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Effects of Ambiguous Common Uncertainty on Employees' Preference for Relative Performance Contracts

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ABSTRACT

We distinguish ambiguous common uncertainty (with *unknown* probability distribution) from risky common uncertainty (with *known* probability distribution) and examine how employee preference for relative performance contracts differs between the two conditions. Using economics and psychology theory in decision making under uncertainty, we hypothesize that (i) preference for relative performance contracts is low (high) when common uncertainty is ambiguous (risky); and (ii) confidence mediates the relation between ambiguity and preference for relative performance contracts. Results from a controlled laboratory experiment support these predictions. A follow-up experiment provides evidence that the direct effect of ambiguity and the mediating effect of confidence disappear if the contract is based on independent performance measures. Our study contributes to the literature on performance measurement, employee contract preference, and decision making under uncertainty.

JEL Classification: M41
Keywords: Contract Preference; Relative Performance; Ambiguity Aversion

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1. Introduction

The primary benefit of using relative performance measures is to filter out common uncertainty and increase contracting efficiency (Homstrom 1982; Antle and Smith 1986; Gibbons and Murphy 1990; Gibbons 1998). The probability distribution for the occurrence of common uncertainty is always assumed to be readily quantified (Homstrom 1982; Antle and Smith 1986; Dye 1992; Aggarwal and Samwick 1999; Hannan et al. 2008; Tafkov 2012; Hannan et al. 2013) Yet, in most real-world scenarios, the probability distribution is neither specified in advance nor assessable based on available evidence (Knight 1921; Ellsberg 1961; Fox and Tversky 1995; Gajdos et al. 2008; Abdellaoui et al. 2011; Maafi 2011). Intuitively, whether the probability distribution of common uncertainty is known or unknown should not make a difference in employee preference for relative performance contracts, because relative performance contracts are designed to insulate employees from common uncertainty. In this study, we rely on economics and psychology theory in decision making under uncertainty to investigate whether this seemingly plausible proposition is true.

Knight (1921) distinguishes between *measurable uncertainty* or *risk,* for which the exact probability distributions of the outcomes are known, and *unmeasurable uncertainty* or *ambiguity,* for which the probability distributions are unknown (Fox and Tversky 1995; Maccheroni et al. 2006; Abdellaoui et al. 2011). In his seminal study, Ellsberg (1961) finds that people generally strive to avoid ambiguity even if it leads to a violation of the axioms of expected utility theory (Savage 1954). This preference for known rather than ambiguous probabilities, or simply ambiguity aversion, has subsequently motivated numerous studies in psychology, economics, and finance. Behavioral studies, using variations of Ellsberg (1961)'s original design, demonstrate the rich domain of ambiguity and ambiguity aversion behavior (Becker and Brownson 1964; Slovic and Tversky 1974; Einhorn and Hogarth 1985; Hogarth and Kunreuther 1988; Camerer and Weber 1992; Sarin and Weber 1993; Keren and Gerritsen 1999; Abdellaoui et al. 2011; Maafi 2011). Neuroscientists, applying functional brain imaging, provide biological evidence that distinctive neural functions correspond to ambiguity (Hsu et al. 2005; Bach et al. 2009). Ambiguity aversion has also been incorporated into various versions of generalized subjective expected utility models (Gilboa 1987; Segal 1987; Fishburn 1988; Schmeidler 1989; Epstein and Zhang 2001; Ghirardato and Marinacci 2002; Maccheroni et al. 2006; Gajdos et al. 2008). Moreover, the finance literature documents that individuals are more prudent, invest less, and seek more insurance under ambiguous conditions than under risk conditions. This behavior provides a powerful explanation for market nonparticipation, price volatility, persistent mispricing, and market incompleteness (Mukerji and Tallon 2001; Epstein and Schneider 2008; Caskey 2009; Bossaerts et al. 2010; Easley and O'Hara 2009). A small accounting literature also uses ambiguity aversion to explain the behavior of auditors, auditees, and the cost of bargaining (Nelson and Kinney 1997; Zimbelman and Waller 1999; Haka et al. 2000; Bigus 2012).

In this study, we examine ambiguity through the managerial accounting lens and focus on the implications of ambiguity on employee preference for relative performance contracts. Employee preference for contracts is an understudied but important research area. It directly affects the level of employee resistance to contract implementation and employees' work-related attitudes, such as job satisfaction and propensity to engage in organization citizenship behavior (Lee et al. 2011). In addition, the main purpose of incentive contracts is to attract, retain, and enhance employee motivation, all of which are influenced to some extent by employee preference

for the contract (Bolino and Turnley 2007; Scott et al. 2015). There is a small literature that examined employee pay preference. For example, Lee et al. (2011) recognized a preference for performance-related pay over seniority-based pay in a Japanese firm.

Consider a simple situation in which employees' independent performance is heavily influenced by an uncontrollable common event. The presence of this event makes it desirable to use relative performance contracts to filter out the performance measurement noise generated by the event. In scenario one, employees do not have information about the likelihood that the event occurs; in scenario two they are told that the chance for the event to occur is 50%. The question of interest here is whether employees exhibit different preferences for participating in identical relative performance contracts in those two scenarios.

We argue that employees will develop a distaste from the common uncertainty's ambiguous nature, despite the fact that their peers are also subject to the same uncertainty. They will likely find relative performance contracts unattractive and prefer to have a larger proportion of their compensation based on fixed pay as compared with what they would prefer if the common uncertainty is not ambiguous. Employees are expected to behave as if they are seeking insurance to compensate for the disutility generated from the ambiguous common uncertainty. This behavior is an analogy of the trade-off between risk and incentive (Feltham and Xie 1994; Bushman et al. 1996; Ittner et al. 1997; Prendergast 1999; Krishnan et al. 2005), that is, as a performance measure becomes noisy, incentive weight decreases to compensate for the increased risk imposed on employees. Consequently, we hypothesize that employees have a low (high) preference for relative performance contracts when common uncertainty is ambiguous (risky).

The purpose of this paper is not only to identify ambiguity aversion in a relative performance contract setting, but to demonstrate the underlying mechanism. Fox and Tversky (1995) recognize "comparative ignorance" as the root cause for ambiguity aversion. They suggest that in a comparative context ambiguity undermines confidence, causing individuals to feel ignorant. In a principal-agent setting, employees judge a relative performance contract's appeal in light of their chance to outperform their peers, and those with higher confidence have a higher probability assessment of their chance for outperformance.[1] Taken together, employee confidence is likely to be undermined by the existence of ambiguous common uncertainty, and the undermined confidence reduces their preference for relative performance contracts. We, therefore, hypothesize that confidence mediates the relation between ambiguous common uncertainty and employee preference for relative performance contracts.

We exploit the freedom of laboratory experiment to manipulate ambiguity in a way similar to the classical experiment in Ellsberg (1961). We develop a case setting in which experiment participants assume the role of employees and are asked to reveal their preferences for comparative incentive contracts. The elicited preferences also serve to measure their willingness to accept a contract and the equilibrium risk or ambiguity premiums they require.

The experiment results provide robust evidence to support the hypotheses. First, the average preference for relative performance contracts decreases by 38% when the common uncertainty is ambiguous as compared with when it is risky. After we control for potential confounding factors such as gender, GPA, risk attitude, and competition preference, the conservative estimated ambiguity effect is still 31%. Second, subjects report lower confidence in the ambiguity condition

[1] Confidence is a key factor determining individuals' tendency toward self-selecting into competition (Camerer and Lovallo 1999; Niederle and Vesterlund 2007; Bartling et al. 2009; Eriksson et al. 2009).

than in the risk condition. Deflated confidence further reduces subjects' preference for relative performance contracts. Overall, confidence mediates 35% of the total effect of ambiguity on the preference for relative performance contracts. The results are robust to the inclusion of risk attitude and competition preference as control variables. To the extent that ambiguity negatively affects risk attitude and competition preference, we provide conservative estimations of ambiguity's direct effect and confidence's mediating effect on employee preference for relative performance contracts.

These results underscore the effect of ambiguity and the mediating effect of confidence on employees' perceived utility of relative performance contracts. These economically and statistically significant effects are obtained after a simple experimental manipulation that removes the information regarding the common uncertainty's probability distribution. It is compelling that confidence was also dampened by the ambiguity condition. Subjects behaved as if they lost their confidence and strived to avoid relative performance contracts. From an alternative perspective, the results indicate that providing employees with an expected probability distribution for common uncertainty can boost their confidence and enhance their willingness to participate in relative performance contracts.

In a follow-up experiment, we examine whether similar effects of ambiguity and confidence exist when the incentive contract is based on an independent performance measure. We do not find evidence that employee preference or confidence is different between ambiguity and risk conditions, consistent with the notion that ambiguity aversion is an inherently comparative effect, triggered by the comparison characterized in relative performance measures and muted when an independent performance measure is used (Fox and Tversky 1995).

This paper makes important contributions to three streams of literature – relative performance, employee contract preference, and decision making under ambiguity. The relative performance literature has assumed that the common uncertainty's probability distribution is known and does not allow for the existence of ambiguity. This study is the first to relax this assumption and finds that employees display a strong aversion to ambiguity. Second, this study adds to the small literature on employee contract preference that aims to understand how to design attractive incentive contracts to select and retain employees as well as to motivate behaviors desired by the organization (Bolino and Turnley 2007; Lee et al. 2011; Scott et al. 2015). The impact of ambiguity on employee preferences, as recognized in this study, implies that ambiguity is an important factor in designing and implementing incentive contracts. Third, our study contributes to the literature on decision making under uncertainty, a fundamental problem in modern decision theory (Fox and Tverskey 1995; Abdellaoui et al. 2011). Although prior literature suggests that ambiguity undermines confidence, no empirical study has tested the mediating role of confidence or any other traits. Our study is the first in this direction. Finally, this study provides important evidence on the critical role of comparison in triggering ambiguity aversion and the associations among gender, risk attitude, competition preference, and ambiguity aversion.

This study also has important practical implications. Given that relative performance contracts usually stimulate higher performance and more risk-taking behaviors (Frederickson 1992; Coles et al. 2006; Matsumura and Shin 2006; Hannan et al. 2008), our finding that the probability information on common uncertainty induces participation in relative performance contracts is nontrivial. For an owner with the objective of encouraging employees to accept a relative performance contract, to provide them with the expected probability of common

uncertainties can be an effective and efficient way to enhance the attractiveness of the contract and achieve the owner's objective. This approach, however, is not equally effective if the contract is based on independent performance measures. Under the circumstances in which ambiguity cannot be remedied, perhaps it is not efficient to use relative performance contracts, which generate employee disutility.

This paper is organized as follows: The next section develops the hypotheses. Section III explains the experiment design. Section IV reports results. Section V discusses the limitations and concludes this study.

2. Theory and hypotheses development

Uncontrollable random events add noise to individual performance measures and impose risk on employees who are evaluated based on these measures (Holmstrom 1982; Feltham and Xie 1994). Agency theory suggests that relative performance contracts, by filtering common uncertainty out of employees' evaluation, reduce employees' exposure to risk without reducing their incentive (Baiman and Demski 1980; Holmstrom 1980; Lazear and Rosen 1981; Holmstrom 1982; Nalebuff and Stiglitz 1983; Wolfson 1985; Antle and Smith 1986; Gibbons and Murphy 1990; Prendergast 1999).[2] Relative performance's positive effect on performance has been widely documented (Antle and Smith 1986; Gibbons and Murphy 1990; Frederickson 1992; Janakiraman et al. 1992; Matsumura and Shin 2006; Matsumura and Shin 2006; Hannan et al. 2008; Hannan et al. 2013; Eriksson et al. 2009).

In relative performance literature, common uncertainty has been assumed to be a vector of normally distributed random variables, and the probability distributions of the random variables are assumed to be known to both principals and agents (e.g., Gibbons 1998). In the real world, however, employees' knowledge about the likelihood of a common random event is not always sufficient enough to inform them of a probability distribution in the standard Bayesian fashion. Examples include the demand fluctuation of natural gas, the equity market movement, and a supervisor's subjective performance evaluation noise. Intuitively, common uncertainties, regardless of their probability distribution being known or unknown, can be filtered out in a relative performance contract and thus should not affect employee preference for the contract. This notion is supported by expected utility theory (Savage 1954), which suggests that individuals maximize expected utility according to subjective priors and that not being informed about an uncertainty's probability distribution should have no effect on behavior.

Ellsberg (1961), however, argues that agents distinguish between risk (known probabilities) and ambiguity (unknown probabilities) and may display aversion to ambiguity.[3] An example of such a situation is the so-called Ellsberg paradox. The original experiment involves two urns, each containing red and black balls. Urn A contains 50 red and 50 black balls, whereas urn B contains 100 red and black balls in an unknown proportion. Suppose a subject draws a ball from an urn at random. He receives $100 or nothing depending on the outcome. Most people are indifferent between betting on red or on black for either urn, indicating that the subjective

[2] We define relative performance evaluation schemes as any competitive compensation scheme in which pay depends on relative performance evaluation. It includes cases in which output is linear in effort (i.e., magnitude of relative performance enters into the compensation scheme) and cases in which output is nonlinear in effort (i.e., rank-order tournament scheme).

[3] Knight (1921) was the first to distinguish between these two concepts.

probabilities of red and black are the same at 50%. However, most people prefer to bet on the 50-50 urn rather than the urn with unknown composition as if they strive to avoid ambiguity. Such behavior is paradoxical and inconsistent with the axioms of expected utility theory (Savage 1954) and other theories of rational behavior under uncertainty in which probabilities are additive (Segal 1987). Ambiguity aversion is a robust phenomenon documented in the experimental decision-making literature (Becker and Brownson 1964; Slovic and Tversky 1974; Einhorn and Hogarth 1985; Hogarth and Kunreuther 1988; Sarin and Weber 1993; Keren and Gerritsen 1999; Cherry and Shogren 2007; Hsu et al. 2005). Ambiguity aversion has informed a large body of economics and finance research (Mukerji and Tallon 2001; Epstein and Schneider 2008; Caskey 2009; Easley and O'Hara 2009; Bossaerts et al. 2010; Abdellaoui et al. 2011).

Fox and Tversky (1995) suggest that ambiguity aversion is an inherently comparative effect and signifies itself in comparative contexts. In other words, the predominant source of ambiguity aversion is comparison. In relative performance contracts, employees are subject to a comparative context, and evaluating ambiguous common uncertainty in such a context can induce ambiguity aversion – employees generate distaste from the uncertainty's ambiguous nature and find the incentive contract unattractive, despite the fact that the ambiguous uncertainty is also faced by their peers. In contrast, common risky uncertainty does not induce such distaste, and relative performance contracts with common risky uncertainty should appeal more to employees than relative performance contracts with common ambiguous uncertainty.

From the perspective of agency theory, the weight attached to any measure in a compensation contract is decreasing in the noisiness of that measure, reflecting a trade-off between risk and incentives. This trade-off occurs because risk-averse agents are imposed with risk by the noisy performance measure and thus seek insurance through reduced incentive weight (Feltham and Xie 1994; Gibbons 1998; Prendergast 1999). In the same light, due to the distaste for ambiguity induced in a relative performance setting, we expect employees to exhibit a trade-off between ambiguity and incentive. When the common uncertainty is ambiguous instead of risky, ambiguity-averse agents will seek insurance against ambiguity and display low preference for ambiguity-based relative incentive contracts as compared with risk-based incentive contracts. Based on the above discussion, we predict that ambiguity has a negative effect on employee preference for relative incentive contracts. Stately formally,

H1: *Employees have a lower preference for relative performance contracts when the common uncertainty is ambiguous as compared with when the common uncertainty is risky.*

Next, we examine whether confidence plays a mediating role in the relation between ambiguity and preference for relative performance contracts. Ellsberg (1961) implies that ambiguity aversion reflects a link between the antecedent condition – "quality and quantity of information" – and the consequent psychological event – "degree of confidence in estimates of probabilities". Fox and Tversky (1995) propose "comparative ignorance" as the explanation for the root cause of ambiguity aversion. They argue that in a comparative context such as a dependent evaluation of uncertain prospects, individuals tend to feel ignorant, their confidence is undermined, and they subsequently exhibit distaste for ambiguous prospects. "Comparative ignorance" has been supported by numerous subsequent empirical studies (e.g., Chow and Sarin 2001; Kuhberger and Perner 2003; Epstein and Schneider 2008; Abdellaoui et al. 2011). The notion that ambiguity undermines confidence, as suggested Fox and Tversky (1995), has also

received attention. Ghosh and Ray (1997) find that individuals who are more tolerant of ambiguity exhibit greater confidence in their choice, indicating a positive relation between a person's ambiguity tolerance and confidence. Epstein and Schneider (2008) link ambiguity with investor confidence in the financial markets. Chateauneuf and Faro (2009) model a confidence function to capture the effect of ambiguity on decision confidence. In a relative performance contract, an individual employee's performance is compared with the performance of others to determine his/her payoff. This comparative setting sensitizes employees to ambiguity. When ambiguous common uncertainty is present, it is likely to undermine employee confidence.

Confidence is a crucial factor in determining employee preference for relative performance contracts. Individuals have different degrees of confidence and thus different probability assignments on their decision option (Knight 1921; Chateauneuf and Faro 2009). More confident individuals have a higher estimation of their own relative ability, are more optimistic about the future probability of winning a competition, and are more likely to enter into competitive games or markets (Camerer and Lovallo 1999; Niederle and Vesterlund 2007; Bartling et al. 2009; Eriksson et al. 2009). In relative performance contracts, the appeal of relative performance is the expected probability that employees can perform well relative to one another. Individuals with higher confidence project a higher probability assessment of success, view relative performance contracts as more attractive, and thus are more likely to prefer such contracts to maximize expected payoff.

Taken together, we expect that confidence will be reduced by ambiguity in relative performance contracts and this muted confidence will reduce the preference for relative performance contracts. Although the effect of ambiguity on confidence has been recognized in the literature, no prior study to our knowledge has tested whether confidence mediates the relation between ambiguity and decision outcomes. In this paper, we formally hypothesize this relation.

H2: *Confidence mediates the relation between ambiguity and employee preference for relative performance contracts.*

We demonstrate H1 and H2 in Figure 1.

3. Method

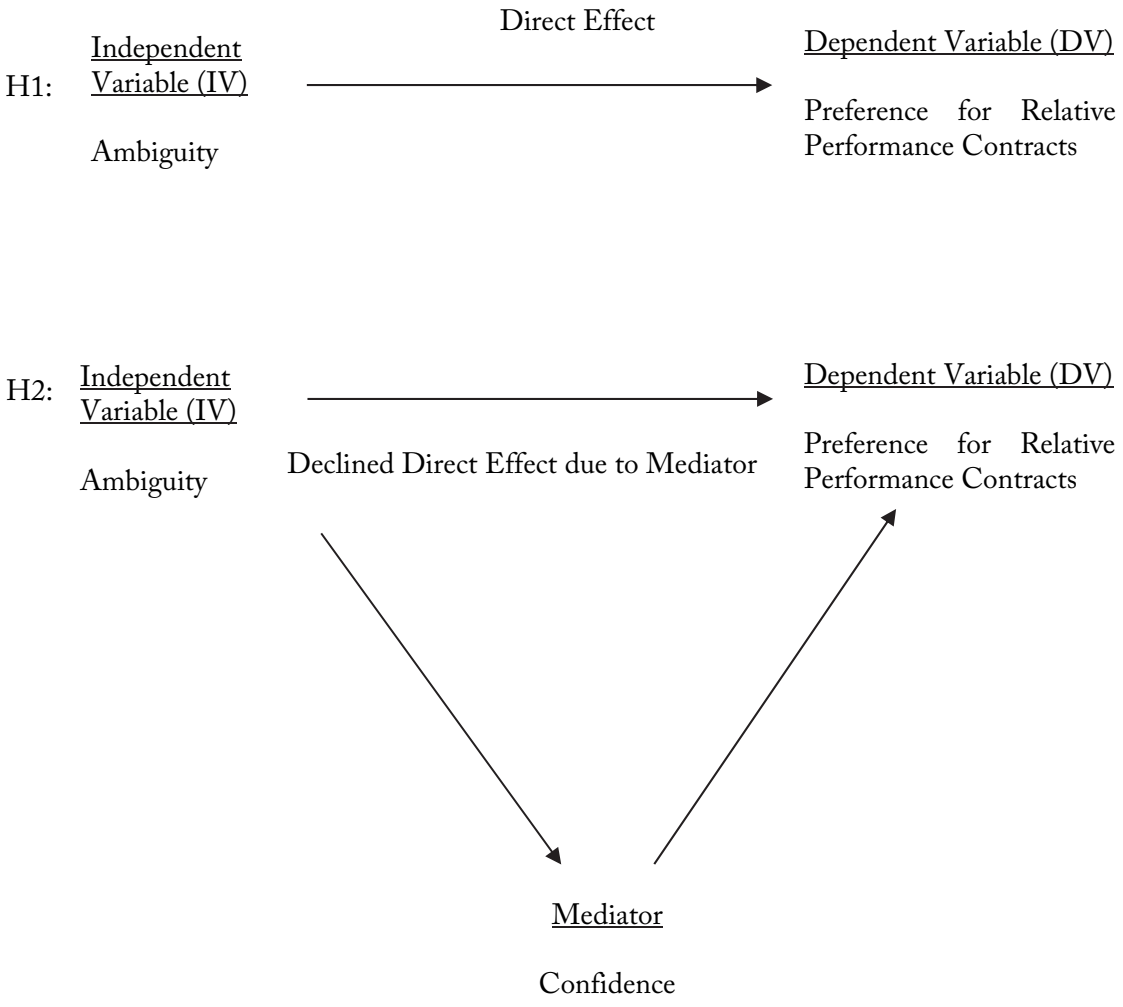
Archival data often lack information on employees' preferences and motives, and causal inference is difficult to make due to confounding factors. To overcome these obstacles, we test the hypotheses in a controlled laboratory environment. Participants in our main experiment were 34 students (sophomores and juniors) recruited from undergraduate business courses at a liberal arts college in the United States.[4] The experiment employs a 2 X 1 between-subject design. We manipulate uncertainty at two levels (ambiguity vs. risk).

Experimental Task and Procedure

We design a case setting to conduct the experiment. Subjects chose their preferred compensation contract in a hypothetical case setting, assuming the role of a sales associate for a medical equipment company that sells a diagnostic device to a foreign country. They were told

[4] 35 students participated, with one student failing to choose a weight, which reduced the valid subjects to 34.

FIGURE 1: HYPOTHESIZED MODEL



Notes:

1. This figure illustrates the hypothesized relationships among ambiguity, confidence, and employee preference for relative performance contracts

that they are going to sell the device together with three other sales associates with similar backgrounds. How many units of that device they can sell depends on the foreign country's economy and personal factors that are specific to individuals, such as skills, knowledge, and effort, etc. The country's economy can be either good or bad. A sales associate is expected to sell between 60 and 120 units if the economy is bad and between 100 and 160 units if the economy is good. Their compensation contains two parts: fixed pay and bonus pay. They are entitled to

receive the fixed pay no matter how many units they sell. They can receive a bonus only if the number of devices they sell next year is in the top half among the four sales associates. The experimental task was to choose a compensation plan from eleven alternatives with different combinations of fixed pay and bonus pay. Participants were randomly assigned to two conditions (ambiguity and risk). They read the instructions and the case and subsequently chose the compensation contract that they preferred. Finally, they were asked a series of post-experimental questions. The experiment instrument and post-experiment questionnaire are presented in Appendixes A and B, respectively. The experiment took thirty minutes, and participants completed it for class credit without monetary compensation.

Independent Variable

We manipulate the two types of uncertainty (i.e., ambiguity vs. risk) following Ellsberg (1961) and subsequent experiments that use "having a known estimated probability" versus "having unknown probability". The only difference between the two conditions is information regarding the probability for the uncontrollable common uncertainty (i.e., the foreign country's economy) that affects all sales associates. This information is absent in the ambiguity condition and present in the risk condition. Specifically, in the risk condition, participants were told that "there is a 50-50 chance that the foreign country is going to have a good economy versus a bad economy". In the ambiguity condition, the above sentence is removed. We code the variable *Ambiguity* as 1 (0) if a subject is in the ambiguity (risk) condition.

Dependent Variable

The dependent variable, *Preference*, is the preference for relative performance contracts. Two forms of relative performance contracts have been studied in behavioral accounting literature. Employees are paid a bonus for each unit of output greater than the average output of the agent's compensation group (e.g., Frederickson 1992), or paid a bonus if their performance is in a certain rank (e.g., Hannan et al. 2008). For the sake of simplicity, we use a form similar to that in Hannan et al. (2008), except that employees receive a bonus if their performance is among the top half. We offer participants eleven alternative compensation plans as shown in Table 1. The compensation plans differ in their combinations of potential bonus pay and fixed pay. For choice A, only fixed pay will be offered. We code this choice 0, indicating the lowest preference for relative performance contracts. For choice K, only bonus pay will be offered. We code this choice 10, indicating the highest preference for relative performance contracts. Under subjective expected utility theory (Savage 1954), if an employee expects his chance of receiving bonus pay to be 50%, he should be indifferent about the compensation plans because their expected values are the same. As his preference for the relative performance contract increases (decreases), he should make a higher (lower) valued choice. Thus, *Preference* indicates subjects' preference for relative performance contracts. Indirectly, *Preference* reveals their willingness to accept relative performance contracts, since the fixed pay is offered independent of performance. A low (high) *Preference* indicates a low (high) willingness to accept, a high (low) risk or ambiguity premium required to compensate for the uncertainty the subject bears, and a high (low) relative performance contracting cost.

TABLE 1: PREFERENCE FOR RELATIVE PERFORMANCE CONTRACTS

Bonus Plan	Coded Value	Fixed Pay ($1,000)	Bonus Pay ($1,000)
A	0	100	0
B	1	90	20
C	2	80	40
D	3	70	60
E	4	60	80
F	5	50	100
G	6	40	120
H	7	30	140
I	8	20	160
J	9	10	180
K	10	0	200

Notes:

1. This table presents the alternatives used in the experiment to elicit subjects' preferences for relative performance contracts.
2. A high value indicates a high preference for relative performance contracts.

Mediating Variable

The mediating variable, *Confidence*, is measured through self-reported ratings obtained in the post-experiment questionnaire. Following Barnsley et al. (2004), participants were asked to what extent they describe themselves as confident. They chose a rating between 1 and 7, with 7 indicating to the greatest extent. Answers to this question indicate subjects' general confidence levels, not decision-specific confidence.[5] In previous experimental studies on ambiguity (e.g., Heath and Tversky (1991) and Ghosh and Ray (1997)), participants' confidence in their answers or choices are evaluated. For example, participants were asked to indicate how confident they are in their answer to a geography question or in the number of quality inspections that they decide to carry out. In these cases, the confidence level in the answer or choice is not a predictor of the answer or choice. In the current study, however, participants' confidence in their chances of receiving a bonus in a relative performance contract is a direct predictor of their preference for the incentive contract.[6] Therefore, we ask participants to evaluate their confidence in general rather than their specific confidence in facing the relative performance contract. By doing so, we prevent participants from being sensitized to justify their earlier choice on the incentive weight. If they were asked to describe their confidence specifically about entering the relative performance contract, then they would have chosen ratings that justify their previous choices for incentive contracts. It might be argued that participants' general confidence levels are independent of the experimental task and thus are unlikely to be influenced by ambiguity or risk that is specific to the experimental task. Despite this seemingly insensitive nature of general confidence in relation to

[5] Specific-decision confidence is defined as a subjective probability assessment of an outcome specific to a decision (Chateauneuf and Faro 2009).

[6] It is worth noting that we are not interested in knowing participants' confidence in their choices but their confidence with respect to accepting the contract.

ambiguity, we used this construct in the experiment, which arguably makes it difficult to observe any effect of ambiguity on confidence.

Control Variables

We collect self-reported gender (*Gender*, coded as 1 female and 0 male), GPA (*GPA*, coded as 0 if < 3.0, 2 if > 3.5, and 1 if in between), risk tolerance rating (*Risk*), and competition attitude rating (*Competition*). Prior research suggests that these factors are related to ambiguity attitude and the willingness to enter a competition (Eriksson et al. 2009). By including these variables in the analysis, we are able to (i) test whether the results for hypotheses testing are robust; and (ii) investigate how these variables are influenced by the independent variable (i.e., *Ambiguity*) as well as affect the dependent variable (i.e., *Preference*) and mediating variable (i.e., *Confidence*). We measure risk tolerance by asking subjects how likely it is that they will bet a day's income at horse races. Subjects chose a rating between 1 and 5, with 5 indicating very likely. We measure competition attitude by asking subjects to what extent they are likely to participate in a competition. Subjects chose a rating between 1 and 7, with 7 indicating to the greatest extent.

Discussion on Experimental Design

Some aspects of our experiment design require additional discussion. First, in both risky and ambiguous conditions participants are placed in a comparative context due to the nature of relative performance contracts. In one of their experiments, Fox and Tversky (1995) manipulated comparison by suggesting the presence of more knowledgeable individuals to participants in a between-subject design. Our study does not suggest the same to participants but instead imposes an inherently comparative contract on participants. This manipulation of the comparative context is a departure from Fox and Tversky (1995) and arguably a weaker manipulation than theirs, and thus is less likely to induce a comparative effect that leads to ambiguity-aversion. Another reason we do not suggest the presence or absence of more knowledgeable individuals in our experiment is that in relative performance contracts this matter often depends on individual employees' assessment.

Second, Fox and Tversky (1995) recognized that most tests of ambiguity aversion employed a within-subject design in which participants compared risky and ambiguous information. They suggest that the within-subject design highlights the contrast between risk and ambiguity and that the between-subject design can better answer whether ambiguity aversion still exists when the risk benchmark is absent. They used a within-subject design in their experiment that examines the effect of knowledge comparison on ambiguity aversion. Consistent with Fox and Tversky (1995), we used a between-subject design in this study, which does not induce a comparison between one contract with risky common uncertainty and the other contract with ambiguous common uncertainty. If we had used a within-subject design, we would not have known whether the ambiguity aversion behavior, if any, is due to participants' comparison between the two conditions or due to the comparative nature of the contract. This design, therefore, offers a clean test of the ambiguity aversion behavior, if any, induced solely by the comparative nature of the relative performance contract.

Third, the design of the eleven bonus plan choices indicates that if a participant, with a concave utility function, believes his/her probability of receiving a bonus is 50% or lower, then he/she will always prefer plan A (fixed wage with no incentive). We adopted this design because

numerous psychological studies show that most people are overconfident about their own relative abilities (e.g., Camerer and Lovallo 1999). This study focuses on the difference, if any, in participants' preference between risky and ambiguous conditions.

4. Results

Manipulation Checks

We begin with an analysis of the effectiveness of our ambiguity manipulation. We ask each subject to recall whether the probability distribution regarding the foreign country's economy is known. All subjects, except for one, answered this question successfully. We also ask subjects to indicate whether the foreign country's economy and their personal factors influence the number of devices they can sell and whether their incentive pay depends on others' performance. These questions are aimed to assess to what extent subjects understand the experimental setting. All subjects, except for the same one who missed the first question, performed well on these effectiveness check questions.[7]

Descriptive Statistics

In Table 2 Panel A, we compare the average value for *Preference* and *Confidence* under the two conditions (i.e., risk and ambiguity). The average *Preference* is 3.75 in the risk condition and 2.33 in the ambiguity condition ($p< 0.01$). The average *Confidence* is 5.69 in the risk condition and 4.67 in the ambiguity condition ($p < 0.01$). We demonstrate this relation in Figure 2. These results are consistent with the predictions in H1 and H2 as well as the notion that most people are overconfident. Even in the ambiguous condition, on average participants chose a 2.33 weight on the relative performance contract. Although 2.33 is lower than the average weight of 3.75 in the risk condition, it indicates that the average subjective assessment of receiving the bonus is significantly greater than 50% despite ambiguity aversion.

To rule out the possibility that these between-group differences are due to demographic differences, we compare *Gender*, *GPA*, *Risk*, and *Competition* between two conditions and present the result in Table 2 Panel B. None of these variables is statistically different between the two conditions, suggesting that the between-condition difference in incentive weight and confidence is likely caused by experiment manipulation.

In Table 2 Panel C, we present a correlation table for all variables used in the empirical testing. *Ambiguity* is negatively correlated with *Preference* and *Confidence*, providing preliminary supporting evidence to the hypotheses. *Preference* is positively associated with *Confidence* and *Risk*, suggesting that more confident and more risk-seeking individuals find incentive schemes more attractive. This is not particularly surprising because these individuals require a relatively low risk premium and evaluate relative performance contracts more favorably. In addition, *Confidence* is positively associated with *Risk* and *Competition*, consistent with the notion that more confident individuals are also more risk-taking and more likely to compete (Eriksson et al. 2009). Finally, *Gender* is negatively correlated with *Confidence, Risk*, and *Competition*, reflecting that women are not as confident as men and are less willing to enter a competition (Niederle and Vesterlund 2007; Borghans et al. 2009; Dohmen and Falk 2011).

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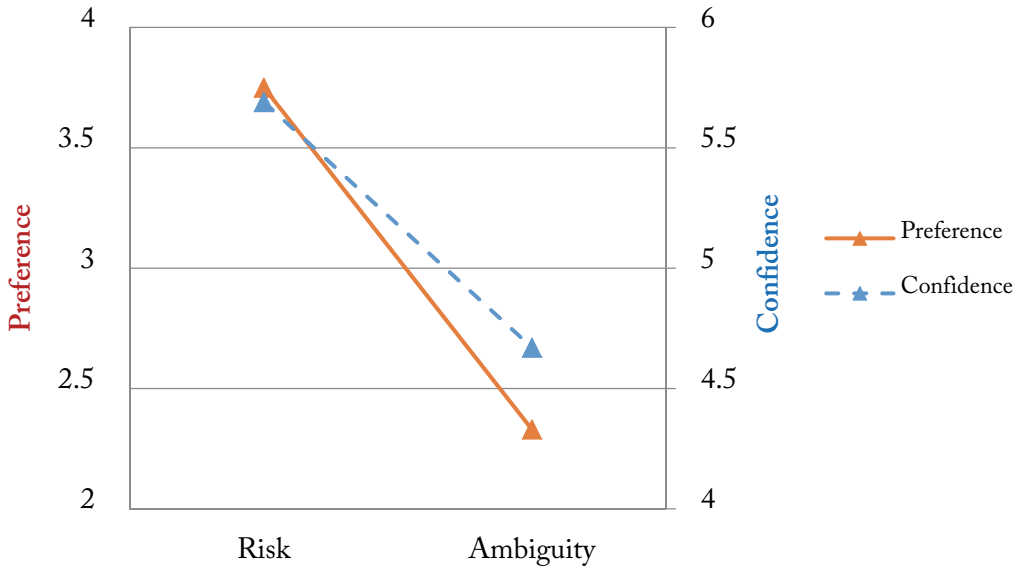
[7] This subject, who was assigned in the risky condition, was removed from the sample. The final sample of 34 students does not include him/her.

FIGURE 2: CONFIDENCE AND EMPLOYEE PREFERENCE FOR RELATIVE PERFORMANCE CONTRACTS



Notes:
1. This figure demonstrates subjects' average preference for relative performance contracts (the left vertical axis) and confidence rating (the right vertical axis) in the risk vs. ambiguity conditions.
2. Table 2 Panel A presents the numeric values used in the figure.

Hypotheses Testing

H1 predicts that ambiguity reduces employee preference for relative performance contracts. As shown in Table 2 Panel A, the average *Preference* is 3.75 in the risk condition and 2.33 in the ambiguity condition ($p< 0.01$), suggesting a negative effect of ambiguity consistent with H1. We then used the Wilcoxon's rank sum test (Wilcoxon 1945), a nonparametric test, and the result is similar ($Z =2.75$; $p < 0.01$). We also use multiple regression analysis to quantify the effect of ambiguity, the results of which are reported in Table 3. In Model 1 without any control variable, *Ambiguity* significantly reduces *Preference* (-1.42, $P< 0.01$). In Model 2, in which *Gender* and *GPA* are controlled for, we obtain similar result (-1.39, $P<0.01$). In Model 3, we control for *Risk* and *Competition* and find that *Ambiguity*'s effect is still robust (-1.17, $P <0.05$).[8] Given that the average *Preference* under risk condition is 3.75, the above results suggest that the existence of

[8] As shown in Table 2 Panel B Model 3, we also find that Risk preference is positively associated with higher preference for relative performance contracts, suggesting that risk-taking individuals find relative performance contracts attractive.

TABLE 2: DESCRIPTIVE STATISTICS

Panel A: Dependent Variable and Mediating Variable

	Risk Condition	Ambiguity Condition	T-Test
Preference	3.75 (3.50; 1.48)	2.33 (2.00; 1.19)	$P < 0.01$
Confidence	5.69 (5.50; 0.95)	4.67 (5.00; 1.19)	$P < 0.01$
N	16	18	

Notes:

1. This panel presents average values for *Preference* and *Confidence* under the two conditions, with the median and the standard deviation in the parentheses.
2. P values are based on two-tailed t-tests of the mean.

Panel B: Control Variable

	Risk Condition	Ambiguity Condition	T-Test
Gender	0.38 (0.00; 0.50)	0.56 (1.00; 0.51)	$P = 0.31$
GPA	1.19 (1.00; 0.54)	1.33 (1.00; 0.69)	$P = 0.50$
Risk	2.44 (2.50; 1.09)	1.94 (2.00; 0.87)	$P = 0.15$
Competition	5.88 (6.00; 1.20)	5.28 (5.00; 1.49)	$P = 0.21$
N	16	18	

Notes:

1. This panel presents average values for control variables under the two conditions, with the median and the standard deviation in the parentheses.
2. P values are based on two-tailed t-tests of the mean.

Panel C: Pearson Correlations among Variables

	Preference	*Confidence*	*Gender*	*GPA*	*Risk*	*Competition*
Ambiguity	-0.22*	-0.26**	-0.03	0.12	-0.13	-0.15
Preference		0.55***	-0.28	0.16	0.43**	0.25
Confidence			-0.63***	-0.22	0.31*	0.58***
Gender				0.07	-0.29*	-0.61***
GPA					-0.03	0.03
Risk						0.06

Notes:

1. This panel presents the Pearson correlations among all variables used in empirical testing.
2. ***, **, and * denote 1%, 5%, and 10% significance levels, respectively.

ambiguity in common uncertainty reduces preference for relative performance contracts by 31% to 38%, depending on what control variables are included.[9] Overall, we find strong and robust evidence in support of H1. Although relative performance contracts are used to insulate employees from common uncertainty, employees are sensitive to whether the common

[9] 31% is 1.17/3.75. 38% is 1.42/3.75, with 1.17 and 1.42 as coefficients for Ambiguity estimated from regression analysis as per Table 3 Panel B.

TABLE 3: EFFECT OF AMBIGUITY ON PREFERENCE (H1)

	Model 1	**Model 2**	**Model 3**
Ambiguity	-1.42***	-1.39***	-1.17**
	(-3.09)	(-3.05)	(-2.54)
Gender		-0.63	-0.25
		(-1.39)	(-0.43)
GPA		0.57	0.54
		(1.55)	(1.50)
Risk			0.45*
			(1.90)
Competition			0.09
			(0.45)
Adjusted R^2	0.21	0.26	0.29
N	34	34	34

Notes:

1. This panel presents the multiple regression analysis result to test the effect of *Ambiguity* on *Preference*.
2. T-scores are reported in the parentheses.
3. ***, **, and * denote 1%, 5%, and 10% significance levels, respectively, based on two-tailed tests.

TABLE 4: EFFECT OF AMBIGUITY ON CONFIDENCE (H2–STEP ONE)

	Model 1	**Model 2**	**Model 3**
Ambiguity	-1.02***	-0.75**	-0.59*
	(-2.75)	(-2.46)	(-1.95)
Gender		-1.30***	-0.78**
		(-4.31)	(-2.05)
GPA		-0.27	0.33
		(-1.10)	(-1.39)
Risk			0.15
			(0.95)
Competition			0.28*
			(2.02)
Adjusted R^2	0.17	0.47	0.51
N	34	34	34

Notes:

1. This panel presents the multiple regression analysis result to test the effect of *Ambiguity* on *Confidence*.
2. T-scores are reported in the parentheses.
3. ***, **, and * denote 1%, 5%, and 10% significance levels, respectively, based on two-tailed tests.

TABLE 5: EFFECT OF CONFIDENCE ON PREFERENCE (H2–STEP TWO)

	Model 1	**Model 2**	**Model 3**
Ambiguity	-0.88*	-0.87*	-0.76*
	(-1.88)	(-1.94)	(-1.71)
Confidence	0.53**	0.69***	0.69**
	(2.63)	(2.77)	(2.63)
Gender		0.26	0.29
		(0.50)	(0.51)
GPA		0.76**	0.77**
		(2.23)	(2.27)
Risk			0.35
			(1.60)
Competition			-0.10
			(-0.47)
Adjusted R^2	0.33	0.47	0.42
N	34	34	34

Notes:

1. This panel presents the multiple regression analysis result to test the effect of *Confidence* on *Preference.*
2. T-scores are reported in the parentheses.
3. ***, **, and * denote 1%, 5%, and 10% significance levels, respectively, based on two-tailed tests.

uncertainty has an ambiguous nature. H2 predicts that confidence mediates the relation between ambiguity and preference for relative performance contracts. Following Sobel (1982), we take three steps to test this hypothesis: First, we test the effect of the independent variable (i.e., *Ambiguity*) on the mediating variable (i.e., *Confidence*); Second, we test the effect of the mediating variable (i.e., *Confidence*) on the dependent variable (i.e., *Preference*); Third, we test the mediating effect of the independent variable (i.e., *Ambiguity*) on the dependent variable (i.e., *Preference*) through the mediating variable (i.e., *Confidence*). As shown in Table 2 Panel A, the average *Confidence* is 5.69 in the risk condition and 4.67 in the ambiguity condition ($p < 0.01$), suggesting that participants' confidence in the ambiguity condition is significantly lower than that in the risk condition. The Wilcoxon's rank sum test provides a similar result ($Z = 2.34$; $p = 0.02$). Regression results are presented in Table 4. In all three models, the coefficient on *Ambiguity* is significantly negative, supporting that ambiguity in common uncertainty dampens confidence. In addition, as per Model 2 and Model 3 we find that males and subjects who are more willing to enter a competition have higher confidence, consistent with the findings from prior literature (Niederle and Vesterlund 2007; Borghans et al. 2009; Dohmen and Falk 2011).

The results for the second step of testing – whether confidence decreases preference for relative performance contracts – are presented in Table 5. The coefficients for *Confidence* from the regression analysis demonstrate a similar pattern. It is worth noting that the regression result is obtained after *Ambiguity* is controlled for. *Confidence,* therefore, has an effect on *Preference* independent from the direct effect from *Ambiguity*. *GPA* is positively related to *Preference*,

TABLE 6: MEDIATING EFFECT OF CONFIDENCE (H2–STEP THREE)

	Model 1	**Model 2**	**Model 3**
Indirect Effect	-0.54** (-1.97)	-0.51* (-1.91)	-0.41* (-1.65)
Gender	No	Yes	Yes
GPA	No	Yes	Yes
Risk	No	No	Yes
Competition	No	No	Yes
Adjusted R^2	0.33	0.47	0.42
N	34	34	34

Notes:

1. This table presents the Sobel (1982) test result for the mediating effect of *Confidence* in the relation between *Ambiguity* and *Preference*.
2. Z-scores are reported in the parentheses.
3. **, and * denote 5%, and 10% significance levels, respectively, based on two-tailed tests.

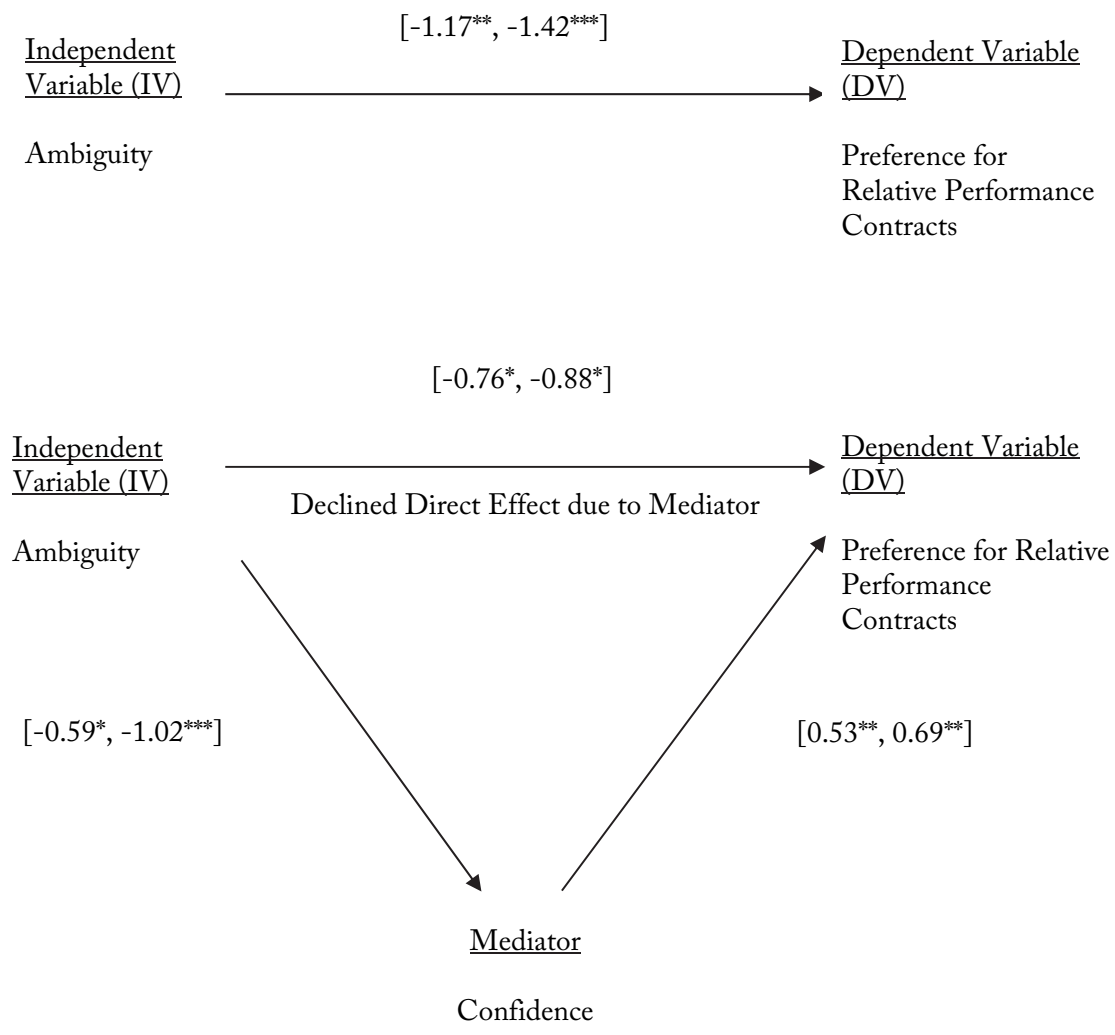
suggesting positive feedback regarding personal skills enhances subjects' willingness to accept relative performance contracts.[10] *Competition* and *Risk* are possibly affected by *Ambiguity* as well, since they are both positively correlated with *Confidence* (as per Table 2 Panel C). By including competition attitude and risk tolerance in regression analysis, we limit the extent of variation in confidence and offer a conservative estimation of the effect of confidence on employee preference for relative performance contracts.

In the final step, we quantify the mediating effect of confidence in employee preference for relative performance contracts using the Sobel (1982) test. As shown in Table 6, the indirect effect of *Ambiguity* through *Confidence* is negative and robust to the inclusion of control variables. The most (least) conservative estimation for the indirect effect is -0.41(-0.54), indicating that *Ambiguity* reduces *Preference* indirectly through *Confidence* by 0.41 (0.54). Given that the total effect from *Ambiguity* to *Preference* is -1.17 (-1.42), the mediating effect is 35% (38%) of the total effect. Moreover, when comparing the results from Table 3 and Table 5, we find that if *Confidence* is included in the regression model, the direct effect of *Ambiguity* on *Preference* is reduced in both magnitude and significance, but not eliminated, suggesting a partial mediation. We illustrate this relationship in Figure 3, presenting the estimated coefficients both with and without control variables.

Taken together, part of ambiguity's impact on employee preference for relative performance contracts is mediated through confidence. This finding is consistent with prior literature that suggests ambiguity might also be due to discomfort, disturbing and aversive feelings, and change in the anchoring and adjustment process (Einhorn and Hogarth 1985, 1986; Chow and Sarin 2001; Pulford and Colman 2007).

[10] Lower skilled employees tend to choose low incentive weight (Chow 1983; Waller and Chow 1985; Shields and Waller 1988; Bonner and Sprinkle 2002).

FIGURE 3: EMPIRICAL MODEL



Notes:

1. This figure illustrates the estimated relationships among ambiguity, confidence, and employee preference for relative performance contracts.
2. Values at the right-hand side in the brackets are obtained from regression analysis when no control variables are included. Values at the left-hand side in the brackets are obtained from regression analysis when all control variables are included.
3. Tables 3-5 Panel B present the numeric values used in the figure.

Follow-up Experiment

While our experiment supports the effect of ambiguity on employee preferences and the mediating role of confidence, it is tempting to ask whether this phenomenon is sensitive to the incentive scheme used. Fox and Tversky (1995) suggest that comparison is the predominant source of ambiguity aversion and when evaluating uncertain prospects independently or separately, people tend to pay little attention to ambiguity. If this suggestion is true, then the effect of ambiguity on employee preferences as observed in relative performance incentive contracts should be muted in an independent incentive contract. We examine this issue in a follow-up experiment, in which we use a quota scheme as an example of an independent incentive scheme. Under a quota scheme, individuals typically receive a flat rate irrespective of performance until a certain targeted level of performance is attained. Once individuals reach this quota, they receive a bonus (Bonner et al. 2000). The quota scheme is widely used in practice and has been extensively examined in the economics literature (Herweg et al. 2010; Oyer 2000; Ericson and Fuster 2011; Bako and Kalecz-Simon 2013).[11]

Consider a quota incentive scheme that offers a lump sum bonus if an agent achieves a certain level of performance, which is significantly impacted by uncontrollable events. Also assume that the agent can easily reach the quota if the common environmental factors work in a favorable way, but will have difficulty reaching the quota if otherwise. The possibility that common factors work favorably is 50%, which is known to the agent. The agent chooses how much weight to assign to his incentive pay (i.e., to what extent he would like to have his pay contingent on his performance measure). In the second scenario, both the impact of environmental factors on performance and the possibility that environmental factors will occur is unknown to the agent. If ambiguity aversion is unique to relative performance-based incentives, then we should not observe lower incentive weight in the ambiguity condition as compared with the risk condition. Based on this idea, we design the follow-up experiment in identical format to the main experiment, except that the incentive scheme is quota-based. If the number of units sold is above 110, then they can receive a bonus. In this case, whether they can receive a bonus depends largely on the uncontrollable state of economy and does not rely on other employees' performance. We use a 1 X 2 design and manipulate ambiguity the same way as in the main experiment. 36 subjects (sophomores and juniors) are asked to choose the incentive weight they prefer among eleven schemes, identical to those in the main experiment. None of these participants was involved in the main experiment. The experiment instrument is presented in Appendix A. The post-experiment questionnaire is the same as that used in the main experiment (presented in Appendix B).

Table 7 shows descriptive statistics. The mean values for *Preference* and *Confidence* are slightly lower in the ambiguity condition, but the differences are not statistically significant.[12] These results suggest that the reduced preference occurs only in relative performance-based incentive contracts and disappears in quota-based incentive contracts in which performance is

[11] The major attraction of the quota incentive scheme is expectation-based loss aversion. Specifically, increasing the number of different wages reduces the agent's expected utility without providing strong additional incentives (Herweg et al. 2010; Ericson and Fuster 2011). As suggested by Herweg et al. (2010), specifying many different payments induces uncertainty for the agent and introduces an endogenous complexity cost into contracting based on psychological foundations.

[12] The Wilcoxon's rank sum test and regression results (untabulated) indicate the same.

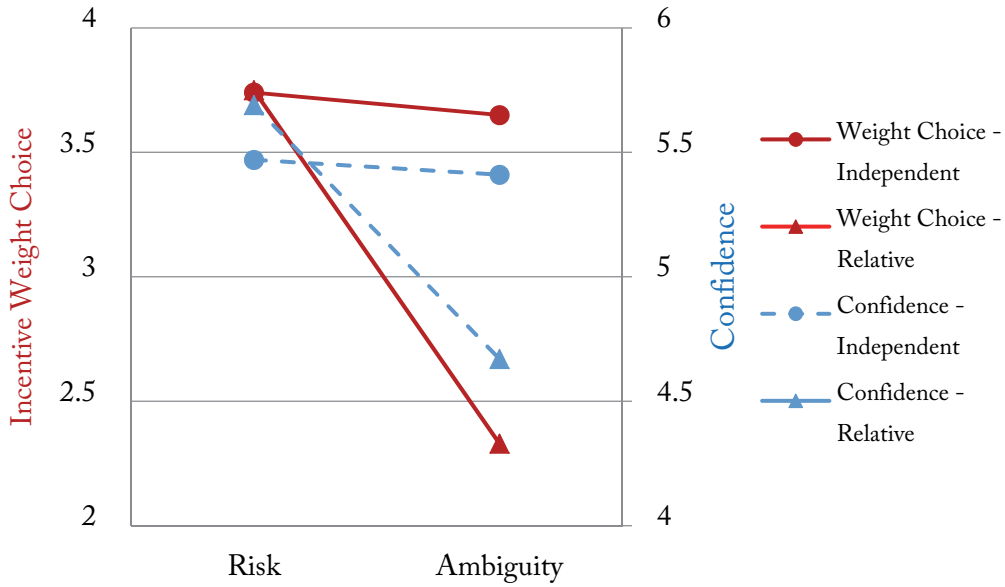
TABLE 7: FOLLOW-UP EXPERIMENT DESCRIPTIVE STATISTICS

	Risk Condition	Ambiguity Condition	T-Test
Preference	3.74 (4.00; 1.63)	3.65 (4.00; 2.23)	$P = 0.89$
Confidence	5.47 (5.00; 0.90)	5.41 (6.00; 0.87)	$P = 0.85$
N	19	17	

Notes:

1. This panel presents the average values for *Preference* and *Confidence* under two conditions from the follow-up experiment, with the median and the standard deviation in parentheses.
2. P-values are based on two-tailed t-tests of the mean.

FIGURE 4: SUPPLEMENTARY ANALYSIS



Notes:

1. This figure demonstrates subjects' average preference for relative performance contracts (the left vertical axis) and confidence rating (the right vertical axis) in the risk vs. ambiguity conditions as well as subjects' average preference for independent performance contracts (the left vertical axis) and confidence rating (the right vertical axis) in the risk vs. ambiguity conditions.
2. Table 2 Panel A and Table 7 present the numeric values used in the figure.

evaluated in isolation. This is consistent with prior research that ambiguity aversion, primarily driven by a comparison between events or between individuals, is greatly reduced or eliminated in the absence of such a comparison. We summarize the results from the main experiment and the follow-up experiment in Figure 4

5. Conclusion

This paper focuses on employee preference for relative performance contracts when knowledge about common uncertainty is incomplete. We explicitly distinguish between ambiguous common uncertainties and risky common uncertainties and address the question of how ambiguity affects contract preferences. Results from laboratory experiments reveal that (i) employees have lower preference for relative performance contracts when the common uncertainty is ambiguous than when the common uncertainty is risky, and (ii) the effect of ambiguity on employee preference is mediated by confidence. The follow-up experiment reveals that similar behaviors are not observed when the incentive contract is based on independent performance measures, consistent with Fox and Tversky (1995)'s notion that ambiguity aversion is an inherently comparative effect. By recognizing the effect of ambiguity in employee contracting preferences, this study makes important contributions to the literatures on relative performance, employee contract preference, and decision making under ambiguity and has practical implications for the design and implementation of relative performance-based contracts.

Several important limitations of this study need to be taken into consideration. First, this study does not examine employee effort level and thus cannot directly contribute to the optimal contracting literature. In addition, recent experimental studies show that principal-agent interactions, such as reciprocity and perceived fairness, are critical to contract efficiency (Fehr et al. 2007; Fehr et al. 2011; Kuang and Moser, 2009; Maas et al. 2011; Brown et al. 2014). In this study, however, the focus is on employee preference. This rather narrow focus prevents us from addressing how such interactions affect contract optimality.

Second, all subjects participating in the experiment received class credit but not monetary compensation. This reward scheme, consistent with that used in some experiments in Fox and Tversky (1995), reflects our focus on employee contract preference rather than contract efficiency. If we were to study contract efficiency, then we would design the experiment in a different way that measures participants' effort levels and links their rewards with effort levels. Nevertheless, this reward scheme prevents us from controlling the incentives of participants and imposes an important limitation of this study.

Third, similar to many experimental studies, we use a case setting to elicit subjects' preferences, which raises the question of generalizability. Although we believe that this setting is appropriate for this study, future research may benefit from using alternative business scenarios or conducting field experiments. Finally, the ratings on confidence, competition preference, and risk attitude are self-reported by experiment subjects and thus are potentially noisy. Future studies may consider measuring these traits in alternative ways, such as engaging subjects with certain tasks.

In this study we examine only two types of commonly used incentive contracts (i.e., relative performance-based contracts and quota-based contracts). The effect of ambiguity on a broader range of incentive schemes awaits further investigation. For example, what are employees' preferences on piece rate-based contract under ambiguity?[13] What is the effect of ambiguity on group-based compensation? Is it possible to eliminate ambiguity in subjective performance measures? These questions are warranted to further our understanding of performance

[13] In accounting literature, incentive schemes are generally classified into four categories: fixed pay, piece-rate, quota, and tournament (Bonner et al. 2000).

measurement and contract design. Finally, the scope of this study is limited to employee contract preference. The effect of employee sorting on performance, which arises from individual preferences, is increasingly emphasized in the literature. Self-selected relative compensation schemes attract employees with traits desirable to the company and thus have a higher performance outcome (Niederle and Vesterlund 2007; Eriksson et al. 2009; Dohmen and Falk 2011). It will be fruitful to explore the performance effects of employee sorting due to ambiguity. We leave this topic for future exploration.

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Appendix A: Experiment Instrument

Risk condition:

After receiving your Bachelor's degree, you jointed TM, Inc., a medical equipment company, as a sales associate. Next year you are going to work at country P to sell a diagnostic device that TM has recently developed, together with three other sales associates who graduated from college and joined TM at the same time as you. How many units of that device you can sell depends on Country P's economy and your personal factors, such as skills, knowledge, and effort etc. Country P's economy can be either good or bad. *There is a 50-50 chance that country P will have a good economy versus a bad economy next year*.[14] A sales associate is expected to sell between 60 and 120 units if the economy is bad and between 100 and 160 units if the economy is good. The sales price is determined by TM. You cannot change the selling price.

Your compensation next year contains two parts: fixed pay and bonus pay. You are entitled to receive the fixed pay no matter how many units you sell. *You can receive a bonus only if the number of devices you sell next year is in the top half of among the four sales associates. In other words, the units sold by you and three other associates will be ranked in decreasing order. You will receive a bonus if you are among the top two ranking associates and receive no bonus if otherwise.*[15] Your supervisor gave you eleven different compensation package options for you to choose. Please open envelope 2 to make a selection among compensation plans.

[14] This italicized sentence does not exist in the ambiguous condition.
[15] In the follow-up experiment, the italicized part is replaced by "You can receive a bonus only if the number of units you sell next year is equal to or above 110."

Appendix B: Post-Experiment Questionnaire

Thank you for participating in the experiment. Please answer the following questions.

1. The chance that country P will have a good economy versus a bad economy next year is known. (34 answered correctly)

   True False

2. Country P's economy influences the number of devices sold. (34 answered true)

   True False

3. My personal factors, such as knowledge, skill, effort etc. influence the number of devices sold. (34 answered true)

   True False

4. How many devices other sales managers sold influences my bonus pay. (34 answered true)

   True False

5. My pay was based on the compensation plan I chose. (34 answered true)

   True False

6. I could choose among alternative compensation plans. (34 answered true)

   True False

7. To what extent do you describe yourself as confident?

1	2	3	4	5	6	7
Not at all		Somewhat		A good bit		Very much

8. How likely that you will bet a day's income at horse races?

1	2	3	4	5
Very unlikely	Unlikely	Not sure	Likely	Very likely

9. To what extent do you like to participate in a competition?

1	2	3	4	5	6	7
Not at all		Somewhat		A good bit		Very much

Please answer the following questions to tell us more about you:

1. What is your gender? Male Female

2. What is your G.P.A at XXX University? <3.0 3.0-3.5 >3.5

Thank you! Please put your name on the Sign-in Sheet to earn three extra points.