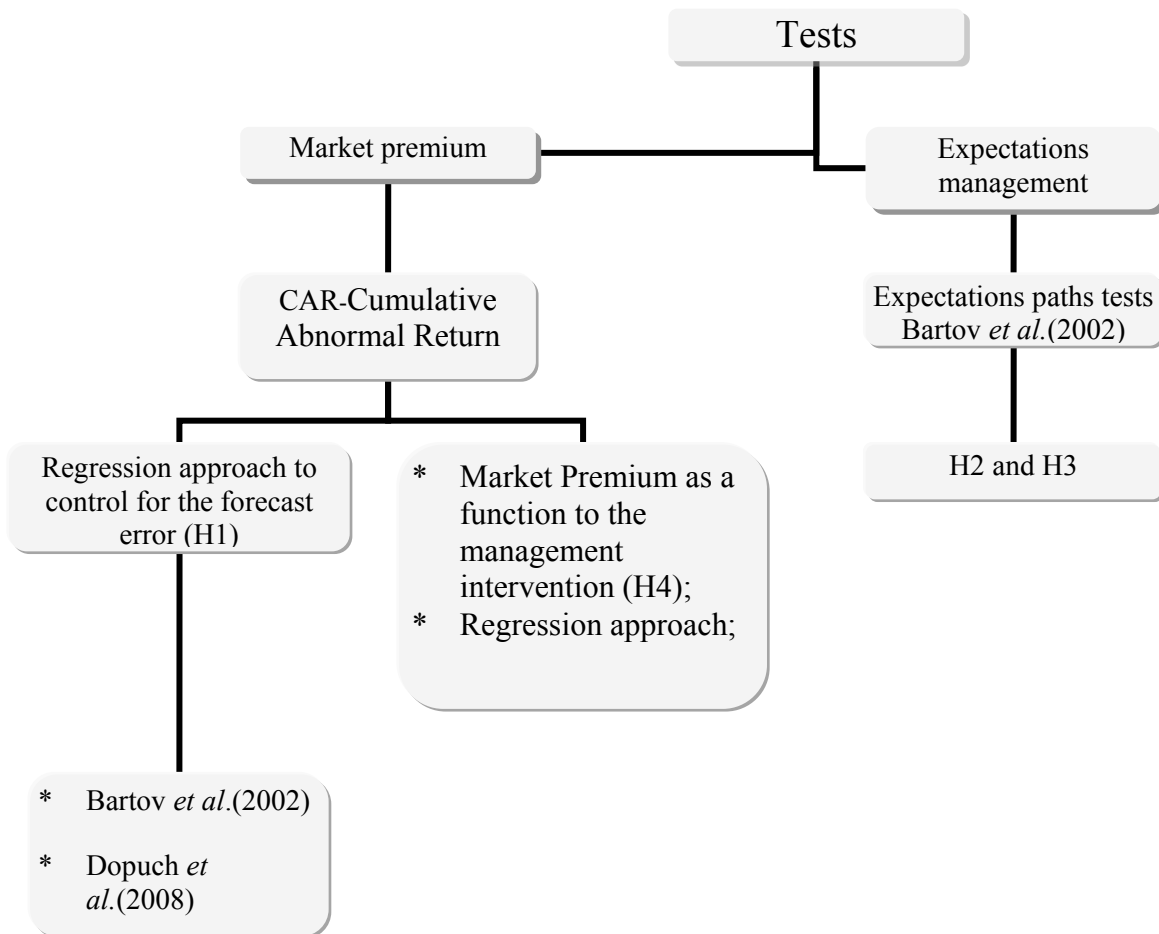


Figure 5 - Research design diagram

3.5.4 Testing MBE premium

MBE cases are, by definition, cases with a zero or positive earnings surprise. To test for the existence of a premium to MBE (H_1) we use a regression approach to control for the forecast error. Specifically, we test for MBE premium by estimating the following regression,

$$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \beta_4 DBEAT_{it} + \beta_5 DMBE * SURP_{it} + \varepsilon_{it} \quad (7)$$

where i is the firm index and t designates the quarter. CAR_{it} is the cumulative abnormal return over the period beginning two days following the first forecast (FF_{it}) and ending one day after the earnings release. The overall forecast error for the quarter, $ERROR_{it}$, and the end-of-quarter earnings surprise, $SURP_{it}$, are measured as described in Table 4, and deflated by the firm's stock price at the beginning of the quarter. $DMBE_{it}$, and $DBEAT_{it}$ are dummy variables that receive the value of 1 if, respectively, $SURP_{it} \geq 0$ (earnings met or exceeded expectations) and $SURP_{it} > 0$ (earnings exceeded expectations). Otherwise, these variables receive the value of zero. The interactive variable, $DMBE * SURP_{it}$, captures the extent to which the reward to beating expectations differs from the penalty for failing to meet expectations⁵¹, tested by Bartov *et al.* (2002).

We expect β_1 to be positive and significant, in line with the findings of the vast body of research on the information content of earnings. Under the null of H_1 , the coefficients β_2 and β_3 are not expected to be significantly different from zero.

Dopuch *et al.* (2008) did not include in their regressions $DBEAT_{it}$ and $DMBE * SURP_{it}$, because these variables capture the effect of beating expectations and the extent to which the MBE premium differs from the penalty for miss expectations, respectively. Bartov *et al.* (2002) demonstrated that regressions with $ERROR$ or REV are equivalents. Since, by definition, $ERROR = SURP + REV$, decomposing $ERROR$ in the regression would yield a coefficient for the revision variable equal to β_1 . Dopuch *et al.* (2008) used the variable REV

⁵¹ Note that this variable takes on a value of zero when expectations are met.

instead of *ERROR*, because *ERROR* is highly positive correlated with *SURP*. Similarly to Dopuch *et al.* (2008) we exclude dummy variables *DBEAT* and *DMBE*SURP*, but consider variable *ERROR* instead of *REV*⁵². Therefore, we also estimate the following regression:

$$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \varepsilon_{it} \quad (8)$$

3.5.5 Testing expectations management

To infer expectations management we perform two tests according to Bartov *et al.* (2002). In the first test we compare the relative frequency of negative earnings surprise and negative forecast error for the quarter (H_2). If expectations management occurs, such that expectations are dampened leading to downward revisions in earnings estimates, we would expect to find that negative earnings surprises are less frequent than negative forecast errors. Conversely, if interim forecast revisions only represent the arrival of new information without any managerial effort to manage expectations, there should be no difference between the frequency of negative earnings surprises and negative forecast errors.

In the second test, we examine the role of the interim forecast revision in affecting the sign of the end-of-quarter earnings surprise. Specifically, we compare the observed sign of the earnings surprise with the sign of the earnings surprise that would have resulted in the absence of an interim forecast revision (H_3). As explained above, in the absence of an interim revision, the sign of the earnings surprise would be the same as the sign of the quarterly forecast error. Observing a negative forecast error that results, due to a sufficiently large downward revision, in a positive earnings surprise is thus consistent with expectations management.

⁵² In our sample the variables *ERROR* and *SURP* are not highly correlated.

3.5.6 Testing MBE premium as a function of management intervention through expectations management

MBE may reflect the fact that firms' performance is genuinely better than expected or it could result from expectations management. If investors can trace the intervention of management to MBE, they may not reward such cases with the same premium or any premium at all.

In order to test this hypothesis relating to management intervention, we estimate the following regression:

$$CAR_{it} = \delta_0 + \delta_1 ERROR_{it} + \delta_2 SURP_{it} + \delta_3 DMBE_{it} + \delta_4 DMBE_{it}^{subset} + \delta_5 DMBE * SURP_{it} + \delta_6 DMBE_{it}^{subset} * SURP_{it} + \varepsilon_{it} \quad (9)$$

CAR_{it} is the cumulative abnormal return over the quarter beginning two days following the first forecast and ending the day after the earnings release. $ERROR_{it}$ is the forecast error computed as the difference between the actual earnings and the first forecast for the quarter, $EPS-FF_{it}$, standardized by price at the beginning of the quarter. $SURP_{it}$ is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, $EPS-LF_{it}$, standardized by price at the beginning of the quarter. $DMBE_{it}$ is a dummy variable that takes on the value of 1 if $SURP_{it} \geq 0$ and 0 otherwise. $DMBE_{it}^{subset}$ is a dummy variable that takes on the value 1 if $SURP_{it} \geq 0$ and, in addition, the case belongs to the designated subset of the sample; otherwise $DMBE_{it}^{subset} = 0$. We set $DMBE_{it}^{subset}$ to 1 and 0 alternately for MBE observations that are more likely to represent expectations management.

Corresponding to the analysis in the previous section, MBE cases that are more likely than others to result from expectations management are identified as cases with a negative forecast error that end with a zero or positive surprise (e.g., negative forecast error cases on the Down–Zero or Down–Up paths). If investors become aware of expectations management and further, do not allocate a premium, or allocate a lower premium to cases

where the MBE is achieved due to expectations management (i.e., a rejection of H_4), δ_4 and δ_6 in regression (9) are expected to be negative.

3.6 Conclusion

In this chapter we developed our research design, delimitating our hypotheses and our methodology. This exposition was important to make a proper understanding of the path of research regarding the main objectives of the work.

In the next chapter we present our main results. We also present results to the two metrics applied to measure the dependent variable in our regression approach, the OLS market model and the market adjusted model.

Chapter 4

Empirical Results

4.1 Introduction

This chapter addresses the main results of our empirical work. We present results from the existence of a market reward to firms that meet or beat analysts' forecasts, the presence of expectations management and the association between the market premium and the intervention of the management through expectations guidance.

In Section 4.2 we present the tendency of MBE during our period of analysis. This analysis is needed to understand if our sample is comparable to those applied in previous research. We follow by presenting the descriptive statistics of our primary variables in Section 4.3.

Section 4.4 provides the empirical results on the MBE reward. In this section we report results of the regression using the two metrics to measure dependent variable and also present a comparison between our work and the results obtained in previous related research.

Section 4.5 is devoted to the results of the presence of expectations management observing the expectations paths and test for hypotheses 2 and 3. Finally, in Section 4.6, we present results of the association between the market premium to MBE and the expectations management.

4.2 MBE tendency

To ascertain whether our sample is comparable to those employed by previous research with respect to the time series pattern of MBE, we produced the distribution of earnings

surprises over time. Our sample is not similar to prior research, especially because our period is relatively smaller than those employed in previous research on MBE. However neither of previous research contain the years after 2005 and because of that is not possible to make a proper comparison. Our results, presented in Table 8, illustrate an upward tendency in the first three years, followed by a decrease in 2008 and 2009. Specifically, we find that the proportion of favorable earnings surprises decreased from about 65% in the year 2007 to almost 45% in the year 2008. We find similar results when we compare the beat versus met cases. In the last two years it was a decrease in both cases. Is of note that the relative frequency of meeting (i.e., zero surprise) increased from 1,98% in 2005 to above 6,9% in 2006 and the relative frequency of beating expectations (a positive surprise) decreased from 60,40% to 53,45%.

Table 8 - MBE tendency

	2005		2006		2007		2008		2009	
	Freq.	N	Freq.	N	Freq.	N	Freq.	N	Freq.	N
Met or Beat	62,38%	63	60,34%	70	65,08%	82	45,45%	65	53,33%	80
Met	1,98%	2	6,90%	8	6,35%	8	6,29%	9	5,33%	8
Beat	60,40%	61	53,45%	62	58,73%	74	39,16%	56	48,00%	72
Not met	37,62%	38	39,66%	46	34,92%	44	54,55%	78	46,67%	70

Similar results were achieved when we observe the relative frequency of positive earnings surprise (i.e., MBE cases) by quarter. Figure 6 illustrates an upward tendency in MBE. With the exception of 2008, there are an increasing in MBE cases. We also noted a tendency of meeting or beating expectations in the previous three quarters of the year and in miss market expectations in the fourth. This findings corrugate with previous research pointing the fiscal quarter the less likely to meet or beat expectations. The reason of that is the taxes heaviness and a less preoccupation in the market reaction.

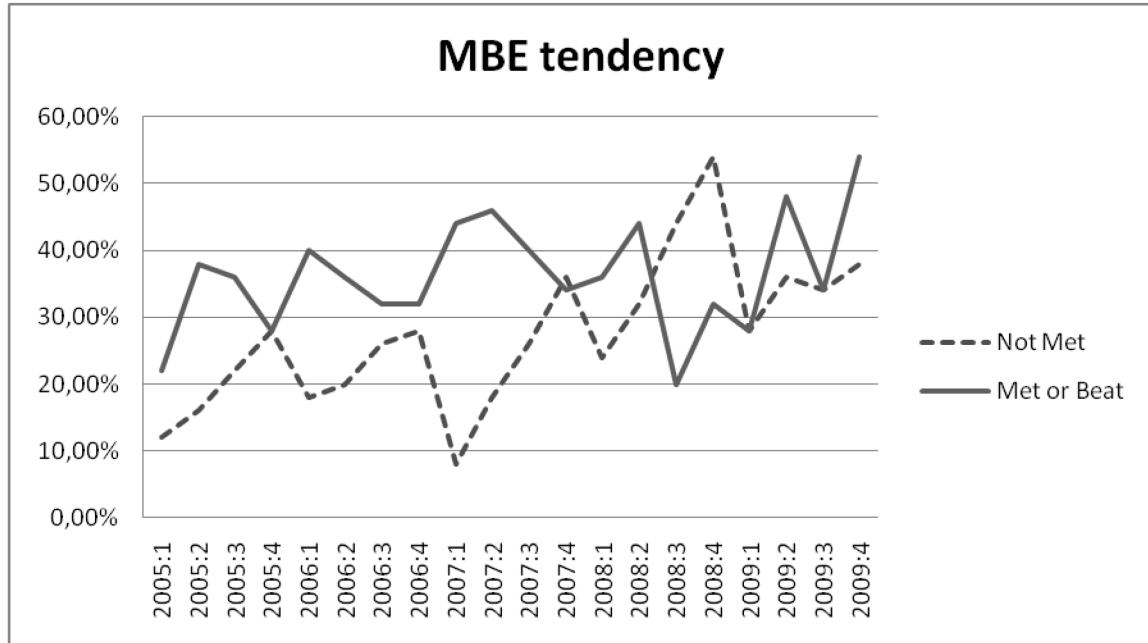


Figure 6 - MBE tendency

4.3 Descriptive statistic – primary variables

Table 7 reports descriptive statistics to primary variables in our sample. We use *SPSS – version 18 (Statistical Package for Social Sciences)* to analyze data.

The mean of variables *Error*, *Surp* and *Rev* are negative which indicates that in period of analysis, the reporting earnings are above analysts' forecasts. All variables presents means and median values with a significantly difference between them, which indicates the presence of outliers.

We also observe that distribution of variable *EPS* is slightly asymmetric because *skeness* value is close to zero. All the other variables present asymmetric distributions. Variables *Pit*, *FF* and *LF* present distributions concentrated to the right with a long tail to the left. Variables *Error*, *Surp* and *Rev* are concentrated to the left with a long tail to the right, due the negative *skeness* value.

Relatively to the *Kurtosis* measure we can conclude that all variables present distributions peaked and leptokurtic.

Table 9 - Primary variables - descriptive statistics

Primary variables							
Full sample N=636							
	P_{it}	FF	LF	EPS	<i>Error</i>	<i>Surp</i>	<i>Rev</i>
					<i>Undeclared</i>		
Mean	40,17	0,87	0,85	0,82	-0,049	-0,025	-0,024
S.D.	32,92	0,86	0,86	1,20	0,897	0,761	0,272
25%	13,99	0,27	0,26	0,25	-0,070	-0,058	-0,020
Median	26,31	0,60	0,57	0,54	0,000	0,010	0,000
75%	53,51	1,27	1,26	1,25	0,100	0,100	0,010
Minium	0,00	-0,23	-1,73	-8,71	-10,900	-11,060	-4,140
Maximum	225,57	4,65	4,64	7,51	3,610	3,610	1,220
Skewness	1,41	1,68	1,61	-0,49	-7,409	-6,771	-9,968
Kurtosis	2,07	3,01	3,09	15,01	80,143	86,500	130,900

P_{it} - security daily price of stocks

FF - first consensus analysts forecast for each firm-quarter..

LF - last consensus analysts' forecasts for each firm-quarter.

EPS - actual earnings per share as reported in I/B/E/S.

Error - difference between EPS and FF .

Surp - difference between EPS and LF .

Rev - difference between LF and FF .

We can conclude that variables do not present normal distributions, and it reflects the presence of *outliers*. The treatment of *outliers* is presented in the next section to variables inputs in the models⁵³.

Results from the tests are present in the next section. We first present results relatively to the market premium to MBE cases, followed by tests of expectations management and ending with the association of expectations management and market premium. We also present results from the calculation of two different *CAR* metrics, OLS market model and market adjusted model.

⁵³ We remove outliers in the variables *CAR*, *ERROR* and *SURP*. Note that *ERROR* and *SURP* are the variables inputs in the models which are deflated by the price of the beginning of the quarter.

4.4 Results for market premium

To test for the existence of a premium to MBE, we measure the incremental abnormal return in cases where expectations are met or beaten, after controlling for the magnitude of the quarterly forecast error.

As noted above, we measure abnormal returns using two different methods, OLS market model and market adjusted model. We began to present results from OLS market adjusted model followed by the second model. We also use two different regressions to test market premium. The first one is consistent with Bartov *et al.* (2002) model. According to Dopuch *et al.* (2008), in the second regression we exclude *dummy* variables.

4.4.1 OLS market model

Descriptive statistics

Table 10 reports descriptive statistics of model inputs variables. To improve the statically inference in our results, we exclude *outliers*. Their exclusion limited the sample to 527 observations.

Results provide by Table 10, demonstrate that the variables distributions improve if we consider *outliers* exclusion. The mean and median values of variables are close to each other. Variable *CAR* presents a mean slightly positive, 0.8% and a median with 1.7%. Variables *ERROR* and *SURP* presents equal values to mean and median. According to Maroco (2003), to a distribution be assumed as normal the *Kurtosis* value should be contained in the interval]-0,5; 0,5[. Cases where these values are highest than 1 the distribution cannot be assumed as normal.

Table 10 - Descriptive statistics of variables inputs in the model to test market premium: CAR measured by OLS market model.

Descriptives Statistics						
	Full Sample N=632 ⁵⁴			Without Outliers N=527		
	CAR	ERROR	SURP	CAR	ERROR	SURP
Mean	0,003	-0,002	-0,001	0,008	0,001	0,001
Std. Deviation	0,107	0,018	0,017	0,078	0,005	0,005
25%	-0,052	-0,003	-0,002	-0,041	-0,002	-0,002
Median	0,016	0,000	0,000	0,017	0,000	0,000
75%	0,063	0,004	0,004	0,059	0,003	0,003
Minimum	-0,741	-0,224	-0,227	-0,219	-0,014	-0,012
Maximum	0,403	0,085	0,080	0,217	0,013	0,014
Skewness	-0,685	-4,733	-5,097	-0,240	0,014	0,079
Kurtosis	4,551	46,008	56,411	0,371	0,274	0,337

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

Correlation

In Table 11 we present the correlation matrix to the variables inputs in the regression. The variables correlations measures are the *Pearson* correlation coefficient and *Spearman* correlation coefficient. *Pearson* correlation coefficient can assume values between -1 and 1. The extremes represent a highest linear association between variables. According to Bryman and Cramer (1993), a correct lecture of correlation coefficients are: lower than 0,19 it is a weak correlation, 0,20 to 0,39 is lower, 0,40 to 0,69 it is a moderate correlation, 0,70 to 0,89 it is a higher correlation and; 0,90 to 1 it is a very higher correlation. *Spearman* correlation coefficient use observation order value instead of observed value. Thus, is not sensitive to asymmetric distributions and the presence of *outliers*.

⁵⁴ We reduce the number of observations because the parameters estimated in OLS market model in four firms-quarters are not significant and therefore not a measure appropriate for expected return.

Table 11 - Correlation matrix of variables inputs in model to test market premium: CAR measured by OLS market model

Correlations Matrix – Without Outliers N=527							
	CAR	ERROR	SURP	DMBE	DBEAT	DMBE*SURP	Spearman's rho correlation
CAR	1,000	0,296** <i>000</i>	0,373** <i>000</i>	0,375** <i>000</i>	0,364** <i>000</i>	0,373** <i>000</i>	
ERROR	0,279** <i>000</i>	1,000	0,836** <i>000</i>	0,686** <i>000</i>	0,707** <i>000</i>	0,799** <i>000</i>	
SURP	0,359** <i>000</i>	0,833** <i>000</i>	1,000	0,850** <i>000</i>	0,864** <i>000</i>	0,949** <i>000</i>	
DMBE	0,362** <i>000</i>	0,612** <i>000</i>	0,738** <i>000</i>	1,000	0,884** <i>000</i>	0,805** <i>000</i>	
DBEAT	0,350** <i>000</i>	0,633** <i>000</i>	0,748** <i>000</i>	0,884** <i>000</i>	1,000	0,911** <i>000</i>	
DMBE*SURP	0,304** <i>000</i>	0,751** <i>000</i>	0,874** <i>000</i>	0,577** <i>000</i>	0,653** <i>000</i>	1,000	
<i>Pearson Correlation</i>							

** Correlation is significant at the 0.01 level

The matrix correlation can be used to verify the association level between variables. All explanatory variables present a higher correlation between them. Specifically, we can observe a very higher correlation between *DMBE*SURP* and *SURP*. This association can lead to collinearity problems and bias in the OLS estimators. To that matter, we also use Dopuch *et al.* (2008) model that exclude the variable *DMBE*SURP*⁵⁵. Although, variable *SURP* and *ERROR* are highly correlated we do not estimate our model replacing *ERROR* to *REV*, as documented by Dopuch *et al.* (2008). It is because *REV* present innumerable *outliers*, and their exclusion significantly reduced our sample. We can also observe a relatively similar correlation between *CAR* and all explanatory variables. The least correlation coefficient is observed between variables *ERROR* and *CAR*, which suggests a lower significance of the forecast error in the quarterly abnormal return.

⁵⁵ As noted earlier this interactive variable captures the difference of the premium to MBE to the penalty to miss expectations, not an issue tested in our research.

Regression results

In Table 12, we present results from the estimation of Bartov *et al.* (2002) model, using regression (8). We also estimate the regression with the presence of outliers, which results are present in Appendix C1. However we do not infer the results of this estimation.

As described in Appendix B we perform *F*, *Breusch-Pagan* and *Hausman* tests to accept or reject the null hypothesis associated, respectively, with: (1) only one intercept identify in all individuals in *cross-section*; (2) a null variance, and; (3) the GLS estimators are consistent.

Heterocedasticity is detected using White proposal test. This test depends on the assumptions of normality. The test are conducted based on a original panel model (regression 10)⁵⁶, in which residual terms are estimated $\hat{\mu}_{it}^2$. After, we perform the following regression estimation,

$$\hat{\mu}_{it}^2 = \alpha_1 + \alpha_2 \hat{Y}_{it}^2 + \nu_{it} \quad (12)$$

where \hat{Y}_{it} are estimated values through regression (10), and α_1 and α_2 are estimators parameters. Under the null hypothesis, $\alpha_2=0$.

Heterocedasticity is corrected using heterocedasticity adjusted model, provided in GRETL⁵⁷. The model calculates a weighted residuals series. Thought this correction, it is computed an OLS estimation and kept the residuals terms. With this regression, the residuals squares became an explanatory variable in an auxiliary regression, and the other original explanatory variables remains added to residual squares. Thus, coefficients obtain in auxiliary regression are used to form residual weight series in the final estimators. Consequently, OLS estimation can be done since there is a correction in the residual

⁵⁶ Appendix B

⁵⁷ GRETL comand: Menu: Model/other linear models/ heterocedasticity adjusted

covariance matrix to consider heterocedasticity. Thus and according to Gujarati (2006), the estimation is robust and called as GLS (*Generalized Least Square*).

We also investigate multicollinearity between variables through variances inflators factors (VIF)⁵⁸ where a value higher than 10 could imply a problem with collinearity. The values obtained go from 3,292 (ERROR) to 8,323 (SURP) validating the estimation.

Table 12 - Premium to MBE: results from the estimation of regression (7) using CAR measured by OLS

Market Model

(t-statistics provided in parenthesis)

$$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \beta_4 DBEAT_{it} + \beta_5 DMBE * SURP_{it} + \varepsilon_{it}$$

Dependent Variable: CAR_{i,t} OLS Market Model

Without outliers N=527

	β_0	β_1	β_2	β_3	β_4	β_5	R^2
Coefficients	0,016**	-1,035	3,831**	0,028*	0,009	0,204	15,43%
t-statistic	(2,092)	(-0,961)	(2,265)	(1,738)	(0,626)	(0,105)	
White test	Chi2 (12)=26,9304 Prob >Chi2=0,0079						
Breusch-Pagan	Chi2 (1)=0,00983 Prob >Chi2=0,92102						
Hausman	Chi2 (5)=3,47228 Prob >Chi2=0,627586						
Test F	F (45, 474) = 0,996441 Prob > F = 0,482158						
Heterocedasticity Adjusted							
Coefficients	-0,0184*	0,743	2,106	0,031**	0,0098	0,394	13,07%
t-statistic	(-1,865)	(0,647)	(0,849)	(2,029)	(0,788)	(0,150)	

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release (using OLS market model).

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP>=0 and 0 otherwise.

DBEAT is a dummy variable that takes on the value of 1 if SURP>0 and 0 otherwise.

⁵⁸ VIF(j) = 1/(1-R(j)²), where R(j) are the correlation coefficient between variable j and the other explanatory variable.

As shown in Table 12, the coefficient β_2 , estimated from the sample without outliers, is positive but not significant. Then, we can infer the statistical significance of the earnings surprise in the return of the period. The coefficient β_3 of 0,031, suggests that the quarterly return for firms that meet or beat their earnings expectations is 3.1% above that of all other firms, independent of the magnitude of the positive earnings surprise.

We also estimate the model excluding variables *DBEAT* and *DMBE**SURP** according to Dopuch *et al.*(2008). As noted in matrix correlation *DMBE**SURP** are higher correlated with *SURP* and their inclusion in the model causes non-efficient estimators. Multicollinearity between variables was inferred through variances inflators factors (VIF). Values obtained go from 2,201 (*DMBE*) to 4,491 (*SURP*) which validate the estimation.

Table 13 - Premium to MBE: results from the estimation of regression (8) using CAR measured by OLS

Market Model

(t-statistics provided in parenthesis)

$$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \varepsilon_{it}$$

Dependent Variable: *CAR_{i,t}* OLS Market Model

Without Outliers N=527

	β_0	β_1	β_2	β_3	R ²
Coefficients	-0,0152**	-0,988	4,15***	0,035***	15,34%
t-statistic	(-2,563)	(-0,883)	(2,933)	(3,699)	
White test	Chi2 (1)=22,252 Prob >Chi2=0,004				
Breusch-Pagan test	Chi2 (1)=0,05602 Prob >Chi2=0,8129				
Hausman test	Chi2 (1)=1,437 Prob >Chi2=0,6967				
Test F	F (45, 476) = 0,997041 Prob > F = 0,5297				
Heterocedasticity Adjusted					
Coefficients	-0,017**	0,154	2,929**	0,0379***	12,59%
t-statistic	(-2,391)	(0,135)	(2,047)	(3,959)	

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release (using OLS Market model).

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if $SURP \geq 0$ and 0 otherwise.

The regression is estimated with the presence of *outliers*. The results are presented in Appendix C2. The results from the Table 13 show that β_2 and β_3 are positive and significant. This results suggesting that the earnings surprise affects the return of the quarter. The coefficient β_3 of 0,0379 suggests that the quarterly return for firms that meet or beat expectations is higher 3,79% than firms who miss expectations. The coefficient of SURP, β_2 , is 2,929, suggesting that 1% of earnings surprise is associated with an incremental quarterly return of about 2,9%.

4.4.2 Market adjusted model

In this section we present results from testing market premium to firms that meet or beat analysts' forecasts using market adjusted return described above. We use a similar approach to that used in OLS market adjusted CAR. We began to present descriptive statistics and correlation matrix followed by the results of regression (7) and (8).

Descriptive statistics

Table 14 - Descriptive statistic of variables inputs in the model to test market premium: CAR measured by market adjusted model

Descriptives Statistics						
	Full Sample N=636			Without Outliers N=528		
	<i>CAR_ma</i>	<i>ERROR</i>	<i>SURP</i>	<i>CAR_ma</i>	<i>ERROR</i>	<i>SURP</i>
Mean	0,002	-0,002	-0,001	0,013	0,001	0,001
Std. Deviation	0,104	0,018	0,017	0,067	0,005	0,005
25%	-0,028	-0,003	-0,002	-0,030	-0,002	-0,002
Median	0,012	0,000	0,000	0,015	0,000	0,001
75%	0,045	0,004	0,004	0,054	0,003	0,003
Minimum	-0,889	-0,224	-0,227	-0,186	-0,014	-0,014
Maximum	0,351	0,085	0,080	0,210	0,013	0,014
Skewness	-1,501	-4,733	-5,097	-0,054	0,032	0,112
Kurtosis	10.071	46,008	56,411	0,351	0,311	0,369

CAR_ma is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release (using market adjusted model).

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

In Table 14 we provide descriptive statistics using market adjusted return to calculate *CAR*. Similar to the observed in the variables using the OLS market model we identify outliers.

Their exclusion limited our sample to 528 observations. The results do not differ in many ways from those present in Table 9. Noted that mean from variable *CAR_ma* increase from 0,8% to 1,3%.

Correlation

In Table 15 we present matrix correlation between variables input in the models. Unlike previous model correlation matrix we observe non statistic correlation between variable *CAR_ma* and *DMBE*, *DBEAT* and *DMBE*SURP* (Pearson correlation). We also verify in *Pearson* correlation coefficients that variable *DMBE*SURP* are statistical uncorrelated with all variables.

Table 15 - Correlation matrix of variables inputs in model to test market premium: *CAR* measured by market adjusted model

Correlations Matrix – Without Outliers N=528						
	CAR_ma	ERROR	SURP	DMBE	DBEAT	DMBE*SURP
CAR_ma	1,000	0,607** <i>000</i>	0,720** <i>000</i>	0,763** <i>000</i>	0,722** <i>000</i>	0,686 <i>0,049</i>
ERROR	0,520** <i>000</i>	1,000	0,827** <i>000</i>	0,676** <i>000</i>	0,694** <i>000</i>	0,787** <i>000</i>
SURP	0,614** <i>000</i>	0,823** <i>000</i>	1,000	0,849** <i>000</i>	0,864** <i>000</i>	0,949** <i>000</i>
DMBE	0,708 <i>0,201</i>	0,603** <i>000</i>	0,733** <i>000</i>	1,000	0,880** <i>000</i>	0,801** <i>000</i>
DBEAT	0,669 <i>0,111</i>	0,622** <i>000</i>	0,744** <i>000</i>	0,880** <i>000</i>	1,000	0,910** <i>000</i>
DMBE*SURP	-0,072 <i>0,049</i>	0,049 <i>0,132</i>	0,061 <i>0,080</i>	-0,012 <i>0,395</i>	0 <i>0,498</i>	1,000

Pearson Correlation

Spearman's rho correlation

** Correlation is significant at the 0.01 level

Regression results

In Table 16, we present regression results using *CAR* obtained with market adjusted model. The method is similar to implied in previous section using 528 observations resulting from the *outliers* exclusion. We also estimate the regression to the entire sample, Appendix C3, but do not infer results from this estimation. Results from the multicollinearity test show

VIF values varies from 1,011 (*DMBE*SURP*) to 4,912 (*DBEAT*), which validate the regression.

From results shown in Table 16, we emphasized the homocedasticity verified, performing White test. When we use *outlier*'s free sample the *pooled OLS* is the most efficient method to estimate regression. Performing *F*, *Breusch-Pagan* and *Hausman* tests we conclude that *pooled OLS* improves our results.

Table 16 - Premium to MBE: Results from the estimation of regression (7) using CAR measured by market adjusted model
(*t*-statistics provided in parenthesis)

$$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \beta_4 DBEAT_{it} + \beta_5 DMBE * SURP_{it} + \varepsilon_{it}$$

Dependent Variable: CARI,t Market Adjusted Model

Without outliers N=528

	β_0	β_1	β_2	β_3	β_4	β_5	R^2
Coefficients	-0,035***	0,559	2,259**	0,063***	0,016*	-0,120***	53,08%
t-statistic	(-8,865)	(0,739)	(2,581)	(7,683)	(1,801)	(-3,044)	
White test	Chi2 (14)=16,5881 Prob >Chi2=0,27879						
Breusch-Pagan	Chi2 (1)=0,199368 Prob >Chi2=0,65523						
Hausman	Chi2 (5)=3,28622 Prob >Chi2=0,655952						
Test F	F (45, 477) = 1,20219 Prob > F = 0,179877						

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release.
 ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.
 SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.
 DMBE is a dummy variable that takes on the value of 1 if SURP>=0 and 0 otherwise.
 DBEAT is a dummy variable that takes on the value of 1 if SURP>0 and 0 otherwise.

As shown in Table 16, the coefficient β_2 , is positive and significant suggesting that earnings surprise affects positively the return from the period. Coefficient β_3 is positive and significant, suggesting that firms that meet or beat expectations experience a higher return in the period. Specifically, using market adjusted return to calculate cumulative abnormal return, the coefficient from *DMBE* suggest that MBE firms enjoy a return of 6,3% above the other cases, independent of the magnitude of the positive earnings surprise. The

coefficient of *SURP* (β_2) is 2,259, suggesting that a 1% earnings surprise is associated with an incremental quarterly return of about 2,26%.

While not formally hypothesized, we also can draw from the regression, results suggesting a higher return associated with beating expectations than merely meeting expectations, coefficient β_4 is positive and significant. Contrarily to previous research we do not find a higher premium for meeting expectations than the penalty for missing expectations, β_5 are negative and significant.

Table 17 presents estimation results of regression (8) using market adjusted model to calculate cumulative abnormal return. We display estimations from the full sample in Appendix C4 and sample without *outliers* (528 observations) in Table 17. We also perform test for heterocedasticity and tests to choose between estimation methods.

Table 17 - Premium to MBE: Results from the estimation of regression (8) using CAR measured by market adjusted model

(t-statistics provided in parenthesis)

$$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \varepsilon_{it}$$

Dependent Variable: CAR_{it}, Market Adjusted Model

Without Outliers N=528

	β_0	β_1	β_2	β_3	R ²
Coefficients	-0,035***	0,614	2,399***	0,076***	52,19%
t-statistic	(-9,563)	(0,806)	(2,841)	(12,517)	
White test	Chi2 (9)=22,769 Prob >Chi2=0,007				
Breusch-Pagan test	Chi2 (1)=0,2755 Prob >Chi2=0,5997				
Hausman test	Chi2 (3)=1,439 Prob >Chi2=0,6965				
Test F	F (45, 479) = 1,23158 Prob > F = 0,151164				
Heterocedasticity Adjusted					
Coefficients	-0,033***	1,270*	1,928*	0,074***	51,97%
t-statistic	(-9,327)	(1,852)	(1,924)	(12,74)	

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP>=0 and 0 otherwise.

The coefficients signals do not differ from our previous results. However the results from heteroscedasticity adjusted estimation, provides β_1 , β_2 and β_3 positives and significant according to previous results from Dopuch *et al.* (2008). Coefficient from *DMBE* is 0,074 suggesting that MBE firms experience a period return above 7,4% the missing firms, independent of the magnitude of earnings surprise. Despite to this constant premium, the abnormal return to MBE firms is affected by the magnitude of earnings surprise. The coefficient from *SURP* is 1,924 suggesting that firms that meet or beat expectations with 1% earnings surprise experience a incremental quarterly return of about 1,9%. The relevance of earnings enhanced in empirical literature is observed in β_1 , which is positive and significant.

Table 18 demonstrates a comparison between our results and empirical results from previous research on MBE. Panel A, show similar coefficients signs than Bartov *et al.* (2002). However, our sample does not provide significant statistical inferences when we use *OLS market model* to compute cumulative abnormal return. One of the reasons is the size of the sample and the estimation problems associated. However the premium to MBE cases it is greater in our sample, 3,1% against 2,3% in Bartov *et al.* (2002).

When we estimate regression (7) using as dependent variable CAR from the market adjusted model we observe coefficients statistical significant and close to those presented by Bartov *et al.* (2002). We do not experience a statistical significant coefficient from the parameter *ERROR* (that reflects the earnings relevance), which is contradictory to previous research. Unlike the results presented in previous research, coefficient from parameter *DMBE*SURP* present a negative signal, suggesting that in our sample the penalty for missing expectations is higher than the reward to meet or beat expectations. We also experience a significant and positive coefficient from the parameter *DBEAT*, suggesting that beating expectations assign a bigger premium than just meeting expectations. Overall results suggests that there are a market premium to MBE firms and the quarterly return enjoy by these firms is 6,3% above the missing firms.

Panel B from the Table 18 illustrate the comparison between ours results and Dopuch *et al.* (2008) results. When we apply regression (8) in our sample, we also find a coefficient from parameter *ERROR*, β_1 , positive and significant suggesting the relevance of earnings.

The coefficient on *SURP* indicates that for our time-period, the earnings surprise influences the quarterly return. Although, Dopuch *et al.* (2008) sample enjoyed a more relevance in earnings surprise than ours (2,92% against 7,05%).

Table 18 - Results from premium to MBE comparison

(t-statistics provided in parenthesis)

Panel A – Results Comparison – Regression (7)									
$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \beta_4 DBEAT_{it} + \beta_5 DMBE * SURP_{it} + \varepsilon_{it}$									
	<i>Period</i>	<i>N</i>	β_0	β_1	β_2	β_3	β_4	β_5	R^2
Our sample <i>CAR OLS</i> <i>Market Model</i>	(2005- 2009)	527	-0,0184* (-1,865)	0,743 (0,647)	2,106 (0,849)	0,031** (2,029)	0,0098 (0,788)	0,394 (0,150)	13,07%
Our sample <i>CAR Market</i> <i>Adjusted Model</i>	(2005- 2009)	528	-0,035*** (-8,865)	0,559 (0,739)	2,259** (2,581)	0,063*** (7,683)	0,016* (1,801)	-0,120*** (-3,044)	53,08%
Bartov et al.(2002) <i>CAR Market</i> <i>Adjusted Model</i>	(1983- 1997)	64.872	-0,028*** (-27,63)	0,407*** (47,82)	0,534*** (8,15)	0,023*** (11,76)	0,034*** (16,49)	0,434*** (3,02)	8,76%
Panel B – Results comparison – Regression (8)									
$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \varepsilon_{it}$									
	<i>Period</i>	<i>N</i>	β_0	β_1	β_2	β_3	R^2		
Our sample <i>CAR OLS Market</i> <i>Model</i>	(2005- 2009)	527	-0,017** (-2,391)	0,154 (0,135)	2,929** (2,047)	0,0379*** (3,959)	12,59%		
Our Sample <i>CAR Market</i> <i>Adjusted Model</i>	(2005- 2009)	528	-0,033*** (-9,327)	1,270* (1,852)	1,928* (1,924)	0,074*** (12,74)	51,97%		
Dopuch et al. (2008). <i>CAR size adjusted</i>	(1993- 2000)	26.7 53	-0,015*** (-6,396)	9,075*** (34,02)	7,048*** (17,92)	0,039*** (13,32)	7,96%		

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if $SURP \geq 0$ and 0 otherwise.

DBEAT is a dummy variable that takes on the value of 1 if $SURP > 0$ and 0 otherwise.

When, we use market adjusted abnormal return we find a higher premium than OLS market model, suggesting that parameters estimate on OLS market model do not entirely

reflect the expected return. This different could be explained to the sample chosen. Our sample consists in index constituents and the difference between market return and observed return on firm could be a better proxy to expected return.

4.5 Market premium robustness tests

In order to ascertain our test robustness, we perform a test based on the difference between CAR when expectations are met or beat and miss, similar to Bartov *et al.* (2002) and Caylor *et al.* (2007). Still, in this study Bartov *et al.* (2002) control for the forecast error placing firms-quarters into portfolios based on error size. However Caylor *et al.* (2007) noted that the portfolio approach has a significant disadvantage which is that it does control for the variation of the forecast revision and the earnings surprise within each portfolio. Furthermore, we do not attempt the difference between beating and merely meeting expectations, so we do not measure the difference of mean abnormal return between beat and meet.

Results in Table 19⁵⁹ demonstrate that, in our sample, cumulative abnormal quarterly return is significant higher to MBE cases. Additionally, we observe a mean abnormal return to firms missing the market expectations. In particular, cases with positive error that ends with a positive earnings surprise have an average CAR of 3,71% while those with a negative earnings surprise, (i.e., fail expectations) show an average CAR of -6.62%. Comparable results in attendance when we observe zero error signals. Contrary to evidenced by Bartov *et al.* (2002) and Caylor *et al.* (2007), we do not observe a negative mean abnormal return in cases of negative forecast error. This result is consistence with our regression approach, in which we do not detect a significant relevance of the earnings forecast error.

⁵⁹ The tests of means comparison are showed in Appendixes D1, D2, D3, D4, D5 and D6.

To note that expectations paths that had a positive forecast error and ends with a negative earnings surprise face a higher negative abnormal return (-6,62%) than paths in which it was a negative forecast error that ends with a negative earnings surprise (-2,03%). These findings are consistent with previous research that document a penalty to cases in which exist a negative earnings surprise. We can also intuitively conclude that the magnitude of the earnings surprise affect the mean quarterly abnormal returns.

Table 19 - Mean abnormal return (CAR_{it}), measure using OLS market model, by sign of forecast error and expectation path
(*t*-statistics provided in parenthesis)

Error Sign	N	Expectations Path Number ^(a)	Expectations were	$CAR_{i,t}$ OLS market model (mean)	Difference between $CAR_{i,t}$ for
					<i>Met or Beat vs Not met</i>
Positive N=268	247	(1), (3), (4), (5)	Met or Beat	0,0371	0,0985***
	21	(2)	Not Met	-0,0662	(7.053)
Zero N=34	23	(12), (13)	Met or Beat	0,0110	0,0631**
	11	(11)	Not Met	-0,0521	(2.292)
Negative N=225	45	(7), (9)	Met or beat	0,0150	0.0353**
	180	(6), (8), (10)	Not Met	-0,0203	(2.561)

^(a) Expectations paths were defined in Table 6 and draw from the sign of forecast revision and the earnings surprise.

Table 20 - Mean abnormal return (CAR_{it}), measure using market adjusted model, by sign of forecast error and expectation path
(*t*-statistics provided in parenthesis)

Error Sign	N	Expectations Path Number ^(a)	Expectations were	$CAR_{i,t}$ market adjusted model (mean)	Difference between $CAR_{i,t}$ for
					<i>Met or Beat vs Not met</i>
Positive N=266	244	(1), (3), (4), (5)	Met or Beat	0,0571	0,102***
	22	(2)	Not Met	-0,0448	(10,064)
Zero N=36	25	(12), (13)	Met or Beat	0,0297	0,0791***
	11	(11)	Not Met	-0,0494	(4.302)
Negative N=226	47	(7), (9)	Met or beat	0,0511	0.0759***
	179	(6), (8), (10)	Not Met	-0,0439	(9.465)

^(a) Expectations paths were defined in Table 6 and draw from the sign of forecast revision and the earnings surprise.

We can withdraw similar conclusions when we measure quarterly abnormal return using market adjusted model (Table 20). Through all error forecast signal we observe a significant higher mean abnormal return in cases of MBE against cases that miss expectations. In particular, cases with a positive forecast error that end with a positive earnings surprise experience a mean quarterly abnormal return of 5,71%.

4.6 Results for expectations management

To infer the presence of expectations management we compare the relative frequency of case with negative forecasts errors and the relative frequency of negative earnings surprise.

The results of testing H_2 are provided in Table 21. The percentage of negative earnings surprises over the entire sample is 42,87%, which is smaller than the percentage of negative forecast errors, 44,57%. Still, the difference is not significant (using the test of proportions – Appendix E1). Similar to Bartov *et al.* (2002) the relative frequency of earnings errors is lower than relative frequency of earnings surprise, however the different was not significant and we can deduct expectations management from this test.

Table 21 - Relative frequency of negative forecast errors and negative earnings surprise

	Negative earnings surprise		Negative forecasts errors		Excess of negative earnings errors over negative surprise cases	
	(1)		(2)		(3)=(2)-(1)	
	N	%	N	%	N	%
Full sample N=636	272	42,83%	283	44,57%	11	1,73%

Earnings surprise is the difference between the actual earnings and the latest forecast for the quarter, EPS-LF:
Forecast error is the difference between the actual earnings and the earliest forecast for the quarter, EPS_FF:

The inference about the existence of expectations management is reinforced by tests of H_3 . As presented in Table 22, we determine the proportion of firm-quarters with a negative forecast error that end with a positive or zero surprise and the proportion of cases with a positive or zero forecast error that end with a negative surprise. Observations that belong to the first group are more likely to result from expectations management than those in the second group. To test H_3 , we examine the difference between these two proportions. As the table shows, 16,96% of the firm-quarters with a negative forecast error ended, nonetheless

(as a result of a sufficiently large downward revision in earnings forecasts), with a positive earnings surprise. In contrast, only 10.76% of the cases with a positive or zero forecast error ended (due to a downward forecast revision) with a negative earnings surprise. The difference, which is statistically significant, suggests the presence of expectations management and the rejection of H_3 .

Table 22 - Expectations management: frequency of selected expectations paths by period (a)

	Cases <i>likely</i> to be affected by expectations management ^(b)			Cases <i>less likely</i> to be affected by expectations management ^(c)			Difference between the proportion of cases where the sign of the surprise is opposite the sign of the error
	Cases with negative forecast error that end with:(N=283)			Cases with a positive earnings forecasts that end with a negative surprise (N=314)	Cases with a zero forecasts errors that end with a negative surprise (N=39)	Cases with either a positive or zero forecast error with a negative surprise (N=353)	
	Positive surprise	Zero surprise	Cases with either positive or zero surprise				
N	34	14	48	26	12	38	10
%	12,01	4,95	16,96	8,28	30,77	10,76	6,20*

*Significant at the 1% level, using the test of proportions (appendix E2).

^(a)Expectation paths are defined by the sign of the forecast revision and the earnings surprise. The forecast revision is the difference between the latest forecast and the earliest forecast for the quarter, LF-FF: The earnings surprise is the difference between the actual earnings and the latest forecast for themquarter, EPS-LF: The forecast error is the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF:

^(b)Defined as observations on the Down–Up or Down–Zero paths.

^(c)Defined as observations on the Up–Down paths.

The findings are consistent with revisions in earnings forecasts being managed so as to result in MBE upon the earnings announcement. In particular, downward revisions are encouraged when, in their absence, the earnings surprise is expected to be negative while upward revisions are discouraged if they might lead to a negative earnings surprise.

4.7 Results for market premium as a function of management intervention

In order to test hypotheses relating to management intervention (H4), we estimate regression (9), setting $DMBE^{subset}$ equal to 1 for MBE observations that are more likely to represent expectations management, and 0, otherwise. In line with the analysis in previous section, MBE cases that are more likely than others to result from expectation management are identified as cases with a negative forecast error that end with a zero or positive earnings surprise (e.g. negative forecast error cases with Down-Zero or Down-UP paths).

Alike with previous test we present results first with CAR obtained from the OLS market model and second with CAR obtained from market adjusted model.

4.7.1 OLS market model

Correlation

Table 23 - Correlation matrix of variables inputs in model to test market premium as a function to expectations management: CAR measured by OLS market model

Correlations Matrix – Without Outliers N=527							
	CAR	ERROR	SURP	DMBE	DMBE ^{subset}	DMBE* SURP	DMBE ^{subset} * SURP
CAR	1,000	0,296** 000	0,373* 000	0,378** 000	0,023 0,301	0,373** 000	0,025 0,287
ERROR	0,280** 000	1,000	0,837** 000	0,685** 000	-0,242** 000	0,799** 000	-0,212** 000
SURP	0,360** 000	0,833** 000	1,000	0,850** 000	0,064 0,072	0,949** 000	0,106** 008
DMBE	0,367** 000	0,612** 000	0,739** 000	1,000	0,249** 000	0,804** 000	0,202** 000
DMBE ^{subs} et	0,025 0,284	-0,195** 000	0,044 0,158	0,249** 000	1,000	-0,004 0,466	0,813** 000
DMBE*S URP	0,303** 000	0,751** 000	0,874** 000	0,577** 000	-0,065 0,069	1,000	0,112** 0,005
DMBE ^{subs} et*SURP	0,041 0,171	-0,158** 000	0,152** 000	0,128** 0,002	0,514** 000	0,160** 000	1,000
Pearson Correlation							

Spearman's rho correlation

** Correlation is significant at the 0.01 level

We began to present a correlation matrix between variables inputs in the model (Table 23). We observe no statistical significant correlation between CAR and $DMBE^{subset}$, and CAR and $DMBE^{subset} * SURP$. From the correlation matrix table we could observe a negative correlation between ERROR and $DMBE^{subset}$ and also with $DMBE^{subset} * SURP$. These results suggest that variables vary in opposite directions.

Results from the multicollinearity test show VIF values varies from 6,585 (SURP) to 1,326 ($DMBE^{subset}$) validating our regression.

Regression results

Similar to the previous results presented here we perform tests to infer the heterocedasticity in the estimation and also the improved estimation model. We also present results from estimation of regression (9), with *outliers* in Appendix F1.

The results of the test of the association between expectations management and the premium (H4) are provided in Table 24. If investors detect expectations management and further, do not assign a premium or assign a lower premium to these cases (i.e., rejection of hypothesis 4), the coefficients δ_4 and δ_6 are expected to be negative. Although the coefficients are negative, they are not significant and therefore do not allow assuming conclusions about the association between premium to MBE and the expectations management.

Table 24 - Association between the premium to MBE and expectations management: results from the estimation of regression (9) using CAR measured by OLS market model
(t-statistics provided in parenthesis)

$$CAR_{it} = \delta_0 + \delta_1 ERROR_{it} + \delta_2 SURP_{it} + \delta_3 DMBE_{it} + \delta_4 DMBE_{it}^{subset} + \delta_5 DMBE * SURP_{it} + \delta_6 DMBE_{it}^{subset} * SURP_{it} + \varepsilon_{it}$$

Dependent Variable: CAR_{i,t} OLS Market Model								
Without Outliers N=527								
	δ_0	δ_1	δ_2	δ_3	δ_4	δ_5	δ_6	R^2
Coefficients	-0,017**	-2,089*	4,673***	0,040***	-0,018	0,303	-2.333	15,78%
t-statistic	(-2,161)	(-1,760)	(2,928)	(3,712)	(-1,171)	(0,154)	(-0.476)	
White test	Chi2 (15)=26,8042 Prob >Chi2=0,0304							
Breusch-Pagan	Chi2 (1)=0,00065 Prob >Chi2=0,9797							
Hausman	Chi2 (5)= 5,68367 Prob >Chi2=0,45954							
Test F	F (45, 473) = 1,03512 Prob > F = 0,4138							
Heterocedasticity Adjusted								
Coefficients	-0,018*	0,231	2,401	0,040***	-0,011	0,801	-0.105	13,54%
t-statistic	(-1,815)	(0,160)	(0,905)	(3,562)	(-0,802)	(0,299)	(-0,036)	

CAR_Q is the cumulative abnormal return over the period beginning two days following the first forecast and ending 1 day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS_FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS_LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes the value of 1 if SURP^{>=0} and 0 otherwise.

DMBE^{subset} is a dummy variable that takes on the value 1 if SURP^{>=0} and the observation belongs to the designated subset of the sample; otherwise DMBE^{subset}=0.

4.7.2 Market adjusted model

Correlation

We present correlation matrix of variables inputs in the model using CAR measure with market adjusted abnormal return. We find similar results provide in the previous Table 25. Variable DMBE*SURP and CAR_{ma} are negatively correlated. We also find no significant correlations between CAR_{ma} and DMBE^{subset}*SURP, and between DMBE*SURP and ERROR, SURP, DMBE and DMBE^{subset}*SURP.

Table 25 - Correlation matrix of variables inputs in model to test market premium as a function to expectations management: CAR measured by market adjusted model

Correlations Matrix – Without Outliers N=528							
	CAR_m a	ERROR	SURP	DMBE	DMBE ^{subset}	DMBE* SURP	DMBE ^{subset*} SURP
CAR_ma	1,000	0,607** 000	0,718* 000	0,763** 000	0,090* 0,019	0,677** 000	0,116** 0,004
ERROR	0,520** 000	1,000	0,827** 000	0,677** 000	-0,247** 000	0,784** 000	-0,217** 000
SURP	0,614** 000	0,823** 000	1,000	0,849** 000	0,070 0,053	0,946** 000	0,113** 005
DMBE	0,708** 000	0,603** 000	0,733** 000	1,000	0,257** 000	0,798** 000	0,212** 000
DMBE ^{subs} et	0,089* 0,020	-0,196** 000	0,046* 0,146	0,257** 000	1,000	0,005 0,454	0,825** 000
DMBE*S URP	-0,072* 0,049	0,049 0,132	0,061 0,080	-0,012 0,395	-0,018 0,338	1,000	0,117** 0,003
DMBE ^{subs} et*SURP	0,070 0,054	-0,163** 000	0,154** 000	0,134** 0,001	0,522** 000	0,004 0,459	1,000
<i>Pearson Correlation</i>							

Spearman's rho correlation

** Correlation is significant at the 0.01 level

Results from the multicollinearity test show VIF with values from 5,344 (SURP) to 1,011 (DMBE*SURP) validating regression estimation.

Regression results

Now we present results of testing the premium of MBE as a function of expectations management. Specifically, we intend to test if investors assign a smaller premium in cases which is more likely that MBE was achieved by expectations management. To that matter we estimate the regression (9).

The results of the test of the association between expectations management and the premium (H₄) are provided Table 26. The estimation of the full sample is present in Appendix F2.

Table 26 - Association between the premium to MBE and expectations management: results from the estimation of regression (9) using CAR measured by market adjusted model
(t-statistics provided in parenthesis)

$$CAR_{it} = \delta_0 + \delta_1 ERROR_{it} + \delta_2 SURP_{it} + \delta_3 DMBE_{it} + \delta_4 DMBE_{it}^{subset} + \delta_5 DMBE * SURP_{it} + \delta_6 DMBE_{it}^{subset} * SURP_{it} + \varepsilon_{it}$$

Dependent Variable: CAR_{it} Market Adjusted Model

Without outliers N=528

	δ_0	δ_1	δ_2	δ_3	δ_4	δ_5	δ_6	R^2
Coefficients	-0,034***	-0,128	2,917***	0,079***	-0,017*	-0,121***	-0,297	53,18%
t-statistic	(-8,837)	(-0,158)	(2,873)	(12,112)	(-1,881)	(-2,979)	(-0,096)	
White test	Chi2 (15)=22,779 Prob >Chi2=0,1198							
Breusch-Pagan	Chi2 (1)=0,17844 Prob >Chi2=0,67272							
Hausman	Chi2 (5)= 3,48403 Prob >Chi2=0,746093							
Test F	F (45, 476) = 1,20024 Prob > F = 0,18194							

CAR_{it} is the cumulative abnormal return over the period beginning two days following the first forecast and ending 1 day following the earnings release.

ERROR_{it} is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS_FF; standardized by price at the beginning of the quarter.

SURP_{it} is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS_LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP_{it} >= 0 and 0 otherwise.

DMBE_{it}^{subset} is a dummy variable that takes on the value 1 if SURP_{it} >= 0 and the observation belongs to the designated subset of the sample; otherwise DMBE_{it}^{subset} = 0.

The coefficients δ_4 are negative and mostly significant. This result suggests that the premium to MBE is lower in instances in which the MBE is more likely to have been driven by expectations management. Overall, however, the premium to MBE in these cases still exists and is lower by only a small amount as compared with the premium to MBE in other cases. This is evident from the small negative coefficient for DMBE^{subset}, δ_4 (-0.017), which is the conditional intercept dummy, relative to the coefficient for DMBE, δ_3 (0,079) the unconditional intercept dummy. We do not experience a coefficient δ_6 statically significant, which conditions our inferences between the expectations management and the premium to MBE.

4.8 Conclusion

In this chapter the results of our empirical work has been presented. We exhibited results from the existence of a market reward to firms that meet or beat analysts' forecasts, the presence of expectations management and the association between the market premium and the intervention of the management through expectations guidance. From the analysis we outline the diminishing of MBE cases in the last two years of our sample period. The decrease could be due to economic variables of the years, especially in 2008 when capital markets experience a prices downfall.

We became aware of the existence of a market premium to firms that meet or beat expectations. This result was more evident when we perform the dependent variable, CAR, by market adjusted model. We also infer from the existence of expectations management to firms quarters presented in our sample.

Chapter 5

Conclusions

The present work examines in which instances the expectations game was played by managers and investors in the DJ Stoxx 50 E Index. In particular, we focus on the level to which reported earnings meet or beat analysts' forecasts. Although some individual conclusions had already been reported throughout and in the end of the previous chapter, we will now summarize in the following the most important results of this work.

Relatively to the evolution of the cases of MBE in the period of the study (2005-2009), results allow us to report a decrease in MBE cases in the year of 2008. In particular, the MBE cases go from a relative frequency of 65% in 2007 to 45% in 2008. In addition, the year of 2008 presents a higher relative frequency of failures to MBE than cases of positive earnings surprises. Consistent with previous research, we observe a decreasing in MBE cases in all fiscal quarters (fourth quarter), relatively to the others quarters in the year. The conclusion leads to the heaviness of taxes and the firms attempt to reduce fiscal taxes. Although this conclusions, we cannot draw a trend in cases of MBE, because of the limited period of the study.

Another objective of the study was to test the existence of a market premium to firms that meet or beat analysts' forecasts. Consistent with previous research we found a market premium to firms that meet or beat expectations, proxied by analysts' forecasts. Our findings show a quarterly abnormal return to firms that meet or beat expectations, proximally 3,9% above other firms. We also concluded that the magnitude of the earnings surprise affect the reaction of the market, suggesting that investors attach a relevance to the earnings surprise and reward the firms that report earnings above market expectations. Our findings show that cases with a positive forecast error that end with a negative earnings

surprise experience a lower premium that cases with negative or zero forecast error that ends with a negative earnings surprise, according to the investors surprise hypothesis.

We also draw from the results that the earnings forecast error does not affect significantly the abnormal return of the quarter. This finding is reinforced in our robustness tests in which we do not find a negative mean quarterly abnormal return to negative forecasts errors cases.

Although is not formally hypothesized, we also conclude that a higher reward is associated with beating expectations than merely meeting expectations. Contradictory to the findings in previous research, we do not find a magnitude of the penalty from missing expectations lower than the premium to meet or beat expectations.

The results also predict that the measure of cumulative abnormal return by market adjusted model increases consistency in our results, which suggests that the market return was an accurate proxy to expected return, especially because we delimitate our sample to a market index constituents.

Another objective of this research was to test the presence of expectations management. Thereunto, we observe the expectations paths during the quarter. A negative forecast error that ends with a positive earnings surprise is consistent with expectations management, especially because it is due to a sufficiently downward revision of the forecast in the interim period. The results suggest that cases with the likelihood of expectations management are significantly higher than cases less likely to be affected by expectations management.

Results from the association between the market premium and the integration of the management through expectations management suggests that the market premium still exist when the MBE is likely to be achieved by expectations management. However, the premium in these cases is lower than in cases in which MBE was genuine. The findings show that investors are not able to discern the expectations management and assign a market premium in cases in which MBE is achieved through expectations management.

Results also predict that investors understand the MBE as a signal of firm future performance and they do not distinguish cases in which MBE is not genuine.

These findings corroborate with the vast literature enhanced the market incentive to managers report earnings that are similar or above the market expectations. The results postulate the hypothesis that market is inefficient and do not adjust to new information. In a topic of efficient market the earnings surprise do not affect the quarterly abnormal return. The results allow us to conclude that investors overreact to earnings surprise and therefore are not rational.

This work has several limitations. The first limitation of this study was the size of the sample. Prior research was based in a very large number of observations relatively to our sample, which can bring heteroscedasticity problems to our estimations and unbiased results. In future research we intend to extend the analysis to a larger number of firms and through a longer period. Specially, we consider that it is pertinent to examine the role of financial numbers game in a Portuguese context. However, Portuguese market is not very attractive and therefore not usually covered by analysts, which increases difficulties to the compilation of data.

Financial numbers game was defined as the actions that managers take to report earnings similar or above the market expectations. The mechanisms that managers could employ are downward guidance and earnings management. Another limitation of this work is to restrain the analysis to expectations management and do not test for earnings management. A pertinent research question for future research is to test earnings management in the sample.

We also can retain another limitation of this study, which is the weakness of the tests for the presence of expectations management. To that matter, we intend to reinforce our results using another model to infer expectations management. Specially, a model in which guidance is the unexpected portion of consensus analyst forecast.

Relatively to the inferences about the association between the market premium and the presence of expectations management, we also pull out a limitation in the CAR

accumulation period. If the market reacts slowly to new information, investors could percept the expectation management late in the quarter. In order to strengthen our results we should extend the period of accumulation to a longer period after the earnings release.

An important area that further work is needed is the attempt to provide explanation to one of our achievements, which is the higher magnitude of the penalty for case that miss expectations than the magnitude of the premium to cases which expectations are met or beat. In a previous analysis, we can draw an explanation based on investor's cognitive bias.

An attempt to future research is to isolate the disclosures about earnings from those that are not about earnings, like dividends. The cumulative abnormal return of the quarter could be affected by other events not related to the earnings. Intercept coefficient in ours regressions is significant, which indicates that there are other explanations to the return of the quarter.

Finally, we believe that our results might be of interest to academics, managers and market participants. Firm managers could be interested in this study because they can guide disclosure strategy inside the firm and became conscious of the market reward to MBE. Researches could be interested in this study because it provides evidence of the market premium in a specific market index. Market participants, analysts and investors, could have interest in this work, because it makes them aware of the game played by firms in order to experience a higher quarterly return.

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Appendix A - DJ Stoxx constituents

DJ Stoxx Constituents

Number	Company	Market	Weight (%)	Market Capitalization (EUR Bil.)	Sector
1	AB INBEV	BRU	1,7	26,41	BEVERAGES
2	AEGON	AEX	0,53	8,24	LIFE INSURANCE
3	AIR LIQUIDE	PAR	1,49	23,17	CHEMICALS
4	ALLIANZ SE	GER	2,51	39,14	NONLIFE INSURANCE
5	ALSTOM	PAR	0,58	9	INDUSTRIAL ENGINEERING
6	ARCELORMITTAL	AEX	1,76	27,4	INDUSTRIAL METALS & MINING
7	AXA	PAR	1,77	27,64	NONLIFE INSURANCE
8	BANCO SANTANDER	MCE	5	77,89	BANKS
9	BASF SE	GER	2,59	40,42	CHEMICALS
10	BAYER N AG	GER	2,55	39,76	CHEMICALS
11	BBVA	MCE	2,39	37,27	BANKS
12	BNP PARIBAS	PAR	3,3	51,41	BANKS
13	CARREFOUR	PAR	1,44	22,45	FOOD & DRUG RETAILERS
14	CREDIT AGRICOLE	PAR	0,73	11,43	BANKS
15	CRH PLC	ISE	0,97	15,1	CONSTRUCTION & MATERIALS
16	DAIMLER AG N	GER	2,22	34,6	AUTOMOBILES & PARTS
17	DANONE	PAR	1,75	27,19	FOOD PRODUCERS
18	DEUTSCHE BANK N	GER	2,08	32,45	BANKS
19	DT BOERSE N	GER	0,73	11,42	FINANCIAL SERVICES

Number	Company	Market	Weight (%)	Market Capitalization (EUR Bil.)	Sector
20	DT TELEKOM N	GER	1,87	29,13	MOBILE TELECOMMUNICATIONS
21	E.ON AG NA	GER	3,57	55,55	GAS, WATER & MULTI-UTILITIES
22	ENEL	MIL	1,62	25,19	ELECTRICITY
23	ENI	MIL	2,64	41,09	OIL & GAS PRODUCERS
24	FRANCE TELECOM	PAR	2,01	31,39	FIXED LINE TELECOMMUNICATIONS
25	GDF SUEZ	PAR	2,29	35,71	GAS, WATER & MULTI-UTILITIES
26	GENERALI ASS	MIL	1,37	21,31	NONLIFE INSURANCE
27	IBERDROLA	MCE	1,5	23,43	ELECTRICITY
28	ING GROEP	AEX	1,67	26,03	LIFE INSURANCE
29	INTESA SANPAOLO	MIL	1,54	24,05	BANKS
30	L OREAL	PAR	1,2	18,67	PERSONAL GOODS
31	L.V.M.H.	PAR	1,44	22,37	PERSONAL GOODS
32	MUENCH. RUECK N	GER	1,28	19,89	NONLIFE INSURANCE
33	NOKIA	HEX	2,2	34,29	TECHNOLOGY HARDWARE & EQUIPMENT
34	PHILIPS KON	AEX	1,59	24,73	LEISURE GOODS
35	REPSOL YPF	MCE	0,9	14,02	OIL & GAS PRODUCERS
36	RWE AG	GER	1,64	25,58	GAS, WATER & MULTI-UTILITIES
37	SAINT-GOBAIN	PAR	1,01	15,68	CONSTRUCTION & MATERIALS
38	SANOFI-AVENTIS	PAR	3,65	56,85	PHARMACEUTICALS & BIOTECHNOLOGY
39	SAP AG	GER	2,07	32,23	SOFTWARE & COMPUTER SERVICES

Number	Company	Market	Weight (%)	Market Capitalization (EUR Bil.)	Sector
40	SCHNEIDER ELECTR	PAR	1,45	22,53	ELECTRONIC & ELECTRICAL EQUIPMENT
41	SIEMENS N	GER	4,12	64,17	GENERAL INDUSTRIALS
42	SOCIETE GENERALE	PAR	1,92	29,89	BANKS
43	TELECOM ITALIA	MIL	0,7	10,93	FIXED LINE TELECOMMUNICATIONS
44	TELEFONICA	MCE	40048	69,85	FIXED LINE TELECOMMUNICATIONS
45	TOTAL	PAR	5,75	89,62	OIL & GAS PRODUCERS
46	UNIBAIL RODAMCO	PAR	0,83	13	REAL ESTATE INVESTMENT TRUSTS
47	UNICREDIT	MIL	2,34	36,49	BANKS
48	UNILEVER CERT	AEX	2,29	35,7	FOOD PRODUCERS
49	VINCI	PAR	1,41	22,03	CONSTRUCTION & MATERIALS
50	VIVENDI	PAR	1,56	24,23	MEDIA

Appendix B - Panel data and estimation methods

Panel data aggregate two forms of data, *cross-sectional* and *times-series* data. The panel models make a quantitative analysis of economic relations, gathering temporal data (*time-series*) and sectional (*cross-section*) in the same model called *pooled*. When the temporal data is not the same in all individuals, we use an unbalanced panel. As analysts have more interest in one firm than another, in the period of our sample, there are missing firms-quarter observations. This scenario leads to an unbalanced or incomplete panel. With panel data we can explore simultaneous variables variation across time between different individuals. This combination technique of *time-series* with *cross-sectional* allows a complete and efficient panel model estimation.

According to Baltagi (2001), panel data offers several advantages over *cross-sectional* and *time-series* models, controlling for individual heterocedasticity. Panel data also give the researcher a large number of observations, increasing the degree of freedom and reducing the collinearity among explanatory variables due the different individuals' structures, hence improving the efficiency of econometric estimates. More important, panel data allows the researcher to analyze important economic questions that cannot be addressed using *cross-sectional* or *time-series* data sets, because estimation efficiency and stability. Panel models also allow the researcher to choose between efficient estimations and to perform dynamic adjustments, not possible in *cross-section* models. However, panel models offer two significant disadvantages. The first is related with heterocedasticity bias and the second results from the sample individuals' selectivity bias.

According to Baltagi (2001), panel general model is given by the follow equation,

$$y_{it} = \beta_{0it} + \beta_{1it}X_{1it} + \dots + \beta_{kit}X_{kit} + u_{it}, \quad i = 1, \dots, N, \quad t = 1, \dots, T \quad (10)$$

where i denotes the individuals and t denotes time. β_{0it} is an intercept term, and each β_{kit} is the coefficient of the X_{kit} explanatory variable.

Most of the panel data applications utilize a one-way component model for the disturbances, with

$$u_{it} = \mu_{it} + v_{it} \quad (11)$$

where μ_{it} denotes the unobservable individual specific effect and v_{it} denotes the remainder disturbance.

The three static estimation models used in panel data are: *pooled OLS*, fixed effects and random effects.

Pooled OLS model assume that β_{0it} is identical to all individuals and remains constant over time. It is the simplest specification, but the most unrealistic one, because of the assumption that the behavior is equal to all individuals over time. The model also predicts that all observations are homogeneous. The model can be estimated with OLS application to the observations, since linear regression classic hypotheses are fulfilled. In this model it is admitted that μ_{it} is “white noise” and $Cov(X_{it}, \mu_{it})=0$.

This method is appropriate to previous selected individuals which present similar characteristics. However, this estimation method is not usually considered as a panel model due to the possible heterocedasticity and the subsequent bias. Alternative *pooled* models introduce individuals’ heterocedasticity in a fixed way (fixed effects) or in a random way (random effects).

Fixed effects model is used to combine the parsimony of heterocedasticity and independence. The model predicts that individuals’ heterocedasticity can be captured in the intercept term, which is different to each individual. The observations homogeneity hypothesis was present because the model assumes that slope coefficients are identical to all individuals.

To estimate the model LSDV (*Least Squares Dummy Variable*) is used, consisting in introducing *dummy* variables to capture heterocedasticity between individuals. We can distinguish three particular cases. We can use *dummy* variables in individuals, in period, or both. The method with individual *dummies* is more usual, since it captures heterocedasticity between individuals. One of the disadvantages of the model with individual *dummies* (when there is a large number of individuals), is the estimation of

many parameters and the consequent loss of degrees of freedom. However, estimators are BLUE (*Best Linear Unbiased Estimator*) because they have minimum variance, since perturbations follow consistent classic hypotheses when $N \rightarrow \infty$ and $T \rightarrow \infty$.

In order to test if model assumptions are appropriated, it is advisable to do a test to verify if intercept terms are different among individuals. The hypotheses are:

$$H_0: \beta_{01} = \beta_{02} = \dots = \beta_{0k}$$

$$H_1: \beta_{01} \neq \beta_{02} \neq \dots \neq \beta_{0k}$$

This hypothesis is tested with statistical F^{60} . Under the null hypothesis, intercepts are equal to all individuals.

In the random effects model the estimation assumes that individuals' heterocedasticity is present in the residual term. The model predicts that β_0 is not fixed but is an unobservable random parameter.

It is assumed that error terms are homoscedastics and uncorrelated. The hypothesis that error term and explanatory variables are uncorrelated is crucial to obtain unbiased and consistent estimators. All individuals have common components which create error autocorrelation in each individual (*within-unit autocorrelation*) causing inefficient OLS estimators and invalid standard deviation. The solution is to estimate the random effects model with GLS (*Generalized Least Squares*) to obtain efficient estimators.

$${}^{60} F_{stat} = \frac{\left[\frac{(R_{fe}^2 - R_{pool}^2)}{(N-1)} \right]}{\left[\frac{(1 - R_{fe}^2)}{(NT - N - k)} \right]} \sim F_{(N-1, NT-N-k)} \quad \text{where } R_{fe}^2 \text{ is the fixed effects LSDV with}$$

individuals *dummies* model determination coefficient, R_{pool}^2 is the *OLS pooled* with common intercept determination coefficient, N is the number of individuals, NT is the number of observations, and K is the number of explanatory variables in the model

To test if random effects model is appropriate, we perform *Breusch-Pagan* test⁶¹ based in Lagrange multiplier. The test hypotheses are:

$$H_0: \sigma_v^2 = 0$$

$$H_1: \sigma_v^2 \neq 0$$

Under the null hypothesis⁶², the fixed effects model is a more appropriate model than random effects model.

To ascertain if random effects models improve estimation relatively to fixed effects model we perform *Hausman* test. The null hypothesis represents random effects model assuming that there is no correlation between the unobservable fixed effects and explanatory variables. The hypotheses to test are:

$$H_0 : Cov(v_i, X_{it}) = 0$$

$$H_1 : Cov(v_i, X_{it}) \neq 0$$

Under the null hypothesis the random effects model (GLS estimation) estimators are efficient and consistent. If $H > \chi_k^2$ or $p\text{-value} < 0.05$, reject random effects model and assume fixed effects model.

⁶¹ The statist test is defined by:

$$LM = \frac{nT}{2(T-1)} \left[\frac{\sum_{i=1}^n \left[\sum_{t=1}^T \mu_{it} \right]^2}{\sum_{i=1}^n \sum_{t=1}^T \mu_{it}^2} - 1 \right]^2$$

⁶² Under the null hypothesis, LM had χ^2 distribution with a degree of freedom.

According to Marques (2000), the choice between fixed or random effects model should be based in the purpose of the research and data context. Therefore, if we pretend, through a random sample, infer relatively to a population, random effects model is appropriate. Our research intends to infer the behavior of a concrete individual, so the most obvious choice is fixed effect model. However, to ascertain if the influence of individuals in our sample in constant term, we estimate our models using *pooled OLS* assuming homogeneity, α constant. Then we perform tests F, *Breusch-Pagan* and *Hausman* to choose between the estimation method that give more consistent and efficient estimators.

Appendix C - Tests from market premium – Full sample

Appendix C1 – Results from regression (7) using full sample: CAR measured by OLS market model.

This appendix presents the estimation results of regression (7), measuring CAR through OLS market model and using the full sample.

Table 27 - Premium to MB: results from the estimation of regression (7) using CAR measured by OLS Market Model – Full sample
(t-statistics provided in parenthesis)

$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \beta_4 DBEAT_{it} + \beta_5 DMBE * SURP_{it} + \varepsilon_{it}$							
Dependent Variable: CAR_{it} OLS Market Model							
Full sample N=632							
	β_0	β_1	β_2	β_3	β_4	β_5	R^2
Coefficients	-0,0273***	0,371	1,139*	0,0443**	0,016	0,025	20,17%
t-statistic	(-4,06)	(0,682)	(1,91)	(2,072)	(0,722)	(0,0416)	
White test	Chi2 (1)=40,7155 Prob> Chi2=0,000						
Breusch-Pagan	Chi2 (1)=0,00983 Prob> Chi2=0,92102						
Hausman	Chi2 (1)=3,47228 Prob> Chi2=0,627586						
Test F	F (45, 474) = 0,996441 Prob > F = 0,482158						
Heterocedasticity Adjusted							
Coefficients	-0,0233***	0,407	1,377	0,0403**	0,0095	0,9002	14,43%
t-statistic	(-3,014)	(0,525)	(1,300)	(2,502)	(0,624)	(0,9598)	

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP \geq 0 and 0 otherwise.

DBEAT is a dummy variable that takes on the value of 1 if SURP $>$ 0 and 0 otherwise.

Appendix C2 - Results from regression (8) using full sample: CAR measured by OLS market model

This appendix presents the estimation results of regression (8), measuring CAR through OLS market model and using the full sample.

Table 28 - Premium to MBE: results from the estimation of regression (8) using CAR measured by OLS Market Model – Full sample
(t-statistics provided in parenthesis)

$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \varepsilon_{it}$					
<i>Dependent Variable: CAR_{i,q} OLS Market Model</i>					
Full sample N=632					
	β_0	β_1	β_2	β_3	R ²
Coefficients	-0,027***	0,376	1,159**	0,058***	20,05%
t-statistic	(-4,271)	(0,761)	(2,145)	(6,752)	
White test	Chi2 (1)=33,129 Prob> Chi2=0,000				
Breusch-Pagan test	Chi2 (1)=0,17795 Prob> Chi2=0,67313				
Hausman test	Chi2 (1)=2,87262 Prob> Chi2=0,411684				
Test F	F (45, 583) = 0,940265 Prob > F = 0,5855				
<i>Heterocedasticity Adjusted</i>					
Coefficients	-0,0257***	0,141	1,488*	0,0563***	14,68%
t-statistic	(-3,2872)	(0,192)	(1,757)	(5,785)	

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP>=0 and 0 otherwise.

Appendix C3 - Results from regression (7) using full sample: CAR measured by market adjusted model

This appendix presents the estimation results of regression (7), measuring CAR through market adjusted model and using the full sample.

Table 29 - Premium to MBE: results from the estimation of regression (7) using CAR measured by market adjusted model – Full Sample
(t-statistics provided in parenthesis)

$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \beta_4 DBEAT_{it} + \beta_5 DMBE * SURP_{it} + \varepsilon_{it}$							
Dependent Variable: CAR_{it} Market Adjusted Model							
Full sample N=636							
	β_0	β_1	β_2	β_3	β_4	β_5	R^2
Coefficients	-0,053***	0,651	1,461***	0,097***	0,006	-0,127	51,84%
t-statistic	(-10,929)	(1,339)	(2,684)	(6,633)	(0,385)	(-1,157)	
White test	Chi2 (14)=35,251 Prob >Chi2=0,0013						
Breusch-Pagan	Chi2 (1)=0,0097 Prob >Chi2=0,9214						
Hausman	Chi2 (5)= 11,0327 Prob >Chi2=0,0507						
Test F	F (45, 585) = 0,975228 Prob > F = 0,52052						
Heterocedasticity Adjusted							
Coefficients	-0,044***	1,216**	1,658**	0,089***	0,004	-0,117*	48,07%
t-statistic	(-9,583)	(1,977)	(2,207)	(7,576)	(0,339)	(-1,826)	

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP \geq 0 and 0 otherwise.

DBEAT is a dummy variable that takes on the value of 1 if SURP>0 and 0 otherwise.

Appendix C4 - Results from regression (8) using full sample: CAR measured by market adjusted model

This appendix presents the estimation results of regression (8), measuring CAR through market adjusted model and using the full sample.

Table 30 - Premium to MBE: results from the estimation of regression (8) using CAR measured by market adjusted model –Full sample
(t-statistics provided in parenthesis)

$CAR_{it} = \beta_0 + \beta_1 ERROR_{it} + \beta_2 SURP_{it} + \beta_3 DMBE_{it} + \varepsilon_{it}$					
Dependent Variable: CAR_{it}, Market Adjusted Model					
Full sample N=636					
	β_0	β_1	β_2	β_3	R ²
Coefficients	-0,054***	0,647*	1,441***	0,103***	51,59%
t-statistic	(-11,151)	(1,713)	(3,486)	(15,666)	
White test	Chi2 (9)=31,394 Prob >Chi2=0,000				
Breusch-Pagan test	Chi2 (1)=0,0564 Prob >Chi2=0,812				
Hausman test	Chi2 (3)=5,9415 Prob >Chi2=0,11445				
Test F	F (45, 587) = 1,0025 Prob > F = 0,47057				
Heterocedasticity Adjusted					
Coefficients	-0,048***	1,288**	1,438**	0,095***	49,57%
t-statistic	(-9,478)	(2,333)	(2,284)	(13,88)	

CAR is the cumulative abnormal return over the quarter beginning two days after the earliest forecast and ending the day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS-FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS-LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP>=0 and 0 otherwise.

Appendix D - SPSS outputs – Comparison of means

Appendix D1 – SPSS outputs from the tests of comparison of CAR mean: ERROR positive and CAR measured by OLS market model.

Tests of compare quarterly abnormal returns means using OLS market model, in paths with positive earnings forecast error.

T-Test

Group Statistics

	SURP	N	Mean	Std. Deviation	Std. Error Mean
CAR	>= ,00000	247	,0370743	,06018950	,00383754
	< ,00000	21	-,0614563	,07520068	,01641013

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
CAR	Equal variances assumed	1,102	,295	7,053	265
	Equal variances not assumed			5,847	22,242

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
CAR	Equal variances assumed	,000	,09853064	,01397024
	Equal variances not assumed	,000	,09853064	,01685287

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
CAR	Equal variances assumed	,07102385	,12603742
	Equal variances not assumed	,06360194	,13345933

Appendix D2 - SPSS outputs from the tests of comparison of CAR mean: ERROR zero and CAR measured by OLS market model.

Tests of compare quarterly abnormal returns means using OLS market model, in paths with zero earnings forecast error.

T-Test

Group Statistics

	SURP	N	Mean	Std. Deviation	Std. Error Mean
CAR	>= ,00000	23	,0110060	,07241111	,01509876
	< ,00000	11	-,0521362	,08087217	,02438388

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
CAR	Equal variances assumed	,159	,692	2,292	32
	Equal variances not assumed			2,202	17,940

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
CAR	Equal variances assumed	,029	,06314214	,02755193
	Equal variances not assumed	,041	,06314214	,02868006

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
CAR	Equal variances assumed	,00702069	,11926358
	Equal variances not assumed	,00287306	,12341122

Appendix D3 - SPSS outputs from the tests of comparison of CAR mean: ERROR negative and CAR measured by OLS market model.

Tests of compare quarterly abnormal returns means using OLS market model, in paths with negative earnings forecast error.

T-Test

Group Statistics

	SURP	N	Mean	Std. Deviation	Std. Error Mean
CAR	>= ,00000	45	,0150060	,06641252	,01001206
	< ,00000	180	-,0203014	,08528616	,00635686

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
CAR	Equal variances assumed	3,095	,080	2,561	222
	Equal variances not assumed			2,977	81,476

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
CAR	Equal variances assumed	,011	,03530742	,01378539
	Equal variances not assumed	,004	,03530742	,01185964

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
CAR	Equal variances assumed	,00814045	,06247439
	Equal variances not assumed	,01171255	,05890229

Appendix D4 - SPSS outputs from the tests of comparison of CAR mean: ERROR positive and CAR measured by market adjusted model.

Tests of compare quarterly abnormal returns means using market adjusted model, in paths with positive earnings forecast error.

T-Test

Group Statistics

SURP		N	Mean	Std. Deviation	Std. Error Mean
CAR_MA	>= ,00000	244	,0571375	,04470138	,00286171
M	< ,00000	22	-,0448270	,05402273	,01151768

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
CAR_MA	Equal variances assumed	1,946	,164	10,064	264
M	Equal variances not assumed			8,592	23,665

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
CAR_MA	Equal variances assumed	,000	,10196452	,01013137
M	Equal variances not assumed	,000	,10196452	,01186787

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
CAR_MA	Equal variances assumed	,08201596	,12191309
M	Equal variances not assumed	,07745208	,12647697

Appendix D5 - SPSS outputs from the tests of comparison of CAR mean: ERROR zero and CAR measured by market adjusted model.

Tests of compare quarterly abnormal returns means using market adjusted model, in paths with zero earnings forecast error.

T-Test

Group Statistics

	SURP	N	Mean	Std. Deviation	Std. Error Mean
CAR_MA	>= ,00000	25	,0296584	,05365695	,01073139
M	< ,00000	11	-,0494317	,04321393	,01302949

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
CAR_MA	Equal variances assumed	,226	,637	4,302	34
M	Equal variances not assumed			4,685	23,637

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
CAR_MA	Equal variances assumed	,000	,07909017	,01838331
M	Equal variances not assumed	,000	,07909017	,01687988

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
CAR_MA	Equal variances assumed	,04173079	,11644954
M	Equal variances not assumed	,04422345	,11395688

Appendix D6 - SPSS outputs from the tests of comparison of CAR mean: ERROR negative and CAR measured by market adjusted model

Tests of compare quarterly abnormal returns means using market adjusted model, in paths with negative earnings forecast error.

T-Test

Group Statistics

	SURP	N	Mean	Std. Deviation	Std. Error Mean
CAR_MA	>= ,00000	47	,0319780	,05107140	,00744953
M	< ,00000	179	-,0439032	,04833976	,00361308

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
CAR_MA	Equal variances assumed		,007	9,465	224
M	Equal variances not assumed			9,165	69,197

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
CAR_MA	Equal variances assumed	,000	,07588120	,00801686
M	Equal variances not assumed	,000	,07588120	,00827948

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
CAR_MA	Equal variances assumed	,06008308	,09167932
M	Equal variances not assumed	,05936493	,09239748

Appendix E - SPSS outputs - Proportions tests

Appendix E1 – SPSS outputs: proportions tests (Hypothesis 2)

Crosstabs

surp_negativo & erro_negativo

surp_negativo	erro_negativo	
	,00	1,00
dimension0	,00	315
	1,00	38

Test Statistics^b

	surp_negativo & erro_negativo
N	636
Chi-square ^a	11,082
Asymp. Sig.	,001
Exact Sig. (2-tailed)	,001
Exact Sig. (1-tailed)	,000
Point Probability	,000

a. Continuity Corrected

b. McNemar Test

Appendix E2 - SPSS outputs: proportions tests (Hypothesis 3)

error_neg_surp_zero_pos & error_pos_zero_surp_neg

error_neg_surp_zero_pos	error_pos_zero_surp_neg	
	,00	1,00
dimension0	,00	38
	1,00	0

Test Statistics^b

	error_neg_surp_zero_pos & error_pos_zero_surp_neg
N	636
Chi-square ^a	,942
Asymp. Sig.	,332
Exact Sig. (2-tailed)	,332
Exact Sig. (1-tailed)	,166
Point Probability	,048

a. Continuity Corrected

b. McNemar Test

Appendix F - Results from the tests of hypothesis 4 – Full sample

Appendix F1 – Results from regression (9) using full sample: CAR measured by OLS market model

Estimation results of regression (9) using CAR measured with OLS market model.

Table 31 – Association between the premium to MBE and expectations management: results from the estimation of regression (9) using CAR measured by OLS market model – Full sample
(t-statistics provided in parenthesis)

$$CAR_{it} = \delta_0 + \delta_1 ERROR_{it} + \delta_2 SURP_{it} + \delta_3 DMBE_{it} + \delta_4 DMBE_{it}^{subset} + \delta_5 DMBE * SURP_{it} + \delta_6 DMBE_{it}^{subset} * SURP_{it} + \varepsilon_{it}$$

Dependent Variable: CAR_{i,t} OLS Market Model

Full sample N=632

	δ_0	δ_1	δ_2	δ_3	δ_4	δ_5	δ_6	R^2
Coefficients	-0,027***	0,404	1,108*	0,060***	-0,020	-0,051	3.891	20,29%
t-statistic	(-4,081)	(0,723)	(1,829)	(6,623)	(-1,045)	(-0,084)	(1,204)	
White test	Chi2 (15)=37,7988 Prob >Chi2=0,0010							
Breusch-Pagan	Chi2 (1)=0,15982 Prob >Chi2=0,689321							
Hausman	Chi2 (5)=3,25696 Prob >Chi2=0,775973							
Test F	F (45, 580) = 0,91406 Prob > F = 0,5784							
Heterocedasticity Adjusted								
Coefficients	-0,023***	0,536	1,242**	0,051***	-0,010	0,792	1.965	15,20%
t-statistic	(-3,051)	(0,651)	(1,120)	(5,287)	(-0734)	(0,857)	(0,880)	

CAR_Q is the cumulative abnormal return over the period beginning two days following the first forecast and ending 1 day following the end of the quarter.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS_FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS_LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP>=0 and 0 otherwise.

DMBE^{subset} is a dummy variable that takes on the value 1 if SURP>=0 and the observation belongs to the designated subset of the sample; otherwise DMBE^{subset}=0.

Appendix F2 - Results from regression (9) using full sample: CAR measured by market adjusted model

Estimation results of regression 9 using CAR measured with market adjusted model.

Table 32 - Association between the premium to MBE and expectations management: results from the estimation of regression (9) using CAR measured by market adjusted model – Full sample
(t-statistics provided in parenthesis)

$$CAR_{it} = \delta_0 + \delta_1 ERROR_{it} + \delta_2 SURP_{it} + \delta_3 DMBE_{it} + \delta_4 DMBE_{it}^{subset} + \delta_5 DMBE * SURP_{it} + \delta_6 DMBE_{it}^{subset} * SURP_{it} + \varepsilon_{it}$$

Dependent Variable: CAR_{i,t} Market Adjusted Model

Full sample N=636

	δ_0	δ_1	δ_2	δ_3	δ_4	δ_5	δ_6	R^2
Coefficients	-0,053***	0,545	1,544***	0,106***	-0,022**	-0,129	0,516	52,10%
t-statistic	(-10,899)	(1,085)	(2,787)	(15,059)	(-1,996)	(-1,178)	(0,167)	
White test	Chi2 (16)=34,9731 Prob >Chi2=0,0040							
Breusch-Pagan	Chi2 (1)=0,090031 Prob >Chi2=0,764138							
Hausman	Chi2 (5)=15,1183 Prob >Chi2=0,019356							
Test F	F (45, 584) = 1,01364 Prob > F = 0,45045							
Heterocedasticity Adjusted								
Coefficients	-0,045***	0,684	2,076**	0,095***	-0,019**	-0,121*	-0,263	48,11%
t-statistic	(-9,733)	(0,948)	(2,458)	(14,32)	(-2,108)	(1,737)	(-0,152)	

CARQ is the cumulative abnormal return over the period beginning two days following the first forecast and ending 1 day following the earnings release.

ERROR is the forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS_FF; standardized by price at the beginning of the quarter.

SURP is the earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS_LF; standardized by price at the beginning of the quarter.

DMBE is a dummy variable that takes on the value of 1 if SURP>=0 and 0 otherwise.

DMBE^{subset} is a dummy variable that takes on the value 1 if SURP>=0 and the observation belongs to the designated subset of the sample; otherwise DMBE^{subset}=0.