Joint Audit and Cost of Equity Capital: Evidence from Saudi Arabia

Nasser Alsadoun

Department of Accounting, King Saud University
nalsadoun@ksu.edu.sa

Yahya Aljabr

Department of Accounting, King Saud University
yaljabr@ksu.edu.sa

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ABSTRACT**:** Article 14 of the Saudi Banking Control Law (1966) and Article 10 of the Saudi Cooperative Insurance Companies Control Law (2003) state that auditing by two independent auditors is mandatory for banks and insurance companies. These joint audit regulations are aimed at improving the independence of the auditor. In accordance with Article 130 of the Saudi Companies Law, in recent years few Saudi-listed firms, other than firms in the banking and insurance industries, have voluntarily appointed two independent auditors. We examine whether Saudi investors require a lower rate of return for investing in firms with two independent auditors as opposed to firms with a single auditor, and whether the rate varies by audit quality of the two appointed auditors as proxied by industry specialist auditors. Our main results suggest that the expected cost of equity and the implied cost of equity, our proxies for the required rate of return, are decreasing in firms that engage two independent auditors as opposed to firms that engage a single auditor. In addition, our results suggest that cost of equity measures are even lower if both of the two appointed auditors are industry specialists. The results of additional analyses suggest that the main findings are driven primarily by the sample of firms that are subject to mandatory regulations.

Keywords: Joint Audit, Auditor Independence, Information Risk, Industry Specialists, Cost of Equity.

ملخص البحث

مقبول للنشر في مجلة جامعة الملك عبدالعزيز- الاقتصاد والإدارة

تلزم الأنظمة ذات الصلة في المملكة العربية السعودية البنوك وشركات التأمين أن يتم مراجعتها من قبل مراجعين اثنين (ما يسمى بالمراجعة المشتركة)، كما تقوم شركات أخرى تنتمي إلى صناعات أخرى طواعية بتعيين مراجعين اثنين لمراجعة حساباتها. تهدف هذه الدراسة الى اختبار أثر المراجعة المشتركة على تكلفة رأس المال للشركات الملزمة أو التي تقوم طواعية بتعيين مراجعين اثنين. تظهر نتيجة الدراسة أن العائد المطلوب على رأس المال من قبل المستثمرين و الجهات ذات العلاقة بسوق المال يكون أقل في حال كانت الشركة تُراجع من قبل مراجعين اثنين. وأظهرت الاختبارات الإضافية أن هذه النتيجة تكون ذات تأثير أقوى للشركات الملزمة (قطاعي البنوك و التأمين) و يختفي هذا التأثير للشركات الغير ملزمة. كما تظهر الاختبارات الإضافية أثر جودة المراجعة المشتركة على النتائج الأساسية ، حيث أظهرت النتائج وجود علاقة عكسية جوهرية بين تكلفة رأس المال وبين المراجعة المشتركة في حال كان مراجعي الحسابات ينتمون الى فئة مكاتب المحاسبة الكبيرة (Big 4)، و تختفي هذه النتيجة في حال كان أحد المراجعين ينتمي الى مكاتب المحاسبة الاخرى (Non-Big 4). تتسق هذه النتائج مع توقعات الجهات المشرعة بالمملكة حيث تعطي مؤشراً بأن المراجعة المشتركة، بحسب رؤية المستثمرين و الجهات المستفيدة، تسهم في زيادة استقلالية المراجع.

1. Introduction

The primary objective of our study is to examine whether market participants price the joint audit regulations and audit quality of the two appointed auditors in the Saudi market. Under Article 14 of the Saudi Banking Control Law (BCL, 1966), Article 10 of the Saudi Cooperative Insurance Companies Control Law (CICCL, 2003), and Article 130 of the Saudi Companies Law (CL, 1965), auditing by two independent auditors is mandatory for banks and insurance companies, and voluntary for companies in other industries. The proponents of joint audit regulations believe that buying off two independent auditors is costly for the firm, arguing that a co-signed audit report enhances investors' faith in the credibility of financial information and, thus, may indicate auditor independence.

While single audit requirements are still the norm in many countries around the world, with the U.S, Canada, and Australia being notable examples; various countries such as France, Denmark, Switzerland, U.K., Germany, India, and Kuwait have either mandated or proposed voluntary joint audit regulations. Prior studies investigate the overall effect of joint audit regulations and provide mixed evidence. A stream of research documents that joint audit does constrain earnings management practices (Holm & Thinggaard, 2010; Lesage, Ratzinger-Sakel, & Kettunen, 2012), has no effect on earnings quality (Aljabr & Alsadoun, 2014), and may result in decreased total audit evidence precision (Deng, Lu, Simunic, & Ye, 2012). Another stream of research, however, documents that firms that voluntarily adopt the joint audit demonstrate higher auditor report consensus and greater accuracy (Baldauf & Steckel, 2012), have a higher degree of earnings conservatism and lower abnormal accruals (Zerni, Haapamäki, Järvinen, & Niemi, 2012), and lower abnormal accruals is even stronger for firms that use two Big 4 auditors (Francis, Richard, & Vanstraelen, 2009).

The studies discussed above have devoted much attention towards investigating the impact of joint audit on financial reporting and audit quality. What these studies do not show, however, is the investors' perception of the joint audit regulations, and whether investors are assigning a greater value to firms with two appointed auditors. Accordingly, the primary purpose of our study is to examine whether investors are pricing two auditors as being better than one auditor, as reflected by the cost of equity capital. We conjecture that if joint audit regulations enhance auditor independence, then this in turn decreases the information asymmetry between the firm and investors, which should result in a lower rate of return as required by investors. We also conjecture that such a reduction in information risk will be more profound if the two appointed auditors are industry specialists.

Based on all available firm-year observations during 2007–2010, our main results indicate a negative association between the joint audit indicator variable and the expected and implied cost of equity measures (discussed in detail in Appendix 1), where the expected cost of equity measure is estimated by applying the capital assets pricing model (CAPM) and the implied cost of equity measure is based on the average of five individual implied cost of equity measures. These findings suggests that despite prior studies that find no impact of a joint audit on earnings and audit quality, investors perceive lower information risk in firms that have two independent auditors, and that investors require an even lower cost of equity when there are two industry specialist auditors conducting the joint audit as opposed to when one or both are non-industry specialist auditors. Our main findings remain robust after clustering the standard errors by firm and controlling for industry dummies.

Additional tests indicate that our results are consistent across all of our five individual implied costs of equity measures. Furthermore, these tests indicate that the negative association between cost of equity measures and the joint audit variable is driven primarily by the sample of firms that are subject to mandatory regulations as compared to the sample of firms that voluntarily opt for joint audit.

The small sample size of our study, which is constrained by there being a small market, is a limitation. However, our findings do contribute to the literature by offering new insight regarding the usefulness of joint audit to investors. These findings also inform the debate by examining whether investors price two auditors better than one and if the audit quality of the appointed two auditors creates a difference that leads to better pricing.

The next section provides background about the audit profession in Saudi and discusses related research. We then briefly describe the research design and sample, which is followed by a discussion of results of our primary tests as well as the results of additional tests. The final section provides our conclusion.

2. Background and Related Literature

2.1. Auditing in Saudi Arabia

The audit market for listed companies in Saudi Arabia is monitored by the Saudi Organization of Certified Public Accountants (SOCPA), and dominated by the international Big 4 accounting firms (i.e., KPMG, Ernst & Young, PricewaterhouseCoopers, and Deloitte). The regulations enacted in Saudi Arabia require all firms listed in the banking and insurance sectors to appoint two independent auditors that are jointly responsible for producing the audit opinion. Specifically, Article 14 of the Saudi banking control law states that "every bank shall appoint annually two auditors from amongst the approved list of auditors registered with the Ministry of Commerce and Industry" (BCL, 1966), and Article 10 of the Saudi cooperative insurance companies control law states that "the general assembly of the insurance or re-insurance company shall annually appoint two auditing offices from among the certified accountants licensed to practice the profession in the Kingdom and shall determine their fees" (CICCL, 2003). On the other hand, Article 130 of the Saudi companies' law suggests that firms in different industries could voluntarily appoint two independent auditors. It states that "the ordinary general assembly shall appoint an auditor or more, of the observers authorized to work in the Kingdom, and determine their remuneration and the duration of their work" (CL, 1965). Regulators in Saudi have long held the view that joint audit requirements enhance auditor independence and contribute to investors' confidence in financial reporting credibility.

2.2. Prior Research

The issue of auditor independence has attracted considerable regulatory and academic interest worldwide. Given that external auditing serves as a monitoring device (Cohen, Krishnamoorthy, & Wright, 2004), auditor independence is vital in maintaining public confidence in capital markets and the integrity of corporate financial statements (Kanagaretnam, Krishnan, & Lobo, 2010). A loss of auditor independence can manifest as lower quality financial reports (Frankel, Johnson, & Nelson, 2002; Krishnan, Sami, & Yinqi, 2005) and higher cost of debt (Dhaliwal, Gleason, Heitzman, & Melendrez, 2008). Given that auditor independence is unobservable, a common approach of assessing independence is to rely on signals that make an audit firm economically independent (Kinney, Palmrose, & Scholz, 2004). One such signal that can be used by investors to assess the level of independence is the joint audit regulation. As noted by Levitt (2000), it is not sufficient for the auditors to *be* independent, investors must be assured the auditors *are* independent.

While prior research on both voluntary and mandatory joint audit settings has devoted much attention on investigating the impact of joint audit on financial reporting and audit quality, the evidence from these studies is decidedly mixed. Several studies have analyzed the effect that joint audit regulations might have on audit quality. In Danish settings, Holm and Thinggaard (2010) investigate whether joint audit impacts audit quality, as proxied by abnormal accruals, and document that joint audit cannot constrain earnings management any better than can a single audit. Another Danish-based study by Lesage et al. (2012) confirms the Holm and Thinggaard study and finds that joint audits do not have an impact on audit quality, as proxied by the level of abnormal accruals. In this context, a Saudi-based study by Aljabr and Alsadoun (2014) examines the effects of joint audit on earnings quality of the Saudi publicly listed companies, as proxied by earnings persistence, and finds that joint audit has no effect on earnings quality in general. In an investigative approach, Deng et al. (2012) examine the consequences of joint audit in France on two aspects of audit quality, both audit independence and audit evidence precision. Their main findings suggest that joint audit may compromise auditor independence as it gives clients the opportunity for "opinion shopping,"[1] and that audit quality may be impaired because the free-rider problem (i.e. one auditor who relies on the other auditor's work) could prevail and result in lower total audit evidence precision.

In contrast, Zerni et al. (2012) in a Swedish setting examine the impact of the voluntary joint audit on audit quality during the 2001–2007 period. They document that firms that opt voluntarily for joint audit have a higher degree of earnings

[1] They argue that the competition between the two auditors creates incentives to 'please' the client.

conservatism and lower abnormal accruals. Baldauf and Steckel (2012) examine the effects of a joint audit on auditors' report consensus and accuracy, and document evidence that auditors who use a joint audit approach achieve higher consensus and greater accuracy. Another French-based paper by Francis et al. (2009) studies whether a firm's ownership structure affects its auditor-pair choice as well its consequences on earning quality. The Francis et al. findings are consistent with agency theory and indicate that a Big 4 auditor (paired with a non-Big 4 auditor) is more likely to be used when there is greater firm information asymmetry (less family control and more diversified ownership structures), and that these associations are even stronger for firms that have two Big 4 auditors conducting the joint audit. They also document that firms using one Big 4 auditor (paired with a non-Big 4 auditor) have smaller income-increasing abnormal accruals compared to firms that use no Big 4 auditors, and find that this effect is even stronger for firms that use two Big 4 auditors.

In this study, we evaluate investors' perception of the joint audit requirements by investigating the relationship between the cost of equity capital and joint audit. If capital providers do not subscribe to the view that joint audit has strengthened auditor independence, then they may not view the single audit regulations as a threat to auditor independence, especially if the single auditor is an industry specialist or among the top-tier accounting firms. However, we agree with the view that without effective controls and monitoring, rational investors will price-protect themselves by increasing cost of equity capital. This view is consistent with those of recent studies that indicate investors demand higher compensation for investing in securities that have greater uncertainty surrounding their financial reporting credibility (e.g., Easley & O'Hara, 2004; Ecker, Francis, Kim, Olsson, & Schipper, 2006; Lambert, Leuz, & Verrecchia, 2007). Therefore, we conjecture that if joint audit requirements and the quality of the two appointed auditors significantly reduce information risk and improve audit quality, insofar as improving perceptions of the impairment of auditor independence, then our measures of cost of equity capital would be negatively related to joint audit, and that the result will be even stronger for firms that use two industry-specialist auditors.

3. Research Design and Sample

3.1. Empirical Model

We employ two multivariate regression models to empirically examine whether investors price the joint audit services. The two models employed, which investigate how investors' perception of joint audit services is reflected in the cost of equity capital, are specified as follows:

$$r_e = \beta_0 + \beta_1 JA\_SA + \beta_2 \ln(Size) + \beta_3 Irisk + \beta_4 Loss + \beta_5 B/P + \beta_6 Lev + \beta_7 \ln(LTG)$$

Model (1)

$$r_e = \beta_0 + \beta_1 JA\_SA + \beta_2 \ln(Size) + \beta_3 Irisk + \beta_4 Beta + \beta_5 Loss + \beta_6 B/P + \beta_7 Lev + \beta_8 lndCOC + \beta_9 \ln(LTG) + \varepsilon$$

Model (2)

We define the dependent variable (r_e) as the expected cost of equity measure in Model (1), and the implied cost of equity measure in Model (2). The definitions of the model specific r_e measures, the test variable (*JA_SA*), and control variables are reported in Table 1.

3.2. Dependent Variable

To estimate the cost of equity capital (r_e), we employ the expected cost of equity capital (r_{CAPM}) and the implied cost of equity capital (r_{AVG}) as described below.

3.2.1. Expected cost of equity capital

Each firm's annualized expected cost of equity is obtained, following Dong et al. (2006), by estimating a firm-specific rate using the capital assets pricing model (CAPM) as follows:

$$E(r_i) = r_f + \beta_i [E(r_m) - r_f]$$

where r_f is the risk free rate, estimated as the U.S. Treasury annual long-term rate;[2] β_i is the systematic risk, obtained as the coefficient estimate of R_m from a market model regression ($R_i = \alpha + b_1 R_m + \varepsilon$), where R_i is the firm's monthly returns and R_m is the market monthly returns; β_i is estimated requiring a maximum of 60 monthly returns and a minimum of 24 months;[3] and $[E(r_m) - r_f]$ is the risk premium rate estimated by applying the historical premium approach using the last five years prior to the inception date (Damodaran, 2008).

3.2.2. Implied cost of equity capital

To estimate the implied cost of equity capital, we employ methods adopted in the extant literature that ex ante infer an estimate of the implied cost of equity using the residual income and growth valuation models developed by Ohlson (1995), Feltham and Ohlson (1995), and Ohlson and Juettner-Nauroth (2005). More specifically, we deduce estimates of the implied cost of equity using the estimation methods of Gebhardt, Lee, and Swaminathan (2001), Claus and Thomas (2001), Gode and Mohanram (2003), Easton (2004), and the modified Ohlson and Juettner-Nauroth (2005), used in Ogneva, Subramanyam, and Raghunandan (2007). We refer to these estimates as r_{GEB}, r_{CT}, r_{GM}, r_{EST}, and r_{MOJ}, respectively. Because each of the five models is unique in its assumptions and definitions for estimating the implied cost of

[2] The Treasury annual long-term rate is obtained from the Federal Reserve website (www.federalreserve.gov/releases/h15/data.htm).
[3] Following Ashbaugh-Skaife , Collins, Kinney Jr, and LaFond (2009), the standard market model is estimated using monthly returns requiring a minimum of 24 and maximum of 60 observations.

equity, considerable variation is expected in the magnitude of the associations between the various implied cost of equity estimates and risk proxies. To mitigate the effect that particular assumptions of each model might have on our results, we follow an approach similar to that adopted by Dhaliwal, Heitzman, and Li (2006) and Hail and Leuz (2009), and employ the average of the five implied cost of equity measures (r_{AVG}) as the dependent variable in the regression models. We separately report the results of additional tests using the five individual cost of equity measures later in the paper. The five implied cost of equity models and the input variables are described in Appendix 1.

3.3. Test and Control Variables

Our test variable in Model (1) and Model (2) is the joint audit variable (*JA_SA*) and is a dichotomous variable coded 1 for joint audit firms (*JA*), and 0 for single audit firms (*SA*). We employ eight (six) variables derived from prior studies in Model 2 (Model 1) to control for the effect of other factors on cost of equity capital. All variables are defined in Table 1.

To begin, the natural logarithm of total assets (*Size*) represents a firm's size and is included under the assumption that differences in the information environment can lead to lower risk for large firms than for small firms (Ali, Hwang, & Trombley, 2003; Gebhardt et al., 2001; Gode & Mohanram, 2001). We then control for the variables that capture the systematic and non-systematic (idiosyncratic) risk components of stock price variability, *Beta* and *Irisk*, that are included under the assumption that the market prices systematic and idiosyncratic risk (Ali et al., 2003; Merton, 1987).[4] Given that profits are more informative than losses about the firms'

[4] Prior studies suggest the use of the Fama and French (1996) three risk factors (*βMKT*, *βSMB*, and *βHML*) to control for risk. However, where data availability is a problematic, we were only able to estimate *Beta* and *Irisk* as proxies for the risk factors.

future prospects, we added *Loss* to the model under the assumption that investors may assign a lower cost of equity for unprofitable firms. Gebhardt et al. (2001) argue that undervalued stocks (high book-value-to-price ratio) should earn an abnormally high implied risk premium until the mispricing is corrected. Therefore, *B/P* is added to the model under the assumption that it proxies for omitted risk factors (Ali et al., 2003; Fama & French, 1992). The variable *Lev*, following Ashbaugh-Skaife et al. (2009), represents debt-to-total-assets ratio, and is included under the assumption that a higher level of debt increases the risk of bankruptcy, which gives rise to agency problems, and increases the level of asymmetric information that require additional costly monitoring (Jensen & Meckling, 1976).[5] The variable *IndCOC* controls for the industry cost of equity capital, which captures the variability of the information environment between industries. Finally, we control for *ln(LTG)*, which captures the long-term growth rate as one of the properties of analyst forecasts (Dhaliwal, Krull, & Zhen Li, 2007; Dhaliwal, Krull, Zhen Li, & Moser, 2005; Gebhardt et al., 2001; Gode & Mohanram, 2003).[6] Note that in the expected cost of equity model (Model 1), we have not controlled for the *IndCOC* and *Beta* variables.

Definitions of test variables are discussed in Table 1.

<<< INSERT TABLE 1 ABOUT HERE >>>

3.4. The Sample

Our test indicator variable, *JA*, comprises hand-collected data and is constructed using audit reports for all firms listed in the Tadawul All Share Index (TASI) during the

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[5] The cost of equity is an increasing function of the amount of its debt (Modigliani & Miller, 1958). Fama and French (1992) find a positive relation between market leverage and ex post mean stock returns. Gode and Mohanram (2003) also find positive association between implied cost of equity and leverage. These studies suggest the effect of greater leverage on firm risk and, thus, firm value.

[6] Prior studies also suggest the use the number of analysts following and the dispersion of analysts' earnings forecasts to control for the quality of information publicly available; however, we were unable to add it to the model due to lack of data.

period 2007 through 2010. Our dependent and control variables sample is based on all data available in Gulf Base database and the Saudi Stock Exchange database (Tadawul) for all firms listed in TASI. Panel A of Table 2 outlines the sample selection procedure and shows that the initial sample obtained for *JA* is 507 firm-year observations. The final sample obtained for r_{CAPM} (the expected cost of equity model) after matching with the test control variables is 256 firm-year observations (single audit observations=175, and joint audit observations=81), and for r_{AVG} (the implied cost of equity model), after eliminating 42 firm-year observations, is 179 firm-year observations (single audit observations=130, and joint audit observations=49). Panel B and Panel C of Table 2 report the year and industry membership of our final sample, respectively. The industry membership information shows that the insurance sector has zero observations when r_{AVG} is used as a measure of cost of equity.

<<< INSERT TABLE 2 ABOUT HERE >>>

4. Results

4.1. Descriptive Statistics and Univariate Analyses

Panel A of Table 3 reports descriptive statistics for the expected cost of equity model across our full sample, joint audit sample (JA sample), and single audit sample (SA sample). The summary statistics for r_{CAPM} indicate that the mean (median) risk premium required by investors is 9.0 (8.8) percent for the full sample. The mean (median) of the JA sample and the SA sample is 8.2 (8.9) percent and 9.4 (10.8) percent, respectively. These data suggest that investors require significantly less rate of return (t-statistic = 5.08, and Wilcoxon Z = 5.38) for firms with two auditors compared to firms with a single auditor. The summary statistics of *ln(Size)*, *B/P* ratio, and *Lev* suggest that JA sample is significantly larger in size, less overpriced, and highly leveraged compared to SA sample. Because most of the insurance companies of the JA sample are sustaining losses, which is justified as most of the companies in this industry are newly listed in the Saudi market, the summary statistics suggest that SA sample is more profitable compared to the JA sample.

<<< INSERT TABLE 3 ABOUT HERE >>>

The main summary statistics for the implied cost of equity model, reported in Panel B of Table 3, indicate that the mean (median) of r_{AVG}, which is constructed as the average of the five implied cost of equity estimates, is 9.2 (9.0) percent.[7] In contrast to r_{CAPM}, the mean r_{AVG} of the JA sample (9.1 percent) is not significantly different from that of the SA sample (9.2 percent). Other statistics in this model also suggest that the JA sample is significantly larger in size, less exposed to the idiosyncratic (*Irisk*) and systematic risk (*Beta*), more profitable (*Loss*), highly leveraged, and has strong growth prospects as evidenced by *ln(LTG)*.

Panel C of Table 3 reports descriptive statistics for four joint audit samples based on (1) industry specialists,[8] and (2) the voluntary versus the mandatory settings, i.e., joint audit by two industry specialist auditors (JA_{Spec} sample), joint audit by non-industry specialist auditors ($JA_{Non\text{-}Spec}$ sample), voluntary joint audit ($JA_{Voluntary}$ sample), and mandatory joint audit ($JA_{Mandatory}$ sample). The summary statistics indicate that r_{CAPM} of the JA_{Spec} sample (7.9 percent) is significantly (at the 1 percent level) is lower than r_{CAPM} of the $JA_{Non\text{-}Spec}$ sample (9.3 percent) (t-statistic = 3.29, and Wilcoxon Z = 2.79) and suggests, at least at the univariate analysis level, that firms that are audited by two industry specialist accounting firms are highly priced by

[7] Consistent with prior research (e.g., Dhaliwal et al., 2006; Guay, Kothari, & Shu, 2005; Ogneva et al., 2007), statistics for the five individual implied cost of equity measures (untabulated) indicate that the Easton (2004) [r_{EST}], the modified Ohlson and Juettner-Nauroth (2005), used in Ogneva et al. (2007) [r_{MOJ}], and Gode and Mohanram (2003) [r_{GM}] models produce larger implied cost of equity estimates, in comparison to the estimates obtained from the Claus and Thomas (2001) [r_{CT}] and Gebhardt et al. (2001) [r_{GEB}] models.

[8] We measure industry specialists as a dichotomous variable coded 1 for auditors with the largest industry market share, and 0 otherwise, where industry market share of auditors is estimated using client's sales revenue, following Lim and Tan (2008).

market participants compared to firms that are audited by non-industry specialist accounting firms. The mean of the implied cost of equity measure (r_{AVG}) for the JA_{Spec} sample (9.1 percent) is greater than that of the $JA_{Non\text{-}Spec}$ sample (8.4 percent); however, the two samples are not significantly different from each other. Note that the sample size for the $JA_{Non\text{-}Spec}$ in the implied cost of equity model is only 4 observations, which potentially leads to sampling bias and an unreliable estimate.

The results also indicate that the $JA_{Voluntary}$ sample has significantly lower r_{CAPM} and r_{AVG} (8.1 and 8.3 percent, respectively) as opposed to the $JA_{Mandatory}$ sample (9 and 11.5 percent, respectively), which suggests, at the univariate analysis level, that the practice of voluntarily appointing two auditors is preferable.

4.2. Multivariate Analyses

Table 4 reports Pearson and Spearman correlation matrices for the expected cost of equity model (Panel A), and for the implied cost of equity model (Panel B). While there are a number of significant correlations, they are not sufficiently large to pose multicollinearity threats. The highest variance inflation factor is 3.84 in Panel B, which is well below the threshold of 10, beyond which multicollinearity may be a problem (Kennedy, 2008).

<<< INSERT TABLE 4 ABOUT HERE >>>

Table 5 reports the results for our baseline multivariate regression model (Model 1), which regresses the expected cost of equity capital (r_{CAPM}) on the test variable of joint audits (*JA_SA*) and six control variables. Note that *Beta* and *IndCOC* are excluded from the model.[9]

[9] Given that r_e in Model (1) is estimated using CAPM, and the systematic risk components of stock price variability (*Beta*) are used in the estimation of r_e, the inclusion of *Beta* poses a minor multicollinearity threat, with a variance inflation factor larger than 5. Prior studies suggest the inclusion of *IndCOC*, but only in the implied cost of equity literature. However, it should be noted that our results of all test variables in all models do not change even with the inclusion of *Beta* and *IndCOC*.

<<< INSERT TABLE 5 ABOUT HERE >>>

The results, reported in the last column of Table 5, indicate a negative and significant association between r_{CAPM} and *JA_SA* (*p*-value < 0.0001) and suggest that, in line with regulators' expectations, investors require a lower rate of return for joint audit firms because they perceive regulations that require joint audit are a means of enhancing auditor independence and, thus, the credibility of the financial information. The results for the control variables indicate that *Irisk* and *Loss* are positively associated with r_{CAPM} (*p*-value < 0.0001), which is consistent with the predicted sign. Further tests (untabulated) are performed after clustering the standard errors by firm, and the coefficient estimate of *JA_SA* remains negative and highly significant at the 1 percent level (−0.014, t-statistic = −5.22). We also include industry dummies in another version of the Model (1) and the results (untabulated) show that *JA_SA* coefficient estimate remains negative (−0.008) and highly significant at the 1 percent level (t-statistic = −2.63).

Table 6 reports the results from the regression of r_{AVG} on *JA_SA* and control variables (Model 2). The model is employed in two versions reported in the last two columns. In the third column (Model 2.1), the variable *ln(LTG)* is excluded, and in the last column (Model 2.2), test and control variables are included in their entirety. Note that in Model (2), the two variables *Beta* and *IndCOC* are included and that insurance firms are not covered by this sample.

<<< INSERT TABLE 6 ABOUT HERE >>>

The results, reported in Model (2.1) and Model (2.2), indicate that the coefficient estimates of *JA_SA* (−0.025 and −0.020, respectively) are negative and significant at the 1 percent level for Model (2.1) and the 5 percent level for Model

(2.2). The results are consistent with the results of Model (1), suggesting that investors price the joint audit practices positively.

We also find that r_{AVG} is positively and significantly associated with *IndCOC* and *ln(LTG)*, and negatively and significantly associated with *B/P*.

4.3. Industry Specialist Analyses

It is possible that investor reaction to joint audit may be stronger if both auditors are industry specialist accounting firms. Thus, we undertake an analysis that splits the joint audit sample into (1) clients of two industry specialist auditors (JA_{Spec} sample), and (2) clients of non-industry specialist auditors ($JA_{Non\text{-}Spec}$ sample). We regress our cost of equity measures (r_{CAPM} and r_{AVG}) on JA_{Spec}_SA ($JA_{Non\text{-}Spec}\_SA$), where JA_{Spec}_SA ($JA_{Non\text{-}Spec}\_SA$) is a dummy variable coded 1 for firms with two industry specialist (non-industry specialist) auditors, and 0 for firms with a single auditor. Note that, in this analysis, our dependent variable r_{CAPM} generates more observations that cover both the banking and insurance industries than that covered by the variable r_{AVG}. The results from these analyses are presented in Model (1) and Model (2) of Table 7, where Panel A of Table 7 reports the results for the expected cost of equity model, and Panel B reports the results for the implied cost of equity model.

<<< INSERT TABLE 7 ABOUT HERE >>>

In Model (1), we replicate our analyses of Table 5 after replacing the test variable *JA_SA* with the variable JA_{Spec}_SA. The results show the coefficient estimate of JA_{Spec}_SA is negative and highly significant at the 1 percent level when using either the expected or the implied cost of equity measures (β_1 = −0.019 and −0.026, respectively, and t-statistic = −5.89 and −2.64, respectively). In Model (2), we include $JA_{Non\text{-}Spec}\_SA$ as our test variable and its coefficient estimate is negative but insignificant for the expected and the implied cost of equity measures. Collectively, these results suggest that investors' positive perceptions surrounding joint audit (e.g., the results obtained in Table 5) grow stronger for firms that appoint two industry specialist auditors.

In the previous tests (Model (1) of Table 5, and Models (1) and (2) of Table 7), we compared the JA sample against the SA sample (single audit) without considering the audit quality of the SA sample. Hence, we expand our analyses by employing two more variables to examine whether the results obtained in the previous tests are mainly driven by the low audit quality of the SA sample. The first variable created (Model (3) of Table 7) is coded 1 for firms with two joint auditors, and 0 for firms with industry specialist single auditor (JA_SA_{Spec}), and the second variable (Model (4) of Table 7) is coded 1 for firms with two industry specialist auditors, and 0 for firms with one industry specialist single auditor ($JA_{Spec}\_SA_{Spec}$). The results of Model (3) show that the coefficient estimate of JA_SA_{Spec} is negative and highly significant at the 1 percent level ($\beta_1 = -0.013$, and t-statistic = −4.51) for the expected cost of equity model, and negative and significant at the 10 percent level (the *p*-value is one-tailed) for the implied cost of equity model (Panel B). The results of Model (4) of Table 7 are consistent with the results of Model (3) and show that $JA_{Spec}\_SA_{Spec}$ is negative and significant at the 1 percent level (10 percent level) for the expected (implied) cost of equity model. Overall, the results obtained from Model (3) and Model (4) are consistent with our previous results and predictions, and suggest that, despite the quality of a single auditor, appointing two auditors, regardless of whether they are industry specialists, is preferred by outside investors.[10]

[10] We replicate the same test after replacing the industry specialists' variable, our measure of audit quality, by Big 4 and Non-Big 4 variables. The results obtained (untabulated) are quite consistent with the results obtained when applying industry specialists as a proxy for audit quality. It suggests that the results of investors' positive perception surrounding joint audit are even stronger for firms that use two Big 4 auditors, and that appointing two auditors is preferred by outside investors despite the audit quality of the single auditor.

5. Additional Analyses

5.1. Individual Implied Cost of Equity Measures

As discussed earlier, the implied cost of equity measure used for the analyses in Table 6 is based on the average of the five implied cost of equity measures (r_{GEB}, r_{CT}, r_{GM}, r_{EST}, and r_{MOJ}). A limitation of employing an average-based cost of equity measure is that it any single measure may be more highly correlated with certain risk proxies than the others (e.g., Botosan & Plumlee, 2005; Dhaliwal et al., 2006; Guay et al., 2005). To evaluate how the effect of *JA* variable varies across the five individual implied cost of equity measures, we replicate our analysis for each measure and provide the results in Table 8.

<<< INSERT TABLE 8 ABOUT HERE >>>

The results of Model (2.1) from these analyses indicate that *JA_SA* is negatively and significantly associated with all five individual cost of equity measures. The association is significant at the 1 percent level for r_{GM}, the 5 percent level for r_{GEB} and r_{CT}, and at the 10 percent level for r_{EST} and r_{MOJ}. On the other hand, in Model (2.2) we find that only three measures (r_{GM}, r_{GEB}, and r_{CT}) are negatively and significantly (p-value < 0.05) associated with *JA_SA*. The lowest adjusted R^2 is 30 percent (r_{EST}) and the highest is 73.4 percent (r_{GEB}). Overall, these findings are consistent with our main results and indicate that our findings are not spuriously driven by a single cost of equity measure.

5.2. Voluntary vs. Mandatory Analyses

To further assess the evolving perception of investors regarding the voluntary versus mandatory requirements of joint audit, we undertake a final analysis by splitting our joint audit sample into voluntary joint audits sample ($JA_{Voluntary}$) and mandatory joint audits ($JA_{Mandatory}$). In Table 9, we regress r_{CAPM} on $JA_{Voluntary}$ and $JA_{Mandatory}$ in Model

(1) and Model (2), and r_{AVG} on $JA_{Voluntary}$ and $JA_{Mandatory}$ in Model (3) and Model (4), respectively, where $JA_{Voluntary}$ ($JA_{Mandatory}$) is a dummy variable coded 1 for firms that voluntarily (mandatorily) appointed two joint auditors, and 0 for firms with a single auditor.

<<< INSERT TABLE 9 ABOUT HERE >>>

The results tabulated in in Table 9 for Model (2) and Model (4) show that only the coefficient estimate of $JA_{Mandatory}$ is negative and highly significant (p-value < 0.001), suggesting that our result for *JA_SA* in Model (1), as shown in Table 5, is systematically driven by investors' positive perception of the mandatory aspect of the regulation. A possible explanation of the insignificant coefficient on $JA_{Voluntary}$ (results of Model (1) and Model (3) in Table 9) could be the small sample size of firms that voluntarily appointed two auditors (14 firm-year observations).

6. Summary and Conclusions

This study examines Saudi investors' perception of the usefulness of the regulatory joint audit requirements that are aimed at enhancing the level of auditor independence. Specifically, we investigate the relationship between cost of equity capital and a joint audit indicator variable, and document a significant negative association between the two. Our conjecture is that investors perceive the joint audit requirements as a means of decreasing information risk, which leads to an economic effect of investors requiring a lower rate of return. We document that investors' perception of joint audit regulation is positive and even stronger when two industry specialist auditors conduct the joint audit. Our findings remain robust for two measures of the cost of equity capital, with five individual implied cost of equity measures, and after controlling for industries and clustering for standard errors by firm. Additionally, when we replicate the tests to analyze the effect of mandatory vs.

voluntary joint audit regulations, we find that our main findings are driven primarily by the sample of firms that are subject to mandatory regulations.

Our study contributes to the scant literature on joint audit and shed little light as to whether joint audit helps to insure and/or convey auditor independence. Our results may also have policy implications for the Saudi Capital Market Authority (CMA) and SOCPA by showing that investors' perceptions of joint audit are positive, more so when joint audit is mandatory, and when the two appointed auditors are industry specialists.

Appendix 1: The Implied Cost of Equity Models

Similar to prior studies in this research stream, to construct the implied cost of equity measures, we require each firm to have available (a) stock price at the end of each firm's fiscal year; (b) book value of equity per share, dividends per share, and actual earnings per share data at the beginning of each firm's fiscal year, and (c) the one-, two-, and three-year-ahead analysts' forecasted earnings per share [*FEPS1*, *FEPS2*, and *FEPS3*][11] and the mean of analysts' estimate of long-term growth rate.[12] Then to estimate the implied cost of equity, we use the models developed by Gebhardt et al. (2001), Claus and Thomas (2001), Gode and Mohanram (2003), Easton (2004), and Ogneva et al. (2007) as follows:

Gebhardt et al. (2001)

The Gebhardt et al. (2001) model is derived from the residual income valuation model (Ohlson, 1995), and uses analyst forecasts for the first three years. Beyond that, *EPS* is assumed to revert to the industry median return of equity (*TROE*). The model is defined as:

$$P_t = B_t + \frac{\left(f^{ROE_{t+1}} - r_{GLS}\right) B_t}{\left(1 + r_{GLS}\right)} + \frac{\left(f^{ROE_{t+2}} - r_{GLS}\right) B_{t+1}}{\left(1 + r_{GLS}\right)^2} + \frac{\left(f^{ROE_{t+3}} - r_{GLS}\right) B_{t+2}}{\left(1 + r_{GLS}\right)^2 \; r_{GLS}} + TV$$

where:

$$TV = \sum_{i=4}^{T-1} \frac{\left(f^{ROE_{t+i}} - r_e\right) B_{t+i-1}}{\left(1 + r_e\right)^i} + \frac{\left(f^{ROE_{t+T}} - r_e\right) B_{t+T-1}}{\left(1 + r_e\right)^{T-1} \; r_e}$$

P_t = share price at the end of fiscal year *t*;

B_t = actual book value of equity at the beginning of fiscal year *t* divided by the number of shares outstanding at the end of fiscal year *t*;

$f^{ROE_{t+1}}$ = the forecasted return on equity for the *t*+1 period, and calculated as $f^{EPS_{t+1}} / B_t$, where $f^{EPS_{t+1}}$ is forecasted earnings per share - one year ahead;

$f^{ROE_{t+2}}$ = the forecasted return on equity for the *t*+2 period, and calculated as $f^{EPS_{t+2}} / BV_{t+1}$, where $f^{EPS_{t+2}}$ is forecasted earnings per share - two year ahead;

$f^{ROE_{t+3}}$ = the forecasted return on equity for the *t*+3 period, and calculated as $f^{EPS_{t+2}} * (1 + Ltg)$, divided by B_{t+2}, where *Ltg* is long-term growth rate estimated following Dhaliwal et al. (2007) as ([$f^{EPS_{t+2}} / f^{EPS_{t+1}}$] - 1) for firms with positive values of $f^{EPS_{t+1}}$ and $f^{EPS_{t+2}}$;

TV = terminal value with $T = 12$. Forecasts of $f^{EPS_{t+4}}$ to $f^{EPS_{t+T}}$ are estimated by median interpolation to the industry target return on equity (*TROE*), where *TROE* is calculated at the end of each firm's fiscal year, and forecasted as the moving median of the past five years of return on equity (*ROE*) for all firms within the same industry, *ROE* equals income before extraordinary items (*IB*) scaled by total common equity (*CEQ*). Firms are then classified based on industry. Observations in which *IB* or *CEQ* are negative were excluded from the calculation because these observations do not represent long-term industry equilibrium rates of return. The medians are then averaged for all firms in the same industry to have a representative yearly *TROE* for each industry;

B_{t+i} ($i>1$) = future book value of equity estimated using clean surplus accounting, and calculated as $B_{t+i-1} + f^{EPS_{t+i}} - k \, . \, f^{EPS_{t+i}}$, where $k \, . \, f^{EPS_{t+i}}$ is forecasted dividends per share, and *k*

[11] In Saudi, a database that provides analysts' earnings forecasts is not available; therefore, *FEPS1*, *FEPS2*, and *FEPS3* are estimated following the procedure that Dhaliwal et al. (2007) used to estimate *FEPS3*, *FEPS4*, and *FEPS5* if one of them is not available. More specifically, we built the estimation of *FEPS1* and *FEPS2* based on the lagged two years of the actual earnings per share. We also include forecasted earnings per share for four and five years ahead (*FEPS4* and *FEPS5*).

[12] We also estimate the long-term growth rate forecast by following Dhaliwal et al. (2007) and estimate long-term growth rate as (*FEPS2 – FEPS1/FEPS2*) for firms with positive values of *FEPS1* and *FEPS2*.

is the dividend payout ratio, calculated as the actual dividends per share at the beginning of year t (DPS_{t-1}) divided by the actual earnings per share at the beginning of fiscal year t (EPS_{t-1}). When $EPS_{t-1} \leq 0$, then DPS_{t-1} is estimated as 6% of total assets per share at the beginning of year t; and

r_{GLS} = the estimated implied cost of equity obtained following the assumptions of Gebhardt et al. (2001).

Claus and Thomas (2001)

The Claus and Thomas (2001) model is also based on the residual income valuation model, but propose different perpetual growth assumption in estimating terminal value. The model uses actual book values per share and forecasted earnings per share up to five years ahead to derive the expected future residual income series. The model implies that the value of a firm can be expressed as:

$$P_t = B_t + \sum_{i=1}^{T=5} \frac{f^{EPS_{t+i}} - r_{CT}B_{t+i-1}}{(1+r_{CT})^i} + \frac{(f^{EPS_{t+T}} - r_{CT}B_{t+T-1})(1+g)}{(r_{CT} - g)(1+r_{CT})^T}$$

where:

P_t = share price at the end of fiscal year t ;

$f^{EPS_{t+i}}$ = forecasted earnings per share at time $t+i$, where analysts' forecasted earnings per share for three, four, and five years ahead are estimated as $f^{EPS_{t+i-1}} * (1 + Ltg)$;

B_t = book value of equity at the beginning of fiscal year t divided by the number of shares outstanding at the end of fiscal year t (Compustat data item 60 / Compustat data item 25);

B_{t+i}, $i>1$ = future book value of equity estimated using clean surplus accounting, and calculated as to $B_{t+i-1} + f^{EPS_{t+i}} - k \cdot f^{EPS_{t+i}}$, where $k \cdot f^{EPS_{t+i}}$ is forecasted dividends per share, and k is the dividend payout ratio calculated as the actual dividends per share at the beginning of year t (DPS_{t-1}) divided by the actual earnings per share at the beginning of fiscal year t (EPS_{t-1}). When $EPS_{t-1} \leq 0$, then DPS_{t-1} is estimated as 6% of total assets per share at the beginning of year t;

g = the growth rate of residual earnings in perpetuity equal to the expected inflation rate (r_{rf} - 0.03), where r_{rf} is the risk free rate; and

r_{CT} = The estimated implied cost of equity obtained following the assumptions of Claus and Thomas (2001).

Gode and Mohanram (2003)

The Gode and Mohanram (2003) model is based on the Ohlson and Juettner-Nauroth (2005) abnormal earnings growth valuation model. It uses one-year-ahead and two-year-ahead earnings per share forecasts, as well as expected dividends per share, in period t+1 to derive a measure of abnormal earnings growth. The model implies that the value of a firm can be inferred as follows:

$$r_{GM} = A + \sqrt{A^2 + \frac{f^{EPS_{t+1}}}{P_t}(g_2 - g)}$$

where:

$$A = \frac{1}{2}\left(g + \frac{k \cdot f^{EPS_{t+1}}}{P_t}\right)$$

$$g_2 = \frac{(f^{EPS_{t+2}} - f^{EPS_{t+1}})}{f^{EPS_{t+1}}}$$

r_{GM} = the estimated implied cost of equity obtained following the assumptions of Gode and Mohanram (2003);

P_t = share price at the end of fiscal year t ;

$f^{EPS_{t+1}}$ = forecasted earnings per share one year ahead;

$f^{EPS_{t+2}}$ = forecasted earnings per share two years ahead;

$k \, . \, f^{EPS_{t+1}}$ = forecasted dividends per share at time $t+i$, where k is the dividend payout ratio calculated as the actual dividends per share at the beginning of year t (DPS_{t-1}) divided by the actual earnings per share at the beginning of fiscal year t (EPS_{t-1}); and

g = the growth rate of residual earnings in perpetuity equal to the expected inflation rate (r_{rf} - 0.03), where r_{rf} is the risk free rate.

The Price-Earnings Growth (PEG) Ratio Modified by Easton (2004)

Easton (2004) also implements the abnormal earnings growth valuation model developed by Ohlson and Juettner-Nauroth (2005) and modifies the price-earnings growth ratio by using the one-year-ahead and two-year-ahead earnings per share and dividends per share in period t+1 to derive the measure of abnormal earnings growth, and assumes that the growth in abnormal earnings to persist in perpetuity after the initial period.

$$P_t = \left(\frac{f^{EPS_{t+1}} + r_{EST}\left(k \, . \, f^{EPS_{t+1}}\right) - f^{EPS_{t+2}}}{\left(r_{EST}\right)^2} \right)$$

where:

P_t = share price at the end of fiscal year t;

$f^{EPS_{t+1}}$ = forecasted earnings per share one year ahead;

$f^{EPS_{t+2}}$ = forecasted earnings per share two years ahead;

$k \, . \, f^{EPS_{t+1}}$ = forecasted dividends per share in time $t+i$, where k is the dividend payout ratio calculated as the actual dividends per share at the beginning of year t (DPS_{t-1}) divided by the actual earnings per share at the beginning of fiscal year t (EPS_{t-1});

r_{EST} = the estimated implied cost of equity obtained following the assumptions of Easton (2004).

The Modified Ohlson and Juettner-Nauroth (2005), Used in Ogneva et al. (2007)

This model is derived from the Ohlson and Juettner-Nauroth (2005) method using all of the information, including the long-term growth rate, contained in the analysts' earnings forecast. It has no explicit assumption about terminal value and assumes constant growth rate. The model is defined as:

$$P_t = \frac{f^{EPS_{t+1}}}{r_{OSR}} + \frac{z_{t+1}}{1+r_{OSR}} + \frac{z_{t+2}}{\left(1+r_{OSR}\right)^2} + \frac{z_{t+3}}{\left(1+r_{OSR}\right)^3} + \frac{z_{t+4}}{\left(r_{OSR}-g\right)\left(1+r_{OSR}\right)^3}$$

$$z_{t+i} = 1/r_{OSR}\left[\left(f^{EPS_{t+i+1}} + r_e * k \, . \, f^{EPS_{t+i}}\right) - \left(\left(1+r_{OSR}\right) FEPS_{t+i}\right)\right]$$

where:

P_t = share price at the end of fiscal year t;

$f^{EPS_{t+1}}$ = forecasted earnings per share one year ahead;

$f^{EPS_{t+i}}$ = forecasted earnings per share in time $t+i$, where analysts' forecasted earnings per share for three, four, five, and six years ahead are estimated as $f^{EPS_{t+i-1}}$ * (1+Ltg);

$k \, . \, f^{EPS_{t+i}}$ = forecasted dividends per share in time $t+i$, where k is the dividend payout ratio calculated as the actual dividends per share at the beginning of year t (DPS_{t-1}) divided by the actual earnings per share at the beginning of fiscal year t (EPS_{t-1});

g = the growth rate of residual earnings in perpetuity equal to the expected inflation rate (r_{rf} - 0.03), where r_{rf} is the risk free rate; and

r_{OSR} = the estimated implied cost of equity obtained following the assumptions of Ogneva et al. (2007).

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TABLE 1
Variable Definitions

Variable	Definition
r_{CAPM}	the expected cost of equity estimated using CAPM model
r_{GM}	the implied cost of equity capital estimated following Gode and Mohanram (2003)
r_{GEB}	the implied cost of equity capital estimated following Gebhardt et al. (2001)
r_{EST}	the implied cost of equity capital estimated following Easton (2004)
r_{CT}	the implied cost of equity capital estimated following Claus and Thomas (2001)
r_{MOJ}	the implied cost of equity capital estimated using the modified Ohlson and Juettner-Nauroth (2005) and adapted by Ogneva et al. (2007)
r_{AVG}	the average of the above five individual measures of the implied cost of equity capital
JA_SA	an indicator variable coded 1 for firms with two joint auditors, and 0 for firms with a single auditor
JA_SA_{Spec}	an indicator variable coded 1 for firms with two joint auditors, and 0 for firms with a single industry specialist auditor
JA_{Spec}_SA	an indicator variable coded 1 for firms with two industry specialist auditors, and 0 for firms with a single auditor
$JA_{Spec}\_SA_{Spec}$	an indicator variable coded 1 for firms with two industry specialist auditors, and 0 for firms with a single industry specialist auditor
$JA_{NonSpec}\_SA$	an indicator variable coded 1 for firms with two non-specialist auditors, and 0 for firms with a single auditor
$JA_{Voluntary}\_SA$	an indicator variable coded 1 for firms that voluntarily appointed two joint auditors, and 0 for firms with a single auditor
$JA_{Mandatory}\_SA$	an indicator variable coded 1 for firms that mandatorily appointed two joint auditors, and 0 for firms with a single auditor
ln(Size)	the natural logarithm of total assets
Beta	systematic risk, obtained as the coefficient estimate of R_m from firm-specific standard market model regression ($R_i=\alpha+b_1R_m+\varepsilon$) requiring a maximum of 60 monthly returns prior to the firm's fiscal year-end, and a minimum of 55 months, where R_i = the firm's monthly returns, and R_m = the market monthly returns
Irisk	idiosyncratic risk or return variability at the end of year *t*, calculated as the standard deviation of residuals from a firm-specific standard market model regression, estimated using a required maximum of 60 monthly returns prior to the firm's fiscal year-end, and a minimum of 55 months
Loss	an indicator variable coded 1 if the firm's income before extraordinary items is less than 1 in the prior year, and 0 otherwise
B/P	book value of equity divided by market value of equity
Lev	leverage ratio estimated as total debt divided by total assets
IndCOC	the mean cost of equity for the firm's industry
ln(*Ltg*)	the natural logarithm of long-term growth in earnings forecasts estimated following Dhaliwal et al. (2007) as ([$f^{EPS_{t+2}}$ [illegible] $f^{EPS_{t+1}}$] - 1) for firms with positive values of $f^{EPS_{t+1}}$ and $f^{EPS_{t+2}}$

TABLE 2

Sample Selection, Year, and Industry Membership

Panel A: Sample Selection

	Observations
The initial sample obtained for the joint audit and single audit sample	507
Final sample obtained for the expected cost of equity model after matching r_{CAPM} with test and control variables	256
The initial sample obtained after matching r_{AVG} with test and control variables	221
The sample is then refined following prior studies (Dong et al. 2006) by excluding:	
▪ observations in which the dividends payout ratio (*k*) exceeds 1	(19)
▪ observations in which the actual book value per share B_t is negative	(23)
Final sample obtained for the implied cost of equity model	179

Panel B: Year Membership of Sample Firms

Year	**Number of Firms**	**% of Sample**	**SA Sample**	**JA Sample**
The Expected Cost of Equity Model:				
2007	53	20.70	36	17
2008	61	23.83	46	15
2009	67	26.17	43	24
2010	75	29.30	50	25
Total Sample	256	100.00	175	81
The Implied Cost of Equity Model:				
2007	39	21.79	23	16
2008	45	25.14	34	11
2009	45	25.14	34	11
2010	50	27.93	39	11
Total Sample	179	100.00	130	49

Panel C: Industry Membership of Sample Firms

Industry Code	**Industry Name**	**Number of Firms**	**% of Sample**	**SA Sample**	**JA Sample**
The Expected Cost of Equity Model:					
1	Banking	39	15.23	0	39
2	Petrochemical	40	15.63	39	1
3	Cement	32	12.50	28	4
4	Retail	28	10.94	27	1
5	Energy and Utilities	8	3.13	8	0
6	Agriculture and Food	47	18.36	44	3
7	Telecom and IT	8	3.13	4	4
8	Insurance	28	10.94	0	28
9	Multi-Investment	26	10.16	25	1
Total Sample		256	100	175	81
The Implied Cost of Equity Model:					
1	Banking	37	20.67	0	37
2	Petrochemical	27	15.08	27	0
3	Cement	31	17.32	27	4
4	Retail	24	13.41	23	1
5	Energy and Utilities	5	2.79	5	0
6	Agriculture and Food	35	19.55	32	3
7	Telecom and IT	8	4.47	4	4
8	Insurance	0	0.00	0	0
9	Multi-Investment	12	6.70	12	0
Total Sample		179	100	130	49

TABLE 3
Descriptive Statistics and Test of Differences

Panel A: Descriptive Statistics for the Full Sample, JA Sample, and SA Sample: The Expected Cost of Equity Model

	Full Sample (n = 256)		JA Sample (n = 81)		SA Sample (n = 175)		Test of Differences	
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**t-statistic**	**Wilcoxon Z**
r_{CAPM}	0.090	0.088	0.082	0.089	0.094	0.108	5.08***	5.38***
JA_SA	0.316	0	1	1	0	0	—	—
ln(Size)	15.102	14.764	16.118	18.523	14.631	15.662	-5.36***	-4.32***
Irisk	0.037	0.037	0.038	0.042	0.037	0.045	-0.75	-1.37
Loss	0.199	0.000	0.222	0	0.189	0	-0.62	-0.62
B/P	0.455	0.414	0.379	0.480	0.491	0.634	3.39***	2.90***
Lev	0.482	0.445	0.789	0.869	0.340	0.500	-7.53***	-10.01***
ln(LTG)	0.485	0.614	1.521	2.747	1.522	2.684	0.01	0.14
Panel B: Descriptive Statistics for the Full Sample, JA Sample, and SA Sample: The Implied Cost of Equity Model								
r_{AVG}	0.092	0.090	0.091	0.110	0.092	0.115	0.08	0.092
JA_SA	0.274	0	1	1	0	0	—	—
ln(Size)	15.528	15.073	17.629	18.651	14.736	15.863	-9.88***	-7.44***
Irisk	0.036	0.036	0.038	0.043	0.035	0.042	-1.78*	-2.37**
Beta	1.027	1.045	0.888	1.047	1.079	1.230	5.63***	5.09***
Loss	0.089	0	0.020	0	0.115	0	2.01**	1.99**
B/P	0.471	0.439	0.432	0.521	0.486	0.622	1.45	1.24
Lev	0.443	0.425	0.733	0.884	0.334	0.498	-11.54***	-7.85***
IndCOC	0.099	0.096	0.107	0.096	0.095	0.104	-1.89*	-2.32**
ln(LTG)	0.694	0.908	2.516	2.905	2.049	2.987	-2.33**	-2.27**

(continued on next page)

TABLE 3 (continued)

Panel C: Descriptive Statistics for the JA_{Spec} Sample, $JA_{Non\text{-}Spec}$ Sample, $JA_{Voluntary}$ Sample, and $JA_{Mandatory}$ Sample

Variable	JA_{Spec} Sample		$JA_{Non\text{-}Spec}$ Sample		Test of Differences		$JA_{Mandatory}$ Sample		$JA_{Voluntary}$ Sample		Test of Differences	
	N	Mean	N	Mean	t-statistic	Wilcoxon Z	N	Mean	N	Mean	t-statistic	Wilcoxon Z
r_{CAPM}	66	0.079	15	0.093	3.29***	2.79***	67	0.081	14	0.090	1.93*	1.03
r_{AVG}	45	0.091	4	0.084	-0.34	-1.11	37	0.083	12	0.115	2.41**	1.197

See Table 1 for variable definitions.

*,**,*** denote significance at the 0.10, 0.05, and 0.01 levels, respectively.

TABLE 4

Pearson (Upper Diagonal) and Spearman (Lower Diagonal) Correlations Among Independent Variables

Panel A: The Expected Cost of Equity Model

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	VIF
(1) r_{CAPM}		**-0.304**	**-0.186**	**0.198**	**0.240**	0.050	-0.104	**-0.181**	—
(2) *JA_SA*	**-0.337**		**0.319**	0.047	0.039	**-0.208**	**0.427**	0.001	1.413
(3) *ln(Size)*	**-0.193**	**0.271**		**-0.337**	**-0.360**	**0.134**	**0.303**	**0.390**	1.642
(4) *Irisk*	**0.164**	0.086	**-0.323**		**0.258**	**-0.282**	-0.121	**-0.195**	1.253
(5) *Loss*	**0.237**	0.039	**-0.376**	**0.242**		**-0.233**	-0.005	**-0.475**	1.466
(6) *B/P*	0.062	**-0.182**	**0.164**	**-0.289**	**-0.274**		-0.096	-0.038	1.246
(7) *Lev*	-0.158	**0.627**	**0.572**	**-0.126**	0.044	**-0.136**		0.025	1.299
(8) *ln*(*LTG*)	**-0.204**	0.009	**0.372**	**-0.191**	**-0.463**	-0.021	**0.151**		1.481

Panel B: The Implied Cost of Equity Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	VIF
(1) r_{AVG}		-0.006	**0.163**	**-0.161**	-0.106	**-0.388**	**-0.274**	0.083	**0.593**	**0.532**	—
(2) *JA_SA*	0.007		**0.596**	0.133	**-0.390**	**-0.148**	-0.108	**0.655**	0.141	**0.172**	2.304
(3) *ln(Size)*	0.138	**0.558**		**-0.209**	**-0.301**	**-0.269**	-0.044	**0.805**	0.131	**0.303**	3.471
(4) *Irisk*	**-0.178**	**0.178**	**-0.177**		**0.310**	**0.153**	**-0.215**	-0.083	-0.109	-0.110	1.492
(5) *Beta*	**-0.174**	**-0.382**	**-0.285**	**0.315**		0.096	0.039	**-0.332**	**-0.219**	-0.099	1.461
(6) *Loss*	**-0.425**	**-0.148**	**-0.274**	0.098	0.091		-0.002	-0.111	**-0.305**	**-0.424**	1.429
(7) *B/P*	**-0.263**	-0.093	-0.062	**-0.227**	0.014	0.014		-0.055	**-0.267**	**-0.198**	1.203
(8) *Lev*	0.102	**0.589**	**0.763**	-0.064	**-0.286**	-0.103	-0.052		0.062	**0.338**	3.824
(9) *IndCOC*	**0.460**	**0.175**	0.114	-0.088	**-0.351**	**-0.375**	**-0.277**	0.032		**0.332**	1.321
(10) *ln*(*LTG*)	**0.553**	**0.171**	**0.242**	-0.094	-0.107	**-0.284**	**-0.237**	**0.400**	**0.210**		1.543

Bold figures represent correlations that are (two-tailed) significant at the 5 percent level.

See Table 1 for variable definitions.

TABLE 5
Regression of the Expected Cost of Equity Measure (r_{CAPM}) on Joint Audit Attribute (*JA*)

Variable	Predicted Sign	Model (1)
Intercept	?	0.070***
		(6.67)
JA_SA	−	-0.014***
		(-5.22)
ln(Size)	−	0.001
		(0.93)
Irisk	+	0.321***
		(3.11)
Loss	+	0.010***
		(3.1)
B/P	+	0.006
		(1.2)
Lev	+	0.002
		(0.94)
ln(LTG)	+	-0.001
		(-0.95)
N		256
Adj-R^2		0.172

The first row in each cell reports the coefficient estimate and the second row reports the *t*-statistics (in parentheses).

***, **, * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

See Table 1 for variable definitions.

TABLE 6

Regression of the Average Implied Cost of Equity Measure (r_{AVG}) on Joint Audit Attribute (*JA*)

Variable	Predicted Sign	Model (2.1)	Model (2.2)
Intercept	?	0.029	-0.001
		(0.71)	(-0.02)
JA_SA	−	-0.025***	-0.020**
		(-2.64)	(-2.28)
ln(Size)	−	0.001	0.002
		(0.6)	(1.09)
Irisk	+	-0.287	-0.197
		(-0.91)	(-0.67)
Beta	+	0.004	-0.001
		(0.28)	(-0.07)
Loss	+	-0.017	-0.001
		(-0.71)	(-0.42)
B/P	+	-0.038***	-0.027**
		(-2.85)	(-2.11)
Lev	+	0.021	-0.008
		(1.09)	(-0.44)
IndCOC	+	0.663***	0.577***
		(7.7)	(6.99)
ln(*LTG*)	+		0.013***
			(4.98)
N		179	179
Adj-R^2		0.433	0.502

The first row in each cell reports the coefficient estimate and the second row reports the *t*-statistics (in parentheses).

***, **, * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

See Table 1 for variable definitions.

TABLE 7

Regression of the Cost of Equity Measures on Joint Audit Attributes Classified Based on Industry Specialists Analyses

Panel A: The Expected Cost of Equity Model

Variable	Model (1)	Model (2)	Model (3)	Model (4)
Intercept	0.080***	0.071***	0.030**	0.095***
	(6.6)	(6.12)	(2.12)	(4.8)
JA_{Spec}_SA	-0.019***			
	(-5.89)			
$JA_{NonSpec}\_SA$		-0.002		
		(-0.4)		
JA_SA_{Spec}			-0.013***	
			(-4.51)	
$JA_{Spec}\_SA_{Spec}$				-0.015***
				(-4.13)
Control Variables	Included	Included	Included	Included
N	241	190	168	153
Adj-R^2	0.209	0.120	0.167	0.189

Panel B: The Implied Cost of Equity Model

Variable	Model (1)	Model (2)	Model (3)	Model (4)
JA_{Spec}_SA	-0.026***			
	(-2.64)			
$JA_{NonSpec}\_SA$		-0.005		
		(-0.25)		
JA_SA_{Spec}			-0.013	
			(-1.45)	
$JA_{Spec}\_SA_{Spec}$				-0.017*
				(-1.76)
Control Variables	Included	Included	Included	Included
N	175	134	121	117
Adj-R^2	0.534	0.517	0.532	0.582

The first row in each cell reports the coefficient estimate and the second row reports the *t*-statistics (in parentheses).

***, **, * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

See Table 1 for variable definitions.

TABLE 8

Regression of the Five Individual Implied Cost of Equity Measures on Joint Audit Attribute (*JA*)

	$r_e = r_{GM}$		$r_e = r_{GEB}$		$r_e = r_{EST}$		$r_e = r_{CT}$		$r_e = r_{MOJ}$	
Variable	**Model (2.1)**	**Model (2.2)**	**Model (2.1)**	**Model (2.2)**	**Model (2.1)**	**Model (2.2)**	**Model (2.1)**	**Model (2.2)**	**Model (2.1)**	**Model (2.2)**
Intercept	0.037	-0.004	-0.006	-0.034	0.006	0.004	0.025	0.002	0.082	0.029
	(0.91)	(-0.12)	(-0.16)	(-0.98)	(0.07)	(0.05)	(0.61)	(0.05)	(1.63)	(0.65)
JA_SA	-0.026***	-0.019**	-0.022**	-0.017**	-0.035*	-0.035	-0.020**	-0.017**	-0.023*	-0.014
	(-2.69)	(-2.28)	(-2.49)	(-2.1)	(-1.66)	(-1.63)	(-2.15)	(-1.82)	(-1.93)	(-1.39)
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
N	179	179	179	179	179	179	179	179	179	179
Adj-R^2	0.501	0.622	0.692	0.734	0.036	0.030	0.440	0.481	0.478	0.616

The first row in each cell reports the coefficient estimate and the second row reports the *t*-statistics (in parentheses).

***, **, * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

See Table 1 for variable definitions.

TABLE 9

Regression of the Cost of Equity Measures on Joint Audit Attributes Classified Based on Voluntary vs. Mandatory Regulations Analyses

	The Expected COE Model		The Implied COE Model	
Variable	**Model (1)**	**Model (2)**	**Model (3)**	**Model (4)**
Intercept	0.049***	0.068***	0.009	-0.046
	(3.26)	(6.43)	(0.21)	(-1.18)
$JA_{Voluntary}\_SA$	-0.004		-0.011	
	(-0.93)		(-0.87)	
$JA_{Mandatory}\_SA$		-0.017***		-0.037***
		(-5.79)		(-2.88)
Control Variables	Included	Included	Included	Included
N	189	242	142	167
Adj-R^2	0.171	0.182	0.517	0.542

The first row in each cell reports the coefficient estimate and the second row reports the *t*-statistics (in parentheses).

***, **, * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

See Table 1 for variable definitions.