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# Classification shifting to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter

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**ABSTRACT:** Companies' management wants to meet or even beat financial analysts' earnings forecasts in the fourth fiscal quarter. To accomplish this goal, they can use earnings management to improve their earnings (Lin et al., 2006). Three forms of earnings management exist: accrual earnings management, real earnings management and classification shifting. Classification shifting is about moving special items up and down the income statement to improve core earnings (Fan et al., 2010). Special items can be one-time gains and losses associated with restructuring, plant closing and asset impairments (Johnson et al., 2011). Companies' management can mislead financial analysts and investors by using classification shifting. The findings of this thesis show that companies' management does not use special items to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter. Companies' management uses more income-decreasing special items to beat earnings forecasts. Total special items are more used in the fourth fiscal quarter than income-decreasing special items. Income-increasing special items are included in total special items and can explain the less negative coefficients of the regression with total special items. These results can influence the regulations regarding earnings management and non-GAAP performance measures. The SEC can make more strict rules to limit the use of non-GAAP performance measures. Future research can elaborate on this topic by for example identifying different types of special items in the income statements, in the notes to the income statement and in the statement of comprehensive income.

**Keywords:** *Classification shifting; special items; financial analysts' earnings forecasts; meeting and beating; fourth fiscal quarter*

# Contents

# 1 Introduction

Meeting the financial analysts' earnings forecasts is important for companies' management because of their stakeholders and their financial health. It testifies to more stability and growth in the company (Lin et al., 2006). Companies can use different methods to manage their earnings to meet earnings forecasts. One of these earnings management methods is called classification shifting.

Prior research suggests that companies misclassify line items in the income statement (classification shifting) to improve their core earnings (McVay, 2006, Fan et al., 2010; Haw et al., 2011). Core earnings (or recurring earnings) are sales minus costs of goods sold minus selling, general and administrative expenses (McVay, 2006); core earnings are important because financial analysts and investors base their earnings forecasts and investments on the estimates of future earnings (Fan et al., 2010; Haw et al., 2011). Companies can increase (decrease) core earnings by shifting revenues up (down) and shifting expenses down (up) the income statement (Abernathy et al., 2014). This is often more prevalent in the fourth fiscal quarter than in the interim fiscal quarters (Fan et al., 2010). Companies use misclassification of special items to improve core earnings (Lin et al., 2006). Companies' characteristics determine the type and the use of the special items. The types are income-decreasing and income-increasing special items (Johnson et al., 2010). Special items are used by companies' management to improve core earnings to meet or beat financial analysts' earnings forecasts (Lin et al., 2006; McVay, 2006; Fan et al., 2010). The research question is:

*Do companies use special items to improve the core earnings to meet or beat the financial analysts' earnings forecasts in the fourth fiscal quarter?*

Companies' management uses special items to improve the core earnings. They include income-increasing special items in the core earnings and they exclude the income-decreasing special items from the core earnings. Income-increasing (income-decreasing) special items are revenues (expenses) that are shifted upwards (downwards) the income statement (Abernathy et al., 2014). Prior studies investigate the effect of income-decreasing special items on core earnings to meet financial analysts' earnings forecasts (McVay, 2006; Fan et al., 2010; Haw et al., 2011). Johnson et al. (2011) mention that companies with better performance recognize more often income-increasing special items than income-decreasing special items. This implies that companies with poor performance recognize more often

income-decreasing special items. Companies with growth opportunities (McVay, 2006), companies with poor financial health, and companies with low accounting flexibility (Abernathy et al., 2014) have more the incentives to misclassify special items. Companies with low accounting flexibility use classification shifting more as an earnings management method than real earnings management, because they are constrained to structure transactions to achieve desired accounting outcomes (Abernathy et al., 2014). These companies will probably use special items to increase their core earnings for meeting financial analysts' earnings forecasts.

Companies' management uses special items to improve core earnings to meet financial analysts' earnings forecasts (Lin et al., 2006; McVay, 2006; Fan et al., 2010). Companies that meet or beat the earnings forecasts gain higher stock returns than peer companies that fail to meet earnings forecasts in the same fiscal quarter (Bartov et al., 2002). Investors' reaction on meeting financial analysts' earnings forecasts are important for companies to use earnings management tools to meet earnings forecasts in the fourth fiscal quarter (Lin et al., 2006). This results in that classification shifting using special items is more present in the fourth fiscal quarter than in interim fiscal quarters (Fan et al., 2010). Richardson et al. (2004) mention that financial analysts adjust their earnings forecasts downwards in the months before the earnings announcement. This results in a walk-down of analysts' earnings forecasts to the earnings announcement date. The walk-down gives companies an incentive to use classification shifting to meet financial analysts' earnings forecasts in the fourth fiscal quarter.

I use an adjusted version of the Fan et al. (2010) model to determine if companies misclassify special items to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter. Next to determining misclassification of special items, I divide the special items into income-increasing and income-decreasing special items to identify which type of special items has more effect on classification shifting. With the help of this model I estimate the expected core earnings and the unexpected core earnings. Core earnings are sales minus costs of goods sold minus selling, general, and administrative expenses (McVay, 2006). Unexpected core earnings are the difference between reported core earnings and expected core earnings. Classification shifting can be assessed with the relation between unexpected core earnings and special items (McVay, 2006). I use variables to indicate meeting earnings forecasts, beating earnings forecasts, and the fourth fiscal quarter to indicate if companies use classification shifting to meet or beat earnings forecasts and if they use it more in the fourth fiscal quarter. I expect that the coefficients of special items, the variables of meeting and

beating earnings forecasts and fourth fiscal quarter have a positive association with the unexpected core earnings. This implies that these variables have a positive effect on classification shifting as an earnings management tool.

My findings show that companies' management uses total special items and income-decreasing special items to improve the core earnings. Dividing total special items into income-decreasing and income-increasing special items gives the possibility to identify the differences in effect of the type of special items on classification shifting compared to total special items. Companies' management can use both income-decreasing and income-increasing special items to improve the core earnings. Further, my results show that when companies' management beats financial analysts' earnings forecasts that they use other line items than special items to improve the core earnings. The effect of special items on classification shifting to meet or beat the earnings forecasts in the fourth fiscal quarter is not significant.

From my results I can conclude that companies' management uses income-decreasing special items to beat financial analysts' earnings forecasts and total special items are more used in the fourth fiscal quarter than in interim fiscal quarters. Income-increasing special items are not used by companies' management to improve core earnings to meet or beat the earnings forecasts in the fourth fiscal quarter. These special items have an effect on classification shifting using total special items.

Regulations regarding earnings management and non-GAAP performance measures can be influenced by the results of this thesis. GAAP earnings do not change by the misclassification of special items (McVay, 2006). The results of this thesis give more insight in different ways companies' management can use special items to improve the core earnings. Investors gain also insight for which reasons companies can use special items and that financial analysts' earnings forecasts are biased because of classification shifting. The biased earnings forecasts influence investors' expectations about the financial health of companies.

In Chapter 2 I discuss the agency theory, the concepts and the institutional setting related to earnings management and in particular classification shifting. Chapter 3 gives a summary of prior literature related to classification shifting in general, classification shifting in the fourth fiscal quarter, classification shifting to meet analysts' earnings forecasts, and literature related to special items. In Chapter 4 the hypotheses related to the research question

are developed and in Chapter 5 I discuss the regression model that I use to answer the research question. Chapter 6 presents the results of the regression models that is describe in Chapter 5. In Chapter 7 I come to an answer and a conclusion to the research question and I give recommendations for future research of the same subject.

# 2 Theory, concepts and institutional setting

In this chapter I discuss briefly the agency theory, different concepts like earnings management, classification shifting and special items, and the institutional setting related to regulation about non-GAAP performance measures.

## 2.1 Agency Theory

The agency theory explains the relation between agents (companies' management) and principals (investors). This theory is about solving problems that could exist between agents and principals. The agency theory addresses two problems: a problem that arises when the goals of agents and principals differ from each other, were the goal of one is very difficult to observe by the other; and a problem that arises when the risk behaviors of agents and principals differ. This can result in different actions agents and principals take in the face of risk (Eisenhardt, 1989).

### 2.1.1 Two streams of Agency Theory

Jensen (1983) states that the agency theory has two streams: positivist agency theory and principal-agent research. The contract between agent and principal is the main unit of analysis in the two streams of agency theory.

#### *2.1.1.1 Positivist Agency Theory*

Fama and Jensen (1983) mention that positivist agency theory focusses on identifying situations in which agents and principals have conflicting goals. This is in line with the first problem of agency theory. Positivist agency theory describes the governance mechanism that limits self-serving behavior of agents and solves agency problems. This governance mechanism is captured in two propositions: the agent is more likely to behave in the principal's interest, because the contract is outcome-based between agent and principal; or the agent is more likely to behave in the interests of the principal, when the principal has information for the verification of the agents' behavior. Both propositions are about the reduction of the agency problem of information asymmetry between agent and principal.

#### *2.1.1.2 Principal-Agent Research*

According to Eisenhardt (1989) principal-agent research is concerned with the general theory of principal-agent relation. It indicates which contract between agent and principal is most effective under different levels of uncertainty, risk attitude and completeness of information. The focus is on determining the optimal contract between agent and principal. Two different cases exist to optimize the contract. The first case is about complete information; principal knows what the agent has done. In the second case the principal does not exactly know what the agent has done. In this case the agent can act in self-interest and not in accordance with the contract with the principal. Problems between agents and principals can arise because of different goals and principals cannot determine if agents behave appropriately. These problems are linked to moral hazard and adverse selection. Moral hazard is about the lack of effort of the agent and adverse selection is about the misrepresenting ability by the agent.

## 2.2 Concepts

### 2.2.1 Earnings management

Different definitions of earnings management are known. Healy and Wahlen (1999) define earnings management as follows: "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" (Healy and Wahlen, 1999, p. 6). This definition captures that earnings management is both used for influencing the contractual outcomes and for misleading the stakeholders. Ronen and Yaari (2008) conclude that this definition has two weaknesses. First, this definition of earnings management does not set a clear boundary between earnings management and normal activities with earnings as output. And, second, not all earnings management is misleading. Due to the weaknesses of this definition, Ronen and Yaari (2008) elaborate on this formulation and formulate an alternative definition of earnings management: "Earnings management is a collection of managerial decisions that result in not reporting the true short-term, value maximizing earnings as known to management. The managed earnings result from taking production/investment actions before earnings are realized, or making accounting choices that affect the earnings numbers and their interpretation after the true earnings are

realized" (Ronen and Yaari, 2008, p. 27). Ronen and Yaari (2008) also mention that earnings management can be beneficial, harmful and neutral. When earnings management is beneficial it does not signal long-term value, when it is harmful it conceals short-term or long-term value, and when it is neutral it reveals the short term true performance. The definitions of earnings management of Healy and Wahlen (1999) and Ronen and Yaari (2008) do not include classification shifting as an earnings management tool. I think it is important to restate this definition of earnings management by including classification shifting as a form of earnings management. Classification shifting is a decision made by management about not reporting the true core earnings but reporting managed core earnings (McVay, 2006).

#### *2.2.1.1 Three areas of earnings management*

Next to the alternative definition of earnings management, Ronen and Yaari (2008) classify earnings management in three areas: the white, the gray, and the black area. They define these areas as follows: The white area of earnings management enhances the transparency of financial reports, the black area involves outright misrepresentation and fraud, and the gray area involves manipulation of the reports within the boundaries of compliance with regulations (Ronen and Yaari, 2008). Ronen and Yaari (2008) also elaborate on these definitions. The white area of earnings management is about taking advantage of the flexible choices in accounting approach for signaling private information of managers about future cash flows. The gray area of earnings management is about choosing an accounting approach that is economically efficient or opportunistic. And the black area of earnings management is about using tricks for misrepresenting or reducing the transparency of financial reports.

#### *2.2.1.2 Different aspects of earnings management*

Ronen and Yaari (2008) use four different aspects of earnings management mentioned by Healy and Wahlen (1999) for their definition of earnings management. The following four aspects are mentioned by Healy and Wahlen (1999):

- Management exercises their assessments in different ways. Like the assessment of expected lives and salvage values of long-term assets, pension obligations, deferred taxes, losses from bad debt and asset impairments;
- The costs of allocation and net revenues are affected by management's judgment in working capital management;

- Management's decision on structuring corporate transactions, business combinations and lease contracts;
- Management has to choose among different acceptable accounting approaches for reporting economic transactions.

#### *2.2.1.3 Incentives to use earnings management*

Companies' management has different incentives to use earnings management. Stein (1989) implies that the most important use of earnings management is that companies' management can use it to mislead either all stakeholders or a specific group of stakeholders. Management uses this way of earnings management when they believe that stakeholders cannot see through earnings management. Another use of earnings management is that some of the information is not publicly available to stakeholders. This private information increases the information asymmetry between management and stakeholders. Stakeholders anticipate a certain amount of earnings management in this case (Stein, 1989). According to Healy and Wahlen (1999) managers can also use accounting judgments to make financial statements more or less informative for their users. This way of earnings management can arise when the specific accounting approaches or estimates are perceived to be credible signals for the financial performance of the company. This can lead to both costs and benefits for companies' management. The costs are potential misclassification of the resources due to earnings management, and the benefits include the potential improvements in the communication of private information by management to outside stakeholders (Healy and Wahlen, 1999).

A problem with earnings management is that it is very hard to test for its existence. Healy and Wahlen (1999) mention that it is difficult to identify whether managers have managed earnings or not. It is important to determine that the incentives of management to manage earnings are strong and whether there are distinct patterns of unexpected accruals that are consistent with these incentives. Healy and Wahlen (1999) describe that these incentives can be expectations and valuations of the capital market, contracts written in the terms of the financial statements and antitrust or governmental regulations.

#### *2.2.1.4 Three forms of earnings management*

Abernathy et al. (2014) describe three forms of earnings management. The first form is accrual earnings management. This way of earnings management is used to manage company's accruals and it has an indirect effect on the value of the company. By using

discretionary accruals, management can use earnings from future periods to increase current period earnings or shift current period earnings to a future period to decrease the current period earnings. The second form is real earnings management. In this case companies' management manages the earnings by managing the real transactions. The third and the last form of earnings management is classification shifting. In this case, companies' management moves with items in the income statement to improve core earnings[1].

*Examples of the three forms of earnings management*

Ronen and Yaari (2008) give examples of the three forms of earnings management. Examples of accrual earnings management are the accepted ways of earnings management under GAAP. These accepted ways of earnings management are for inventory valuation, depreciation, and revenue recognition policies. Further, decisions of management on the timing of the adoption of a new standard and the judgment calls of the estimates of the GAAP, and the transparency of the presentation of financial statements (Ronen and Yaari, 2008). Examples of real earnings management are: management structures transactions to achieve the desired accounting outcomes, the timing of the recognition of revenues and expenses, the real production and investment decisions, and the management of the informativeness of earnings (Ronen and Yaari, 2008). At last, they give the definition of classification shifting. Classification shifting is the classification of items above or below the line of the operating earnings to separate the persistent earnings from the transitory earnings (Ronen and Yaari, 2008).

#### *2.2.1.5 Four patterns of earnings management*

Ronen and Yaari (2008) identify four different patterns of earnings management:

- 'Taking a bath': companies' management reports large losses in the current period to enhance the probability of future reported profits;
- Income minimization: less extreme than 'taking a bath', but it also involves taking losses to lower earnings. Companies' management uses income minimization for tax reasons;

[1] Companies' management can also classification shift with the allocation of revenues and expenses between different segments of the company. The true performance of the operating or core segments are masked by the other segments (Lail et al., 2014).

- Income maximization: companies' management uses this pattern to increase the reported earnings. This pattern is used for bonus or contracting reasons and to meet or beat the financial analysts' earnings forecasts;
- Income smoothing: companies' management wants to lower the variability of earnings over time. This is done to prevent fluctuations in the compensation of earnings over time.

### 2.2.2 Classification shifting

McVay (2006) defines classification shifting as the deliberate misclassification of items within the income statement by a company's management. Some distinctions exist between classification shifting and accrual earnings management and real earnings management. First, classification shifting does not change GAAP earnings, because users of financial statements focus more on non-GAAP earnings than on GAAP earnings (Abernathy et al., 2014). The line items are more persistent when they are closer to the sales. The investors recognize this distinction and they weight the line items in the income statement differently (Fan et al., 2010). Second, when companies' management uses classification shifting in one year, this does not directly imply that they do not use classification shifting in the next period. The next period earnings are equal to the earnings minus the costs of earnings management in the prior period (McVay, 2006). McVay (2006) states that companies' management wishes to maximize the reported performance and they might shift the expenses down or the revenues up in the income statement. The presented picture by management is not consistent with the economic reality. This implies that companies manage their earnings and that the earnings are not according the SEC and GAAP regulations.

### 2.2.3 Special items

Two types of special items are used by management for classification shifting. The two types of special items are positive special items and negative special items. Positive special items are special item income or gains and negative special items are special item expenses or losses (Compustat, 2016). Positive special items are known as income-increasing special items and negative special items are known as income-decreasing special items. Special items are defined as certain nonrecurring items that are included or excluded from the income (Johnson et al., 2011). Positive special items are reported less frequently than negative special items (Kolev and Potepa, 2016). The special items in the Compustat database are the

sum of special items that are mentioned as line items in the income statement and in the notes to the financial statements (McVay, 2006). Special items represent unusual and/or non-recurring items that are reported by the company (Compustat, 2016).

Johnson et al. (2011) mention one-time gains and losses associated with restructuring, plant closing, and asset impairments as examples of special items. Income-increasing special items are gains related to asset disposition and litigation-related gains, and income-decreasing special items are restructuring charges and property, plant and equipment write-offs and goodwill impairment charges. Companies can report more than one of these types of special items in the same reporting period.

### 2.2.4 Core earnings

McVay (2006) defines core earnings as sales minus costs of goods sold minus selling, general and administrative expenses. The core earnings are used to determine the expected value of the core earnings, and also to determine the unexpected core earnings. The unexpected core earnings are the difference between the reported core earnings and the expected core earnings (McVay, 2006).

### 2.2.5 Non-GAAP earnings

Bowen et al. (2005) state that non-GAAP earnings are affected by classification shifting by companies' management, but GAAP earnings are not directly affected by classification shifting. Non-GAAP earnings are not fully related to standard GAAP approaches, because it is an alternative measure of a company's performance. Many companies report the non-GAAP earnings in addition to GAAP earnings; these companies argue that non-GAAP earnings better represent companies' performance. Non-GAAP earnings are also known as pro-forma earnings and street earnings. Pro-forma earnings are non-GAAP earnings reported by the company itself and street earnings are non-GAAP earnings reported by the market and investors (Lin et al., 2006). Non-GAAP performance measures can be used to measure growth, capital efficiency, cash and profit generation, as well as optimization of the capital structure. Examples of non-GAAP performance measures are adjusted growth rates of revenue, book-to-bill ratio, total sectors profit, return on equity (after tax), return on capital employed (adjusted), free cash flow, adjusted EBITDA, adjusted EBIT, adjusted EBITDA margins, and net debt (Siemens AG, 2014).

Non-GAAP earnings provide cleaner measures of the recurring performance by removing transitory items from net income. It gives management the opportunity to strategically adjust GAAP earnings (Choi and Young, 2015).

Non-GAAP financial measures do not include financial measures that are required by GAAP. Regulation G of the Securities and Exchange Commission (SEC) reduces the frequency of companies' management using pro-forma earnings to communicate the profitability (SEC, 2002). For the purpose of Regulation G the non-GAAP financial measure is a numerical measure for a company's historical or future performance. Non-GAAP performance measures exclude amounts in financial statements that are included in the measure that is in accordance with GAAP (SEC, 2002).

## 2.3 Institutional setting

Prior earnings management literature, like Athanasakou et al. (2010), examine the effect of tighter accounting and disclosure standards (like Regulation G) on the use of the strategic accounting approach choices and non-GAAP earnings disclosures to meet earnings benchmarks of a company's management. These studies suggest that Regulation G limits companies' managements' opportunistic behavior in pro-forma earnings disclosures. Regulation G proposes to reduce the frequency of companies' management using pro-forma earnings to communicate the profitability. Pro-forma earnings blur the meaning of special items because of deliberate misclassification of recurring expenses as special items by management (Athanasakou et al., 2010).

In relation to non-GAAP earnings the U.S. Securities and Exchange Commission (SEC) implemented Regulation G in March 28, 2003. This new regulation gave conditions for the use of the non-GAAP financial measures. Regulation G is a disclosure regulation and it requires public companies to disclose or release a presentation of the comparable GAAP financial measure. Public companies have also to disclose the reconciliation of the disclosed non-GAAP financial measure that is comparable with the GAAP financial measure (SEC, 2002).

The SEC states that Regulation G has to be applied to the disclosures of the non-GAAP financial measures that represent the projections or the forecasts of the results related to the proposed business combination transactions. Regulation G is not applicable to the disclosures in which the expectations of the non-GAAP financial measures that are related to the forecasts

of the proposed business combination transactions. It is also not applicable to an entity that is related to the business combination transaction that is included in the communication that is subject to the SEC's communications rules that are applicable to the business combination transactions (SEC, 2002).

## 2.4 Summary

The agency theory shows two problems between companies' management (agents) and stakeholders (principals). First they have different goals and second they have a different risk appetite (Eisenhardt, 1989). These two problems give companies' management the opportunity to use earnings management, classification shifting, to alter or improve the core earnings. With classification shifting companies' management alters non-GAAP performance measures (Fan et al., 2010). Regulation G by the SEC is implemented for the reconciliation of the non-GAAP performance measures (SEC, 2002). Non-GAAP performance measures give companies' management possibilities to use earnings management. This is done by shifting special items up and down the income statement (McVay, 2006).

# 3 Prior literature

In the next sections I discuss the prior literature related to the subject of this thesis. First, I discuss the prior classifications literature and there after the literature related to special items.

## 3.1 Classification shifting literature

Prior literature focus on different topics regarding classification shifting by companies' management. The following areas of classification shifting are already studied:

- Detection of classification shifting and classification shifting in different fiscal quarters (McVay, 2006; Fan et al., 2010; Siu and Faff, 2013);
- The market reaction to classification shifting (Alfonso et al., 2010; Bartov and Mohanram, 2014);
- Classification shifting and the analysts' forecasts (Lin et al., 2006; Athanasakou et al, 2009; Shirato and Nagata, 2012; Behn et al., 2012; Pan, 2014);
- Classification shifting as a substitute of accrual earnings management and real earnings management (Athanasakou et al., 2010; Abernathy et al., 2014);
- The impact of corporate governance mechanisms on the extent of classification shifting (Haw et al., 2011; Zalata et al., 2015);
- Additional measures of classification shifting (Barua and Cready, 2008; Abdalla and Clubb, 2015);
- Classification shifting using other line items than special items (Barua et al., 2010; Skaife et al., 2013).

These areas of classification shifting are described in the following seven subsections. Each subsection is linked to one of the Panels in Table 1.

### 3.1.1 Detection of classification shifting and classification shifting in different fiscal quarters

McVay (2006) is the first researcher who studies classification shifting using special items, and she creates a model to determine classification shifting by companies' management. She concludes that an increase or decrease of the unexpected core earnings only reverses when special items are absent in the next period, otherwise companies' management uses classification shifting again in the next period. In absence of special items it is

impossible to shift with these line items within the income statement. Classification shifting is more likely for growth companies and companies that just meet the analyst forecasts. It is also associated with negative stock returns in the next period; this suggests that investors are negatively surprised when expenses that are previously removed from the core earnings reappear (McVay, 2006). This implies that the core earnings are lower when the expenses reappear in the core earnings when they are not used for classification shifting. Investors focus on non-GAAP earnings and when these earnings change investors will get doubts about the reliability of companies. The changes in core earnings do not have an effect on GAAP earnings (McVay, 2006).

Fan et al. (2010) use and adjust the model of McVay (2006) to determine classification shifting in the fourth fiscal quarter and if classification shifting is more likely in the fourth fiscal quarter than in interim fiscal quarters. Managers are more likely to resort to expectations management in the fourth fiscal quarter than other quarters to meet analysts' earnings forecasts. Next to replacing fiscal years for fiscal quarters they also include current fiscal quarter and the previous fiscal quarter returns in the model for the calculation of the expected core earnings. Fan et al. (2010) state that classification shifting is more likely in the fourth fiscal quarter than in the interim fiscal quarters. Companies' management uses classification shifting more often when the manipulation of accruals is constrained and when they have to meet earnings benchmarks. It gives a broad support for the conclusion of McVay (2006) that managers engage in classification shifting (Fan et al., 2010).

Siu and Faff (2013) conclude that companies use classification shifting to increase reported core earnings around seasoned equity offerings (SEOs). The results suggest that companies' management uses classification shifting around SEOs. A positive association between income-decreasing special items and unexpected core earnings exists in the fourth fiscal quarter (Siu and Faff, 2013).

Panel A of Table 1 on page 22 presents an overview of these three articles.

### 3.1.2 The market reaction to classification shifting

The studies of Alfonso et al. (2010) and Bartov and Mohanram (2014) are about the market mispricing core earnings of companies that use classification shifting to improve their core earnings. Alfonso et al. (2010) conclude that investors overprice core earnings of companies that use classification shifting to improve core earnings. These investors do also

not see through managers' opportunistic behavior of shifting normal and recurring operating expenses to non-recurring expense categories on the income statement. This study justifies SEC's concerns of the misclassification of the income statement and the adverse impact of this misclassification on investors and market participants (Alfonso et al., 2015).

Next to this, the position of the line items in the income statement does matter to investors. Bartov and Mohanram (2014) conclude that the reaction of the market on the gains and losses differs significantly between the pre-SFAS No. 145 and the post-SFAS No.145 period. Statement of Financial Accounting Standards (SFAS) No. 145 is a regulation that states that gains or losses from early debt extinguishments should be reported as special items above the line of the core earnings (Bartov and Mohanram, 2014).

Panel B of Table 1 presents an overview of these two articles.

### 3.1.3 Classification shifting and the analysts' forecasts

Lin et al. (2006) examine a set of earnings management tools and forecast guidance to gain insights into the earnings management tools that are used by companies to meet or beat financial analysts' earnings forecasts. Upward classification shifting increases the probability of meeting or beating the earnings forecasts of analysts. Companies' management uses discretionary accruals and forecast guidance to meet or beat earnings forecasts. The probability that companies meet or beat earnings forecasts increases with negative abnormal selling, general and administrative expenses. This probability decreases through positive abnormal production and negative abnormal cash from operations. This suggests that managers use downward guidance and classification shifting to meet or beat financial analysts' earnings forecasts (Lin et al., 2006).

Pan (2014) concludes that financial analysts can identify classification shifting behavior. How financial analysts respond on this behavior and whether their response is reflected in their earnings forecasts. The opportunistically boosted core earnings are less likely to be recognized as persistent in the future by the financial analysts. This results in a less extreme forecast revision for earnings news by classification shifters than by non-shifters. The forecasts for classification shifters are more biased and less accurate (Pan, 2014).

Athanasakou et al. (2009) find evidence that companies in the United Kingdom are more likely to engage in forecasts guidance and classification shifting than companies that use

accrual earnings management to meet financial analysts' earnings forecasts. Managers of companies in the United Kingdom are more likely to engage in earnings forecast guidance to meet benchmarks than that they have the costs of deploying income-increasing accruals (Athanasakou et al., 2009).

Managers of Japanese companies also use classification shifting to increase their core earnings. The results for these companies are consistent with the prior evidence for companies in the United States and in East Asian countries. The tendency to shift expenses downward and gains upward by management is for meeting or beating financial analysts' earnings forecasts (Shirato and Nagata, 2012).

Behn et al. (2013) examine classification shifting in a global sample and the differences in investor protection of different countries. They also study if financial analysts play a role in the mitigation of classification shifting. Classification shifting is more constraint in weak investor protection environment, when more financial analysts follow a company.

Table 1 Panel C shows an overview of these articles.

### 3.1.4 Classification shifting as a substitute of accrual earnings management and real earnings management

Company's management is more likely to use classification shifting than real earnings management and accrual earnings management, when real and accrual earning management are constrained. Abernathy et al. (2014) find a positive relation between classification shifting and specific costs of accrual earnings management. This includes accounting system flexibility and analyst issuance of cash flow forecasts. They find support for constraints of both real earnings management and accrual earnings management that leads to a greater likelihood of classification shifting, when the sample only includes companies that are likely to manipulate earnings. This includes companies with poor financial health, high institutional ownership, low accounting system flexibility and issuance of cash flow forecasts. Abernathy et al. (2010) use an adjusted form of the McVay (2006) model; the operating accruals are replaced by working capital accruals (Abernathy et al., 2014).

Athanasakou et al. (2010) examine how the increased discretion of classification of special items affects the use of classificatory smoothing and inter-temporal smoothing through abnormal accruals for offsetting temporary shocks in the company's performance. It

highlights the sustainable profitability of companies in the United Kingdom. After Financial Reporting Standard No. 3 (FRS3), managers use abnormal working capital accruals less for income smoothing. FRS3 is a regulation in the United Kingdom about the reporting of financial performance on classificatory income smoothing and it banned the use of special items to alter the core earnings (Athanasakou et al., 2010).

In Panel D of Table 1 you can find an overview of these articles.

### 3.1.5 The impact of corporate governance mechanism on the extent of classification shifting

Company's corporate board and audit committee mitigate the misclassification of recurring expenses in the income statement. Classification shifting is less likely in companies in the United Kingdom with a board of directors that includes more independent directors and more directors with longer tenures. But there is more severe misclassification when audit committees are more characterized by directors who are CEOs in other firms or when participants have multiple directorships (Zalata et al., 2015).

Haw et al. (2011) examine to what extent misclassification is employed to increase core earnings in East Asia. The role of internal and external corporate governance in restraining misclassification is also monitored by Haw et al. (2011). Misclassification of expenses is more pervasive when management wants to meet or beat financial analysts' earnings forecasts. This misclassification will be mitigated by well-functioning legal institutions and the appointment of an external auditor. Big-4 auditors notice this way of earnings management more in countries with strong investor protection than in countries with weak investor protection (Haw et al., 2011).

Panel E of Table 1 shows an overview of these articles.

### 3.1.6 Additional measures of classification shifting

Conventional expected earnings measures might be upward biased in the setting of McVay (2006). This upward bias may mask any upward oriented income management activities. This makes it difficult to clearly interpret the relation between unexpected core earnings and special items. The results from this model does not present a reliable case for thinking that classification shifting involving special items is either widespread or economically significant (Barua and Cready, 2008).

Abdalla and Clubb (2015) develop a forecasting and valuation framework that chains a small set of accounting variables, including the misclassified core earnings, to the related valuation weights in price models. They mention two possible roles for core operating expenses. The two roles are the information role as a component of the core earnings and a bad news signaling role. Based on the McVay (2006) model, they create a metric of the misclassified operating expenses. This helps to disentangle the misclassified core expenses from real special items. These special items do not forecast abnormal earnings in future periods. The market is unable to define the correct portion of special items that are value relevant (Abdalla and Clubb, 2015).

In Panel F in Table 1 you can find an overview of these articles.

### 3.1.7 Classification shifting using other line items than special items

Besides researchers that investigate classification shifting using special items, there are researchers that study classification shifting using other items than special items. Barua et al. (2010) study if managers use classification shifting to manage earnings when they report discontinued operations. A positive relation between unexpected core earnings and discontinued operations exists. This relation is driven by the companies that have losses from discontinued operations. Since the introduction of SFAS No. 144, *Accounting for the Impairment or Disposal of Long-Lived Assets*, classification shifting using discontinued operations has declined. SFAS No. 144 broadens the definition of discontinued operations. The broadened definition allows smaller asset dispositions to be qualified as discontinued operations. In this way SFAS No. 144 reduces the recognition threshold for asset disposals to be classified as discontinued operations. This results in discontinued operations being used less for classification shifting.

Skaife et al. (2013) examine classification shifting using research and development (R&D) expenses by management. The evidence of this research is consistent with companies' management engagement in research and development classification shifting to influence investors' perceptions of the company's performance when they miss their earnings benchmarks. Management will bias research and development expenses upward to be of influence on investors' perception of the companies' operating performance (Skaife et al., 2013).

Panel G of Table 1 shows an overview of these articles.

## 3.2 Special item literature

Johnson et al. (2011) provide a comprehensive descriptive analysis of special items. They examine the typical characteristics of firms that recognize special items. The last 30 years the temporal frequency, the magnitude, and the persistence of the special items has increased significantly. These increases are driven by the negative special items. Industry affiliations as well as poor prior performance are two important antecedents of subsequent special item reporting. This is an increasing function of the frequency of prior special item reporting (Johnson et al., 2011).

Further, Cain et al. (2014) study the general composition of income-increasing special items. They also assess what portion of income-increasing special items will reflect the appropriately classified, economically driven transitory items and the opportunistically misclassified recurring expenses that have to be recognized in the past, present, and future. The high-quality and the low-quality components of the special items have different implications on the future cash flows and the future accounting restatements. The high-quality special items are not associated with future cash flows and the propensity to restate, but the low-quality special items are negatively associated with the future cash flows and they are positively associated with the propensity to restate (Cain et al., 2014).

Panel H of Table 1 gives an overview of the special item literature.

## 3.3 The focus of this thesis

The focus of this thesis is on classification shifting literature and if companies' management uses classification shifting to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter. McVay (2006) mentions that the income-increasing special items are left for future research. I use total special items, income-decreasing and income-increasing special items in my thesis. I expect that special items have a positive effect on classification shifting because companies probably use these items to meet or beat the financial analysts' earnings forecasts. With an adjusted version of the Fan et al. (2010) model I identify if companies use classification shifting to increase their core earnings to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter in comparison to the interim fiscal quarters.

## 3.4 Summary

McVay (2006) concludes that companies that just meet analysts' forecasts and companies that are growth companies are more likely to use classification shifting to increase core earnings than other companies. Fan et al. (2010) elaborates on the outcomes of McVay (2006) by studying classification shifting in the fourth fiscal quarter and if classification is stronger in this period. The likelihood of companies engaging in classification shifting is larger when companies have a poor financial health, high institutional ownership, and low accounting system flexibility (Abernathy et al., 2014). In countries with weaker investor protection classification shifting is also more likely (Behn et al., 2013). Companies' management is more likely to use classification shifting to increase core earnings when they want to meet or beat financial analysts' earnings forecasts (Lin et al., 2006). This is also the case for companies in the United Kingdom and in East Asian countries (Athanasakou et al., 2009; Haw et al., 2011).

## Table 1 Prior Literature

**Panel A: Detection of classification shifting and classification shifting in different fiscal quarters**

| Author(s) (year) | Research objective | Sample | Methodology | Outcomes/Conclusion |
|---|---|---|---|---|
| S. E. McVay (2006) | The deliberate misclassification of items within the income statement as an earnings management tool. Classification shifting using income-decreasing special items to improve the core earnings. | The sample consists of U.S. companies. The sample period is from 1988 to 2003. The data is obtained from: Annual Compustat File, I/B/E/S and CRSP Daily Return Tapes. The final sample consists of 76,901 firm-year observations. | A model to determine classification shifting using income-decreasing special items. The reported, the expected and the unexpected core earnings are used in this model together with the special items to determine classification shifting. | The unexpected core earnings are increasing with the special items in the current year, but this reverses in the next period. It only reverses when there are no special items reported in the next period. This holds only for special items that are susceptible to classification shifting. Companies that just met the analyst forecasts or growth companies use sooner classification shifting. Classification shifting is associated with negative returns in the next year. |
| Y. Fan, A. Barua, W. M. Cready and W. B. Thomas (2010) | The difference in classification shifting between the fourth fiscal quarter and the interim fiscal quarters and whether and when managers use classification shifting to manage the company's core earnings. | The sample consists of U.S. companies. The sample period is from 1988 to 2007. The data is obtained from Compustat Industrial Quarterly File and I/B/E/S Detail File. The full sample consists of 132,292 firm-quarter observation. The subsample with the available analysts' forecasts consists of 67,980 firm-quarter observations. | An adjusted version of the McVay (2006) model is used. The firm-years are replaced by firm-quarters, they also include the core earnings of the previous quarter, and the accruals of the current quarter are replaced by the accruals of the previous quarter, and they also include the returns of the previous and current quarter in their model. | Classification shifting by companies' management is more likely in the fourth fiscal quarter than in the fiscal interim quarters. When the ability of managers to manipulate the accruals are constrained than classification shifting is more likely to happen, this is also the case when they want to meet the earnings benchmarks. |

*Continued*

| | | | | |
|---|---|---|---|---|
| D. T. L. Siu, and R. W. Faff (2013) | If the companies' management uses classification shifting to raise the reported core earnings around the seasoned equity offerings (SEOs). | The sample consists of U.S. companies with SEOs. The sample period is from 1990 to 2006. The data is obtained from Securities Data Company (SDC) New Issues database. The final sample consists of 896 SEOs. | The McVay (2006) model with control variables for the fourth fiscal quarter in the regression of the unexpected core earnings. | The evidence is consistent with the companies' management uses classification shifting around SEOs. A significant positive association between income-decreasing special items and unexpected core earnings in the fourth fiscal quarter exists. |

**Panel B: The market reaction to classification shifting**

| Author(s) (year) | Research objective | Sample | Methodology | Outcomes/Conclusion |
|---|---|---|---|---|
| E. Alfonso, C.S. A. Cheng, and S. Pan (2015) | They test if the market misprices the core earnings for companies that use classification shifting and they also test if the model of McVay (2006) is valid. | The sample consists of U.S. companies. The sample period is from 1988 to 2010. The data is obtained from Compustat and the Centre For Research in Security Prices (CRSP). The final sample consists of 94,221 firm-year observations, and 13,584 companies. 19% of the sample is classification shifters and 81% are non-classification shifters. | The McVay (2006) model and also additional tests: the Mishkin Test, a test that the difference in returns on a zero-investment portfolio between classification shifters and non-shifters, a test that uses a multivariate regression to analyze the mispricing of classification shifting. | Investors overprice the core earnings of the classification shifters and they do not see through the companies' managements' opportunistic strategy of shifting normal and recurring operating expenses to non-recurring categories. This study provides evidence that justifies the SEC's concerns of income statement misclassification and the adverse impact on the investors and the market. |
| E. Bartov, and P. S. Mohanram (2014) | If the placement of the line items in the income statement do matter to investors. | The sample consists of U.S. companies in the pre-FSAS No. 145 period and post-FSAS No. 145 period. The sample period is from 1996 to 2009. The data is obtained from Compustat and CRSP. The final sample consists of 258, 342 and 134 observations for respectively pre-SFAS No. 145, post-FSAS No. 145 and distinct companies. | Four different sets of tests are used. The first set of tests consists of portfolio return tests. The second set of tests consists of multivariate regression analyses, which control factors other than the accounting change that may vary across the two accounting regimes. The third set of tests attempts to rule out the alternative explanations that maybe underlie the relation between the gains/losses and the stock returns. | The market response to the gains/losses from the early debt extinguishment varies significantly between the two accounting regimes. |

*Continued*

**Panel C: Classification shifting and the analysts' forecasts**

| Author(s) (year) | Research objective | Sample | Methodology | Outcomes/Conclusion |
|---|---|---|---|---|
| S. Lin, S. Radhakrishnan, and L. Su (2006) | The examination of a comprehensive set of earnings management tools and forecasts guidance to gain insight into the tools used by the companies' management to meet or beat the financial analysts' earnings forecasts. | The sample consists of U.S. companies. The sample period is from 1993 to 2004. The data is obtained from I/B/E/S, Compustat, and CRSP databases. The final sample consists of 32,251 quarterly observations for 2,995 companies. | Different regression models to determine if earnings management is used to meet or beat the financial analysts' earnings forecasts. An adjusted version of the McVay (2006) model is used. The core earnings are replaced by the street earnings. Next to this model, a regression model for the estimation of the cumulated abnormal returns, and they include different interaction terms. | The probability of meeting or beating the financial analysts' earnings forecasts increases by the use of downward forecast guidance, upward discretionary accruals and upward classification shifting. Negative abnormal selling, general and administrative expense also increases this probability. This probability decreases through positive abnormal production and negative abnormal cash flow from operations. This evidence suggests that companies' management uses downward guidance and classification shifting for meeting or beating the analysts' earnings forecasts. Classification shifting is used by companies' management to opportunistically manage their earnings. |
| S. Pan (2014) | The identification of the income classification behavior of the companies by the financial analysts and the respond of the financial analysts on this behavior in their future earnings forecasts. | The sample consists of U.S. companies. The sample period is from 1988 to 2010. The data is obtained from Compustat Industrial Quarterly File, I/B/E/S Split-Unadjusted File, and CRSP monthly return. The full sample consists of 126,427 firm-quarter observations and 6,987 unique companies. The subsample consists of 70,306 firm-quarters and 4,799 unique firms. | The models of McVay (2006) and Fan et al. (2010) are used to determine the differences between those two models. Those models are combined to create the quarterly core eamings changes model. A regression model is estimated to examine if analysts can identify and incorporate income classification shifting behavior in the forecast revisions. Another regression model is estimated to examine the bias and accuracy of the analysts' forecasts for classification shifters. | The analysts' forecast revision is significantly less for earnings news by shifters, this implies that analysts recognize that the opportunistically boosted core earnings by shifters are less likely to persist into future periods. The analysts cannot fully assess the extent of the implications of the income shifting on the future earnings, this results in a more biased forecast for classification shifters. |

*Continued*

| | | | | |
|---|---|---|---|---|
| V. E. Athanasakou, N. C. Strong, and M. Walker (2009) | The examination whether U.K. companies engage in earnings management or forecast guidance to ensure that their reported earnings meet the analysts' earnings expectations. | The sample consists of U.K. companies that are listed in DataStream. The sample period is from 1994 to 2002. The data is obtained from I/B/E/S. The final sample contains 1,154 companies and 5,117 observations. | The model of McVay (2006) is used to determine classification shifting. In the regression of the unexpected core earnings They use income-increasing special items and these items are also replaced by the non-operating exceptional items and other non-recurring items. Next to the McVay (2006) model they also use the Jones model with lagged return on assets to estimate the abnormal working capital accruals and a model for the earnings forecast guidance to meet the analysts' forecasts. | U.K. companies are more likely to engage in earnings forecast guidance and in classification shifting than in accrual earnings management to meet the analysts' forecasts. U.K. managers are more likely to engage in earnings benchmarks than that they bear the costs of deploying income-increasing discretionary accounting choices. |
| K. Shirato, and K. Nagata (2012) | The investigation of earnings management through classification shifting within Japanese companies. | The sample consists of Japanese companies and the companies are listed in the Tokyo Stock Exchange (TSE). The sample period is from 2001 to 2011. The data is obtained from the Nikkei Financial Quest. The final sample consists of 13,230 firm-year observations. | The Fan et al. (2010) model is used for the calculation of the of the core earnings. Another model is used to determine the unexpected income-decreasing special items. | The outcomes of this study are consistent with prior research in the U.S. and in East Asia. Strong evidence is found for the strong tendency to shift expenses (gains) downward (upward) to increase the core earnings. This tendency is more likely when it enables the companies to meet or beat financial analysts' earnings forecasts. |
| B. K, Behn, G. Gotti, D. Hermann, and T. Kang (2013) | Classification shifting in a broader international setting. The analysis of the differences in investor protection on classification shifting and the exploration if financial analysts play a role in the mitigation of earnings management through classification shifting. | The sample consists of companies around the whole world. The sample period is from 1996 to 2008. The data is obtained from Compustat Global Vantage Industrial-Commercial file, the Global Vantage Issues file, and from the I/B/E/S summary file. The final sample consists of 6,540 observations of observations from 40 different countries. | The model of McVay (2006) is used to determine classification shifting and the regression of the unexpected core earnings are adjusted. The size, the book to market value, an indicator variable and the country fixed effects are included in this regression. A model to determine the number of the analysts following a certain company is also used. | Classification shifting is both present in countries with strong and weak investor protection. A higher number of analysts following constraints the classification shifting behavior in countries with weak investor protection. Classification shifting is common across a wide range of countries and therefore it deserves greater attention. |

*Continued*

**Panel D: Classification shifting as a substitute of accrual earnings management and real earnings management**

| Author(s) (year) | Research objective | Sample | Methodology | Outcomes/Conclusion |
|---|---|---|---|---|
| J. L. Abernathy, B. Beyer, and E. T. Rapley (2014) | If companies' management uses classification shifting when the other two forms of earnings management are constrained. | The sample consists of U.S. companies. The sample period is from 1988 to 2011. The data is obtained from the annual Compustat North America Fundamental Industrial Annual File, CRSP, I/B/E/S and Thomas Reuters databases. The full sample consists of 33,619 firm-year observations. The suspect sample consists of 7,638 firm-year observations. | The model of McVay (2006) is used and the operating accruals are replaced by the working capital accruals. A logit model is used to calculate the probability that a company is a classification shifter based on the constraints to real earnings management and accrual earnings management. | Companies use more often classification shifting when real earnings management is constrained, and this earnings management method is constrained by poor financial performance, high institutional ownership and low industry market share. A positive relation between classification shifting and the costs of accruals earnings management and the analyst issuance of the cash flow forecasts. Companies use classification shifting as a substitute for both real earnings management and accrual earnings management. |
| V. E. Athanasakou, N. C. Strong, and M. Walker (2010) | The examination of the increased discretion of the classification of the special items that affect the classificatory smoothing and the intertemporal smoothing of the earnings through abnormal accruals to offset the temporary shocks in the performance of the company and highlighting the sustainable profitability. | The sample consists of U.K. companies that are non-financial listed firms from DataStream. The sample period is from 1987 to 2002. The data is obtained from DataStream. The final sample consists of 867 companies and 11,162 firm-year observations. | Models for the inter-temporal income smoothing through abnormal items and classificatory smoothing using the classificatory smoothing index are used. | After FRS3 the abnormal working capital accruals are less used to smooth income. This decrease occurs in companies that exploited the increased flexibility in the classificatory choices to smooth the pre-exceptional earnings. Additional analysis shows that the results are robust to the alternative estimates of the abnormal working capital accruals and to the alternative explanation for the observed effects. |

*Continued*

**Panel E: The impact of corporate governance mechanism on the extent of classification shifting**

| Author(s) (year) | Research objective | Sample | Methodology | Outcomes/Conclusion |
|---|---|---|---|---|
| A. Zalata, and C. Roberts (2015) | Whether the corporate boards and audit committees mitigate the misclassification of the recurring expenses within the income statement. Studying whether certain board and audit committee characteristics, which have been shown to affect the level of accrual based earnings management, also affect the extent of classification shifting. | The sample consists of the top 500 U.K. companies. The sample period is from 2008 to 2010. The data is obtained from DataStream and I/B/E/S. The final sample consists of 713 firm-year observations. | The McVay (2006) model is used, the calculation of the unexpected core earnings are adjusted with control variables for the performance of the companies. | Classification shifting is less prevalent in companies with boards compromising of more independent directors with long tenures, but it is more prevalent when the board compromises more CEO directors in other companies. The composition of the audit committee is also important for the level of classification shifting by the companies. |
| I. M. Haw, S. S. M. Ho, and A. Y. Li (2011) | The examination of the extent to which the expense misclassification is employed to increase core earnings in East Asian countries and also the examination of the monitoring role played by the external and the internal corporate governance mechanism in restraining this misclassification. | The sample consists of East Asian Countries. The sample period is from 2001 to 2004. The data is obtained from the databases of DataStream and Worldscope. The final sample consists of 3,993 firm-year observations from eight East Asian economies. | The model of McVay (2006) is used to determine classification shifting. | The unexpected core earnings increase with the special items in the year that the special items are recognized and abnormally high core earnings are interrupted in the subsequent year. This suggests that managers opportunistically shift core expenses to special items to increase the core earnings. This is more pervasive when they want to meet or beat the analysts' earnings forecasts. Well-functioning legal institutions and an external auditor can mitigate the classification shifting behavior. The Big-4 auditors are alert to classification shifting in countries with strong investor protection than in countries with weak investor protection. The market does not see through classification shifting but it later unravels the quality of the manipulated core earnings. |

*Continued*

**Panel F:Additional measures of classification shifting**

| Author(s) (year) | Research objective | Sample | Methodology | Outcomes/Conclusion |
|---|---|---|---|---|
| A. Barua, and W. M. Cready (2008) | In the setting of McVay (2006) the conventional expected earnings measures might be upward biased. This bias might mask any upwards oriented earnings management, including earnings management, undertaken by companies. | The sample consists of U.S. companies. The sample period is from 1989 to 2006. The data is obtained from the annual Compustat File for the years 1988 to 2008. The final sample consists of 87,246 firm-year observations. | Replication of McVay (2006) and they check for the accrual beta effects. This effect is included in the regression of the unexpected core earnings. The accruals related to the special items are also included in the regression of the unexpected core earnings. They use multiple adjustments to the unexpected core earnings. They also use adjustments for the negative special items that shift or not. | The body of the evidence that is reported in McVay (2006) does not represent a reliable case for thinking that classification shifting activities with respect to special items is either widespread or economically significant. |
| A. Abdalla, and C. Clubb (2015) | The examinations of the information content of the earnings conditional in the existence of misclassification of the accounting earnings components in the earnings announcements. | The sample consists of U.S. companies. The sample period is from 1988 to 2012. The data is obtained from the annual Compustat database, the monthly Center for research in Security Prices (CRSP). The full sample consists of 69,430 firm-year observations and the subsample consists of 54,912 firm-year observations. | The McVay (2006) model is used to determine the expected core earnings and the change in the expected core earnings. This is also the case for the unexpected core earnings and the change in unexpected core earnings. Next to the McVay (2006) model they also use Vector Auto Regression (VAR) of a set of accounting variables that accommodates with two components of special items; a permanent component including the shifted operating expenses and a component reflecting the measure of 'true' special items. | The true special items do not forecast the future abnormal earnings for transitory earnings. In relation to the market valuation, the stock prices react irrationally to special items. They also ignore the heterogeneity between the components of the special items. The market is unable to correctly define the portion of special items that is value relevant, and the market over valuates the special items in order to moderate this mispricing. |

*Continued*

**Panel G: Classification shifting using other line items than special items**

| Author(s) (year) | Research objective | Sample | Methodology | Outcomes/Conclusion |
|---|---|---|---|---|
| A. Barua, S. Lin, and A. M. Sbaraglia (2010) | The study if managers use classification shifting to manage the core earnings when they report discontinued operations. | The sample consists of U.S. companies. The sample period is from 1989 to 2005. The data is obtained from the 2007 Annual Compustat File. The final sample consists of 79,643 firm-year observations, with 6,262 observations reporting the discontinued operations. | The McVay (2006) model is used for the calculation of the expected core earnings. The regression for the unexpected core earnings is adjusted. The special items are replaced by the discontinued operations and control variables are also included. | The unexpected core earnings and the discontinued operations are positive associated. This association is driven by the companies' losses from the discontinued operations. The magnitude of this way of classification shifting had declined after the introduction of SFAS No. 144. |
| H. A. Skaife, L. A. Swenson, and D. D. Wangerin (2013) | Companies' management using classification shifting to improve the core earnings using the research and development (R&D) expenses. | The sample consists of U.S. companies. The sample period is from 1996 to 2012. The data is obtained from Compustat. The final sample consists of 28,659 firm-year observations. | A model for the expected R&D expenses is used. With the help of an OLS regression they determine the R&D classification shifting. | Managers engage in R&D classification shifting to be of influence of the investors' perceptions of the company's performance when the companies miss the earnings benchmarks. The amount of the institutional investors and the analysts' coverage decline in the amount of classification shifting using R&D expenses. |

*Continued*

**Panel H: Special items**

| Author(s) (year) | Research objective | Sample | Methodology | Outcomes/Conclusion |
|---|---|---|---|---|
| P. M. Johnson, T. J. Lopez, and J. M. Sanchez (2011) | The provision of a comprehensive descriptive analysis of special items and the characteristics of companies that recognize special items. | The sample consists of U.S. companies. The sample period is from 1980 to 2009. The data is obtained from Compustat. The final sample consists of 235,799 firm-year observations, 137,951 observations include no special items, 68,754 observations include negative special items, and 29,094 observations include positive special items. | The frequency of special item reporting; the persistence of the special items; the magnitude of the special items; firm performance are determined. The performance of the companies are determined by: the adjusted ROA, operating margin, cash flow from operations, industry-adjusted market returns, and report the company's performance effects prior to the recognition of positive, negative, and no special item events. | The temporal frequency, the magnitude, and the persistence of the special items have increased significantly the last 30 years. These increases are primarily driven by negative special items. Poor prior performance and the industry affiliation are important antecedents of the subsequent special item reporting. |
| C. A. Cain, K. Kolev, and S. McVay (2014) | The examination of the general composition of the income-decreasing special items and the assessment of what portion reflects the appropriately classified transitory items versus the opportunistically misclassified recurring expenses that have to be recognized in the past, present or future. | The sample consists of U.S. companies. The sample period is from 1989 to 2011. The data is obtained from Compustat Annual Files, Audit Analytics, and SDC Platinum. The full sample consists of 102,839 firm-year observations for 13,174 individual companies. | The core earnings are calculated with the McVay (2006) model. The net operating assets are estimated and a regression analysis for the income-decreasing special items. | The different qualities of the special item components have different implications for the future cash flows and the future accounting restatements. Low-quality special items are negatively associated with the future cash flows and positively associated with the propensity to restate. The high-quality special items are not associated with either. One third of the reported special items would be more appropriately classified as recurring expenses. |

# 4 Hypotheses development

Two hypotheses will be developed to answer the following research question:

*Do companies use special items to improve the core earnings to meet or beat the financial analysts' earnings forecasts in the fourth fiscal quarter?*

## 4.1 Hypothesis 1

Companies' management has different incentives to use classification shifting to improve core earnings. One of these incentives is that management wants to meet or beat the analysts' earnings forecasts (Lin et al., 2006). Fan et al. (2010) state that companies want to meet or beat earnings forecasts to gain a higher stock market rate. Companies' management also uses earnings management tools, like classification shifting, to meet the thresholds by studying investors' reaction to the company meeting or beating the earnings forecasts (Lin et al., 2006). According to Shirato and Nagata (2012) the tendency to use classification shifting is more likely when it enables the management to meet or beat the earnings forecasts. Hypothesis 1 is formulated as follows:

*Management uses classification shifting to meet or beat the financial analysts' earnings forecasts.*

## 4.2 Hypothesis 2

Companies want to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter to gain a higher stock market rate than companies that fail to meet the earnings forecasts in the same quarter (Bartov et al., 2002). Classification shifting in the fourth fiscal quarter is more prevalent than in the interim fiscal quarters, when other forms of earnings management are constrained (Fan et al., 2010). The financial analysts adjust their earnings forecast during the months before the official earnings announcement. The earnings forecasts show a walk-down closer to the earnings announcement date (Richardson et al., 2004). This gives the companies' management an extra incentive to use classification shifting to meet or beat the earnings forecasts in the fourth fiscal quarter. Hypothesis 2 is formulated as follows:

*Management uses classification shifting more in the fourth fiscal quarter than in the interim fiscal quarters.*

## 4.3 Summary

These two hypotheses are stated in the alternative notation. The related null hypotheses are as follows: *Management does not use classification shifting to meet or beat the financial analysts' earnings forecasts; Management uses classification shifting equally in both the fourth fiscal quarter and in the interim fiscal quarters.*

With the help of these two hypotheses I create different regressions and I answer the research question.

# 5 Research design

In this chapter I discuss the research design that I use to test the hypotheses and to answer the research question. I use an adjusted version of the Fan et al. (2010) model. Next to the research design I also discuss the theoretical constructs that are used in the regression models and the sample selection.

## 5.1 Regression model

### 5.1.1 General model

The regression model that I use is an adjusted version of the regression model of Fan et al. (2010). I leave out the three month market return. Abernathy et al. (2014) and Alfonso et al. (2015) leave out the three-month market return which is included by Fan et al. (2010). This model will increase comparability of the regression to the regression of the expected core earnings of McVay (2006). Classification shifting is determined by the relation between unexpected core earnings and special items. A positive relation between special items and unexpected core earnings is required to determine classification shifting. This relation implies an improvement of the reported core earnings. The core earnings are expected with regression models (1A) and (1B).

*McVay (2006) model with quarterly data*

According to McVay (2006) lagged core earnings ($CE_{q-4}$) are included because of the persistency of the core earnings. Asset turn over ($ATO_q$) is included because of the inverse relation with the profit margin. The definition of core earnings is close to the definition of the profit margin, according to McVay (2006). Lagged accruals ($ACCRUALS_{q-4}$) and current accruals ($ACCRUALS_q$) are included because of the explanatory power of accruals for the future performance of companies. Good performance is also related to the increases in accruals. The percentage change in sales ($\Delta SALES_q$) and negative change in sales ($NEG\_\Delta SALES_q$) are included because when the sales grow the costs become smaller per sales dollar.

$$CE_q = \beta_0 + \beta_1 CE_{q-4} + \beta_2 ATO_q + \beta_3 ACCRUALS_{q-4} + \beta_4 ACCRUALS_q + \beta_5 \Delta SALES_q + \beta_6 NEG\_\Delta SALES_q + \varepsilon_q \quad (1A)$$

*Fan et al. (2010) model without the three-month market return*

Fan et al. (2010) mention that the model of the expected core earnings captures the natural relation between core earnings ($CE_q$) and company's performance. Lagged core earnings ($CE_{q-1}$ and $CE_{q-4}$) are included because of the persistency of core earnings. The core earnings of the previous quarter are included because these core earnings capture the company's current economic environment. The core earnings of the same quarter one year ago capture the seasonal pattern of the core earnings for many companies. It results in a better control for the current period core earnings. $ATO_q$, $ACCRUALS_{q-4}$, $ACCRUALS_{q-1}$, $\Delta SALES_q$ and $NEG\_\Delta SALES_q$ are included by Fan et al. (2010) for the same reasons as McVay (2006) included them. The current period accruals are excluded from the model because of the constraint of using accrual earnings management in previous quarters. Companies use classification shifting in the current quarter (Fan et al., 2010).

$$CE_q = \beta_0 + \beta_1 CE_{q-4} + \beta_2 CE_{q-1} + \beta_3 ATO_q + \beta_4 ACCRUALS_{q-4} + \beta_5 ACCRUALS_{q-1} + \beta_6 \Delta SALES_q + \beta_7 NEG\_\Delta SALES_q + \varepsilon_q \quad (1B)$$

*Unexpected core earnings*

Equation (2) shows the relation between the reported core earnings ($CE_q$) and the expected core earnings ($E(CE_q)$). The difference between reported core earnings and expected core earnings are the unexpected core earnings ($UN\_CE_q$) (Fan et al., 2010). Unexpected core earnings are the residuals of regression (1A) and (1B). The residuals of regression (1B) are used in the regression models of hypotheses 1 and 2.

Regression model (3) shows the relation between unexpected core earnings ($UN\_CE_q$) and total special items ($\%SI_q$). Special items are expected to have a positive relation with unexpected core earnings.

$$UN\_CE_q = CE_q - E(CE_q) \quad (2)$$

$$UN\_CE_q = \alpha_0 + \alpha_1 \%SI_q + \mu_q \quad (3)$$

### 5.1.2 Models related to hypothesis 1

For the first hypothesis I include dummy variables in the regression model of the unexpected core earnings that are related to meeting and beating financial analysts' earnings

forecasts. Next to the dummy variables of meeting and beating financial analysts' earnings forecasts, I replace total special items by income-decreasing and income-increasing special items. The regressions (4), (5) and (6) are used for the first hypothesis.

Regression models (4), (5) and (6) show the relation between unexpected core earnings and meeting and beating financial analysts' earnings forecasts and the relation with special items. The important variables are the interaction variables of meeting the earnings forecasts and special items and beating the earnings and special items. I expect that both the interaction variable of meeting and beating the earnings forecasts have a positive relation with the unexpected core earnings. A positive relation between the special items and the unexpected core earnings indicate classification shifting (Fan et al., 2010).

*With total special items*

$$UN\_CE_q = \delta_0 + \delta_2 MEET_q + \delta_3 BEAT_q + \delta_4 MEET_q * \%SI_q + \delta_5 BEAT_q * \%SI_q + \mu_q \quad (4)$$

*With income-decreasing special items*

$$UN\_CE_q = \delta_0 + \delta_2 MEET_q + \delta_3 BEAT_q + \delta_4 MEET_q * \%DECRSI_q + \delta_5 BEAT_q * \%DECRSI_q + \mu_q \quad (5)$$

*With income-increasing special items*

$$UN\_CE_q = \delta_0 + \delta_2 MEET_q + \delta_3 BEAT_q + \delta_4 MEET_q * \%INCRSI_q + \delta_5 BEAT_q * \%INCRSI_q + \mu_q \quad (6)$$

### 5.1.3 Models related to hypothesis 2.

For the second hypothesis I include a dummy variable in the regression model of unexpected core earnings that is related to fourth fiscal quarter. I replace total special items by income-increasing and income-decreasing special items. The regressions (7), (8) and (9) are used for the second hypothesis.

Regression models (7), (8) and (9) show the relation between unexpected core earnings and the fourth fiscal quarter and the relation between unexpected core earnings and interaction between the fourth fiscal quarter and special items. I expect a positive relation between the interaction variable of special items and fourth fiscal quarter and the unexpected core

earnings. Prior literature shows a positive relation between unexpected core earnings and the fourth fiscal quarter (Fan et al., 2010).

*With total special items*

$$UN\_CE_q = \gamma_0 + \gamma_1 FOURTH_q + \gamma_2 FOURTH_q * \%SI_q + \mu_q \quad (7)$$

*With income-decreasing special items*

$$UN\_CE_q = \gamma_0 + \gamma_1 FOURTH_q + \gamma_2 FOURTH_q * \%DECRSI_q + \mu_q \quad (8)$$

*With income-increasing special items*

$$UN\_CE_q = \gamma_0 + \gamma_1 FOURTH_q + \gamma_2 FOURTH_q * \%INCRSI_q + \mu_q \quad (9)$$

### 5.1.4 Models related to the combination of hypotheses 1 and 2

To answer the research question it is important to combine the linear regressions of the first and the second hypothesis. Regressions (10), (11) and (12) are obtained from the combination of the hypotheses.

In regression models (10), (11) and (12) the relation between unexpected core earnings and the interaction variables are important. I expect the same outcomes of these variables as for the regression models as for the first and second hypothesis.

*With total special items*

$$UN\_CE_q = \theta_0 + \theta_2 MEET_q + \theta_3 BEAT_q + \theta_4 FOURTH_q + \theta_5 MEET_q * \%SI_q + \theta_6 BEAT_q * \%SI_q + \theta_7 FOURTH_q * \%SI_q + \mu_q \quad (10)$$

*With income-decreasing special items*

$$UN\_CE_q = \theta_0 + \theta_2 MEET_q + \theta_3 BEAT_q + \theta_4 FOURTH_q + \theta_5 MEET_q * \%DECRSI_q + \theta_6 BEAT_q * \%DECRSI_q + \theta_7 FOURTH_q * \%DECRSI_q + \mu_q \quad (11)$$

*With income-increasing special items*

$$UN\_CE_q = \theta_0 + \theta_2 MEET_q + \theta_3 BEAT_q + \theta_4 FOURTH_q + \theta_5 MEET_q * \%INCRSI_q + \theta_6 BEAT_q * \%INCRSI_q + \theta_7 FOURTH_q * \%INCRSI_q + \mu_q \quad (12)$$

## 5.2 Theoretical constructs

The theoretical constructs are the core earnings, the assets turn over, the accruals, the sales, the unexpected core earnings and the special items (income-increasing and income-decreasing). In addition I use three dummy variables to control for meeting and beating financial analysts' earnings forecasts and one to control for the fourth fiscal quarter. Table 2 shows the variable definitions related to the theoretical constructs.

### 5.2.1 Core earnings

The core earnings ($CE_q$) are calculated as sales minus cost of goods sold minus selling, general and administrative expenses. These core earnings are also known as the reported core earnings (Fan et al., 2010). The expected core earnings ($E(CE_q)$) are predicted with the help of a linear regression which I discuss in section 5.1.

### 5.2.2 Asset turn over

The asset turnover ratio ($ATO_q$) is defined as the sales divided by the average net operating assets (NOA). The net operating assets are the operating assets minus the operating liabilities. The operating assets are calculated as the total assets minus cash and short-term investments. The operating liabilities are calculated as the total assets minus total debt, minus the book value of common and preferred equity, minus minority interest. The average NOA is calculated by adding up the NOA of the current and previous quarter and divided by two (Fan et al., 2010).

### 5.2.3 Accruals

The accruals ($ACCRUALS_q$) are calculated as the net income before extraordinary items minus the cash from operations (Fan et al., 2010).

### 5.2.4 Sales

The sales ($\Delta SALES_q$) that are used in the model are the percentage change in sales. It is calculated as sales of the current quarter minus the sales of the same quarter in the previous year and divided by the same quarter in the previous year sales (Fan et al., 2010).

### 5.2.5 Unexpected core earnings

The unexpected core earnings ($UN\_CE_q$) are calculated as the difference between reported core earnings ($CE_q$) and expected core earnings ($E(CE_q)$) (Fan et al., 2010). The unexpected core earnings are the residuals in the regression model of expected core earnings. The residuals are the differences between reported core earnings and expected core earnings (Brooks, 2014).

### 5.2.6 Special items

The special items ($\%SI_q$) are a percentage of sales (Fan et al., 2010). It includes all special items, both income-increasing and income-decreasing special items. Total special items are multiplied by -1 to get a better idea of the relation between the special items and the unexpected core earnings (Fan et al., 2010). With continuous variables I control for the effect of the type of special items.

#### *5.2.6.1 Types of special items*

To control for the effect of the type of special items (income-increasing ($\%INCRSI_q$) and income-decreasing ($\%DECRSI_q$)) I replace total special items by income-increasing or income-decreasing special items. These variables are continuous variables. These two variables have their own subsample to control for the effect of the special items on meeting and beating the earnings forecasts. When special items are negative (positive), they are income-decreasing (income-increasing). With these variables I determine the effect on the unexpected core earnings and if the type of special items has an effect on classification shifting.

### 5.2.7 Meeting the financial analysts' earnings forecasts

Controlling for meeting the financial analysts' earnings forecasts is done by the variable $MEET_q$. This variable has the value one when companies meet financial analysts' earnings forecasts and otherwise 0. In this case the forecast error is equal to zero. The forecast error is the difference between the analysts' earnings forecasts and the actual earnings (Lin et al., 2006).With this variable I can determine what kind of effect meeting earnings forecasts has on classification shifting.

### 5.2.8 Beating the financial analysts' earnings forecasts

Control for beating the financial analysts' earnings forecasts is achieved through the variable $BEAT_q$. This variable has the value one when companies beat financial analysts' earnings forecasts and 0 otherwise. This implies that companies have a forecast error that is larger than zero. With this variable I can determine what effect beating the earnings forecasts has on classification shifting.

### 5.2.9 Fourth fiscal quarter

Controlling for the fourth fiscal quarter is done by a dummy variable. This dummy variable represents the fourth fiscal quarter. The dummy variable of the fourth fiscal quarter is one when it is the fourth fiscal quarter and otherwise 0.

**Table 2**

| Variable | | Variable Definitions |
|---|---|---|
| $CE_q$ | = | The reported core earnings, calculated as sales minus the cost of goods sold minus selling, general, and administrative expenses in fiscal quarter *q*. |
| $UN\_CE_q$ | = | The unexpected core earnings, calculated as the difference between reported core earnings ($CE_q$) and expected core earnings ($E(CE_q)$) estimated by the fiscal quarters: $CE_q = \beta_0 + \beta_1 CE_{q-4} + \beta_2 CE_{q-1} + \beta_3 ATO_q + \beta_4 ACCRUALS_{q-4} + \beta_5 ACCRUALS_{q-1} + \beta_6 \Delta SALES_q + \beta_7 NEG\_\Delta SALES_q + \varepsilon_q$ |
| $\%SI_q$ | = | The special items, calculated as a percentage of sales and multiplied by -1. |
| $\%INCRSI_q$ | = | The income-increasing special items, calculated as a percentage of sales and multiplied by -1. Income-increasing special items are the reported positive special items. |
| $\%DECRSI_q$ | = | The income-decreasing special items, calculated as a percentage of sales and multiplied by -1. Income-decreasing special items are the reported negative special items. |

*Continued.*

| | | |
|---|---|---|
| $ACCRUALS_q$ | = | The accruals, calculated as net income before extraordinary items minus cash from operations. |
| $ATO_q$ | = | The asset turnover ratio, calculated as sales divided by the average net operating assets. Net operating assets are operating assets minus operating liabilities. Operating assets are calculated as total assets minus cash and short-term investments. Operating liabilities are calculated as total assets minus total debt minus book value of common and preferred equity and minus minority interests. The net operating assets are required to be positive. |
| $\Delta SALES_q$ | = | The percentage change in sales, calculated as sales of the current quarter minus the sales of the same quarter in the previous year and divided by the same quarter in the previous year sales. |
| $NEG\_\Delta SALES_q$ | = | $\Delta SALES_q$ if the percentage change in sales is negative and otherwise 0. |
| $MEET_q$ | = | Meeting the financial analysts' earnings forecasts. $MEET_q$ is 1 when the forecast error is between 0.00 and 0.01 dollar, and otherwise 0. |
| $BEAT_q$ | = | Beating the financial analysts' earnings forecasts. $BEAT_q$ is 1 when the forecast error is larger than 0.00 dollar, and otherwise 0. |
| $FOURTH_q$ | = | The fourth fiscal quarter. $FOURTH_q$ is 1 when it is the fourth fiscal quarter, and otherwise 0. |

*Continued.*

## 5.3 Sample selection

I obtain data for the years 1999 to 2014 from Compustat North America Fundamentals Quarterly and data related to financial analysts' earnings forecasts and the forecast error from the I/B/E/S Detail History Actuals for actual earnings per share and I/B/E/S Summary Statistics Unadjusted for financial analysts' earnings forecasts. The sample period is from 2000 to 2014. I first eliminate observations that are not included in one of the two data sets of the two databases. So, first companies with missing company names are deleted, as well as observations with missing forecast errors, observations with unequal company names and unequal currencies. After this elimination I delete observations of companies in the financial sector, SIC 6000-6999. Hereafter, I delete observations with changes in the fiscal years and observations with negative average net operating assets. The sample selection procedure can

be found in Table 3 and the sample selection results in a final sample of 63,340 firm-quarter observation and 3,485 unique companies. The subsample of companies with income-decreasing special items consists of 56,555 firm-quarter observations and 3,330 unique companies. The subsample of companies with income-increasing special items consists of 5,197 firm-quarter observations and 1,648 unique companies.

The final sample of 63,340 firm-quarter observations is comparable to the sample with available financial analysts' earnings forecasts of Fan et al. (2010). The subsample of Fan et al. (2010) consists of 67,980 firm-quarter observations.

**Table 3**

| **Sample Selection Procedure** | |
|---|---|
| Full sample | 786,935 |
| Observations without company names | -/- 57,358 |
| Observations without forecast errors | -/- 537,149 |
| Observations with unequal company names | -/- 102,933 |
| Observations with unequal currencies | -/- 689 |
| Observations with SIC 6000-6999 | -/- 15,211 |
| Observations with changes in the fiscal years | -/- 5,493 |
| Observations with negative average net operating assets | -/- 4,762 |
| Final sample (firm-quarter observations) | 63,340 |
| Final sample (unique companies) | 3,485 |
| Subsample Income-Decreasing Special Items(firm-quarter observations) | 56,555 |
| Subsample Income-Decreasing Special Items(unique companies) | 3,330 |
| Subsample Income-Increasing Special Items (firm-quarter observations) | 5,197 |
| Subsample Income-Increasing Special Items (unique companies) | 1,648 |

## 5.4 Summary

I expect that the variables of meeting and beating the financial analysts' earnings forecasts have a positive effect on the unexpected core earnings, which implies that when companies' management wants to meet or beat financial analysts' earnings forecasts, they use classification shifting to achieve this result. I also expect that the fourth fiscal quarter has a positive effect on the unexpected core earnings. This implies that companies' management uses classification shifting more often in the fourth fiscal quarter than during the interim fiscal quarters. Next to those expectations, I expect that the special items have a positive relation

with the unexpected core earnings, which indicates the improvement of the core earnings by the management, and therefore classification shifting.

# 6 Empirical results and analysis

In this chapter I discuss the descriptive statistics, winsorizing of the variables, the regression outputs, the ordinary least square (OLS) assumptions, the acceptance or rejection of the hypotheses and compare these outcomes with my expectations and related prior literature.

## 6.1 Descriptive statistics

Table 4 presents the descriptive statistics of the variables: the variable names, the number of observations per variable, the mean, the standard deviation, the minimum and the maximum value of the variables. The mean values of the core earnings ($CE_q$) and the lagged core earnings ($CE_{q-1}$ and $CE_{q-4}$) are comparable, 146.361, 149.397, and 154.551 respectively. The accruals ($ACCRUALS_q$) and the lagged accruals ($ACCRUALS_{q-1}$ and $ACCRUALS_{q-4}$) also have comparable means. The means are -206.668, -205.391, and -216.509 respectively.

The mean of the asset turn over ($ATO_q$) is 0.654. This implies that the sales are 65.4 percent of the net operating assets. The mean of the percentage change in sales ($\Delta SALES_q$) is 15.5 percent, this implies that the sales increase every year with approximately 15.5 percent

The unexpected core earnings ($UN\_CE_q$) have a mean of 0.000, this implies that an average company has a minimum deviation of zero between reported core earnings ($CE_q$) and expected core earnings ($E(CE_q)$). These companies do not use classification shifting to increase the core earnings ($CE_q$).

The mean of total special items as a percentage to sales ($\%SI_q$) is 2.8 percent. Companies have more income-decreasing special items than income-increasing special items. Income-increasing special items as a percentage of sales ($\%INCRSI_q$) have a mean of -3.3 percent and income-decreasing special items ($\%DECRSI_q$) have a mean value of 3.3 percent.

The variables, $MEET_q$, $BEAT_q$, and $FOURTH_q$ have the following means: 0.176, 0.476, and 0.229 respectively. The mean of $MEET_q$ implies that the majority of companies do not just meet the earnings forecasts of financial analysts. Only 17.6 percent of these companies just meet the earnings forecasts. 47.6 percent of the companies beat the financial analysts' earnings forecasts. The mean of $FOURTH_q$ implies that 22.9 percent of the data is from the fourth fiscal quarter.

**Table 4**

**Descriptive Statistics**

| Variable | Observations | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| $CE_q$ | 55,967 | 146.361 | 471.807 | -43.165 | 3,559 |
| $CE_{q-1}$ | 53,097 | 149.397 | 482.647 | -42.491 | 3,652 |
| $CE_{q-4}$ | 46,152 | 154.551 | 506.328 | -43.765 | 3,872 |
| $ATO_q$ | 53,675 | 0.654 | 0.904 | 0 | 6.437 |
| $ACCRUALS_q$ | 62,022 | -206.668 | 730.704 | -5,466 | 260.496 |
| $ACCRUALS_{q-1}$ | 58,768 | -205.391 | 726.933 | -5,441 | 269.449 |
| $ACCRUALS_{q-4}$ | 51,131 | -216.509 | 766.493 | -5,787 | 270.973 |
| $\Delta SALES_q$ | 51,581 | 15.5% | 0.440 | -70.1 | 269.5% |
| $UN\_CE_q$ | 39,712 | 0.000 | 102.510 | -3,698.402 | 2,986.063 |
| $\%SI_q$ | 61,752 | 2.8% | 0.131 | -12.8% | 104.2% |
| $\%INCRSI_q$ | 5,197 | -3.3% | 0.043 | -12.8% | 0.0% |
| $\%DECRSI_q$ | 56,555 | 3.3% | 0.135 | 0 | 104.2% |
| $MEET_q$ | 63,340 | 0.176 | 0.381 | 0 | 1 |
| $BEAT_q$ | 63,340 | 0.476 | 0.499 | 0 | 1 |
| $FOURTH_q$ | 63,340 | 0.229 | 0.420 | 0 | 1 |

See Table 2 for the variable definitions. The full sample consists of 63,340 firm-quarter observations. The subsamples with income-increasing and income-decreasing special items consist of 5,197 and 56,555 firm-quarter observations. All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$.

Table 5 Panel A shows the Pearson correlations between the variables in the sample with total special items. The Pearson correlations between unexpected core earnings ($UN\_CE_q$) and total special items ($\%SI_q$) is -0.018 and significant. This correlation indicates a negative correlation between the variables.

The correlation between unexpected core earnings ($UN\_CE_q$) and meeting ($MEET_q$) financial analysts' earnings forecast is -0.010. This indicates that unexpected core earnings are lower when companies meet financial analysts' earnings forecasts. Meeting earnings forecasts results in less classification shifting by companies' management. The correlation between unexpected core earnings ($UN\_CE_q$) and beating the earnings forecasts ($BEAT_q$) is

0.035. This indicates that when companies beat the earnings forecasts, that they use classification shifting, because of the positive and significant correlation between these two variables. The correlation between unexpected core earnings ($UN\_CE_q$) and the fourth fiscal quarter ($FOURTH_q$) is -0.039. This correlation implies that companies use less classification shifting in the fourth fiscal quarter than in interim fiscal quarters. The regression output will give a better identification of the relation between the independent variables and the unexpected core earnings ($UN\_CE_q$), because of the interaction variables that are included in the regression models.

The Pearson correlation between meeting ($MEET_q$) financial analysts' earnings forecasts and the fourth fiscal quarter ($FOURTH_q$) is -0.009 and significant. This shows that the correlation between these two variables is negative. The correlation between beating ($BEAT_q$) financial analysts' earnings forecasts and the fourth fiscal quarter ($FOURTH_q$) is -0.012 and significant.

The Pearson correlation between the variables in the subsample with income-decreasing special items are presented in Table 5 Panel B. The correlations are comparable with the correlations between the variables in the full sample. The only two differences are the insignificance at a 5 percent significance level of the correlation between unexpected core earnings ($UN\_CE_q$) and meeting ($MEET_q$) financial analysts' earnings forecasts and the correlation between meeting ($MEET_q$) financial analysts' earnings forecasts and the fourth fiscal quarter ($FOURTH_q$). These correlations are significant at a 10 percent significance level.

Panel C of Table 5 presents the Pearson correlations between the different variables in the subsample with the income-increasing special items. Correlations between the different variables are less significant in this subsample than in the subsample with income-decreasing special items and the full sample with total special items. The correlations between income-increasing special items and meeting earnings forecasts, beating earnings forecasts, fourth fiscal quarter and unexpected core earnings have a reversed sign than the same correlations in the Panel A and B of Table 5. The unexpected core earnings ($UN\_CE_q$) and income-increasing special items ($\%INCRSI_q$) and beating ($BEAT_q$) earnings forecasts does not have a significant correlation. The correlation between the income-increasing special items ($\%INCRSI_q$) and meeting ($MEET_q$) earnings forecasts is also not significant.

## Table 5

**Pearson Correlation Matrix**

**Panel A: Correlation of the full sample with Total Special Items**

| | $CE_q$ | $CE_{q-1}$ | $CE_{q-4}$ | $ATO_q$ | $ACCRUALS_q$ | $ACCRUALS_{q-1}$ | $ACCRUALS_{q-4}$ | $\Delta SALES_q$ | $NEG\_\Delta SALES$ | $UN\_CE_q$ | $\%SI_q$ | $MEET_q$ | $BEAT_q$ | $FOURTH_q$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $CE_q$ | | | | | | | | | | | | | | |
| $CE_{q-1}$ | **0.970** | | | | | | | | | | | | | |
| $CE_{q-4}$ | **0.958** | **0.957** | | | | | | | | | | | | |
| $ATO_q$ | **-0.066** | **-0.068** | **-0.067** | | | | | | | | | | | |
| $ACCRUALS_q$ | **-0.812** | **-0.833** | **-0.817** | **0.075** | | | | | | | | | | |
| $ACCRUALS_{q-1}$ | **-0.797** | **-0.804** | **-0.801** | **0.074** | **0.724** | | | | | | | | | |
| $ACCRUALS_{q-4}$ | **-0.812** | **-0.827** | **-0.812** | **0.071** | **0.923** | **0.710** | | | | | | | | |
| $\Delta SALES_q$ | **-0.024** | **-0.037** | **-0.069** | **0.047** | **0.044** | **0.049** | **0.051** | | | | | | | |
| $NEG\_\Delta SALES_q$ | **0.042** | **0.034** | 0.005 | **0.068** | -0.005 | -0.004 | **-0.012** | **0.498** | | | | | | |
| $UN\_CE_q$ | **0.215** | 0.000 | 0.000 | 0.000 | **0.021** | 0.000 | 0.000 | 0.000 | 0.000 | | | | | |
| $\%SI_q$ | **-0.031** | **-0.026** | **-0.021** | **-0.051** | **-0.031** | **0.021** | 0.005 | **-0.044** | **-0.126** | **-0.018** | | | | |
| $MEET_q$ | **-0.030** | **-0.030** | **-0.031** | **0.016** | **0.027** | **0.033** | **0.027** | 0.001 | **0.047** | **-0.010** | **-0.023** | | | |
| $BEAT_q$ | **0.038** | **0.028** | **0.030** | **0.061** | **-0.008** | **-0.016** | **-0.016** | **0.061** | **0.063** | **0.035** | **-0.050** | **0.017** | | |
| $FOURTH_q$ | -0.002 | 0.005 | -0.002 | -0.004 | **-0.116** | **-0.040** | **-0.110** | 0.004 | -0.004 | **-0.039** | **0.081** | **-0.009** | **-0.012** | |

In total 63,340 firm-quarter observations. All the variables, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$ are winsorized at 1st and 99th percentile. Bold correlations are the correlations that are significant at a 5 percent significance level.

*Continued.*

**Pearson Correlation Matrix**

**Panel B: Correlation of the subsample with Income-Decreasing Special Items**

| | $CE_q$ | $CE_{q-1}$ | $CE_{q-4}$ | $ATO_q$ | $ACCRUALS_q$ | $ACCRUALS_{q-1}$ | $ACCRUALS_{q-4}$ | $\Delta SALES_q$ | $NEG\_\Delta SALES$ | $UN\_CE_q$ | $\%DECRSI_q$ | $MEET_q$ | $BEAT_q$ | $FOURTH_q$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $CE_q$ | | | | | | | | | | | | | | |
| $CE_{q-1}$ | **0.971** | | | | | | | | | | | | | |
| $CE_{q-4}$ | **0.959** | **0.957** | | | | | | | | | | | | |
| $ATO_q$ | **-0.066** | **-0.068** | **-0.066** | | | | | | | | | | | |
| $ACCRUALS_q$ | **-0.807** | **-0.827** | **-0.812** | **0.077** | | | | | | | | | | |
| $ACCRUALS_{q-1}$ | **-0.792** | **-0.799** | **-0.797** | **0.077** | **0.710** | | | | | | | | | |
| $ACCRUALS_{q-4}$ | **-0.804** | **-0.818** | **-0.805** | **0.072** | **0.918** | **0.696** | | | | | | | | |
| $\Delta SALES_q$ | **-0.024** | **-0.038** | **-0.069** | **0.043** | **0.044** | **0.050** | **0.053** | | | | | | | |
| $NEG\_\Delta SALES_q$ | **0.045** | **0.037** | 0.008 | **0.066** | -0.006 | -0.005 | **-0.012** | **0.490** | | | | | | |
| $UN\_CE_q$ | **0.229** | **0.012** | **0.015** | 0.000 | 0.005 | **-0.017** | **-0.014** | 0.006 | -0.010 | | | | | |
| $\%DECRSI_q$ | **0.031** | **0.026** | **0.021** | **0.059** | **0.033** | **-0.021** | -0.004 | **0.050** | **0.141** | **0.019** | | | | |
| $MEET_q$ | **-0.028** | **-0.028** | **-0.028** | **0.014** | **0.023** | **0.031** | **0.023** | -0.002 | **0.045** | -0.010 | **-0.027** | | | |
| $BEAT_q$ | **0.034** | **0.024** | **0.026** | **0.062** | -0.006 | **-0.012** | **-0.013** | **0.063** | **0.066** | **0.036** | **-0.050** | **0.019** | | |
| $FOURTH_q$ | -0.002 | 0.005 | -0.002 | -0.006 | **-0.121** | **-0.039** | **-0.115** | 0.004 | -0.008 | **-0.036** | **0.092** | -0.008 | **-0.012** | |

In total 56,555 firm-quarter observations. All the variables, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$ are winsorized at 1st and 99th percentile. Bold correlations are the correlations that are significant at a 5 percent significance level.

*Continued.*

**Pearson Correlation Matrix**

**Panel C: Correlation of the subsample with Income-Increasing Special Items**

| | $CE_q$ | $CE_{q-1}$ | $CE_{q-4}$ | $ATO_q$ | $ACCRUALS_q$ | $ACCRUALS_{q-1}$ | $ACCRUALS_{q-4}$ | $\Delta SALES_q$ | $NEG\_\Delta SALES$ | $UN\_CE_q$ | $\%INCRSI_q$ | $MEET_q$ | $BEAT_q$ | $FOURTH_q$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $CE_q$ | | | | | | | | | | | | | | |
| $CE_{q-1}$ | **0.970** | | | | | | | | | | | | | |
| $CE_{q-4}$ | **0.961** | **0.957** | | | | | | | | | | | | |
| $ATO_q$ | **-0.069** | **-0.071** | **-0.070** | | | | | | | | | | | |
| $ACCRUALS_q$ | **-0.810** | **-0.844** | **-0.812** | **0.075** | | | | | | | | | | |
| $ACCRUALS_{q-1}$ | **-0.773** | **-0.788** | **-0.765** | **0.075** | **0.722** | | | | | | | | | |
| $ACCRUALS_{q-4}$ | **-0.808** | **-0.837** | **-0.804** | **0.074** | **0.923** | **0.696** | | | | | | | | |
| $\Delta SALES_q$ | 0.002 | -0.011 | **-0.055** | **0.060** | 0.019 | **0.032** | 0.020 | | | | | | | |
| $NEG\_\Delta SALES_q$ | **0.059** | **0.046** | 0.009 | **0.070** | -0.026 | -0.009 | -0.028 | **0.532** | | | | | | |
| $UN\_CE_q$ | **0.235** | 0.010 | 0.019 | -0.006 | 0.028 | -0.027 | **0.037** | **0.037** | **0.043** | | | | | |
| $\%INCRSI_q$ | **0.051** | **0.049** | **0.043** | **0.107** | **-0.084** | **-0.036** | **-0.045** | 0.012 | **0.162** | 0.006 | | | | |
| $MEET_q$ | 0.018 | 0.010 | 0.016 | **0.035** | -0.005 | **-0.031** | -0.019 | **0.050** | **0.064** | **0.035** | 0.018 | | | |
| $BEAT_q$ | **-0.029** | -0.026 | -0.025 | **0.035** | **0.034** | 0.026 | **0.035** | 0.021 | **0.083** | -0.017 | **0.035** | -0.017 | | |
| $FOURTH_q$ | -0.013 | 0.000 | -0.017 | 0.011 | **-0.105** | **-0.038** | **-0.102** | 0.014 | 0.023 | **-0.057** | **-0.031** | **-0.031** | -0.011 | |

In total 5,197 firm-quarter observations. All the variables, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$ are winsorized at 1st and 99th percentile. Bold correlations are the correlations that are significant at a 5 percent significance level.

## 6.2 Statistical tests and results

In the following sections I explain the results of the different regressions I use to accept or to reject the hypotheses and to answer my research question. First I run the regressions of Fan et al. (2010) and McVay (2006) to get insight in the differences between the models. Thereafter I run three regressions including $MEET_q$ and $BEAT_q$ and special items as a percentage of the sales ($\%SI_q$; $\%INCRSI_q$; $\%DECRSI_q$). Furthermore, I run three regressions to control for the fourth fiscal quarter ($FOURTH_q$) including special items ($\%SI_q$; $\%INCRSI_q$; $\%DECRSI_q$). Finally, I run three regressions with both $MEET_q$ and $BEAT_q$ and the dummy variable of the fourth fiscal quarter ($FOURTH_q$) and special items ($\%SI_q$; $\%INCRSI_q$; $\%DECRSI_q$).

### 6.2.1 The unexpected core earnings regressions of the Fan et al. (2010) model and the McVay (2006) model

First I regress regression models (1A) and (1B) before I regress the regressions related to hypothesis 1 and 2. First, I regress the Fan et al. (2010) model without the three-month market return, and the residuals of this model, unexpected core earnings, as a regression of total special items. Thereafter, I regress the McVay (2006) model using quarterly data to compare the outcomes with the adjusted Fan et al. (2010) model. The regression output is presented in Tables 6 and 7. The Fan et al. (2010) model of expected core earnings ($E\ (CE_q)$) has a higher adjusted R-squared than the model of McVay (2006). The adjusted R-squared of the Fan et al. (2010) model of unexpected core earnings ($UN\_CE_q$) is lower than the adjusted R-squared of the model of McVay (2006). This implies that the regression of expected core earnings ($E(CE_q)$) of Fan et al. (2010) has more explanatory power than the regression of McVay (2006). The regression of unexpected core earnings ($UN\_CE_q$) of Fan et al. (2010) has less explanatory power than the regression of McVay (2006). The association between unexpected core earnings and special items is more explained by the McVay (2006) model than by the Fan et al. (2010) model. A possible explanation of this outcome is the use of quarterly data instead of annual data in the McVay (2006) model. Another possible explanation can be that the residuals, in other words the unexpected core earnings of McVay (2006) model are larger than in Fan et al. (2010) model. This can explain the higher adjusted R-squared of the Fan et al. (2010) model for the regression of expected core earnings. So, the

model of Fan et al. (2010) is inferior in describing the relation between the special items and the unexpected core earnings.

**Table 6**

**Regression of the Expected Core Earnings using two different models.**

Fan et al. (2010) (1B):
$CE_q=\beta_0+\beta_1 CE_{q-4}+\beta_2 CE_{q-1}+\beta_3 ATO_q+\beta_4 ACCRUALS_{q-4}+\beta_5 ACCRUALS_{q-1}+\beta_6 \Delta SALES_q+\beta_7 NEG\_\Delta SALES_q+\varepsilon_q$
McVay (2006) (1A):
$CE_q=\beta_0+\beta_1 CE_{q-4}+\beta_2 ATO_q+\beta_4 ACCRUALS_{q-4}+\beta_5 ACCRUALS_q+\beta_6 \Delta SALES_q+\beta_7 NEG\_\Delta SALES_q+\varepsilon_q$

| $CE_q$ | Expected Sign | Fan et al. (2010) model without returns | McVay (2006) model with quarterly data |
|---|---|---|---|
| $CE_{q-1}$ | + | 0.578<br>(148.77)*** | |
| $CE_{q-4}$ | + | 0.376<br>(103.31)*** | 0.852<br>(356.15)*** |
| $ATO_q$ | - | -0.807<br>(-1.39) | -2.321<br>(-3.12)*** |
| $ACCRUALS_{q-1}$ | - | -0.011<br>(-8.77)*** | |
| $ACCRUALS_{q-4}$ | - | -0.008<br>(-6.23)*** | -0.050<br>(-20.58)*** |
| $ACCRUALS_q$ | + | | -0.025<br>(-10.12)*** |
| $\Delta SALES_q$ | + | 19.600<br>(13.45)*** | 28.784<br>(15.46)*** |
| $NEG\_\Delta SALES_q$ | + | 84.865<br>(16.82)*** | 160.755<br>(25.13)*** |
| *Intercept* | | 8.075<br>(10.04)*** | 17.325<br>(16.84)*** |
| Adjusted R-squared | | 95.40% | 92.36% |
| Number of Observations | | 39,712 | 39,973 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***. The expected signs are based on the prior literature of McVay (2006) and Fan et al. (2010).

Table 7 presents the regression output of unexpected core earnings ($UN\_CE_q$) regressions (2) and (3). Special items as a percentage of sales have a negative association with the unexpected core earnings ($UN\_CE_q$) in both the Fan et al. (2010) model and the McVay (2006) model. This implies that special items decrease unexpected core earnings ($UN\_CE_q$). A decrease in unexpected core earnings ($UN\_CE_q$) means that the difference between reported core earnings ($CE_q$) and expected core earnings ($E(CE_q)$) become smaller. The Fan et al.

(2010) model shows more classification shifting than the McVay (2006) model. The coefficient of special items is less negative in the Fan et al. (2010) model than in the McVay (2006) model.

**Table 7**

**Regression of the Unexpected Core Earnings on Special Items as a Percentage of Sales using two different models**

Regression of the unexpected core earnings (3): $UN\_CE_q=\alpha_0+\alpha_1\%SI_q+\varepsilon_q$

| $UN\_CE_q$ | **Expected Sign** | **Fan et al. (2010) model without Returns** | **McVay (2006) model with quarterly data** |
|---|---|---|---|
| $\%SI_q$ | + | -14.707 | -27.368 |
| | | (-3.57)*** | (-5.20)*** |
| *Intercept* | | 0.458 | 0.605 |
| | | (0.90) | (0.92) |
| Adjusted R-squared | | 0.03% | 0.07% |
| Number of Observations | | 39,317 | 39,574 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***. The expected signs are based on the prior literature of McVay (2006) and Fan et al. (2010).

#### *6.2.1.1 OLS assumptions*

First I test if the regressions of the unexpected core earnings ($UN\_CE_q$) of Fan et al. (2010) and McVay (2006) fulfill the Ordinary Least Squares (OLS) assumptions. I test if the residuals are normally distributed, if the residuals are homoscedastic, if there is no multicollinearity between independent variables, if there is no autocorrelation between residuals and lagged residuals and if the model is correctly specified (Brooks, 2014). The results to the additional tests related to the OLS assumptions are reported in Appendix 2 to this thesis.

*Fan et al. (2010)*

To test if residuals are normally distributed I use the standardized normal probability plot. Aside from this plot, I use the Shapiro-Wilk test to test for normality. The Shapiro-Wilk test has a null hypothesis of normal distributed residuals (Brooks, 2014). The output of the standardized normal probability plot shows that the residuals are not normally distributed. The

plotted residuals deviate from the diagonal that represents the normal distribution of the residuals. The output of the Shapiro-Wilk test also shows that the residuals are not normally distributed. The related P-value is 0.000 and the null hypothesis is rejected. To assess if the residuals are homoscedastic I use a scatterplot of residuals to fitted values and the White test. The White test has a null hypothesis of homoscedasticity (Brooks, 2014). The scatter plot shows the residuals are around the null line with some outliers. The output of the White test shows that the residuals are homoscedastic. The null hypothesis of the White test cannot be rejected, because the P-value is 0.2816 and therefore not significant. To test multicollinearity between independent variables I use the variance inflation factor (VIF value). The VIF values should be lower than 10, otherwise there is multicollinearity between the independent variables (Brooks, 2014). The average VIF value is 1.0, therefore there is no multicollinearity between the independent variables. A scatterplot of residuals and lagged residuals and the correlation between residuals and lagged residuals is used to determine autocorrelation of residuals (Brooks, 2014). Both tests show no autocorrelation between residuals and lagged residuals. The linktest is used to test if the model is correctly specified. The output of the linktest shows if there is model misspecification or not. This test creates two new variables as predictors: *_hat* and *_hatsq*. *_hat* is the variable of prediction and *_hatsq* is the variable of squared prediction. *_hat* should be significant and *_hatsq* should not be significant if the model is correctly specified (Brooks, 2014). Model misspecification implies omitted correlated variables or too many variables included in the model. The output of the linktest shows that there are omitted correlated variables, the *_hatsq* is significant. This is not a problem because this regression is not the full regression I use to answer the research question.

*McVay (2006)*

The normal probability plot shows that the residuals are not normally distributed. The residuals deviate from the diagonal of the normal distribution. The Shapiro-Wilk test gives the same outcome as the normal probability plot. Therefore, the residuals are not normally distributed. The scatterplot of residuals and fitted values is similar to the scatterplot of the Fan et al. (2010) regression. The residuals are around the null line, and the output of the Shapiro-Wilk test shows that the residuals are homoscedastic. Using the VIF values I assess the multicollinearity between independent variables. The average VIF value is 1.0 and below 10, therefore there is no multicollinearity between independent variables. To asses autocorrelation between residuals and lagged residuals I use a scatterplot and the correlation between those

variables. Those two tests show no autocorrelation between residuals and lagged residuals. The linktest is used to test for model misspecification. This test shows that there are omitted correlated variables, because the *_hatsq* is significant.

### 6.2.2 Hypothesis 1

Table 8 presents the output of the regression models (4), (5) and (6) with the dummy variables $MEET_q$ and $BEAT_q$.

*Total Special Items*

First I run the regression with the total special items as a percentage of sales ($\%SI_q$). I do not use control variables in my regression, because I use the same type of regression model as Fan et al. (2010), and they do not include control variables in their models. Instead of control variables I use interaction variables between meeting and beating the earnings forecasts and special items. With the help of interaction variables I try to indicate an effect of meeting or beating financial analysts' earnings forecasts with the help of special items. In other words if companies use classification shifting to meet or beat the earnings forecasts. The interaction variable of $MEET_q$ and special items ($\%SI_q$) has a negative coefficient of -17.499 and is not significant. Companies do not use special items to meet financial analysts' earnings forecasts and this association is not significant, but it lowers unexpected core earnings. The coefficient of beating ($BEAT_q$) financial analysts' earnings forecasts and special items ($\%SI_q$) is negative with a value of -19.550. This indicates a negative and significant association. Beating earnings forecasts has a significant effect on unexpected core earnings ($UN\_CE_q$) in combination with the special items ($\%SI_q$). The $MEET_q$ and $BEAT_q$ variables have both a significant association with the unexpected core earnings ($UN\_CE_q$). The coefficients are -2.573 and 7.584 respectively.

*Income-Decreasing Special Items*

The regression with income-decreasing special items ($\%DECRSI_q$) shows the same results as the regression with total special items ($\%SI_q$). Companies use income-decreasing special items to decrease core earnings. The coefficients of the regression with total special items are less negative for the interaction variable of meeting earnings forecasts. The interaction variable of meeting ($MEET_q$) financial analysts' earnings forecasts and income-decreasing special items ($\%DECRSI_q$) has a negative coefficient of -18.671 and is not

significant. This indicates a negative non-significant association between unexpected core earnings and income-decreasing special items and meeting earnings forecasts. The interaction variable of beating ($BEAT_q$) financial analysts' earnings forecasts and income-decreasing special items is also negative with a value of -19.418. This coefficient is significant. This results in a negative and significant association with unexpected core earnings. $MEET_q$ and $BEAT_q$ have both a significant association with unexpected core earnings. The coefficients are -2.289 and 7.575 respectively.

*Income-Increasing Special Items*

The regression output of the regression with income-increasing special items ($\%INCRSI_q$) shows that the interaction variables are not significant. The coefficient of the interaction variable of meeting ($MEET_q$) financial analysts' earnings forecasts and income-increasing special items ($\%INCRSI_q$) is positive and not significant. The coefficient is 30.041, indicating a positive insignificant association between this interaction variable and unexpected core earnings. Unexpected core earnings increase when companies use income-increasing special items to improve core earnings. The difference between reported core earnings ($CE_q$) and expected core earnings ($E(CE_q)$) increase. This is called classification shifting. The coefficient of the interaction variable of beating ($BEAT_q$) financial analysts' earnings forecast and income-increasing special items ($\%INCRSI_q$) is positive and not significant. The coefficient is 22.591, this implies that when companies use income-increasing special items to beat earnings forecasts and that unexpected core earnings increase. $BEAT_q$ has a significant association with the unexpected core earnings. The coefficient is 8.529.

*Robust Standard Errors*

To control for non-normality and heteroscedasticity of the residuals I run the same three regressions as above with robust standard errors. The above regression does not fulfill these two OLS assumptions, except for the homoscedasticity of the regression with income-increasing special items. The regression output of the coefficients is the same as above, only the significance of the coefficients changes a bit by robust standard errors. The same conclusion can be made from these regressions. The OLS assumptions are tested in the following section.

**Table 8**

**Regression of the Expected Core Earnings on Special Items as a Percentage of Sales using interaction variables between the meet and the beat variables and the three types of special items.**

**Panel A: Without Robust Standard Errors.**

Total Special Items (4):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 MEET_q*\%SI_q+\delta_4 BEAT_q*\%SI_q+\mu_q$
Income-Decreasing Special Items (5):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 MEET_q*\%DECRSI_q+\delta_4 BEAT_q*\%DECRSI_q+\mu_q$
Income-Increasing Special Items (6):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 MEET_q*\%INCRSI_q+\delta_4 BEAT_q*\%INCRSI_q+\mu_q$

| $UN\_CE_q$ | Expected Sign | Total Special Items | Income-Decreasing Special Items | Income-Increasing Special Items |
|---|---|---|---|---|
| $MEET_q$ | + | -2.573<br>(-1.96)** | -2.289<br>(-1.68)* | -3.962<br>(-0.65) |
| $BEAT_q$ | + | 7.584<br>(7.51)*** | 7.575<br>(7.23)*** | 8.529<br>(1.98)** |
| $MEET_q*\%SI_q$ | + | -17.499<br>(-1.48) | | |
| $BEAT_q*\%SI_q$ | + | -19.550<br>(-2.61)*** | | |
| $MEET_q*\%DECRSI_q$ | + | | -18.671<br>(-1.58) | |
| $BEAT_q*\%DECRSI_q$ | + | | -19.418<br>(-2.58)*** | |
| $MEET_q*\%INCRSI_q$ | + | | | 30.041<br>(0.23) |
| $BEAT_q*\%INCRSI_q$ | + | | | 22.591<br>(0.33) |
| *Intercept* | | -2.903<br>(-3.95)*** | -3.085<br>(-4.09)*** | -0.895<br>(-0.30) |
| Adjusted R-squared | | 0.17% | 0.17% | 0.04% |
| Number of Observations | | 39.317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***. The expected signs of the variables are based on prior literature.

*Continued.*

**Panel B: With Robust Standard Errors**

Total Special Items (4):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 MEET_q*\%SI_q+\delta_4 BEAT_q*\%SI_q+\mu_q$
Income-Decreasing Special Items (5):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 MEET_q*\%DECRSI_q+\delta_4 BEAT_q*\%DECRSI_q+\mu_q$
Income-Increasing Special Items (6):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 MEET_q*\%INCRSI_q+\delta_4 BEAT_q*\%INCRSI_q+\mu_q$

| $UN\_CE_q$ | Expected Sign | Total Special Items | Income-Decreasing Special Items | Income-Increasing Special Items |
|---|---|---|---|---|
| $MEET_q$ | + | -2.573<br>(-2.33)** | -2.289<br>(-1.97)** | -3.962<br>(-0.82) |
| $BEAT_q$ | + | 7.584<br>(7.60)*** | 7.575<br>(7.33)*** | 8.529<br>(2.01)** |
| $MEET_q*\%SI_q$ | + | -17.499<br>(-0.68) | | |
| $BEAT_q*\%SI_q$ | + | -19.550<br>(-2.76)*** | | |
| $MEET_q*\%DECRSI_q$ | + | | -18.671<br>(-0.71) | |
| $BEAT_q*\%DECRSI_q$ | + | | -19.418<br>(-2.66)*** | |
| $MEET_q*\%INCRSI_q$ | + | | | 30.041<br>(0.50) |
| $BEAT_q*\%INCRSI_q$ | + | | | 22.591<br>(0.49) |
| *Intercept* | | -2.903<br>(-3.70)*** | -3.085<br>(-3.90)*** | -0.895<br>(-0.25) |
| R-squared | | 0.18% | 0.18% | 0.15% |
| Number of Observations | | 39.317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***. The expected signs of the variables are based on prior literature.

#### 6.2.2.1 OLS assumptions

The output of the tests of the OLS assumptions related to the first hypothesis can be found in Appendix 3 to this thesis.

*Total Special Items*

To test if the residuals are normal distributed I use the normal probability plot and the Shapiro-Wilk test. Both tests show that the residuals are not normally distributed. The residuals should be homoscedastic and this is tested by using a scatterplot and the White test. The scatterplot of residuals and fitted values is similar to the scatterplot of the Fan et al. (2010) model, but the White test shows heteroscedastic residuals. Both the non-normality and the heteroscedasticity of the residuals mean this model is not the best unbiased linear estimator. To solve this problem, I run the same regression using robust standard errors. Robust standard errors control for non-normality and heteroscedasticity of residuals in the model. Multicollinearity is tested by using the VIF values and the average values is 1.1, this is lower than 10 and indicates no multicollinearity. Autocorrelation is tested by using a scatterplot of residuals and lagged residuals and the correlation between these two variables. These two tests result in no autocorrelation of residuals. I use the linktest for model specification. This test shows that there are no model specification errors. The regression model predicts what it should predict and there are no omitted correlated variables. The *_hat* and *_hatsq* are significant and insignificant, implying correct model specification.

*Income-Decreasing Special Items*

Both the normal probability plot and the Shapiro-Wilk test show that the residuals are not normally distributed. This is the same as the outcomes of the model with total special items. The residuals of this regression model are heteroscedastic. This is concluded from both the scatterplot of residuals and fitted values and the White test. This problem can be solved by using robust standard errors. Multicollinearity is tested by using VIF values. The average VIF value is 1.1 and this is lower than 10. This implies no multicollinearity. The scatterplot of residuals and lagged residuals and the correlation between residuals and lagged residuals shows no autocorrelation. The linktest shows no model specification errors, the model is correctly specified.

*Income-Increasing Special Items*

The residuals are not normally distributed. Both the normal probability plot and the Shapiro-Wilk test show this. This is the same result as the results as regressions with total special items and income-decreasing special items. The white test and the scatterplot of residuals and fitted values show that the residuals are homoscedastic. I use robust standard errors to solve the non-normality problem. The VIF values show no autocorrelation between independent variables and the average VIF value is 1.4. Both the scatterplot of residuals and lagged residuals and the correlation between residuals and lagged residuals show no autocorrelation. The linktest shows that this regression has variables that should not be included, *_hat* is not significant. A possible reason of this model misspecification can be caused by the insignificant coefficients of the related regression model or the amount of observations.

### 6.2.3 Hypothesis 2

Table 9 presents the regression output of the regressions (7), (8) and (9) with the dummy variable of the fourth fiscal quarter.

*Total Special Items*

Companies use special items ($\%SI_q$) more in the fourth fiscal quarter (*FOURTH*) to decrease unexpected core earnings ($UN\_CE_q$). The coefficient of the interaction variable of the fourth fiscal quarter and total special items as a percentage of the sales is -19.541 and significant. This coefficient indicates that companies do not misclassify special items to increase the unexpected core earnings. The fourth fiscal quarter ($FOURTH_q$) has a negative association with unexpected core earnings. The coefficient is -8.142 and is significant. Companies' management uses classification shifting more in the interim fiscal quarters than in the fourth fiscal quarter.

*Income-Decreasing Special Items*

Companies' management uses income-decreasing special items ($\%DECRSIq$) to decrease unexpected core earnings in the fourth fiscal quarter ($FOURTH_q$). The coefficient of the interaction term of income-decreasing special items ($\%DECRSI_q$) and the fourth fiscal quarter ($FOURTH_q$) is -20.844 and significant. This implies a significant and negative association between these two variables. The fourth fiscal quarter ($FOURTH_q$) has a negative

association with unexpected core earnings ($UN\_CE_q$) and the coefficient has a value of -7.326 and is significant. The dummy variable of the fourth fiscal quarter lowers unexpected core earnings.

*Income-Increasing Special Items*

Companies use income-increasing special items ($\%INCRSI_q$) to increase unexpected core earnings ($UN\_CE_q$). This implies that the expected core earnings ($E(CE_q)$) are lower than the reported core earnings ($CE_q$). The coefficient of the interaction variable of the fourth fiscal quarter ($FOURTH_q$) and income-increasing special items ($\%INCRSI_q$) is 32.838 and not significant. This implies that the association between the interaction variable and unexpected core earnings is positive but not significant. The fourth fiscal quarter has a negative significant effect on unexpected core earnings, -13.890. Unexpected core earnings are lower in the fourth fiscal quarter than during the interim fiscal quarters.

*Robust Standard Errors*

The regressions with robust standard errors have the same coefficients as the regressions without robust standard errors. The significance of the coefficients is lower than the significance of the coefficients in the original regressions. The regressions with robust standard errors have less significant prediction power than the regressions without robust standard errors.

**Table 9**

**Regression of the Expected Core Earnings on Special Items as a Percentage of Sales using an interaction variable of the fourth fiscal quarter and the types of special items.**

**Panel A: Without Robust Standard Errors.**

Total Special Items (7):
$UN\_CE_q=\delta_0+\delta_1 FOURTH_q+\delta_2 FOURTH_q*\%SI_q+\mu_q$
Income-Decreasing Special Items (8):
$UN\_CE_q=\delta_0+\delta_1 FOURTH_q+\delta_2 FOURTH_q*\%DECRSI_q+\mu_q$
Income-Increasing Special Items (9):
$UN\_CE_q=\delta_0+\delta_1 FOURTH_q+\delta_2 FOURTH_q*\%INCRSI_q+\mu_q$

| $UN\_CE_q$ | | **Total Special Items** | **Income-Decreasing Special Items** | **Income-Increasing Special Items** |
|---|---|---|---|---|
| $FOURTH_q$ | + | -8.142<br>(-6.61)*** | -7.326<br>(-5.69)*** | -13.890<br>(-2.68)*** |
| $FOURTH_q*\%SI_q$ | + | -19.541<br>(-3.14)*** | | |
| $FOURTHq*\%DECRSIq$ | + | | -20.844<br>(-3.35)*** | |
| $FOURTH_q*\%INCRSI_q$ | + | | | 32.838<br>(0.36) |
| *Intercept* | | 2.117<br>(3.73)*** | 1.725<br>(2.95)*** | 6.316<br>(2.84)*** |
| Adjusted R-squared | | 0.17% | 0.16% | 0.27% |
| Number of Observations | | 39,317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***. The expected signs of the variables are based on prior literature.

*Continued.*

**Panel B: With Robust Standard Errors.**

Total Special Items (7):
$UN\_CE_q=\delta_0+\delta_1 FOURTH_q+\delta_2 FOURTH_q*\%SI_q+\mu_q$
Income-Decreasing Special Items (8):
$UN\_CE_q=\delta_0+\delta_1 FOURTH_q+\delta_2 FOURTH_q*\%DECRSI_q+\mu_q$
Income-Increasing Special Items (9):
$UN\_CE_q=\delta_0+\delta_1 FOURTH_q+\delta_2 FOURTH_q*\%INCRSI_q+\mu_q$

| $UN\_CE_q$ | | Total Special Items | Income-Decreasing Special Items | Income-Increasing Special Items |
|---|---|---|---|---|
| $FOURTH_q$ | + | -8.142<br>(-5.91)*** | -7.326<br>(-5.39)*** | -13.890<br>(-2.09)*** |
| $FOURTH_q*\%SI_q$ | + | -19.541<br>(-1.92)* | | |
| $FOURTHq*\%DECRSIq$ | + | | -20.844<br>(-2.03)** | |
| $FOURTH_q*\%INCRSI_q$ | + | | | 32.838<br>(0.39) |
| *Intercept* | | 2.117<br>(4.02)*** | 1.725<br>(3.11)*** | 6.316<br>(3.79)*** |
| R-squared | | 0.17% | 0.16% | 0.33% |
| Number of Observations | | 39,317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***. The expected signs of the variables are based on prior literature.

#### *6.2.3.1 OLS assumptions*

The output of the tests of the OLS assumptions of the second hypothesis can be found in Appendix 4 to this thesis.

*Total Special Items*

The normal probability plot and the Shapiro-Wilk test show that the residuals are not normally distributed. The null hypothesis of the Shapiro-Wilk test is rejected. The residuals of the regression are heteroscedastic. Both the output of the scatterplot of residuals and fitted values and the White test show that the residuals are heteroscedastic. To solve the problem of non-normality and heteroscedasticity is by using robust standard errors in the regression. There is no multicollinearity of the independent variables. The average VIF value is 1.1 and is lower than 10. The scatterplot of residuals and lagged residuals show no autocorrelation. The

correlation between those two variables gives the same conclusion. The linktest shows no misspecification of the regression model. The *_hat* shows no variables that should be excluded and the *_hatsq* shows no omitted correlated variables, the model is right specified.

*Income-Decreasing Special Items*

The Shapiro-Wilk test and the normal probability plot show that the residuals are not normally distributed. The White test and the scatterplot of residuals and fitted values show that the residuals are heteroscedastic. To solve the problem of non-normality and heteroscedasticity of residuals is done by using robust standard errors. The VIF values are below 10. The average VIF value is 1.1 and this implies no multicollinearity. Both the scatterplot and the correlation between residuals and lagged residuals show no autocorrelation. The linktest shows no model misspecification. All the correct variables are included in the regression model. This is assessed from the significance of the coefficients of *_hat* and *_hatsq*.

*Income-Increasing Special Items*

Both the normal probability plot and the Shapiro-Wilk test show that the residuals are not normally distributed. The residuals of this regression are also heteroscedastic. Both the scatterplot and the White test show this. I use robust standard errors to control for the non-normality and the heteroscedasticity. The VIF values are below 10. The average VIF value is 1.4. This indicates no multicollinearity of the independent variables. Both the scatterplot and the correlation between residuals and lagged residuals show no autocorrelation between these two variables. The link test shows no model misspecification. There are no variables that are included but not should be included and there are no omitted correlated variables. The significance of the coefficients of *_hat* and *_hatsq* show that the model has no misspecification errors.

### 6.2.4 Hypotheses 1 and 2 combined

Table 10 presents the regression output of the full regressions (10), (11) and (12).

*Total Special Items*

The regression with total special items as a percentage of sales ($\%SI_q$) and $MEET_q$ and $BEAT_q$ and fourth fiscal quarter ($FOURTH_q$) shows that companies do not use special items to meet and beat financial analysts' earnings forecasts in the fourth fiscal quarter. The coefficient of the interaction variable of $MEET_q$ and total special items ($\%SI_q$) is -13.738 and is not significant. The coefficient of the interaction variable of $BEAT_q$ and total special items ($\%SI_q$) is -10.964 and not significant. The coefficient of the interaction variable of fourth fiscal quarter ($FOURTH_q$) and total special items ($\%SI_q$) is -12.633 and significant. Both the interaction variables of $MEET_q$ and $BEAT_q$ are not significant, this implies that the fourth fiscal quarter is more important for companies to decrease unexpected core earnings with special items than using special items to meet or beat financial analysts' earnings forecasts. The coefficient of $MEET_q$ is -2.774 and significant. When companies meet the earnings forecasts, has this a negative effect on unexpected core earnings ($UN\_CE_q$). The coefficient of $BEAT_q$ is 7.314 and significant. Companies improve the reported core earnings ($CE_q$) to beat financial analysts' earnings forecasts. The coefficient of the fourth fiscal quarter ($FOURTH_q$) is -8.262 and is also significant. This results in lower unexpected core earnings. The overall effect is a decrease in unexpected core earnings, which indicates no classification shifting to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter. The effect of special items is not significant.

*Income-Decreasing Special Items*

The regression with income-decreasing special items ($\%DECRSI_q$) show that companies do not use income-decreasing special items to increase the unexpected core earnings ($UN\_CE_q$) to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter. The coefficient of interaction variable of $MEET_q$ and income-increasing special items ($\%DECRSI_q$) is -14.565 and is not significant. The coefficient of the interaction variable of $BEAT_q$ and income-decreasing special items ($\%DECRSI_q$) is -10.038 and is not significant. The coefficient of the interaction variable of the fourth fiscal quarter ($FOURTH_q$) and income-decreasing special items ($\%DECRSI_q$) is -14.278 and significant. Income-decreasing special items are used by companies' management more in the fourth fiscal quarter than in interim

fiscal quarters. $MEET_q$ has a negative and significant coefficient of -2.515. The coefficient of $BEAT_q$ is 7.233 and significant and the coefficient of the fourth fiscal quarter is -7.461 and significant. Companies' management lowers core earnings when they meet financial analysts' earnings forecasts and when it is the fourth fiscal quarter. When companies' management beat financial analysts' earnings forecasts they increase core earnings.

*Income-increasing Special Items*

The regression with income-increasing special items ($\%INCRSI_q$) shows that companies do not use these special items to increase unexpected core earnings ($UN\_CE_q$). The coefficient of the interaction variable of $MEET_q$ and income-increasing special items ($\%INCRSI_q$) is 23.469 and not significant. The coefficient of the interaction variable of $BEAT_q$ and income-increasing special items ($\%INCRSI_q$) is 13.950 and not significant. The coefficient of the interaction variable of the fourth fiscal quarter ($FOURTH_q$) and income-increasing special items ($\%INCRSI_q$) is 23.412 and not significant. Income-increasing special items have no significant association with the unexpected core earnings. $MEET_q$ has a coefficient of -4.269 and is significant. The coefficient of $BEAT_q$ is 8.172 and is significant and the coefficient of the fourth fiscal quarter is -14.107 and is significant. The dummy variables have a significant association with unexpected core earnings. When the companies meet financial analysts' earnings forecasts and it is the fourth fiscal quarter, lowers this unexpected core earnings and so the difference between reported core earnings ($CE_q$) and expected core earnings ($E(CE_q)$) decline. Beating financial analysts' earnings forecasts increases unexpected core earnings.

*Robust Standard Errors*

Because of the non-normality and the heteroscedasticity of the residuals, see next section, I run the same three regressions with robust standard errors. The coefficients are the same as in the normal regression. The significance of the coefficients change by using the robust standard errors. The coefficients are less significant than in the normal regression. The model has less significant prediction power with the robust standard errors than without the robust standard errors.

**Table 10**

**Regression of the Expected Core Earnings on Special Items as a Percentage of Sales using three types of special items and all control variables meet, beat and fourth.**

**Panel A: Without Robust Standard Errors**

Total Special Items (10):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 FOURTH_q+\delta_4 MEET_q*\%SI_q+\delta_5 BEAT_q*\%SI_q+\delta_6 FOURTH_q*\%SI_q+\mu_q$
Income-Decreasing Special Items (11):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 FOURTH_q+\delta_4 MEET_q*\%DECRSI_q+\delta_5 BEAT_q*\%DECRSI_q+\delta_6 FOURTH_q*\%DECRSI_q+\mu_q$
Income-Increasing Special Items (12):
$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 FOURTH_q+\delta_4 MEET_q*\%INCRSI_q+\delta_5 BEAT_q*\%INCRSI_q+\delta_6 FOURTH_q*\%INCRSI_q+\mu_q$

| $UN\_CE_q$ | Expected Sign | Total Special Items | Income-Decreasing Special Items | Income-Increasing Special Items |
|---|---|---|---|---|
| $MEET_q$ | + | -2.774 | -2.515 | -4.269 |
| | | (-2.11)** | (-1.85)* | (-0.70) |
| $BEAT_q$ | + | 7.314 | 7.233 | 8.172 |
| | | (7.22)*** | (6.87)*** | (1.87)* |
| $FOURTH_q$ | + | -8.262 | -7.461 | -14.107 |
| | | (-6.70)*** | (-5.79)*** | (-2.66)*** |
| $MEET_q*\%SI_q$ | + | -13.738 | | |
| | | (-1.15) | | |
| $BEAT_q*\%SI_q$ | + | -10.964 | | |
| | | (-1.36) | | |
| $FOURTH_q*\%SI_q$ | + | -12.633 | | |
| | | (-1.83)* | | |
| $MEET_q*\%DECRSI_q$ | + | | -14.565 | |
| | | | (-1.22) | |
| $BEAT_q*\%DECRSI_q$ | + | | -10.038 | |
| | | | (-1.24) | |
| $FOURTH_q*\%DECRSI_q$ | + | | -14.278 | |
| | | | (-2.07)** | |
| $MEET_q*\%INCRSI_q$ | + | | | 23.469 |
| | | | | (0.18) |
| $BEAT_q*\%INCRSI_q$ | + | | | 13.950 |
| | | | | (0.19) |
| $FOURTH_q*\%INCRSI_q$ | + | | | 23.412 |
| | | | | (0.24) |
| *Intercept* | | -0.835 | -1.174 | 2.979 |
| | | (-1.06) | (-1.46) | (0.94) |

| | | | |
|---|---|---|---|
| Adjusted R-squared | 0.31% | 0.29% | 0.31% |
| Number of Observations | 39,317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***. The expected signs of the variables are based on prior literature.

**Panel B: With Robust Standard Errors**

Total Special Items (10):

$$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 FOURTH_q+\delta_4 MEET_q*\%SI_q+\delta_5 BEAT_q*\%SI_q+\delta_6 FOURTH_q*\%SI_q+\mu_q$$

Income-Decreasing Special Items (11):

$$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 FOURTH_q+\delta_4 MEET_q*\%DECRSI_q+\delta_5 BEAT_q*\%DECRSI_q+\delta_6 FOURTH_q*\%DECRSI_q+\mu_q$$

Income-Increasing Special Items (12):

$$UN\_CE_q=\delta_0+\delta_1 MEET_q+\delta_2 BEAT_q+\delta_3 FOURTH_q+\delta_4 MEET_q*\%INCRSI_q+\delta_5 BEAT_q*\%INCRSI_q+\delta_6 FOURTH_q*\%INCRSI_q+\mu_q$$

| $UN\_CE_q$ | **Expected Sign** | **Total Special Items** | **Income-Decreasing Special Items** | **Income-Increasing Special Items** |
|---|---|---|---|---|
| $MEET_q$ | + | -2.774 | -2.515 | -4.269 |
| | | (-2.52)** | (-2.17)** | (-0.89) |
| $BEAT_q$ | + | 7.314 | 7.233 | 8.172 |
| | | (7.31)*** | (7.00)*** | (1.93)* |
| $FOURTH_q$ | + | -8.262 | -7.461 | -14.107 |
| | | (-6.00)*** | (-5.51)*** | (-2.11)** |
| $MEET_q*\%SI_q$ | + | -13.738 | | |
| | | (-0.55) | | |
| $BEAT_q*\%SI_q$ | + | -10.964 | | |
| | | (-1.64) | | |
| $FOURTH_q*\%SI_q$ | + | -12.633 | | |
| | | (-1.59) | | |
| $MEET_q*\%INCRSI_q$ | + | | -14.565 | |
| | | | (-0.57) | |
| $BEAT_q*\%INCRSI_q$ | + | | -10.038 | |
| | | | (-1.46) | |
| $FOURTH_q*\%INCRSI_q$ | + | | -14.278 | |
| | | | (-1.82)* | |

*Continued.*

| | | | | |
|---|---|---|---|---|
| $MEET_q$*%$DECRSI_q$ | + | | | 23.469 |
| | | | | (0.39) |
| $BEAT_q$*%$DECRSI_q$ | + | | | 13.950 |
| | | | | (0.27) |
| $FOURTH_q$*%$DECRSI_q$ | + | | | 23.412 |
| | | | | (0.25) |
| *Intercept* | | -0.835 | -1.174 | 2.979 |
| | | (-1.11) | (-1.51) | (1.04) |
| R-squared | | 0.32% | 0.31% | 0.48% |
| Number of Observations | | 39,317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***. The expected signs of the variables are based on prior literature.

#### *6.2.4.1 OLS assumptions*

The results of the tests of the OLS assumptions can be found in Appendix 5 to this thesis.

*Total Special Items*

The normal probability plot and the Shapiro-Wilk test show not normal distributed residuals in the regression. The null hypothesis of the Shapiro-Wilk test is rejected. The scatterplot of residuals and fitted values and the White test show that the residuals are heteroscedastic and the null hypothesis of the White test is rejected. A regression with robust standard errors solves the problems of non-normality and heteroscedasticity of residuals. The average VIF value is 1.2 and all the VIF values are below 10. This indicates there is no evidence of multicollinearity of variables. Both the scatterplot of residuals and lagged residuals and the correlation of residuals and lagged residuals show that the residuals are not autocorrelated. The linktest shows that the model is correctly specified. The coefficient of *_hat* is significant and the coefficient of *_hatsq* is insignificant.

*Income-Decreasing Special Items*

Both the normal probability plot and the Shapiro-Wilk test show that the residuals are not normally distributed. The residuals of the regression are heteroscedastic. Both the output of the scatterplot of residuals and fitted values and the White test give this result. To solve this problem I use robust standard errors in the regression. The VIF values are below 10. The average VIF value is 1.2. There is no multicollinearity between independent variables. The

residuals and lagged residuals are not autocorrelated. Both the scatterplot of residuals and lagged residuals and the correlation between residuals and lagged residuals show this. The output of the linktest shows that the regression model is correctly specified. The significance of *_hat* and *_hatsq* coefficients shows that the model is correctly specified.

*Income-Increasing Special Items*

The null hypothesis of the Shapiro-Wilk test is rejected which indicates that the residuals are not normally distributed. The normal probability plot also shows non normality of residuals. The White test and the scatterplot of residuals and fitted values show that the residuals are heteroscedastic. To solve the problem of non-normality and heteroscedasticity I use robust standard errors in the regression model. With an average VIF value of 1.5 no multicollinearity between the independent variables can be concluded. Both the scatterplot of residuals and lagged residuals and the correlation of residuals and lagged residuals show that the residuals are not autocorrelated. The significance of the output of the linktest shows that the model is correctly specified. The coefficients of *_hat* and *_hatsq* show that the model has no excess variables included and no correlated variables excluded.

## 6.3 Comparison with Fan et al. (2010)

The regression models I use are created with the help of the model of Fan et al. (2010). First of all I deleted the three-month market return from the regression of expected core earnings from the Fan et al. (2010) model. This can cause different regression outputs of the regression of unexpected core earnings. The coefficient of special items is negative and smaller than one in the model of Fan et al. (2010), whereas the coefficient of special items in my model is negative and larger than one. The adjusted R-squared is higher in the Fan et al. (2010) model. A possible reason of these differences is the difference in the length of the sample period. Another reason can be that my full sample includes financial analysts' earnings forecasts and the full sample of Fan et al. (2010) does not include financial analysts' earnings forecasts. This explains the difference in samples size between both full samples. The subsample of Fan et al. (2010) is more comparable with my final sample because the analysts' forecasts are included in this sample. The size of Fan et al. (2010) subsample and my full sample are comparable. This subsample consists of 67,980 firm-quarter observations, my full sample consists of 63,340 firm-quarter observations. The descriptive statistics of Fan et al. show that the core earnings of Fan et al. (2010) are smaller than the core earnings presented in

my descriptive statistics table (Table 4). The accruals mentioned in Table 4 are also higher than the accruals in Fan et al. (2010). The mean value of the percentage change in sales is lower in my model than in the model of Fan et al. (2010). The difference is approximately 4 percent. The coefficients in my model are also probably larger than the coefficients of Fan et al. (2010) because they probably divided all variables by sales. I did not divide the variables by sales, because it was not clear if Fan et al. (2010) do this. They do not mention this in the variable definition table. By not dividing the variables by the sales you can directly see the effect of special items on (unexpected) core earnings is. You do not have to multiply (unexpected) core earnings by sales to determine this effect. A reason why Fan et al. (2010) probably scaled the variables by sales is for the comparability of the coefficients between the different industries and companies. Another reason of different outcomes can be because of the difference in length of sample period. I use a sample period of 15 years and Fan et al. (2010) use a sample period of 20 years.

I include a variable to control for meeting financial analysts' earnings forecasts by companies' management. In the model of Fan et al. (2010) they include not only a variable of meeting but also not meeting earnings forecasts. Using a dummy variable that is 1 if the company meet the earnings forecast and otherwise 0 you can determine the effect of meeting and not meeting financial analysts' earnings forecasts. An interaction variable is created to control for the effect of special items on meeting earnings forecasts. The coefficients in my model are negative and not significant whereas the coefficients in the Fan et al. (2010) model are negative and significant. Next to the variable of meeting financial analysts' earnings forecast, I include a dummy variable of beating earnings forecasts. This variable is not included in the model of Fan et al. (2010). With the help of the variable of beating the earnings forecasts I determine if the companies use special items to beat financial analysts' earnings forecasts. The forecast error is positive and not equal to zero when companies beat earnings forecasts. The outcomes differ from Fan et al. (2010) because of other definitions of the variables to determine if companies meet earnings forecasts and if they beat earnings forecasts. Next to this I use a dummy variable for the fourth fiscal quarter instead of two different regressions. With the help of these variables I am able to determine if companies use special items to meet or beat earnings forecasts in the fourth fiscal quarter and if meeting and beating earnings forecasts in the fourth fiscal quarter has other reasons than special items. This is another way to determine if companies use special items to meet or beat earnings forecasts in the fourth fiscal quarter. Using this regression you can see the effect of the

different factors in one regression by using dummy variables and interaction variables between the dummy variables and special items.

The adjusted R-squares of my models are smaller than the adjusted R-squares of the Fan et al. (2010) model. This can be caused by the differences in specification of the models. The adjusted R-squares are comparable to the model of McVay (2006). This results in that the predictive power of the models I create is lower than the predictive power of the Fan et al (2010) models. The adjusted R-squared of the regression of expected core earnings is comparable to the R-squared of the same regression of McVay (2006), Fan et al. (2010) does not show regression output of the regression of expected core earnings. The adjusted R-squares of the regressions of unexpected core earnings are lower than Fan et al. (2010) models. The differences in the variables can probably explain this.

I split total special items into income-increasing and income-decreasing special items. By splitting special items into income-increasing and income-decreasing special items I am able to explain the difference in effect of the type of special items on unexpected core earnings, and therefore on classification shifting. The results show that total special items and income-decreasing special items are used to meet and beat financial analysts' earnings forecasts, by lowering unexpected core earnings. Income-increasing special items are not used to improve the core earnings to meet or beat earnings forecasts in the fourth fiscal quarter. The smaller sample of companies with income-increasing special items can cause this difference in classification shifting. Companies present income-decreasing special items more often than income-increasing special items in the financial statements.

## 6.4 Summary

Companies' management does not use classification shifting to meet or beat financial analysts' earnings forecasts. Income-decreasing special items are used more by companies' management to beat the earnings forecasts than total special items. Companies use total special items more in the fourth fiscal quarter than income-decreasing special items. Income-decreasing special items are used more in interim fiscal quarters. The first hypothesis can only be accepted regarding beating the earnings forecasts, because the interaction between meeting earnings forecasts and special items is not significant. When the companies' management meets earnings forecasts unexpected core earnings decreases, this implies that the reported core earnings also decreases. The second hypothesis is accepted for the regression with the

total special items. The coefficient of the interaction variable between the fourth fiscal quarter and total special items are less negative than the coefficient of income-decreasing special items. This is probably because of the effect of income-increasing special items in total special items. Companies' management uses classification shifting more often in the fourth fiscal quarter than in interim fiscal quarters. The interaction between the fourth fiscal quarter and the (income-decreasing) special items decreases unexpected core earnings and the fourth fiscal quarter has a negative effect on unexpected core earnings. Companies' management uses special items to lower unexpected core earnings to beat financial analysts' earnings forecasts in the fourth fiscal quarter.

# 7 Conclusion

*Do companies use special items to improve the core earnings to meet or beat the financial analysts' earnings forecasts in the fourth fiscal quarter?* Companies with income-decreasing special items do not use these special items to meet or beat earnings forecasts of financial analysts in the fourth fiscal quarter. These companies do not need to use special items to improve the core earnings, because they already meet financial analysts' earnings forecasts. In this case the income-decreasing special items lower the unexpected core earnings, which indicates no classification shifting. Companies with income-increasing special items use these special items to increase unexpected core earnings to meet or beat earnings forecasts. Management of companies with income-increasing special items have a reason to use these special items; they want to improve core earnings and meet the earnings forecasts. The relation between the interaction variables and unexpected core earnings is unfortunately not significant. Income-increasing special items have an effect on the output of the sample with total special items. The regression output of the sample with total special items shows that companies' management uses slightly more classification shifting than the sample with income-decreasing special items. Companies' management classification shifts more using total special items in the fourth fiscal quarter than companies using income-decreasing special items.

This thesis elaborates on prior literature about companies' management using special items for classification shifting. Prior literature like McVay (2006) and Fan et al. (2010) use only income-decreasing special items to study the effect of special items on core earnings. Using total special items, income-decreasing special items and income-increasing special items, I can assess the effect of total special items to either income-decreasing special items or income-increasing special items. I use different variables to control for the effect of meeting or beating financial analysts' earnings forecasts by companies' management and if companies' management uses classification shifting more in the fourth fiscal quarter than in interim fiscal quarters.

Companies' management can use special items for different reasons. They can use special items to meet financial analysts' earnings forecasts by improving core earnings (Lin et al., 2006). From my findings I conclude than companies' management does not use special items to meet or beat financial analysts' earnings forecasts in the fourth fiscal quarter. But

income-decreasing special items are more used to classification shift to beat financial analysts' earnings forecasts than total special items.

This research can be of influence on the regulations regarding earnings management and non-GAAP performance measures. The SEC can be stricter on identifying different types of earnings management and on the publication of non-GAAP performance measures. The way that special items are used gives also more insight what companies' management does with special items. Investors get an idea about the different ways companies' management uses special items and what effect special items have on meeting and beating financial analysts' earnings forecasts and if classification shifting is used more in the fourth fiscal quarter or not. Financial analysts' earnings forecasts can also be biased by classification shifting. Biased earnings forecasts also influence the investing behavior of investors.

Alternative explanations of my findings can be due to the use of other metrics of the variables of meeting and beating financial analysts' earnings forecasts, the variable of the fourth fiscal quarter and the uneven distribution of observations between companies with income-increasing special items and companies with income-decreasing special items. Fan et al. (2010) uses two variables to determine if companies' management uses special items to meet financial analysts' earnings forecasts or not. This can be a reason for the differences between the results of this thesis and the results of Fan et al. (2010). Aside from using other metrics for these variables, the definition of the variables to determine core earnings is also different from Fan et al. (2010). Fan et al. (2010) probably divided the variables by sales, but I look at the real differences between core earnings and expected core earnings.

The variables of meeting and beating earnings forecasts may be too similar. This can have an effect on the regression output if companies' management uses special items to meet or beat financial analysts' earnings forecasts. My findings also suggest that companies' management does not only use special items but also other line items to improve core earnings. From the regression output in Tables 8, 9 and 10 can be concluded that the companies improve unexpected core earnings to beat financial analysts' earnings forecasts. This result implies that other line items than special items are involved in improving core earnings to beat financial analysts' earnings forecasts.

A limitation of this thesis is the identification of line items as special items that can be misclassified by companies' management. I only make the distinction between whether a special item is income-increasing or income-decreasing. The reported special items can be a combination of both income-increasing and income-decreasing special items. The value of total special items gives only an indication of whether a company has larger income-increasing or income-decreasing special items. You do not know what kind of special item is more important for the company to improve core earnings. By using an adjusted version of the Fan et al. (2010), removing the three-month market returns, it is difficult to determine the effect of the returns on meeting or beating the earnings forecasts or reversed effects. Another limitation of this thesis is that I do not divide all the variables by firm-quarter sales. This results in higher coefficients in the regressions than in the regressions by Fan et al. (2010). These limitations result in opportunities for future research.

Future research can elaborate on this topic in several ways. First, researchers can investigate line items that are used as special items by companies' management. Different line items can be used for different reasons to improve core earnings. Companies' management maybe uses other line items to improve core earnings when they want to meet earnings forecasts than when they want to earn higher stock returns. Another possibility for future research can be about the relationship between classification shifting and the position of line items in an annual report. Are special items placed as a line item in the income statement or are they placed in the notes to the income statement? When special items are not mentioned in the income statement or in the notes to the income statement, they can also be mentioned in other comprehensive income. Companies use the statement of other comprehensive income to show minor line items that are not included in the income statement. These line items can be used by companies to classification shift and improve core earnings. A new model can also be created for studying if companies meet or beat financial analysts' earnings forecasts that better fits than by replacing variables. Different regressions can be used for meeting and beating earnings forecasts. Including control variables, like size of companies, can also result in different outcomes of this research. Aside from controlling for size, you can also make a distinction between the different industries that exists. By including industry dummies you can determine which effect an industry has on classification shifting and the differences in classification shifting between the different industries. At last, companies' characteristics can also be used as control variables. You can for example think of a dummy variable representing growth firms and a dummy that represents the financial health of a company.

# 8 References

Abdalla, A., and C. Clubb. 2015. Classification Shifting, Abnormal Earnings Dynamic, and Stock Valuation. *Working Paper*.

Abernathy, J. L., B. Beyer, and E. T. Rapley. 2014. Earnings Management Constraints and Classification Shifting. *Journal of Business Finance & Accounting* 41 (5): 600-626.

Alfonso, E., C. S. A. Cheng, and S. Pan. 2015. Income Classification Shifting and Mispricing of Core Earnings. *Journal of Accounting, Auditing & Finance* 30 (2): 1-32.

Athanasakou, V., N. Strong, and M. Walker. 2009. Earnings management or forecast guidance to meet analyst expectations? *Accounting and Business Research* 39 (1): 3-35.

Athanasakou, V., N. Strong, and M. Walker. 2010. The association between classificatory and inter-temporal smoothing: Evidence from the UK's FRS3. *The International Journal of Accounting* 45 (2): 224-257.

Bartov, E., D. Givoly, and C. Hayn. 2002. The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33 (2): 173-204.

Bartov, E., and P. S. Mohanram. 2014. Does Income Statement Placement Matter to Investors? The Case of Gains/Losses from Early Debt Extinguishment. *The Accounting Review* 89 (6): 2021-2055.

Barua, A., and W. M. Cready. 2008. Classification Shifting and Special Items: Evidence of Earnings Management or a Research Design Consequence. *Working Paper*.

Barua, A., S. Lin, and A. M. Sbaraglia. 2010. Earnings Management Using Discontinued Operations. *The Accounting Review* 85 (5): 1485-1509.

Behn, B. K., G. Gotti, D. Herrmann, and T. Kang. 2013. Classification Shifting in an International Setting: Investor Protection and Financial Analysts Monitoring. *Journal of International Accounting Research* 12 (2): 27-50.

Bowen, R. M., A. K. Davis, D. A. Matsumoto. 2005. Emphasis on Pro Forma versus GAAP Earnings in Quarterly Press Releases: Determinants, SEC Intervention, and Market Reactions. *The Accounting Review* 80 (4): 1011-1038.

Brooks, C. 2014. *Introductory Econometrics for Finance:* 3rd ed. Cambridge University Press.

Cain, C. A., K. Kolev, and S. McVay. 2014. Qualifying Special Items. *Working Paper*.

Choi, Y. S., and S. Young. 2015. Transitory earnings components and the two faces of non-generally accepted accounting principles earnings. *Accounting and Finance* 55 (2015): 75-103

Compustat. 2016. *Compustat Monthly Updates – Fundamentals Annual.* Retrieved from Wharton wrds https://wrds-web-wharton-upenn-edu.eur.idm.oclc.org /wrds/ds/compm/funda/index.cfm?navId=84

Cready, W. M., T. J. Lopez, and C. A. Sisneros. 2012. Negative Special Items and Future Earnings: Expense Transfer or Real Improvements? *The Accounting Review* 87 (4): 1165-1195.

Eisenhardt, K. M. 1989. Agency Theory: An Assessment and Review. *The academy of Management Review* 14 (1): 57-74.

Fama, E., and Jensen, M. 1983. Separation of ownership and control. *Journal of Law and Economics* 26: 288-307.

Fan, Y., A. Barua, W. M. Cready, and W. B. Thomas. 2010. Managing Earnings Using Classification Shifting: Evidence from Quarterly Special Items. *The Accounting Review* 85 (4): 1302-1323.

Haw, I. M., S. S. M. Ho, and A. Y. Li. 2011. Corporate Governance and Earnings Management by Classification Shifting. *Contemporary Accounting Research* 28 (2): 517-553.

Healy, P. M., and J. M. W. Wahlen. 1999. A Review of the Earnings Management Literature and Its Implications for Standard Setting. *Accounting Horizons* 14 (4): 365-383.

Jensen, M. 1983. Organization theory and methodology. *Accounting Review* 62 (6): 319-338.

Johnson, P. M., T. J. Lopez, and J. M. Sanchez. 2011. Special Items: A Descriptive Analysis. *Accounting Horizons* 25 (3): 511-536.

Kolev, K., J. Potepa. 2016. On the Contemporaneous Reporting of Income-Increasing and Income-Decreasing Special Items: Initial Evidence. *Working Paper*.

Lail, B. E., W. B. Thomas, and G. J. Winterbotham. 2014. Classification Shifting Using the "Corporate/Other" Segment. *Accounting Horizons* 28 (3): 455-477.

Lin, S., S. Radhakrishnan, L. Su. 2006. Earnings Management and Guidance for Meeting or Beating Analysts' Earnings Forecasts. *Working Paper*.

McVay, S. E. (2006). Earnings Management Using Classification Shifting: An Examination of Core Earnings and Special Items. *The Accounting Review* 81 (3): 501-531.

Palepu, K. G., P. M. Healy, E. Peek. 2013. *Business Analysis and Valuation:* 3th ed. Cengage Learning Emea.

Pan, S. 2014. Income Classification Shifting and Financial Analysts' Forecasts. *Dissertation*.

Richardson, S., S. H. Teoh, and P. D. Wysocki. 2004. The Walk-Down to Beatable Analyst Forecasts: The Role of Equity Issuance and Insider Trading Incentives. *Contemporary*

*Accounting Research* 21 (4): 885-924.

Ronen, J., and V. Yaari. 2008. *Earnings Management. Emerging Insights in Theory, Practice, and Research:* 1st ed. New York: Springer Science + Business Media, LLC.

SEC. 2002. *Final Rule: Conditions for Use of Non-GAAP Financial Measures*. Retrieved from Securities and Exchange Commission https://www.sec.gov/rules/final/338176.htm

Shirato, K., and K. Nagata. 2012. Earnings management through classification shifting under Japanese GAAP. *Working Paper.*

Siemens AG. 2014. *Non-GAAP Financial Measures*. Retrieved from http://www.siemens.com/investor/pool/en/investor_relations/financial_publications/speeches_and_presentations/q22014/non_gaap_e_q2_2014.pdf

Siu, D. T. L., and R. W. Faff. 2013. Management of Core Earnings Using Classification Shifting around Seasoned Equity Offerings. *Working Paper*.

Skaife, H. A., L. A. Swenson, and D. D. Wangerin. 2013. Classification Shifting of R&D Expense. *Working Paper.*

Stein, J. C. 1989. Efficient capital markets, inefficient firms: A model of myopic corporate behaviour. *The Quarterly Journal of Economics* 104 (4): 655-669.

Zalata, A., and C. Roberts. 2014. Internal Corporate Governance and Classification Shifting Practices: An Analysis of U.K. Corporate Behavior. *Journal of Accounting, Auditing & Finance* 31 (1): 51-78.

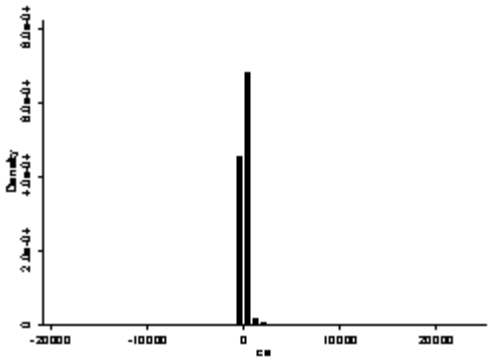
# 9 Appendix

## 9.1 Appendix 1: Winsorizing

**Figure 1**

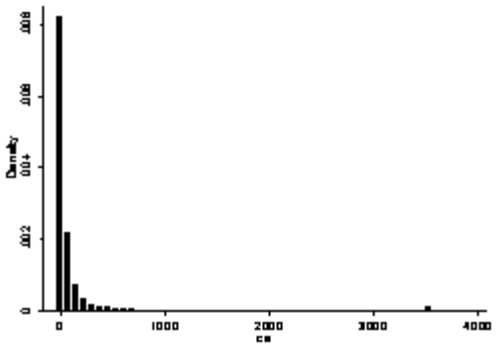
**Histograms of the Core Earnings *($CE_q$)***

*Before Winsorizing*




*Skewness: 10.461*

*After Winsorizing*

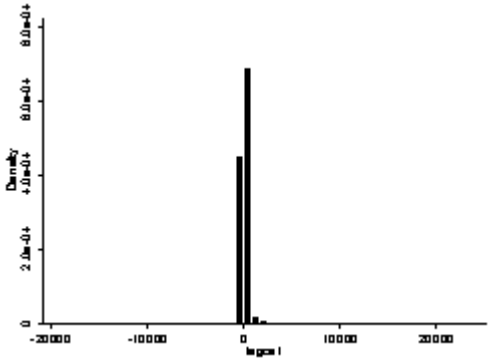



*Skewness: 5.484*

**Figure 2**

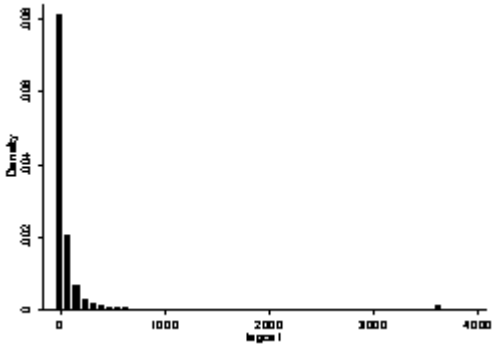
**Histograms of the Lagged Core Earnings of the previous quarter *($CE_{q-1}$)***

*Before Winsorizing*




*Skewness: 10.370*

*After Winsorizing*

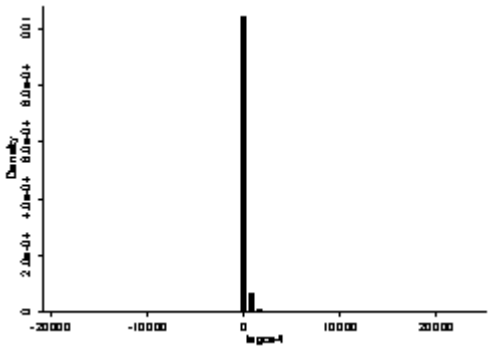



*Skewness: 5.514*

**Figure 3**

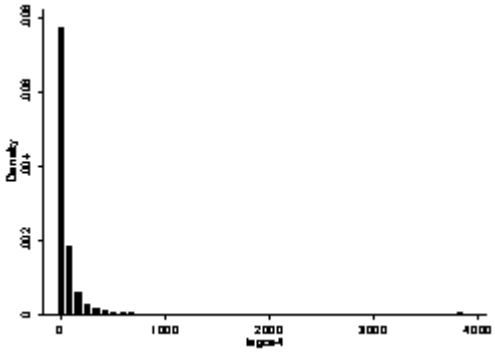
**Histograms of the Lagged Core Earnings of the previous year *($CE_{q-4}$)***

*Before Winsorizing*



*Skewness: 10.076*

*After Winsorizing*

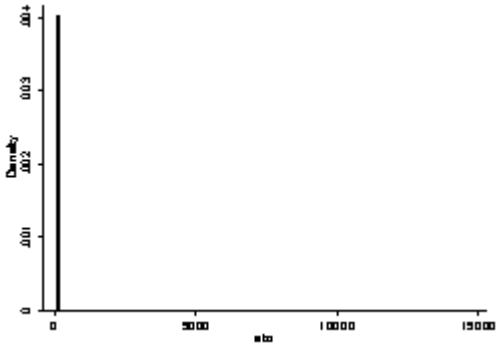


*Skewness: 5.619*

**Figure 4**

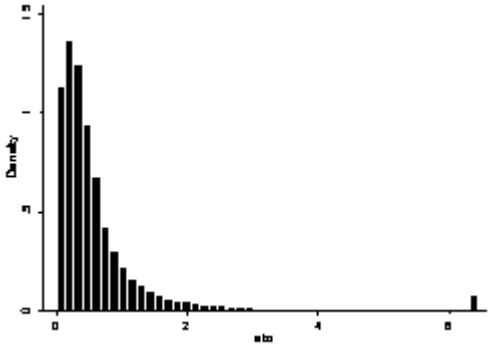
**Histograms of the Asset Turn Over *($ATO_q$)***

*Before Winsorizing*



*Skewness: 195.763*

*After Winsorizing*

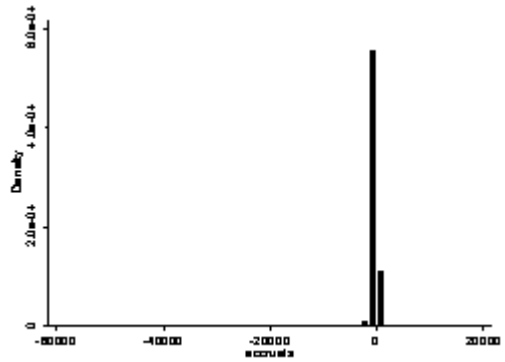


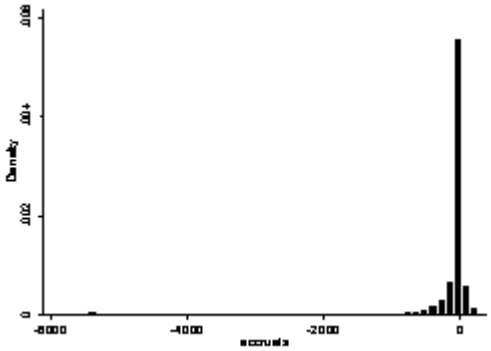
*Skewness: 4.051*

**Figure 5**

**Histograms of the Accruals *($ACCRUALS_q$)***

*Before Winsorizing* *After Winsorizing*



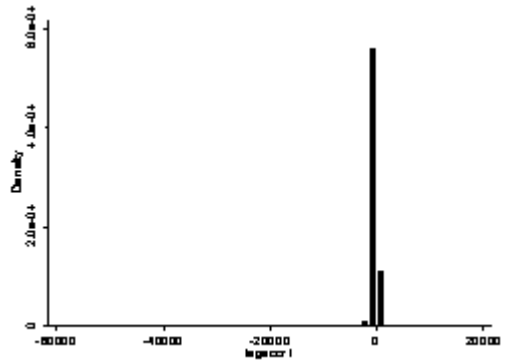



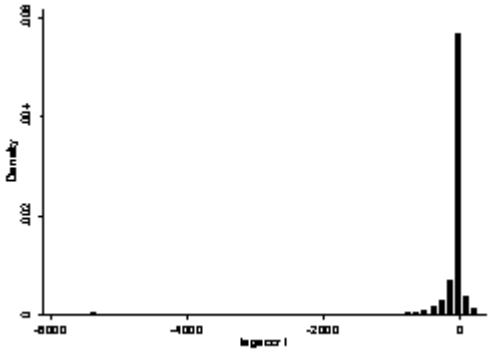

*Skewness: -13.867* *Skewness: -5.529*

**Figure 6**

**Histograms of the Lagged Accruals of the previous quarter *($ACCRUALS_{q-1}$)***

*Before Winsorizing* *After Winsorizing*



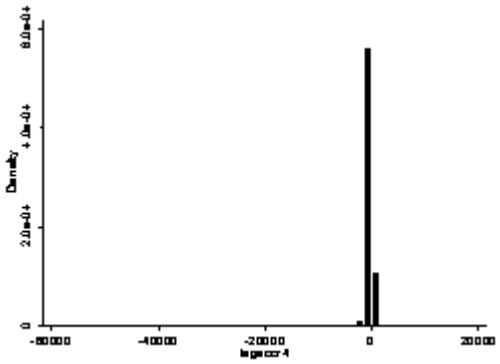




*Skewness: -13.842* *Skewness: -5.520*

**Figure 7**

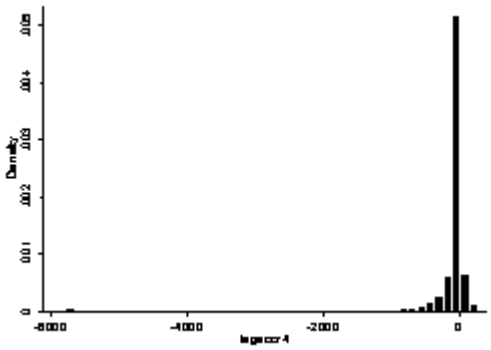
**Histograms of the Lagged Accruals of the previous year *($ACCRUALS_{q-4}$)***

*Before Winsorizing*



*Skewness: -13.547*

*After Winsorizing*

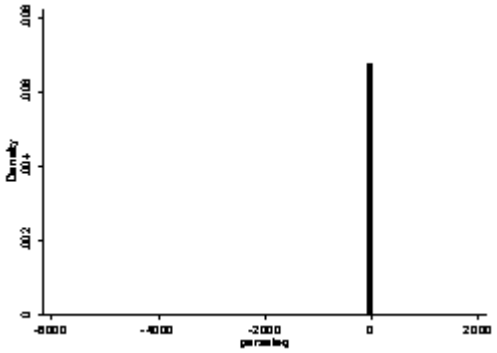


*Skewness: -5.578*

**Figure 8**

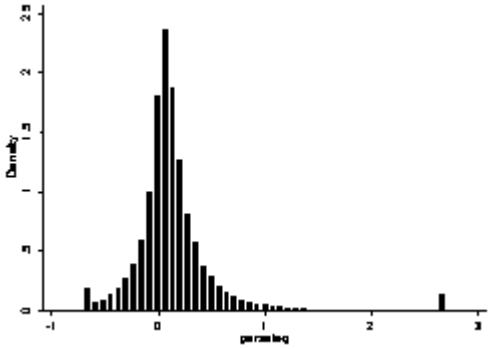
**Histograms of the Percentage Change of the Sales *($\Delta SALES_q$)***

*Before Winsorizing*



*Skewness: -157.067*

*After Winsorizing*

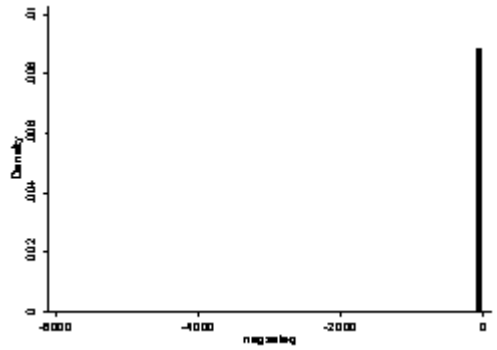


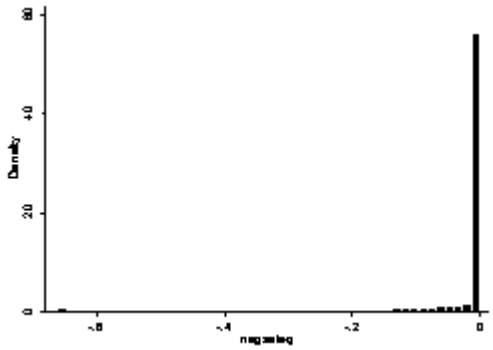
*Skewness: 2.878*

**Figure 9**

**Histograms of the Negative Change of the Sales *(NEG_ΔSALES$_q$)***

*Before Winsorizing* *After Winsorizing*



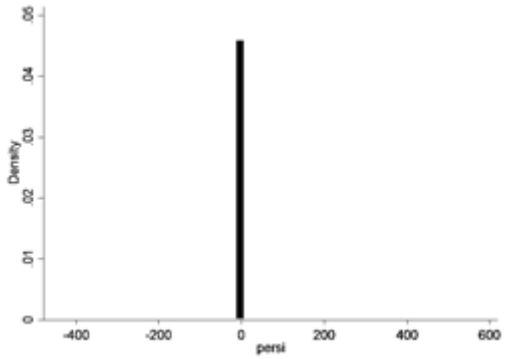



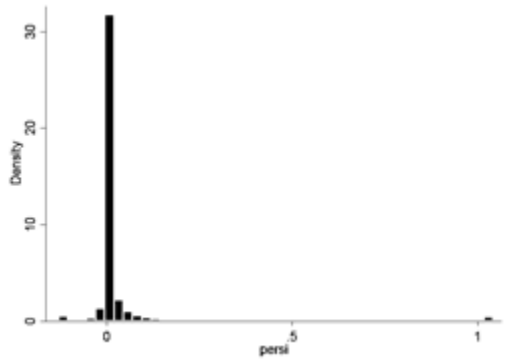

*Skewness: -247.749* *Skewness: -3.396*

**Figure 10**

**Histograms of the Special Items as a percentage of Sales *(%SI$_q$)***

*Before Winsorizing* *After Winsorizing*



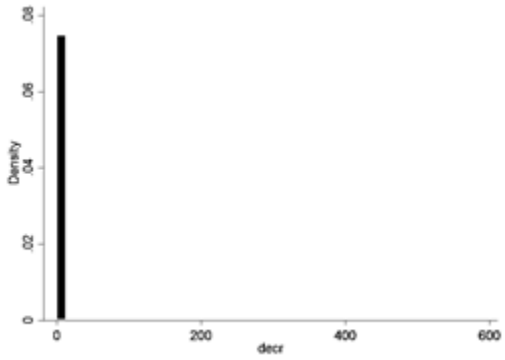




*Skewness: 53.092* *Skewness: 6.197*

**Figure 11**

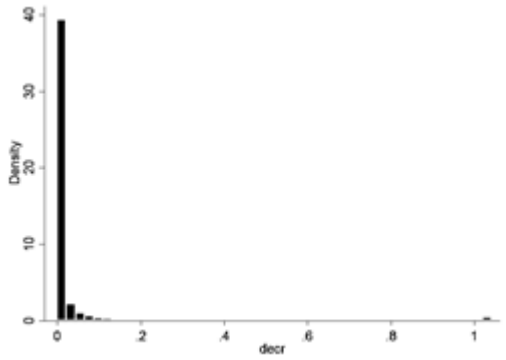
**Histograms of Income-Decreasing Special Items as a percentage of Sales *(%DECRSI$_q$)***

*Before Winsorizing*




*Skewness: 66.546*

*After Winsorizing*

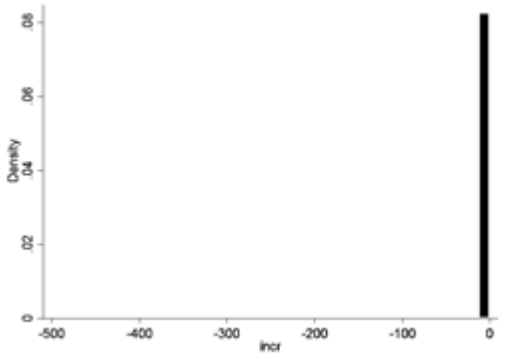



*Skewness: 6.470*

**Figure 12**

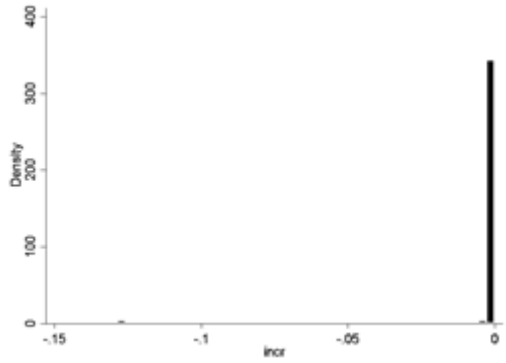
**Histograms of Income-Increasing Special Items as a percentage of Sales *(%INCRSI$_q$)***

*Before Winsorizing*




*Skewness: -60.212*

*After Winsorizing*




*Skewness: -6.941*

## 9.2 Appendix 2: OLS assumptions of the Fan et al. (2010) and McVay (2006) models

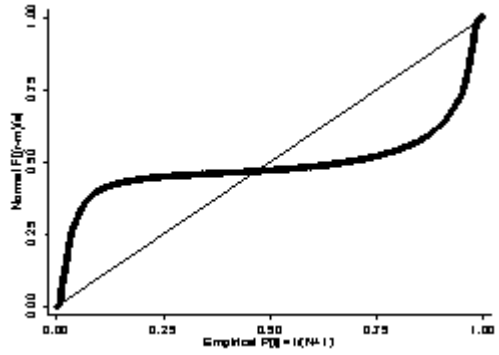
### 9.2.1 Normal distributed residuals

#### *9.2.1.1 Normal probability plots*

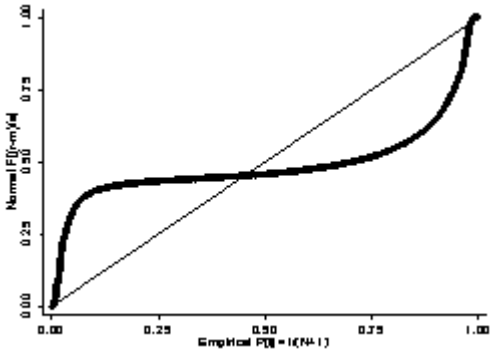
**Figure 13**

**Normal Probability Plots**

Fan et al. (2010)



McVay (2006)



#### *9.2.1.2 Shapiro-Wilk Test*

**Table 1**

| **Shapiro-Wilk test to test if the residuals are normally distributed.** | | | | | | |
|---|---|---|---|---|---|---|
| Regression | Variable | Observations | W | V | Z-value | P-value |
| Fan et al. (2010) | Residuals | 39,317 | 0.346 | 1.00E+04 | 25.451 | 0.000 |
| McVay (2006) | Residuals | 39,574 | 0.370 | 9740.334 | 25.366 | 0.000 |
| The residuals are not normally distributed, because of the significant P-value. | | | | | | |

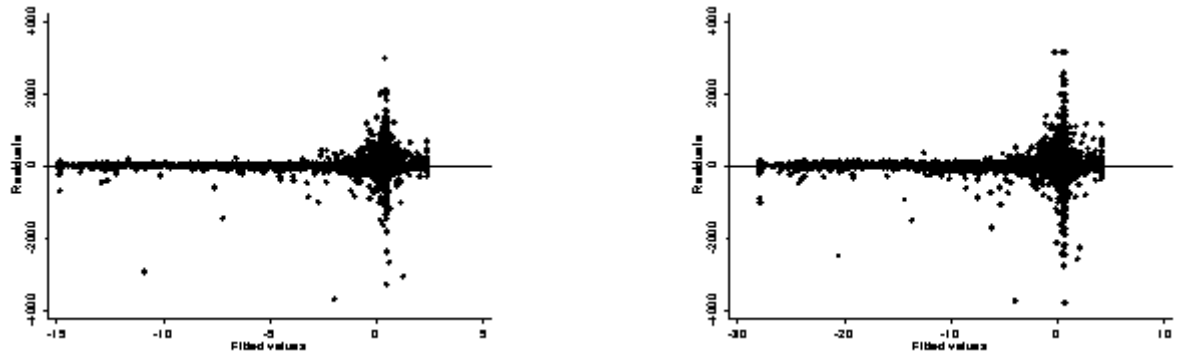
### 9.2.2 Homoscedasticity of the residuals

#### *9.2.2.1 Residuals versus Fitted Values Plots*

**Figure 14**

**Scatterplots of the Residuals and Fitted Values**

Fan et al. (2010) McVay (2006)




#### *9.2.2.2 White test*

**Table 2**

| White test to test if the residuals are homoscedastic. | | | | |
|---|---|---|---|---|
| Regression | Source | Chi-squared | Degrees of Freedom | P-Value |
| Fan et al. (2010) | Heteroskedasticity | 2.53 | 2 | 0.282 |
| | Skewness | 7.10 | 1 | 0.008 |
| | Kurtosis | 12.70 | 1 | 0.000 |
| | Total | 22.33 | 4 | 0.000 |
| McVay (2006) | Heteroskedasticity | 0.46 | 2 | 0.794 |
| | Skewness | 3.11 | 1 | 0.078 |
| | Kurtosis | 25.40 | 1 | 0.000 |
| | Total | 27.97 | 4 | 0.000 |
| The residuals are homoscedastic, because of the insignificant P-value. | | | | |

### 9.2.3 Multicollinearity

#### *9.2.3.1 Variance inflation factor (VIF)*

**Table 3**

**Table of the variance inflation factors (VIF) for the three regressions of hypothesis 1.**

| Regression | Variable | VIF | 1/VIF |
|---|---|---|---|
| *Fan et al. (2010)* | $MEET_q$*%$SI_q$ | 1.0 | 1.0 |
| | *Mean VIF* | 1.0 | |
| *McVay (2006)* | $MEET_q$*%$SI_q$ | 1.0 | 1.0 |
| | *Mean VIF* | 1.0 | |

There is no multicollinearity between the independent variables in this regression model, the VIF values are lower than 10.

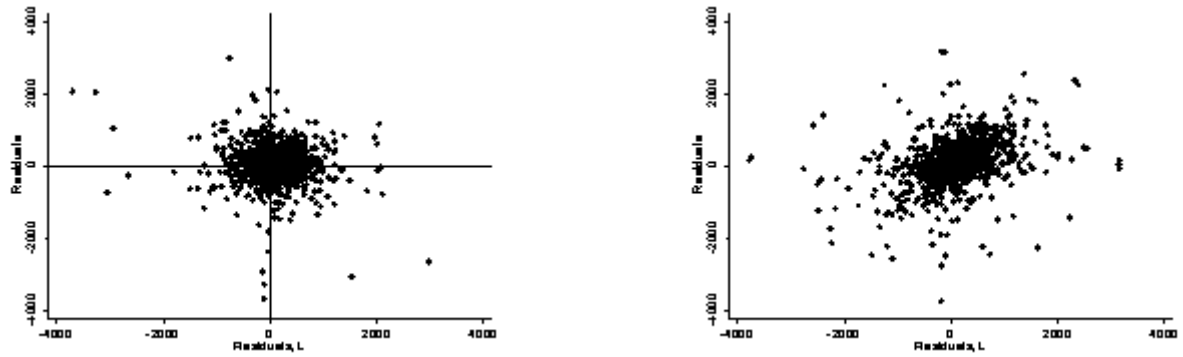
### 9.2.4 No autocorrelation between the residuals and the lagged residuals

#### *9.2.4.1 Scatterplots*

**Figure 15**

**Scatterplots of the Residuals and Lagged Residuals**

Fan et al. (2010) McVay (2006)



#### 9.2.4.2 Correlation table

**Table 4**

| Correlation between the residuals and the lagged residuals. | |
|---|---|
| **Regression** | **Correlation between Residual and Lagged Residual** |
| Fan et al. (2010) | -0.029 |
| McVay (2006) | 0.414 |
| There is no autocorrelation between the residuals and the lagged residuals. | |

### 9.2.5 Model specification

#### 9.2.5.1 Linktest

**Table 5**

| Regression output of the linktest. | | |
|---|---|---|
| $UN\_CE_q$ | **Fan et al. (2010)** | **McVay (2006)** |
| *_hat* | 2.803 | 2.565 |
| | (3.71)*** | (4.83)*** |
| *_hatsq* | 0.158 | 0.072 |
| | (2.57)** | (3.16)** |
| *_cons* | -0.646 | -0.636 |
| | (-1.15) | (-0.94) |
| Adjusted R-squared | 0.04% | 0.09% |
| Number of Observations | 39,317 | 39,574 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***.

## 9.3 Appendix 3: OLS assumptions of hypothesis 1

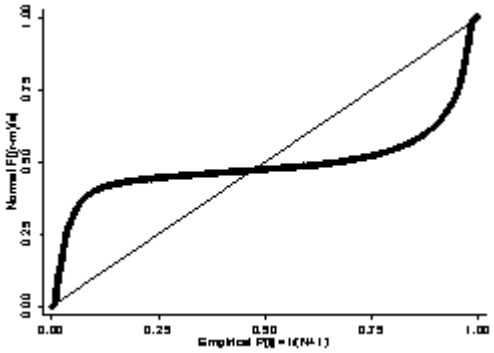
### 9.3.1 Normal distributed residuals

#### *9.3.1.1 Normal probability plots*

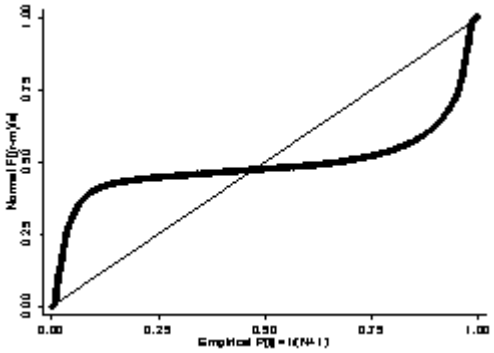
**Figure 16**

**Normal Probability Plots**

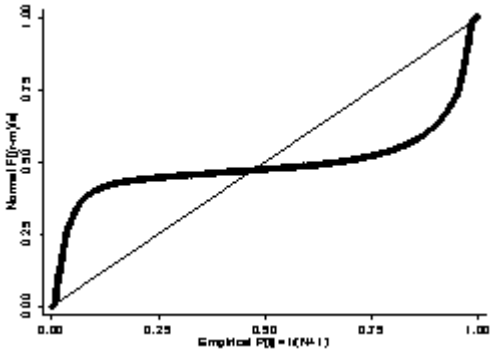
Total Special items



Income-Decreasing special items



Income-Increasing special items



*9.3.1.2 Shapiro-Wilk Test*

**Table 6**

| Shapiro-Wilk test to test if the residuals are normally distributed. | | | | | | |
|---|---|---|---|---|---|---|
| Regression | Variable | Observations | W | V | Z-value | P-value |
| Total Special Items | Residuals | 39,317 | 0.348 | 1.00E+04 | 25.442 | 0.000 |
| Income-Decreasing Special Items | Residuals | 35,819 | 0.347 | 9336.382 | 25.201 | 0.000 |
| Income-Increasing Special Items | Residuals | 3,498 | 0.358 | 1262.596 | 18.523 | 0.000 |
| The residuals are not normally distributed, because of the significant P-value. | | | | | | |

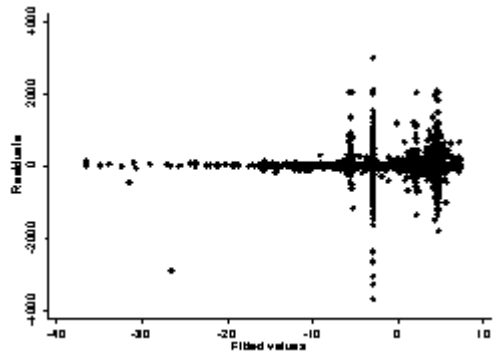
### 9.3.2 Homoscedasticity of the residuals

*9.3.2.1 Residuals versus Fitted Values Plots*

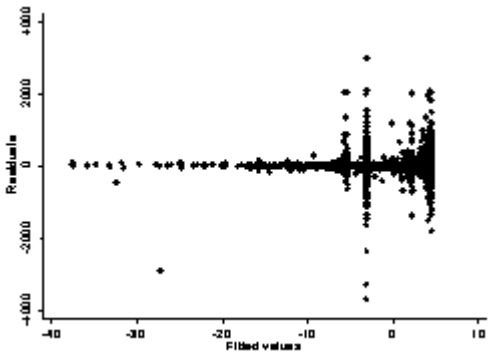
**Figure 17**

**Scatterplots of the Residuals and Fitted Values**

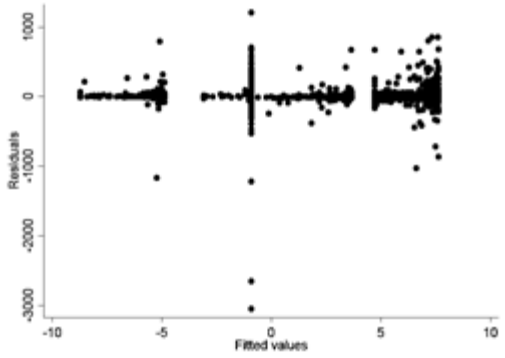
Total Special items




Income-Decreasing special items



Income-Increasing special items




*9.3.2.2 White test*

**Table 7**

| White test to test if the residuals are homoscedastic. | | | | |
|---|---|---|---|---|
| Regression | Source | Chi-squared | Degrees of Freedom | P-Value |
| Total Special Items | Heteroskedasticity | 48.84 | 9 | 0.000 |
| | Skewness | 30.11 | 4 | 0.000 |
| | Kurtosis | 12.71 | 1 | 0.000 |
| | Total | 91.65 | 14 | 0.000 |
| Income-Decreasing Special Items | Heteroskedasticity | 53.45 | 9 | 0.000 |
| | Skewness | 32.18 | 4 | 0.000 |
| | Kurtosis | 10.52 | 1 | 0.001 |
| | Total | 96.14 | 14 | 0.000 |
| Income-Increasing Special Items | Heteroskedasticity | 3.61 | 9 | 0.935 |
| | Skewness | 4.33 | 4 | 0.363 |
| | Kurtosis | 2.23 | 1 | 0.135 |
| | Total | 10.18 | 14 | 0.749 |
| The residuals are heteroscedastic, because of the significant P-value. Except for the regression with income-decreasing special items, because of the insignificant P-value. | | | | |

### 9.3.3 Multicollinearity

#### *9.3.3.1 Variance inflation factor (VIF)*

**Table 8**

**In this table the variance inflation factors (VIF) for the three regressions of hypothesis 1.**

| Regression | Variable | VIF | 1/VIF |
|---|---|---|---|
| *Total Special Items* | $MEET_q$*%$SI_q$ | 1.2 | 0.865 |
| | $BEAT_q$*%$SI_q$ | 1.1 | 0.875 |
| | $MEET_q$ | 1.0 | 0.968 |
| | $BEAT_q$ | 1.0 | 0.980 |
| | Mean VIF | 1.1 | |
| *Income-Decreasing Special Items* | $MEET_q$*%$DECRSI_q$ | 1.2 | 0.855 |
| | $BEAT_q$*%$DECRSI_q$ | 1.2 | 0.866 |
| | $MEET_q$ | 1.0 | 0.956 |
| | $BEAT_q$ | 1.0 | 0.969 |
| | Mean VIF | 1.1 | |
| *Income-Increasing Special Items* | $MEET_q$*%$INCRSI_q$ | 1.6 | 0.645 |
| | $BEAT_q$*%$INCRSI_q$ | 1.5 | 0.692 |
| | $MEET_q$ | 1.4 | 0.730 |
| | $BEAT_q$ | 1.3 | 0.796 |
| | Mean VIF | 1.4 | |

There is no multicollinearity between the independent variables in this regression model, the VIF values are lower than 10.

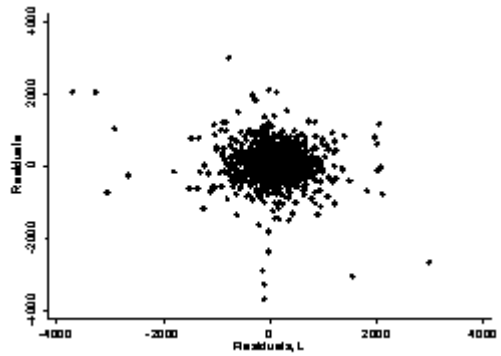
### 9.3.4 No autocorrelation between the residuals and the lagged residuals

#### *9.3.4.1 Scatterplots*

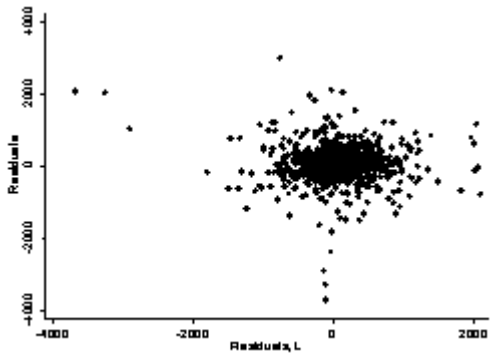
**Figure 18**

**Scatterplots of the Residuals and the Lagged Residuals**

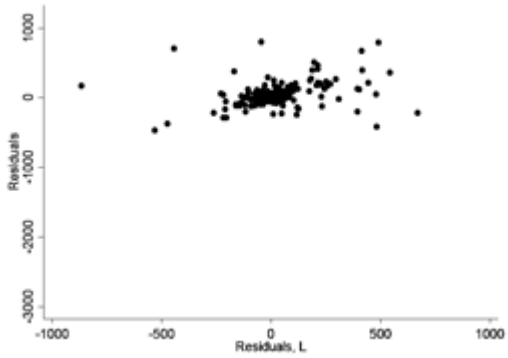
Total Special items




Income-Decreasing special items




Income-Increasing special items




#### *9.3.4.2 Correlation table*

**Table 9**

**Correlation between the residuals and the lagged residuals.**

| Regression | Correlation between Residual and Lagged Residual |
|---|---|
| Total Special Items | -0.029 |
| Income-Decreasing Special Items | -0.016 |
| Income-Increasing Special Items | 0.331 |

There is no autocorrelation between the residuals and the lagged residuals.

### 9.3.5 Model specification

#### *9.3.5.1 Linktest*

**Table 10**

| **Regression output of the linktest.** | | | |
|---|---|---|---|
| $UN\_CE_q$ | **Total Special Items** | **Income-Decreasing Special Items** | **Income-Increasing Special Items** |
| *_hat* | 1.022<br>(8.19)*** | 1.029<br>(7.75)*** | 0.635<br>(0.99) |
| *_hatsq* | 0.008<br>(0.64) | 0.008<br>(0.63) | 0.090<br>(0.76) |
| *_cons* | -0.143<br>(-0.26) | -0.127<br>(-0.23) | -1.414<br>(-0.49) |
| Adjusted R-squared | 0.17% | 0.18% | 0.11% |
| Number of Observations | 39,317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***.

## 9.4 Appendix 4: OLS assumptions of hypothesis 2

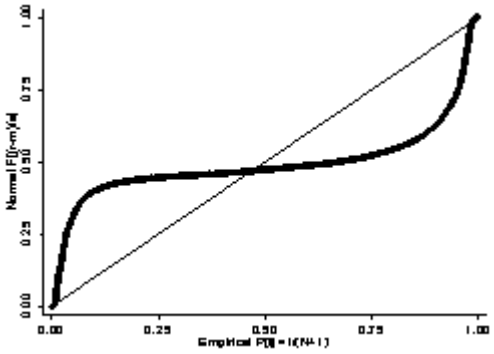
### 9.4.1 Normal distributed residuals

#### *9.4.1.1 Normal probability plots*

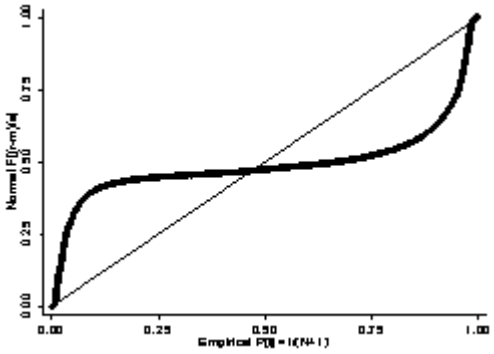
**Figure 19**

**Normal Probability Plots**

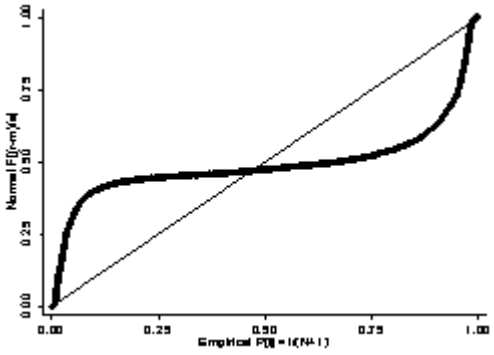
Total Special items



Income-Decreasing special items



Income-Increasing special items



*9.4.1.2 Shapiro-Wilk Test*

**Table 11**

| Shapiro-Wilk test to test if the residuals are normally distributed. | | | | | | |
|---|---|---|---|---|---|---|
| Regression | Variable | Observations | W | V | Z-value | P-value |
| Total Special Items | Residuals | 39,317 | 0.348 | 1.00E+04 | 25.441 | 0.000 |
| Income-Decreasing Special Items | Residuals | 35,819 | 0.347 | 9335.788 | 25.201 | 0.000 |
| Income-Increasing Special Items | Residuals | 3,498 | 0.363 | 1253.609 | 18.504 | 0.000 |
| The residuals are not normally distributed, because of the significant P-value. | | | | | | |

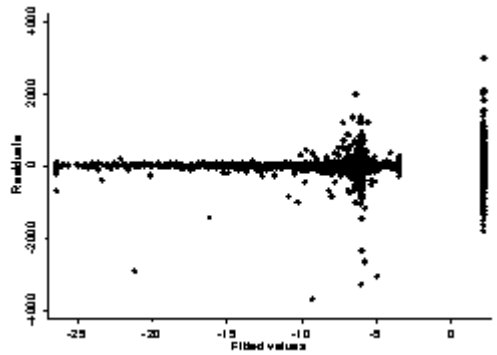
### 9.4.2 Homoscedasticity of the residuals

*9.4.2.1 Residuals versus Fitted Values Plots*

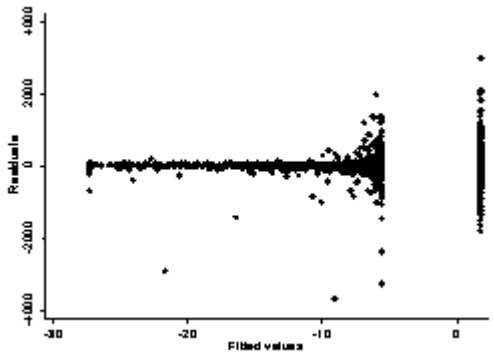
**Figure 20**

**Scatterplots of the Residuals and Fitted Values**

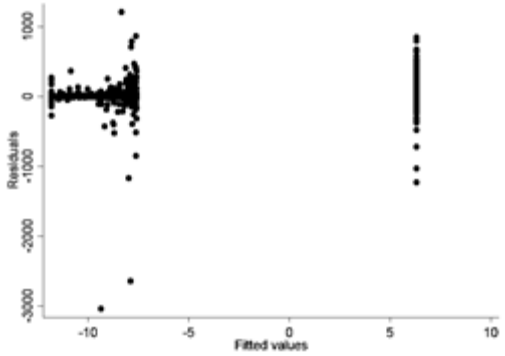
Total Special items




Income-Decreasing special items



Income-Increasing special items




### *9.4.2.2 White test*

**Table 12**

| White test to test if the residuals are homoscedastic. | | | | |
|---|---|---|---|---|
| Regression | Source | Chi-squared | Degrees of Freedom | P-Value |
| Total Special Items | Heteroskedasticity | 24.08 | 3 | 0.000 |
| | Skewness | 26.81 | 2 | 0.000 |
| | Kurtosis | 12.75 | 1 | 0.000 |
| | Total | 63.64 | 6 | 0.000 |
| Income-Decreasing Special Items | Heteroskedasticity | 31.25 | 3 | 0.000 |
| | Skewness | 25.30 | 2 | 0.000 |
| | Kurtosis | 10.56 | 1 | 0.001 |
| | Total | 67.10 | 6 | 0.000 |
| Income-Increasing Special Items | Heteroskedasticity | 17.39 | 3 | 0.001 |
| | Skewness | 7.31 | 2 | 0.026 |
| | Kurtosis | 2.24 | 1 | 0.135 |
| | Total | 26.93 | 6 | 0.000 |
| The residuals are heteroscedastic, because of the significant P-value. | | | | |

### 9.4.3 Multicollinearity

#### *9.4.3.1 Variance inflation factor (VIF)*

**Table 13**

**In this table the variance inflation factors (VIF) for the three regressions of hypothesis 2.**

| Regression | Variable | VIF | 1/VIF |
|---|---|---|---|
| *Total Special Items* | $FOURTH_q$ | 1.1 | 0.944 |
| | $FOURTH_q$*%$SI_q$ | 1.1 | 0.944 |
| | *Mean VIF* | 1.1 | |
| *Income-Decreasing Special Items* | $FOURTH_q$ | 1.1 | 0.928 |
| | $FOURTH_q$*%$DECRSI_q$ | 1.1 | 0.928 |
| | *Mean VIF* | 1.1 | |
| *Income-Increasing Special Items* | $FOURTH_q$ | 1.4 | 0.718 |
| | $FOURTH_q$*%$INCRSI_q$ | 1.4 | 0.718 |
| | *Mean VIF* | 1.4 | |

There is no multicollinearity between the independent variables in this regression model, the VIF values are lower than 10.

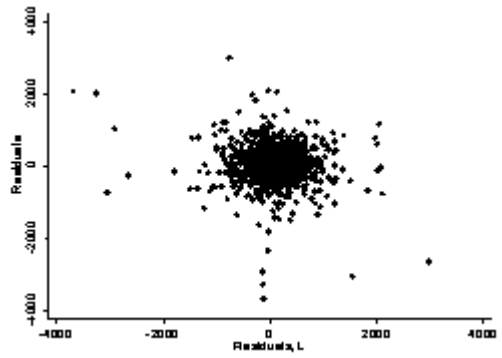
### 9.4.4 No autocorrelation between the residuals and the lagged residuals

#### *9.4.4.1 Scatterplots*

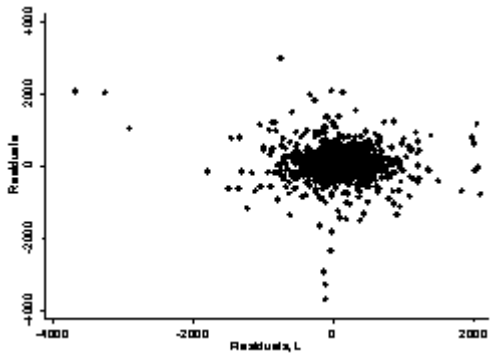
**Figure 21**

**Scatterplots of the Residuals and the Lagged Residuals**

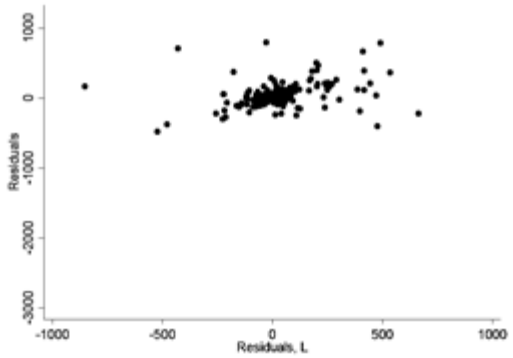
Total Special items




Income-Decreasing special items



Income-Increasing special items




*9.4.4.2 Correlation table*

**Table 14**

| **Correlation between the residuals and the lagged residuals.** | |
|---|---|
| **Regression** | **Correlation between Residual and Lagged Residual** |
| Total Special Items | -0.030 |
| Income-Decreasing Special Items | -0.017 |
| Income-Increasing Special Items | 0.336 |
| There is no autocorrelation between the residuals and the lagged residuals. | |

### 9.4.5 Model specification

#### *9.4.5.1 Linktest*

**Table 15**

| Regression output of the linktest. | | | |
|---|---|---|---|
| $UN\_CE_q$ | **Total Special Items** | **Income-Decreasing Special Items** | **Income-Increasing Special Items** |
| *_hat* | 1.087<br>(5.96)*** | 1.129<br>(5.60)*** | 1.057<br>(2.04)** |
| *_hatsq* | 0.009<br>(0.64) | 0.012<br>(0.84) | 0.022<br>(0.13) |
| *_cons* | -0.161<br>(-0.29) | -0.159<br>(-0.29) | -1.229<br>(-0.13) |
| Adjusted R-squared | 0.17% | 0.16% | 0.27 |
| Number of Observations | 39,317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***.

## 9.5 Appendix 5: OLS assumptions of hypothesis 1 and hypothesis 2

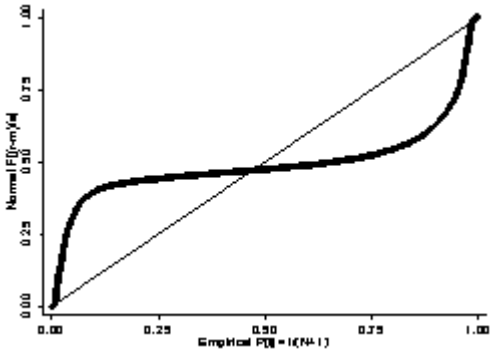
### 9.5.1 Normal distributed residuals

#### *9.5.1.1 Normal probability plots*

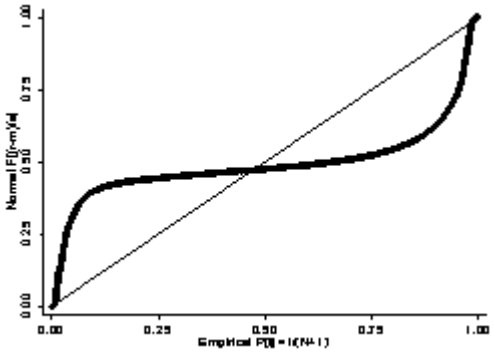
**Figure 22**

**Normal Probability Plots**

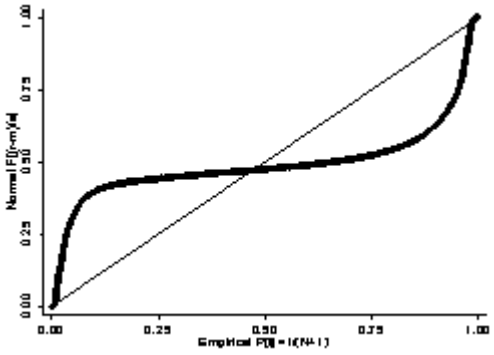
Total Special items



Income-Decreasing special items



Income-Increasing special items



*9.5.1.2 Shapiro-Wilk Test*

**Table 16**

| Shapiro-Wilk test to test if the residuals are normally distributed. | | | | | | |
|---|---|---|---|---|---|---|
| Regression | Variable | Observations | W | V | Z-value | P-value |
| Total Special Items | Residuals | 39,317 | 0.350 | 9985.714 | 25.431 | 0.000 |
| Income-Decreasing Special Items | Residuals | 35,819 | 0.349 | 9304.607 | 25.192 | 0.000 |
| Income-Increasing Special Items | Residuals | 3,498 | 0.365 | 1249.936 | 18.497 | 0.000 |
| The residuals are not normally distributed, because the P-value is significant. | | | | | | |

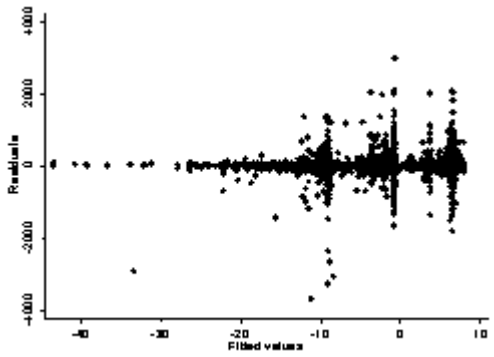
### 9.5.2 Homoscedasticity of the residuals

*9.5.2.1 Residuals versus Fitted Values Plots*

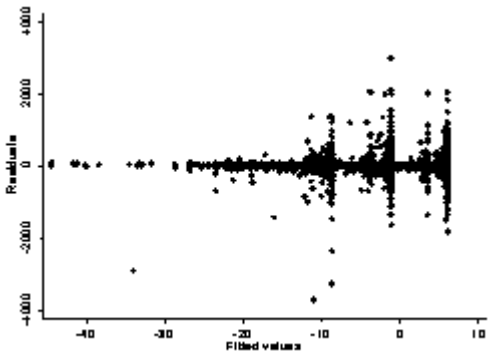
**Figure 23**

**Scatterplots of the Residuals and Fitted Values**

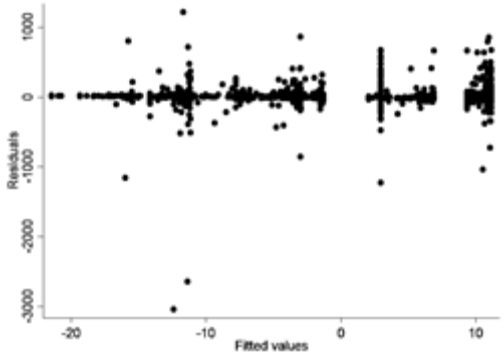
Total Special items




Income-Decreasing special items



Income-Increasing special items




*9.5.2.2 White test*

**Table 17**

| White test to test if the residuals are homoscedastic. | | | | |
|---|---|---|---|---|
| Regression | Source | Chi-squared | Degrees of Freedom | P-Value |
| Total Special Items | Heteroskedasticity | 105.31 | 18 | 0.000 |
| | Skewness | 47.24 | 6 | 0.000 |
| | Kurtosis | 12.76 | 1 | 0.000 |
| | Total | 165.32 | 25 | 0.000 |
| Income-Decreasing Special Items | Heteroskedasticity | 111.09 | 18 | 0.000 |
| | Skewness | 45.81 | 6 | 0.000 |
| | Kurtosis | 10.57 | 1 | 0.001 |
| | Total | 167.47 | 25 | 0.000 |
| Income-Increasing Special Items | Heteroskedasticity | 45.81 | 18 | 0.000 |
| | Skewness | 9.88 | 6 | 0.130 |
| | Kurtosis | 2.24 | 1 | 0.135 |
| | Total | 57.93 | 25 | 0.000 |
| The residuals are heteroscedastic, because the P-value is significant. | | | | |

### 9.5.3 Multicollinearity

#### *9.5.3.1 Variance inflation factor (VIF)*

**Table 18**

**In this table the variance inflation factors (VIF) for the three regressions of hypothesis 1.**

| Regression | Variable | VIF | 1/VIF |
|---|---|---|---|
| *Total Special Items* | $BEAT_q$*%$SI_q$ | 1.3 | 0.752 |
| | $FOURTH_q$*%$SI_q$ | 1.3 | 0.765 |
| | $MEET_q$*%$SI_q$ | 1.2 | 0.852 |
| | $FOURTH_q$ | 1.1 | 0.942 |
| | $MEET_q$ | 1.0 | 0.996 |
| | $BEAT_q$ | 1.0 | 0.972 |
| | Mean VIF | 1.2 | |
| *Income-Decreasing Special Items* | $BEAT_q$*%$DECRSI_q$ | 1.3 | 0.744 |
| | $FOURTH_q$*%$DECRSI_q$ | 1.3 | 0.752 |
| | $MEET_q$*%$DECRSI_q$ | 1.2 | 0.842 |
| | $FOURTH_q$ | 1.1 | 0.926 |
| | $MEET_q$ | 1.1 | 0.954 |
| | $BEAT_q$ | 1.0 | 0.960 |
| | Mean VIF | 1.2 | |
| *Income-Increasing Special Items* | $BEAT_q$*%$INCRSI_q$ | 1.6 | 0.611 |
| | $FOURTH_q$*%$INCRSI_q$ | 1.6 | 0.640 |
| | $MEET_q$*%$INCRSI_q$ | 1.6 | 0.645 |
| | $FOURTH_q$ | 1.5 | 0.689 |
| | $MEET_q$ | 1.5 | 0.689 |
| | $BEAT_q$ | 1.3 | 0.774 |
| | Mean VIF | 1.5 | |

There is no multicollinearity between the independent variables in this regression model, the VIF values are lower than 10.

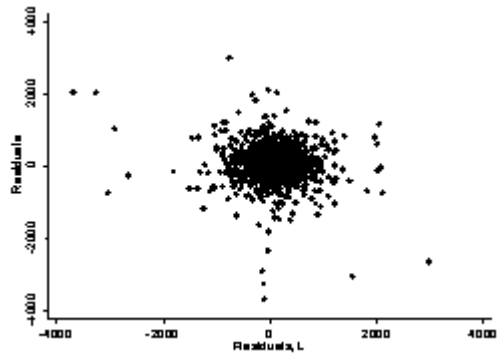
### 9.5.4 No autocorrelation between the residuals and the lagged residuals

#### *9.5.4.1 Scatterplots*

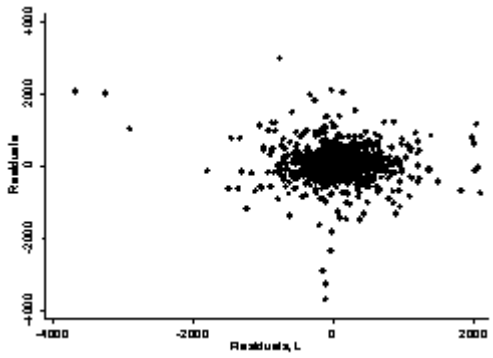
**Figure 24**

**Scatterplots of the Residuals and the Lagged Residuals**

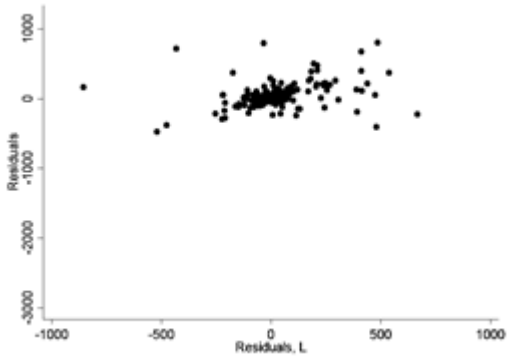
Total Special items




Income-Decreasing special items




Income-Increasing special items




#### *9.5.4.2 Correlation table*

**Table 19**

| **Correlation between the residuals and the lagged residuals.** | |
|---|---|
| **Regression** | **Correlation between Residual and Lagged Residual** |
| Total Special Items | -0.030 |
| Income-Decreasing Special Items | -0.017 |
| Income-Increasing Special Items | 0.335 |
| There is no autocorrelation between the residuals and the lagged residuals. | |

### 9.5.5 Model specification

#### *9.5.5.1 Linktest*

**Table 20**

| **Regression output of the linktest.** | | | |
|---|---|---|---|
| $UN\_CE_q$ | **Total Special Items** | **Income-Decreasing Special Items** | **Income-Increasing Special Items** |
| *_hat* | 0.968<br>(9.75)*** | 0.980<br>(9.05)*** | 0.987<br>(4.04)*** |
| *_hatsq* | -0.006<br>(-0.72) | -0.003<br>(-0.37) | -0.025<br>(-0.83) |
| *_cons* | 0.191<br>(0.34) | 0.088<br>(0.15) | 1.714<br>(0.59) |
| Adjusted R-squared | 0.32% | 0.31% | 0.44% |
| Number of Observations | 39,317 | 35,819 | 3,498 |

All the variables are winsorized at 1st and 99th percentile, except the variable $UN\_CE_q$ and the three dummy variables $MEET_q$, $BEAT_q$ and $FOURTH_q$. Amounts reported are regression coefficients (with t-statistics in parentheses). The stars indicate the significance levels of 10, 5 and 1 percent respectively: *, **, ***.

## 9.6 Appendix 6: Table with variable names

**Table 21**

| **Stata variable names and regression variable names** | |
|---|---|
| *Variable Names Stata* | *Variable Names Regressions* |
| ce | $CE_q$ |
| lagce1 | $CE_{q-1}$ |
| lagce4 | $CE_{q-4}$ |
| ato | $ATO_q$ |
| accruals | $ACCRUALS_q$ |
| lagaccr1 | $ACCRUALS_{q-1}$ |
| lagaccr4 | $ACCRUALS_{q-4}$ |
| persaleq | $\Delta SALES_q$ |
| negsaleq | $NEG\_\Delta SALES_q$ |
| persi | $\%SI_q$ |
| incr | $\%INCRSI_q$ |
| decr | $\%DECRSI_q$ |
| Residuals | *Residuals* |
| Residuals, L | *Lagged Residuals* |
| _cons | *Intercept* |

In this table the different variable names of Stata that are used in the figures are linked to the variable names of the regressions mentioned in Chapter 5.