
An Empirical Analysis Of The Change In The Provision For Credit Losses On Trade Receivables From An Earnings Management Perspective

Jonathon Butler and John Casey
Waterford Institute of Technology

Address inquiries to: John Casey, School of Business, Waterford Institute of Technology, Cork Road, Ireland; jcasey@wit.ie

Abstract

This paper considers the practices of UK listed companies with regard to the provision for credit losses on trade receivables. Following the work of Lev and Thiagarajan (1993), the concept of an abnormal provision for credit losses is put forward; this is where the provision for credit losses is greater or less than what could have been expected for a given increase in gross trade receivables. Our contention is that this abnormal provision for credit losses is indicative of earnings management activity. Therefore, we test to determine the factors that may be influencing the extent of the abnormal provision for credit losses.

We found evidence of under provisioning; with companies under-providing by 10% relative to the increase in gross trade receivables, this was significantly different from 0% i.e. the absence of under-provisioning. Additionally, we found that on average, the level of provision for credit losses was equal to 6% of trade receivables and 15% of net income attributable to ordinary shareholders. In relation to the factors that cause this under provisioning, the results show:

- Where the board of directors is comprised of an increasing proportion of independent non-executive directors, there is significantly less under provisioning activity.
- Where executive level managers receive remuneration contingent upon earnings performance, there is significantly more under provisioning activity.
- However, numerous other factors that are usually associated with earnings management exhibited no relationship with the abnormal provision for credit losses on trade receivables.

This study adds to existing earnings management research by considering a single attribute of discretionary accruals. It is only a relatively recent phenomenon that companies have routinely disclosed their credit loss provisions. Many companies only began the practice of disclosure in 2005 as part of the transition to international GAAP. However, the results were disappointing with low Adj R²s and many of the hypothesised variables proving insignificant.

On average, abnormal under provision for credit losses on trade receivables was found to exist amongst FTSE 350 companies, however we were unable to satisfactorily explain the existence of the abnormal under-provision from the perspective of the earnings management literature. Some possible explanations for the lack of results are explored.

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1.0: Introduction

This paper considers the practices of UK listed companies with regard to the provision for credit losses on trade receivables. Results on the average level of trade receivables and provisioning activity are presented. Then, following the work of Lev and Thiagarajan (1993), the concept of an abnormal provision for credit losses is put forward; this is where the provision for credit losses is greater or less than what could have been expected for a given increase in gross trade receivables. Our contention is that this abnormal provision for credit losses is indicative of earnings management activity. Therefore, we test to determine the factors that may be influencing the extent of the abnormal provision for credit losses. The results suggest that although we were able to show evidence of abnormal under-provision for credit losses on trade receivables, we could not confirm that the variables that have been found to influence earnings management (more broadly defined) could be applied in the singular measure in this instance.

The importance of trade credit as a method of corporate financing is widely documented, with empirical evidence suggesting that trade receivables account for between 5 to 30 per cent of the total assets of European companies (Van Der Wijst and Hol, 2002). Post the 2008 financial crisis, both private and corporate credit risk remain elevated. With the intensification of the sovereign debt crisis across Europe during 2011 and 2012, macroeconomic uncertainty and credit risk have increased further. EFMA (2012) states that 79 per cent of credit risk manager respondents anticipate a renewed recession across Europe during 2012, leading to increased restrictions in trade credit and expected increases in credit delinquencies.

Companies provide for anticipated losses on trade receivables through a specific provision for credit loss on trade receivables (IAS 39: S.58-59), commonly referred to as the provision for doubtful receivables or provision for bad debts. In an environment of such elevated credit risk, any reduction in this provision or failure to augment the provision relative to an increase in total gross trade receivables could be considered to be suspect. Indeed, any reduction or failure to augment this provision generally serves to inflate overall earnings. McNichols and Wilson (1988) identified the large impact that the provision for credit losses can have on reported earnings: they noted that the average provision for credit losses is equal to 20% of average reported earnings and that discretion over the bad debt provision equates to up to 4% of income. They concluded that, while on its own discretionary provision for credit losses may appear immaterial, it can in conjunction with other discretionary accruals, help managers to achieve target income.

Prior empirical studies, ranging from Healy (1985), Jones (1991) to Dechow *et al* (2011) have examined in great detail the existence, frequency and magnitude of earnings management activity, primarily in the context of discretionary accruals. McNichols and Wilson (1988) identify the need for further research with regard to earnings management through singular accrual measures such as the provision for bad debts. However, excepting the research of Lev and Thiagarajan (1993) and Ricci (2011), the authors are not aware of additional extensive research that has examined the manipulation of the provision for credit losses on trade receivables from an earnings management perspective, in a European or IFRS compliant financial reporting context.

Our main research objectives are:

1. To quantify the existence and magnitude of the provision for credit losses on trade receivables amongst FTSE 350 companies.
2. To quantify the existence, direction and magnitude of abnormal provision for credit losses on trade receivables amongst FTSE 350 companies.
3. To develop a model that examines the determining factors that help to explain the extent of the abnormal provision for credit losses on trade receivables amongst FTSE 350 companies.

This study adds to existing earnings management research by considering a single attribute of discretionary accruals. It is only a relatively recent phenomenon that companies have routinely disclosed their bad debt provisions. Many companies only began the practice of disclosure in 2005¹ as part of the transition to international GAAP. Hence, now that the practice is well established, it is opportune to consider its impact. In considering the determinants of under or over provisioning, it is envisaged that useful insights will be gained that may be of help to auditors and financial regulators.

We found evidence of under provisioning; with companies under providing by 10% relative to the increase in gross trade receivables, this was significantly different from 0% i.e. the absence of under-provisioning. In relation to the factors that cause this under provisioning, the results indicate:

- Where the board of directors is comprised of an increasing proportion of independent non-executive directors, there is significantly less under provisioning activity.
- Where executive level managers receive remuneration contingent upon earnings performance, there is significantly more under provisioning activity.
- However, numerous other factors that are usually associated with earnings management exhibited no relationship with the abnormal provision for credit losses on trade receivables.

The remainder of this paper is organised in the following sequence: section two considers the previous literature, theoretical basis of the paper and sets out the basis for the hypotheses that will be tested. In section three, the research methodology is detailed and the key methodological decisions are explained. The results of the empirical research are discussed in section four, while, section five details our overall conclusion.

2.0: Previous Literature

This section will briefly introduce the concept of earnings quality and earnings management, leading to a discussion on measuring earnings management. Then, the current financial reporting regulations governing disclosures of the provision for credit losses on trade receivables are reviewed, followed by the previous studies that have concentrated on the use of the provision for credit losses to manage earnings. In the next section, the main theoretical frameworks that are commonly used to explain earnings management behaviour are described. Finally, the hypotheses that form the basis for this study are developed.

¹ For example, GSK began to disclose their bad debt provision in 2005 while Vodafone began the practice in 2002.

2.1: Earnings Quality and Earnings Management

This study investigates the practices of FTSE 350 companies in their provisioning for credit losses on trade receivables. It is an activity that requires considerable judgement. As a consequence, there is scope for potential manipulation of the provision with a resultant impact on reported earnings. In situations where the provision for credit losses does not reflect the underlying economic events affecting a firm, then the reported earnings could be considered to be of lower quality.

The concept of earnings quality is documented extensively in prior literature, with Ayres (1994) stating that earnings quality was examined as early as the 1930's, whereby the *true* or underlying value of a security could be determined through careful analysis of an entity's financial statements to indicate whether a company should be trading in excess of or below its current market value. According to Ayres (1994), a focus on the degree of permanence in reported earnings became a principal measure of earnings quality during the early 1970's.

The concept of earnings management is very closely linked with earnings quality. Earnings management comprises income smoothing behaviour but also refers to the intentional structuring of disclosure or investment decisions with the *bottom line* impact in mind (Ayres, 1994). Bricker *et al* (1995) posit that reported earnings are of the highest quality when they are most reflective of underlying events and conditions. Moreover, Duncan (2002) asserts that management must often undertake subjective estimates with regard to losses on loans or trade receivables that directly impact earnings quality and that if managers smooth or manage earnings through estimates that are either too liberal or conservative, there is a significant risk that such earnings may be viewed as lower quality earnings by financial statement users. In supporting Duncan (2002), Schipper *et al* (2003) determine that investors consistently attach higher price multiples to earnings patterns that are supported by high quality earnings and that the magnitude of any earnings management activity directly impacts the quality of earnings.

While acknowledging that accounting flexibility is a primary mechanism through which earnings management takes place, Dechow and Skinner (2000) suggest that the elimination of all accounting flexibility would render earnings useless as a measurement of economic performance. Colson *et al* (2010) suggest that firms may utilise such flexibility to provide a clearer indication of their financial performance, rather than to mislead investors. Additionally, Srivastava (2008) determines that firms utilise flexibility in revenue recognition rules in order to convey value relevant information to investors and not to engage in earnings management.

Accrual accounting, which is utilised to disrupt cash flow patterns in order to compensate for issues of both timing and recognition (Dechow and Dichev, 2002), is most contentious in the area of earnings management. Although accounting driven accruals are often identified as a primary mechanism through which earnings management may take place (Dechow *et al*, 1995), it is argued that the use of accrual accounting in the determination of earnings results in long run earnings patterns that are closely correlated with returns (Degeorge *et al* 1999). Healy and Wahlen (1998) also contend that current earnings, which are indicative of management judgement, are value relevant and are better indicators of future cash flow performance than current cash flows.

2.2 Measures of Earnings Quality

Schipper and Vincent (2003) state that earnings quality may be measured through indicators that include the ratio of cash from operations to income, changes in total accruals or the direct estimation of discretionary accruals through accounting fundamentals. Palliam and Shalhoub (2003) define earnings quality as a measure of the predictability of future earnings while Schipper *et al* (2003) also posit that higher quality earnings have a signalling effect that indicates the sustainability of an earnings pattern. Bellovary *et al* (2005), in identifying the provision for doubtful receivables as a singular measure of earnings quality, also contend that earnings quality refers to the stability, persistence and lack of variability in reported earnings while Mohammady (2010) supports these assertions in stating that persistence, predictive value, feedback value and earnings smoothness can all be employed as indicators of earnings quality.

As a result of the relationship between earnings management activity and earnings quality, the detection of earnings management has been the focus of multiple empirical studies to date, with the work of Healy (1985), DeAngelo (1986), and Jones (1991) in the development of specific models to test for the existence, frequency and magnitude of earnings management. Subsequent empirical studies, including those of Sweeney (1994), Dechow *et al* (1995), Dechow and Dichev (2002), and Dechow *et al* (2011) have attempted to refine prior models in the detection of earnings management and to identify the primary determinants of earnings management practice generally.

2.3: The Provision for Credit Losses – Current Regulation (2011)

The current regulation governing the provision for credit losses (or impairment of financial assets) is set out in IAS 39 Financial Instruments: Recognition and Measurement. Section 58 of IAS 39 prescribes that an entity should reduce the carrying amount of a financial asset either directly or through the use of an allowance account where objective evidence of impairment exists at the reporting period end. Section 59 of IAS 39 also states that, *inter alia*, the following constitute objective evidence of impairment:

- Significant financial difficulty of the obligor.
- A breach of contract, such as a default or delinquency in interest or principal payments.
- Where the creditor grants concessions to the debtor that it would not consider in the normal course of business.
- Adverse changes in the payment status of debtors (e.g. delayed payment).
- National or local economic conditions that correlate with defaults on the assets in a group.

IFRS 7, Financial Instruments: Disclosures, describes the regulation surrounding the disclosures that should be made in relation to the provision for credit losses.

While the regulation attempts to reduce the possibility for manipulation to a minimum (IAS 39 effectively eliminated the use of general provisions, IAS 39 IG E4.2), a degree of judgement is still required to determine if ‘objective evidence of impairment’ exists. The relevant sections of IAS 39 became effective for accounting periods beginning on 1 January 2005 (IAS 39, section 103). Prior to that date, the regulation governing the provision for credit losses was less restrictive.

2.4: The Provision for Credit Losses – Previous Studies

Notwithstanding the changes in financial reporting regulation referred to in the previous paragraph, the limited number of previous studies into the use of the provision for credit losses may provide some useful insights. At the outset, there is a significant literature gap with regard to empirical studies that examine the level of provision for credit losses on trade receivables, in the context of earnings management. This is possibly explained as a result of prior research utilising a portfolio or combination approach in examining the combined level of total discretionary accruals.

In utilising the provision for doubtful debts as a proxy for earnings management activity and predicting the provision for doubtful debts in the absence of earnings management, McNichols and Wilson (1988) determine that firms manage their earnings through the choice of income decreasing accruals when income is extreme. McNichols and Wilson (1988) also determine that discretion in the provision for bad debts ranges from 1 – 4 per cent of income for firms with extreme income and that exercising discretion over the provision for bad debts, combined with alternative discretionary accrual measures, can facilitate the achievement of target income where annual earnings targets are within a 10 to 15 per cent growth range.

In developing a multivariable earnings signal framework, Lev and Thiagarajan (1993) identify disproportionate annual changes in trade receivables relative to revenue and disproportionate annual changes in the provision for doubtful receivables relative to trade receivables as fundamental indicators of earnings quality, suggesting that firms with inadequate provisions for doubtful receivables are expected to experience future depressed earnings as a result of increased provisions. Lev and Thiagarajan (1993) also determine that while the aforementioned receivables and doubtful receivables signals are relatively weak in *unconditioned* analysis, both signals are statistically significant and value relevant during high inflation years, indicating the importance of contextual or *conditioned* analysis. Lev and Thiagarajan (1993) also suggest that there are adverse implications arising from inadequate bad debt provisioning for both the persistence and growth of earnings.

Ricci (2011) compares the receivables and receivables related accounts of companies subject to U.S. SEC enforcement actions against those of a positive control group. Utilising the Wilcoxon Signed Ranks Test, manipulating companies are paired against non-manipulating companies within the same industry grouping. In determining that trade receivables manipulation varies by industry type, Ricci (2011) finds that receivables are inflated via the provision for doubtful receivables amongst companies in the Information Technology sector.

As already outlined however, there is limited prior research with regard to the manipulation of the provision for credit losses on trade receivables in a European or IFRS compliant financial reporting context. Given the identifiable literature gap, it is hoped that the completion of this study somewhat addresses this imbalance.

2.5: Earnings Management - Theoretical Perspectives

Earnings management activity, of which the flexibility inherent in the provision for credit losses is a subset, can be viewed primarily within the confines of the signalling, agency and positive accounting theoretical frameworks. While several sources of literature contend that

there are significant differences between agency theory and signalling theory, Morris (1987) concludes that both theories are consistent, with considerable overlap in many instances.

Signalling theory describes the actions of parties who are engaged in a transaction within the context of asymmetric information. Morris (1987) states that higher quality firms will utilise accounting information disclosure to indicate to shareholders that they are not utilising accounting flexibility to their detriment, or that they are not utilising such flexibility to the same extent as other firms. Whereas, lower quality firms utilise accounting methods that conceal their inferior quality. The clear inference from these assertions is that those firms who engage in earnings management are predisposed towards those signalling motives of inferior quality firms (Morris, 1987).

Positive accounting theory (Watts and Zimmerman, 1978) provides significant grounding for the existence of earnings management practice. Positive accounting theory attempts to explain and predict accounting practices. The theory suggests, and empirical evidence confirms, that key variables including size, the debt to equity ratio and the existence of a management level compensation plan impact the propensity towards earnings management within a firm (Watts and Zimmerman, 1986).

Conceptualised primarily by Jensen and Meckling (1976), agency theory defines the relationship between the principal and agent, owner and manager of a firm. Palliam and Shalhoub (2003) state that the risk differential between principals and agents creates a problem in the principal - agent relationship. While the responsibility for the management of earnings rests with the agents of a firm, the methods undertaken to manage earnings are not equally desirable from a principal's perspective (Palliam and Shalhoub, 2003). The principal can limit divergence by the agent from their desired perspectives through both incentives and monitoring costs. In the context of this agency relationship, Palliam and Shalhoub (2003) further posit that in order to comply with consensus earnings forecasts, to achieve the desires of the principal or to project a smooth earnings path, agents will manage earnings through the acceleration or deferral of either revenue or expenses or through accounting operations.

2.6: Hypothesis Development

There have been numerous empirical studies that have considered the determinants of earnings management. While many of these studies have not been in the context of the provision for credit losses, nonetheless they will inform our study and permit us to develop a number of hypotheses. These hypotheses will be subsequently tested in the context of the use of the provision for credit losses to manage earnings.

2.6.1: Hypothesis 1: The use of the provision for credit losses to manage earnings

Both McNichols and Wilson (1988) and Lev and Thiagarajan (1993) provide some evidence of the use of the provision for credit losses to manage earnings. This study will test the assertion that FTSE 350 companies are managing their earnings through the provision for credit losses on trade receivables. Utilising the approach developed by Lev and Thiagarajan (1993), an abnormal provision exists where the relative change in the provision for credit losses on trade receivables is disproportionate to the relative change in total gross trade

receivables². Consistent with Lev and Thiagarajan (1993), this study attaches a similar interpretation to this measure; where abnormal under (over) provision is defined as earnings inflation (deflation) activity. Throughout this study, this measure is employed as the primary measure of earnings quality and proxy for earnings management activity. Specifically:

H₁ – *Ceteris paribus*, the mean abnormal provision for credit losses (as defined in section 3.1) is not equal to zero.

If the abnormal provision for credit losses was equal to zero, then any increase in trade receivables should be matched by an equal increase in the provision for credit losses. An abnormal provision of less (greater) than zero implies that a change in trade receivables results in a smaller (greater) change in the provision for credit losses. In the context of this study, instances where the mean abnormal provision is less (greater) than zero may provide evidence of earnings inflation (deflation) activity.

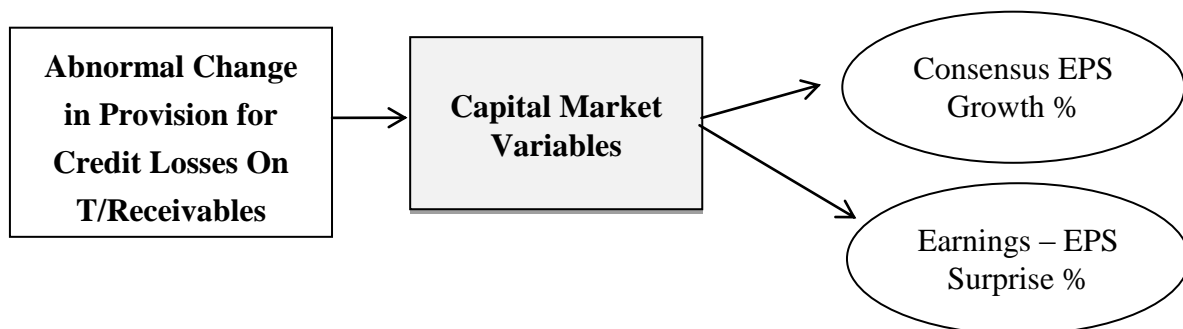
2.6.2: Hypothesis 2 and Hypothesis 3: Earnings expectations and the impact on the provision for credit losses

Hypotheses two and three are conceptualised in the context of earnings management activity, via the change in the provision for credit losses, in an environment where firms are under pressure to meet the expectations of institutional investors, analysts and other capital market participants. Payne and Robb (1997) determine that firms manage their earnings in order to meet or comply with analysts’ forecasts.

Kaszniak (1999) provides evidence consistent with the findings of Payne and Robb (1997), determining that managers utilise positive discretionary accruals to inflate earnings when earnings would otherwise, in the absence of inflation, fall below prior management forecasts.

Habib and Hansen (2008) state that the importance placed upon meeting analysts’ forecast benchmarks has increased in recent years. Lopez and Rees (2002) determine, via empirical analysis, that 65 per cent of sample firms met or exceeded analysts’ forecasts during the years post 1992. Lopez and Rees (2002) also find that the negative response of stock market participants to not meeting forecasts is significantly greater, in absolute terms, than the response to beating forecasts and that meeting analysts’ forecasts is a more powerful variable in the explanation of returns than the annual profit or loss performance of a firm.

Figure 1 – Capital Market Determinants of Earnings Management



² Throughout this paper the concept of the ‘abnormal provision for credit losses on trade receivables’ is used. This is explained in section 3.1.

H₂ – *Ceteris paribus*, there is a negative association between analyst consensus EPS growth forecasts and the abnormal change in provision for credit losses on trade receivables.

Those firms that exhibit the greatest negative abnormal change in the provision for credit losses on trade receivables by under-providing (thereby inflating earnings) are those firms that have the greatest growth in EPS targets to achieve. These are the firms that are under the greatest pressure to meet the expectations of the capital markets.

H₃ – *Ceteris paribus*, there is a negative association between a company's earnings (EPS) surprise and the abnormal change in provision for credit losses on trade receivables.

Those firms that exhibit the greatest negative abnormal change in the provision for credit losses on trade receivables by under-providing (thereby inflating earnings) are those firms that have experienced the greatest earnings surprise. These are the firms that beat the market expectations by the greatest amount (but did so through earnings inflation activity).

2.6.3: Hypothesis 4, 5 and 6: Contractual relationships and the impact on the provision for credit losses

Hypothesis four, five and six consider the effect that contractual relationships between the firm and the providers of debt finance and between the firm and management have on the extent of the abnormal provision for credit losses (i.e. on the propensity of the firm to manage earnings). Healy and Wahlen (1998) state that contracting motives arise where management compensation contracts are utilised to align external stakeholder and management incentives or where lending contracts are utilised to prevent against managerial level engagement in activity to the detriment of a firm's creditors.

According to Healy and Wahlen (1998), the balance of empirical evidence suggests that managers will utilise accounting judgement to inflate earnings where bonus plans and contractual compensation incentives are linked to earnings performance. Moreover, Healy (1985) determines that firms who specify a limit on their bonus award schemes are more likely to report accruals resulting in the deferral of income when the bonus limit is reached, indicating that there is an incentive to report earnings that will result in receipt of the maximum bonus level, but not beyond such a level.

Dechow and Sloan (1991) determine that chief executive officers reduce research and development spending during their final years in office, possibly to report more positive short run earnings, with their final compensation contracts linked to these earnings upon departure. Gaver and Gaver (1998), supporting the findings of Balsam (1998), found that managers are rewarded for undertaking accounting choice that positively impacts income. Chen (2006) also asserts and finds, in a Taiwanese context, that those firms engaged in earnings manipulation have a stronger incentive to avoid reporting net losses or depressed earnings in order to secure high levels of bonus payments, when compared with a sample of non-manipulating firms. Clearly, the majority evidence from these studies (Table 1 overleaf) suggests that executive level compensation is a primary determinant of earnings management activity.

Table 1 – Executive Level Compensation and Earnings Management

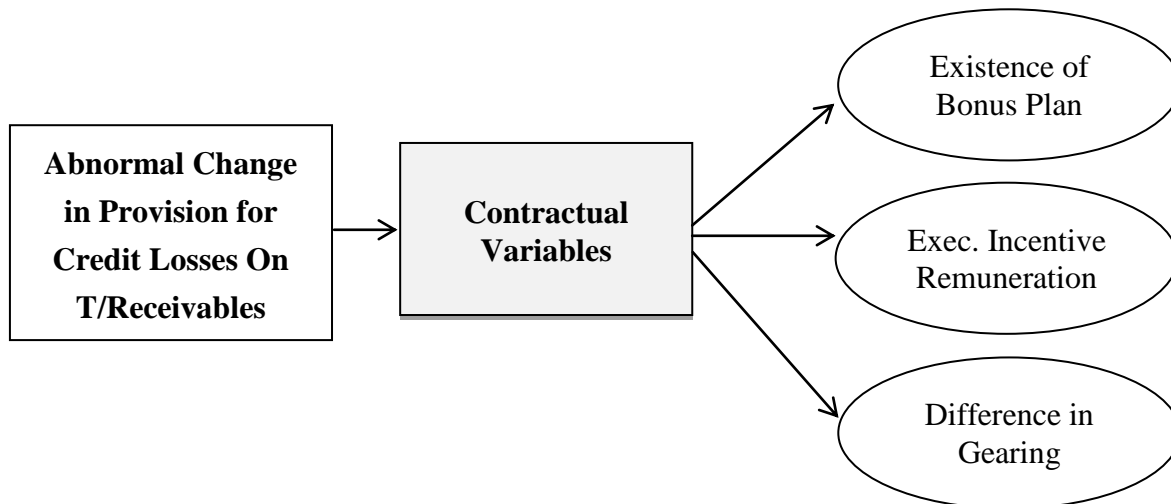
Author	Subject	Earnings Management	R
Healy (1985)	Bonus Plans	Limited Earnings Mgmt.	+
Healy and Wahlen (1998)	Bonus Plans	Earnings Inflation	+
Dechow and Sloan (1991)	R&D Expenditure	Earnings Inflation	-
Balsam (1998)	Mgmt. Compensation	Earnings Inflation	+
Gaver and Gaver (1998)	Mgmt. Compensation	Earnings Inflation	+
Chen (2006)	Bonus Payments	Earnings Inflation	+

Where R indicates the relationship between the subject and earnings management activity.

Prior research has also investigated the relationship between an increasing risk of breaching debt covenants or lending contracts and earnings management activity. Chen (2006) suggests that firms are more likely to be successful in loan or funding applications where they have higher net incomes and gearing ratios that are well below the industry accepted threshold. Dechow *et al* (1996) state that a primary determinant of earnings management is the desire to raise external financing at a low cost and to avoid any debt covenant restrictions.

In examining firms that have violated lending contracts, DeFond and Jimbalvo (1994) determine that firms accelerated their earnings one year prior to the breach of debt covenants. Additionally, Sweeney (1994) determined that debt covenant violators typically engage in income increasing accounting policy changes; however this engagement is generally post debt covenant violation.

Figure 2 – Contractual Variables and Earnings Management



H₄ – *Ceteris paribus*, there is a negative association between the existence of a bonus plan and the abnormal change in provision for credit losses on trade receivables.

Those firms that exhibit the greatest negative abnormal change in the provision for credit losses on trade receivables by under-providing (thereby inflating earnings) are more likely to have a bonus plan to reward the senior executives. However, given the proliferation of

executive bonus plans it is suggested that this may not be a distinguishing factor hence hypothesis five is developed (below).

H₅ – *Ceteris paribus*, there is a negative association between the proportion of incentive (bonus) specific executive level remuneration and the abnormal change in provision for credit losses on trade receivables.

It is hypothesised that there is a greater incentive on those firms to inflate earnings (by a negative abnormal change in the provision for credit losses on trade receivables) where a greater proportion of executive remuneration is comprised of incentivised related payments.

H₆ – *Ceteris paribus*, there is a negative association between the difference in the level of gearing of a firm and the abnormal change in provision for credit losses on trade receivables.

It is difficult to obtain information on firms that are close to (or actually) breaking debt covenants. However, it is suggested that companies with increasing levels of gearing are more likely to engage in earnings inflation activities through a negative abnormal change in the provision for credit losses on trade receivables

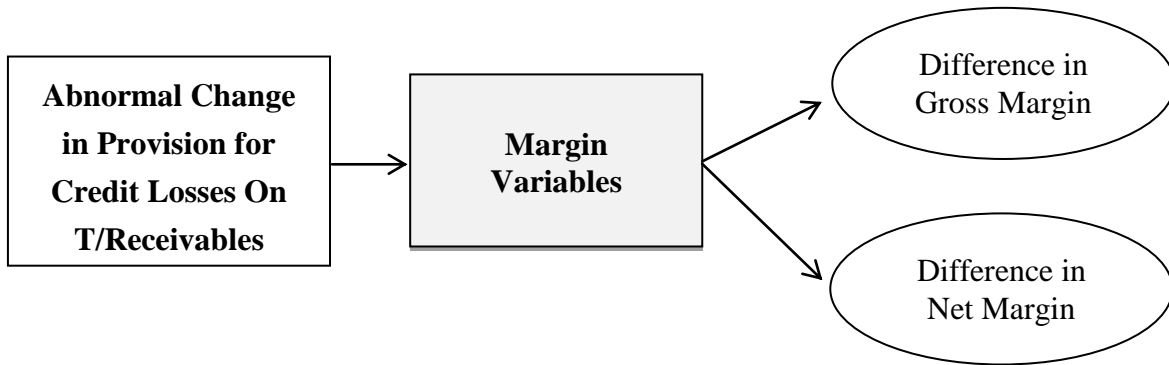
2.6.4: Hypothesis 7, and 8: Operating margins and the impact on the provision for credit losses

Operating margins are a key metric used by investors when assessing the performance of a company. Investors and capital market participants also place significant emphasis upon reported revenue according to Anderson and Yohn (2002), who conclude that when there are irregularities with a firm's financial statements, investors are more concerned with revenue recognition and margin misstatements than alternative reporting issues. Furthermore, revenue restatements result in significantly more adverse stock returns compared with alternative accounting restatements (Anderson and Yohn, 2002). Zhang (2006) determined that firms with the following characteristics were more likely to manage or manipulate revenues:

- Higher growth perspectives
- Higher operating margins
- Outstanding analyst sales forecasts
- Higher accounting policy flexibility in revenue recognition

The higher growth perspectives variable has been captured by hypothesis 2, which considers the impact of consensus EPS growth expectations on the abnormal provision for credit losses on trade receivables. Outstanding analyst sales forecasts are difficult to access for all members of the FTSE 350, hence this variable is not included. Accounting policy flexibility in revenue recognition is both an unreliable and subjective assessment in the context of this study. However, the impact of operating margins as highlighted by Zhang (2006) is hypothesised in this study, as follows (overleaf):

Figure 3 – Margin Related Determinants of Earnings Management



H₇ – *Ceteris paribus*, there is a negative association between the difference in the gross margin of a firm and the abnormal change in provision for credit losses on trade receivables.

Those firms that are experiencing increasing gross margins are more likely to exhibit a negative abnormal change in the provision for credit losses on trade receivables (by under-providing for credit losses and thereby inflating earnings). However, in many firms the impairment for credit losses expense is reported as an operating expense and not as part of cost of sales hence hypothesis eight is presented below.

H₈ – *Ceteris paribus*, there is a negative association between the difference in the net margin of a firm and the abnormal change in provision for credit losses on trade receivables.

It is hypothesised that there is a greater incentive on those firms to inflate earnings (by a negative abnormal change in the provision for credit losses on trade receivables) where a firm is reporting an increase in its net margin.

2.6.5: Hypothesis 9, 10, 11 and 12: Corporate governance structures and the impact on the provision for credit losses

Empirical research has identified a strong link between effective corporate governance structures and a reduced level of earnings management activity, as summarised in Table 2 overleaf. Dechow *et al* (1996) find that poor oversight through weak governance structures is an important determinant of earnings manipulation. Chen (2006) determines that Taiwanese firms who are engaged in earnings manipulation have a lower concentration of INEDs on their boards of directors and supervisory boards, when compared with non-manipulating firms.

Table 2 – Corporate Governance Structures and Earnings Management

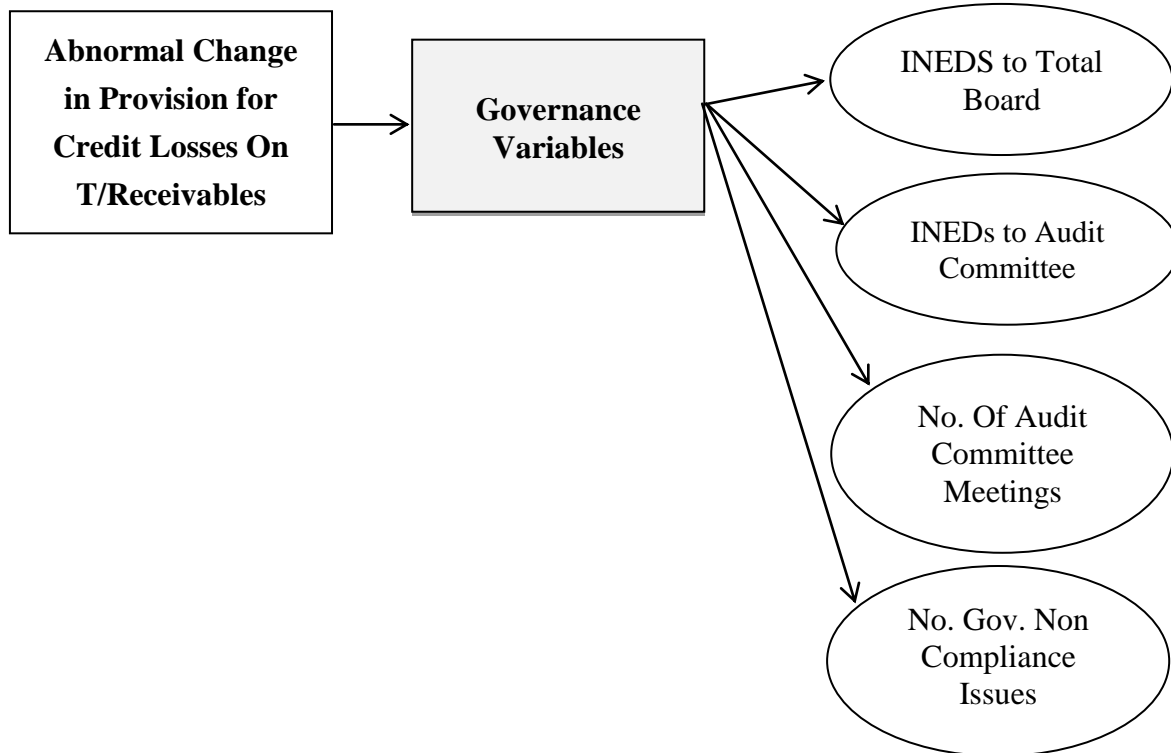
Author	Subject	Earnings Management	R
Dechow et al (1996)	Weak Governance	Increased Manipulation	+
Beasley (1996)	(+) INEDs to Board	Reduction in Fraud	-
Peasnell et al (2005)	(+) INEDs to Board	Reduced Earnings Inflation	-
Sebahattin and Harlan (2009)	Strong Governance	Reduced Earnings Mgmt.	-

Where R indicates the relationship between the subject and earnings management activity.

Additionally, Beasley (1996) determines that the proportion of external director concentration to the board of directors for firms experiencing financial statement fraud is lower when compared with non-fraud firms and that the composition of the board, rather than audit committee presence, is a more important mechanism for reducing the likelihood of financial statement manipulation.

Although the Corporate Governance Code is twenty years old, there persists a level of non-compliance. Grant Thornton (2011) found that only half of all FTSE 350 companies were fully compliant with the Combined Code during their 2011 review. Therefore, the number of governance non-compliance issues variable has been introduced as a measure of the strength of governance within a firm.

Figure 4 – Governance Specific Determinants of Earnings Management



H₉ – *Ceteris paribus*, there is a positive association between the proportion of INEDs to the total board of directors and the abnormal change in provision for credit losses on trade receivables.

Those firms that have a lower proportion of independent non-executive directors on the board of directors (INEDs), and thereby less effective oversight, will find it easier to report a negative abnormal change in the provision for credit losses on trade receivables (by under-providing for credit losses and thereby inflating earnings). As the proportion of non-executive directors decreases, the abnormal change in the provision for credit losses becomes more negative – both variables should move in the same direction.

H₁₀ – *Ceteris paribus*, there is a positive association between the proportion of INEDs to the total audit committee and the abnormal change in provision for credit losses on trade receivables.

The logic is the same as the previous hypothesis, except that in this instance, the composition of the audit committee is considered. In many firms, the key accounting estimates and judgements are discussed at the audit committee meetings and not at the main board meeting. However, Lin *et al* (2006) was unable to support this assertion in relation to earnings management.

H₁₁ – *Ceteris paribus*, there is a positive association between the number of audit committee meetings held during the financial year and the abnormal change in provision for credit losses on trade receivables.

The contention with this hypothesis is that as the audit committee holds more meetings, then its members are able to engage in more effective oversight, thereby limiting the opportunity for earnings management (through negative abnormal changes in the provision for credit losses on trade receivables). Therefore, as the number of meetings held is lower, the abnormal change in the provision for credit losses becomes more negative – both variables should move in the same direction.

H₁₂ – *Ceteris paribus*, there is a negative association between the number of firm specific governance non-compliance issues and the abnormal change in provision for credit losses on trade receivables.

The greater the number of specific corporate governance non-compliance issues, the less effective the corporate governance structures are within a firm. Therefore, there is greater opportunity for earnings management (through negative abnormal changes in the provision for credit losses on trade receivables). As the number of non-compliance issues increase, the propensity to manage earnings increases and the abnormal change in the provision for credit losses becomes more negative – both variables should move in opposite directions.

2.6.6: Hypothesis 13 and 14: Auditor oversight and the impact on the provision for credit losses

Francis and Krishnan (1999) determine that large audit firms provide higher quality audits, exhibit reporting conservatism and are more aggressive in constraining the earnings management activity of their clients. Krishnan (2003) showed that clients of non-specialist auditors exhibit elevated levels of discretionary accruals when compared with clients of

specialist auditors while also suggesting that the use of a Big 6³ auditor with industry specialist knowledge can enhance the credibility of accounting information.

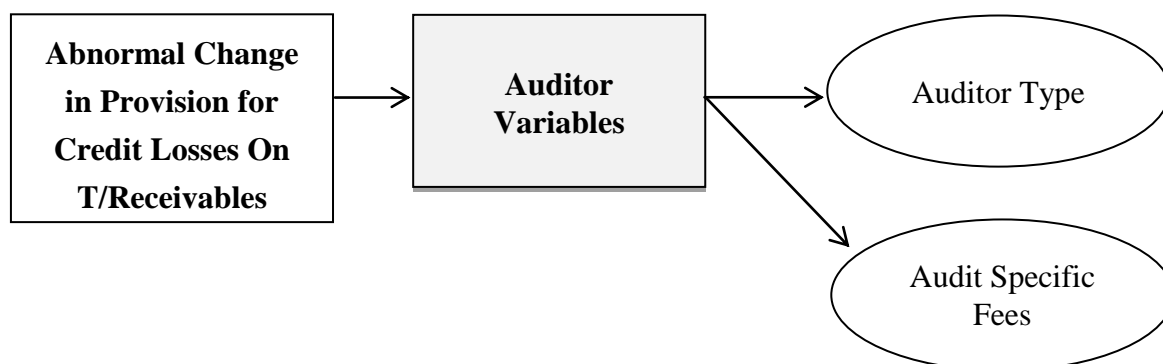
Jordan *et al* (2010) found that managers of companies audited by small audit firms manipulated their earnings to generate EPS values consistent with user reference points and that Big 4 audit firms are more likely to be effective in constraining the efforts of their clients in earnings manipulation. In addition, Lin *et al* (2006) suggest that higher audit fees from either audit specific or non-audit services reduce auditor independence and therefore impair overall audit quality. In contrast, Frankel *et al* (2002) find that there is a negative association between audit specific fees and earnings management indicators. Table 3 (below) summarises these findings.

Table 3 – Auditor Type, Auditor Remuneration and Earnings Management

Author	Subject	Earnings Management	R
Francis and Krishnan (1999)	Large Audit Firms	Reduced Earnings Mgmt.	-
Frankel et al (2002)	(+) Audit Fees	Reduced Earnings Mgmt.	-
Lin et al (2006)	(+) Audit Fees	Increased Earnings Mgmt.	+
Jordan et al (2010)	Small Audit Firms	Increased Earnings Mgmt.	+

Where R indicates the relationship between the subject and earnings management activity.

Figure 5 – Auditor Related Determinants of Earnings Management



H₁₃ – *Ceteris paribus*, there is a positive association between auditor type and the abnormal change in provision for credit losses on trade receivables.

Auditor type is a categorical variable, in this study a firm that is audited by one of the Big 4 is assigned ‘1’ whereas a firm that is audited by a non-Big 4 audit firm is assigned ‘0’. Firms that are audited by a Big 4 auditor (‘1’s) have less opportunity for earnings management (through negative abnormal changes in the provision for credit losses on trade receivables) and the abnormal change in the provision for credit losses becomes less negative – both variables should move in the same direction.

H₁₄ – *Ceteris paribus*, there is a positive association between audit specific fees and the abnormal change in provision for credit losses on trade receivables.

³ Big 6 audit firms in 2003 have subsequently reduced to Big 4 audit firms at the time of this study.

The literature is not clear on this issue. However, our contention is that as the audit fee increases, the auditor can dedicate more resources to the audit thereby constraining the abnormal under-provision activity of their clients. Thus, as the audit fee increases the abnormal change in the provision for credit losses becomes less negative – both variables should move in the same direction.

Having considered the extant literature and set out the basis behind the hypotheses to be tested, the next section describes how the testing was undertaken.

3.0: Research Design

The research approach adopted in this study uses a measure of earnings management, the abnormal provision for credit losses, that is directly consistent with Lev and Thiagarajan (1993). The sample is selected from the FTSE 350 Index, excluding banks, insurance and financial related institutions. Recent changes to accounting standards require that companies must now routinely disclose information on the provision for credit losses and its movement over the financial period. This section describes, in more detail, the methods employed to measure the independent variables, select the sample, gather the data and test the hypotheses (as detailed in the previous section).

3.1.: Measuring the abnormal provision for credit losses

The measurement of earnings management is a difficult activity. There have been numerous models developed, particularly to measure discretionary accruals. The original discretionary accruals model was developed by Jones (1991). This was later modified (now called the Modified Jones Model) by Dechow et al. (1995) and remains one of the most widely acknowledged and utilised models for measuring discretionary accruals. Dechow et al. (1995) studied each of these models and determined that the Modified Jones Model provided a more effective and accurate test of earnings management. Similarly, further studies which examined the effectiveness of the various models confirmed this finding (Hedstrom and Tounkara, 2011).

However, while the modified Jones model is deemed to be the more effective and accurate measure of discretionary accruals internationally; it still possesses a number of significant limitations which is reiterated throughout academic research. Thus, there have been numerous calls made for enhanced models to be developed. In their study, Bernard and Skinner (1996) appeal for “methodologically more reliable ways of measuring earnings management”.

McNichols and Wilson (1988) identify the need for further research with regard to earnings management through singular accrual measures such as the provision for bad debts. In an effort to answer McNichols and Wilson’s (1988) call, this study uses a single measure as a proxy for the existence of earnings management – the abnormal provision for credit losses on trade receivables.

The abnormal provision for credit losses on trade receivables exists where the change in the provision is disproportionate to the change in gross trade receivables. For example, where

gross trade receivables for a given company doubles, it is expected that the provision for credit losses should double also. If this is not the case, then the company is deemed to be under or over providing for credit losses with a resultant impact on the reported profits. While there may be sound underlying reasons in an individual company for a difference to exist, across large samples these should average to close to zero.

The measure of abnormal provision for credit losses used in this study is:

$$AbProv = \frac{Prov_t - Prov_{t-1}}{Prov_{t-1}} - \frac{GTR_t - GTR_{t-1}}{GTR_{t-1}}$$

Where: AbProv = the abnormal provision for credit losses on trade receivables

Prov_t = the provision for credit losses in the current period (t-1 is the prior period)

GTR_t = gross trade receivables in the current period (t-1 is the prior period)

Utilisation of this measure is directly consistent with Lev and Thiagarajan (1993). Where AbProv is negative, this indicates an abnormal under-provision, while a positive value indicates an abnormal over-provision for credit losses. An abnormal under-provision has the effect of inflating earnings. Throughout this study, this measure is employed as a proxy for earnings management activity.

3.2.: Sample Selection

The initial total sample of 350 companies relates to the composition of the FTSE 350 Index in June 2012. Consistent with prior studies, including Burgstahler and Dichev (1997), banks, financial and financial related institutions are specifically excluded, given the significant variance in their capital structures. Moreover, Collins *et al* (1995) already document the existence of earnings management through abnormal provisioning activity within banks, further supporting their exclusion from this study.

Companies within sectors classified as Banks, Equity Investment Instruments, Financial Services, Life Insurance, Non-Equity Investment Instruments, Nonlife Insurance, Real Estate Investment and Services and Real Estate Investment Trusts were therefore specifically excluded. Ruspetro PLC, admitted to the FTSE 350 Index during early 2012, had not published any financial statements as at 07 June 2012 and was therefore excluded from the study. After exclusion of these companies, the total sample consisted of 241 companies.

A preliminary examination of their financial statements resulted in the exclusion of a further 31 companies, due to the omission of information with regard to the provision for credit losses on trade receivables or where summary receivables were presented, that comprised significantly of VAT and other non-trade components. The sample is now made up of 210 companies.

Outliers in this study are identified with reference to the dependent variable (AbProv). Six companies were identified as having extreme abnormal provision for credit losses on trade receivables relative to the total sample. This resulted in their exclusion from all subsequent analysis and reduced the final sample population to 204 companies. In a number of these cases, the companies involved had a near zero provision for credit losses in the previous period compared to a much larger provision in the current period (due to a large growth in gross trade receivables) giving a very large, close to infinity, abnormal over provision.

Table 4 – Sample Selection Refinement Summary

	Total
Initial FTSE 350 Population	350
Exclusion of Financial Firms	-108
Annual Report Unavailable	-1
Insufficient Provision Information	-31
Outlier Firms	-6
Final Sample	204

3.3.: Data Sources

The data for this study was collected from a combination of the individual annual reports of the companies in the sample and the Thomson One Banker databases. While the Thomson One Banker databases are used extensively throughout this study, in-depth analysis of individual annual reports and disclosure notes is also necessary to collect firm specific data relating to trade receivables, the provision for credit losses on trade receivables, along with contractual, governance and auditor related variables. The latest available annual reports for all companies were downloaded from the Investor Relations sections of companies' websites in June 2012. These annual reports cover the 15 month period from 31 Dec 2010 to 31 March 2012; however 81% of the sample had year ends between 31 Dec 2011 and 31 March 2012. The source for data underlying each significant measure used in this study is detailed in Table 5 below.

Table 5 – Data Sources for Data Measures

Data Measure	Source	Data Measure	Source
Gross Trade Receivables	AR	Prop. Of INEDS to Total Board	AR
Provision For Credit Losses On T/Rec	AR	Prop. Of INEDS to Audit Comm.	AR
Consensus EPS Growth (%)	TO	# Of Gov. Non Compliance Issues	AR
Earnings (EPS) Surprise (%)	TO	# Of Audit Committee Meetings	AR
Existence of Bonus Plan	AR	Auditor Type	AR
Exec. Incentive Remuneration	AR	Revenue	AR
Difference in Gross Margin (%)	TO	Audit Specific Fee(s)	AR
Difference in Net Margin (%)	TO	Stock Price Performance	TO
Difference in Gearing (%)	TO	Stock Beta Value	TO
Change in Trade Rec. Days	TO	Total Assets	TO

In Table 6 above, AR refers to the annual report of a company while TO refers to the Thomson One Banker database.

3.4.: The independent variables

According to our hypotheses, the abnormal provision for credit losses on trade receivables may be related to a number of variables. From prior empirical research, it is possible to arrive at measures for these independent variables. Table 6 (below) identifies these various hypotheses along with the measure or proxy used and the previous studies supporting each hypothesis respectively. It should be noted that in the interests of brevity and readability, the number of supporting studies has been limited to one per measure/proxy.

Table 6: Hypotheses, Variable Measures/Proxies and Expected Relationship

Hypothesis	Variable Measure/Proxy			Expected Relationship
Consensus EPS growth	$\frac{\text{Mean EPS Forecast}_t - \text{Actual EPS}_{t-1}}{\text{Actual EPS}_{t-1}}$	EPS GROWTH	Payne and Robb (1997)	Negative
Earnings surprise	$\frac{\text{Actual EPS}_t - \text{Mean EPS Forecast}_t}{\text{Actual EPS}_t}$	EPS SURPRISE	Payne and Robb (1997)	Negative
Existence of bonus plan	1 = Bonus plan exists, 0 = No bonus plan exists	BONUS	Healy and Wahlen (1998)	Negative
Executive incentive remuneration	$\frac{\text{Incentive specific remuneration}_t}{\text{Total directors remuneration}_t}$	REMUN	Healy and Wahlen (1998)	Negative
Difference in gearing	$\frac{\text{Gearing}_t - \text{Gearing}_{t-1}}{\text{Gearing} = \frac{\text{Total Debt}}{\text{Total Assets}}}$	GEARING	Dechow et al (1996)	Negative
Difference in gross margin	$\text{Gross Margin}_t - \text{Gross Margin}_{t-1}$	GROSS MARGIN	Zhang (2006)	Negative
Difference in net margin	$\text{Net Margin}_t - \text{Net Margin}_{t-1}$	NET MARGIN	Zhang (2006)	Negative
Proportion of INEDs to total board	$\frac{\text{Number of non exec directors}}{\text{Total number of directors}}$	INEDS BOARD	Peasnell et al (2005)	Positive
Proportion of INEDs on audit committee	$\frac{\text{Non exec directors on audit comm}}{\text{Total directors on audit comm}}$	INEDS AUDIT	Lin et al (2006)	Positive
Number of governance non-compliance issues	Number of non-compliance issues raised in annual report	GOV NON COMP	Dechow et al (1996)	Negative
Number of audit committee meetings	Number of audit committee meetings held in current period	AUDIT MEET	Lin et al (2006)	Positive
Auditor type	1 = Big 4, 0 = non Big 4	AUDITOR	Krishnan (2003)	Positive

Table 6 (continued): Hypotheses, Variable Measures/Proxies and Expected Relationship

Hypothesis	Variable Measure/Proxy			Expected Relationship
Audit specific fees	$\frac{\text{Audit Specific Fee}_t}{\text{Total Revenue}_t}$	AUDIT FEES	Frankel et al (2002)	Positive

3.5.: Compliance with OLS regression assumptions

The utilisation of OLS regression analyses requires compliance with its underlying assumptions, including correct model specification, normal distribution of the error observations (ε_i) and the absence of multicollinearity between the independent explanatory variables. Misspecification in previous earnings management models is well documented, while attempts at misspecification mitigation procedures have often reduced test power (Dechow *et al*, 2011). The accrual reversal framework of Dechow *et al* (2011) provides an apparent solution for mitigating model misspecification, yet there is no generally identified optimal model for detecting or examining earnings management activity.

The multivariate regression model employed in this study for examining the determinants of earnings management is consistent with prior research; however, given the lack of results that will be described in the next section, the problem of misspecification and omitted variables is a risk. With regard to the other assumptions of OLS regression analyses, the results of all procedures verify compliance with these underlying assumptions.

Having described the research approach, the next section will detail the results of the research.

4.0: Results and Discussion

The results of our analysis are presented in this section. Thereafter, the implications of the results are discussed in the context of current regulation and existing empirical research.

4.1: The abnormal provision for credit losses (H_1)

For the period analysed, the mean relative increase in gross trade receivables is measured at 12.0 per cent, with a corresponding mean relative increase in the provision for credit losses on trade receivables of only 2.1 per cent. The mean level of abnormal provision is therefore measured at -9.9 per cent (Table 7 overleaf).

Table 7 – Descriptive Statistics for Magnitude of Abnormal Provision (N=204)

Magnitude of Abnormal Provision	Mean*	Std Error*	Min*	Max*	Skew
Abnormal Provision for Credit Losses (%)	-9.90	2.67	-141.60	135.30	-0.10
Change in Gross Trade Receivables (%)	12.00	2.23	-85.20	163.56	1.80
Change in Provision for Credit Losses (%)	2.10	2.36	-73.28	191.20	2.10

All Percentages (Indicated*) are converted to Percentage Point Scores through Multiplication – (X 100)

The mean level of abnormal provision indicates that there was an average under-provision for credit losses on trade receivables of 9.9 per cent, with a standard error of 2.7 per cent suggesting that on average, companies under-provided for credit losses relative to the change in trade receivables. This is significantly different (p value < 0.001) from 0 per cent, which was the hypothesised level of abnormal provision for credit losses.

Of the total sample of 204 FTSE 350 companies, 138 or 67.7 per cent exhibited a negative abnormal provision for credit losses (i.e. a relative under-provision) during the period. The skewness value of -0.1 also indicates that the abnormal provision for credit losses on trade receivables variable is normally distributed. Additionally, we found that on average, the level of provision for credit losses was equal to 6% of trade receivables and 15% of net income attributable to ordinary shareholders. The previously cited study of McNichols and Wilson (1988) determined that the provision for credit losses was equal to 20% of reported earnings, although the regulations have changed in the interim⁴.

Previously, the following hypothesis was set out:

H₁ – *Ceteris paribus*, the mean abnormal provision for credit losses (as defined in section 3.1) is not equal to zero.

This can now be accepted, in fact, we can state that the mean abnormal provision for credit losses is less than zero⁵. A possible explanation is that there is an economy of scale effect – as receivables increase companies get better at collection. However, the economic conditions over the period of this study may indicate otherwise. Indeed, in the following year (2012) to the reference year (the majority of the financial statements relate to 2011), European corporates expected an even stronger deterioration in credit risk (Atradius, 2012).

In addition, as part of this study, the level of trade receivables past due but not impaired was collected (where disclosed). The mean level of trade receivables past due, but not impaired amounted to £138.8 million, compared with a mean of £128.0 million in the previous period, representing a relative increase of 8.4 per cent. Moreover, the average rate of provision for credit losses on trade receivables amongst the 204 FTSE 350 companies declined to 5.98% (of trade receivables) from 6.41% (of trade receivables) in the previous period. Despite the categorisation of non-impairment, there has been a clear increase in the level of receivable-credit risk amongst the 204 FTSE 350 companies, rendering the identified negative abnormal provision for credit losses (under-provision) all the more suspect. With such widespread

⁴ There have been numerous changes in regulations since 1988. However, the most significant is the ‘downgrading’ of prudence in favour of fair value – for example, general provisions are now much harder to justify.

⁵ On average, as trade receivables increase the provision for credit losses does not increase to the same extent.

relative under-provision, the downside risk arising from instances of elevated credit losses in the near term is significant. Should credit risk deteriorate further, as anticipated, there is an underlying risk of increased write-offs and a negative impact upon corporate earnings as a result of increased provisioning activity - given the current level of abnormal under-provision amongst the companies analysed.

While no consistent approach to credit risk assessment was noted amongst the 204 FTSE 350 companies, significant divergence from the disclosure requirements of IFRS 7 was noted throughout. Of the final sample of 204 FTSE 350 companies, only 98 provided detail regarding trade receivables past due and specifically impaired in a manner consistent with IFRS 7, while 178 provided detail regarding trade receivables past due and not impaired in a manner consistent with IFRS 7. The possible explanation for this lack of disclosure is the state of flux that exists with IFRS 7. While the relevant paragraph of IFRS 7 (paragraph 37) was part of the original standard, applicable to accounting periods beginning from 1 Jan 2007, the standard has had numerous changes, deletions and amendments. It is not difficult to appreciate how this has led to considerable divergence in disclosure practice.

The impact of such divergence and the problem of information asymmetry provides ample opportunity for manipulation of the provision for credit losses on trade receivables in the context of earnings management. Extensive regulation of the provision for credit losses on trade receivables by the IASB is clearly impractical, as the impairment of trade receivables is inherently subjective and unique to each company or sector type. However, enhanced disclosure compliance with IFRS 7 is fundamentally important, given the results of this study⁶.

4.2: Factors influencing the abnormal provision for credit losses (H₂ to H₁₄)

The aim of these hypotheses was to examine the applicability of previously identified determinants of earnings management to the abnormal provision for credit losses on trade receivables amongst FTSE 350 companies.

4.2.1: Results of Hypothesis 2 to Hypothesis 14

Table 8 – Descriptive Statistics for Categorical Independent Variables

	FREQ 1	FREQ 0
β3 Existence of Bonus Plan (1 = plan in place)	202	2
β12 Auditor Type (1 = Big 4 auditor)	198	6

⁶ In a separate analysis, we found that 90.1 per cent of the variation in the change in provision for credit losses on trade receivables is explained by factors beyond the relative change in gross trade receivables.

Table 9 – Descriptive Statistics for Continuous Independent Variables

Determinants of Earnings Mgmt.	Mean	Std Dev	Min	Max	Skew
β1 Consensus EPS Growth (%)*	34.91	1.56	-63.48	1760.00	8.72
β2 Earnings (EPS) Surprise (%)*	0.33	0.21	-185.00	97.00	-4.24
β4 Executive Incentive Remuneration	0.36	0.18	0.00	0.89	-0.41
β5 Difference in Gearing (%)*	0.09	5.77	-23.44	21.00	0.21
β6 Difference in Gross Margin (%)*	1.03	6.63	-18.39	51.89	3.73
β7 Difference in Net Margin (%)*	0.04	10.31	-72.95	41.28	-2.20
β8 Proportion of INEDs to the Total Board*	53.95	0.10	28.57	80.00	0.08
β9 Proportion of INEDs to Audit Comm.*	98.00	0.07	50.00	100.00	-5.48
β10 No. Of Governance Non Compliance Issues	0.74	1.09	0.00	8.00	2.68
β11 No. Of Audit Committee Meetings	4.32	1.58	2.00	14.00	2.39
β13 Audit Specific Fee(s)	0.08	0.06	0.01	0.44	1.85

All Percentages (Indicated*) are converted to Percentage Point Scores through Multiplication – (X 100)

OLS univariate regression analysis was conducted to examine the extent of the relationship between the primary dependent variable (abnormal change in the provision for credit losses on trade receivables) and each of the previously identified 14 independent variables. This was initially undertaken with the full sample of 204 companies, with the analysis subsequently restricted to the 138 identified under-providers, as these are the companies that are most likely to be using the provision for credit losses to manage their earnings. The equation used is as follows:

$$AbProv = \beta_0 + \beta_i X_i + \varepsilon$$

Where:

AbProv = abnormal provision for credit losses on trade receivables (proxy for earnings management).

βX_i = each of the 14 independent explanatory variables.

β₀ = intercept.

ε = regression error term.

The results of simple linear regression analysis are contained in Table 10 (overleaf):

Table 10 – Simple Regression Analysis Results

Hypo.	Variable	Pred. Sign	Full Sample (N= 204)		AbProv Negative Sample (N = 138)	
			Coefficient	P-Value	Coefficient	P-Value
2	β1 Consensus EPS Growth (%)	-	-0.023	0.181	-0.015	0.266
3	β2 Earnings (EPS) Surprise (%)	-	0.188	0.151	0.156	0.161
4	β3 Existence of Bonus Plan	-	0.046	0.866	-0.134	0.508
5	β4 Executive Incentive Remuneration	-	-0.245	0.094**	-0.001	0.985
6	β5 Difference in Gearing (%)	-	-0.011	0.022*	-0.007	0.100**
7	β6 Difference in Gross Margin (%)	-	0.004	0.369	-0.009	0.039*
8	β7 Difference in Net Margin (%)	-	0.003	0.203	0.002	0.347
10	β8 Proportion of INEDs to the Total Board	+	0.543	0.036*	0.483	0.037*
11	β9 Proportion of INEDs to Audit Committee	+	0.246	0.524	-0.143	0.641
12	β10 No. Of Governance Non Compliance Issues	-	-0.008	0.748	-0.001	0.981
13	β11 No. Of Audit Committee Meetings	+	0.008	0.655	0.008	0.627
14	β12 Auditor Type	+	0.010	0.524	0.377	0.022***
15	β13 Audit Specific Fees	+	-0.270	0.555	-0.189	0.628

*** This is a spurious result as auditor type is not a distinguishing feature of the sample.

* = Significant at the 5% level ** = Significant at the 10% level

As indicated in Table 10, based upon the full sample, 10 of the 13 independent variables exhibit no significant influence on the direction of abnormal provision for credit losses on trade receivables. However, the bolded p-values, indicate that both the difference in gearing and the proportion of INEDs to the total board variables have a significant (5% level) influence on the direction of abnormal provision for credit losses on trade receivables, with the signs of the coefficients consistent with those hypothesised in both instances. Additionally, the executive incentive remuneration variable exhibits a significant (10% level) negative relationship with the direction of abnormal provision for credit losses on trade receivables.

When the sample is restricted to the 138 under-providers (see Table 10), the difference in gross margin and the proportion of INEDs to the total board variables significantly influence the direction of abnormal provision for credit losses on trade receivables at the 5% level. The difference in gearing variable also exhibits significance at the 10% level. The signs of the coefficients of all significant variables are also consistent with those hypothesised. While the auditor type variable exhibits an apparent significant relationship (0.022), this result is disregarded as this variable is not normally distributed. Only three of the 138 abnormal under-providers are audited by a non-Big 4 auditor, therefore the variable does not exhibit

any variability. On further analysis a t-test of the mean abnormal provision where a non-Big 4 auditor was used and the mean abnormal provision where a Big 4 four auditor was used could not prove that the means were different.

While only a small number of the hypothesised variables exhibited a significant relationship with the dependent variable, a multiple regression model was developed which attempts to show how the movement in the abnormal provision for credit losses can be explained by each of the previously identified 13 independent variables.

Regression One: Thirteen Hypotheses Regression (N=204)

Regression one consists of the full sample of 204 FTSE 350 companies and tests all thirteen hypotheses as outlined below.

Multiple Regression One Equation

$$\begin{aligned} \text{AbProv} = & \beta_0 + \beta_1 \text{ EPS GROWTH} + \beta_2 \text{ EPS SURPRISE} + \beta_3 \text{ BONUS} \\ & + \beta_4 \text{ REMUN} + \beta_5 \text{ GEARING} + \beta_6 \text{ GROSS MARGIN} \\ & + \beta_7 \text{ NET MARGIN} + \beta_8 \text{ INEDS BOARD} + \beta_9 \text{ INEDS AUDIT} \\ & + \beta_{10} \text{ GOV NON COMP} + \beta_{11} \text{ AUDIT MEET} \\ & + \beta_{12} \text{ AUDITOR} + \beta_{13} \text{ AUDIT FEES} + \varepsilon \end{aligned}$$

Table 11 (overleaf) contains the results of the analysis. The model exhibits only limited explanatory power, with a regression significance p-value of 0.088. The adjusted R square value of 0.037 indicates that the model only explains 3.7 per cent of the variation in the direction of abnormal provision for credit losses on trade receivables. In addition, only three variables exhibit a statistically significant relationship with the direction of abnormal provision for credit losses on trade receivables: the executive incentive remuneration (5%), difference in net margin (5% level), and the proportion of INEDs to the total board (5% level). Moreover, the positive coefficient of earnings surprise variable is contrary to that hypothesised, while the p-values of several variables highlight their insignificance (see Table 11 below).

Regression Two: Seven Hypotheses Regression (N=204)

Regression two consists of the full sample of 204 FTSE 350 companies and tests seven hypotheses, having eliminated the most insignificant variables, as indicated in the equation below.

Multiple Regression Two Equation

$$\begin{aligned} \text{AbProv} = & \beta_0 + \beta_1 \text{ EPS GROWTH} + \beta_2 \text{ EPS SURPRISE} + \beta_4 \text{ REMUN} \\ & + \beta_5 \text{ GEARING} + \beta_6 \text{ GROSS MARGIN} + \beta_7 \text{ NET MARGIN} \\ & + \beta_8 \text{ INEDS BOARD} + \varepsilon \end{aligned}$$

The results contained in Table 11 indicate a marked improvement in the power of the model. The F-stat and associated p-value show that the model has explanatory power with a regression significance p-value of 0.006. The adjusted R square value of 0.063 indicates that the model explains just 6.3 per cent of the variation in the abnormal provision for credit losses on trade receivables. Despite the marked improvement in the explanatory power of the model, no additional variables exhibit statistical significance in determining the change in the abnormal provision for credit losses on trade receivables. The proportion of INEDs to the total board and executive incentive remuneration variables exhibit significance at the 5% level. The analysis was also repeated on the restricted sample of 138 identified under-providers; however the results did not differ to those reported for the full sample.

Table 11: Multiple Regression Results

Coefficient (Predicted Sign +/-)	Regression 1	Regression 2
β1 Consensus EPS Growth (-)	-0.021 (0.242)	-0.022 (0.216)
β2 Earnings (EPS) Surprise (-)	0.234 (0.099)***	0.224 (0.098)***
β3 Existence of Bonus Plan (-)	0.092 (0.742)	
β4 Executive Incentive Remuneration (-)	-0.342 (0.029)**	-0.322 (0.029)**
β5 Difference in Gearing (-)	-0.007 (0.100)***	-0.008 (0.100)***
β6 Difference in Gross Margin (-)	-0.005 (0.186)	-0.005 (0.220)
β7 Difference in Net Margin (-)	0.005 (0.049)**	0.005 (0.061)***
β8 Proportion of INEDs to the Total Board (+)	0.549 (0.046)**	0.514 (0.046)**
β9 Proportion of INEDs to Audit Committee (+)	0.081 (0.856)	
β10 No. Of Governance Non Compliance Issues (-)	0.012 (0.684)	
β11 No. Of Audit Committee Meetings (+)	0.001 (0.920)	
β12 Auditor Type (+)	-0.052 (0.749)	
β13 Audit Specific Fees (+)	0.298 (0.536)	
R Square	0.099	0.095
Adj R Square	0.037	0.063
F Stat	1.599 (0.088)	2.946 (0.006)*

P-Values in parentheses

* = Significant at the 1% level

** = Significant at the 5% level

*** = Significant at the 10% level

Acceptance or rejection of the research hypotheses ($H_2 - H_{14}$ inclusive) is undertaken relative to the results of univariate regression analysis and multiple regressions one and two. $H_2 - H_{14}$ are conceptualised with regard to the abnormal change in provision for credit losses on trade receivables. A summary of the results is contained in Table 12 (overleaf):

Table 12 – H₂ to H₁₄: Summary Findings

<ul style="list-style-type: none"> • Main relationships <ul style="list-style-type: none"> ○ There is a significant <i>positive</i> association between the proportion of INEDs to the total board and the abnormal provision for credit losses on trade receivables. H₉ is therefore accepted. This was found in both the univariate and multiple regression analysis. ○ There is a significant <i>negative</i> association between executive incentive remuneration and the abnormal provision for credit losses on trade receivables. H₅ is therefore accepted. This was found in multiple regression analysis and at the 10% level of significance in the univariate analysis.
<ul style="list-style-type: none"> • Weaker relationships <ul style="list-style-type: none"> ○ There is a <i>negative</i> association between the difference in gearing and the abnormal provision for credit losses on trade receivables. This was found in both the univariate analysis at the 5% level and multiple regression analysis at the 10% level (H₆) ○ There is a <i>negative</i> association between the difference in gross margin and the abnormal provision for credit losses on trade receivables. This was only found in the univariate analysis. No relationship was found in the multiple regression analysis. ○ There is a <i>positive</i> association between the difference in net margin and the abnormal provision for credit losses on trade receivables. This was only found in the multiple regression analysis at the 5% and 10% level and the direction of the relationship was not that of the direction hypothesised. ○ There is a positive association between earnings surprise and the direction of abnormal provision for credit losses on trade receivables. This was only found in the multiple regression analysis at the 10% level and the direction of the relationship was not that of the direction hypothesised. ○ Given the lack of consistency in the results of the weaker relationships, H₃, H₆, H₇ and H₈ cannot be accepted.
<ul style="list-style-type: none"> • No relationships <ul style="list-style-type: none"> ○ On all other variables no relationship was detected. The following hypotheses cannot be accepted: <ul style="list-style-type: none"> ▪ H₂, consensus EPS growth ▪ H₄, existence of bonus plan ▪ H₁₀, proportion of non-executives to total audit committee ▪ H₁₁, number of governance non-compliance issues ▪ H₁₂, number of audit committee meetings ▪ H₁₃, auditor type ▪ H₁₄, audit specific fees

4.2.2: Discussion of results of Hypothesis 2 to Hypothesis 14

The aim of these hypotheses was to examine the applicability of previously identified and alternative determinants of earnings management to the abnormal provision for credit losses on trade receivables amongst FTSE 350 companies.

Capital Market Variables – No Evidence

The significance of capital market determinants, including analyst earnings expectations, is well documented in previous earnings management research (Healy and Wahlen, 1998). However, the findings of this study provide only limited evidence of a relationship between these variables (via the earnings surprise variable) and the abnormal provision for credit losses on trade receivables.

Contractual Variables – Some Evidence

Contractual determinants of earnings management examined in this study comprise the existence of a bonus plan, executive incentive remuneration and the difference in gearing.

While the existence of a bonus plan variable displayed no significant relationship, the executive incentive remuneration variable exhibited a significant negative relationship in both univariate and multiple regression analysis with the direction of abnormal provision for credit losses on trade receivables. This result provides strong support for the findings of prior research including that of Healy (1985), Healy and Wahlen (1998), Chen (2006) and the management compensation hypothesis of positive accounting theory (Watts and Zimmerman, 1986). In the context of this study, the result suggests that executive level managers utilise abnormal under-provision for credit losses on trade receivables to inflate earnings where their total compensation is increasingly comprised of incentive remuneration contingent upon such earnings performance.

The evidence is less convincing with respect to the difference in gearing variable. This variable is significant in the univariate analysis but only at the 10% level in the multivariate analysis. The results provide limited support that increasing levels of gearing are associated with abnormal under-provision for credit losses on trade receivables. This may explain the use of earnings inflation procedures to reduce the risk of violating debt covenants (Dechow *et al.*, 1996).

Margin Variables – No Evidence

Although there was some weak evidence that the difference in the gross margin variable had a negative relationship with the direction of abnormal provision for credit losses on trade receivables, this was not a consistent result and could not be accepted. This result is contrary to the findings of Zhang (2006). In addition, although the difference in net margin variable indicated significance in multiple regression analysis, this result was not consistent with the univariate analysis, while the direction of the relationship was also contrary to that hypothesised.

Governance Variables – Some Evidence

The intervening and mitigating effects of robust corporate governance structures on earnings management are widely acknowledged (Sebahattin and Harlan, 2009). Consistent with Lin *et al.* (2006), no significant relationship is found between the number of audit committee meetings variable and the direction of abnormal provision for credit losses on trade receivables.

However, the proportion of INEDs to the total board variable exhibited a significant positive (5% level) relationship with the direction of abnormal provision for credit losses on trade receivables. This finding provides some evidence of decreasing earnings inflation activity as

the robustness of corporate governance structures increase, consistent with Dechow *et al* (1996), Beasley (1996), Peasnell *et al* (2005) and Sebahattin and Harlan (2009). This result also represents support for the mitigating effects of independent oversight on earnings inflation activity (via abnormal under-provision for credit losses on trade receivables specifically).

Auditor Variables – No Evidence

Large auditors with industry specialist knowledge are widely considered to be more effective in constraining the earnings management activity of their clients (Francis and Krishnan, 1999). The findings of this study, upon initial examination, provide some support in this regard, with an apparent significant positive (5% level) relationship between the auditor type variable and the direction of abnormal provision for credit losses on trade receivables.

However, the abnormal distribution of the auditor type (categorical) variable has resulted in the disregarding of this result. Given that 198 or 97 per cent of the final sample were audited by Big 4 firms, this variable is no longer effective in earnings management research. Contrasting with Frankel *et al* (2002), no significant relationship between the audit specific fees variable and the direction of abnormal provision for credit losses on trade receivables is exhibited.

Non Hypothesised Variables

The Adj. R Square values resulting from the regression analyses examining research objective three range from 3.7 – 6.3 per cent, with a significant extent of the variation in the direction of abnormal provision for credit losses on trade receivables therefore explained by factors omitted from the model employed. This result is not surprising however, given that Dechow *et al* (2011) document the lack of power in earnings management models and the relatively low Adj. R Square values recorded in prior earnings management research; for example: Chen (2006), Adj R Square between 10% to 12%.

Following the low Adj R Square the authors revised the model, including the previous period abnormal provision for credit losses as a control style variable. This variable was included on the basis that an over (or under) provision could be a reaction to the previous period's provisioning activities. No prior expectation of the sign of this variable was set forth. A negative relationship could be explained by a reaction to the previous period's experience – an over provision in previous period may be followed by an under provision in the current period. A positive relationship may be found in situations where companies continue with the behaviour from one period to the next – an over provision in the previous period may be followed by an over provision in the current period as companies are reluctant to change their provisioning behaviour (in this case an overly prudent approach). The results of these models are not presented but they did not add to the power of the model. When this variable was added to the model, the adjusted R Square value was 2.9% and the previous year's abnormal provision was not a significant variable in the model.

The overall decision to manage earnings (abnormally provide for credit losses on trade receivables) is a complex one; affected by the broader macroeconomic environment and sector specific variables but also significantly by the economic and political circumstances of a firm (Peltier-Rivest and Swirsky, 2000). While both the positive accounting and agency theories provide a firm foundation for the determinants of earnings management, the decision

to manage earnings ultimately comprises many variables that are simply non-linear and not quantifiable but qualitative in nature.

5.0: Conclusion

While the existence of abnormal under provision for credit losses on trade receivables was found, the results attempting to explain the existence of the abnormal under provision were discouraging. These disappointing results are compounded by the fact that many of the variables identified in the model were informed by past studies in the earnings management literature. How can this lack of results be explained, given the existing body of evidence?

- The measure of earnings management employed (the abnormal provision for credit losses on trade receivable) is not effective. Companies that manage earnings have a variety of measures at their disposal; the abnormal provision for credit losses is just one measure. It is possible that the model developed and the sample selected is not powerful enough to capture the earnings management behaviour of companies.
- Many of the earnings management studies tend to concentrate on companies in financial distress or companies that have been shown to have actually managed earnings (Dechow et al (1996), Jaggi and Lee (2002)). In this study, the sample was based on the FTSE 350 Index of companies, the majority of whom would be in good financial health, indeed; only 19 companies in the sample had negative net margin percentages. Thus, the companies that comprise the sample are less likely to manage earnings.
- It is possible that the average company does not use the provision for credit losses to manage earnings. This is contrary to Lev and Thiagarajan (1993) and McNichols and Wilson (1988) and we would posit, is an unlikely explanation. Alternatively, any under-provision may be justified, where the credit risk attaching to specific customers has declined significantly. However, given the period to which the research relates, it is unlikely that credit risk in general should be decreasing (Atradius (2012)).

The work undertaken in this study can be extended in several directions. Those companies exhibiting extreme abnormal under-provision for credit losses on trade receivables could be examined across a broader spectrum of earnings quality indicators to ascertain the extent of overall earnings quality and earnings management activity. In addition, companies are now required to provide much greater levels of detail on their credit loss risks, for example: information on 'receivables that are past due and impaired' and 'receivables that are past due but not impaired'. This may prove to be a much better indicator of earnings management activity – an index of the relationship between 'receivables that are past due but not impaired' and the actual provision for credit losses, as this gap widens then this may indicate the existence of earnings management. Finally, the response of capital markets to the abnormal provision for credit losses on trade receivables is worthy of further investigation.

This study answered the call of McNichols and Wilson (1988) for further research of earnings management through singular accrual measures. On average, abnormal under provision for credit losses on trade receivables was found to exist amongst FTSE 350 companies, however we were unable to satisfactorily explain the existence of the abnormal under-provision from the perspective of the earnings management literature.

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