Abstract

The demise of Arthur Andersen and collapse of Enron, Polly Peck, Schlecker and other companies have resulted in serious repercussions on the public’s confidence of the value of the audit. Despite a growing stricter regulatory framework, financial scandals have continued to occur, and often involve the Big 4 accounting firms - PwC, EY, KPMG, and Deloitte. To maintain the audit quality, competition and to continue the culture of the independent audit, the European Union has introduced mandatory audit firm rotation (MAFR). This study aims to examine the early results of MAFR in the UK and explore its effectiveness using the three key measures - independence, quality and competition. FAME and Nexis financial database were used as a source of data and analysis. The FTSE350 firms are selected for analysis as they are the main target of the regulatory changes in the UK. We find no significant improvement in the high market concentration of the industry, implying that the proposed change in regulation has not achieved, as yet, its full usefulness to open up the market to mid-sized and small tier firms. Additionally, the results show a negative relationship between audit rotation and audit quality. We find the length of audit tenure has little or no effect on the extent of non-audit services provided by the auditor which is used as proxy for auditor independence. This also supports the view that future policy makers should re-consider ways of improving audit independence, competition and quality of the audit and thereby addressing the continuing concerns and enhancing the credibility of the audit industry.

Keywords: Audit rotation; Audit quality, Audit Independence; Audit firm competition

**Introduction**

The public’s confidence in the audit profession was severely shaken by the scandal of Enron and WorldCom, followed by the collapse of one of the Big5 audit firms in 2002; Arthur Andersen (Landsman et al., 2009; Beattie et al., 2013; Lai, 2013). These US scandals along with the European corporate failures have led to debates and concerns on auditor independence, audit quality and the lack of integrity, especially amongst the Big4 accounting firms (KPMG, PwC, EY, and Deloitte) and their long-term, cosy relationships with clients (Jones and Raghunandan, 1998). In particular, there have been numerous examples of long term relationships between auditor and client,for example, Deloitte have been the auditors of Proctor and Gamble for 125 years and PWC have been Caterpillar’s auditors for 90 years that have questioned independence and competition within the audit industry (Financial Times 2015; Gietzmann and Sen, 2002). These concerns have resulted in the introduction of new rules and regulations related to audit in both the US and Europe with the aim of enhancing the public confidence in the auditing process.

The European Commission, in November 2011, in an attempt to address issues of audit independence and competition in the audit industry proposed that there should be a requirement for audit rotation. This proposal arose from their consultation Green Paper “Audit Policy: Lessons from the Crisis” (EC, 2010). The paper notably dismissed the notion of “audit partners” rotation within a firm as the threat of familiarity and breach of independence still persists. Looking at the client with a “fresh pair of eyes” was the compelling argument in favour of Mandatory Audit Firm Rotation (MAFR). It is said that such regulation could enhance independence and diversify the market by reducing its oligopolistic nature (Lu and Sivaramakrishnan, 2009).

Following theses consultations, in June 2014, the European Union introduced MAFR to take place every 10 years, where a company must put their audit out to tender to audit firms other than to the existing audit firm and MAFR became effective in the UK in June 2016 (ICAEW, 2015). MAFR, as suggested above, has been a topic of debate for many years, with professionals and academics speculating the potential benefits and costs of such regulation (Gerakos and Syverson, 2015). It is important to ascertain whether this regulation is thus an effective cure to the problem of independence or just a placebo.

The literature on audit independence and audit rotation is closely linked with audit firm tenure. Those supporting the case for audit rotation argue that long term tenure can erode auditor independence primarily because of the economic benefits derived from the bonding of the audit firm with the client in long term relationships (Myers et al., 2003; Carcello and Nagy, 2004). Regulators, in particular, over a number of years have had concerns about the possible lack of independence between auditors and their clients arising from long-term professional relationships (e.g. Sarbanes Oxley Act of 2002 in the US and The European Commission Green Paper 2010). The relationship between audit independence, rotation and tenure is sourced from varying jurisdictions, which are characterised, by national rules and legislation. The metrics employed to measure the positive and negative effect of tenure tend mainly, but not solely, to focus on earnings quality (see, Davis et al., 2009). Whilst not conclusive many of these studies conclude that audit tenure does not significantly affect audit quality (Myers et al., 2003). The first aim of this study in the context of the UK, which has recently introduced MAFR is- to test whether long audit tenure poses potential threats to auditor independence in the UK.

Recent literature provides evidence on how MAFR can impact independence and audit quality but there is lack of focus on competition within the audit industry. These studies failed to test how such a mandate can open up clients to mid-tier firms, thus reducing the oligopolistic nature of the industry influenced by the Big4. Competition within the audit industry has not been extensively studied in the past, despite the on- going concern of the dominance of the Big 4 and the possibility of adverse impact on audit quality in a consolidated market environment (Reid and Carcello, 2017). Even years after the demise of Arthur Andersen, stakeholders closely involved in audit believe that the dominance of the Big 4 firms largely contributes to the negative perception surrounding auditing and its adverse impact on quality (Rama and Read, 2006). It is clear that there is a large division between the Big4 and smaller and mid-tier firms in terms of their global client reach. This poses a significant threat to the profession, if only four firms are able to carry out audits of multinational companies and a greater threat if one of these firms failed. This leads to the second objective of the study- *how does audit rotation impact on competition in the audit industry and does the dominance of the Big4 accounting firms influence the relationship between MAFR and competition?*

The findings of this study provide important insights into whether MAFR has added value to the audit profession and meets its original objectives in the UK audit environment. This study examines the relationship between audit tenure and the proportion of non-audit services to main audit activities of the auditor as potential answers to an increase for auditor independence. Additionally, we also investigate the impact of mandatory audit rotation on the competition of the audit industry and whether the dynamics of the market competition have been altered by a decrease of market share of the Big4 firms and whether the mid-tier firms have been able to secure any large company audits since the regulation has been proposed. If this has not been the case then the results of this research could act as a warning sign for policy makers and accounting bodies suggesting consideration of other ways to combat the clearly defined problems associated with independence. Furthermore, this study contributes to the literature to the on- going debate as to whether mandatory rotation is beneficial by providing some actual results rather than just mere opinions and speculations that have been made prior to the policy being formally proposed. As audit quality tends to come hand-in-hand with independence this study also aims to examine how audit tendering affects audit quality in the mandatory rotation environment. The overall effectiveness of the implementation of this new regulation therefore is examined by the use of three key measures – competition, independence and quality.

The remainder of this paper is organized as follows; Section 2 comprises of the literature review and establishment of the Hypothesis. Section 3 covers Methodology followed by Findings and Analysis in Section 4 and finally the Conclusions are raised in Section 5.

**Literature Review and Hypotheses Development**

This section provides a comprehensive review of the existing literature about mandatory audit rotation and its effects on audit independence, competition and quality.

**Audit Rotation**

MAFR has been considered an important topic in accounting literature since the scandals surrounding the collapse of Enron and its auditor- Arthur Andersen (e.g. Nagy, 2005; Blouin, Grein, and Rountree 2007). Since then the worries of compromised independence and audit quality have resulted in the implementation of Sarbanes-Oxley Act (SOX) in the US and Code of Corporate Governance in the UK which introduced a 5 year audit partner rotation, and audit committee approval of external auditors (Tysiac, 2013; 2014). Policy makers perceive this as a way to combat issues surrounding both independence and a way of increasing audit quality by introducing a “fresh look” to the audit. The regulation has its proponents and opponents who claim that such rotation can allow for less of familiarity threat to independence and respectively, such rotation may cause a loss of continuity and crucial knowledge of the client which is helpful in the auditing process. There are learning curve costs to clients as new auditors increase their fees because they need to become familiar with the new client (Stanley and DeZoort, 2007).

The studies about audit rotation brought mixed results about the quality of earnings at various stages of the audit process. For example, it was found that rotation resulted in abnormally low income increasing discretionary accruals in the final year of the audit (DeFond and Subramanyam, 1998). However, most of these studies include some major limitations such as, an incapability to measure the effects of audit rotation on the audit quality due to lack of sufficient data. In contrast, other recent studies (e.g. Chi et al, 2009; Cameran et al, 2016) find evidence opposed to audit firm rotation with findings that show a result of lower financial reporting quality and an adverse overall effect on audit output.

Policy makers have decided that the regulation needs to be enhanced to further improve audit quality and independence (Abbott et al, 2016). The idea of audit firm rotation has been around for a while and has been a focal point of discussion by regulators and the accounting professionals. The regulators proposed an extension to the policy of audit partner rotation with the introduction of MAFR as it is argued that partner rotation alone does not remove the familiarity threat as originally intended. Despite the rotation of partners, it is considered highly likely that the new partner on the engagement would follow the decisions made by former partner in order not to lose the client (Reid and Carcello, 2017). However, the accounting community has been generally opposed to MAFR (Laurion et al, 2017). Studies indicate that MAFR would reduce audit quality as opposed to strengthening it, suggesting that the costs of rotation outweigh its benefits (PwC, 2012). The main argument behind their claim surrounds the potential threat of more fraudulent reporting during the changeover period where the knowledge of the client is limited (Carcello and Nagy, 2004). This is also consistent with Jackson et al (2008), which found that audit quality tends to be higher in longer client relationships. The study of Jackson et al (2008) used discretionary accruals as a proxy of measuring earnings management to represent audit quality and its relationship to audit tenure. Kim and Park (2014) used real earnings management as proxy for earnings management and found that auditors prefer to change client when real earnings management is high as it could turn to poor audit quality. Geiger and Raghunandan (2002) also found a negative correlation between audit tenure and probability of audit failures from a sample of 117 companies that filed for bankruptcy. However, it is important to note that the studies prior to the regulation being proposed use data from a non-rotation environment. Thus, any rotation that took place at the time of the study was voluntary rather than mandatory. It is therefore not certain that similar results would be obtained in a mandatory audit firm rotation setting. These studies do contributed to the debate by speculating the potential consequences that rotation may bring to the table, but now we have the opportunity to examine the issue in the UK.

Conversely, those in favour of MAFR consider that the longer the audit tenure the higher the likelihood of audit failures similar to that of Enron. This idea is based on the belief that a longer relationship with a client leads to a higher threat of familiarity and self-interest which clouds judgement and affects professional scepticism (Castarella and Johnston 2013). Myers et al. (2003) establishes comparable results by finding that the longer the audit tenure of a client the lower the audit quality. There are very limited studies, which support MAFR. The study of Li (2010), whilst favouring MAFR, found that , that longer tenure creates higher threats to independence in a smaller client setting rather than that of larger firms and they argue that the regulation should be aimed at small firms as opposed to requiring the FTSE350 to tender their audits every 10 years (EY, 2014).

**Competition and the Big4**

Competition within the industry, or its lack of, has been a cause of concern in the recent years due to the audit scandals that have negatively impacted the belief in the profession. The Big4 firms are holding a significant market share globally within the audit industry and have positioned themselves as the leaders of the profession. At this point it is important to note that the Big4 have not always had this market share, in the past the industry had Big8 accounting services firms. Since 1989, there has been a significant reduction in the number of international audit services firms as the Big8 decreased to, first the Big6, then the Big5 and eventually after the demise of Arthur Andersen- the Big4 (Singh, 2013). There is no doubt that these Big4 firms provide high quality reputable services, and it is argued in the academic literature that these Big4 firms provide a higher quality of auditing to their clients than smaller audit firms in the market (Reid and Carcello, 2017). However, it can be argued that there is a lack of choice of audit service providers and the Big4 have been previously accused of low-balling fees in order to reduce competition further and create a barrier for new entry (Accountancy Age, 2007).

Another factor that affects the level of competition which also should be considered is the length of tenure. As the Big4 have built long client relationships, voluntary auditor change was not a common occurrence and if it did occur it often acted as a warning sign that problems may exist. This was due to the fact that (a) The Big4 firms may resign from auditing certain risky firms, or (b) the auditor may be dismissed due to a disagreement, either in respect of disputes on fees or an issued opinion. It has therefore been suggested that in a mandatory rotation environment, auditor changes on a regular basis will no longer be something out of the ordinary and could therefore lead to a so called “Opinion Shopping” where a client may switch firms on the basis of receiving a qualified opinion. It can thus be argued that in a MAFR environment audit clients will be able to avoid such an opinion more easily than prior to the new regulation (Rietberg, 1998).

In contrast, proponents of MAFR worry that having only 4 firms with global client reach and expertise is not enough, and the threat of the Big4 potentially becoming the Big3 in the future is too high. Additionally, it can be argued that due to MAFR audit firms will have to differentiate themselves more in order to win a client. This could therefore lead to more innovation and thus improve audit quality (Jackson et al., 2008).

With the dominance of the Big4 another concern of the policy makers is the potential consequences of another failure of one of these firms on the financial system with the further lack of choice available in the audit industry. Reducing the audit market to just three firms would seriously further reduce the competition. The European Commission (2011) argue that MAFR could open up the industry to smaller firms which would address the issue of a lack of competition. From the above analysis we can derive the following hypothesis:

H1: Audit firm rotation increases market concentration thus limiting competition within the industry.

There is a clear gap in the existing literature with regard to competition and MAFR. This topic has not been extensively studied as it is very difficult to estimate results of MAFR on competition prior to the regulation being proposed. The study of Gerakos and Syverson (2015) find that in a MAFR setting rotation leads to an increase in market concentration which is opposite to the purpose of the MAFR. Additionally, it is important to note that other European Countries such as Spain have already introduced MAFR but revoked it a year later due to the unsatisfactory results (Ruiz-Barbadillo et al. 2009). Thus it is important to measure the results of this regulation to determine in a UK context the impact on competition through the adoption of MAFR.

**Auditor Independence**

Auditor independence can be defined as the auditor’s objectivity in expressing an impartial opinion free from potential threats of judgment and bias (Zhang et al., 2017). This means that potential threats such as length of tenure (familiarity), remuneration (self-interest) and non-audit services (NAS) (self-review) should not sway or influence the opinion issued. The nature of the work carried out by the auditor and its end result places independence as a fundamental part of the profession (Craswell et al. 2002). Previous studies have often used the proportion of NAS to audit fees as proxy for independence. Non-audit services represent all of the additional work such as advisory services and consulting that the auditor provides to its clients, on top of the audit itself. A threat to independence could therefore arise by allowing the potential for self-review. If, for example, the auditor has helped to prepare the financial statements and then gives an opinion on these, the auditor’s independence becomes impaired. In other studies we could find the opposite or no relationship between NAS and auditor independence (Lu, 2006). A recent study by Causholli et al. (2014) adds to the long-standing debate of relationship between NAS and auditor independence by focusing on current and future NAS. They found that the audit quality would be poor if the client firm is not willing to purchase the future NAS services from the same audit firm. It can be argued that though the changes in the regulation can limit the NAS services a client firm can purchase but if we distinguish between current and future NAS the NAS can impair auditor independence. Previous literature shows mixed and inconclusive results about the relationship between NAS and auditor independence and thus it is useful to further test in the UK context whether the regulation achieved its objective by removing the potential for impaired independence on the basis of NAS.

Other studies have also looked at discretionary accruals as proxy for Earnings Management to represent audit quality; a factor closely linked to auditor independence (Frankel et al., 2002; Srinidhi and Gul, 2007). However, a study of Elshafie and Nyadroh (2014) suggests that the use of discretionary accruals may not necessarily reflect audit quality as little association is found between the levels of discretionary accruals and other measures of quality such as amount of restatements, going concern opinions and the size and reputation of the auditing firm. Our study therefore focuses only on tenure and NAS fees for the measure of effects of rotation on auditor independence. Thus, we propose the following hypothesis:

H2: Audit tenure has a negative relationship with the amount of NAS, thus decreases the threat to independence

**Audit Quality**

Audit quality is considered to be the main focus point in the debates surrounding the issues faced by the industry. Due to the financial scandals that happened in the past the public have lost faith in the level of expertise of auditors. Auditors are often blamed for the financial crisis (Sikka, 2009). De Angelo (1981) defines audit quality as not just the auditor’s ability to discover a breach in the client’s accounts but also, the reporting of that breach. It can therefore be argued that independence and quality are closely linked with each other. Since the audit profession has not been receiving a positive response on the level of their usefulness, top firms have placed the aim of achieving the highest quality on top of their core values (PwC, 2012). Academics have debated as to what effect MAFR will have on the level of quality performed by the auditors. They have argued that MAFR can cause real damage to quality as the auditors main focus would be to pitch and win new clients and thus securing more income rather than perform high quality work on clients which will soon go out to tender (Jackson et al. 2008). It also eliminates the continuum knowledge of the client (Dao et al 2008, Kramer et al 2011). This appears to have been the case in Korea where MAFR was abolished after it was found to negatively impacted the quality of audit work performed (EY, 2013). On the other hand, some argue that such change would improve quality as the new auditor would look at a set of accounts with a fresh pair of eyes’ and bring innovation to the table.

Previous literature in this field tends to generate results that do not work in favour of MAFR. The study of Boone et al (2012) concluded that MAFR negatively impacted the audit quality. Thus the following hypothesis has been developed:

*H3: Mandatory audit rotation negatively impacts audit quality*

**Econometric Approach**

**Sample selection**

Data from FAME database, annual reports of firms quoted on the FTSE350 and data from Nexis news was collected. The research is based on UK firms only. Despite the regulation covering the whole of EU, it can be argued that there would be different results in each country (Vanstraleen, 2000) and one rule does not simply fit all. The UK does not have a constitution unlike other countries in the EU and operates on a principles based accounting approach, as opposed to rule based. The data period covers 2013-14 (prior the EU regulation) and 2014-15 (post EU regulation). The European Commission proposed audit rotation in November 2011 and introduced the Directive in June 2014. Although the UK regulation was not effective until June 2016 a number of UK companies adopted MAFR under the EU regulation presumably anticipating the UK adoption in June 2016. Since MAFR is a new regulation, a large proportion of the firms are only in the process of putting their audit out to tender. This does not happen overnight, thus there is limited data available. In order to overcome this issue, a cut-off date for the data collection has been applied as the 14th February 2016.

Due to unavailability of observations of variables used in the estimation model, our final sample contains 332 firms out of FTSE 350 firms. Appendix A lists and explains each variable included in this study.

**Variable Description (dependent variables):**

**Competition**

This study examines market concentration i.e. levels of competitiveness within the audit industry. In order to ascertain whether MAFR has any effect on the dominance of the Big4 firms, a further sample of the Top50 accounting firms (determined by total turnover) have been selected in order to calculate the percentage of market share for both 2014 and 2015. The competition variable is computed through the difference between the two years, representing the change in market concentration once MAFR come into effect.

**Independence**

Following the academic literature NAS (non-audit services) is selected as a proxy for auditor independence. Audit tenure is selected as the independent variable in order to test whether longer relationships with clients are more likely to impact auditor independence.

***Audit Quality***

The Financial Reporting Council (FRC) checks the quality of audit reports annually. They are an independent regulating body responsible for promoting high quality corporate governance (FRC, 2015). Thus, one of the variables used in this study, is the opinion on the audit report issued by the external auditor, reviewed by the FRC. The proportion of good audits has been compared in this study for the years before the commencement of MAFR and after in order to calculate the change in the quality of service provided by the audit firms.

**Empirical Approach**

To examine the impact of mandatory audit firm rotation on audit competition, quality and independence the following multiple regression model is used in this study

Where *Yi* is (1) the competition calculated as percentage change in market share of audit firms before and after the regulation came into effect, (2) NAS to AF used as proxy for auditor independence, (3) Change in FRC used as a proxy for audit quality. is the error term.

**Descriptive Statistics**

Table 1 represents the descriptive statistics for the main variables used in the study. The mean of audit fees for the sample firms is £2,176,000, which makes up 67% of the Total fees paid to the auditors in 2014-15. In contrast, the mean of non-audit fees paid in relation to advisory made up 33% of total fees. This suggests that NAS (non-audit services) may no longer be a suitable proxy for auditor independence as the level of non-audit services provided by the external auditors are not abnormally high, which is tested further in Hypothesis 2. The result is in line with previous studies of Anandarajan et al. (2012), who argue that in the post SOX environment NAS may provide biased results which are no longer the best surrogate for auditor’s independence. According to the SOX auditors are subjected to certain types of NAS services that they can provide to their clients. Similar restrictions are also applied in the UK by the existing corporate governance norms. Thus, NAS is not able to capture a complete picture of auditor independence.

[Insert Table 1 about here]

Table 2 portrays the frequency tables for the binary variables representing Audit Rotation and the Big4. It shows that a year after the adoption of MAFR only 18.37% of the sample firms out of 332 sample firms has swapped auditors. This not surprising as change of auditor will take time. Despite this, a number of studies provide a valid contribution to such a new topic, and shows the first results predicting possible future trends (Davis et al., 2009). As opening up the market to mid-tier firms was one of the main aims of MAFR, it can be concluded that this has not been achieved so far and may indicate the need to examine it further in future.

[Insert Table 2 about here]

This is consistent with Chang et al. (2010) who speculated that MAFR would only decrease competition within the audit industry due to the limited choice of switching. Only the Big4 firms operate globally and thus a lot of possible clients are simply out of reach for mid-sized tier firms. If clients start considering medium and small audit firms then it is possible to overcome the oligopolistic nature of the audit industry. But MAFR can also encourage the existing dominance of Big4 as smaller audit firms will not have the incentives to heavily spend money in collecting and processing information about the clients when they knew that the client firm will have to find another audit firm after ten years following the regulation of mandatory audit firm rotation.

Figure 1 visually shows the limited competition within the industry. It can be seen that the Big4 are more likely to collude with one another in order to control the acquisition of new clients and redistribute these amongst themselves.

**Correlation matrix**

Table 3 shows the correlation between the main variables used in the study. It can be concluded that audit rotation is significantly highly correlated with audit fees, client turnover, number of directors and audit tenure. This suggests that the speed of switching is related to the current length of tenure, the longer the relationship the faster the client will put their audit out to tender in the MAFR environment. As a number of the variables show significant correlation with one another attention has been paid to possible issues of multicollinearity.

The variance inflation factor (VIF) numbers obtained for each regressor, in all empirical models, is less than 5. Thus, there is no overlap in the predictive power of the variables, and so the risk of bias is not present (Garcia et al., 2014). In addition, a significant positive correlation exists between *AF* and *NAF.* Therefore, this suggests that knowledge spill over exists between the two types of services provided by the auditor which in turn leads to cost savings for the company (Beattie et al. 1999). This finding adds to the debate on the threats of NAS as it can be argued that these services help the auditor gain better knowledge of the client.

[Insert Table 3 about here]

**Results**

**Audit competition**

Table 4 presents the results of a multiple regression estimations to test our Hypothesis 1. The dependent variable used for this model is the change in market share of audit firms since MAFR has come into effect. The use of this variable is consistent with previous study of Newton et al. (2013) in which market share is used in order to determine the relationship between competition and audit quality. Models 2, 3 and 4 in Table 4 show that audit rotation is likely to decrease the competition in the audit industry, as the coefficients are statistically significant. The values of the significant negative coefficients are indicating that impact of the rotation is very strong on competition. This clearly supports our Hypothesis 1. The change in market share could be attributable to other factors such as the amount in fees generated from each client. However, when we include the interaction term of audit rotation and Big4, we see a positive relationship of the completion and the interaction term, which justifies that the market concentration of the Big4 firm increases rather than decrease in line with the objectives of MAFR. These results are consistent with the findings in a different context of Newton et al. (2013), Arrurada and Paz-Ares (1997) who also find that MAFR is not a good solution of combating the problem of the oligopolistic nature of the Big4 accounting firms. This evidence contributes to the policy by ascertaining that MAFR is not meeting its objective in these early results. We find a negative and significant effect between audit tenure and competition.

[Insert Figures 1 and 2 about here]

Figure 2 graphically displays the change in market share since the implementation of the new regulation. It can be argued that the largest firms have increased in market share whilst the smaller ones have experienced a further decrease in their place in the market. The bar chart in Figure 2 also clearly portrays the gap between the Big4 accountancy firms and their mid-tier sized rivals.

**Audit independence**

Non-audit services (NAS) and going concern have been previously used as measures of audit independence, with mixed results. A number of studies (e.g. Craswell et al., 2002; Lai, 2013 and Li, 2010) find no support that going concern opinions are influenced by auditor independence and the level of NAS. Since NAS is frequently used as a measure of independence in prior literature, we measure the proxy for auditor independence (dependent variable) by the proportion of NAS to audit fees to estimate the relationship between audit tenure and auditor independence. This provides the evidence whether MAFR can enhance the independence, as proposed in Hypothesis 2.

[Insert Table 4 about here]

All the models in Table 4 show that audit rotation has strong and negative impact on non-audit services. In addition, the audit tenure is also negatively related to the independence (Model 7: coefficient =-0.615 and in Model 7: coefficient =-0.9 both coefficients are statistically significant 0.1%). It suggests that the longer the audit tenure, the less the NAS provided to client thus the higher the independence. These results are therefore supporting our Hypothesis 2 that MAFR does not positively influence Independence. The findings of Ghosh (2005) support this result as the study concludes that the longer the audit tenure, the greater the independence exercised by the auditors.

However, previous studies show mixed findings on the matter of whether NAS is a suitable proxy for Independence (Anandarajan et al. 2012). Adding to the uncertainty of the reliability of this proxy, the regulation will increase sanctions placed on NAS from 2016.

**Audit quality**

The Financial Reporting Council (FRC) checks the quality of audit reports annually and reports its findings on the proportion of good audits completed by accounting firms (FRC criteria for good audits: https://www.frc.org.uk/Our-Work/Conduct/Audit-Quality-Review.aspx).This proportion has been compared in this study for the years before the commencement of MAFR and year after in order to calculate the change in the quality of service provided by the audit firms.

[Insert Table 5 about here]

All the models in Table 5 show that audit rotation is likely to decrease audit quality as all the coefficients for audit rotation variables are strongly and negatively related to the proxy of audit quality. These coefficients are also statistically significant at 10%. Factors other than competition can also affect the level of change in quality. For example, a firm that scored badly in the previous year may try to perform better in the next year regardless of any additional work such as tendering that is undertaken. The coefficients of number of directors show negative impact on the audit quality. Taken together we find a logical support of our Hypothesis 3. It can be argued that the quality is likely to drop as the auditors are no longer focused on the audit itself, but pitching for clients in order to remain competitive. Conversely, the coefficients for interaction term (Rotation and Big4) (significant at 10%) indicate a significant positive relationship between quality and the choice of Big4/Non Big4 in the MAFR environment. The coefficients (Models 9-12) imply that when rotation occurs from Big4 to another Big4, the quality improves as compared to if the firm swapped from a Big4 to a mid-sized auditor. Therefore, it can be argued that choosing a Big4 auditor instead of a smaller firm will result in a higher quality audit (Behn et al. 2008; Khurana and Raman 2004). The results are consistent with the study of Boone et al (2012) who also used market share as measure of competition and found that the lower the increase in competition the higher the audit quality of audits in Singapore. However, it is important to mention at this juncture that the study of Kim et al (2015) based on companies on Korean firms yields conflicting results. This can be possible as Korea, being the emerging markets, has weak institutional framework and corporate governance. So to implement a policy to improve quality of auditing is difficult in such economy. This indicates that MAFR achieves different results in different countries and the policy makers should consider this in the future.

In summary, the findings from the study do not work in favour of the proposed MAFR. This study shows the initial results of MAFR and it is important to monitor its effect in the longer term.

Robustness checks

To check the robustness of our findings we use hierarchical linear regression models. Table 7 represents the results obtained from hierarchical linear regression estimations. Additionally, in all models we also control for the industry of the client firms. In Step 2, in each of the models we find that audit rotation and the interaction term of audit rotation and Big4 are statistically significant and show qualitatively similar effects as we find in Table 4, 5 and 6. These results further strengthen our hypotheses.

Conclusions

Due to MAFR being recently implemented in the UK, it is difficult to reach a conclusion about its impact on corporate performance. Previous research in other jurisdictions has been limited, inconclusive and formed on speculations derived from a voluntary audit firm rotation environment. Our study explored the effects of MAFR on competition, independence and quality in order to ascertain whether such regulation has been successful in years before and after proposition. The results are derived from the sample of 332 companies of the FTSE 350 firms, in which 61 have swapped auditors since the European Directive came into effect. The accounting community has been generally opposed MAFR. PwC (2012) believes that MAFR can reduce audit quality as opposed to strengthening it, suggesting that the costs of rotation outweigh its benefits.

Our results from this study indicate that MAFR does not increase competition but creates an even more concentrated market than ever before, with companies simply transitioning from one Big4 firm to another. Competition is negatively correlated with quality in the MAFR environment, which is consistent with the studies of Boone et al. (2012). Finally, we find that prolonged audit tenure has a negative effect on the level of non-audit services (NAS), implying that the longer the length of the relationship, the smaller the proportion of NAS and thus lower threat to Independence. Our study has methodological implications for MAFR and audit independence. Although NAS has been questioned as an effective proxy for audit independence as proposed by Anandarajan et al (2012), we improved the measure by calculating the proportion of NAS to audit fees, which we believe to be one of the contributions of our study. However, future research may use other proxies such as discretionary accruals to yield similar results and form more reliable proxies.

This study contributes to the evidence in this important debate, by establishing first trends of the behaviour of firms in the MAFR environment, and testing the first results that can be observed on Independence, Competition and Quality. Our findings have implications for legislators, regulators and will also contribute to the academic debate (for the countries that have implemented MAFR rules or in the process of enforcing the policy) on the effectiveness of MAFR and provide scope for the need of future policy improvement.

In conclusion, the results suggest that in its first year of official proposition of MAFR has failed to meet its main objectives and thus the policymakers should carefully monitor the impact of MAFR. To achieve the proposed objectives of MAFR, in practice, alternative ways may be required to consider combating issues surrounding Competition, Independence and Quality. Following the suggestion of PwC (2012) we believe that a further increase on the level of audit committee monitoring would be a much more effective way of increasing quality and independence as opposed to MAFR. The result warns that the regulation will impose a significant risk of higher fraudulent reporting during the changeover periods. Our findings need to be interpreted carefully for countries, such as China, dominated by a relationship-based society (see Zhang et al., 2017) or Spain, characterized by ‘unusually long audit tenure’ (see, Gracia-Blandon and Argiles, 2015) because of their different institutional settings. Additionally, this regulation should be monitored for a longer period of time in order to see how these results will vary as more firms put their audits out to tender. An interesting scenario could take place in 30 years’ time, when a firm may run out of the Big4 auditors to switch to. A new research question could therefore arise, as to whether the process will complete the circle and start over or the company will eventually be forced to reach out to smaller audit firms. This could eventually open up the market and decrease the oligopolistic nature of the profession, however is the timeframe of that possibility worth the wait? Despite this study only examining early results after proposition of MAFR, its findings urge policymakers for a moment of reflection regarding the issues stemmed from the demise of Arthur Andersen and a “learn from mistakes” approach to future regulatory changes.

**References**

Abbott, L., Daugherty, B., Parker, S. and Peters, G. (2016). Internal Audit Quality and Financial Reporting Quality: The Joint Importance of Independence and Competence. *Journal of Accounting Research*, 54(1), 3–40.

Accountancy Age (2007) *External Audits* ‘Auditors go on the defensive’ Available at: http://www.accountancyage.com/digital\_assets/1946/external-audit-oct07.pdf (Accessed on 10 November 2015)

Anandarajan, A., Kleinman, G. and Palmon, D. (2012). Is non-audit services a suitable proxy for auditor independence in the post-SOX period? *Research in Accounting Regulation,*24(2), 105-111.

Arruñada, B. and Paz-Ares, C. (1997). Mandatory rotation of company auditors: A critical examination, *International Review of Law & Economics,*17(1), 31-61.

Beattie, V., Brandt, R. and Fearnley, S. (1999). Perceptions of auditor independence: U.K. evidence. *Journal of International Accounting, Auditing and Taxation,*8(1), 67-107.

Beattie, V., Fearnley, S. and Hines, T. (2013).Perceptions of factors affecting audit quality in the post-SOX UK regulatory environment. *Accounting and Business Research,*43(1), 56-81.

Behn, B.K., Choi, J. and Kang, T. (2008). Audit Quality and Properties of Analyst Earnings Forecasts. *The Accounting Review,*83(2), 327-349.

Boone, J.P., Khurana, I.K. and Raman, K.K. (2012). Audit Market Concentration and Auditor Tolerance for Earnings Management. *Contemporary Accounting Research,*29(4), 1171-1203.

Blouin, J., Grein, B.M. and Rountree, B.R. (2007). An Analysis of Forced Auditor Change: The Case of Former Arthur Andersen Clients. *The Accounting Review*, 82(3), 621-650.

Carcello, J.V. and Nagy, A.L. (2004).Audit firm tenure and fraudulent financial reporting. *Auditing,*23(2), 55-69.

Cameran, M., Prencipe, A and Trombetta, M. (2016). Mandatory Audit Firm Rotation and Audit Quality. *European Accounting Review*, 35-58.

Casterella, J.R. and Johnston, D. (2013). Can the academic literature contribute to the debate over mandatory audit firm rotation? *Research in Accounting Regulation,*25(1), 108-116.

Causholli, M., Chambers, D.J. and Payne, J.L. (2014). Future Nonaudit Service Fees and Audit Quality. *Contemporary Accounting Research,*31(3), 681-712.

Chang, H., Cheng, C.S.A. and Reichelt, K.J. (2010). Market reaction to auditor switching from big 4 to third-tier small accounting firms. *Auditing,*29(2), 83-114.

Chi, W., Huang, H., Liao, Y. and Xie, H. (2009). Mandatory audit partner rotation, audit quality, and market perception: Evidence from Taiwan. *Contemporary Accounting Research,*26(2), 359-391.

Craswell, A., Stokes, D.J. and Laughton, J. (2002). Auditor independence and fee dependence. *Journal of Accounting and Economics,*33(2), 253-275.

Dao, M., Mishra, S. and Raghunandan, K. (2008) Auditor tenure and shareholder ratification of the auditor. *Accounting Horizons,*22(3), 297-314.

Davis, L. R., Soo, B. S., Trompeter, G. M. (2009). Auditor tenure and the ability to meet or beat earnings forecasts. *Contemporary Accounting Research*, 26, 517–548.

DeAngelo, L.E. (1981). Auditor size and audit quality. *Journal of Accounting and Economics,*3(3), 183-199.

DeFond, M.L., Subramanyam, K.R. (1998). Auditor changes and discretionary accruals. *Journal of Accounting and Economics*, 15 (1) 35-67.

Elshafie, E. and Nyadroh, E. (2014). Are Discretionary Accruals a Good Measure of Audit Quality?  *Journal of Management Policy and Practice,*15(2), 43-59.

European Commission (2011) Impact Assessment Available at: <http://ec.europa.eu/internal_market/auditing/docs/reform/impact_assesment_en.pdf> (Accessed 5 January 2016)

EY (2013) *Point of view* ‘Q&A on mandatory firm rotation’ Available at: http://www.ey.com/Publication/vwLUAssets/EY-qa-on-mandatory-firm-rotation-march-2013/$FILE/EY-qa-on-mandatory-firm-rotation-march-2013.pdf (Accessed on 14 February 2016)

EY (2014) *View Points* ‘Audit Firm Retendering and Rotation’ Available at: http://www.ey.com/Publication/vwLUAssets/EY-ViewPoints-issue-37-Retender-and-rotation/$FILE/EY-ViewPoints-issue-37-Retender-and-rotation.pdf (Accessed on 21 December 2015)

Frankel, R.M., Johnson, M.F. and Nelson, K.K. (2002). The Relation between Auditors' Fees for Nonaudit Services and Earnings Management.  *The Accounting Review,*77, 71-105.

FRC (2015) Audit Quality Review Available at: https://www.frc.org.uk/Our-Work/Conduct/Audit-Quality-Review.aspx (Accessed on 1 January 2016)

Financial Times (2015) Audit firms called to account for cosy tenures

*https://www.ft.com/content/1586c658-0fa4-11e5-94d1-00144feabdc0*

13 Jun 2015

EC (2010) European Commission Green Paper, Audit Policy: Lessons from

[*www.ey.com/...european-commission-green-paper-audit-policy-lessons-from-the-crisis*](http://www.ey.com/...european-commission-green-paper-audit-policy-lessons-from-the-crisis)

Garcia, C.B., García, J., López Martín, M.M. and Salmerón, R.(2014). Collinearity: revisiting the variance inflation factor in ridge regression. *Journal of Applied Statistics*, 42(3), 648-661.

Gracia-Blandon, J. and Argiles, J.M. (2015). Audit firm tenure and independence: A comprehensive investigation of audit qualifications in Spain. *Journal of International Accounting, Auditing and Taxation*. 42, 82-93.

Geiger, M.A. and Raghunandan, K. (2002). Auditor tenure and audit reporting failures.  *Auditing: A Journal of Practice and Theory,*21(1), 67-78.

Gerakos, J. and Syverson, C. (2015). Competition in the Audit Market: Policy Implications.  *Journal of Accounting Research,*53(4), 725-775.

Ghosh, A. (2005). Auditor Tenure and Perceptions of Audit Quality. *The Accounting Review,*80(2), 585-612.

Gietzmann, M., and Sen. P. K. (2002). Improving auditor independence through selective mandatory rotation. *International Journal of Auditing.*  6, 183–210.

ICAEW (2015) Implementation of European Audit Reforms. Available at: <http://www.icaew.com/en/technical/ethics/auditor-independence/implementation-of-european-audit-reforms> (Accessed 10 November 2015).

Jackson, A.B., Moldrich, M. and Roebuck, P. (2008). Mandatory audit firm rotation and audit quality. *Managerial Auditing Journal,*23(5), 420-437.

Jones F.L., Raghunandan, K. (1998). Client risk and recent changes in the market for audit services. *Journal of Accounting and Public Policy* 17 (2),169-181.

Khurana, I.K. and Raman, K.K. (2004). Litigation Risk and the Financial Reporting Credibility of Big 4 versus Non-Big 4 Audits: Evidence from Anglo-American Countries. *The Accounting Review,*79(2), 473-495.

Kim, Y. Park, M.S. (2014). Real Activities Manipulation and Auditors' Client-Retention Decisions. *The Accounting Review*, 89 (1), 367-401.

Kim, H., Lee, H. and Lee, J.E. (2015). Mandatory audit firm rotation and audit quality. *Journal of Applied Business Research,*31(3), 1089-1106.

Kramer, S.T., Georgakopoulos, G., Sotiropoulos, I. and Vasileiou, K.Z. (2011). Audit Firm Rotation, Audit Firm Tenure and Earnings Conservatism.  *International Journal of Business and Management,*6(8), 44-57.

Lai, K.W. (2013). Audit Reporting of Big 4 Versus Non-Big 4 Auditors: The Case of Ex-Andersen Clients. *The International Journal of Accounting*, 48, 495-524.

Landsman, W.R., Nelson, K.K., Rountree, B.R. (2009). Auditor switches in the pre-and post-Enron eras: Risk or realignment. *The Accounting Review* 84 (2), 531-558.

Laurion, H., Lawrence, A and Ryans , J. P. (2017). U.S. Audit Partner Rotations. *The Accounting Review*, 92(3), 209-237.

Li, D. (2010). Does auditor tenure affect accounting conservatism? Further evidence.  *Journal of Accounting and Public Policy,*29(3), 226-241.

Lu, T. (2006) Does Opinion Shopping Impair Auditor Independence and Audit Quality? *Journal of Accounting Research,*44(3), 561-583.

Lu, T., and K. Sivaramakrishnan. (2009). Mandatory audit firm rotation: Fresh look versus poor knowledge. *Journal of Accounting and Public Policy*, 28, 71–91.

Myers, L.A., Myers, J.N. and Omer, T.C. (2003). Exploring the Term of the Auditor-Client Relationship and the Quality of Earnings: A Case for Mandatory Auditor Rotation?  *The Accounting Review,*78(3), 779-799.

Nagy, A. L. (2005). Mandatory Audit Firm Turnover, Financial Reporting Quality, and Client Bargaining Power: The Case of Arthur Andersen. *Accounting Horizons* 19, (2), 51-68.

Newton, N.J., Wang, D. and Wilkins, M.S. (2013). Does a lack of choice lead to lower quality? Evidence from auditor competition and client restatements.  *Auditing,*32(3), 31-67.

PwC (2012) Point of View Mandatory Audit Firm Rotation: why other changes would be better for investors. Available at: https://www.pwc.com/us/en/point-of-view/assets/mandatory-audit-firm-rotation.pdf (Accessed on 12 January 2016)

Rama, D.V., Read, W. J. (2006). Resignations by the Big 4 and the Market for Audit Services. *Accounting Horizons* 20 (2), 97-109.

Reid, L.C., and Carcello, J.V. (2017). Investor reaction to the prospect of mandatory audit firm rotation. *The Accounting review*, 92(1), 183-211.

Rietberg, D.R. (1998). Auditor changes and opinion shopping - a proposed solution.  *University of Michigan journal of law reform,*22(1), 211-243.

Ruiz-Barbadillo, E., Gómez-Aguilar, N. and Carrera, N. (2009). Does Mandatory Audit Firm Rotation Enhance Auditor Independence? Evidence from Spain.  *Auditing,*28(1), 113-135.

Sikka, P. (2009). Financial crisis and the silence of the auditors.  *Accounting, Organizations and Society,*34(6), 868-873.

Singh, H. (2013). Anticompetitive behaviour in the audit services market by the Big audit firms: Evidence over time. *Corporate Ownership and Control,*10(2 A), 56-79.

Srinidhi, B.N. and Gul, F.A. (2007). The Differential Effects of Auditors' Nonaudit and Audit Fees on Accrual Quality. *Contemporary Accounting Research,*24(2), 595-629.

Stanley, J.D., DeZoort, F.T. (2007). Audit firm tenure and financial restatements: An analysis of industry specialization and fee effects. *Journal of Accounting and Public Policy* 26 (2), 131-159.

Tysiac, K. (2013). Bill prohibiting mandatory audit firm rotation passes U.S. House. *Journal of Accountancy* (July 8). Available at: http:// www.journalofaccountancy.com/news/2013/jul/20138294.html

Tysiac, K. (2014). Mandatory audit firm rotation rules published in EU. *Journal of Accountancy* (May 28). Available at: <http://www>. journalofaccountancy.com/news/2014/may/201410229.htm

Vanstraelen, A. (2000). Impact of renewable long-term audit mandates on audit quality.  *The European accounting review,*9(3), 419-442.

Zhang, M., Xu, H. and Li, X. (2017). The Effect of Previous Working Relationship between Rotating Partners on Mandatory Audit Partner Rotation.*The International Journal of Accounting,* 52, 101-121.

Figure 1

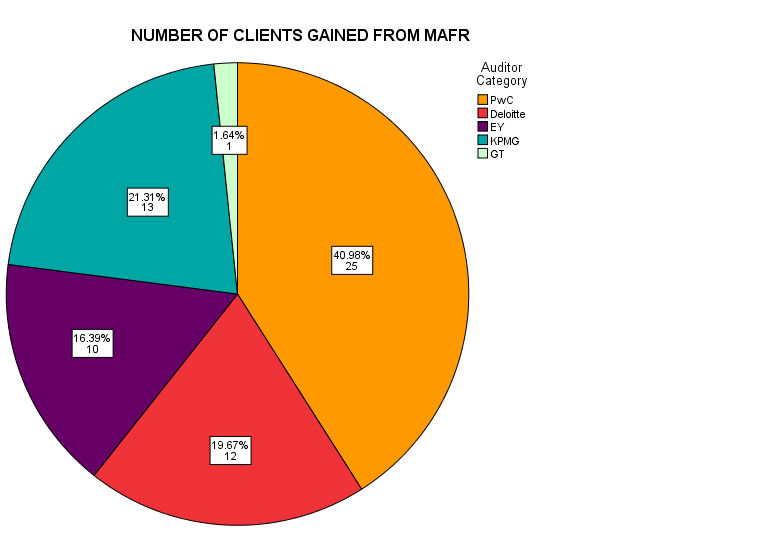


Figure 1: Number of Clients Gained from MAFR (Source: Authors’ calculation)

Figure 2

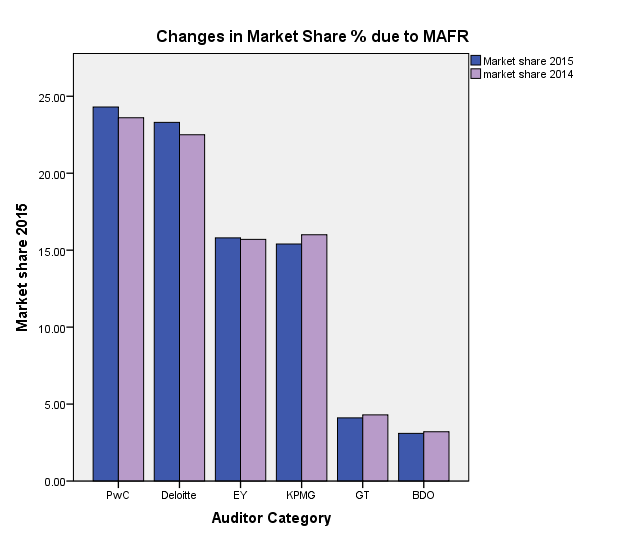


Figure 2: Changes in Market Share Bar Chart

Table 1: Descriptive statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Observations | Mean | Standard dev | Min | Max |
| Competition | 331 | 0.271 | 0.577 | -0.6 | 0.800 |
| Audit Rotation | 332 | 0.184 | 0.388 | 0 | 1 |
| Audit Rotation\*Big4 | 332 | 0.181 | 0.385 | 0 | 1 |
| Turnover (£000,000’s) | 325 | 60.372 | 222.252 | 0.049 | 2700.6 |
| Number of directors | 332 | 30.530 | 17.576 | 0 | 124 |
| Change in FRC | 331 | 2.181 | 13.942 | -25 | 38 |
| Tenure | 293 | 18.655 | 15.928 | 1 | 119 |
| NAS to AF | 327 | 33.365 | 21.351 | 0 | 91.354 |
| Going Concern | 332 | 0.009 | 0.095 | 0 | 1 |
| Tax fees | 226 | 389.823 | 641.219 | 1 | 5100 |
| Number of director\* Rotation | 332 | 6.596 | 16.191 | 0 | 93 |
| Audit fees | 328 | 2176.387 | 4873.482 | 21 | 35000 |
| Non audit fees | 310 | 1244.631 | 2804.007 | 1 | 22638 |
| Big 4 | 332 | 0.181 | 0.385 | 0 | 1 |

Notes: Competition = % Change in Market Share of Audit Firms before and after the regulation came into effect. Big 4 is a dummy takes the value 1 if the audit firm belongs to either KPMG, PwC, EY, and Deloitte, 0 otherwise.

Table 2: Characteristics of audit rotation and Big4 firms in the sample

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Big 4** | Freq. | Percent | Cumulative |  | **Audit Rotation** | Freq. | Percent | Cumulative |
| 0 | 272 | 81.93 | 81.93 |  | 0 | 271 | 81.63 | 81.63 |
| 1 | 60 | 18.07 | 100 |  | 1 | 61 | 18.37 | 100 |

Table 3: Correlation

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | Competition | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Audit Rotation | -0.05 | 1.00 |  |  |  |  |  |  |  |  |  |  |
| 3 | Big 4 | 0.05 | 0.99 | 1.00 |  |  |  |  |  |  |  |  |  |
| 4 | Log (Turnover) | 0.09 | 0.22 | 0.22 | 1.00 |  |  |  |  |  |  |  |  |
| 5 | Log (No. of directors) | 0.15 | 0.16 | 0.15 | 0.56 | 1.00 |  |  |  |  |  |  |  |
| 6 | Change in FRC | -0.67 | -0.10 | -0.09 | -0.02 | -0.14 | 1.00 |  |  |  |  |  |  |
| 7 | Log (Tenure) | -0.07 | 0.20 | 0.20 | 0.13 | 0.19 | -0.00 | 1.00 |  |  |  |  |  |
| 8 | NAS to AF | -0.01 | -0.12 | -0.12 | -0.08 | -0.13 | 0.02 | -0.03 | 1.00 |  |  |  |  |
| 9 | Going Concern | 0.04 | -0.05 | -0.04 | 0.11 | 0.04 | -0.01 | -0.11 | -0.07 | 1.00 |  |  |  |
| 10 | Tax fees | 0.10 | 0.04 | 0.05 | 0.46 | 0.31 | -0.15 | 0.14 | 0.08 | 0.07 | 1.00 |  |  |
| 11 | Log (Audit fees) | 0.04 | 0.16 | 0.16 | 0.83 | 0.56 | -0.02 | 0.12 | -0.09 | 0.10 | 0.55 | 1.00 |  |
| 12 | Log (Non audit fees) | 0.05 | 0.09 | 0.10 | 0.68 | 0.40 | -0.07 | 0.05 | 0.45 | 0.09 | 0.59 | 0.80 | 1.00 |

Notes: Competition = % Change in Market Share of Audit Firms before and after the regulation came into effect.

Table 4: Multiple regression - The effect of MAFR on audit competition

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Model 1 | Model 2 | Model 3 | Model 4 |
| Audit Rotation | -0.016 | -1.291\*\* | -1.269\*\* | -1.265\*\* |
|  | (0.06) | (0.05) | (0.05) | (0.06) |
| Log (Turnover) | -0.028\*\*\* | -0.028\*\*\* | -0.030\*\*\* | -0.027 |
|  | (0.02) | (0.02) | (0.02) | (0.02) |
| Log (no. of Directors) | 0.151\* | 0.153\* | 0.147\* | 0.156\* |
|  | (0.06) | (0.06) | (0.07) | (0.07) |
| Change in FRC | -0.029\*\* | -0.030\*\* | -0.030\*\* | -0.030\*\* |
|  | (0.00) | (0.00) | (0.00) | (0.00) |
| Audit Rotation\*Big4 |  | 1.296\*\* | 1.292\*\* | 1.453\*\* |
|  |  | (0.06) | (0.06) | (0.14) |
| Log (Tenure) |  |  | -0.056\*\*\* | -0.068 |
|  |  |  | (0.03) | (0.05) |
| Log (Audit Fees) |  |  |  | -0.003 |
|  |  |  |  | (0.03) |
| MAFR\_Long |  |  |  | -0.034 |
|  |  |  |  | (0.10) |
| MAFR\_Short |  |  |  | -0.199 |
|  |  |  |  | (0.12) |
| Constant | 0.199 | 0.195 | 0.396 | 0.406 |
|  | (0.22) | (0.22) | (0.26) | (0.29) |
| R2 | 0.489 | 0.505 | 0.512 | 0.515 |
| Observations | 301 | 301 | 265 | 265 |

Notes: The dependent variable is competition measured as % Change in Market Share Prior and post MAFR. MAFR\_Long and MAFR\_Short are the dummy variables indicating long and short Audit Tenure after MAFR respectively. Robust standard errors are reported in parentheses. \*, \*\* and \*\*\* represent coefficients significant at the 5%, 1% and 0.1% respectively.

Table 5: Multiple regression - The effect of MAFR on audit independence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Model 5 | Model 6 | Model 7 | Model 8 |
| Audit Rotation | -14.481\*\* | -0.845\*\*\* | -2.870\* | -3.454\* |
|  | (1.68) | (0.49) | (1.17) | (1.44) |
| Audit Rotation\*Big4 | 13.008\*\* | 1.525\*\*\* | 1.814\*\*\* | 1.713 |
|  | (2.37) | (0.86) | (0.92) | (2.09) |
| Log (Tenure) | -1.872 | -0.499 | -0.615\*\*\* | -0.716 |
|  | (1.62) | (0.35) | (0.37) | (0.52) |
| Going Concern | -3.810\*\*\* | -0.879 | -0.700 | -0.387 |
|  | (2.20) | (1.08) | (1.14) | (1.44) |
| Tax Fees | 0.009\*\* | 0.001 | 0.001 | 0.001 |
|  | (0.00) | (0.00) | (0.00) | (0.00) |
| Log (Audit Fees) | -4.300\*\* | -19.424\*\* | -19.538\*\* | -19.493\*\* |
|  | (1.16) | (0.46) | (0.43) | (0.47) |
| Log (Non-audit fees) |  | 18.458\*\* | 18.473\*\* | 18.458\*\* |
|  |  | (0.83) | (0.82) | (0.85) |
| Number of director\* Rotation |  |  | 0.050\* | 0.070\* |
|  |  |  | (0.02) | (0.03) |
| Log (no. of director) |  |  |  | -0.369 |
|  |  |  |  | (0.79) |
| Log (Turnover) |  |  |  | -0.058 |
|  |  |  |  | (0.25) |
| MAFR\_Long |  |  |  | -0.007 |
|  |  |  |  | (0.95) |
| MAFR\_Short |  |  |  | 0.036 |
|  |  |  |  | (1.75) |
| Constant | 66.022\*\* | 55.408\*\* | 56.357\*\* | 58.424\*\* |
|  | (8.02) | (2.95) | (3.17) | (4.15) |
| R2 | 0.122 | 0.931 | 0.931 | 0.931 |
| Observations | 200 | 200 | 200 | 188 |

Notes: The dependent variable is audit independence measured as Proportion of NAS to AF. MAFR\_Long and MAFR\_Short are the dummy variables indicating long and short Audit Tenure after MAFR respectively. Robust standard errors are reported in parentheses. \*, \*\* and \*\*\* represent coefficients significant at the 5%, 1% and 0.1% respectively.

Table 6: Multiple regression - The effect of MAFR on audit quality

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Model 9 | Model 10 | Model 11 | Model 12 |
| Audit Rotation | -26.173\*\* | -27.984\*\* | -33.184\*\* | -33.327\*\* |
|  | (1.12) | (1.60) | (5.41) | (5.43) |
| Audit Rotation\*Big4 | 23.982\*\* | 24.796\*\* | 25.180\*\* | 25.203\*\* |
|  | (1.92) | (2.15) | (2.19) | (2.21) |
| Log (no of Directors) | -5.625\*\* | -4.730\* | -5.700\* | -5.768\* |
|  | (1.94) | (2.23) | (2.38) | (2.36) |
| Log (Turnover) | 0.817 | 1.386 | 1.496\*\*\* | 1.496\*\*\* |
|  | (0.51) | (0.86) | (0.86) | (0.86) |
| Log (Tenure) |  | 0.098 | -0.025 | -0.052 |
|  |  | (1.13) | (1.12) | (1.75) |
| Log (Audit Fees) |  | -0.101 | -0.280 | -0.299 |
|  |  | (1.26) | (1.23) | (1.24) |
| Log (Non-audit fees) |  | -1.230 | -1.202 | -1.199 |
|  |  | (0.87) | (0.87) | (0.87) |
| Number of director\* Rotation |  |  | 0.129 | 0.132 |
|  |  |  | (0.13) | (0.13) |
| MAFR\_Long |  |  |  | 0.472 |
|  |  |  |  | (2.83) |
| MAFR\_Short |  |  |  | 1.419 |
|  |  |  |  | (4.81) |
| Constant | 10.167 | 7.045 | 10.183 | 10.201 |
|  | (7.10) | (8.67) | (9.12) | (9.49) |
| R2 | 0.044 | 0.061 | 0.066 | 0.066 |
| Observations | 301 | 250 | 250 | 250 |

Notes: Notes: The dependent variable is audit quality measured as change in FRC. MAFR\_Long and MAFR\_Short are the dummy variables indicating long and short Audit Tenure after MAFR respectively. Robust standard errors are reported in parentheses. \*, \*\* and \*\*\* represent coefficients significant at the 5%, 1% and 0.1% respectively.

Table 7: Hierarchical Linear Regression

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Dependent variable: Competition*** | | Unstandardized Coefficients | | ΔR2 | ΔF |
| B | SE (B) |  |  |
| Step 1 | ***Controls*** |  |  |  |  |
|  | Log (Turnover) | -0.014 | 0.013 |  |  |
|  | Log (Tenure) | **-0.153** | 0.033 |  |  |
|  | Change in FRC | **-0.029** | 0.002 | 0.205 | **14.666** |
| Step 2 | ***Independent Variables*** |  |  |  |  |
|  | Audit Rotation\*BIG4 | **1.246** | 0.422 |  |  |
|  | Audit Rotation | **-1.252** | 0.421 | 0.481 | **87.131** |
| ***Dependent variable: Audit Independence*** | |  |  |  |  |
|  |  |  |  |
| Step 1 | ***Controls*** |  |  |  |  |
|  | Log (no. of directors) | **-4.921** | 2.460 |  |  |
|  | Log (Turnover) | **1.536** | 0.796 |  |  |
|  | Log (Tenure) | **-0.724** | 0.293 |  |  |
|  | No. of director \* Rotation | 0.125 | 0.117 |  |  |
|  | Going Concern | -2.138 | 7.881 |  |  |
|  | Log (Audit Fees) | -1.248 | 0.981 | 0.462 | **48.997** |
| Step 2 | ***Independent Variables*** |  |  |  |  |
|  | Audit Rotation\* Big4 | **25.034** | 13.467 |  |  |
|  | Audit Rotation | **-32.351** | 14.188 | 0.022 | **2.949** |
| **Dependent variable: Audit Quality** | |  |  |  |  |
| Step 1 | ***Controls*** |  |  |  |  |
|  | Log (No. of directors) | **-4.672** | 2.462 |  |  |
|  | Log (Turnover) | **-7.124** | 0.681 |  |  |
|  | Log (Tenure) | **-0.658** | 0.269 |  |  |
|  | **Competition** | **-0.337** | 0.169 |  |  |
|  | No. of directors\*Rotation | -0.147 | 0.118 |  |  |
|  | Log (Non-audit fees) | **10.662** | 0.692 | 0.501 | **40.691** |
| Step 2 | ***Independent Variables*** |  |  |  |  |
|  | Audit Rotation\* Big4 | **2.165** | 1.031 |  |  |
|  | Audit Rotation | **-3.446** | 1.586 | 0.013 | **0.659** |

Notes: We use three different models where the dependent variables are Competition, Audit Independence and Audit Quality. Coefficients in bold are statistically significant at either 5% or 1%. ΔR2 and ΔF are the change in R2 and F-statistics. All F-statistics are statistically significant at either 5% or 1%. In all models, industries of client firms are controlled.

**Appendix A**

|  |  |  |
| --- | --- | --- |
| **Variables** | **Description** | **DATA SOURCE** |
| **TURNOVER** | Turnover of client in £000s | FAME |
| **DIRECTOR** | No. of Directors of a client | FAME |
| **TENURE** | Length of Audit firm tenure (years) | FAME |
| **AUDIT FEES** | Audit Fees (£000’s) | FAME |
| **TAX FEES** | Tax Fees (NAS) | FAME |
| **TOTAL FEES** | Total Fees paid | FAME |
| **AUDIT INDEPENDENCE** | Proportion of NAS TO AF | FAME |
| **ROTATION** | Dummy variable 1= Rotation , 0=otherwise | Lexis-Nexis |
| **BIG4** | Dummy Variable for rotated firms |  |
| 1=Big4 | Lexis-Nexis |
| 0=Mid-Tier Firm |  |
| **COMPETITION** | % Change in Market Share Prior and post MAFR | FAME |
| **AUDIT ROTATION\*BIG4** | Interaction variable ROTATIONxBIG4 | Lexis-Nexis |
| **AUDIT QUALITY** | Change in Proportion of Good Quality Audits Prior and Post MAFR | FAME |
| **GCONCERN** | Dummy Variable |  |
| 1= Going concern warning | FAME |
| 0=No going concern issues in FTSE350 |  |
| **MAFR\_LENGTH** | Audit Tenure after MAFR (Long, Moderate or Short) | FAME |