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An Empirical Study of Public Accountants' Risk-Taking Propensities

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There may be no such thing as a typical CPA; however, justified or not, the public appears to have adopted a prim and conservative image of accountants. For example, students at four Northeastern colleges rated accountants as weak, shallow, submissive, low in status, lacking in social skills and aesthetic sensibilities, cold, and evasive [O'Dowd and Beardslee, 1960]. Moreover, Decoster and Rhode [1971] state that, "the typical stereotype depicts accountants as cold, aloof, and impersonal." A prominent psychologist, Abraham Maslow [1961], labeled accountants as "obsessional, interested in small details, tradition-bound, and noncreative." Even accountants themselves have promulgated negative self-images by depicting other accountants as conservative, risk averters. For example, Sterling [1973] writes that "accountants try to avoid risk-taking behavior . . . They do not expand into new areas of uncertainty."

It is essential that CPAs project a favorable image in order that successful relationships can be developed with prospective recruits, clients, and the general public. The profession should not allow unfounded, stereotyped constructs to cloud its relationship with the public it serves. Research is needed which provides insights into the CPA's true personality. The objective of this research effort is to determine whether public accountants are the conservative, risk averters which their image suggests.

Theory of Risk Taking

The relationship between risk-taking behavior and personality variables has been the object of considerable research by psychologists in recent years. Various theories as to "who takes risk" have been proposed, but Kogan and Wallach's [1964] cognitive-motivational theory seems to have drawn more than its share of attention in the psychology literature. Kogan and Wallach segregated risk takers into two groups: motivational and cognitive. Briefly, the behavior of the former group is overinfluenced by motivational requirements such as defending one's self image or avoiding failure, and underinfluenced by situational aspects of a task. In contrast, cognitive risk takers carefully evaluate situational cues which are relevant to successful performance, instead of allowing motivational determinants to dictate the decision [Kogan and Wallach, 1964].

Neither cognitive nor motivational risk takers are necessarily risky or conservative. The difference between them lies in the consistency with which their risk-taking strategy is employed. Motivationally determined risk takers are either consistently willing to accept risk or consistently conservative; their concern with anticipated evaluation causes them to ignore whether or not a task requires skill or merely luck. Being defen-

sive, they ignore the effects which different risk-taking strategies may have on particular tasks. In contrast, cognitive risk takers do not exhibit a consistent risk-taking orientation across various tasks. They examine the particular situation and choose the decision strategy whose expected success is greatest [Alker, 1969].

When faced with failure, motivational risk takers react by taking a defensive position and insisting on their satisfaction with that strategy. However, cognitive risk takers will express dissatisfaction with the outcome and change the risk-taking strategy to improve their results. Thus, Alker [1969] equates motivational risk taking to irrational risk taking and refers to cognitive risk taking as rational risk taking.

Kogan and Wallach's [1964] theory of risk taking can be applied to any demographic group. The question concerning the accounting profession is whether CPAs take an irrational approach and consistently avoid risks regardless of the merits of a particular situation or, alternatively, do CPAs evaluate the risks and rewards of each individual situation before establishing a risk taking strategy? The objective of this research project is to answer this important question.

The Questionnaire

The questionnaire used to elicit the risk attitudes was developed by two prominent psychologists, Nathan Kogan and Michael Wallach [1964]. The respondent is asked to place himself in the central decision-making role of twelve diverse risk situations, each of which consists of a two-choice dilemma. If he elects to play it safe and avoid risk, the rewards are small. On the other hand, if he chooses a riskier alternative, the rewards are lucrative but less certain.

The twelve risk situations comprising the questionnaire are given in the appendix. For each situation, the subject is asked to state the lowest probability of success which must prevail before he would select the riskier alternative. The subject chooses one of the following probabilities for success: one chance in ten, three chances in ten, five chances in ten, seven chances in ten, nine chances in ten. If desired, the subject may even decide that he would not select the riskier alternative regardless of the probability of success. The following instruction accompanies each risk situation:

Please circle the lowest probability that you would consider acceptable before you would . . . (take the risky alternative).

1 The chances are 1 in 10 . . . .
3 The chances are 3 in 10 . . . .
5 The chances are 5 in 10 . . . .
7 The chances are 7 in 10 . . . .
9 The chances are 9 in 10 . . . .
10 Please circle here if you would not take the riskier alternative no matter what the probabilities.

Thus on a relative basis, responses 1 and 3 might be considered risky; 5 and 7 might be considered moderate; and 9 and 10 could be considered as very conservative responses.

Data Acquisition

The hypothesis under investigation is that CPAs are risk averse regardless of the situation. This hypothesis is examined both internally by evaluations within the accounting profession and externally by comparisons with other populations.

The data for CPAs as solicited by mailing the Kogan-Wallach risk questionnaire and a profile sheet to a random sample of practicing members of the American Institute of Certified Public Accountants (AICPA). The sampling frame consisted of all practitioner members of the organization and the random sample of 1000 names was selected by the AICPA. The response rate for the initial mailing was approximately 39 percent. After four weeks, a follow-up letter was mailed to all non-respondents producing additional returns of 3 percent. Of the 1,000 questionnaires mailed, 420 (42 percent) usable responses were received.

The other demographic groups included in this study were defined and examined by Kogan and Wallach [1961] and Cecil [1967]. The former used four populations to examine the effects that sex and age have on risk attitudes; the latter studied the risk behavior of male business students. All three research projects used the same questionnaire with one modification: the dollar values in question three were adjusted for inflation.

Methodology

A model describing the smallest probability acceptable before a particular respondent would accept the higher payoff alternative can be modeled as

$$Y_{ij} = \mu + \alpha_i + \beta_j + \varepsilon_{ij} \quad \begin{array}{l} (i = 1, ..., 12 \\ j = 1, ..., 420) \end{array}$$

where Y_{ij} is the response of the jth subject to the ith question, μ is the overall mean of all CPAs to all risk situations, α_i is the change in response attributable to the ith question, β_j is the effect due to the jth individual responding and ε_{ij} consists of the unexplainable or random component in the response.

This is a two-way mixed model since the twelve questions constitute a fixed effect and the 420 CPAs comprise a random sample. If α_i were equal to zero for all values of i, this would imply the response of a CPA to all questions is the same regardless of the situation; if α_i are not equal to zero for some questions then the risk situation would influence the response. The role of the β_j term accounts for all intrinsic differences among CPAs such as personal interpretation of the probability values or traits that result in some individuals yielding consistently higher or lower responses than others. Because of the potential existence of dependencies among the twelve responses of each individual, the ordinary one-way analysis variance model is inappropriate.

A similar model is used to compare the twelve risk situations for the six demographic groups. The β_j terms represent the effects attributable to differences among the classifications in the second model.

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Results of the Study

Evaluation of CPA Survey

Table 1 consists of the analysis of variance table for testing two null hypotheses: first, that CPAs are consistently risk averse regardless of the situation (H_O: $\alpha_i = 0$ for values of i), and second, that there is no variation in responses attributable to differences among the CPAs (H_O: $\beta_j = 0$ for values j). Since the probabilities (both p-values = .0000) of observing F-statistic values more extreme than those observed with this sample data (F = 177.981 and F = 3.267) are less than the predetermined level of significance, .05, both null hypotheses should be rejected. Therefore, inherent differences in risk attitudes do exist among CPAs and, more importantly, the true mean scores of all CPAs in the population from which this sample was taken are not all equal for the twelve risk situations.

TABLE 1

TEST FOR VARIATION IN THE RISK ATTITUDES OF CPAs

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F-Statistic	P-Value
Differences Among Risk Situations	10484.201	11	953.109	177.981	.0000
Differences Among CPAs	7329.709	419	17.493	3.267	.0000
Residual	24681.777	4609	5.355		
Total	42495.687	5039			

This does not necessarily imply that the CPAs viewed every situation as distinctly different. In fact, some of the twelve questions may have been assessed with similar risk preferences. The question now becomes: in which situations are the mean responses significantly different? Using the least significant difference (LSD) procedure for multiple comparisons, one can infer that two population means are different if the corresponding sample means have a difference which exceeds the value of LSD:

$$LSD = t_{(.025,4609)} \cdot \sqrt{\frac{2 \cdot MSE}{b}} = .3130$$

where b is the number of CPAs in the sample and MSE is the mean square of the residual term.

Table 2 indicates that the 12 questions can be partitioned into eight dif-

TABLE 2

MEAN OF MINIMUM PROBABILITIES ACCEPTABLE BEFORE
THE HIGHER RISK ALTERNATIVE WOULD BE TAKEN

Question	Topic	Mean Minimum Probability (x10)	Adjacent Differences	Conclusion
7	chess	3.543		
4	football	3.717	.174	Q7 and Q4: No significant difference
11	research	4.467	.750	Q4 and Q11: Significant difference
6	college	4.795	.328	Q11 and Q6: Significant difference
1	job	4.964	.169	Q6 and Q1: No significant difference
9	POW	5.352	.388	Q1 and Q9: Significant difference
2	heart	6.393	1.041	Q9 and Q2: Significant difference
3	personal investment	6.798	.405	Q2 and Q3: Significant difference
10	political	6.898	.100	Q3 and Q10: No significant difference
8	occupation	7.062	.164	Q3, Q10 and Q8: No significant difference
12	marriage	7.407	.345	Q8 and Q12: Significant difference
5	foreign investment	8.062	.655	Q12 and Q5: Significant difference

Standard error for the difference of two sample means is 0.1597; LSD = .3130.

ferent levels of minimum mean probabilities. This indicates that CPAs do indeed evaluate the risks and rewards of a situation before determining a risk taking strategy. The risk attitudes are not significantly different in only four situations. First, there is no significant difference between the football decision (Q4) and the chess move (Q7). This is not surprising since both are game situations. Second, there is no significant difference between the job choice (Q1) and the college choice (Q6). Both of these situations are task or employment oriented, and the CPAs viewed them similarly. Third, questions 8 and 10 are also employment situations and the CPAs expressed similar attitudes thereon. Fourth, there is no significant difference between the occupational choice (Q8), the political choice (Q10), and the personal investment decision (Q3). It is interesting that the CPAs viewed the investment decision and the two employment decisions similarly. Perhaps, the political and occupational decisions are seen as investments in the future.

Comparison to Other Studies

A comparison of the CPA's mean scores with the scores of other groups that have responded to the Kogan and Wallach questionnaire provides interesting insights. The mean of the responses to each question and group are shown in Table 3 and the corresponding analysis of variance table is given in Table 4. The null hypothesis that the mean minimum probabilities for each risk situation are all equal is rejected because the p-value, .0000, is less than the pre-determined level of significance, .05. In addition, since the p-value of .0307 is less than .05, the null hypothesis that all demographic groups have the same mean response when averaged over all questions is also rejected. Using the least significant difference of LSD = 0.478, from Table 5, one can conclude that there is no evidence to indicate the mean response to these questions is different for the populations of CPAs, young men, young women, and male business students. However, these groups do have means which are lower than the population means of older men and older women.

In light of the traditional image of CPAs described in the beginning of this article, this result is surprising but gratifying since many psychologists consider young subjects to be more willing to accept risk than older subjects. Examining individual questions reveals that in the job decision (Q1) and in both of the game situations (Q4 and Q7), the CPAs were willing to bear more risk than any of the other groups. In contrast, the CPAs proved to be the most risk averse of the groups in only one situation — a critical life or death dilemma (Q9).

This comparison casts doubt on the stereotype image of the risk averse CPA. Based on evidence gathered via Kogan and Wallach's risk-taking questionnaire, CPAs appear willing to bear as much risk as other groups.

Future Research

Additional research is needed to extend the boundaries of knowledge in the area of risk-taking behavior. Now that information concerning CPAs' general risk attitudes has been gathered, the next step is to design a questionnaire which is specifically directed to risks which the CPA confronts in a practice environment. For example, a questionnaire might

TABLE 3

MEAN RESPONSES OF SIX GROUPS RESPONDING TO KOGAN AND WALLACH QUESTIONNAIRE

Group	Situation											
	1	2	3	4	5	6	7	8	9	10	11	12
CPAs	4.96	6.39	6.80	3.72	8.06	4.80	3.54	7.06	5.35	6.90	4.47	7.41
Young Men[1]	5.09	7.00	5.97	5.43	7.72	5.11	4.96	6.67	4.25	5.89	4.33	7.42
Young Women[1]	5.27	6.93	7.14	5.94	7.32	4.81	4.94	5.89	5.31	6.05	4.31	6.63
Older Men[1]	6.03	6.82	8.62	4.82	8.38	4.71	5.49	6.92	5.28	6.97	5.06	7.45
Older Women[1]	6.89	6.18	8.62	5.35	8.27	4.78	6.24	6.60	5.08	6.42	4.43	7.48
Male Business[2] Students	5.22	6.54	6.40	4.17	7.88	5.61	4.39	7.09	4.39	5.89	4.86	7.93

[1]Nathan Kogan and Michael A. Wallach, "Aspects of Judgment and Decision-Making: Interrelationship and Changes with Age," *Behavioral Science* 6 (1961): 23-25.

[2]Earl A. Cecil, "The Effect of Group Composition on the Level of Risk in Group Decisions," Ph.D. dissertation, Indiana University, 1967.

TABLE 4

TEST FOR VARIATION BETWEEN DEMOGRAPHIC GROUPS

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F-Statistic	P-Value
Differences Among Risk Situations	90.193	11	8.1993	23.8643	.0000
Differences Among Demographic Groups	4.603	5	.9207	2.67966	.0307
Residual	18.897	55	.3436		
Total	113.721	71			

TABLE 5

MEAN RESPONSE FOR EACH DEMOGRAPHIC GROUP

Group	Mean Response
CPAs	5.7833
Young Men	5.820
Male Business Students	5.864
Young Women	5.878
Older Women	6.362
Older Men	6.378

Standard error for the difference of two group means is .239; LSD = 0.478.

contain at least one risk situation which relates directly to each of the ten generally accepted auditing standards. This type of questionnaire might indicate whether CPAs are more cautious in applying particular standards than others. For example, are they more risk averse in applying field standards than reporting standards?

A second area for future research relates to the characteristics and implications of group risk taking. Many public accounting firms have increased their use of standing committees or ad hoc groups to assist engagement partners in making certain types of key audit decisions [Lea,

1977]. The possibility exists that decisions made on a group basis will be more risk prone than decisions made by individuals. If this phenomenon is predictable and significant in specific situations, it might have important implications in auditing. For example, what types of individuals should comprise a group to insure that the differences in risk profiles are adequately considered? That is, the group decision may differ, depending on the individual risk takers composing the group. A group divided equally between risk averters and risk takers might react differently than a group which is dominated by risk takers.

Other useful research might include gathering information on the risk attitudes of other professional groups such as financial managers, bankers, security analysts, internal auditors, and government accountants. These risk responses could then be compared to those of CPAs to determine if there are important risk attitude and risk perception differences between financial statement presenters, attestors, and user groups.

Summary and Conclusions

In order to determine whether CPAs are the consistent risk averters which their image suggests, a risk taking questionnaire was mailed to a random sample of practicing certified public accountants. The questionnaire responses indicate that the amount of risk that CPAs are willing to bear is determined by the consequences of the decision. In addition, the CPAs' risk responses were no more risk averse than those of other groups that have responded to the same questionnaire.

While more research is needed before asserting that CPAs are not conservative in their professional decisions, the evidence gathered in this study suggests that they are not the innate risk averters which their stereotyped image implies. If the profession is to interact successfully with its surrounding environment, it is important that false, negative impressions be dispelled. Hopefully, future research will provide additional insights into the CPA's true personality.

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APPENDIX
Kogan-Wallach Risk-Taking Questionnaire

Question 1 — job choice.

You are an electrical engineer, who is married and has one child, and has been working for a large electronics corporation since graduating from college five years ago. You are assured of a lifetime job with a modest though adequate salary, and liberal pension benefits upon retirement. On the other hand, it is very unlikely that your salary will increase before you retire. While attending a convention, you are offered a job with a small, newly founded company which has a highly uncertain future. The new job would pay more to start and would offer the possibility of a share in the ownership if the company survives the competition of the larger firms. Select the lowest probability that you would consider acceptable before you would take the job.

Question 2 — heart operation.

You are a 45-year-old accountant, and have recently been informed by your physician that you have developed a severe heart ailment. The disease would be sufficiently serious to force you to change many of your strongest life habits — reducing your work load, drastically changing your diet, giving up favorite leisure time pursuits. The physician suggests that a delicate medical operation could be attempted which, if successful, would completely relieve the heart condition. But its success could not be assured, and in fact, the operation might prove fatal. Select the lowest probability that you would consider acceptable before you would have the operation performed.

Question 3 — personal investment.

You are a married man with two children, have a steady job that pays you about $16,000 per year. You can easily afford the necessities of life, but few of the luxuries. Your father, who died recently, carried a $10,000 life insurance policy. You would like to invest this money in stocks. You are well aware of the secure "blue-chip" stocks and bonds that would

pay approximately 6% on your investment. On the other hand, you have heard that the stocks of a relatively unknown Company X might double their present value if a new product currently in production is favorably received by the buying public. However, if the product is unfavorably received, the stocks would decline in value. Select the lowest probability that you would consider acceptable before you would invest in Company X stocks.

Question 4 — football game.

You are the captain of College X's football team. College X is playing its traditional rival, College Y, in the final game of the season. The game is in its final seconds, and your team, College X, is behind in the score. College X has time to run one more play. You, the captain, must decide whether it would be best to settle for a tie score with a play which would be almost certain to work; or, on the other hand, should you try a more complicated and risky play which could bring victory if it succeeded, but defeat if it did not. Select the lowest probability you would consider acceptable before you would attempt the risky play.

Question 5 — foreign investment.

You are the president of a light metals corporation in the United States. The corporation is quite prosperous, and has strongly considered the possibilities of business expansion by building an additional plant in a new location. The choice is between building another plant in the U.S., where there would be a moderate return on the initial investment, or building a plant in a foreign country. Lower labor costs and easy access to raw materials in that country would mean a much higher return on the initial investment. On the other hand, there is a history of political instability and revolution in the foreign country under consideration. In fact, the leader of a small minority party is committed to nationalizing; that is, taking over all foreign investments. Select the lowest probability that you would consider acceptable for your corporation to build a plant in that country.

Question 6 — college choice.

You are currently a college senior who is very eager to pursue graduate study in chemistry leading to the Doctor of Philosophy degree. You have been accepted by both University X and University Y. University X has a world-wide reputation for excellence in chemistry. While a degree from University X would signify outstanding training in this field, the standards are so very rigorous that only a fraction of the degree candidates actually receive the degree. University Y, on the other hand has much less of a reputation in chemistry, but almost everyone admitted is awarded the Doctor of Philosophy degree, though the degree has much less prestige than the corresponding degree from University X. Select the lowest probability that you would consider acceptable before you would enroll in University X rather than University Y.

Question 7 — chess move.

You, a competent chess player, are participating in a national chess tournament. In an early match you draw the top-favored player in the tournament as your opponent. You have been given a relatively low ranking in view of your performance in previous tournaments. During the course of your play with the top-favored man, you note the possibility of a deceptive though risky maneuver which might bring you a quick victory. At the same time, if the attempted maneuver should fail, you would be left in an exposed position and defeat would almost certainly follow. Select the lowest probability that you would consider acceptable before you would attempt the risky play in question.

Question 8 — occupational choice.

You, a college senior, have studied the piano since childhood. You have won amateur prizes and given small recitals, suggesting that you have considerable musical talent. As graduation approaches, you have the choice of going to medical school to become a physician, a profession which would bring certain prestige and financial rewards; or entering a conservatory of music for advanced training with a well-known pianist. You realize that even upon completion of your piano studies, which would take many more years and a lot of money, success as a concert pianist would not be assured. Select the lowest probability that you would consider acceptable before you would continue with your musical training.

Question 9 — POW escape.

You are an American captured by the enemy in The Korean War and placed in a prisoner-of-war camp. Conditions in the camp are quite bad, with long hours of hard physical labor and a barely sufficient diet. After spending several months in this camp, you note the possibility of escape by concealing yourself in a supply truck that shuttles in and out of the camp. Of course, there is no guarantee that the escape would prove successful. Recapture by the enemy could well mean execution. Select the lowest probability that you would consider acceptable before you would attempt an escape.

Question 10 — political choice.

You are a successful businessman who has participated in a number of civic activities of considerable value to the community. You have been approached by the leaders of your political party as a possible congressional candidate in the next election. Your party is a minority party in the district, though the party has won occasional elections in the past. You would like to hold political office, but to do so would involve a serious financial sacrifice, since the party has insufficient campaign funds. You would also have to endure the attacks of your political opponents in a hot campaign. Select the lowest probability that you would consider acceptable before you would run for a political office.

Question 11 — research choice.

You are a married 30-year-old research physicist, who has been given a five year appointment by a major university laboratory. As you contemplate the next five years, you realize that you might work on a difficult long-term problem which, if a solution could be found, would resolve basic scientific issues in the field and bring high scientific honor. If no solution were found, however, you would have little to show for your five years in the laboratory, and this would make it hard for you to get a good job afterwards. On the other hand, you could, as most of your professional associates are doing, work on a series of short-term problems where solutions would be easier to find, but where the problems are of lesser scientific importance. Select the lowest probability that you would consider acceptable before you would work on the more difficult long-term problem.

Question 12 — marriage choice.

You are contemplating marriage to Miss T, a girl whom you have known for a little more than a year. Recently, however, a number of arguments have occurred between you, suggesting some sharp differences of opinion in the way each views certain matters. Indeed, you decide to seek professional advice from a marriage counselor as to whether it would be wise for you to marry. On the basis of these meetings with a marriage counselor, you realize that a happy marriage, while possible, would not be assured. Select the lowest probability that you would consider acceptable before you would get married.