行政院國家科學委員會專題研究計畫　成果報告

機率詞彙與審計判斷：實驗研究

計畫類別：個別型計畫
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計畫主持人：杜榮瑞
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機率詞彙與審計判斷：實驗研究

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計畫主持人：杜榮瑞教授

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國科會專題計劃成果報告

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摘要

本研究企圖回答下列問題：（1）台灣的審計人員是否對相同的機率詞彙存在很大的解讀差異？（2）審計人員對機率詞彙的解讀是否會影響其對客戶備抵呆帳金額之判斷？以及（3）會計師事務所的審計結構是否有助於降低上述的解讀分歧？

本研究以來自 14 家查核上市（櫃）公司的會計師事務所之 196 名審計人員為受試者，在實驗中要求他們針對 39 個機率詞彙解讀，填答他們心目中的機率數字，並對一審計個案加以判斷，應予提列之備抵呆帳金額，最後填答有關審計結構之問題。實驗結果發現，在審計人員之間存在機率詞彙的解讀差異，雖然他們的一致性屬中等程度，但低於以前的研究。另外，審計人員對於「很有可能」與「很少可能」的差異反映在所提列的備抵呆帳上面，但備抵呆帳金額與解讀後的機率數字並無顯著相關。最後，雖然有證據顯示，審計結構與解讀差異間的關係，但證據並不強。本研究之發現對於會計專業及會計準則制定機構（特別是 IASB）應有重要的意涵。

關鍵詞：機率詞彙，機率詞彙之解讀，審計判斷，審計結構

Abstract

This study attempts to answer three research questions: (1) Do auditors in Taiwan interpret probability expressions diversely? (2) Do the interpretations of probability expressions translate into audit judgments on allowance for bad debts? And (3) Can audit structure reduce the variability of interpretations? The results of an experiment show that there are variations in interpretations on 39 probability expressions among 196 auditors from 14 audit firms that provide financial statement attestation for listed companies in Taiwan. Though the level of agreement of interpretations among the auditors is moderate, it is lower than that in prior research. The result also indicates that auditors do react to differences in probability expressions in judging the allowance for uncollectibles but that auditors' probability interpretations do not directly translate into audit judgment in such a context. Finally, this study finds that there is some but weak evidence that audit structure is associated with interpretation variability. The findings of this study have important implications for the accounting profession and accounting standard setting bodies, especially IASB.

Keywords: probability expressions, interpretations of probability expressions, audit judgment, audit structure

Motivation and Purposes

Auditors often make judgments and decisions under situations where the occurrence of outcomes is ambiguous though there exist professional standards to guide the performance of financial statements attestation. For example, SFAS No. 5 stipulates the conditions under which a loss should be accrued, or disclosed in

the footnote given that the amount of loss can be reasonably estimated. International Accounting Standards No. 37 and Taiwan's Financial Accounting Standards No. 9 had similar requirements. These standards used probability expressions such as *probable, reasonably possible,* and *remote,* rather than probability numbers to indicate the occurrence of loss. In deciding what to do about the potential loss, auditors must gauge whether the likelihood of the loss reached the threshold for a particular accounting treatment as required by the standards. Thus, interpretations of the probability expressions used in the professional standards are crucial to audit work.

Extant research in psychology has indicated that people interpret the same probability expression quite diversely (e.g., Beyth-Marom 1982; Brun and Teigan 1988; Dusenbury and Fennema 1996; Teigan and Brun 2000; Wallsten, Fillenbaum and Cox 1986; Wallsten, Budescu, Rapoport, Zwick and Forsyth 1986). The subjects in these studies include college students and physicians. Accounting research also documented that auditors interpreted the same probability expression very differently (e.g., Chesley 1979, 1986; Harrison and Tomassini 1989; Amer, Hackenbrack and Nelson 1994). In addition, accounting researchers examined the communication efficiency of using the probability expressions adopted in the accounting standards (Amer et al. 1994; Laswad and Mak 1997), effects of context features on the interpretation of probability expressions (Raghunandan, Grimlund and Schepanski 1991; Harrison and Tomassini 1989; Amer, Hackenbrack and Nelson 1995), and effects of response mode (probability expressions vs. probability numbers) on risk assessments (Reimers, Wheeler and Dusenbury 1993; Stone and Dilla 1994).

The above prior accounting studies are featured by their focus on the interpretation diversity of probability expressions and possible determinants. Only a few studies examined the effect of interpretations of probability expressions on audit judgments. Assessing the consequences of interpretation diversity is important because auditor use the results of interpretations as inputs for judging whether the occurrence of a loss has reached the threshold for an accounting treatment (accrued loss, footnote disclosure or doing nothing). This will further affect auditors' decisions in asking their clients to adjust the account balance, disclose in the footnote or do nothing. As another example, in assessing the appropriateness of accounts receivable balance, auditors must assess the adequacy of allowance for bad debts in the light of the occurrences of uncollectibles. When the likelihood of occurrences is high, auditors will ask their clients to adjust the account balance. The occurrences of uncollectibles may be communicated by probability expressions rather than precise probability numbers. How auditors interpret the probability expressions may have an effect on how they judge the appropriateness of account balance and further actions.

A third feature of prior research is that only a few, if any, studies concerned about how to reduce the diversity in interpretations. Since the diversity will jeopardize the communication quality among auditors, an examination of the effect of mechanisms on reducing the diversity of interpretations is important. One possible mechanism is audit structure. Audit firms often

establish audit guidance to promote audit structure by which communication is expected to enhance (Cushing and Loebbecke 1986; see also Rudolph and Welker 1998).

Overall, the purposes of the current study include:

(1) Examination of the variability of auditors' interpretation of probability expressions;
(2) Examination of whether auditors' interpretation of probability expressions translates into audit judgment in a provision of uncollectibles context; and
(3) Examination of whether audit structure can reduce the variability in interpretations of probability expression (subject to the finding in (1)).

This inquiry not only has implications for the audit profession as described above, but it also has implications for financial accounting standards setting. The Enron and subsequent business scandals have caused concern; among others; with the feasibility of setting principles-based standards as opposed to rules-based standards (see FASB 2002; SEC 2003; Nelson 2003; Sarbanes-Oxley Act 2002; Schipper 2003). A distinctive feature of principles-based standards is that no precise criterion or bright-line test exists and therefore professional judgment is emphasized. Compared to providing precise probability numbers in accounting standards, verbal expressions of probability is a manifestation of principles-based standards (see Nelson 2003). However, if probability expressions lead to diverse interpretations and further audit judgments and actions, the accounting profession and the standards-setting body should consider complementary mechanisms such as audit guidance and structure by CPA firms to ensure consensus and consistency in implementing the accounting standards, which are principles-based. All of these may have further implications for adopting a uniform accounting standards such as IFRS over the world.

Results and Discussion

Research Question 1

In the experiment, I listed 39 probability expressions and asked 196 auditors to assign numerical probabilities (ranging from 0 to 100) for these expressions. The auditors were recruited from 14 audit firms that provide financial statement attestation for listed companies in Taiwan. To examine variability of interpretations on the probability expressions, standard deviations of the assigned probabilities among the auditors are employed as a measure. The results indicate that the variability ranges from 12.89 (reasonable certainty) to 29.61 (significant doubt), suggesting some variation among auditors' interpretations. F tests are conducted to examine if the variance of auditors' interpretations for each expression is significantly different from 0. The results show that all of the 39 variances are significantly different from 0 ($P < 0.05$). Since variance of 0 is rather a strict benchmark, Kendall W statistic is further calculated to measure the agreement among auditors on the probability interpretations across 39 expressions. The value is 0.525, indicating a moderate level of agreement. Some probability expressions are further selected to compare the agreement in the current study with that of Reimers (1992). The result shows that the agreement among auditors' interpretations in the current study (0.501) is lower than that in Reimers (0.879). This may imply that

interpretations of the same probability expression are different across nations and languages, which further suggest a potential challenge concerning adoption of a uniform accounting standard such as IFRS over the world (see Doupnik and Richter 2003; Schipper 2005).

Research Question 2

I manipulated probability expressions at two levels (probable vs. remote) to examine if auditors' interpretations of these two expressions translate into their audit judgments in an "allowance for uncollectibles" context. The experimental results indicate that auditors' judgments on allowance for uncollectibles significantly differ with whether the uncollectibility of a major customer's accounts receivable is probable or remote ($p < 0.05$). Spearman correlation coefficient is further calculated for each of the two conditions to examine the agreement between auditors' probability expressions and audit judgments; and none significantly differs from 0. Taken together, the above findings suggest that auditors in the current study do react to differences in probability expressions and that their interpretations on these expressions cannot directly translate into their audit judgments. One possible reason is that, in the current study, there is no specific context (such as collectibility of accounts receivable) against which auditors interpret the probability expressions, and hence an interpretation in general cannot translate into judgments for a specific context. Another reason is that auditors may have different thresholds in deciding the amount of provision even if they have the same interpretations. Factors affecting the threshold include, e.g., risk consciousness, and audit experience, and may be an issue for future study.

Research Question 3

To examine whether audit structure can mitigate the diversity of probability interpretations, I include in the experimental materials a questionnaire on audit structure to solicit auditors' responses on a 1 to 7 scale. Assessment using Cronbach alpha and factor analysis suggests that the scale is of reasonable level of reliability and validity. Audit structure for each audit firm is calculated by taking the average of responses of auditors in the respective firm. Variance of interpretations on each expression is also calculated for each firm. For each expression, Spearman correlation coefficient is then calculated to explore the association between audit structure and interpretation variability. Among the 39 correlations, only two are significant at the 0.05 level and one significant at the 0.07 level. These correlations correspond to "generally", "potentially" and "not expected" expressions. Though the variances of interpretations on the three expressions are not among the highest (15.42, 18.61, and 20.84 respectively), they are not used frequently in Taiwan's accounting standards. Thus, there is some, though not strong, evidence on the effect of audit structure on interpretation variability for the less frequently used probability expressions.

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