Journal of Business Ethics (2007) 76:347–360
DOI 10.1007/s10551-006-9286-z

The Effects of Moral Development and Adverse Selection Conditions on Managers' Project Continuance Decisions: A Study in the Pacific-Rim Region

C. Janie Chang
Sin-Hui Yen

ABSTRACT. According to agency theory, agents base their economic decisions on self-interests when adverse selection conditions exist. However, cognitive moral development theory predicts that ethics/morals may influence decision-makers not to behave egoistically. Rutledge and Karim (1999; Accounting, Organizations and Society 24(2), 173–184) find both the moral reasoning level of the managers and an adverse selection condition affect a manager's project evaluation decisions significantly. Since prior studies have shown that national culture might influence the application of agency theory in project evaluation, this current study uses a different moral development measurement to reexamine Rutledge and Karim's hypotheses in another culture. A total of 73 Taiwanese executive MBA students with an average of 12.17 years work experience participated in this study. We found that both moral development level and adverse selection conditions significantly affect managers' project continuance decisions. The interaction effect of these two factors indicates that, when adverse selection conditions exist, participants with a high level of moral development exhibit less of a tendency to continue an unprofitable project than those with a low level of moral development. With subjects from a different culture, our results confirm the findings of Rutldege and Karim. That is, the effects of moral development and adverse selection conditions on managers' project continuance decisions are robust and can be generalized to different cultures. Implications of the findings of this study to multinational firms are also discussed.

KEY WORDS: adverse selection, agency theory, moral development, project continuation

C. Janie Chang, Ph.D., is the Vern Odmark Professor of Accountancy at San Diego State University. She received her Ph.D. from the University of California, Irvine. She is the co-editor of the Review of Accounting and Finance, *and has published in the areas of auditing, managerial accounting, and information systems to investigate information processing of experts. She has also studied cross-cultural issues related to professional judgments and decisions in auditing and managerial accounting.*

Sin-Hui Yen, Ph.D., is currently a Professor of Accounting at Tamkang University in Taiwan. He received his Ph.D. from national Taiwan University. He is the executive editor of the Journal of Contemporary Accounting, *and has published in the areas of accounting and finance to investigate human information processes, as well as ethical issues related to business professionals.*

Introduction

Prior research supports agency theory that managers act in their own self-interest rather than the firm's interest (i.e., shirk) when there is an incentive for them to do so and information asymmetry exists between managers and the firm (Harrell and Harrison, 1994; Harrison and Harrell, 1993). Since managers often have privately-held information, adverse selections and moral hazard situations may occur in the course of daily operations (Eisenhardt, 1989). Such behaviors often lead to dysfunctional decisions that are harmful to the firm. Agency theory has affected not only the design of incentive contracts and performance evaluation systems in practice, but also the development of accounting theories (e.g., positive accounting theory by Watts and Zimmerman, 1986).

Noreen (1988), however, proposed an alternative explanation for managers' economic decision-making. First, he indicates that agency theory ignores the essential connection between ethics and economics, and then, he provides parables concerning managers' opportunistic behaviors. He stresses that ethical behaviors are not to be scorned, since they are a necessary lubricant for the proper economic function of markets. Recently, Jensen (2006), one of the important advocators of agency theory, also indicated that finance theory and practice are incomplete without an integrated notion of integrity and that integrity is a necessary condition to maximizing a firm's long-term value. Hence, Rutledge and Karim (1999) examine specifically whether, in addition to adverse selection conditions, moral reasoning[1] may also influence managers' judgments in project evaluation. They find that managers' self-interests, as well as their level of moral reasoning, can have a significant effect on their project evaluation judgments. In addition, adverse selection conditions interact with level of moral reasoning to affect managers' judgments. That is, the presence of adverse selection conditions does not significantly affect the project evaluation judgments of managers with high levels of moral reasoning.

Although Rutledge and Karim's (1999) findings are quite encouraging, to our knowledge, no study has tested their conclusions in a different culture. Agency theory and moral development theory were developed by Western scholars and have been empirically examined mainly in Western cultures. Some studies have shown that national culture plays an important role in decision making, because it greatly influences managers' values and attitudes (e.g., Geletkanycz, 1997). It is important for researchers and practitioners, in an era of global business, to investigate whether these theories can be generalized outside Western cultures.

In the current era of accelerating internationalization, multinational companies are, in essence, operating in a "global village" with managers from different countries. Given Rutledge and Karim's (1999) findings, this study uses a different moral development measurement (i.e., DIT) to examine Taiwanese managers' project continuance decisions in light of different levels of moral development and different situations regarding adverse selections (agency effect). We chose Taiwanese managers as our subjects for two reasons. First, during the past decade, the Great China Area (China, Hong Kong, and Taiwan) has played an increasingly significant economic role in the global market (Drucker, 1994). Also, most U.S. multinational firms have already established subsidiaries or joint ventures in this region, which makes it important to examine whether U.S. managers make project continuance decisions differently from their counterparts in the Great China Area. Second, Taiwanese nationals share the same cultural heritage as Chinese nationals, and they have school training similar to that of their U.S. counterparts. Universities in Taiwan tend to adopt American textbooks and/or to use the translated versions of American textbooks in business education. These circumstances provide a good arena in which to explore the influence of national culture on managerial decisions, since the subjects have similar knowledge bases in management. The ultimate goal of this study is to investigate the possible interactive effect of adverse selection conditions and the level of moral development on managers from a different culture to better understand whether we can generalize Rutledge and Karim's (1999) results. The findings of this study might benefit multinational companies in the design of management control systems, especially those companies with managers from different countries.

Background and hypotheses

Adverse selection and culture

Agency theory builds on classical expected utility economics models and assumes that managerial and owner interests can diverge. That is, managers, despite being agents of shareholders, under certain conditions could make decisions that maximize their personal benefit, not that of the firm's shareholders (Jensen and Meckling, 1976). It stresses that managers are motivated by self-interest, and, when they have privately-held information and incentives to shirk, adverse selections and moral hazard may occur (Alchian and Demsetz, 1972; Baiman, 1990; Fama, 1980). Harrison and Harrell (1993) use agency theory framework to specifically examine managers' project continuance decisions. In their study, MBA students were first informed that they had initiated four ongoing projects: two with favorable future returns and two with unfavorable future returns. In the experimental group, subjects were provided with an adverse selection condition that (1) all information about the projects was not available to their superiors and (2) a decision to discontinue a project would have a significant negative effect on their potential outside job offer. Subjects in the control group were told the opposite. The study's results show that managers with private information about the prospects of investment alternatives and a strong incentive to shirk would continue the failing projects. This finding matches the prediction of agency theory. Harrell and Harrison (1994) and Rutledge and Karim (1999) also support this argument.

Cross-cultural studies in management accounting suggest that national culture may affect the design and the use of management control systems, managers' values, and their decision making (e.g., Chow et al., 2000). Some studies find that the national cultures of managers within multinational companies may affect such managers' project continuation decisions (Chow et al., 1997; Salter and Sharp, 2001; Sharp and Salter, 1997). For example, Sharp and Salter (1997) find that the agency effect (adverse selection situations) was insignificant for their Asian sample (Hong Kong and Singapore), yet highly significant in North America (U.S. and Canada). In addition, Salter and Sharp (2001) find a strong effect of national culture, given an apparently small culture difference (i.e., U.S.A. and Canada), on how well agency theory can explain managers' project continuance decisions. Therefore, they suggest that the effect of adverse selection conditions may be highly country-specific.

On the other hand, some studies suggest that agency theory may be applicable across cultures. Using the same U.S. data in Harrell and Harrison (1994), Harrison et al. (1999) collect data from Taiwanese managers to examine the effects of private information, potential for personal gain, and national culture on project continuance decisions. Their findings indicate that, though Taiwanese subjects overall continued unprofitable projects less often than did their U.S. counterparts, when managers had private information and the potential for personal gain (an adverse selection situation), both national groups tended to continue the unprofitable project. Kowtha and Leng (1999) examine the effectiveness of introducing an incentive design to an Asian audience while extending the agency theoretic approach to control. Hypotheses derived from this theory were tested in 61 retail stores in Singapore. Results indicate that agency theory may be applicable across cultures. Chang and Taylor (1999), using both agency theory and comparative national culture frameworks, investigate factors determining the degree and type of control used on their Korean subsidiaries by American and Japanese multinational corporations. Overall, the study supports the usefulness of agency theory in explaining the degree of management control exerted across different cultures.

Since there is little research that investigates the culture effect on adverse selection, more studies are needed on this line of research in light of the above differing claims. We attempt to explore such an effect. We have chosen to follow the logic of adverse selection prediction, as well as the findings of Rutledge and Karim (1999) and Harrison et al. (1999), thus we hypothesize that the effect of adverse selection conditions will be significant in Taiwanese managers' project continuance decisions.

H1: Taiwanese project managers who experience conditions associated with adverse selection (have an incentive to shirk and possess privately-held information) will have a greater tendency to continue an unprofitable project than project managers who do not experience these conditions.

Moral development

Agency theory assumes that managers will make decisions to maximize their personal interests, not those of the firm. This assumption ignores the possibility that some managers may act ethically in making business decisions, hence it has been criticized for its simplicity and narrowness (Baiman, 1990; Collard, 1978; Noreen, 1988). As Rampersad (2003) stated, "Employees should care about ethics and corporate social responsibilities, and ensure that their actions reflect integrity and high ethical standards ... It is the moral duty of business executives and employees to pursue a profitable organization based on *owner* investment.'' Also, Jensen (2006) argued that the positive proposition that increasing integrity of a firm would contribute to increasing its value is no different in kind from the positive proposition that the net present value investment rule will lead to value creation.

Although moral dilemmas in business are complex (Gaa, 1994; Lampe and Finn, 1992; Moizer, 1995; Rest, 1986a), prior research does suggest that individuals' moral reasoning may affect their decision making in business settings (Ponemon, 1992; Ponemon and Gabhart, 1990; Tsui and Gul, 1996). As Pennino (2002) indicated, ''Typically, managers are faced with many decision dilemmas that involve processing and evaluation of information that is of an ethical nature.'' (p. 344); ''The relationship between managerial decision style and moral development is one that could provide unique insights into the area of decision making, yet it is an area that has remained relatively unexplored.'' (p. 337)

The most recognized moral reasoning theory is developed by Kohlberg (1969, 1981, 1984). Kohlberg's cognitive moral development model includes three levels with each level subdivided into two stages. Each of the six stages is cognitively and morally at a higher level than the previous stages. Table I presents the essential factors of Kohlberg's model (adopted from Thorne, 2001, p.105). According to Kohlberg (1984), the three levels can be understood as three different types of relationships between the self and society's rules and expectations. The first development level is called the Pre-conventional level and relates to self-interest. In Stage 1, individuals obey the rules to avoid punishment, and then, in Stage 2, they seek personal rewards through manipulation of others. In the second level (Conventional level), individuals focus on interpersonal concordance and seeking acceptance as a member of the community (Stage 3), and following national law and authority (Stage 4). The third level is called the Post-conventional level; in it, individuals focus on universal fairness and achieving the principal-centered moral of conviction. In Stage 5, individuals lean toward a social contract orientation and focus on rights, equality, and human dignity. Different from individuals in Stage 4, people in Stage 5 consider that rules can be changed. In Stage 6, individuals would like to hold unwritten universal moral principles. They place the highest value on human life, duties, justice, and human rights. In sum, as Baier (1958, p. 191) states, ''If one has adopted the moral point of view, then one acts on principle and not merely on rules of thumb designed to promote one's aim.''

Prior research indicates that individuals' levels of moral development have a direct relationship to their ethical performance. For example, Ponemon and Gabhart (1990) find that auditors' moral development is significantly related to their independence judgments. Ponemon (1992) find that auditors with lower levels of moral development tended to underreport audit time more than those with higher levels of moral development. Tsui and Gul (1996) report that, in an audit conflict situation, moral development significantly moderates the relationship between auditors' locus of control and their resistance to client pressure in aggressive reporting. More recently, using undergraduate business students, Abdolmohammadi and Sultan (2002) find that individuals with high levels of moral development tend not to use insider information for trading of stocks. Accordingly, we hypothesize that,

H2: Taiwanese project managers with a low level of moral development will exhibit a greater tendency to continue an unprofitable project than will be exhibited by those with a high level of moral development.

TABLE I

Kohlberg's three levels of moral development

Level	Focus	Orientation	Moral Reasoning defined by
Pre-conventional	Self-interest	Reward and punishment	External authority
Conventional	Community	Law and order	Social group
Principled or post-conventional	Universal fairness	Principles	Inner conscience

Interaction effect between adverse selection and moral development

Noreen (1988) argues that if managers and their firms lack mutual trust, some mutually beneficial interchanges may not take place, and, even when they do, there are losses because of monitoring costs and inefficient risk sharing. He indicates that both parties may be in better positions if they restrain their opportunistic behavior. Hence, he suggests that managers with a high level of moral development would behave ethically, that is, differently than those with a low level of moral development. In reality, the Enron case supports Noreen's point. "Enron is an example of a successful company that went into bankruptcy because it was undermined by management's unethical behaviour." (Rampersad, 2003). According to Weber (1991) "an enhanced understanding of managers' moral reasoning could lead to a greater awareness of the influences upon managerial decision making when faced with ethical dilemmas ..." (p. 293). Little is known, however, with regard to the relationship between moral reasoning and agency theory.

Rutledge and Karim (1999) used a laboratory experiment to directly examine the interaction effect between adverse selection and ethical considerations on managers' project evaluation. In total, 77 MBA and MSA (MS-accounting) students with an average of 5 years' work experience participated in their study. The participants were randomly assigned to two treatments: (1) an adverse selection condition (i.e., with privately-held information and an incentive to shirk), and (2) no adverse selection condition. Using the Sociomoral Reflection Objective Measure (SROM), Rutledge and Karim separated subjects into two groups, high and low levels of moral reasoning. Given this 2×2 between-subject design, they found a significant interaction effect between adverse selection and moral reasoning. Their participants behaved similarly (did not continue a failing project) when an adverse selection condition was not present. However, when such a condition was present, participants with lower moral reasoning indicated they would continue a failing project, while those with high moral reasoning would discontinue the failing project. Rutledge and Karim conclude that ethics constrain self-interest based behavior. Accordingly, we hypothesize that,

H3: Adverse selection conditions will interact with the level of moral development to affect Taiwanese managers' project continuance decisions.

H3a: Taiwanese project managers with a low level of moral development will have a greater tendency to continue an unprofitable project when the adverse selection condition is present than when it is absent.

H3b: Taiwanese project managers with a high level of moral development will have a similar tendency to continue an unprofitable project whether the adverse selection is present or absent.

Research method

A survey was conducted to investigate the main effect and interaction effect of moral development and adverse selection on Taiwanese managers' decisions in project continuation. We have used a 2×2 between-subject factorial design. The two independent variables are an adverse selection condition (present vs. absent) and the level of moral development (high vs. low). To be able to make a direct comparison with the findings of Rutledge and Karim (1999), we have adopted their case instrument with minor revisions (see Appendix). The only differences between their case and ours are in numbers, such as the dollar amounts related to the project's cash flows, the length of payback period, and the internal rate of return (IRR). These changes have been made to make the case more realistic to Taiwanese managers, that is, more like the general business environment in Taiwan within which they operate daily.

The participants

We invited EMBA alumni and students from three universities in Taiwan to participate in our study. A total of 130 instrument packages were distributed by two instructors and one EMBA alumnus to volunteer participants. In 3 weeks, 86 packages were collected (i.e., a return rate of 66.2%). After discarding four incomplete questionnaires and nine others that were not usable based on DIT standards (Rest, 1986b), we had 73 usable questionnaires from the respondents.

The average age of participating managers was 37.9 years old. Their mean work experience was 12.2 years. On average, their supervision and budgetary experience were 6.0 and 5.0 years, respectively. All of them had taken at least one management accounting course prior to answering the questionnaire.

Case scenario

The wording of the case scenarios is basically the same as that of Rutledge and Karim (1999) but translated into Chinese. All participants were asked to assume the role of a project manager with 4 years invested in a project with an estimated 7-year life. The participants were told that the results of the project were better than expected during its initial first 4 years. However, recent unexpected events have caused the cash inflows to drop significantly. Their decision is to determine whether to continue the project or not. If they discontinue the project, the salvage value of the project can be used to purchase government bonds yielding 10 percent annually for the following 3 years. If they continue the project, the expected return of the project for the entire project life will still be in excess of the required IRR of 16 percent. However, the IRR for the remaining 3 years is projected to be negative.

The differences between the two case scenarios are the manipulations of the adverse selection conditions. For the group of participants in the adverse selection condition, the case indicates two points. First, the information about the project's success or failure is private information. Second, discontinuing the project might make others believe the project is failing, could damage the manager's reputation, and would probably cause him or her to lose an offer of a more important position at a higher salary. If the adverse selection condition is absent, the case specifies differently. First, the information about the project's success or failure is public information. Second, although discontinuing the project might make others believe the project is failing, it would not damage the manager's well-established reputation, and currently he or she has no promotion opportunity.

Finally, the participants were asked to indicate, by marking on a 10-point Likert type scale (1 = Definitely Continue; 10 = Definitely Discontinue), whether they would continue or discontinue the project [2]. The participant's decision on the project's continuation is used as the dependent variable.

Moral development instrument

According to Kohlberg's (1969) theory of moral reasoning, Rest (1979) developed the Defining Issues Test (DIT), a multiple choice questionnaire that provides an objective measure of ethical reasoning development level. The ''P'' (principled) score generated from the DIT (Rest, 1986b) is the most recognized and widely used measure of moral development (Abdolmohammadi and Sultan, 2002; Lord and DeZoort, 2001; Louwers et al., 1997). Its validity has been assessed over 15 years (Rest et al., 1999). Therefore, we have chosen to use the DIT, not the SROM, to evaluate our participants' moral development levels.[3] The P-score in the DIT is the sum of the responses related to the highest level of moral development (i.e., post-conventional level). The higher an individual's P-score, the higher the moral development level of individual.

The full version of the DIT instrument has six scenarios of ethical dilemmas. Each ethical dilemma is accompanied by 12 questions designed for diagnosing different schemes of fairness. Due to time constraints, our instrument includes only three out of the six scenarios: (1) Should Heinz steal a drug from an inventor in town to save his wife who is dying and needs the drug? (2) Should a man who escaped from prison but has since been leading an exemplary life be reported to authorities? (3) Should a student newspaper be stopped by the principal of the high school when the newspaper stirs controversy in the community? We chose these three scenarios for our participants to work on because these three have the highest relevancy for Taiwanese subjects and such a combination correlates well with the six scenarios compared to any other combinations (Chang, 1994).

Results

Descriptive statistics

The median and averaged DIT P-scores of the participants are 30.0 and 31.1, respectively. Similar to

TABLE II

Mean project continuance decision responses for moral reasoning and adverse selection condition variable (including standard deviation and cell size)

		Adverse selection condition		Total
		Present	Not present	
Panel A: Taiwanese managers				
Moral development level	High	7.9 (2.1) n = 19	7.5 (2.2) n = 15	7.7 (2.1) n = 34
	Low	3.7 (2.2) n = 20	6.7 (2.8) n = 19	5.2 (2.9) n = 39
Total		5.7 (3.0) n = 39	7.1 (2.6) n = 34	
Panel B: U.S. managers (from Rutledge and Karim's study)				
Moral development level	High	6.1 (0.5) n = 19	7.6 (0.8) n = 17	6.8 (0.5) n = 36
	Low	3.3 (0.6) n = 15	7.8 (0.4) n = 16	5.6 (0.5) n = 31
Total		4.9 (0.5) n = 34	7.7 (0.4) n = 33	

Lord and DeZoort (2001) and Ponemon (1992, 1995), we use the median DIT P-score to split the sample into high and low moral development groups. The 34 managers in the high group had an average DIT P-score (standard deviation) of 44.3 (7.7), and the 39 managers in the low group had an average DIT P-score (standard deviation) of 19.7 (6.8). The t-test suggests a significant difference in the moral development of the two groups ($p < 0.0001$). Since managers were assigned to two treatment groups (adverse selection present or absent), there were four cells in the study (see Panel A in Table II).

For the 19 managers in the group with high moral development/adverse selection present, the average likelihood to discontinue the failing project is 7.9. For the 15 managers in the group of high moral development/adverse selection absent, the average likelihood to discontinue the failing project is 7.5. The overall average likelihood to discontinue the project for managers in the group of high moral development is 7.7. Since any number larger than 6 on a 1–10 Likert scale means they would discontinue the project, these managers generally would discontinue the project. However, for the 20 managers in the group of low moral development/adverse selection present, the average likelihood to discontinue the failing project is 3.7; for the 19 managers in the group of low moral development/adverse selection absent, the average likelihood to discontinue the failing project is 6.7. The overall average likelihood to discontinue the project for managers in the group of low moral development is 5.2; this number suggests that these managers are more likely to continue the failing project than their counterparts (7.7).

Hypothesis tests

Data were analyzed using a two-way ANOVA. The results are reported in Table III. Recall that the first hypothesis expects the adverse selection conditions will affect a Taiwanese manager's project continuance decision. ANOVA results in Panel A of Table III support our conjecture ($F = 5.57$, $p < 0.0211$). Panel A of Table II also indicates a similar finding. Taiwanese managers in the group with the adverse selection condition present chose to continue the project (mean = 5.7), which is significantly different from the choice of the group without the adverse selection condition (mean = 7.1). That is, hypothesis 1 is confirmed. Hypothesis 2 predicts a Taiwanese manager's moral development level will affect hisor her project continuance decision. ANOVA results confirm this hypothesis ($F = 20.61$, $p < 0.0001$). Panel A of Table II also supports this finding: the mean likelihood for participants with a low level of moral development is 5.2, and for subjects with a high level of moral reasoning, it is 7.7.

Hypothesis 3 suggests an interaction effect between adverse selection conditions and moral

TABLE III

Two-way analysis of variance results for managers' project continuance decisions

Source	Type III sum of squares	DF	Mean square	F	p
Panel A: Taiwanese managers					
Corrected Model	208.91	3	69.64	12.52	<0.0001
Moral reasoning (M)	114.63	1	114.63	20.61	<0.0001
Adverse selection (A)	31.00	1	31.00	5.57	0.0211
M × A	50.44	1	50.44	9.07	0.0036
Error	383.83	69	5.56		
Corrected total	592.74	72			
Panel B: U.S. managers (from Rutledge and Karim's study)					
Corrected Model	194.45	3	64.82	10.97	0.0001
Moral reasoning (M)	28.31	1	not reported	4.79	0.0323
Adverse selection (A)	144.65	1	not reported	24.48	0.0001
M × A	35.77	1	not reported	6.05	0.0166
Error	372.24	63	5.91		
Corrected total	not reported	66			

For Panel A: R^2 = .352
For Panel B: R^2 = .343

development on managers' project continuance decision. It is confirmed (see Panel A of Table III, $F = 9.07$, $p < 0.0036$). In addition, results shown in Table IV support both hypotheses 3a and 3b that Taiwanese project managers with a low level of moral development tend to continue an unprofitable project more often when the adverse selection condition is present than when it is absent ($F = 13.70$, $p < 0.001$) and that Taiwanese project managers with a high level of moral development tend not to continue an unprofitable project whether the adverse selection condition is present or absent ($F = 0.23$, $p < 0.632$). The interaction of adverse selection condition and moral development level is depicted in Figure 1.

Sensitivity analysis

According to the meta-analysis of Borkowski and Ugras (1998), females exhibit stronger ethical attitudes than males. In addition, prior research suggests that more experienced managers are less likely to escalate commitment (Chang and Ho, 2004; Salter and Sharp, 2001). To control the possible confounding effects from gender and experience, we use ANCOVA (with gender and budgetary experience as two covariate variables) to analyze our data. The results (Table V Panel A) are similar to the ANOVA results. Both the main effects of adverse selection and moral development are still significant ($F = 6.03$, $p < 0.0167$ and

TABLE IV

The differences in managers' project evaluations between two adverse selection conditions by moral reasoning level variable

Moral reasoning level	Adverse selection condition	Mean	Std. error	F	p
Low (n = 39)	Not present (n = 19)	6.7	2.8	13.70	0.001
	Present (n = 20)	3.7	2.2		
High (n = 34)	Not present (n = 15)	7.5	2.2	0.23	0.632
	Present (n = 19)	7.9	2.1		

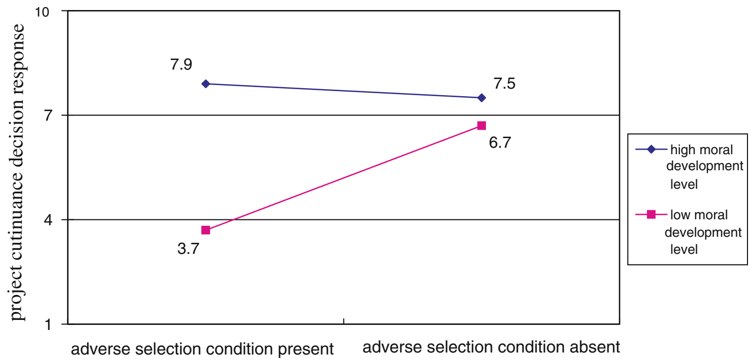

Figure 1. The interaction of moral development level and adverse selection condition.

F = 18.06, $p < 0.0001$, respectively). In addition, the interaction effect of adverse selection and moral development is also significant (F = 10.15, $p < 0.0022$). That is, after controlling the influence of gender and experience, all of our hypotheses are still confirmed.

In our study, the median DIP P-score is used to split the sample into the high and low moral development groups mentioned above, which is similar to Lord and DeZoort (2001) and Ponemon (1992, 1995). Since Rest (1986b) suggests that 34 may be a good alternative cutoff point to separate the high from the low moral development level, we follow this suggestion to rerun our ANCOVA to test the robustness of our findings.[4] Table V Panel B shows that different moral development cutoff points

TABLE V

Two-way ANCOVA for Taiwanese managers' project continuance decisions (Covariate variables: 1. Budget experience, and 2. Gender)

Source	Type III sum of squares	DF	Mean square	F	p
Panel A: One missing data					
Corrected model	212.87	5	42.57	7.63	<0.0001
Moral reasoning (M)	100.80	1	0.80	18.06	<0.0001
Adverse selection (A)	33.66	1	33.66	6.03	0.0167
M × A	56.64	1	56.64	10.15	0.0022
Cov. variable 1	0.38	1	0.38	0.07	0.7942
Cov. variable 2	0.61	1	0.61	0.11	0.7418
Error	368.45	66	5.58		
Corrected total	71	581.32			
Panel B: Using 34 as the high/low moral development cutoff point with one missing data					
Corrected model	242.28	5	48.46	9.43	<0.0001
Moral reasoning (M)	120.01	1	120.01	23.36	<0.0001
Adverse selection (A)	20.49	1	20.49	3.99	0.0499
M × A	69.62	1	69.62	13.55	0.0005
Cov. variable 1	3.98	1	3.98	0.78	0.3819
Cov. variable 2	1.63	1	1.63	0.32	0.5754
Error	339.03	66	5.14		
Corrected total	71	581.32			

R^2 = .366
R^2 = .417

do not change our findings. That is, both the main effects and the interaction effect of adverse selection and moral development variables are still significant ($F = 3.99$, $p < 0.0499$, $F = 23.36$, $p < 0.0001$, and $F = 13.55$, $p < 0.0005$, respectively). That is, all of our hypotheses are still confirmed.

Results comparison

This study uses the same setting as Rutledge and Karim (1999), so we can compare the results of the two studies. Statistically, we have the same results from both studies. However, some interesting differences do exist. According to the descriptive numbers (see Table II) and the ANOVA results (see Table III), the adverse selection condition appears to have a greater impact on the U.S. managers (mean: 4.9 for 'present' vs. 7.7 for 'not present'; ANOVA $p = 0.0001$) than on the Taiwanese managers (mean: 5.7 for 'present' vs. 7.1 for 'not present'; ANOVA $p = 0.0211$). On the other hand, the influence of moral development on the U.S. managers' decisions (mean: 6.8 for 'high' vs. 5.6 for 'low'; ANOVA $p = 0.0323$) seems to be smaller than its influence on the Taiwanese managers' decisions (mean: 7.7 for 'high' vs. 5.2 for 'low'; ANOVA $p = 0.0001$).

It should be noted that our sample has total standard deviations of 3.0 and 2.6 for adverse selection situations present and not present, respectively (see Table II). These standard deviations are larger than 0.5 and 0.4 in Rutledge and Karim's study (1999). The case used in our study was intended to reflect true ethical dilemmas. That is, situations presented in our study were not obviously "ethical" or "unethical," in order to avoid the "off-the-shelf" problem discussed by Jones and Ponemon (1993). If the scenarios were clearly acceptable or unacceptable based on professional guidelines, measures of scale reliability could be upwardly biased (Jones and Poneman, 1993; Kidder, 1981). As Cruz, Shafer & Strawser (2000) indicated, one method of evaluating scenarios for this potential limitation is the standard deviations of the responses. The relatively high standard deviations in our study suggest that the internal reliability measures obtained in this study were not upwardly biased by end loading. It appears that the Taiwanese managers' responses to the scenario utilized in this study reflect greater variability than those of their U.S. counterparts in Rutledge and Karim's study. This result provides further evidence that the case scenario presented in this study posed true ethical dilemmas for the Taiwanese managers.

Conclusion

Discussion of findings and implications

We believe our study has important practical and theoretical implications, because we used subjects with a different culture (Taiwanese managers) and a different moral development measurement (DIT) to examine whether the findings of Rutledge and Karim's (1999) study can be generalized. The results are similar to Rutledge and Karim's findings. That is, our results confirm the agency theory and cognitive moral development theory that managers are more likely to continue a failing project under conditions of adverse selection than when they are not under such conditions and that managers are more likely to discontinue failing projects when they have a high level of moral reasoning than when they have a low level of moral reasoning. More importantly, this study confirms the significant interactive effect of the two variables. Both U.S. and Taiwanese managers are likely to continue an unprofitable project only when adverse selection conditions are present and the managers' moral reasoning level is low.

The most important implication of this study relates to the generalizability of agency theory. Findings here confirm what prior studies discovered. That is, the presence of self-serving against the interest of owners on managers exists even in a collectivistic culture in which self-interest is usually subordinate compared to the welfare of the group. In general, however, the results of this study suggest that while the agency models of self-interest-based managerial decision-making are valid for explaining managers' behavior, they do so only for managers with a low level of moral development. Since both studies indicate that self-interest may be constrained by ethical considerations, the agency theory's assumption that behavior is motivated solely by self-interest may be invalid. That is, the empirical results of both studies support the argument of Jensen

(2006) that finance theory and practice are incomplete without an integrated notion of integrity. It is obvious that the effect of moral reasoning on managers' decision making is quite significant. In addition to devising comprehensive performance evaluation and compensation schemes in firms' management control systems, enhancing the moral development of managers can also effectively intervene or mitigate unethical shirking behavior. The results of this study support the importance of incorporating an ethical perspective in CEO compensation, as argued by Perel (2003).

In addition, though the overall results of this study are similar to those of Rutledge and Karim (1999), we found some interesting differences. The adverse selection condition seems to have more influence on western managers' project evaluations than on eastern managers'. On the other hand, the project evaluations of eastern managers are more subject to their moral development levels than are those of western managers. That is, the relative influences of adverse selection condition and moral development level on the project evaluations of western and eastern managers could be different. This finding may shed light on the design of management control systems, especially for multinational companies with managers from different countries.

Limitations

The results of the study should be interpreted with caution. The first concern is about external validity, since, similar to most behavioral studies, we have used pencil-and-paper instruments in a class environment. Though our subjects (EMBA students) had had years of management experience, they were not randomly selected from the population of all managers that make project evaluation decisions. In addition, the sample size of our study is not large, thus the generalizability of our sample to a manager population may be limited. Second, like most prior ethics studies, we have examined intention but not choice. Although the attitude-behavior literature (Ajzen, 1991) documents that measuring intention is a reasonable surrogate for behavior, readers should be cautious in using our results to predict managers' choice behaviors. Finally, we did not control for possible social desirability bias (Cohen et al., 1996; Randall and Fernandes, 1992). It is possible that subjects may be willing to respond more honestly regarding their perceptions of their peers' behavioral intentions than their own intention.

Future research

This study suggests a number of opportunities for future research. The most important extension of this study is to reexamine issues from prior research based on the self-interest behavior assumption of agency theory. Do the results of such research still hold in light of the consideration of moral reasoning? Future research may also include the examination of the effects of ethical considerations on other decision-making tasks (e.g., earnings management, auditing judgment, or investment decision). Or, other decision-making groups (e.g., accountants, auditors or mutual fund managers) could be used to test the interaction of moral reasoning and adverse selection conditions. Second, the relative influences of adverse selection and moral development on project evaluation are different for managers with distinctly different culture backgrounds. It would be worthwhile to directly examine the culture effect on the application of agency theory and cognitive moral development theory using a field study. Finally, future studies could employ an experimental economics framework to observe actual choices (not only intentions).

Notes

[1] Moral reasoning is "the cognitive processes people use in making ethical decisions" (Trevino and Youngblood, 1990, p. 378). Like Pennino (2002), in this article, the terms moral reasoning and moral development are used interchangeably.

[2] In order to compare our results with those of Rutledge and Karim (1999), we use the same 10-point Likert type scale as in Rutledge and Karim's study.

[3] Though the new version of the DIT has been available since 1999, as to our knowledge, almost all the studies in Taiwan have not adopted the new version. Therefore, for Taiwanese subjects, the relative advantages and disadvantages of the new DIT version are unknown for research in business ethics. Since the validity of the original DIT version is well documented

in Taiwan, we chose the original DIT version for our study.

[4] There are 41 managers in the low group and 32 managers in the high group if we use DIT P-score of 34 to split the sample into high and low moral development groups.

Appendix

Example of case studies used in the experiment

High adverse selection condition (incentive to shirk, private information)

You are a junior project manager with a growing reputation for completing profitable projects. This growing reputation of successfully managing projects has recently caused a competing firm to initiate recruiting discussions for a more important position with a substantially higher salary. However, being associated with a project which is unprofitable would damage your growing reputation and your immediate marketability. About 4 years ago, y ou decided to invest NT$30,000,000 into machinery to produce a new product, product A. Your decision was based on the following budgeted information:

Actual results were better than expected during the first 4 years of the product's life with annual net cash inflows of NT$10,500,000. However, unexpected production cost increases are expected to adversely affect product A's cash flows during the next 3 years. During the next 3 years, net cash inflows are expected to be NT$750,000 per year. The salvage value of the machinery at the end of the product's life is expected to be NT$500,000. If the project (product A) is discontinued now, the machinery can be sold for NT$3,000,000. This amount could be invested in government bonds to yield 10% annually for the next 3 years. Therefore, you are thinking whether to continue the project immediately or not.

If the project is continued now, the results presented below are expected (the firm's discount rate and minimum acceptance rate of return remains at 16%):

If you decide to discontinue the project now, others in your firm and industry will believe the project was a failure, which will damage your reputation as a highly talented manager. This will probably cause the competing firm to withdraw its offer of a more important position at a substantially higher salary. As manager of the project, the interim information about its success or failure presented above is available only to you; this information is not available to others in your firm or industry. If you continue the project now, no further progress reviews are planned, and therefore, no information about the project's success or failure will be known to others in your firm or industry until the project is completed (in 3 years); your reputation as a highly talented manager will remain intact.

Will you continue or discontinue project A? (please circle one of the numbers on the scale below)

References

Abdolmohammadi, M. and J. Sultan: 2002, 'Ethical Reasoning and the Use of Insider Information in Stock Trading', *Journal of Business Ethics* **37**(2), 165–173.

Ajzen, I.: 1991, 'The Theory of Planned Behavior', *Organizational Behavior and Human Decision Processes* **50**(2), 179–211.

Alchian, A. A. and H. Demsetz: 1972, 'Production Information Costs and Economic Organization', *American Economic Review* **62**(5), 777–795.

Baier, K.: 1958, *The Moral Point of View: A Rational Basis of Ethics* (Cornell University, Ithaca, New York).

Baiman, S.: 1990, 'Agency Theory in Managerial Accounting: A Second Look', *Accounting, Organizations and Society* **15**(4), 341–371.

Borkowsku, S. C. and Y. J. Ugras: 1998, 'Business Students and Ethics: A Meta-Analysis', *Journal of Business Ethics* **17**(11), 1117–1127.

Chang, C. J. and J. L. Ho: 2004, 'Judgment and Decision Making in Project Continuation: A Study of Students as Surrogates for Experienced Managers', *Abacus* **40**(1), 94–116.

Chang, Fon-Yean: 1994, *The Defining Issues Test, Symposium on Cognitive Development Approach to Morality: Measurement and Educational Application* (Chinese Culture University, Taipei) pp F1–G28..

Chang, E. and M. S. Taylor: 1999, 'Control in Multinational Corporations (MNCs): The Case of Korean Manufacturing Subsidiaries', *Journal of Management* **25**(4), 541–565.

Chow, C. W., P. Harrison, T. Lindquist and A. Wu: 1997, 'Escalating Commitment to Unprofitable Projects: Replication and Cross-Cultural Extension', *Management Accounting Research* **8**(3), 347–361.

Chow, C. W., J. Deng and J. L. Ho: 2000, 'The Openness of Knowledge Sharing Within Organizations: A Cross-Cultural Investigation', *Journal of Management Accounting Research* **12**, 65–95.

Cohen, U. R., L. W. Pant and D. J. Sharp: 1996, 'Measuring the Ethical Awareness and Ethical Orientation of Canadian Auditors', *Behavioral Research in Accounting* **8**(Supplement), 98–119.

Collard, D.: 1978, *Altruism and Economy: A Study in Non-Selfish Economics* (Oxford University, New York).

Cruz, C. A., W. E. Shafer and J. R. Strawser: 2000, 'A Multidimensional Analysis of Tax Practitioners' Ethical Judgments', *Journal of Business Ethics* **24**, 223–244.

Drucker, P.: 1994, 'The Rise of the Knowledge Society', *Australian Business Monthly* **15**, 90–95.

Eisenhardt, K.: 1989, 'Agency Theory: An Assessment and Review', *Academy of Management Review* **14**(1), 57–74.

Fama, E.: 1980, 'Agency Problems and the Theory of the Firm', *Journal of Political Economy* **88**(2), 288–307.

Gaa, J.: 1994, *The Ethical Foundations of Public Accounting* (BC: Canadian Certified General Accountants' Research Foundation, Vancouver).

Geletkanycz, M. A.: 1997, 'The Salience of ''Culture's Consequences'': The Effects of Cultural Values on Top Executive Commitment to the Status Quo', *Strategic Management Journal* **18**(8), 615–634.

Harrell, A. and P. Harrison: 1994, 'An Incentive to Shirk, Privately-Held Information and Managers' Project Evaluation Decisions', *Accounting, Organizations and Society* **19**(7), 569–577.

Harrison, P. D., C. W. Chow, A. Wu and A. M. Harrell: 1999, 'A Cross-Cultural Investigation of Managers' Project Evaluation Decisions', *Behavioral Research in Accounting* **11**, 143–160.

Harrison, P. and A. Harrell: 1993, 'The Impact of ''Adverse Selection'' on Managers' Project Evaluation Decisions', *Academy of Management Journal* **36**(3), 635–643.

Jensen, M.: 2006, 'Putting Integrity into Finance Theory and Practice: A Positive Approach', from Harvard NOM Research Paper No. 06-06.

Jensen, M. and W. H. Meckling: 1976, 'Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure', *Journal of Financial Economics* **3**(4), 305–360.

Jones, S. K. and L. A. Ponemon: 1993, 'A Comment on ''A Multidimensional Analysis of Selected Ethical Issues in Accounting''', *The Accounting Review* **68**, 411–416.

Kidder, L. H.: 1981, *Research Methods in Social Relations* (Holt, Rinehart, and Winston, New York).

Kohlberg, L.: 1969, 'Stage and Sequence: The Cognitive-Developmental Approach to Socialization', in D. Goslin (ed.), *Handbook of Socialization Theory and Research* (Rand McNally, Chicage, IL), pp. 347–480.

Kohlberg, L.: 1981, *Essays on Moral Development, The Philosophy of Moral Development: Moral Stages and the Idea of Justice*, Vol. I (Harper and Row, San Francisco).

Kohlberg, L.: 1984, *Essays on Moral Development, The Psychology of Moral Development: The Nature and Validity of Moral Stages*, Vol. II (Harper and Row, San Francisco).

Kowtha, N. R. and Q. S. Leng: 1999, 'Incentives in the Asian Context: Theory and Preliminary Evidence', *Asia Pacific Journal of Management* **16**(1), 95–110.

Lampe, J. and D. Finn: 1992, 'A Model of Auditors' Ethical Decision Processes', *Auditing: A Journal of Theory and Practice* **11**(Supplement), 33–59.

Lord, A. and F. DeZoort: 2001, 'The Impact of Commitment and Moral Reasoning on Auditors' Responses to Social Influence Pressure', *Accounting, Organizations and Society* **26**(3), 215–235.

Louwers, T. J., L. A. Ponemon and R. R. Radtke: 1997, 'Examining Accountants' Ethical Behavior: A Review and Implications for Future Research', in V. Arnold and S. G. Sutton (eds.), *Behavioral Accounting Research: Foundations and Frontiers* (American Accounting Association, Sarasota, FL), pp. 188–221.

Moizer, P.: 1995, 'An Ethical Approach to the Choices Faced by Auditors', *Critical Perspective on Accounting* **6**(5), 415–431.

Noreen, E.: 1988, 'The Economics of Ethics: A New Perspective on Agency Theory', *Accounting, Organizations and Society* **13**(4), 359–370.

Pennino, C. M.: 2002, 'Is Decision Style Related to Moral Development Among Managers in the U.S.?', *Journal of Business Ethics* **41**(4), 337–347.

Perel, M.: 2003, 'An Ethical perspective on CEO Compensation', *Journal of Business Ethics* **48**(4), 381–391.

Ponemon, L.: 1992, 'Auditor Underreporting of Time and Moral Reasoning: An Experimental-Lab Study', *Contemporary Accounting Research* **9**(1), 171–189.

Ponemon, L.: 1995, 'The Objectivity of Accountants' Litigation Support Judgments', *The Accounting Review* **70**(3), 467–488.

Ponemon, L. and D. R. L. Gabhart: 1990, 'Auditor Independence Judgments: A Cognitive-Developmental Model and Experimental Evidence', *Contemporary Accounting Research* **7**(1), 227–251.

Rampersad, H. K.: 2003, 'The Links Between Individual Learning, Collective Learning and Ethics', *Training and Management Development Methods* **17**(1), 201–400.

Randall, M. R. and D. M. Fernandes: 1992, 'Social Desirability Bias in Ethics Research', *Business Ethics Quarterly* **2**, 183–205.

Rest, J.: 1979, *Development in Judgment Moral Issues* (University of Minnesota, Minneapolis).

Rest, J. R.: 1986a, *Moral Development: Advances in Theory and Research* (Praeger, New York).

Rest, J. R.: 1986b, *DIT Manual, 3rd edition* (University of Minnesota, Minneapolis).

Rest, J., D. Narvaez, M. J. Bebeau and S. J. Thomas: 1999, *Postconventional Moral Thinking: A Neo-Kohlbergian Approach* (Lawrence Erlbaum Associates, New Jersey).

Rutledge, R. W. and K. E. Karim: 1999, 'The Influence of Self-Interest and Ethical Considerations on Managers' Evaluation Judgments', *Accounting, Organizations and Society* **24**(2), 173–184.

Salter, S. and D. Sharp: 2001, 'Agency Effects and Escalation of Commitment: Do Small National Culture Differences Matter?', *The International Journal of Accounting* **36**(1), 33–45.

Sharp, D. and S. Salter: 1997, 'Project Escalation and Sunk Costs: A Test of the International Generalizability of Agency and Prospect Theories', *Journal of International Business Studies* **28**(1), 101–121.

Thorne, L.: 2001, 'Refocusing Ethics Education in Accounting: An Examination of Accounting Students' Tendency to Use Their Cognitive Moral Capability', *Journal of Accounting Education* **19**(2), 103–117.

Trevino, L. K. and S. A. Youngblood: 1990, 'Bad Apples in Bad Barrels: A Causal Analysis of Ethical Decision-Making Behavior', *Journal of Applied Psychology* **4**, 378–383.

Tsui, J. S. L. and F. A. Gul: 1996, 'Auditors' Behaviour in an Audit Conflict Situation: A Research Note on the Role of Locus of Control and Ethical Reasoning', *Accounting, Organizations and Society* **21**(1), 41–51.

Watts, R. L. and J. L. Zimmerman: 1986, *Positive Accounting Theory* (Prentice-Hall, Englewood Cliffs).

Weber, J.: 1991, 'Adapting Kohlberg to Enhance the Assessment of Managers' Moral Reasoning', *Business Ethics Quarterly* **1**(3), 293–318.

C. Janie Chang
School of Accountancy,
San Diego State University,
San Diego, CA 92182-8221, USA
E-mail: jchang@mail.sdsu.edu

Sin-Hui Yen
Department of Accounting,
Tamkang University,
Taipei, Taiwan
E-mail: sinhui@mail.tku.edu.tw