



**The impact of the characteristics of the board of directors on Earnings
Management: evidence from the United Kingdom**

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Dissertation

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Abstract

The current study examines the impact of certain characteristics of the board of directors on the level of earnings management undertaken by firms listed in the London Stock Exchange, keeping the guidelines provided by the UK Corporate Governance Code in mind. To the best of our knowledge, most studies focusing on this topic have not yet included the impacts of demographic characteristics and the research on this issue is still limited in the United Kingdom.

The results obtained with this study corroborate the guidelines provided by the UK Corporate Governance Code when it comes to board independence. They indicate that board size is positively related with earnings management and that firms with longer average director tenures have reduced levels of earnings management. Additionally, this study provides some evidence on the positive link between the percentage of female directors and earnings management practices.

These results suggest that board characteristics, both intrinsic and demographic, have in fact an impact on earnings management, ultimately influencing earnings quality.

Keywords: Board of directors, Earnings management, Corporate Governance, Demographic diversity

Biographical note

Maria Cardoso was born on the 14th of May 1995, she started the bachelor's degree in economics in the year of 2013 at Faculdade de Economia da Universidade do Porto, which she concluded in 2016. In that same year she enrolled in the Master's in Finance, in the same institution, which culminates with the delivery of the current dissertation. During her Master's degree, Maria studied at Ghent University for a semester. Currently, she works as an assistant accountant at Adidas Global Business Services.

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Index

1. Introduction	1
2. Literature review	3
2.1. Main theories.....	3
2.1.1. Earnings management	3
2.1.2. The role of the board of directors.....	3
1. Agency theory	3
2. Stewardship theory	4
3. Stakeholder theory	5
4. Resource dependence theory	5
2.2. Similar studies	6
2.3. Characteristics of the board of directors	8
1. Intrinsic characteristics.....	9
2. Demographic characteristics	10
3. Hypotheses development.....	12
4. Methodology and Data Description.....	15
4.1. The Model	15
4.2. Methodology	17
4.3. Data collection	19
4.4. Descriptive statistics.....	21
5. Results.....	23
6. Conclusions.....	30

Table index

Table 1: Characteristics used and results obtained in similar papers	7
Table 2: Methodological aspects of similar studies	8
Table 3: Board characteristics and expected results	14
Table 4: Board characteristics and expected results	18
Table 5: Adjustments made to the initial sample.....	20
Table 6: Industries included to estimate the coefficients of equation (1).....	20
Table 7: Descriptive statistics for board variables	21
Table 8: Spearman correlations among variables.	22
Table 9: Regression analysis of Absolute abnormal accruals on the characteristics of the board of directors (Coefficient estimate and p-value in brackets).....	24
Table 10: Regression analysis of Absolute abnormal accruals on the characteristics of the board of directors below and above thresholds using Model 1 (Coefficient estimate and p-value in brackets).....	26
Table 11: Regression analysis of Absolute abnormal accruals on the characteristics of the board of directors below and above thresholds using Model 2 (Coefficient estimate and p-value in brackets).....	28

1. Introduction

Earnings management are usually associated with a decrease in the quality of financial information necessary for shareholders to make decisions. According to the agency theory, the board of directors' main goal is to mitigate agency risk and protect shareholders' interests (Fama & Jensen, 1983). Hence, it seems reasonable to expect that the characteristics of the board of directors ought to have an impact on earnings management.

There is a vast empirical literature on the effects of the characteristics of the board of directors on firm performance. When it comes to earnings management, although there is indeed some empirical research available, this is not as extensive and remains mostly confined to the United States of America and Canada, with only a few studies developed in the United Kingdom. Furthermore, to the best of our knowledge, most studies have not yet attempted to look at the impact of both demographic and intrinsic characteristics of the board on earnings management, which we intend to do.

There is a great number of theories in Corporate Governance trying to explain the role of the board of directors. Being the most prominent ones, regarding board research, the Agency Theory and the Resource Dependence Theory.

Simultaneously, many characteristics of the board have also been used to explain the propensity of firms to manage earnings. Having the UK Corporate Governance Code in mind, in this study we look into the effects of some of those characteristics such as board independence, board size, number of board meetings and demographic diversity, and we study its effects on earnings management.

The results obtained with this research show that there is a positive link between the number of directors and the level of abnormal accruals which is in line with the literature branch showing that bigger boards are not always better and can be a source of conflicts among directors.

On the other hand, boards with more than 50% independent directors seem to be able to better control earnings management, consistent with the research proving that independent board members are better at constraining earnings manipulation.

Simultaneously, the percentage of female directors sitting on the board of directors has a significantly positive relationship on earnings management when earnings increase. From an income smoothing perspective, this result is consistent with previous literature on the link between gender diversity and income-decreasing earnings management. Ultimately, it implies that female directors tend to prefer conservative earnings management strategies.

Lastly the number of years a director sits on the board is negatively related with the level of abnormal accruals, which is consistent with the research proving that senior directors have more knowledge about the company's business and subsequently show a better ability to detect earnings management.

The remainder of this dissertation is structured as follows: Section 2 will focus on the literature review, Section 3 will focus Hypotheses Development, Section 4 will put some emphasis on Methodology and Data, Section 5 discusses the results obtained with the tests performed and Section 6 includes the conclusions drawn from this study.

2. Literature review

2.1. Main theories

2.1.1. Earnings management

Earnings management can be defined as a purposely intervention in the external financial reporting process, with the intent of obtaining some private gain (Schipper, 1989). Unlike financial statement fraud, earnings management is acceptable, since it is covered by the “grey area” of the GAAP (Generally Accepted Accounting Principles), therefore it does not mean a clear violation of the law. However, it is still a problem because it reduces the quality of financial information necessary for shareholders to make decisions.

It is possible to manage earnings through the manipulation of real activities as well as through the manipulation of accruals. However, it is commonly agreed that the cost of real activities manipulation is greater than the cost of accrual-based manipulation (Peasnell et al., 2000). It seems therefore reasonable to assume that managers will prefer to undertake earnings management using accrual manipulation.

2.1.2. The role of the board of directors

“Corporate governance is the system by which companies are directed and controlled. Boards of directors are responsible for the governance of their companies. The shareholders’ role in governance is to appoint the directors and the auditors [...]” (The UK Corporate Governance Code, 2016, p. 1)

There are many theories in Corporate Governance trying to explain the relationship between managers and principals. These theories also provide different views on the role of the board of directors inside a corporation, in this section we will take a quick look at the most common theories and their different views on the role of the board of directors.

1. Agency theory

The agency relationship is described as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent

(Jensen & Meckling, 1976). It is therefore expectable that the agent will, without the appropriate incentives provided by the principal, not always act in the principal's best interest, he will instead act having his own self-interest in mind.

In their work "Separation of ownership and control", Fama and Jensen (1983) explain that the decision process in a corporation has four main steps: Initiation, Implementation, Monitoring and Ratification. The first two are designated as decision management, whilst the last two are often considered as decision control. According to their view, when decision managers are not the major residual claimants there is an agency problem and to solve this, no individual agent should exclusively exercise management and control rights in the same decision.

In open corporations one of the mechanisms used to control agency risks and align the interests of principals and agents is by setting a board of directors, whose members can be chosen by residual claimants. Although it is reasonable to have some internal managers on the board, because of their inside knowledge on company affairs, outside members are very important since their main purpose is to solve the agency conflicts rising between managers and shareholders (Fama & Jensen, 1983).

2. Stewardship theory

Rather than looking at a manager as an opportunistic self-interested individual, the stewardship theory looks at him as a steward who understands that pro-organizational, collectivist behaviours produce a higher utility than individualistic, self-serving ones. Thus, even when the interests of the steward diverge from those of the principal, the steward will choose to cooperate (Davis et al., 1997).

According to this view, a steward's performance depends on how easily he can act when a certain scenario is presented to him. Therefore, corporate governance structures should facilitate his actions. The duality of a CEO who also assumes the position of chairman of the board of directors is encouraged.

Ultimately, the kind of relationship between owners and executives, whether it is an agency or a stewardship relationship, depends on the risk the owner is willing to take, i.e. risk averse shareholders might be more prone to behave as predicted by the agency theory and prefer to impose monitoring on the managers (Davis et al., 1997).

3. Stakeholder theory

The stakeholder theory's main premise is that managers should satisfy a wider set of stakeholders other than shareholders. To ensure that the interests of managers are aligned with the interests of stakeholders, it is important to look at not only "quasi-independent governance structures" (e.g.: board of directors) but also institutions that have evolved to represent certain groups of stakeholders, as labour unions and consumer unions.

For a company to succeed, it is expected that directors take into account the interests of all stakeholders, rather than the sole interest of shareholders. However, ultimately directors must be accountable to shareholders, and shareholders only. Otherwise, they might end up being accountable to no one at all (Clarke, 1998).

Clarke (1998) argues that the advantages of the stakeholder theory are evident when we look into the development of German and Japanese companies and their two-tier boards¹. However, as this companies have started to enter international markets they have also started to bend to the interests of shareholders.

4. Resource dependence theory

The resource dependence theory pictures organizations as open systems constrained by a network of interdependencies with other organizations. Given the uncertainty associated with the actions of each organization, the success of a specific organization is also uncertain. Managers try to contain these interdependencies and although they might be able to reduce them, they are never capable to fully extinguish them (Dill, 1981) *in* (Hillman et al., 2009).

The power of an organization is associated with how much they need the resources of other organizations (less power) and how much other organizations need their own resources (more power).

Directors can provide many resources to a company, including advice and counsel, channels of information flow, preferential access to resources and legitimacy to

¹ A two-tier board is a board system consisting in the separation of the board of directors into two: the supervisory board and the management board. The supervisory board can sometimes include employee representatives.

the firm. The board of directors should manage environmental dependencies and reflect environmental needs (Hillman et al., 2009).

The Resource Dependence Theory alongside with the Agency Theory are the most prominent theories when it comes to board research. Some authors go as far as attributing only two functions to the board of directors: monitoring from the Agency Theory; and resource provision from the Resource Dependence Theory (Hillman et al., 2009).

2.2. Similar studies

This study has the main purpose of assessing the effects of different characteristics of the board of directors on earnings management in the United Kingdom. Whilst there is a vast empirical research on the impact of certain board characteristics on firm performance, the research on the impact of these characteristics on earnings management does not seem to be as extensive.

Notwithstanding, a few studies have been developed on the matter both in the UK but mainly in other countries. With this work, we intend to extend the research on the topic, using the United Kingdom as setting.

One of the first studies related to this topic focused on the difference between the board characteristics of firms that had violated the Generally Accepted Accounting Principles, this is firms that had committed financial statement fraud, and those that had not (Beasley, 1996).

Some authors have then tried to extend the research to evaluate whether the links found by Beasley (1996) could be extended to the case of earnings management. As a result, Klein (2002) and Xie et al. (2003) have investigated the impact of certain board characteristics on earnings management in the United States of America. Park and Shin (2004) have investigated this same relationship but for the case of Canada. Additionally, in the UK, Peasnell et al. (2005) have studied this same association.

However, none of these studies has attempted to consider the impact of several demographic characteristics (Ben-Amar et al., 2013). This study intends to fill this existent gap as well as to contribute to the research on this topic in the United Kingdom.

Ben-Amar et al. (2013) measured demographic diversity in Canada by creating an index that takes into account the percentage of women on the board, whether the CEO is a woman, the percentage of foreign directors on the board and director's tenure. The results obtained show a U-shaped relationship between Demographic Diversity and M&A performance.

Furthermore, Adams and Ferreira (2009) have explained that female directors tend to be tougher monitors than their male counterparts which does not always result in better firm performance, it can in fact result in overmonitoring, which brings down firm performance.

Table 1 summarizes the characteristics of the board of directors that have been previously studied by the papers mentioned above and the respective results obtained.

Table 1: Characteristics used and results obtained in similar papers

Dependent variables	Independent variables	Paper	Result
Earnings management	Percentage of independent directors	Xie et al. (2003)	Negative
		Klein (2002)	Negative
		Peasnell et al. (2005)	Negative
		Park and Shin (2004)	Inconclusive
	Board size	Xie et al. (2003)	Negative
		Peasnell et al. (2005)	Negative
	Number of board meetings	Xie et al. (2003)	Negative
	Block ownership	Klein (2002)	Inconclusive
		Park and Shin (2004)	Inconclusive
	Board ownership	Xie et al. (2003)	Inconclusive
		Klein (2002)	Inconclusive
	Financial expertise of directors	Peasnell et al. (2005)	Inconclusive
		Xie et al. (2003)	Negative
	CEO duality ²	Park and Shin (2004)	Negative
Xie et al. (2003)		Inconclusive	
Firm performance	Gender diversity	Peasnell et al. (2005)	Inconclusive
		Adams and Ferreira (2009)	Negative
M&A performance	Demographic diversity	Ben-Amar et al. (2013)	Negative at lower levels positive at higher levels

² CEO duality refers to the conjugation of the position of CEO (Chief Executive Officer) and Chairman of the board of directors in one same individual.

Table 2 summarises the main methodological aspects of all the papers included in the previous table.

Table 2: Methodological aspects of similar studies

Paper	Country	Years studied	Sample size	Data sources	Statistical analysis ³
Klein (2002)	USA	1992-1993	692 firm-years	Compustat	Regression
				CRSP	
				Proxy statements	
Xie et al. (2003)	USA	1992, 1994, 1996	282 firm-years	Compustat	Regression
				Proxy statements	
Peasnell et al. (2005)	UK	1993-1996	1271 firm-years	Datastream	Regression
				The Price Waterhouse Corporate Register	
				Stock Exchange official Yearbook	
				Annual Reports	
Park and Shin (2004)	Canada	1991-1997	539 firm-years	Global Vantage database	Regression
				Proxy statements	
Ben-Amar et al. (2013)	Canada	2000-2007	289 observations ⁴	Thomson SDC	Regression
				CFMRC database	
				SEDAR	
Adams and Ferreira (2009)	USA	1996-2003	8253 firm-years	IRRC	Regression
				ExecuComp	
				Compustat	
				CRSP	

2.3. Characteristics of the board of directors

“The board and its committees should have the appropriate balance of skills, experience, independence and knowledge of the company [...]” (The UK Corporate Governance Code, 2016, p. 5)

The vast number of theories on the role of the board of directors is understandably extendable to the research examining which characteristics of the board of directors are

³ Some papers include Spearman correlations and one-way ANOVAs as part of their descriptive statistics, but all of them use regressions as part of their multivariate analysis, to evaluate the impact of the different characteristics of the board of directors on the dependent variable studied

⁴ In this case the authors study the specific case of M&A transactions that is why we have observations rather than firm-years.

indeed associated with better governance structures. This section dwells on these characteristics.

1. Intrinsic characteristics

1.1. Board independence

After Fama and Jensen (1983) underlining the importance of outsiders on the board of directors, many studies have attempted to empirically study the impact of board independence on a countless number of variables.

Although a fully independent board is not advisable (Fama and Jensen, 1983; Klein, 2002), outside directors are very important to solve agency problems. They are usually important decision agents in other corporations, which makes them care about their reputation as experts in decision control (Fama & Jensen, 1983), which ultimately makes them reliable.

1.2. Board size

Some authors argue that smaller boards are better because they are more functional (Jensen, 1993), while others show that bigger boards are better because they are more likely to have more independent directors (Xie et al., 2003).

In fact, according to the Resource Dependence Theory, board size is dependent on environmental needs, meaning that firms with higher interdependence require a higher proportion of outsiders on the board and therefore bigger boards (Hillman et al., 2009). The UK Corporate Governance Code (2016) also recommends the board to be large enough so that it can meet the company's needs, but it should not be large to the point of becoming ineffective.

1.3 Number of board meetings

Previous studies have shown that more active boards, proxied by the number of board meetings, are able to more effectively constrain earnings management (Xie et al., 2003). Simultaneously, The UK Corporate Governance Code (2016) advises the board to meet regularly enough, in order to discharge its duties effectively.

Hence, we expect board meeting frequency to be negatively associated with the level of earnings management.

2. Demographic characteristics

“One of the ways in which constructive debate can be encouraged is through having sufficient diversity on the board. This includes, but it is not limited to, gender and race” (The UK Corporate Governance Code, 2016, p. 2)

2.1. Gender diversity

Countless scholars have attempted to assess the role of women on boards and management teams over the last decade. In 2003, Norway established that 40% of board seats in public companies⁵ should be filled by women, France and Spain followed. Although the United Kingdom has not established any gender quotas on the board, the UK Corporate Governance Code encourages gender diversity.

Given the tougher monitoring associated with women (Adams & Ferreira, 2009), we expect earnings management to be negatively associated with the percentage of women sitting on the board. However, it is important not to forget that the relationship between gender diversity and earnings management might not be a linear one and keep that in mind when performing the appropriate tests.

2.2. Cultural diversity

We intend to assess the level of cultural diversity by looking at the percentage of foreign directors on the board of directors. Foreign directors' expertise in foreign markets as well as the extension of international exposure and network of contacts they provide can bring positive effects to the company, as supported by the resource dependence theory. But greater levels of diversity are usually associated with an increase in conflicts as well (Ben-Amar et al., 2013).

Nevertheless, we expect that a greater level of cultural diversity will be associated with lower levels of earnings management.

2.3. Director's average board tenure

⁵ By public companies it is meant a company whose stocks are traded in the Stock exchange.

Some authors defend that the experience of a director on the board makes him/her able to better understand the business and ongoing management, forcing them to leave would be a waste of skills (Vance, 1983) *in* (Vafeas, 2003)-

Oppositely, other authors argue that the longer a director sits on the board the more likely he/she is to befriend the CEO, increasing the probability of CEO entrenchment. Thus, the monitoring capacity of the board will be reduced, making it less effective (Vafeas, 2003), (Ben-Amar et al., 2013).

We will follow the same reasoning as Vafeas (2003) and expect a positive relationship between the average director's tenure and earnings management. Once again, keeping in mind that this relationship might not be linear when performing the tests.

3. Hypotheses development

Regarding board independence, even though there are studies that have found no association, or a negative one, between board independence and firm performance. Given the amount of evidence supporting the negative relationship between earnings management and boardroom independence, in this study we will also expect to find this relationship.

Most studies found analysing the impact of board size in earnings management have concluded for the negative link between these variables. Following these results, we will also look for a negative relationship between board size and Earnings Management.

In what concerns board meeting frequency, following the advisory guidelines provided in the UK Corporate Governance Code and the research found studying this variable, we will also look for a negative relationship between earnings management and the number of board meetings.

When it comes to gender diversity, we expect that companies with more female directors sitting on the board will have lower earnings management given the tougher monitoring associated to female directors. Similarly, we will look for a negative relationship between the number of foreign directors and earnings management.

Oppositely, we will look for a positive relationship between the average director board tenure and earnings management behaviour. In line with the literature found proving that the longer a director sits on the board the lower will be his/her monitoring capacity.

At last, the hypotheses to be tested are:

H10: There is no relationship between the number of independent directors on the board and level of earnings management.

H1: There is a negative relationship between the number of independent directors on the board and level of earnings management.

H20: There is no relationship between the size of the board of directors and the level of earnings management.

H2: There is negative relationship between the size of the board of directors and the level of earnings management.

H30: There is no relationship between the number of board meetings and the level of earnings management.

H3: There is a negative relationship between the number of board meetings and the level of earnings management.

H40: There is no link between the number of women sitting on the board and the level of earnings management.

H4: There is a negative link between the number of women sitting on the board and the level of earnings management.

H50: There is no association between the number of foreign directors sitting on the board and earnings management.

H5: There is a negative association between the number of foreign directors sitting on the board and earnings management.

H60: There is no relationship between the director's average tenure and the level of earnings management.

H6: There is a positive relationship between the director's average tenure and the level of earnings management.

To facilitate the analysis, we have summarised these hypotheses in the following table.

Table 3: Board characteristics and expected results

	Definition	Expected results
Board independence	Percentage of independent directors as reported by the firm	Negative
Board size	Total number of board members at the end of the fiscal year	Negative
Board meeting frequency	Number of board meetings	Negative
Gender diversity	Percentage of female directors on the board	Negative
Cultural diversity	Percentage of board members with a cultural background different from the locations of the company's headquarters	Negative
Director's average tenure	Average number of years board members stay on the board	Positive

4. Methodology and Data Description

In this section, we will present a brief introduction to the methodological aspects of this work by explaining how we obtained and analysed the data required to conduct this research.

4.1. The Model

As Klein (2002) explains a study of earnings management is both an evaluation of earnings management and of the model used to compute the components necessary to calculate the level of accruals.

Hence, as a proxy of the level of earnings management we intend to compute the abnormal level of accruals for each firm using the modified Jones model. As Dechow et al. (1995) explain, this model seems to produce better results when compared to other methods of measuring earnings management, including the original Jones model.

The following equation comprises the calculations necessary to obtain the non-discretionary component of accruals:

$$NDA_{j,t} = \alpha_1 \frac{1}{TA_{j,t-1}} + \alpha_2 \left(\frac{\Delta REV_{j,t} - \Delta REC_{j,t}}{TA_{j,t-1}} \right) + \alpha_3 \frac{PPE_{j,t}}{TA_{j,t-1}}, \quad (1)$$

$$AAC C_t = \frac{ACCR_{i,t}}{TA_{i,t-1}} - \left[\hat{\alpha}_1 \frac{1}{TA_{i,t-1}} + \hat{\alpha}_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} \right) + \hat{\alpha}_3 \frac{PPE_{i,t}}{TA_{i,t-1}} \right], \quad (2)$$

Where TA_{t-1} is total assets at t-1, ΔREV_t is revenues in year t minus revenues in year t-1, ΔREC_t is net receivables in year t less net receivables in year t-1 and PPE_t is the gross property, plant and equipment in year t. $\hat{\alpha}_1$, $\hat{\alpha}_2$ and $\hat{\alpha}_3$ are obtained by estimating equation (1) using every firm in industry j.

In order to obtain the abnormal portion of accruals, we have then to subtract the non-discretionary component of accruals to the total level of accruals, using the estimators obtained.

To obtain total accruals we follow the same reasoning as Teoh et al. (1998) and Klein (2002), according to these authors the earnings reported by a firm in a certain period can be decomposed into cash flow from operations and total accruals. Ergo, we can compute total accruals as equated below:

$$Total\ accruals_t = \frac{Net\ Income_t - Cash\ flow\ from\ operations_t}{Total\ assets_{t-1}}, (3)$$

After obtaining the level of abnormal accruals for each firm, we can then run our regression to study the impact of each characteristics on the level of earnings management.

The following regressions will be used to study the impact of our structural and demographic variables on the level of earnings management:

$$AAACC_{i,t} = \alpha_0 + \beta_1 B_Size_{i,t} + \beta_2 B_Meet_{i,t} + \beta_3 B_Ind_{i,t} + \beta_4 B_Female_{i,t} + \beta_5 B_Foreign_{i,t} + \beta_6 B_Tenure_{i,t} + \beta_7 Lev_{i,t} + \beta_8 Size_{i,t} + \beta_9 ROA_{i,t} + \varepsilon_{i,t}, (I)$$

$$AAACC_{i,t} = \alpha_0 + \beta_1 B_Size_{i,t} + \beta_2 B_Meet_{i,t} + \beta_3 B_Ind_50_{i,t} + \beta_4 B_Fem_20_{i,t} + \beta_5 B_For_30_{i,t} + \beta_6 B_Tenure_{i,t} + \beta_7 Lev_{i,t} + \beta_8 Size_{i,t} + \beta_9 ROA_{i,t} + \varepsilon_{i,t}, - (II)$$

Where $AAACC_{i,t}$ is the absolute abnormal accruals for firm i , year t . Computed using equations (1) and (2). $B_Size_{i,t}$ is board size for firm i and year t . $B_Meet_{i,t}$ is the number of board meetings held annually for firm i at time t . $B_Ind_{i,t}$ is the percentage of independent directors in firm i for year t . $B_Ind_50_{i,t}$ is a dummy variable assuming the value of 1 when more than half of the board of directors is composed of independent directors and 0 otherwise. $B_Female_{i,t}$ is the percentage of female directors in firm i , year t . $B_Fem_20_{i,t}$ is a dummy variable assuming the value of 1 when more than 20% of the board of directors is composed of female directors and 0 otherwise. $B_Foreign_{i,t}$ is the percentage of foreign directors in firm i , year t . $B_For_30_{i,t}$ is a dummy variable assuming the value of 1 when more than 30% of the board of directors is composed of foreign directors and 0 otherwise. $B_Tenure_{i,t}$ is the average director board tenure for firm i year t .

Model (II) was created in order to allow the study of the impact of the percentage of female, foreign and independent directors in certain thresholds where we would normally expect these variables to produce effects. This model allows us to study whether there is a difference between firms with an above threshold percentage of independent, foreign and female directors and those without. This was possible through the creation of dummy variables assuming the value of 1 when the variable is above the average and 0

otherwise. With this dummy model we expect to be able to find certain effects that would otherwise stay unnoticed

Besides these characteristics, we also control for a set of variables that might have an impact on earnings management as well.

In this set of control variables, we include leverage measured as total debt divided by beginning of the period total assets and we expect highly leveraged firms to incur more often in income increasing earnings management in order to be able to meet earning targets stipulated by creditors.

We also include size, measured as the natural logarithm of the book value of total assets. In this case, we expect bigger firms to exhibit lower abnormal accruals.

Lastly, we control for the return on assets and we expect firms with a higher Return on assets to have lower abnormal accruals. Since as exposed in Chen et al. (2015) fraud firms tend to exhibit lower performance.

These controls are included since these variables have been many times proven to impact the level of earnings management undertaken by firms ((Klein, 2002), (Peasnell et al., 2005)).

4.2. Methodology

Studying earnings management is a very difficult process, since there are many conflicting reasons for firms to manipulate earnings. It has been previously noticed that earnings management activity is more pronounced around certain thresholds (Peasnell et al., 2005).

Managers tend to manipulate earnings when they wish to avoid to report a negative result at the end of the period or when they do not want to show a decrease in earnings and also when they are not able to meet the analysts forecasts (Burgstahler & Dichev, 1997).

Additionally, according to the income smoothing theory, managers manipulate earnings in order to make them constant. This way, they can reduce earnings fluctuations over time in order to avoid speculation (DeFond & Park, 1997).

As a result, to perform our tests we will not only study the impact of board characteristics on earnings management using the whole sample but also by splitting the sample in a way that allows each new sample to be more homogeneous when it comes to the incentives to manipulate earnings. This split will result in:

- i. Observations of firms experiencing an increase in earnings;
- ii. Observations of firms experiencing a decrease in earnings.

By doing this, it is expected that the incentives managers have to manipulate earnings are homogenized, making it easier to find a relationship between earnings management activities and our board variables. This threshold was chosen instead of zero because we are dealing with top performing British companies, after considering the zero-threshold option we realized that this threshold would provide a very small sample of observations.

Instead of using net income as a proxy for earnings, we have decided to use Cash flow from operations since this measure can be seen as a proxy of earnings without the results obtained through accrual manipulations (Peasnell et al., 2000).

The following table defines all the variables used in the regression model.

Table 4: Board characteristics and expected results

		Definition
B_IND	Board independence	Percentage of independent directors as reported by the firm
B_IND_50	Board independence	Dummy variable taking the value of 1 if more than half of the board of directors is independent
B_SIZE	Board size	Total number of board members at the end of the fiscal year
B_MEET	Board meeting frequency	Number of board meetings
B_FEMALE	Gender diversity	Percentage of female directors on the board
B_FEM_20	Gender diversity	Dummy variable assuming the value of one when over 20% of the board is composed of women.
B_FOREIGN	Cultural diversity	Percentage of foreign board members.

B_FOR_30	Cultural diversity	Dummy variable assuming the value of 1 when over 30% of the board of directors is composed of foreigners.
B_TENURE	Director's average tenure	Average number of years board members stay on the board
ROA	Profitability	Net income over total assets
LEV	Leverage	Total debt divided by beginning of the period's total assets
ASS	Size	Total assets at the end of the period.

4.3. Data collection

The data used in this study was obtained through Eikon/Datastream. This database provided all the variables we need to measure the level of accruals for each firm, the variables necessary to study the demographic and intrinsic characteristics of the board of directors were available in Eikon. These last variables are defined exactly in the same way as Eikon describes them in Table 3.

We started our sample by selecting all companies included in the FTSE 350 index, which comprises the 350 companies with the highest market capitalization traded in the London Stock Exchange.

Since this study is preformed throughout four years, i.e. 2013, 2014, 2015 and 2016, every firm with missing information on the variables necessary to obtain the level of earnings management, the ones in Equation (1) and (2), as well as those with missing data on any of the corporate governance variables previously discussed were excluded from the initial sample.

Subsequently, our sample was divided according to the supersector in which these firms operated, to do this the Industry Classification Benchmark (ICB) was used. This industry classification was developed by the FTSE and it splits firms into 10 industries, 19 supersectors, 41 sectors and 114 subsectors according with their main operational activities.

Every firm performing activities related with financial services was deleted, since these companies have different ways to manipulate accruals that might not be captured

by the modified Jones model, as well as firms operating in the utilities and telecommunications sectors because these have different incentives and opportunities to manage earnings. This meant deleting every firm belonging to any two-digit industry groups between 65 to 87 (Klein, 2002) (Peasnell et al., 2005).

Lastly, firms in industries considered to be underrepresented were also deleted, since these would make the results obtained with equation (1) less reliable. Table 6 displays the number of firms per industry used to compute the coefficients displayed in equation (1) and necessary to calculate equation (2). Only industries with 5 or more firms were included in this study.

Overall, this study is conducted on a final sample of 66 firms and 264 firm-years observations.

Table 5 summarizes the adjustments discussed:

Table 5: Adjustments made to the initial sample

Adjustments	Sample
FTSE 350	351
Missing accrual data	(119)
Industry codes between 65-87	(36)
Firms in industries with less than 5 firms	(1)
Missing corporate governance data	(127)
Missing controls	(2)
Final Sample	66

Table 6: Industries included to estimate the coefficients of equation (1)

Industry	No. of firms
5 Oil & Gas	7
13 Chemicals	5
17 Basic Resources	14

23	Construction & Materials	8
27	Industrial Goods & Services	53
35	Food & Beverage	11
37	Personal & Household Goods	15
45	Health Care	13
53	Retail	22
55	Media	11
57	Travel & Leisure	29
95	Technology	6
Total		194

4.4. Descriptive statistics

Table 5 displays the descriptive statistics for the corporate governance variables used in our study.

The average board is composed of, approximately, 10 directors of which 59% are independent, 21% are female and 31% have a cultural background different from the one existing in the location of the company's headquarters. Additionally, these directors appear to meet on average 8 times per year and their average tenure is of, approximately, 6 years.

Moreover, it might be interesting to notice that in this sample, there is no board with no foreign directors on it, which proves the great levels of cultural diversity among companies traded on the LSE.

Table 7: Descriptive statistics for board variables

	Mean	Min	Max	Std. Dev.
B_Ind	0.59	0.07	0.87	0.16
B_Size	10.11	5.00	21.00	2.42
B_Meet	8.17	1.00	26.00	2.88
B_Female	0.21	0.00	0.45	0.10

B_Foreign	0.31	0.07	1.00	0.22
B_Tenure	5.55	1.71	10.32	1.41

It is important for a study to produce valid results that its variables are not strongly correlated, in order to avoid multicollinearity issues. As we can infer from table 8, our variables are not strongly correlated with each other suggesting that we can proceed with our regression analysis without having to worry about multicollinearity issues.

Table 8: Spearman correlations among variables.

	AAACC	B_Ind	B_Size	B_Meet	B_Fem	B_For	B_Ten
AAACC	1.00						
B_Ind	-0.07	1.00					
B_Size	-0.02	0.06	1.00				
B_Meet	0.03	0.06	0.03	1.00			
B_Female	0.01	0.06	0.28***	0.01	1.00		
B_Foreign	-0.11**	0.07	0.02	-0.19***	-0.15***	1.00	
B_Tenure	-0.16***	-0.10*	-0.04	-0.09	-0.26***	0.23***	1.00

5. Results

In this section, we use multivariate models to determine and discuss the results of the impact of the characteristics of the board of directors on earnings management following the methodology previously presented.

i) Results obtained using the entire sample

Table 9 contains the results for the whole sample both using Model I and II

The positive and significant at a 10% level coefficient for the $\text{Log}(\text{B_size})$ variable seems to be consistent with the hypothesis that UK boards are too big, which ultimately results in conflicts.

In Model 2, the negative coefficient for the B_Ind_50 is consistent with the hypothesis that independent directors play indeed a role in constraining earnings manipulation. This coefficient indicates that the guideline stipulated in the UK Corporate Governance Code, stating that at least half of the board of directors should be composed of independent directors is in fact associated to reduced earnings manipulation.

On the other hand, the negative coefficient of $\text{Log}(\text{B_Tenure})$ seems to be consistent with the branch of research defending that directors with a longer tenure tend to become more experienced and this makes them more capable of identifying and constraining earnings management. We can in this case reject both H6 and H60

In both models the coefficients for ROA, LEV and SIZE are statistically significant at the 1% level. Through the analysis of the control variables, we can deduct that better performing, low leveraged and bigger firms tend to have lower abnormal accruals, presenting therefore a lower propensity to manipulate earnings.

The Adjusted R-Squared of 0.26 indicates that 26% of the changes in abnormal accruals are justified by our model.

Table 9: Regression analysis of Absolute abnormal accruals on the characteristics of the board of directors
(Coefficient estimate and p-value in brackets)

	Expected signal	Model I	Model II.
Intercept	?	0.143***	0.152***
B_Ind	-	0.004	
B_Ind_50	-		-0.011*
Log(B_Size)	-	0.029*	0.025
Log(B_Meet)	-	0.003	0.003
B_Female	-	0.051	
B_Fem_20	-		0.006
B_Foreign	-	0.004	
B_For_30	-		0.002
Log(B_tenure)	+	-0.017	-0.02*
ROA	-	-0.003***	-0.003***
Lev	+	0.065***	0.062***
Size	-	-0.010***	-0.009***
R-Squared		0.286	0.291
Adj. R-Squared		0.26	0.27
F		11.31***	11.58***
Obs.		264	264

B_Ind is the percentage of independent board members.

Log(B_size) is the natural logarithm of the number of directors sitting on the board.

Log(B_meet) is the natural logarithm of the number of board meetings taking place every fiscal year.

B_Female is the percentage of women sitting on the board.

B_Fem_20 is a dummy variable assuming the value of 1 when the percentage of women on the board exceeds 20% and 0 otherwise.

B_Foreign is the percentage of foreign directors sitting on the board of directors.

B_For_30 is a dummy variable assuming the value of 1 when the percentage of foreign directors exceeds 30% and 0 otherwise.

Log(B_tenure) is the natural logarithm of the average number of year a director sits on the board for.

ROA is the return on assets.

Lev is the total debt divided by the beginning of the period's assets.

Size is the natural logarithm of the book value of total assets.

*, ** and *** significant at a 10%, 5% and 1% levels, respectively.

ii) Results obtained using earnings thresholds to split the sample

Table 10 and 11 present the results for the regression analysis with thresholds using model 1 and 2 respectively.

Using Model I, it is possible to realize that when there is an increase in earnings relatively to the last period, the percentage of female directors sitting on the board seems to be positively related with earnings management behaviour. These results show that we can reject both H4 and H40.

However, according with the income smoothing theory when earnings increase, we can expect managers to manipulate earnings downwards in order to create provisions for future earnings decreases. Therefore, this increase in accruals can be considered as evidence of the conservatism associated to female directors (Powell & Ansic, 1997). According to Peni and Vähämaa (2010) female directors tend to follow more income decreasing earnings management strategies, due to their conservatism and risk -aversion. Subsequently, it seems reasonable to assume that there will be a positive relationship between the number of female directors and such earnings management strategies when there are more incentives to pursue them.

On the other hand, when firms increase their earnings, the number of years a director sits on the board is negatively related with the level of absolute abnormal accruals. We therefore reject H6 and H60, and we can conclude in favour of the branch of literature exposing the benefits experience brings when it comes to knowing the business. These results indicate that senior directors are better at constraining earnings management than junior directors

When firms experience an increase in earnings, board size seems to be positively related with earnings management, we can therefore reject H2 and H20. These results are consistent with previous studies demonstrating that bigger boards are less effective when discharging its duties due to dysfunctional communication and decision-making (Jensen, 1993; Yermack, 1996)

In this test, it is interesting to notice how better the Adjusted R-Squared measure is when we are dealing with the sample of firms experiencing an increase in earnings.

This suggests that our variables are better able to explain the changes in abnormal accruals when there is an increase in earnings.

Table 10: Regression analysis of Absolute abnormal accruals on the characteristics of the board of directors below and above thresholds using Model 1 (Coefficient estimate and p-value in brackets)

	Expected signal	CFO_t > CFO_{t-1}	CFO_t < CFO_{t-1}
Intercept	?	0.212***	0.061
B_Ind	-	-0.002	0.002
Log(B_Size)	-	0.009	0.047*
Log(B_Meet)	-	0.010	-0,007
B_Female	-	0.087*	-0,032
B_Foreign	-	0.003	0.005
Log(B_tenure)	+	-0,026*	-0,003
ROA	-	-0,004***	0.002***
Lev	+	0,057***	0,008***
Size	-	-0,011***	-0,076
R-Squared		0,405	0.17
Adj R-Squared		0,37	0.1
F		10.88***	2.32**
Obs.		154	110

B_Ind is the percentage of independent board members.

Log(B_size) is the natural logarithm of the number of directors sitting on the board.

Log(B_meet) is the natural logarithm of the number of board meetings taking place every fiscal year.

B_Female is the percentage of women sitting on the board.

B_Foreign is the percentage of foreign directors sitting on the board of directors.

Log(B_tenure) is the natural logarithm of the average number of year a director sits on the board for.

ROA is the return on assets.

Lev is the total debt divided by the beginning of the period's assets.

Size is the natural logarithm of the book value of total assets.

CFO_t is the cash flow from operation in period *t*.

CFO_{t-1} is the cash flow from operations in period *t-1*.

*, ** and *** significant at a 10%, 5% and 1% levels, respectively.

In table 11 it is possible to see the results for the threshold division using model II.

When firms experience an increase in earnings, firms with a percentage of independent directors above 50% exhibit a lower propensity for accrual management. This shows that firms which follow the guidelines provided by the UK corporate governance code seem to have lower abnormal accruals.

For firms experiencing a decrease in earnings, the size of the board of directors seems to be positively linked with the level of abnormal accruals, suggesting once again that top performing British companies' boards are too big to effectively discharge their duties.

Regarding gender diversity, in this case, we can see that firms with an above average percentage of female directors seem to engage in earnings management activities when there is an increase in earnings. Oppositely, when there is a decrease in earnings, the negative coefficient for firms with an above average percentage of female directors is consistent with H4. This is also consistent with the literature on the link between income-decreasing earnings management and gender diversity.

Once again, we find board tenure to be negatively linked with the level of abnormal accruals. However, in this case, the relationship is only significant when firms increase earnings.

Regarding the control variables, it is possible to notice that although size always keeps a negative signal it is only significant for firms increasing earnings. However, we can still infer that better performing and low leveraged firms have lower levels of abnormal accruals, despite any earnings fluctuations.

Once again, as we can see the R-squared is much higher for the model containing firms with a cash flow from operations above last year's suggesting that our variables have a higher explanatory power in this case.

Table 11: Regression analysis of Absolute abnormal accruals on the characteristics of the board of directors below and above thresholds using Model 2 (Coefficient estimate and p-value in brackets)

	Expected signal	$CFO_t > CFO_{t-1}$	$CFO_t < CFO_{t-1}$
Intercept	?	0.214 ^{***}	0.049
B_Ind_50	-	-0.019 ^{**}	-0.006
Log(B_Size)	-	0.003	0.055 ^{**}
Log(B_Meet)	-	0.011	-0.004
B_Fem_20	-	0.020 ^{**}	-0.023 ^{**}
B_For_30	-	-0.001	0.008
Log(B_tenure)	+	-0.027 [*]	-0.016
ROA	-	-0.004 ^{***}	-0.001 ^{**}
Lev	+	0.055 ^{***}	0.059 ^{**}
Size	-	-0.009 ^{***}	-0.006
R-Squared		0.433	0.215
Adj R-Squared		0.4	0.145
F		12.21 ^{***}	3.05 ^{***}
Obs.		154	110

B_Ind is the percentage of independent board members.

Log(B_size) is the natural logarithm of the number of directors sitting on the board.

Log(B_meet) is the natural logarithm of the number of board meetings taking place every fiscal year.

B_Female is the percentage of women sitting on the board.

B_Fem_20 is a dummy variable assuming the value of 1 when the percentage of women on the board exceeds 20% and 0 otherwise.

B_Foreign is the percentage of foreign directors sitting on the board of directors.

B_For_30 is a dummy variable assuming the value of 1 when the percentage of foreign directors exceeds 30% and 0 otherwise.

Log(B_tenure) is the natural logarithm of the average number of year a director sits on the board for.

ROA is the return on assets.

Lev is the total debt divided by the beginning of the period's assets.

Size is the natural logarithm of the book value of total assets.

CFO_t is the cash flow from operation in period *t*.

CFO_{t-1} is the cash flow from operations in period *t-1*.

*, ** and *** significant at a 10%, 5% and 1% levels, respectively

In all tests performed, we were unable to detect any impact associated with the variable representing the percentage of foreign directors sitting on the board and the variable representing the number of board meetings. According with our results, these variables have an insignificant impact on earnings management for the considered sample. It is then possible to reject H3 and H5 and conclude in favour of H30 and H50.

6. Conclusions

The main aim of this study was to study the impact of the characteristics of the board of directors on earnings management in the United Kingdom. As previously discussed, the impact of the corporate governance characteristics of a firm on earnings management is not direct and it is dependent on the characteristics of the environment in which firms are inserted.

This study adds up to the literature on the impact of corporate governance variables on a firm's financial behaviour. This study is, to the best of our knowledge, one of the few assessing the impact of both demographic and intrinsic characteristics of the board on earnings manipulation.

With the results obtained, it is possible to conclude that boards composed of more than half independent directors seem to engage in less earnings manipulation. This result demonstrates that firms following the guideline provided by the UK Corporate Governance Code on board independence tend to have lower levels of abnormal accruals.

Simultaneously, the size of the board of directors seems to be positively related with abnormal accruals, indicating that boards in the United Kingdom are too big which ends up generating conflicts and reducing communication and decision-making abilities. This result is also valid for the subsample of firms experiencing a decrease in earnings.

Additionally, and unlike initially predicted, board tenure seems to be negatively linked with the level of abnormal accruals of British firms. These results are consistent with the literature branch defending that senior directors are savvier and therefore more capable of detecting earnings management than junior directors.

Lastly, it is also possible to conclude that when firms increase their earnings, the percentage of female directors sitting on the board seems to positively influence the level of earnings management. This link seems to be consistent with the branch of literature explaining the relationship between gender diversity and conservative earnings management strategies.

In this study we were unable to detect any link between the number of board meetings and the level of abnormal accruals or the percentage of foreign directors and earnings management activities.

This study adds up to the existing literature on Corporate Governance and Earnings management, by proving that there is a link between earnings management and both the intrinsic and demographic characteristics of the board of directors.

One important limitation of this study comes from the lack of data. It is very hard to obtain all necessary variables to compute abnormal accruals and even harder to get big samples when studying the impact of board variables, especially demographic, on earnings management. Another important limitation stemming from the lack of data is that we can only analyse firms within the group that is obliged to reveal information on Corporate Governance data in their annual reports, this makes us look only into big publicly held firms, which are already under the constant scrutiny of financial markets, making them more reluctant to use accruals to manipulate earnings.

Future studies should attempt to solve these limitations, including better samples and subsequently reaching better results. Other suggestions for future research would pass through studying the impact of board characteristics on real earnings management and the use different measures of accrual manipulation, as current accruals for example.

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Anexes

Dependent Variable: AAACC
 Method: Panel Least Squares
 Date: 08/04/18 Time: 10:59
 Sample: 2013 2016
 Periods included: 4
 Cross-sections included: 66
 Total panel (balanced) observations: 264

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.143072	0.047824	2.991660	0.0030
B_IND	0.004432	0.019340	0.229143	0.8189
LOG(B_SIZE)	0.029414	0.016226	1.812738	0.0711
LOG(B_MEET)	0.002964	0.009330	0.317701	0.7510
B_FEMALE	0.051420	0.035831	1.435072	0.1525
B_FOREIGN	0.004324	0.014843	0.291293	0.7711
LOG(B_TENURE)	-0.017433	0.012333	-1.413445	0.1587
ROA	-0.003120	0.000376	-8.288686	0.0000
TOT_DEBT/LAG_ASS	0.065477	0.016442	3.982196	0.0001
LOG(ASS)	-0.010166	0.002969	-3.424092	0.0007
R-squared	0.286186	Mean dependent var		0.046675
Adjusted R-squared	0.260893	S.D. dependent var		0.056792
S.E. of regression	0.048825	Akaike info criterion		-3.163999
Sum squared resid	0.605510	Schwarz criterion		-3.028546
Log likelihood	427.6478	Hannan-Quinn criter.		-3.109570
F-statistic	11.31498	Durbin-Watson stat		1.428480
Prob(F-statistic)	0.000000			

Dependent Variable: AAACC
 Method: Panel Least Squares
 Date: 08/04/18 Time: 10:57
 Sample: 2013 2016
 Periods included: 4
 Cross-sections included: 66
 Total panel (balanced) observations: 264

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.152580	0.047843	3.189199	0.0016
B_IND_50	-0.011283	0.006787	-1.662332	0.0977
LOG(B_SIZE)	0.025358	0.016089	1.576145	0.1162
LOG(B_MEET)	0.003455	0.009293	0.371826	0.7103
B_FEM	0.006401	0.006511	0.983096	0.3265
B_FOR_30	0.002263	0.006672	0.339140	0.7348
LOG(B_TENURE)	-0.020436	0.012374	-1.651584	0.0999
ROA	-0.003026	0.000368	-8.213215	0.0000
TOT_DEBT/LAG_ASS	0.062420	0.016366	3.813916	0.0002
LOG(ASS)	-0.008692	0.002852	-3.047532	0.0026
R-squared	0.290982	Mean dependent var		0.046675
Adjusted R-squared	0.265859	S.D. dependent var		0.056792
S.E. of regression	0.048661	Akaike info criterion		-3.170741
Sum squared resid	0.601441	Schwarz criterion		-3.035288
Log likelihood	428.5378	Hannan-Quinn criter.		-3.116312
F-statistic	11.58244	Durbin-Watson stat		1.432429
Prob(F-statistic)	0.000000			

Dependent Variable: AAACC
 Method: Panel Least Squares
 Date: 08/27/18 Time: 19:11
 Sample: 2013 2016 IF THRES>0
 Periods included: 4
 Cross-sections included: 66
 Total panel (unbalanced) observations: 154

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.212158	0.065064	3.260766	0.0014
B_IND	-0.001730	0.024777	-0.069842	0.9444
LOG(B_SIZE)	0.008922	0.020375	0.437901	0.6621
LOG(B_MEET)	0.010054	0.011993	0.838360	0.4032
B_FEMALE	0.087254	0.047766	1.826686	0.0698
B_FOREIGN	0.002874	0.018801	0.152862	0.8787
LOG(B_TENURE)	-0.025529	0.015752	-1.620608	0.1073
ROA	-0.003822	0.000469	-8.152437	0.0000
TOT_DEBT/LAG_ASS	0.056869	0.019597	2.901883	0.0043
LOG(ASS)	-0.011306	0.003700	-3.055801	0.0027
R-squared	0.404756	Mean dependent var		0.047735
Adjusted R-squared	0.367553	S.D. dependent var		0.061793
S.E. of regression	0.049141	Akaike info criterion		-3.125498
Sum squared resid	0.347743	Schwarz criterion		-2.928293
Log likelihood	250.6633	Hannan-Quinn criter.		-3.045394
F-statistic	10.87974	Durbin-Watson stat		1.306709
Prob(F-statistic)	0.000000			

Dependent Variable: AAACC
 Method: Panel Least Squares
 Date: 08/27/18 Time: 18:56
 Sample: 2013 2016 IF THRES<0
 Periods included: 4
 Cross-sections included: 61
 Total panel (unbalanced) observations: 110

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.061241	0.068549	0.893388	0.3738
B_IND	0.002472	0.032362	0.076374	0.9393
LOG(B_SIZE)	0.047399	0.028091	1.687334	0.0947
LOG(B_MEET)	-0.007336	0.014988	-0.489455	0.6256
B_FEMALE	-0.031964	0.056670	-0.564042	0.5740
B_FOREIGN	0.004567	0.027314	0.167217	0.8675
LOG(B_TENURE)	-0.003286	0.019463	-0.168846	0.8663
ROA	-0.001691	0.000635	-2.662322	0.0090
TOT_DEBT/LAG_ASS	0.075855	0.030171	2.514199	0.0135
LOG(ASS)	-0.007253	0.005115	-1.417874	0.1593
R-squared	0.172686	Mean dependent var		0.045192
Adjusted R-squared	0.098228	S.D. dependent var		0.049182
S.E. of regression	0.046704	Akaike info criterion		-3.203464
Sum squared resid	0.218127	Schwarz criterion		-2.957966
Log likelihood	186.1905	Hannan-Quinn criter.		-3.103889
F-statistic	2.319240	Durbin-Watson stat		2.239521
Prob(F-statistic)	0.020518			

Dependent Variable: AAACC
 Method: Panel Least Squares
 Date: 09/01/18 Time: 11:44
 Sample: 2013 2016 IF THRES<0
 Periods included: 4
 Cross-sections included: 61
 Total panel (unbalanced) observations: 110

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.048552	0.067257	0.721880	0.4721
B_IND_50	-0.006282	0.010242	-0.613383	0.5410
LOG(B_SIZE)	0.054646	0.026244	2.082222	0.0399
LOG(B_MEET)	-0.004249	0.014461	-0.293819	0.7695
B_FEM	-0.023069	0.010433	-2.211061	0.0293
B_FOR_30	0.008345	0.009862	0.846186	0.3995
LOG(B_TENURE)	-0.015625	0.019418	-0.804667	0.4229
ROA	-0.001416	0.000588	-2.409364	0.0178
TOT_DEBT/LAG_ASS	0.058889	0.029634	1.987178	0.0496
LOG(ASS)	-0.005779	0.004413	-1.309692	0.1933
R-squared	0.215406	Mean dependent var		0.045192
Adjusted R-squared	0.144792	S.D. dependent var		0.049182
S.E. of regression	0.045482	Akaike info criterion		-3.256481
Sum squared resid	0.206863	Schwarz criterion		-3.010983
Log likelihood	189.1065	Hannan-Quinn criter.		-3.156906
F-statistic	3.050493	Durbin-Watson stat		2.232995
Prob(F-statistic)	0.002880			

Dependent Variable: AAACC
 Method: Panel Least Squares
 Date: 09/01/18 Time: 11:44
 Sample: 2013 2016 IF THRES>0
 Periods included: 4
 Cross-sections included: 66
 Total panel (unbalanced) observations: 154

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.214188	0.063682	3.363416	0.0010
B_IND_50	-0.019055	0.008733	-2.181791	0.0307
LOG(B_SIZE)	0.002978	0.019725	0.150949	0.8802
LOG(B_MEET)	0.011079	0.011686	0.948081	0.3447
B_FEM	0.019874	0.008129	2.444676	0.0157
B_FOR_30	-0.001288	0.008664	-0.148608	0.8821
LOG(B_TENURE)	-0.027135	0.015468	-1.754301	0.0815
ROA	-0.003813	0.000456	-8.367866	0.0000
TOT_DEBT/LAG_ASS	0.054806	0.019083	2.872025	0.0047
LOG(ASS)	-0.009087	0.003648	-2.491053	0.0139
R-squared	0.432847	Mean dependent var		0.047735
Adjusted R-squared	0.397400	S.D. dependent var		0.061793
S.E. of regression	0.047968	Akaike info criterion		-3.173840
Sum squared resid	0.331332	Schwarz criterion		-2.976635
Log likelihood	254.3857	Hannan-Quinn criter.		-3.093736
F-statistic	12.21110	Durbin-Watson stat		1.345241
Prob(F-statistic)	0.000000			