The Effect of Auditors' Geographic Distance and Industry Specialization on the Reporting of Goodwill Impairment

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SUMMARY

Using a sample of 1,385 firm year observations collected for UK nonfinancial listed firms on the LSE FTSE ALL SHARES index, this paper investigates the effect of geographic proximity between auditors and their clients, and auditor industry specialization on the reporting of goodwill impairment over the period from 2006 – 2014. Results show a strongly significant positive relationship between geographic distance, measure by log of miles, and both the likelihood and magnitude of unexpected goodwill impairment. This indicates that the greater the distance between audit firm and the client headquarter, the greater information asymmetry and the less likely that auditors might control management from manipulating the impairment test and reporting more/less goodwill impairment than it should be. Interestingly, when the auditor is specialized, his expertise and knowledge helps to reduce the information asymmetry problems and become better able to challenge the management on the estimates and assumptions they have used, and thus constrain them from using goodwill impairment as a tool for managing their earnings. However, auditors' specialization is moderating this relationship only when auditors are classified as being specialized on the regional level, demonstrating that knowledge and expertise are shared only between audit partners and offices located in the same region, and not expanded to others located outside that region.

Keywords: Goodwill impairment, auditor specialization, geographic distance, board diversity

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1. INTRODUCTION

The increased importance of goodwill as well as the problems associated with its recognition and valuation has derived accounting organizations and professional bodies to issue set of accounting standards related to the fair presentation of this asset. The early set of standards required goodwill to be amortized over an assumed life of not more than 20 years. However, in 2001, the Financial Accounting Standards Board (FASB) released SFAS No. (142) that required goodwill to be annually tested for impairment rather than amortized.

In addition, in 2004, IAS 36 require Goodwill to be tested also at least annually for impairment. Due to an increasing demand for harmonized global financial accounting, the IASB issued International Financial Reporting Standard IFRS 3 "Business Combinations" in 2004, which applied the same accounting treatment for goodwill issued by the IAS 36 and required UK firms listed on the main London Stock Exchange to adopt IFRSs starting from January 2005.

Companies recognize and record goodwill when they do mergers or acquisitions and pay more than the fair value of net identifiable assets acquired. Following IFRS 3, all UK companies listed on the London stock exchange are required to review their recorded goodwill at least annually for impairment[2] to make sure that the recorded amount of goodwill is not exceeding its fair value. However, the majority of studies on the determinants of goodwill impairment have outlined that managers use the discretion inherent in the reporting of goodwill impaired opportunistically, for the purpose achieving their own interests (Beatty and Weber, 2006; Glaum et al., 2015; Lapointe-Antunes et al., 2009; Laurion et al., 2014; Li and Sloan, 2015; Li et al., 2011; Masters-Stout et al., 2008; Ramanna and Watts, 2012; Zang, 2008).

Due to the substantial value of recognized goodwill as a percentage to the total assets recorded in the balance sheet (ex: 80% of the total assets in some companies), problems related to its consequent measurement, and the increasing number of companies recording and impairing goodwill (Chen et al., 2015), the objective of this paper is to investigate the effect audit quality, measured through the geographic proximity between auditors and their clients, and auditor industry specialization on the reporting of goodwill impairment in the United Kingdom over the period from 2006 – 2014.

[2] Impairment is defined as a reduction in the value of asset and is calculated by the difference between the asset book value and its fair value if the book value is higher.

This research makes several contributions to the literature in goodwill impairment and audit quality. It is one of the first studies that examine the effect of auditor industry specialization in the UK on the reporting of goodwill impairment, investigating whether auditors' knowledge and expertise are shared between audit partners and offices on a national or a regional level. Moreover, it is one of the first studies that explore the effect of geographic distance between auditors and clients in the UK on the quality of audit provided, and the effect of auditor industry specialization as a moderator variable on this relationship. This research is of much interest to regulators, policy makers, audit firms, and investors.

The reminder of this paper is organized as follows. Section 2 reflects a quick review of the literature in goodwill impairment and audit quality, followed by a development for the research hypotheses. Variables measurements and model specification are presented in section 3, followed by a description for the sample selection and some descriptive statistics in section 4. Finally, section 5 presents the results and the conclusion.

2. EXTANT LITERATURE AND HYPOTHESIS DEVELOPMENT

2.1 Literature on the Determinants of Goodwill Impairment

Studies on the determinants of goodwill impairment started to take place after the introduction of both the SFAS No.142 in the US in 2001, and Section 3062 of the CICA Handbook in Canada in 2002. (Beatty and Weber, 2006) is one of the earliest studies that show that managers normally tend to increase the amounts of goodwill written off in the transition period that are considered as a change in the accounting policy (below the line) [3], and act opportunistically to decrease the likelihood of recognizing future goodwill impairments that will be reported above the line and consequently affect the company income. Furthermore, companies are less likely to write off goodwill if their debt covenants have little slack and the covenants react to accounting changes. On the other hand, they are more likely to impair goodwill in the adoption period, if their CEOs had a short tenure, they are riskier, and they have higher earnings response coefficients on income from continuing operations.

[3] When implementing SFAS 142 for the first time, firms could decide whether to write down the goodwill recorded in their balance sheets (immediate "hit" to their balance sheet, without affecting current reported earnings). This initial impairment was reported below the line, whereas any future impairments would be taken above the line included in income from continuing operations (Hussainey et al., 2013).

In a similar study, Jordan and Clark (2011) find that companies recording goodwill impairment show lower level of earnings compared to their counterparts from the non-impairment group. Furthermore, companies reporting negative earnings from the impairment group are found to have significant negative earnings than their counterparts. They argue that companies try to accelerate the recording of goodwill impairment in the same implementation year (2002) as a change in the accounting principles instead of recording it as an operating expense in subsequent years, and hence increase future earnings. Sevin and Schroeder (2005) extend the work done by Jordan and Clark (2011) and report that small firms are charging goodwill impairments more than large firms.

Providing an evidence for a different earnings management strategy, Long (2005) finds that US companies are not reporting impairment on a timely basis in the initial implementation of SFAS No. 142, as they try to minimize the reported impairment losses to smooth income and to avoid the violation of debt covenants. Covering the same period, Zang (2008), also, finds a significant negative relationship between leverage levels and the recorded goodwill impairment losses for a sample of 870 US companies. This result is robust to different measures of leverage that reflect the strictness of debt covenants. Similar to (Beatty and Weber, 2006), Zang (2008) argues that leveraged firms are less likely to record impairment losses when their covenants include the effect of accounting changes and restrictions on retained earnings and net assets than when their covenants exclude accounting changes or do not have such restrictions.

Furthermore, Hayn and Hughes (2006) study the possibility of predicting goodwill impairments for US firms. They conclude that investors face considerable difficulty in predicting goodwill impairments. They argue that the poor quality of relevant disclosures concerning the post-acquisition performance of acquired business units was the main reason for poor predictability of impairments. They also conclude that there was a tendency for many goodwill impairments to be taken only after considerable delay. For their sample of the post SFAS 142 acquisition, they conclude that the adoption of SFAS 142 is less likely to improve the quality of financial reports in forecasting goodwill write-offs.

Likewise, while examining the timeliness of the reported goodwill impairment for a sample from 1996 to 2011, thus covering both the pre- and post-SFAS 142 periods, Li and Sloan (2015) find that goodwill impairments in the post-SFAS 142 period lag deteriorating operating performance and stock returns by at least three years. They conclude that goodwill

impairment does not reflect the economics of the business, as firms act opportunistically and belatedly recognize their losses; in their view the new impairment rules in SFAS 142 are ineffective in achieving timely impairments.

Moreover, Ramanna and Watts (2012) study a sample of US firms for which there is a high likelihood of goodwill impairment. Only 69% of the research sample reports goodwill impairment. They find no evidence that manager had positive inside information about future cash flows, and some evidence that impairments may have been avoided for opportunistic reasons related to CEO compensation, CEO reputation, and debt-covenant violation concerns. They also find some evidence that the non-impairments in their sample may be explained by managers' flexibility provided under the SFAS 142.

Using a sample of 38,667 firm-year observations for US companies over the period from 2003 to 2011, Filip et al. (2015) show that firms postponing goodwill impairment in their accounting books manage their current levels of cash flows upward, compared to firms that recognize an impairment loss, using different proxies of cash flow management. This pattern of unexpected positive cash flows suggests that managers are manipulating current cash flows to support their choice not to report impairment loss in financial statements. Furthermore, they report that non-impairers that are likely to carry impaired goodwill exhibit a lower change in future operating performance, present lower future stock returns and cumulated abnormal returns than impairers over one-to-two years after impairment avoidance. These results are consistent with the argument that these unexpectedly high levels of current cash flows of firms that delayed impairment are detrimental to future performance.

Regarding studies that examine the IFRS context, AbuGhazaleh et al. (2011) examine whether the discretion involved in the reporting of goodwill impairment under the *IFRS 3 Business combinations* has been used as was intended by IASB to signal informative information or opportunistically to reflect management incentives. The research sample consists of 528 firm-year observations from the largest 500 UK listed companies (based on their market capitalization) for the years 2005 and 2006. As predicted, a multivariate tobit regression analysis finds an association between goodwill impairments and recent CEO changes, Big Bath, and Income smoothing; with the CEO change and Income smoothing affect positively, while the Big Bath affect negatively. Moreover, this supports the notion that managers are using the discretion in the recording of goodwill impairment, however, further

analysis shows that this discretion is more likely to be used to signal private information about the company performance rather than being used opportunistically.

By considering the impact of the global financial crisis on a firm's behavior during the financial crisis in Australia, Vanza et al. (2011) find that both CEO change and debt contracting are associated with reported impairment according to IFRS 3 for a sample of 5,884 firm year observations pertaining to 647 firms exhibiting indicators of impairment. Similarly, Hamberg et al. (2011) find that tenured management is negatively associated with the impairment decision based on Swedish data pertaining to all firms listed at the Stockholm Stock Exchange in 2001 to 2007.

Hussainey et al. (2013) extend the work done be AbuGhazaleh et al. (2011) through using a large sample of UK listed companies that covers the period from 2001 to 2009, therefore includes the effect of the financial crisis. Results show that current period bad news in the stock price, high opening goodwill relative to the market value of equity, firm size, more focused business, inside ownership, and CEO change are the main drivers for goodwill impairments in the UK. Moreover, the reporting of goodwill impairment was found to be quite timely as no significant relationship exit between lagged return or lagged bad return and the recorded impairments.

However, Glaum et al. (2015) find that the likelihood of reporting goodwill impairment is associated with lagged stock market return, suggesting that firms tend to delay necessary impairment. However, further investigations reveal that the timeliness of goodwill impairment depends on the strength of national accounting and auditing enforcement systems: firms in countries with strong enforcement systems tend to write off goodwill in a timely fashion, both before and after the Financial Crisis, while firms in countries with weak enforcement systems tend to delay necessary goodwill impairments. Moreover, they find that firms' decisions to impair goodwill are not only related to measures of performance, but also to proxies for managerial and firm level incentives (such as CEO tenure, income smoothing, the number of firms' operating segments), and to firms' ownership structures.

Furthermore, based on a sample of 538 Spanish-listed firm-year observations corresponding to the period 2005–2011, Giner and Pardo (2014) examine managers' use of discretion in deciding whether or not to impair goodwill and about the magnitude of the impairment. Results show that Big Bath and Income Smooth explain the decision to impair and the magnitude decision, respectively. They also argue that Firm size is an attribute that appears

significant in all the analyses, suggesting that the cost and complexity of running the tests affect managers' decisions; thus, larger firms appear to be more prone to recording impairment and to impairing larger amounts than smaller firms are.

On the other hand, Carlin et al. (2010); Carlin and Finch (2015); Laili and Khairi (2013); and Stokes and Webster (2009) examine the effect of the audit quality, using the auditor brand name (Big 4 versus Non-Big 4) as a proxy, on the degree to which companies are strictly following and implementing the IFRS standards while measuring and reporting their goodwill impairment losses.

Carlin et al. (2010), Carlin and Finch (2015), and Laili and Khairi (2013) explore this effect on the compliance level of the Singaporean, Hong Kong, and Malaysian listed companies, respectively, with the goodwill impairment disclosures requirements imposed by IFRS. Carlin et al., (2010) show that companies audited by Big 4 and non-Big 4 failed to even adhere to the basic disclosure requirements. Following the same methodology used by Carlin et al. (2010), Laili and Khairi (2013) find no significant differences in the audit quality among the Big 3 auditors. This indicates that audit quality among the largest audit firms is homogenous, as has so often been assumed in the literature. However, consistent with Carlin et al. (2010), companies failed to comply with even the basic elements of the Standard in relation to goodwill impairment testing.

Moreover, Carlin and Finch (2015) find that audit quality is higher for Big 4 than non-Big 4 auditors, as levels of non-compliance and poor disclosure quality pertaining to goodwill impairment of other audit firm clients were higher than that of Big 4 audit firm clients. However, on the one hand clients of Deloitte were found to be the best practice disclosure bearing on goodwill impairment testing process. On the other hand, clients of E&Y, KPMG, PWC and other audit firms were evaluated to have substantial variations of practice disclosures relating to method employed, CGU aggregation and discount rates and growth rates. This indicates that the quality of an audit among Big 4 audit firms is not homogeneous as has been accepted before, but is subject to variation.

To examine the effect of audit quality on the relevance and timeliness of goodwill impairment reported, Stokes and Webster (2009) use a sample from companies that are listed on the Australian stock exchange during the period from 1999 to 2008, covering both the area before and after the introduction of the IFRS, and following the same methodology used by Chalmers et al. (2011) and Godfrey and Koh (2009). They find companies that have been

audited by Big 4 auditors are more likely to report goodwill impairments that reflect the underlying economic value of goodwill and their investment opportunities (IOS) than other companies that have been audited by non-Big 4 auditors. Findings demonstrate more explanatory power for the Big 4 model (R^2 = 46%) than the non-Big 4 one ((R^2 = 32%), with a significant negative relationship exists only in the big 4 audit firms sample between the reported impairment losses and their IOS.

Moreover, Chen et al. (2015) present the effect of monitoring tools, such as: audit quality (measured through auditor industry specialization); and institutional ownership (reflects the percentage of shares owned by institutions), on the market participants decisions following the disclosure of goodwill impairment. They find the amounts of goodwill impairment are negatively associated with analysts' forecast accuracy and positively associated with their forecast dispersion, because of the uncertainty surrounding goodwill impairments. However, with a more specialized auditor and greater institutional ownership, the uncertainty relating to goodwill impairments is decreasing and consequently the adverse effect of goodwill impairments on analyst forecast dispersion is decreasing as well.

2.2 Hypotheses Development

2.2.1 Geographic Distance Between the Auditor and the Client

Recent finance studies suggest that information asymmetry increases with the physical distance between investors and their targets. In a seminal paper by Coval and Moskowitz (2001), the authors find that mutual fund managers earn higher returns on investments in local versus non-local firms, and attribute their findings to local analysts having better monitoring capabilities and/or better access to private information. Similarly, using a sample of over 6,000 business acquisitions, Uysal et al. (2008) shows that in the context of mergers and acquisitions, acquirers have a preference for local targets and earn significantly higher returns on local transactions versus non-local transactions.

In the auditing literature, Choi et al. (2012) document that auditor–client proximity has a positive effect on audit quality as they improve accrual quality. Specifically, they show that clients of local auditors report a higher level of accrual quality compared to clients of non-local auditors[4]. They suggest that geographic proximity provides auditors with an

[4] They define an auditor as a local auditor (1) if the auditor's practicing office is located in the same metropolitan statistical area (MSA) as the client's headquarters, and (2) if the geographic distance between the

informational advantage that facilitates a more effective monitoring of client managers, possibly because of common media markets, increased awareness of local business conditions, common social networks, or easier access to client personnel. Moreover, Jensen et al. (2015) document that accruals quality improves with auditor proximity, however, geographic distance imposes additional costs on auditors that could require additional client screening protocols. This results in audit fees increase with client distance, possibly as compensation for the increased costs incurred by auditors contracting with far away clients.

Existing research has also found that geographic proximity to governing bodies, such as an SEC office, has implications for auditees and their external auditors. DeFond et al. (2015) find evidence suggesting that non-Big 4 auditors are more likely to issue going concern opinions for clients headquartered in cities with SEC regional offices, possibly because of risk protection behaviour by auditors. Furthermore, Kedia and Rajgopal (2011) argue that the SEC is more likely to investigate firms located closer to its offices, as they find that companies located more than 100 km from an SEC office are more likely to restate their financial statements.

Moreover, chen et al. (2016) show a positive association between auditor–client geographic distance and internal control weakness, that is weaker for firms with longer auditor tenure. These results suggest that auditor rotation policies could deprive the auditor of client specific knowledge, especially for auditors located further away from their clients. On the contrary, a another study done by López and Rich (2016) on the effect of geographic distance, measured as the driving distance between U.S. municipalities and their external auditors, on the likelihood and severity of municipal internal control weaknesses finds evidence of a positive association between the disclosure of internal control exceptions and driving distance, suggesting that audit rigor is greater for geographically distant clients. They argue that this could be an indication of greater independence due to reduced political or economic ties between auditors and their local municipal leaders.

In sum, these studies indicate that geographic proximity mitigates information asymmetries and enhances monitoring effectiveness. Therefore, based on the above arguments, it is expected that shorter auditor–client geographic distance helps auditors develop better knowledge about client-specific industry, resulting in being more effective in constraining

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two cities where the auditor's practicing office and the client's headquarters are located is within 100 kilometres, or they are in the same MSA.

managers from using estimates to report unexpected positive/negative goodwill impairment. Thus, the first hypothesis is as follows:

> **H1:** Shorter auditor–client geographic distance is associated with lower unexpected goodwill impairment.

Next, this paper posits that longer auditor–client geographic distance would have less significant effect on the reporting of unexpected goodwill impairment if the auditor is classified as being specialized in the client industry. This assumes that specialized auditors have the level of knowledge and experience that enable them to understand the client business more effectively that non-specialized ones, and therefore, reduce the risk of information asymmetry that might result when auditors are located far away from the client. Therefore, industry specialized auditors are better able to evaluate the estimates and the assumptions that managers use in the calculation of goodwill impairment than non-specialized auditors located at the same distance from their clients. This leads to the second hypothesis as follows:

> **H2:** The positive relation between auditor–client geographic distance and Unexpected goodwill impairment is weaker when the auditor is specialized in the client industry.

Recent research has begun exploring if industry reputations of Big 4 accounting firms are the result of office-level industry leadership in specific cities rather than a firm's national-level industry leadership based on its total clientele (Bills et al., 2013; Carson and Fargher, 2007; Ferguson et al., 2003; Francis et al., 2005; Fung et al., 2012; Minutti-Meza, 2013; Reichelt and Wang, 2010). Therefore, the underlying issue is whether Big 4 industry expertise is a firm- wide phenomenon or a more localized office-specific phenomenon. Ferguson et al. (2003) argue that reputations are more likely to be firm-wide if the industry expertise of office-based professionals can be captured and distributed to other offices of the firms through knowledge sharing practices. Alternatively, reputations are more likely to be office-specific if industry expertise is closely tied to office-based professionals who primarily service clients headquartered in the same locale.

In the UK, Basioudis and Francis (2007) and McMeeking et al. (2006) provide an evidence that auditors receive significant fee premiums if they are defined as specialized on the city level, not the national level. This indicates that specialized auditors receive higher premium because they are assumed to provide higher audit quality than non-specialized auditors, and industry expertise of office-based professionals are not shared and distributed to other offices

of the firms through knowledge sharing practices. However, if auditor specialization in the UK is not shared across the country, and hence specialization on the national level has not shown significant effect on the audit fees premium, it might be that auditor knowledge and expertise are shared and distributed between audit firm office located in the same UK regions. This is because UK cities located in each region are close to each other (compared to US) and hence knowledge and expertise can be easily shared between offices in the same region.

Therefore, the second research hypothesis is empirically tested through two sub hypotheses:

> **H2a:** The positive relation between auditor–client geographic distance and Unexpected goodwill impairment is weaker when the auditor is specialized in the client industry on the national level.
>
> **H2b:** The positive relation between auditor–client geographic distance and Unexpected goodwill impairment is weaker when the auditor is specialized in the client industry on the regional level.

3. MEASUREMENT OF VARIABLES AND MODEL SPECIFICATION

3.1 Measurement of Variables

3.1.1 Unexpected Goodwill Impairment

Following Beatty and Weber (2006), Bens et al., (2011) and Knauer and Wöhrmann (2015), unexpected goodwill impairment is calculated as it will help to clearly examine the effect of audit firm geographic proximity and auditor specialization. As this paper is targeting the unexpected goodwill impairment, those two variables should negatively affect the positive or negative unexpected goodwill impairment. Therefore, the absolute value of unexpected goodwill impairment is used as the dependent variable.

To compute the expected goodwill impairment, an approach suggested by Beatty and Weber (2006) for single segment firms and refined by Bens et al., (2011) and Knauer and Wöhrmann (2015) for multi-segment firms is used. For single-segment firms, the expected impairment is calculated as the difference between the prior quarter's book value of equity and the market value of equity up to the amount of goodwill. If the market value of equity exceeds the book value of equity, the expected write-off is set to 0.

For multi-segment firms, the difference between the prior quarter's implied book value of equity per segment and its implied market value of equity is calculated to measure the expected impairment per segment. Therefore, the book value of equity is allocated to each segment based on the segment's prior year share of total sales. Second, to estimate the implied market value of a firm, the segment's prior year sales is multiplied with the sales multiple. The sales multiple is calculated as the median ratio of the market value of equity over sales of all single segment firms in the same industry (indicated by the first two digits of the Industrial Classification Benchmark - ICB). If the implied book value per segment exceeds its market value, the difference between these two is the expected impairment restricted to the amount of goodwill, which is also assigned to segments based on sales. If the implied book value per segment does not exceed its market value, the expected impairment is 0. Finally, the expected impairments for all segments of a firm are added together to calculate the expected impairment per firm.

As suggested by Bens et al. (2011), this paper uses the single-segment approach also for multi-segment firms if the former leads to a higher expected impairment. Further, the single-segment approach is used when there are less than five peers to calculate the sales multiplier for the segments of a multi-segment firm.

3.1.2 Measurement of Distance

Following previous literature, the natural log of the physical distance between a firm and its auditor is used as the measure for geographic proximity. In particular, the Haversine formula (see Shumaker and Sinnott, 1984 for details) is used to calculate the physical distance between firm *i* and its auditor *j* (DISTANCE) as follows:

$$\begin{aligned} DISTANCE_{i,j} = \; & \arccos\{\cos(latitude_i)\, cos(longitude_i)\, \cos(latitude_j)\, cos(longitude_j) + \\ & \cos(latitude_i)\, sin(longitude_i)\, \cos(latitude_j)\, sin(longitude_j) + \\ & \sin(latitude_i)\, sin(latitude_j)\}\, 2\pi r/360 \end{aligned}$$

where r is the radius of the earth (≈3,963 miles).

3.2 Model Specification

To test the research hypotheses, both tobit[5] and logit regression models are used to test the magnitude and the likelihood of unexpected goodwill impairment, respectively.

$Pr(D\text{-}UGI_i=1) = \alpha_0 + \alpha_1$ Specialization $+ \alpha_2$ *Distance*Specialization* $+ \alpha_3$ other control variables $+ u_i$ **(1)**

$UGITA_i = \alpha_0 + \alpha_1$ Specialization $+ \alpha_2$ *Distance*Specialization* $+ \alpha_3$ other control variables $+ u_i$ **(2)**

Where:

Dependent variable	
D-UGI$_i$	Dummy variable equal 1 if the firm has a positive value of unexpected goodwill impairment, 0 otherwise
UGITA$_i$	Continuous variable: Absolute value of unexpected goodwill impairment deflated by lagged total assets
Independent Variables	
Specialization	Dummy variable equal 1 if auditor is specialized, 0 otherwise[6]
Geographic Distance	Natural logarithm of miles
*Distance*Specialization*	Interaction term (Distance*Specialization)
GW/TA	Goodwill before impairment of year $_t$ deflated by total assets before impairment $_t$ (Worldscope)
Size	Natural logarithm of total assets (Worldscope)
Beta	Firm beta (Datastream)
Risk	Price volatility (Worldscope)
Free Float	Percentage of shares available to trade (Worldscope)
Segment (log)	Natural logarithm of number of segment (Worldscope)
Board Diversity	Percentage of female on board (Datastream-Assets4)
% Non-Executives	Percentage of nonexecutive directors (Datastream-Assets4)
CEO Duality	Dummy variable equal 1 if the CEO is the chairman of the business, 0 otherwise (Datastream-Assets4)
Cross Listed	Dummy variable equal 1 if the firm is cross-listed in the use, 0 otherwise.

[5] Tobit regression is used because data has non-negative values and the majority of them tend to be zero.
[6] Specialization is measured using the weighted approach proposed by Neal and Riley (2004)

4. SAMPLE AND DESCRIPTIVE STATISTICS

4.1 Sample

The initial sample consists of all UK firms listed on the London Stock Exchange (LSE) FTSE ALL SHARES index. Data is collected for the period 2006 – 2014, one year behind the adoption of IFRS by UK listed firms, to avoid the noise of the adoption year, till the latest available data at the time this research has started. Data on the city locations of auditor's offices are collected manually from the annual reports due to the unavailability of this information in all UK databases, while data on the city locations of their client headquarters are downloaded from Datastream. Next, postcodes are used to find the latitude and longitude data for auditor's and the client headquarters' offices, which are used to measure the geographical distance between them. List of UK metropolitan areas and their corresponding regions are defined using ESPON project 1.4.3 study on Urban Functions issued on March 2007[7], and Nomenclature of Territorial Units for Statistics (Three levels NUTS) codes of the UK maintained by the UK Office for National Statistics[8]. Data on the percentage of female on board and other board characteristic variables are downloaded from ASSET4 through Datastream database. Other accounting and financial data are retrieved from Datastream, Fame, Osiris.

As presented in Table 1, Panel A, this research exclude (1) Financial firms because they are required to follow industry specific regulations, (2) Firms that do not recognize goodwill in their balance sheet in any of the nine years covered in this study, (3) firms with missing audit firm name, and (4) firms audited by non-Big 4 auditors or auditors from outside the UK. The final sample consists of 347 non-financial firms, reflecting 2194 firm year observations. Table 1, Panel B reports the sample distribution across nine industries, following the Industry Classification Benchmark (ICB-level 1), with utilities group (industrial group) having the lowest (highest) level of representation.

[Insert Table 1 Here]

[7] http://www.espon.eu/export/sites/default/Documents/Projects/ESPON2006Projects/StudiesScientificSupportProjects/UrbanFunctions/fr-1.4.3_April2007-final.pdf

8 http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guidemethod/geography/beginner-s-guide/eurostat/index.html

To measure auditor industry specialization on the national level, audit fees are collected from Worldscope-Datastream for 2,239 UK firms (Active and Inactive firms) to. This results in 12,723 firm year observations over the period from 2006 to 2014. Then, firms audited by non-big4 audit firms are excluded resulting in 7,509 firm year observations. Information about cities and addresses where auditors' offices are located are collected manually from the audit reports following Basioudis and Francis (2007) and McMeeking et al. (2006). This results in having 7,502 firm year observations used for measuring specialization on the regional level.

Table 2 illustrates the sample distribution and the Big-4 industry leaders on the national level across the 33 London Stock Exchange industry codes (ICB-level 3) in the UK Based on 2006 – 2014 Audit Fees

[Insert Table 2 Here]

4.2 Descriptive Statistics

Table 3 presents the proportion of firms reporting impairment over years (including and excluding 2005). Despite that the total number of firms reporting goodwill is increasing over years, the percentage of them reporting goodwill impairment is decreasing.

[Insert Table 3 Here]

As presented in Figure 1, the percentage of firms impairing goodwill was the highest in 2005, the year where UK companies listed on the LSE were required to adopt IFRS and to test their goodwill for impairment by the end of the year. After that, firms manged to avoid the reporting of goodwill impairment till the financial crisis in 2008 and 2009, where it is doubled from 10.78% to 20.43%. Again, over the following years, firms managed to avoid the reporting of goodwill impairment, and the trend almost shows a continuous reduction in the percentage of impairment reporting till it reached 11.23% in 2014, the last year in the research sample.

[Insert Figure 1 Here]

Table 4, Panel A provides descriptive statistics for the whole sample. Approximately 16% percent of firms report goodwill impairment, while the mean value of goodwill impairment reported approach 0% with a maximum value of 47% of total assets. This gives an indication that firms tend to avoid reporting impairment. Goodwill an average (median) of 20% (16%)

of Total assets, with a maximum value of 74%. This gives an indication of the materiality of Goodwill to company total assets on average. The percentage of female on board represents an average (median) of 12% (11%), up to a maximum of 50% of the board members. This shows a higher percentage of participation that its effect should be considered on the reporting of goodwill impairment. The mean (median) value of distance in miles between auditors and clients is approximately 25% (10%) with a minimum of 0.05 mile. The 75% percentile of 30-mile distance indicates that 75% percent of the sample chose to auditors located close to their headquarters. However, we still have around 250 (195) firm year observations with auditors located 80(100) miles away from their headquarters up to a maximum of 398 miles. The mean (median) risk of firms (proxied by price volatility) in the sample is 27 (26), while firm beta has an average (median) of 0.83 (0.79). The percentage of non-executive directors represents an average (median) of 64.6% (63.6%), the average percentage of CEOs who simultaneously are chairman is 4%, and the average of firms cross listed in US market is 35%.

Table 4, Panel B presents descriptive statistics for the two groups of sample (Impairment sample & Control Sample). It shows that firms reported goodwill impairment tend to have larger amount of goodwill, bigger in size, but less riskier firms not reporting goodwill impairment. This might give an indication that some firms of the control sample are manipulating to avoid the reporting of goodwill impairment. Table 4, Panel C show pearson correlation matrix.

[Insert Table 4 Here]

5. RESULTS AND CONCLUSION

Table 5, Panel A presents results for the logit model used to test the effect of geographic distance, auditor industry specialization, the interaction between them, and finally board member diversity on the likelihood of having unexpected goodwill impairment. Model 1 show results if specialization is measured on the national level, where model 2 shows specialization measured on the region level. Findings show a strongly significant positive relationship at 1% between Geographic distance, measure by log of miles, and the likelihood of having unexpected goodwill impairment. This indicates that the greater the distance between audit firm and the client headquarter, the less likely that auditors might control management from manipulating the impairment test and reporting more/less goodwill impairment than it should be. This might be because larger distance between the auditor and

the client results in greater information asymmetry between clients and auditors. However, interestingly, when the auditor is specialized on the regional level, his expertise and knowledge helps to reduce the information asymmetry problems and become better able to challenge the management on the estimates and assumptions they have used, and thus constrain them from using goodwill impairment as a tool for managing their earnings. This supports the idea that auditors specialized on the regional level are better able to reduce the likelihood of having unexpected goodwill impairment than non-specialized auditors. Therefore, we can argue that if we have two auditors located at the same geographical distance from their clients, and one of them is recognised as specialized on the regional level, specialized auditor will have a higher chance of providing a higher audit quality, through constraining management from recording more/less goodwill impairment than it should be. This result demonstrates that knowledge and expertise are shared only between audit partners and offices located in the same region.

Regarding the other control variables, results show a 10% significant negative relationship (in the 2 models) between percentage of female on board and the likelihood of reporting unexpected impairment. This supports the idea the female board members are more ethical and reluctant to opportunistically use the discretion involved the process of testing goodwill for impairment. Furthermore, findings display that big firms are more likely to report unexpected goodwill impairment. Moreover, the higher price volatility (risk), the more likely that firms report unexpected impairments. As expected, results also show that when the CEO is the chairman of the company, he tends to exercise some power to manipulate the amount of goodwill impaired and report more/less than should be in the way that serves his interests. Table 5, Panel B presents results for the Tobit regression model used to examine the effect on the magnitude of unexpected goodwill impairment reported. Results from this regression model confirm the same results extracted from the logit model except for specialization, as findings show a negative but insignificant effect of auditor industry specialization on both levels on the amount of unexpected goodwill impairment reported.

[Insert Table 5 Here]

This research contributes to the literature in goodwill impairment and audit quality in several ways. First, it is one of the first studies that examine the effect of auditor industry specialization in the UK on the reporting of goodwill impairment, investigating whether auditors' knowledge and expertise are shared between audit partners and offices on a national

or a regional level. Furthermore, it is the first to explore the effect of geographic distance between auditors and clients in the UK on the quality of audit provided, and the effect of auditor industry specialization as a moderator variable on this relationship.

Results of this research are important for auditors and investors, as audit firms should work on spreading their offices and avoid to be centralized in large cities. This would help them to better able to offer higher audit quality through being close to their clients collecting more information and conducting more audit tests, and thus reducing information asymmetry problems. Finally, results about the board members' diversity on board are of great importance to regulators and policy makes, as imposing a compulsory quota for women participation on board for UK companies, rather than voluntary choice, would help to improve the quality of the reporting, especially the reporting of accounting items that are affected by management discretion such as goodwill.

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Table 1 – Sample Selection and Distribution by Industry

Panel A – Sample Selection Procedures	Firm	Firm year observations
UK firms listed in FTSE ALL Shares index	634	5,294
(-) Financial firms	287	2,583
(-) Firms with no goodwill over the entire period		332
(-) Firms with missing audit firm name		28
(-) Firms audited by non-Big 4 auditors or auditors from outside the UK		157
(-) Observations with missing control variables		809
Final number of firm-year observations		1,385

Panel B – Sample Distribution by industry	All Firms with Goodwill		Exclude Missing observations	
	No. of Firms	%	No. of Firms	%
Basic Materials	148	6.75	81	5.85
Consumer Goods	249	11.35	181	13.07
Consumer Services	521	23.75	387	27.94
Health Care	101	4.6	60	4.33
Industrials	861	39.24	475	34.30
Oil & Gas	88	4.01	44	3.18
Technology	120	5.47	72	5.20
Telecommunications	47	2.14	27	1.95
Utilities	59	2.69	58	4.19
Total	2,194	100	1,385	100

Table 2 – Sample Distribution and Big-4 industry leaders on the national level Based on 2006 – 2014 Audit Fees

SIC	ICB SECTOR NAME	Observation per SIC	%	2006	2007	2008	2009	2010	2011	2012	2013	2014
530	Oil & Gas Producers	338	4.5	EY	EY	EY	EY	EY	EY	EY	EY	EY
570	Oil Equipment & Services	78	1.04	KPMG	KPMG	PWC	PWC	PWC	PWC	PWC	EY	EY
580	Alternative Energy	38	0.51	EY	EY	KPMG	KPMG	PWC	PWC	PWC	PWC	KPMG
1350	Chemicals	169	2.25	KPMG	KPMG	KPMG	KPMG & PWC	PWC	PWC	KPMG	KPMG	KPMG
1730	Forestry & Paper	22	0.29	DT	DT	DT	DT	DT	DT	DT	DT	DT
1750	Industrial Metals & Mining	34	0.45	PWC	EY	EY	EY	EY	EY	EY	EY	EY
1770	Mining	248	3.3	PWC	PWC	PWC	PWC	PWC	PWC	PWC	DT	DT
2350	Construction & Materials	241	3.21	KPMG	DT	DT	DT	DT	DT	DT	DT	DT
2710	Aerospace & Defence	114	1.52	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG
2720	General Industrials	115	1.53	PWC	PWC	DT	PWC	PWC	PWC	PWC	PWC	PWC
2730	Electronic & Electrical Equipment	213	2.84	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG
2750	Industrial Engineering	341	4.54	KPMG	KPMG	KPMG	EY	EY	EY	EY	EY	EY
2770	Industrial Transportation	200	2.66	PWC	PWC	PWC	KPMG	KPMG	KPMG	KPMG	KPMG	EY
2790	Support Services	1,056	14.06	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
3350	Automobiles & Parts	35	0.47	KPMG	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
3530	Beverages	51	0.68	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
3570	Food Producers	213	2.84	PWC	DT	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG	KPMG
3720	Household Goods & Home Construction	294	3.92	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
3740	Leisure Goods	50	0.67	PWC	PWC	EY	PWC	PWC	PWC	KPMG	KPMG	KPMG
3760	Personal Goods	94	1.25	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	KPMG
3780	Tobacco	20	0.27	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
4530	Health Care Equipment & Services	245	3.26	PWC	EY	EY	EY	EY	EY	EY	EY	EY
4570	Pharmaceuticals & Biotechnology	366	4.87	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
5330	Food & Drug Retailers	96	1.28	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
5370	General Retailers	536	7.14	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
5550	Media	473	6.3	PWC	PWC	DT	DT	DT	DT	DT	DT	DT

5750	Travel & Leisure	665	8.86	PWC	PWC	EY	EY	EY	PWC	PWC	PWC	PWC
6530	Fixed Line Telecommunications	53	0.71	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
6570	Mobile Telecommunications	46	0.61	DT	DT	DT	DT	DT	DT	DT	DT	DT
7530	Electricity	53	0.71	PWC	PWC	KPMG	EY	KPMG	KPMG	KPMG	KPMG	KPMG
7570	Gas, Water & Multiutilities	135	1.8	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC	PWC
9530	Software & Computer Services	672	8.95	PWC	PWC	PWC	PWC	PWC	PWC	EY	PWC	KPMG
9570	Technology Hardware & Equipment	205	2.73	EY	EY	EY	EY	EY	EY	EY	EY	EY
	Total	**7,509**	**100**									

Audit Firm Definitions:

DT = Deloitte & Touche
EY = Ernst & Young
KPMG = KPMG
PWC = PricewaterhouseCoopers

Table 3 – Proportion of Firms Reporting Impairment over Years

Year		Goodwill Impairment		Total Observations
		Yes	No	
2005	No of Obs.	44	160	204
	Percentage	21.57%	78.43%	
2006	No of Obs.	37	180	217
	Percentage	17.05%	82.95%	
2007	No of Obs.	25	207	232
	Percentage	10.78%	89.22%	
2008	No of Obs.	45	187	232
	Percentage	19.4%	80.6%	
2009	No of Obs.	48	187	235
	Percentage	20.43%	79.57%	
2010	No of Obs.	35	207	242
	Percentage	14.46%	85.54%	
2011	No of Obs.	40	210	250
	Percentage	16%	84%	
2012	No of Obs.	36	214	250
	Percentage	14.4%	85.6%	
2013	No of Obs.	40	220	260
	Percentage	15.38%	84.62%	
2014	No of Obs.	31	245	276
	Percentage	11.23%	88.77%	
Total including 2005	No of Obs.	381	2017	2,398
	Percentage	15.89	84.11	
Total Without 2005	No of Obs.	337	1,857	2,194
	Percentage	15.36	84.64	

Figure 1 – Percentage of Firms Reporting Impairment over Years

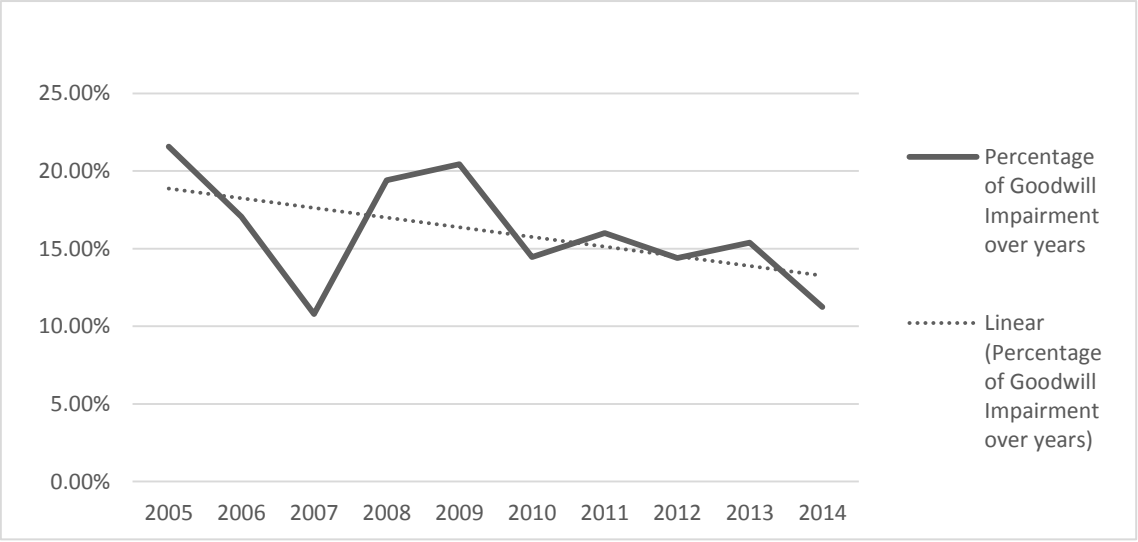

Table 4 – Descriptive Statistics and Correlation for Firm Year Observations for the Years 2006 – 2014

Panel A: Descriptive Statistics for the Whole Sample

Variable	*N*	*Mean*	*S.D.*	*Min*	*p(25)*	*Median*	*p(75)*	*Max*
IMP/TA	1385	0	0.02	0	0	0	0	0.47
DIMP	1385	0.16	0.37	0	0	0	0	1
UnExp IMP/TA	1385	0.02	0.05	0	0	0	0	0.93
GW/TA	1385	0.2	0.16	0	0.07	0.16	0.32	0.74
Board Diversity	1385	11.93	10.2	0	0	11.11	18.75	50
Specialization	1385	0.71	0.45	0	0	1	1	1
Distance (log)	1385	1.98	1.82	-3.24	0.48	2.27	3.39	5.99
Distance (Miles)	1385	24.79	44.43	0.04	1.62	9.68	29.52	397.89
Size	1385	14.51	1.53	10.33	13.4	14.35	15.38	19.05
Beta	1385	0.83	0.66	-0.97	0.43	0.79	1.12	4.35
Risk	1385	27.21	8.47	12.34	21.38	26.05	31.69	57.79
Free Float	1385	83.78	15.65	16	77	88	95	100
log Segment	1385	1.05	0.62	0	0.69	1.1	1.61	2.3
% Non-Executives	1385	64.56	11.65	27.78	55.56	63.64	73.33	100
CEO Duality	1385	0.04	0.2	0	0	0	0	1
Cross listed	1385	0.35	0.48	0	0	0	1	1

Panel B: Descriptive Statistics for Each Group

	Impairment Sample (N = 226)				*Control Sample (N = 1159)*					
Variable	***N***	***Mean***	***Median***	***S.D.***	***N***	***Mean***	***Median***	***S.D.***	***Mean Diff***	***Unequal t-test***
GW/TA	226	0.24	0.23	0.16	1159	0.19	0.15	0.16	-0.05***	-4.15
Board Diversity	226	11.03	11.11	9.77	1159	12.11	11.11	10.27	1.08	1.50
Specialization	226	0.7	1	0.46	1159	0.72	1	0.45	0.02	0.35
Geographic Distance	226	1.82	1.93	1.8	1159	2.01	2.41	1.82	0.19	1.46
Size	226	15.12	14.8	1.56	1159	14.39	14.22	1.5	-0.73***	-6.45
Beta	226	0.73	0.7	0.66	1159	0.84	0.81	0.66	0.11*	2.43
Risk	226	28.07	26.95	9.42	1159	27.04	25.91	8.27	-1.03	-1.54
Free Float	226	86.57	90	15.58	1159	83.24	88	15.61	-3.33**	-2.94
log Segment	226	1.11	1.1	0.59	1159	1.04	1.1	0.63	-0.07	-1.75
% Non-Executives	226	65.95	66.67	12.04	1159	64.29	63.64	11.55	-1.66	-1.91
CEO Duality	226	0.07	0	0.25	1159	0.04	0	0.19	-0.03	-1.62
Cross listed	226	0.4	0	0.49	1159	0.34	0	0.48	-0.06	-1.67

* p<0.05 ** p<0.01 *** p<0.001

Panel C: Pearson Correlation Matrix

	(1)	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***	***(7)***	***(8)***	***(9)***	***(10)***	***(11)***	***(12)***
(1) Board Diversity	1											
(2) Specialization	0.111***	1										
(3) Geographic Distance	-0.134***	-0.133***	1									
(4) Distance*Specialization	-0.0672*	0.473***	0.685***									
(4) GW/TA	0.019	-0.026	-0.101***	1								
(5) Size	0.287***	0.161***	-0.230***	0.001	1							
(6) Beta	0.016	0.003	-0.141***	-0.035	0.105***	1						
(7) Price Volatility	-0.189***	-0.033	0.040	-0.112***	-0.345***	0.022	1					
(8) Free Float	0.199***	-0.080**	-0.011	0.101***	0.267***	0.104***	-0.202***	1				
(9) log Segment	0.074**	0.068*	-0.062*	0.131***	0.213***	0.043	-0.105***	0.143***	1			
(10) % Non-Executives	0.260***	0.104***	-0.138***	0.040	0.395***	0.128***	-0.127***	0.072**	0.050	1		
(11) CEO Duality	0.010	0.039	0.019	0.042	-0.077**	-0.107***	-0.003	-0.248***	-0.041	-0.104***	1	
(12) Cross Listed	0.260***	0.124***	-0.196***	0.002	0.625***	0.183***	-0.295***	0.226***	0.135***	0.339***	-0.059*	1

* p<0.05 ** p<0.01 *** p<0.001

Table 5 – Geographic Proximity, Gender Diversity on Board, Likelihood of Unexpected Impairment, and Size of Unexpected Impairment

Panel A – Logit Model	*Prediction*	*(1)*	*(2)*
Dependent Var: Absolute Unexpected IMP		*National Level*	*Region Level*
Specialization	–	0.00399	0.630**
		(0.240)	(0.296)
Geographic Distance	+	0.214***	0.344***
		(0.0722)	(0.0939)
*Distance*Specialization*	–	-0.126	-0.261***
		(0.0833)	(0.101)
GW/TA	+	1.894***	1.994***
		(0.446)	(0.446)
Size	?	0.962***	0.924***
		(0.127)	(0.126)
Beta	+	-0.186	-0.203
		(0.145)	(0.146)
Risk	+	0.706***	0.706***
		(0.0894)	(0.0887)
Free Float	?	0.169	0.212*
		(0.110)	(0.109)
Segment (log)	?	0.146	0.131
		(0.113)	(0.111)
Board Diversity	–	-0.00534*	-0.00557*
		(0.00292)	(0.00290)
% Non-Executives	–	-0.0772	-0.0757
		(0.0841)	(0.0846)
CEO Duality	+	0.980***	0.977***
		(0.312)	(0.308)
Cross Listed	–	-0.0862	-0.137
		(0.191)	(0.194)
Constant		-1.728***	-2.164***
		(0.495)	(0.547)
Observations		1,385	1,385
Industry Fixed Effect		YES	YES
Year Fixed Effect		YES	YES
Pseudo R2		0.1561	0.1568

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Panel B – Tobit Model	*Prediction*	(1)	(2)
Dependent Var: Absolute Unexpected IMP		National Level	Region Level
Specialization	–	-0.0169	0.0226
		(0.0160)	(0.0181)
Geographic Distance	+	0.0122***	0.0209***
		(0.00435)	(0.00564)
Distance*Specialization	–	-0.00472	-0.0137**
		(0.00485)	(0.00598)
GW/TA	+	0.147***	0.160***
		(0.0280)	(0.0296)
Size	?	0.0316***	0.0298***
		(0.00559)	(0.00520)
Beta	+	-0.000560	-0.00225
		(0.0106)	(0.0106)
Risk	+	7.20e-05	0.000235
		(0.000284)	(0.000294)
Free Float	?	0.00429***	0.00430***
		(0.000566)	(0.000562)
Segment (log)	?	0.00829	0.00785
		(0.00629)	(0.00611)
Board Diversity	–	-0.000291*	-0.000326*
		(0.000169)	(0.000176)
% Non-Executives	–	-0.000394	-0.000395
		(0.000452)	(0.000461)
CEO Duality	+	0.0396**	0.0392**
		(0.0159)	(0.0164)
Cross Listed	–	-0.000541	-0.00330
		(0.0114)	(0.0119)
Constant		-0.693***	-0.704***
		(0.0978)	(0.104)
Observations		1,385	1,385
Industry Fixed Effect		YES	YES
Year Fixed Effect		YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1