EFFECTS OF PAY VARIABILITY AND MUTUAL MONITORING ON EMPLOYEE EFFORT AND CONTRACT CHOICE

by

Kristian Gail Mortenson

_____

A Dissertation Submitted to the Faculty of the

COMMITTEE ON BUSINESS ADMINISTRATION

In Partial Fulfillment of the Requirements
For the Degree of

DOCTOR OF PHILOSOPHY
WITH A MAJOR IN MANAGEMENT

In the Graduate College

THE UNIVERSITY OF ARIZONA

2008

THE UNIVERSITY OF ARIZONA
GRADUATE COLLEGE

As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Kristian G. Mortenson entitled Effects of Pay Variability and Mutual Monitoring on Employee Effort and Contract Choice and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy

_____ Date: May 15, 2008
William S. Waller

_____ Date: May 15, 2008
Jeffrey W. Schatzberg

_____ Date: May 15, 2008
Leslie G. Eldenburg

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

_____ Date: May 15, 2008
Dissertation Director: William S. Waller

STATEMENT BY AUTHOR

This dissertation has been submitted in partial fulfillment of requirements for an advanced degree at the University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this dissertation are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his or her judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Kristian Gail Mortenson

ACKNOWLEDGEMENTS

I thank my dissertation committee: Bill Waller, Jeff Schatzberg, and Leslie Eldenburg for their guidance and support. I appreciate the comments and suggestions of Jason Smith, Bob Huber, and workshop participants at the University of Arizona, the College of William and Mary, Georgia State University, Oregon State University, the University of Saint Thomas and the University of Wisconsin. All errors are my own.

DEDICATION

I dedicate this work to my wife and daughters to whom I am eternally indebted for their untiring support and patience. To my parents, siblings, and extended family for their willingness to appear interested every time I explained what it was I was doing.

TABLE OF CONTENTS

ABSTRACT

A primary cause of income volatility for employees is job loss due to firm downsizing. Economists have suggested that firms use share contracts rather than wage contracts as one possible solution to downsizing. In my experimental setting employment contracting involves an employer who hires two employees to produce output. In each of 31 rounds, employees choose between a wage contract (status quo) and a share contract with an employer-set sharing rule. I manipulate whether the share contract incorporates a form of mutual monitoring and examine the effects on employee effort, contract preference, and welfare. The results show that, compared to wage contracts, subjects exert more effort and have higher welfare when they choose share contracts. Incorporating mutual monitoring into the share contract also increases total effort and subject welfare but does not lead to an increase in the use of share contracts.

1. INTRODUCTION

Social scientists and public policy makers have recently expressed concerns about the economic and psychological consequences for American employees due to increasing income volatility (for example Dynan et al. 2007; Hacker 2006). A primary cause of income volatility, especially as firms respond to downturns in the business cycle, is job loss as part of firm downsizing (Baumol et al. 2003). Economists have suggested that firms use share contracts rather than wage contracts as one possible solution (Weitzman, 1984, 1985). In the short run, firms with wage contracts respond to downturns by eliminating jobs, whereas firms with share contracts respond to downturns by reducing pay instead of eliminating jobs. A primary criticism of share contracts, however, is that they place employees in a prisoners' dilemma where free riding is a dominant strategy. This study contributes to the accounting literature by addressing the call for experimental research that provides useful *ex ante* analysis of alternative accounting policies (Kachelmeier and King 2002). In this study I present share contracts as an alternative employment policy to wage contracts and consider the following questions: Do share contracts improve the welfare of employees and employers, relative to wage contracts? Does mutual monitoring by employees mitigate the free-rider problem and increase employee effort? Does mutual monitoring increase the use of share contracts?

Prior literature has identified two general forms of employment contracts: *wage contracts* and *share contracts* (Baker et al. 1988; Prendergast 1999).[1] A wage contract

[1] Although mixed contracts exist (cf. Weitzman, 1984, 1985), I focus on a pure form of wage contracts versus a pure form of share contracts.

pays a fixed monetary amount for a time period, provided employees supply an acceptable level of input and the employer decides not to eliminate the job. A share contract pays a variable monetary amount for a time period, indexed to a measure of economic value. Depending on available information, the measure could represent anything from revenue or profit at the firm or unit level to the added value specific to the employee.

I focus on employees below the level of top management, and assume that these employees are risk-averse and effort-averse. Wage contracts and share contracts involve different risks. A risk in wage contracts is the possibility of job loss. A risk in share contracts is the variance in pay that stems from variance in the measured value. Whether an employee prefers a wage contract or a share contract depends on how the employee weighs these risks. If the risk of job loss under a wage contract is trivial, then the employee's risk aversion is a sufficient reason to avoid share contracts. Alternatively, share contracts become more attractive when the risk of job loss under a wage contract is high.

In this experimental study, employment contracting involves a firm consisting of an employer who hires two employees to work as a team. The employer offers a share contract with a specified sharing rule. The employees accept the offer or by default accept a wage contract. At the time of contract selection all parties are uncertain about the economic state (good or bad). After contract selection and state realization each employee chooses low or high effort. After choosing their own effort each employee observes the other's effort choice. The employer prefers that employees choose high

effort but cannot observe either employee's effort choice. This information asymmetry prevents the employer from directly forcing employees to choose high effort. Under the wage contract the employer decides whether or not to lay off one employee. The profit-maximizing decision is to lay off one randomly-selected employee if and only if the economic state is bad. Under the share contract the employer maximizes profit by retaining both employees regardless of the state. The potential for layoffs under the wage contract implies a smaller expected surplus than under the share contract, holding effort constant.

I study share contracts as a plausible alternative to wage contracts by establishing the wage contract as the *status quo* and examining the propensity of firms to switch from a wage contract to a share contract under two conditions ("no monitoring" and "mutual monitoring"). In both conditions I randomly re-assign subjects to firms after each round to minimize intertemporal dynamics such as reputation or signaling. Multiple rounds allow for learning. In the "no monitoring" condition the employees have no means of reporting their effort choices to the employer. The employees are likely to free ride under share contracts in this variation of the prisoners' dilemma. I therefore predict that both employees will exert low effort under either share or wage contracts. In the "mutual monitoring" condition I incorporate into the share contracts a form of monitoring adapted from Ma (1988). In this paper mutual monitoring consists of employees mutually observing each other's effort and reporting to the employer about their effort. Assuming rational behavior, mutual monitoring mitigates the free-rider problem under share contracts to the benefit of the employer, employees, or both. I therefore predict that firms

have a higher propensity to switch from wage contracts to share contracts when mutual monitoring is present.

I report four main results. First, in an experimental setting where the possibility of job loss is high under wage contracts, the participants' welfare is significantly higher under share contracts than wage contracts. Specifically, when compared to the wage contract, both employer and employee welfare is significantly higher under the share contract with or without mutual monitoring. Second, relative to the wage contract, the use of a share contract leads to an increase in employee productivity. "Employee productivity" is defined as the expected quantity of output produced given employee effort. This result holds before and after controlling for the number of layoffs under the wage contract. Third, relative to the wage contract and the share contract without mutual monitoring there is an additional increase in employee productivity when the share contract incorporates mutual monitoring. Fourth, contrary to my prediction, incorporating mutual monitoring decreases the propensity of firms to switch from wage contracts to share contracts after controlling for the specified share offer. Disutility from monitoring a co-worker's effort could explain this unexpected result.

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature and develops the hypotheses. Section 3 describes the setting, while Section 4 describes the experimental method and design. Section 5 presents the results. The final section summarizes and concludes the paper.

2. BACKGROUND LITERATURE AND HYPOTHESES

2.1 Income Volatility and Downsizing

In March 2007 the congressional Joint Economic Committee issued a policy brief addressing the issue of household income volatility. The brief cites policy makers' concerns that the increased feelings of economic insecurity and anxiety associated with income volatility decrease the standard of living of American families. Job loss due to firm downsizing, i.e., laying off employees, is a primary cause of income volatility (Baumol et al. 2003). Laid-off employees experience increased volatility in their income leading to economic and psychological hardships (Hacker 2006). Retained employees face increased uncertainty about their job and income security which often leads to morale problems and decreased productivity (Uchitelle 2006). Society in general experiences a reduction in purchasing power and an increase in the cost of social safety nets when firms downsize (Baumol et al. 2003).

2.2 Downsizing and Wage Contracts

Numerous explanations have been offered for why employers lay employees off rather than adjust wages downward in the short run. One behavioral explanation is based on the link between employees' nominal wages and their morale. After interviewing over 300 managers, labor leaders, and employment counselors, Bewley (1999) concludes that employers perceive a positive link between employee morale and productivity and that employers are slow to reduce employees' nominal wages for fear of damaging morale and thus productivity. Bewley also reports that when demand for a firm's product falls,

employers are more likely to lay off employees than they are to reduce their nominal wages. Another possible behavioral explanation is loss aversion (Kahneman and Tversky 1979). Under this theory, employees perceive a cut in their nominal wage as more damaging than an increase of the same amount as beneficial. The length and terms of labor contracts may also constrain an employer's ability to reduce wages. For example, Holden (1999) demonstrates how risk aversion and *ex ante* uncertainty regarding the outcome of labor contract renegotiations can establish a range of wages in which contract renegotiation will not take place.

While a comprehensive explanation of wage rigidity has yet to be identified, the practical result is that employers see wages as downwardly unresponsive in the short run and therefore treat the short-run marginal cost of labor as fixed. Downturns in the business cycle often result in decreased demand for a firm's product. In response, firms attempt to remain profitable by cutting their costs. Under a wage contract, labor cost reductions are primarily achieved by laying off employees, i.e., downsizing, until the marginal cost of labor equals its marginal benefit (Kandil 1996; Thomas and Maurice 2005).[2]

2.3 Share Contracts as an Alternative to Downsizing

As an alternative to wage contracts economists have suggested that firms switch to share contracts (Weitzman, 1985). I use the term share contract to mean any contract which ties employee pay to some measure of firm or subunit performance. Examples of

[2] In this paper I focus on layoffs as a response to short run fluctuations in the business cycle as opposed to downsizing decisions in response long-run shifts in equilibrium (Radcliffe et al 2001).

share contracts include profit-sharing, revenue-sharing, and employee stock compensation. Two arguments have been offered in favor of share contracts (Kruse 1993). The first argument addresses the incongruence in employee and employer incentives typically associated with a wage contract. Generally, employers prefer that employees exert higher rather than lower levels of effort. Under wage contracts employees are paid a fixed wage for a minimally acceptable level of effort. Because their pay does not vary with their effort under a wage contract, employees have no additional incentive to increase their effort and productivity. Economic theory predicts that effort-averse wage-earners will only provide the minimum labor necessary to keep their jobs. Alternatively, share contracts have the potential to increase employee effort by directly tying the employee's pay to a measure of productivity that tends to increase as the employee increases his effort.

The second argument in favor of share contracts is that, in response to short-run fluctuations of the business cycle, share contracts avoid the problem of rigid wages and therefore reduce the need to cut costs by laying off employees (Davis et al. 2006; Kruse 1992; Weitzman 1985). Because the marginal cost of labor varies with the contracted measure of performance, the firm's total labor costs are reduced during downturns in the business cycle without the need to lay off employees. The result is that when compared to wage-earners facing a relatively high probability of job loss, share-earners experience less variance in their income.

In this setting I examine the welfare effects on firms of allowing employees to choose between a wage contract and a share contract. Through their choice employees indicate a

preference between a flat wage with the possibility of job loss and variable pay with no possibility of job loss. When employees in a firm select share contracts the firm should experience less extreme income volatility than when employees select wage contracts. This leads to my first hypothesis.

> H1: When the risk of job loss is high under a wage contract, welfare for employees and employers will be higher when employees choose a share contract rather than a wage contract.

2.4 Effort, Contract Choice, and Mutual Monitoring

Most employers have mechanisms to ensure that individual employees exert at least a minimum amount of effort. For example, employees who fail to show up for work or who fall asleep on the job are terminated. These mechanisms effectively guarantee a minimal effort level per retained employee. I assume that both share-firms and wage-firms use these mechanisms. Nevertheless, I expect employee productivity to be higher in share-firms, for two reasons. First, share-firms experience fewer layoffs, so there are more retained employees who exert at least minimal effort. Second, by tying employee pay to a measure that increases in effort, share-firms provide an incentive for retained employees to exert extra effort. As elaborated below, the latter consideration depends on how the employees resolve the free-rider problem under the share contract.

> H2: Employee productivity will be higher when employees choose a share contract rather than a wage contract.

Critics often argue that, while share contracts are theoretically interesting, free riding leads to a loss in productivity that may outweigh any gains to the employer (Nalbantian and Schotter, 1997; Prendergast, 1999). As a possible solution to free riding in team

production Arya, Fellingham, and Glover (1997) developed a two-period model that relies on implicit sidecontracts between employees. Their model assumes that employees are able to mutually observe each other's effort choices and that the same set of workers interact in both periods. In the first period, employees' incentives are based on a measure of group performance where free riding is a dominate strategy. In the second period, employees receive individual incentives structured in such a manner as to create multiple equilibria. These multiple equilibria introduce the possibility of employees using a tit-for-tat strategy whereby one employee can punish the other for exerting low effort in the first period. Arya et al. conclude that the implicit threat of the tit-for-tat strategy in the second period should result in the two-period group-individual incentive scheme resolving free riding.

Nikias (2006) tests the Arya et al. (1997) model in two-period experimental setting. He finds that when employees are allowed unlimited communication prior to choosing their actions, that using the group-individual incentive scheme reduces free riding and leads to an overall level of effort equivalent to those achieved under individual incentive contracts.

Another possible solution to free riding in team production is the use of a formal monitoring system (Ma 1988; Prendergast 2000). Mutual monitoring in particular takes advantage of mutual observability, i.e., situations where employees are able to observe each other's efforts, by requiring employees to provide the employer with a report of their efforts. Employers can use the reported effort choices to reward or penalize

employees. However, because the employer is unable to observe an employee's actual effort the accuracy of the employee-generated reports is a concern.

Depending on the details of the mutual monitoring system, employees may try to devise false reporting strategies to avoid penalties or earn rewards while exerting low levels of effort (Towry, 2003). If a share contract incorporates a mutual monitoring system that elicits truthful effort reports and resolves the free-riding problem, then the level of employee productivity under a share contract with mutual monitoring should be higher than under a share contract without mutual monitoring.[3]

> H3: The level of employee productivity will be higher under the share contract with mutual monitoring than under either the wage contract or the share contract without mutual monitoring.

Under a share contract without mutual monitoring, employees may also dislike the potential for other employees to free-ride on their effort. Therefore, it is possible that neither employers nor employees prefer a share contract despite the potential for increased productivity. Providing a solution to the free riding problem could make share contracts a viable alternative to wage contracts and downsizing. A share contract that incorporates a mutual monitoring system with incentives for truthful reports about observed effort levels may be relatively more attractive to both employers and employees than a share contract that does not incorporate such a mutual monitoring system.

[3] Another possible solution to free-riding is the use of informal sanctions. Knez and Simester (2001) document a partial share-based incentive plan implemented at Continental Airlines. The authors suggest that, among other factors, the use of informal sanctions, such as peer pressure, were critical in reducing free-riding and improving performance.

H4: Employees will select a higher proportion of share contracts that incorporate mutual monitoring than share contracts that do not incorporate mutual monitoring.

3. SETTING

Both the no monitoring and monitoring treatment conditions take place in two parts. Each part consists of at least 30 rounds. Part one establishes the wage contract as the *status quo* and serves as a baseline for comparison of subject welfare. Part two introduces the choice between the wage and share contract. All subjects interact in triads consisting of two employees and one employer. Each round triads are formed by randomly grouping two employees with one employer. The employer hires the employees to exert effort in the production of output which is sold in a market. Panel A of Figure 1 shows the sequence of events for part one.

By randomly re-grouping subjects each round I place employees in a one-shot prisoners' dilemma. Alternatively, I could have allowed the same triad members to repeatedly interact over periods, thus placing employees in a repeated prisoners' dilemma. While allowing subjects to repeatedly interact may be more realistic, game theory provides a single equilibrium solution to the one-shot prisoners' dilemma and an unlimited number of solutions to repeated prisoners' dilemma. Thus, re-grouping subjects each round allows me to make specific testable predictions about subject behavior.

3.1 Part One

After being formed, each triad learns whether the market for their output will be good with high prices, or bad with low prices. The employer decides whether to lay off one employee; this decision is announced to everyone in the triad. If a layoff occurs, one of

the employees is randomly selected and laid off. The choice to randomly select which employee to lay off is only one of a number of decision rules that could have been incorporated in the wage contract. Other rules, such as a tenure-based rule, would likely create different contract preferences among employees but would also introduce issues that are beyond the scope of this paper.

After the triad learns the employer's layoff decision, each retained employee chooses either low or high effort. Providing employees a choice between high and low effort makes it possible to compare the effects of the different employment contracts on their effort choices in part two. Effort choice probabilistically determines output with high effort more likely to produce more output. Retained employees observe each other's effort choices but the employer cannot. The triad learns the total amount of output produced and the amount it sold for in the market. Importantly, the probabilistic relationship between effort and output prevents the employer from exactly inferring employee effort choices after observing output. Finally, the employer pays each retained employee a fixed wage and keeps the profit. Laid-off employees receive nothing.

I assume that subjects are expected utility maximizers. Rather than ignore or measure their risk preferences, I induce subjects' utility functions using the Berg, Daley, Dickhaut, and O'Brien (1986) lottery method discussed below. The employer is risk neutral with a utility function that is linear in profit. An employee is risk- and effort-averse with a utility function that is additively separable in pay and effort. An employee's utility in pay is concave and strictly increasing. His disutility of effort is convex and strictly increasing, representing his personal cost of increased effort.

Under the wage contract, employees are paid a fixed wage regardless of their effort choices. Thus, an employee's utility maximizing strategy is to minimize the disutility from effort, i.e., always choose low effort. I assume that the employer is aware of the employees' effort strategy and that layoff decisions are made assuming employees always choose low effort. When the output market is good, the employer's expected profit is always positive and is maximized when both employees are retained. When the output market is bad, the employer's expected profit is positive if one employee is retained, but negative if both are retained. Thus, assuming employees will always choose low effort, the employer's profit-maximizing strategy under the wage contract is to retain both employees in a good market and lay off one employee in a bad market.

3.2 Part Two

The sequence of events for part two is shown in Panel B of Figure 1. Part two introduces the choice between the wage and share contracts. Depending on the treatment condition, employees choose between the wage contract they experienced in part one and either a share contract without mutual monitoring or a share contract with mutual monitoring.

3.3 Share Contract without Mutual Monitoring

Under the share contract without mutual monitoring, employees are not paid a fixed wage; the employer offers the employees a share of the total revenue earned from selling the triad's output. Employees split the share equally. To prevent employers from irrationally laying off employees under the share contract, I do not allow employers to

make a layoff decision under share contracts, i.e., both employees are automatically retained. Thus, round by round variability in employee pay is a function of the sharing rule and realized output under the share contract and only a function of layoffs under the wage contract.

The employer sets the share of total revenue before anyone in the triad learns the market realization. Employees are presented with the terms of the wage contract and the share contract. The employees privately vote for the contract they prefer.[4] Consistent with establishing the wage contract as the *status quo* in part one, unless both employees vote for the share contract, the wage contract is used. If the wage contract is selected, events proceed as in part one. If the share contract is selected, both employees choose either low effort or high effort and observe each other's effort choice. The triad learns the total amount of output produced and its sales value in the market. Finally, the employer pays the employees their share of the total revenue, which they split equally, and keeps the remaining profit.

Under the share contract without mutual monitoring, employees maximize their expected joint payoff and their expected utility, net of the cost of effort, when *both* choose high effort. However, when an employee chooses high effort rather than low effort, he personally bears the full cost of increased effort while his expected individual payoff only increases by a fraction of the expected increase in revenue. In my setting, the increased personal cost of switching from low to high effort is greater than the

[4] In the case where the share contract is selected, triad members infer that both employees voted for the share contract. In the case where the wage contract is selected, the employer is unable to identify whether one or both of the employees voted for the wage contract. If an employee voted for the share contract, he can always infer the vote of his co-worker when the selected contract is revealed.

accompanying expected increase in an employee's individual payoff. Therefore, an employee can improve his expected individual payoff by choosing low effort when his co-worker chooses high effort. Because all employees have the same induced utility and cost of effort, each has this same incentive to unilaterally defect from the payoff-maximizing (high effort, high effort) strategy. That is, the employees' incentives create a prisoners' dilemma in which both employees rationally choose low effort even though each would be better off if both chose high effort.

I assume that the employer is aware that employees hired under the share contract without mutual monitoring are playing a prisoners' dilemma and that both employees will choose low effort. The employer's objective is to determine which contract, and what terms, maximize his expected utility given his expectation of the employees' low effort choices. Under the share contract, the employer maximizes his expected utility by offering employees the smallest share of revenue they will accept, retaining the maximum amount of revenue. As discussed above, the employer's utility is maximized under the wage contract by laying one employee off when the market is bad and retaining both employees when the market is good.

The potential for layoffs under the wage contract means that a wage-firm's labor force may be smaller than that of a share-firm. Assuming that each employee exerts at least the minimally enforceable amount of effort, retaining both employees under the share contract assures that the employee productivity of a share-firm can never fall below that of a wage firm. Because a firm's employee productivity determines its revenue, the minimum expected revenue under the share contract is higher than that under the wage

contract. Therefore, the employer prefers that employees choose the share contract rather than the wage contract.

For employees to choose the share contract, their expected utility under the share contract needs to be at least as high as under the wage contract. The share that equates the employees' expected utility under the share and wage contracts should be the minimum share acceptable to employees. If the offered share is above the minimum, the share contract has a higher expected utility for employees than the wage contract and employees should prefer the share contract. Alternatively, the maximum share acceptable to the employer equates his expected utility, net of employee payments, under both contracts. If the share is greater than the maximum, then the employer's expected utility is lower under the share contract than the wage contract. If the share is set at any level between the employee minimum and the employer maximum, then the expected utility of both the employees and the employer is higher under the share contract than the wage contract.

3.4 Share Contract with Mutual Monitoring

The share contract with mutual monitoring differs from the share contract without mutual monitoring only by the addition of a mutual monitoring mechanism adapted from Ma (1988). Ma develops a sequential reporting mechanism that enables the employer to take advantage of the employees' ability to mutually observe effort. By requiring employees to sequentially report and verify their effort choices, and by carefully setting the employees' incentives for truthful reporting, the employer induces the employees to make self-interested effort choices that resolve the free-rider problem and maximize the

employer's net profit. Ma (1988) designed this mechanism to work in a setting where multiple employees were involved in joint production and paid under the terms of a wage contract. I have adapted Ma's mechanism as part of a share contract.

In my setting, mutual monitoring takes place in two stages beginning after each employee observes the other's effort choice, but before output is revealed (See Figure 1). In stage one, one employee, say A, files a report consisting of each employee's effort choice. This report is visible to both employees and the employer. If the report indicates that an employee chose low effort, then that employee is charged with an *effort penalty*. In stage two, the other employee, say B, has the opportunity to accept or reject A's report. If A's report is accepted, then the reporting process is over, total output and revenue are revealed to the triad, both agents receive their share of revenue less any applicable effort penalty, and the employer keeps the rest.

If A's report is rejected, then A is charged with a *reporting penalty* for having his report rejected and the computer assesses the validity of A's report. The computer assesses a report's validity by comparing each subject's actual effort choice against his reported effort choice. An effort report is valid if and only if each employee's reported effort choice matches his actual effort choice, otherwise, the report is invalid. If the effort report is found to be valid, then B is fined a *rejection penalty*, for incorrectly rejecting A's valid report. If A's effort report is found to be invalid, then B earns a *rejection bonus,* for correctly rejecting an invalid report.

In equilibrium, the employer relies on self-interested expected-utility-maximizing employees using the following backward reasoning to lead to a choice of high effort.

Starting in stage two, both A and B have seen A's effort report and know whether they have been charged with the effort penalty. At that point, B knows that his utility can either remain unchanged by accepting A's report, increase by the rejection bonus if he rejects an invalid report, or decrease by the rejection penalty if he rejects a valid report. Knowing that a rational and self interested B will always reject an invalid report in stage two, and that such a rejection will cause him to incur the reporting penalty, A maximizes his expected utility by filing a valid report in stage one, regardless of either employee's actual effort choice. Finally, when making their effort choices, both A and B know that A will maximize his expected utility by filing a valid report in stage one and, as such, both employees maximize their expected utilities by avoiding the effort penalty with a choice of high effort.

The ability to correctly assign B either the rejection penalty or bonus is essential to the process of backward reasoning, without which, Ma's monitoring mechanism would not work. Ma's original model involved the use of a lottery with unique outcomes conditioned on the contents of the effort reports. Using Ma's lottery would have added an unnecessarily complex layer to my experiment. Instead, I assure the credibility of B's incentives in stage two of the backward reasoning process by using the computer, described to subjects as an internal auditor, to perfectly assess B's accept/reject decision and assign the correct rejection penalty or bonus. Consistent with Ma, the computer only assesses a report's validity if B rejects the report.

To correctly align employee's incentives with those of the principal, the penalties and bonus need to have the following relationships. First, the rejection penalty and rejection

bonus need to be greater than zero. Second, the reporting penalty needs to be greater than the effort penalty. Finally, the effort penalty needs to be greater than the difference between two amounts. The first amount is the increase in utility an employee experiences by choosing low rather than high effort. The second amount is the difference between the employee's expected utility of pay when both employees choose high effort and the employee's expected utility of pay when he chooses low effort and his co-worker chooses high effort.

4. METHOD

The experiment operationalized the setting described above and was conducted with the software z-Tree (Fischbacher 2007). Group one chose between the wage contract and a share contract without mutual monitoring. Group two chose between the wage contract and a share contract with mutual monitoring.

4.1 Subjects

Subjects were undergraduate students randomly selected from a voluntary recruitment database at a major university. Upon arrival, two-thirds of the subjects were randomly assigned to the role of employee and one-third to the role of employer. An individual's identity and role were known only to the subject and the experimenter. Each subject participated in one of the two experimental groups. A group consisted of 15 subjects divided into 5 triads with two employees and one employer. All groups were repeated twice for a total of 60 subjects. Subjects were in the lab approximately two hours and earned an average of $24.67.

4.2 Risk Induction

Assuming that subjects maximize expected utility, Berg et al. (1986) describe a method that allows the experimenter to induce any utility in subjects. In this technique subjects play a lottery with two possible payouts, one larger than the other. A subject's probability of winning the larger payout is represented by the number of points the subject has earned. By controlling the way in which a subject's experimental pay (i.e., wage, share, or profit stated in terms of Francs) is converted into points, the experimenter

can induce any desired utility over experimental pay. I use this method to induce a utility function that is linear for the risk-neutral employer and a utility function that is concave for the risk-averse employees.

4.3 Procedure

Subjects interacted over a computer network with individual terminals separated by partitions. Subjects were in the experimental lab for approximately two hours. Prior to logging on to a computer, each subject was provided printed instructions that included examples of the decisions and situations they would encounter. In addition, subjects were provided two reference sheets. The first sheet converted a subject's earned Francs into points based on their role. The second sheet listed the market prices for output in Francs and the cost of effort in points. After all subjects had finished reading the instructions, the experimenter publicly reviewed the instructions and worked through several examples for both roles. The public review was intended to make the tasks and incentives common knowledge. Following a brief question and answer session, subjects logged on to the computer and began the experiment. To enhance experimental control within and between treatments, I used a random device to predetermine the actual number or rounds, the triad groupings, and the markets. Subjects were told that these events were random but not that they had been determined prior to the experiment. The experiment took place in two parts.

Part One. Subjects were informed that part one would last for at least 30 rounds and that each subsequent round had a 70% chance of being the last. In fact, part one was predetermined to last for 32 rounds. At the beginning of each round triads were formed

by randomly grouping two employees with one employer. Each round under the wage contract proceeded as shown in Panel A of Figure 1. The computer randomly determined if the market was good or bad, and the triad was shown the market realization. The employer decided whether to lay off one randomly selected employee, and the employer's layoff decision was announced to the triad. Each retained employee chose to exert low or high effort. Low effort cost an employee 150 points; high effort cost 215 points. Retained employees were shown each other's effort choices.

Finally, subjects were given an income statement consisting of two sections. Section one revealed triad level information including the realized market, total output, total revenue, triad labor expense, and triad net earnings. Section two revealed subject-specific information including whether the subject was laid off, the subject's earnings in Francs and points, effort cost in points, and net points for the round.

At the top of each screen, a header displayed the round, subject's role, realized market, type of employment contract, subject's net points, and subject's average points across all rounds. Information from all past rounds was available by scrolling through the header. Subjects completed part one before receiving any information about part two.

Part Two. Before beginning part two, subjects were given a second set of printed instructions. The instructions explained that part two would last for at least 30 rounds and that each subsequent round had a 70% chance of being the last. In fact, part two was predetermined to last for 31 rounds. The instructions also explained that triads would be given a choice between the wage contract and a share contract, provided a definition of the share contract, and explained how employees voted for their preferred contract. After

subjects finished reading the instructions, the experimenter publicly reviewed the instructions and worked through several examples of the share contract.

As in part one, triads were randomly re-formed at the beginning of each round. The employer began each round by setting the sharing rule for the share contract. The employer was able to set the share at any value between 40% and 100%. The share offer was limited to this range in order to minimize nonsensical offers. Employees were shown the terms of each contract and asked to vote for the contract they preferred. The triad was shown the selected contract and events proceeded as shown in Panel B of Figure 1.

4.4 Mutual Monitoring Incentives

In order for mutual monitoring to work the following relationships among the mutual monitoring incentives needed to be satisfied. First, the effort penalty had to be greater than the net increase in an employee's utility from free riding. Second, the reporting penalty had to be greater than the effort penalty. Third, the rejection penalty and rejection bonus had to be greater than zero. Based on pilot testing I set the effort penalty at 40 points. Given the effort penalty, I set the reporting penalty at 45 points and the rejection penalty and rejection bonus at 20 points.

4.5 Subject Payout and Earnings

When part two was completed, each subject's computer screen displayed his average points for parts one and two. For the employers, Francs were converted into points to induce risk neutrality using the linear function $P(x) = a + bx$, where x is the number of

Francs earned, $a = 384.02$ is the intercept, and $b = 0.39$. For employees, Francs were converted into points to induce risk aversion using the concave function $P(x) = a + b(-e^{-.002*x})$, where x is the number of Francs earned and $a = b = 1052.40$. $P(x)$ ranges from 0 – 1000 points representing the [0, 1] probability range of winning the larger lottery payout.

Subjects were called into a private room, one at a time, to settle up. For part one, subjects drew a numbered chip from a bag containing 1,000 chips. If the number on the drawn chip was less than or equal to the subject's average points for part one, they won $10, otherwise, they won nothing. After replacing the first chip the bag was mixed and the subject drew a second chip. If the value on this chip was less than the subject's average points for part two they won $25, otherwise, they won $5. Subjects were also paid a $5 show-up fee. Thus, subjects' earnings ranged between $10 and $40.

4.6 Measures

In each round I measure welfare as the expected number of points conditioned on employee effort choices. Expected employee welfare is calculated as the average of both employees' expected points, net of effort. Expected employer welfare is equal to the employer's expected points. Expected triad welfare is calculated as the average expected points for both employees and the employer in the triad. To measure employee productivity I calculate a triad's expected output given each employee's effort choice. Expected revenue is calculated by multiplying expected output by the realized market prices for output. I use expected values rather than actual values to be consistent with the assumption of expected utility maximization and to avoid any variation from the predicted experimental parameters that may occur in small samples.

5. RESULTS

I present my results in five tables. Table 1 presents descriptive statistics. Table 2 presents the correlations among the explanatory variables. Tables 3, 4, and 5 present the statistical tests of the hypotheses. Both experimental conditions involved 10 triads participating for 32 (31) rounds in part one (two). Panel A of Table 1 uses the 640 observations from part one, 320 from each condition. Panels B and C of Table 1 and all other tables use the 620 observations from part two, 310 from each condition.

Subject responses are repeatedly measured over rounds which introduces the possibility that subjects experience a simultaneous learning process or some other form of serial dependence. Accordingly, I run all regressions using two-way robust clustered standard errors. This procedure controls for serial dependence due to repeated observation of the same subject over 31 rounds and for any cross-sectional dependence between triads in a given period (Gow et al. 2008).

5.1 Descriptive Statistics and Correlations

Table 1 presents the mean (standard deviation) descriptive statistics organized by condition ("no monitoring" or "mutual monitoring") and experiment part (one or two). Layoff is equal to the proportion of contracts in which a layoff occurred. Expected output, expected revenue, employee welfare, employer welfare, and triad welfare are measured as described above. Share offer is the share of revenue the employers offered employees in part two. Proportion of contracts is the proportion of each contract type

chosen by employees in part two. Panel A reports part one values. Panels B and C report part two values for wage contracts and share contracts respectively.

Table 1 also presents t-tests (z-tests) for differences in means (proportions). Under the assigned wage contract of part 1, subjects in the mutual monitoring condition performed differently than subjects in the no mutual monitoring condition. However, when subjects chose to work under the wage contract in part 2 these differences disappeared.[5]

Table 2 presents both the Spearman and Pearson correlation coefficients for the all variables used in tables 3, 4, and 5. All correlations except that between share and mutual monitoring are significantly different from zero. The high correlation between layoff and contract is a result of layoffs only occurring under wage contracts. None of the other correlations are large enough to support concerns of multicollinearity. Untabulated variance inflation factors for all individual correlations were less than 10 and the average variance inflation factor was less than 6 indicating no significant multicollinearity.

5.2 Hypotheses Tests

Table 3 presents results from statistical tests for the difference in the level of subject welfare between wage contracts and share contracts in part two. Tests are based on the following model:

[5] It is possible that the difference in performance between conditions in part 1 could bias my results in favor of my hypotheses. To control for this potential bias, all regressions were repeated using subjects' part one earned welfare and layoff experience as control variables. The untabulated results remain qualitatively unchanged from those presented tables 3, 4, and 5.

$$\text{Welfare} = \alpha + \beta_1 * \text{Contract} + \beta_2 * \text{Monitoring} + \beta_3 * \text{Contract x Monitoring}$$

This model is the same for three different measures of the dependent variable. In model (1) the dependent variable is expected triad welfare, in model (2) the dependent variable is expected employer welfare, and in model (3) the dependent variable is expected employee welfare.

In each model I regress the dependent variable measuring welfare on the same independent dummy variables. Contract indicates contract type and is equal to 1 for a share contract and 0 for a wage contract. Monitoring indicates the experimental condition and is equal to 1 when the share contract incorporates mutual monitoring and 0 when it does not. Contract x Monitoring tests for an interactive effect between contract type and mutual monitoring and is equal to 1 when a share contract that incorporates mutual monitoring is chosen and 0 otherwise.

H1 predicts that triad welfare will be higher when triads choose the share contract rather than the wage contract. I test H1 using model (1) which has an adjusted R^2 of 0.33. The intercept indicates that the average triad earned 492.46 points in the no mutual monitoring condition using a wage contract; that is, when all variables are equal to 0. The coefficient on contract is positive and significant ($\beta_1 = 130.23$, $p < .01$). This result supports H1; average expected triad welfare increased by 130.23 points (on the 0 – 1,000 scale) when employees chose a share contract rather than a wage contract.

I use model (2) and model (3) to investigate whether employees and employers each achieved significantly higher expected welfare under share contracts rather than wage contracts. Model (2) uses expected employer welfare as the dependent variable and has

an adjusted R^2 of 0.65. The intercept indicates that an employer earned 473.85 points in the no mutual monitoring condition when employees chose a wage contract. The coefficient on contract is positive and significant ($\beta_1 = 193.71$, $p < .01$). This means that an employer increased his average expected welfare by 193.71 points when the employees in his triad chose a share contract rather than a wage contract.

Model (3) uses expected employee welfare as the dependent variable and has an adjusted R^2 of 0.16. The intercept indicates that employees in a triad earned an average of 501.76 points in the no mutual monitoring condition when they chose a wage contract. The coefficient on contract is positive and significant ($\beta_1 = 98.48$, $p < .01$) indicating that when employees chose a share contract rather than a wage contract their average welfare increased by 98.48 points.

In sum, the results presented in Table 3 support the prediction of H1 that triad welfare is higher when employees choose a share contract rather than a wage contract. The results also show that both the employer and the employees experienced an increase in welfare when the share contract rather than the wage contract was chosen.[6]

H2 predicts that the main effect of selecting a share contract will be an increase in employee productivity relative to a wage contract. H3 predicts that there will be an interactive effect between the share contract and mutual monitoring leading to higher levels of employee productivity when compared to the share contract alone. I measure employee productivity as the expected output a triad could produce given its employees'

[6] Untabulated analysis for all regressions was performed using controls for the effects of subjects' part one earned welfare, individual layoff experience, and triad layoff experience. The results remain qualitatively unchanged from those presented in Tables 3 and 5.

effort choices. The first column of Table 4 presents tests of H2 and H3 based on the following model, model (1):

$$\text{Expected Output} = \alpha + \beta_1 * \text{Contract} + \beta_2 * \text{Monitoring} + \beta_3 * \text{Contract x Monitoring}$$

The independent variables are the same variables presented in Table 3.

The intercept in model (1) means that when employees chose a wage contract in the no mutual monitoring condition a triad's expected output was 1.83 units. Model (1) has an adjusted R^2 of 0.67. As predicted by H2 the coefficient on contract type is positive and significant ($\beta_1 = 1.22$, $p < .01$) indicating that choosing a share contract increased expected output by 1.22 units. As predicted by H3 the coefficient on the interaction between contract type and mutual monitoring is positive and significant ($\beta_3 = .36$, $p < .01$). This means that when triads chose a share contract that incorporated mutual monitoring expected output increased by an additional .36 units.

The second column of Table 4 presents results for model (2) which expands model (1) by the addition of a control for the effect of layoffs (β_4) on expected output. Layoff is equal to 1 if one of the employees is laid off and 0 if both are retained. Model (2) has an adjusted R^2 of 0.92. The intercept in model (2) means that when employees chose a wage contract in the no mutual monitoring condition a triad's expected output was 2.52 units. The coefficient on layoff is negative and significant ($\beta_4 = -1.28$, $p < .01$) indicating that layoffs under a wage contract reduced a triad's expected output by 1.28 units. Supporting H2, the coefficient on contract remains positive and significant ($\beta_1 = .53$, $p < .01$) indicating that choosing a share contract increased expected output by .53 units. The coefficient on mutual monitoring is also positive and marginally significant ($\beta_2 = .02$, $p <$

.10) indicating that expected output is higher in the monitoring condition than the no monitoring condition. The coefficient on the interaction of contract and mutual monitoring remains positive and significant ($\beta_3 = .29$, $p < .01$). This result supports H3 and means that a triad's expected output increased by an additional .29 units when it chose a share contract that included mutual monitoring as compared to a share contract without mutual monitoring.

The coefficient on the interaction of contract and mutual monitoring is positive and significant in Table 4 but is not significant in Table 3. This apparent discrepancy of an increase in expected output without a corresponding increase in welfare can be explained by the difference in scale between the dependent variables in the two tables. Statistical significance is a matter of degree; at the margin, a significant increase in expected output need not result in a significant increase in expected welfare.

Collectively, the results presented in Table 4 support the prediction of H2 that employee productivity (as measured by expected output) will be higher when employees choose a share contract rather than a wage contract. Additionally, the results support the predicted interactive effect of H3 that employee productivity will be higher under the share contract with mutual monitoring than under either the wage contract or the share contract without mutual monitoring.

H4 predicts that employees will choose share contracts with mutual monitoring more frequently than they will choose share contracts without mutual monitoring. Table 5 presents results from a logistic regression specified as:

$$\text{Contract} = \alpha + \beta_1 * \text{Monitoring} + \beta_2 * \text{Share}$$

where the dependent variable is the type of contract chosen and is equal to 1 for a share contract and 0 for a wage contract. Monitoring is as described in Table 3. Share is the share of revenue offered by the employer and can take any value between 40 and 100 percent. The model correctly identifies the chosen contract 68.7% of the time and has a pseudo R^2 of 0.27. Contradicting H4, the coefficient on monitoring is negative and significant ($\beta_1 = -.48$, $p < .01$) indicating that the probability of choosing a share contract decreases when mutual monitoring is incorporated. The coefficient on share is positive and significant ($\beta_2 = .17$, $p < .01$) indicating that the probability of choosing a share contract increases as the employees' share of revenue increases. The results of the logistic regression presented in Table 5 fail to support the prediction of H4 that a share contract that incorporates mutual monitoring will be chosen more frequently than a share contract without mutual monitoring.

6. SUMMARY AND CONCLUSIONS

This study contributes to the accounting literature by providing ex ante insights into alternative employment policies (Hussein and Rosman 1997; Kachelmeier and King 2002). This study also contributes to the literature by investigating the effort and welfare effects of different employment contracts in a group-based setting (Sprinkle 2003). I use a computerized experiment to group subjects into employer-employee triads who choose to work under either a wage contract or a share contract. I present four main results. First, triads who chose to work under a share contract had significantly higher welfare than triads who chose a wage contract. Additionally, the increase in triad welfare under a share contract benefited both the employer and the employees. An implication of this finding is that when the risk of job loss is high, both employers and employees can benefit by switching from a wage contract that leads to layoffs during downturns in the business cycle to a share contract that reduces the need for layoffs by allowing labor costs to vary with firm performance.

Second, share contracts elicit higher levels of employee productivity than do wage contracts. Relative to the wage contract more employees were retained and made an effort choice under the share contract. This result indicates another benefit of share contracts, namely, firms are able to maintain higher production capacity during economic downturns when they use share contracts rather than wage contracts. Third, when a share contract effectively incorporates mutual monitoring to mitigate free riding the level of employee productivity is greater than under the share contract without mutual

monitoring. This result illustrates the potential benefit of mitigating the free-rider problem in share contracts by incorporating a form of mutual monitoring.

In my setting mutual monitoring relied on an employee's ability to observe his co-worker's actions. Given this mutual observability, I adapted a process of sequential employee effort reports from Ma (1988) so that employees had individual incentives to both truthfully reveal their private information and to choose high effort. My results show that this mutual monitoring mechanism can be successfully adapted for use in mitigating the free-rider problem inherent in share contracts.

Finally, contrary to my predictions, I fail to find an increase in the use of share contracts when they incorporate mutual monitoring. One possible explanation for this lack of finding is that some subjects found the share contract with mutual monitoring too complex and opted instead for the simpler wage contract. Another explanation is that some employees are averse to monitoring their co-workers. Future research is necessary to distinguish these explanations.

This study suffers from the following limitations. First, employees made their contract and effort decisions in a dynamic setting where the employer was free to make layoff decisions under the wage contract and vary the share or revenue under the share contract. While a dynamic setting allows insight into how subject actions shape a particular interaction it also complicates analysis when subjects deviate from economically predicted behavior.

A second limitation is the potential complexity of the share contract with mutual monitoring. Although many subjects seemed to understand the reporting process and the

incentives involved, some subjects deviated from the predicted behavior to their own as well as their co-worker's detriment. Future research could address these limitations as well as investigate other factors that influence employee preferences between wage and share contracts. Three such factors include the level of social support available to laid-off employees, the decision rule used for selecting employees when a layoff takes place, and the disciplining influence of a competitive labor market.

APPENDIX A: Figures and Tables

Figure 1

Sequence of Events Under All Contracts

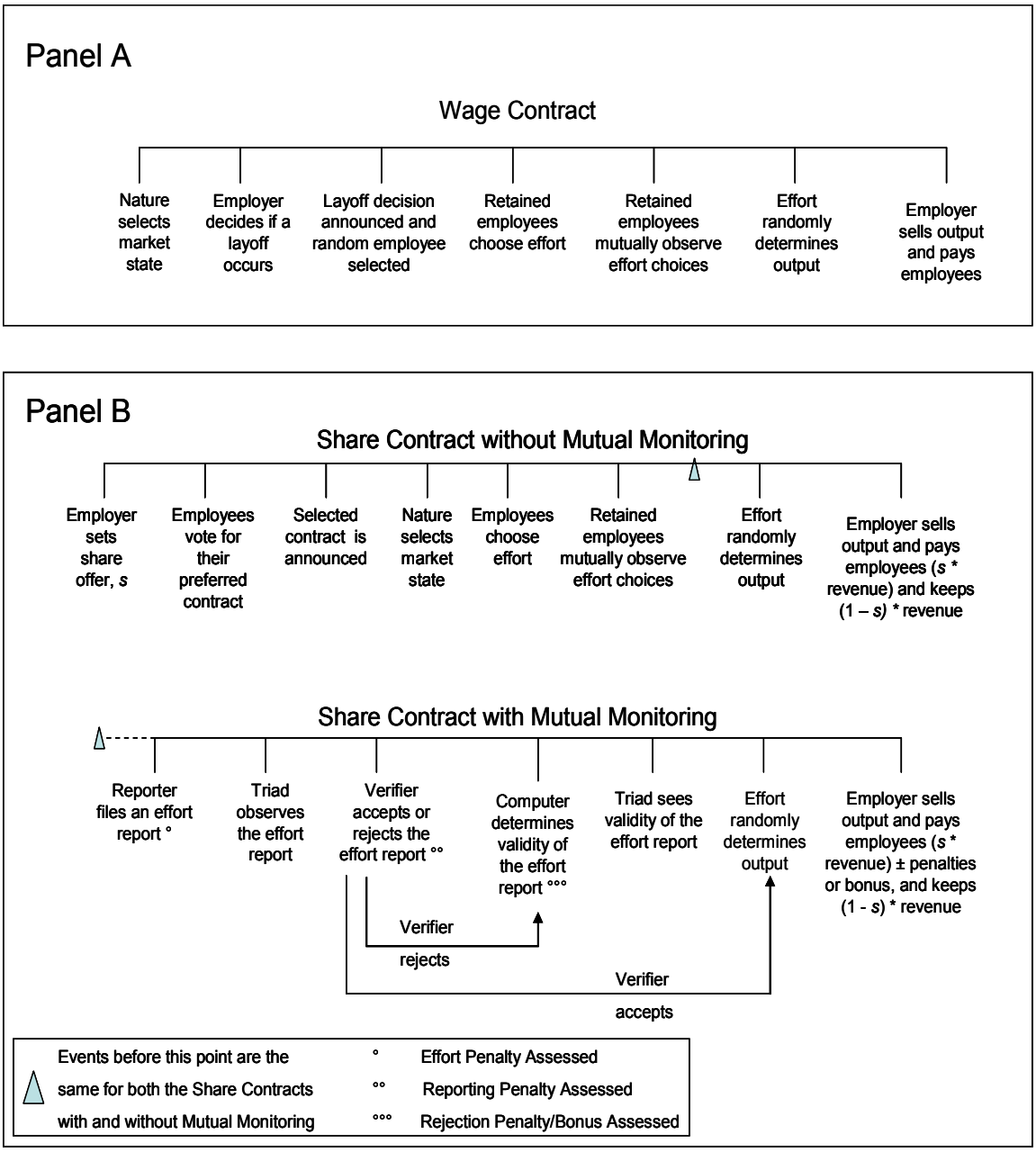

Table 1
Descriptive Statistics for Key Experimental Variables
Mutual Monitoring Condition by Part and Contract Type

Panel A Part 1 Wage Contract	No Mutual Monitoring	Mutual Monitoring	t-test[1]	p-value
Layoffs	**0.48**	**0.41**	**1.83**	(0.07)
Expected output	**1.96** (0.67)	**2.12** (0.67)	**-4.98**	(0.00)
Expected revenue	**1,482.44** (553.14)	**1,579.65** (571.57)	**-3.79**	(0.00)
Expected employee welfare	**518.02** (171.37)	**538.74** (170.08)	**-1.54**	(0.13)
Expected employer welfare	**488.90** (87.85)	**504.33** (100.13)	**-2.07**	(0.04)
Expected triad welfare	**508.31** (131.33)	**527.27** (132.30)	**-3.15**	(0.00)

Panel B Part 2 Wage Contract	No Mutual Monitoring	Mutual Monitoring	t-test	p-value
Share offer	**59.33** (6.80)	**60.41** (8.20)	**-1.21**	(0.23)
Proportion of contracts	**0.41**	**0.50**	**-3.19**	(0.00)
Layoffs	**0.54**	**0.59**	**-0.85**	(0.40)
Expected output	**1.83** (0.64)	**1.79** (0.64)	**0.54**	(0.59)
Expected revenue	**1,396.56** (550.91)	**1,357.30** (577.97)	**0.58**	(0.56)
Expected employee welfare	**501.76** (171.92)	**483.06** (169.07)	**0.92**	(0.36)
Expected employer welfare	**473.85** (79.46)	**474.21** (83.44)	**-0.04**	(0.97)
Expected triad welfare	**492.46** (132.55)	**480.11** (135.23)	**0.77**	(0.44)

Panel C Part 2 Share Contract	No Mutual Monitoring	Mutual Monitoring	t-test	p-value
Share offer	**65.95** (5.24)	**65.97** (5.03)	**-0.03**	(0.98)
Proportion of contracts	**0.59**	**0.50**	**3.19**	(0.00)
Layoffs	**N/A**	**N/A**	**N/A**	**N/A**
Expected output	**3.05** (0.37)	**3.36** (0.26)	**-8.92**	(0.00)
Expected revenue	**2,149.49** (413.12)	**2,280.93** (402.68)	**-2.95**	(0.00)
Expected employee welfare	**600.24** (66.08)	**602.20** (64.84)	**-0.27**	(0.78)
Expected employer welfare	**667.56** (66.65)	**684.52** (63.65)	**-2.38**	(0.02)
Expected triad welfare	**622.68** (56.20)	**629.64** (55.07)	**-1.14**	(0.25)

[1] Where appropriate, tests have been adjusted for unequal variance.

Table values are Means (Standard Deviations) over all periods. The t-test is for a difference in means between conditions. For the Layoffs and Proportion of contracts variables this is a z-test of proportions.
Part 1 = employees are only hired under a flat wage contract. (10 triads x 32 rounds)
Part 2 = employees choose to work under a flat wage or sharing contract. (10 triads x 31 rounds)
Share offer = share of revenue, between 40% and 100%, the employer offered to employees.
Proportion of contracts = proportion of share or wage contracts chosen in Part 2.
Layoffs = proportion of wage contracts in which employers chose to lay off one employee.
Expected output = expected triad output given employee effort choices.
Expected revenue = expected triad revenue given state and employee effort choices.
Expected employee welfare = employee's expected points out of a possible 1000 points.
Expected employer welfare = employer's expected points out of a possible 1000 points.
Expected triad welfare = triad's expected points out of a possible 1000 points.

Table 2
Correlations

	Contract	Monitoring	Contract x Monitoring	Share	Layoff
Contract	1	-0.091	0.527	0.427	-0.648
Monitoring	-0.091	1	0.577	-0.003	0.085
Contract x Monitoring	0.053	0.577	1	0.226	-0.342
Share	0.449	0.026	0.242	1	-0.257
Layoff	-0.648	0.085	-0.342	-0.274	1

The lower left-hand portion of the table represents Spearman correlations.
The upper right-hand portion of the table represents Pearson correlations.

All correlations, except that between Monitoring and Share, are significant at the .05 level.

Contract = 1 if the share contract is selected, and 0 if the wage contract is selected.
Monitoring = 1 if the share contract includes mutual monitoring, and 0 otherwise.
Contract x Monitoring = 1 if the share contract with monitoring is selected, and 0 otherwise.
Share = share of revenue, between 40% and 100%, the employer offered to employees.
Layoff = proportion of wage contracts in which employers chose to lay off one employee.

TABLE 3
OLS Regression of Expected Subject Welfare on Contract, Monitoring, and Contract x Monitoring[a]

	Model (1) Expected Triad Welfare	Model (2) Expected Employer Welfare	Model (3) Expected Employee Welfare
Intercept	492.46 (31.35)*	473.85 (67.90)*	501.76 (21.42)*
Contract	130.23 (7.50)*	193.71 (25.13)*	98.48 (4.06)*
Monitoring	-12.34 (-0.58)	0.36 (0.04)	-18.70 (-0.62)
Contract x Monitoring	19.30 (0.81)	16.60 (1.29)	20.66 (0.64)
Adjusted R^2	0.33	0.65	0.16
Number of observations	620	620	620

[a] Table values are regression coefficients. (t-statistics) are based on two-way clustering of the standard errors to control for cross-sectional and serial dependence.
Contract = 1 if the share contract is selected, and 0 if the wage contract is selected.
Monitoring = 1 if the share contract includes mutual monitoring, and 0 otherwise.
Contract x Monitoring = 1 if the share contract with monitoring is selected, and 0 otherwise.
* indicates significance at $p \leq .01$.

TABLE 4

OLS Regression of Expected Triad Output on Contract, Monitoring, Contract x Monitoring, and Layoff[a]

	Model (1) Expected Output[b]	Model (2) Expected Output
Intercept	1.83 (21.2)*	2.52 (275.15)*
Contract	1.22 (16.61)*	0.53 (14.52)*
Monitoring	-0.04 (-0.50)	0.02 -1.53
Contract x Monitoring	0.36 (3.78)*	0.29 (5.63)*
Layoff	-- --	-1.28 (-92.98)*
Adjusted R^2	0.67	0.92
Number of observations	620	620

[a] Table values are regression coefficients. (t-statistics) are based on two-way clustering of the standard errors to control for cross-sectional and serial dependence.

[b] Expected Output is a triad's expected output given employee effort choices;
Contract = 1 if the share contract is selected, and 0 if the wage contract is selected;
Monitoring = 1 if the share contract includes mutual monitoring, and 0 otherwise;
Contract x Monitoring = 1 if the share contract with monitoring is selected, and 0 otherwise;
Layoff = 1 if a layoff occurred, and 0 otherwise.

* indicates significance at $p \leq .01$.

TABLE 5
Logistic Regression of Contract Choice
on Monitoring and Share[a]

	Contract Choice
Intercept	-10.39 (30.03)*
Monitoring	-0.48 (6.3)*
Share	0.17 (33.82)*
Pseudo R^2	0.27
Correctly predicts	68.7%
Number of observations	620

[a] Table values are regression coefficients. (Wald statistics) are based on two-way clustering of the standard errors to control for cross-sectional and serial dependence.

Contract Choice = 1 if the share contract is selected, and 0 if the wage contract is selected.

Monitoring = 1 if the share contract includes mutual monitoring, and 0 otherwise.

Share = the share of total revenue the employer offered the employees under the share contract. Values are between 40% and 100%.

* indicates significance at $p < .01$.

APPENDIX B: Experimental Instructions

This is a study in decision making. You will be paid for your participation. You have already earned **$5.00** for showing up at the appointed time. Your additional earnings will depend partly on your decisions, the decisions of others and, to some extent, chance. By carefully following these instructions and making good decisions you have the chance to earn a good amount of money, which will be paid to you privately, in cash, at the end.

This study has two parts. Instructions for Part 1 are below. Part 1 will last for at least 30 periods. Starting with the 31st period, each subsequent period has a 70% chance of being the last. Your performance in Part 1 will not affect your participation in Part 2. Instructions for Part 2 will be given to you later

Your Role

You have been randomly assigned to play a **worker**. You will keep your role for the duration of the study.

Part 1 Instructions

Ten of you have been randomly assigned to the role of a worker. The remaining five have been randomly assigned to the role of an employer. Each period the computer randomly selects two workers and pairs them with one employer to form a company. This random selection continues until each of you is part of a company.

Each period, the employer hires the two workers in his company to exert effort in order to produce output. The output is sold in a market. The market can be good with high prices, or bad with low prices. There is a 50-50 chance (like a coin flip) that the market will be good or bad. Table 1 shows the market prices in Francs (₹), which is the currency used in this study.

Table 1 - Market Prices

Output Sold	Market: Good	Market: Bad
1	₹ 900	₹ 700
2	1700	1300
3	2400	1800
4	3000	2200

Everyone in the company simultaneously finds out if the market is good or bad. Next, the employer decides whether or not to lay off one worker. If a layoff does occur, it is announced to everyone in the company and the computer randomly chooses which worker is laid off. Each worker has a 50-50 chance of being the one laid off. Unless the employer decides to lay off one worker, both workers keep their jobs.

Retained workers choose to exert either low effort or high effort. If both workers are retained, they are shown each others effort choice. The employer never sees the workers' effort choices. The computer uses worker effort to determine the total amount of output. When two workers are retained, everyone in the company sees total output but **not** how many units an individual worker produced. The employer sells the output in the market, pays each retained worker Ŧ800, and keeps the remaining Francs. Laid off workers are paid Ŧ0.

Francs, Points, and Dollars

At the end of each period, the amount of Francs you earn will be converted into points. The employer's Francs convert into points at a different rate than the workers' Francs.

Table 2

Worker
Francs to Points Conversion

Francs	=	Points
0		0
800		840

Table 3

Employer
Francs to Points Conversion

Francs	=	Points	Francs	=	Points
-300		297	600		598
-100		364	800		665
100		431	900		699
200		464	1400		866
500		565			

Workers: Each period the workers can earn one of two Franc amounts. A retained worker earns ₮800, regardless of low or high effort. A laid-off worker earns ₮0. A worker's Francs convert to points as shown in Table 2.

Employers: After selling output and paying workers, an employer can earn one of nine possible Franc amounts each period. An employer's Francs convert to points as shown in Table 3.

Your points will be averaged over all periods of Part 1. Your average points will translate into a chance to win $10. The higher your average points, the higher your chance to win $10. The maximum is 866 points and the minimum is 0 points.

Effort and Output

Retained workers make a choice to exert low or high effort. Low effort costs a worker 150 points, high effort costs 215 points. For each worker, low effort has a 25% chance of producing 2 units and a 75% chance of producing 1 unit. High effort has a 75% chance of producing 2 units and a 25% chance of producing 1 unit. (See Table 4 on the attached Blue Sheet.)

Example 1

Suppose the market turns out to be bad and the employer decides to lay off one worker. The computer then randomly determines which worker is laid off.

Also, suppose that the retained worker chooses low effort and that the computer determines output to be 1 unit.

The employer sells the 1 unit for ₮700, pays the retained worker ₮800, and therefore has a loss of ₮100. The laid-off worker earns ₮0.

The employer's - ₮100 convert to 364 Points.

The retained worker's ₮800 convert to 840 Points. The choice of low effort costs him 150 Points. So, the retained worker earns (840 – 150) = 690 Points.

The laid-off worker's ₮0 convert to 0 Points.

Example 2

Suppose the market turns out to be good and the employer decides not to lay off a worker.

Also suppose that one worker chooses low effort, one worker chooses high effort, and the computer determines output to be 3 units.

The employer sells the 3 units of output for ₮2,400 and pays the workers ₮800 each.

So, the employer earns ₮2,400 – ₮1,600 = ₮800, which convert to 665 Points.

Each worker earns ₮800 which convert to 840 Points.

The worker who chose low effort has a cost of 150 Points. So, he earns a total of (840 – 150) = 690 Points.

The worker who chose high effort has a cost of 215 Points. So, he earns a total of (840 – 215) = 625 Points.

Drawing for Dollars

At the end of the study, you will draw a chip from a bag containing 1000 numbered chips. If the number you draw is less than or equal to your average points for Part 1, you win $10. If the number you draw is greater than your average points for Part 1, you win $0.

Example 3

Suppose at the end of Part 1 you have earned an average of 550 points. Therefore, you have a 55% chance (550/1000) of winning $10.

Also suppose that when the study is over you are called to the back and you draw number 480 from the bag.

Because 480 is less than or equal to your Part 1 average of 550 points, you win $10.

Example 4

Suppose at the end of Part 1 you have earned an average of 470 points (a 47% chance of winning $10) and you draw number 573 from the bag.

Because 573 is greater than your Part 1 average of 470 points, you win $0.

Computer Screens

Look at the example computer screen below. The computer screen has three main parts: Header, Information Area, and Decision Area.

The Header displays the Period Number, Time Remaining for you to act, your Type (employer or worker), the Market (good or bad), your Net Points earned for the period, and your Average Points over all periods. Information from all past periods is displayed in the Header.

The Information Area is where you will receive information about the market, layoffs, effort choices, etc.

The Decision Area is where you enter your decisions.

Example:

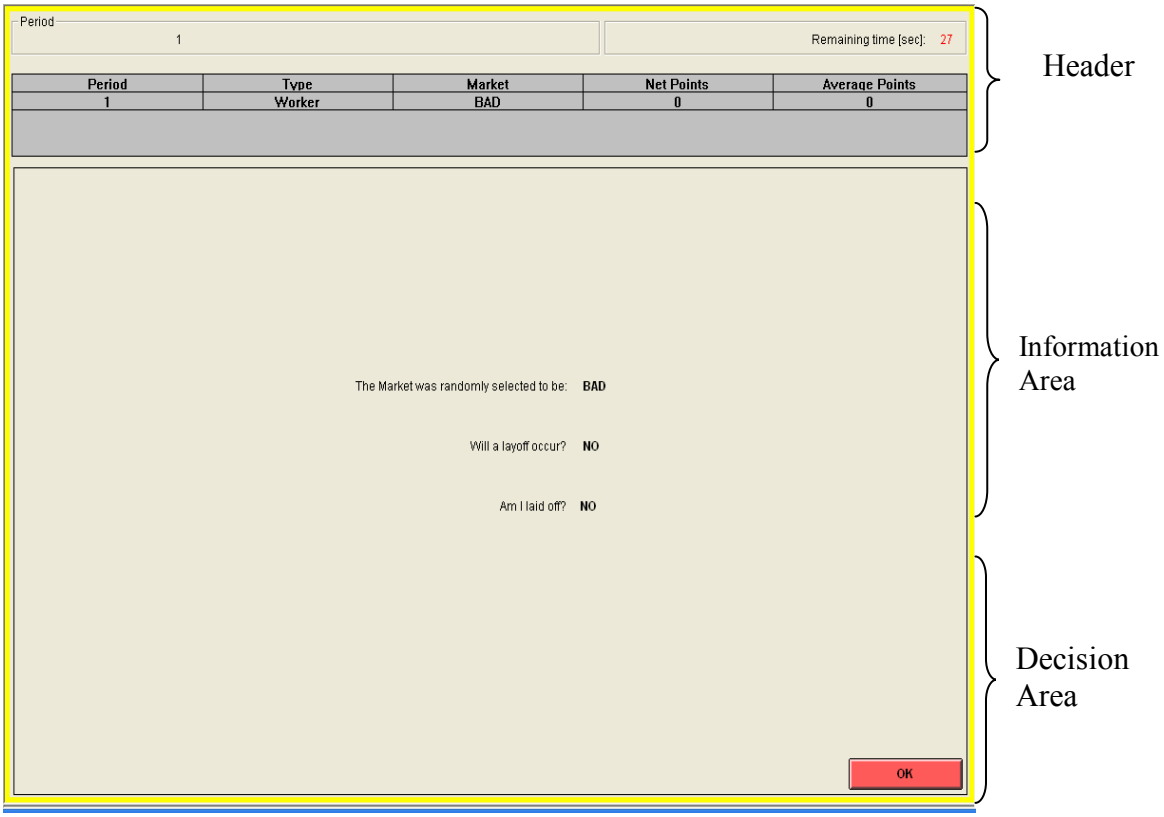

Table 1 - Revenue

Output Sold	Market: Good	Market: Bad
1	₮ 900	₮ 700
2	1700	1300
3	2400	1800
4	3000	2200

Table 4 - Effort and Output

Table values are the probability that the total number of units are produced given the worker effort choice(s).

With 1 Worker

		Total Output Produced: 1	2
Worker Effort	Low	75%	25%
	High	25%	75%

With 2 Workers

		Total Output Produced: 2	3	4
Worker Effort	Low & Low	56.3%	37.5%	6.3%
	Low & High	18.8%	62.5%	18.8%
	High & High	6.3%	37.5%	56.3%

Part 2 Instructions

You are still part of the same company you were with in Part 1. In this part of the study the employer offers the workers a choice between two employment contracts, Contract A or Contract B. Workers in a company vote on which contract they prefer. Part 2 will last at least 30 periods. Starting with the 31st period each subsequent period has a 70% chance of being the last.

--CONTRACTS--

Contract A

Under Contract A, all conditions are the same as in Part 1. The employer decides whether or not to lay off one worker. If a layoff occurs, the computer randomly chooses which one of the workers is laid off. Retained workers choose to exert high or low effort. The computer uses worker effort choices to determine total output and the employer sells the output in the market. The employer pays each retained worker ₮800 and keeps the remaining Francs. A laid-off worker earns ₮0.

Contract B

Under Contract B, no workers are laid off. After everyone in the company finds out if the market is good or bad, each worker chooses to exert high or low effort. The computer uses worker effort choices to determine total output and the employer sells the output in the market. Workers are not paid a fixed ₮800. Instead, the employer offers workers a share of the total revenue earned from selling output. The employer sets the workers' share of total revenue at any value between 40% — 100%. Both workers split this share equally. The employer keeps the remaining Francs.

Example 1

Suppose workers are hired under Contract B and the employer sets the workers' share of total revenue at 45%. Also suppose that total revenue is ₮2,400.

The workers' share is ₮1,080, which is 45% of total revenue. Thus, each worker receives ₮540 and the employer keeps the remaining ₮1320.

Example 2

Suppose workers are hired under Contract B and the employer sets the workers' share of total revenue at 53%. Also suppose that total revenue is ₮3,000.

The workers' share is ₮1,590, which is 53% of total revenue. Thus, each worker receives ₮795 and the employer keeps the remaining ₮1410.

Choosing a Contract

At the beginning of each period the employer decides what share of total revenue to offer the workers under Contract B. Next, the employer gives the workers a choice between Contract A and Contract B. Each worker then privately and simultaneously votes for the contract he or she would like to work under. Importantly, unless both workers vote for Contract B, then Contract A will be used for the period.

After both workers submit their vote, everyone in the company sees which contract will be used for the period. The contract between the employer and workers is chosen before anyone knows whether the market is good or bad. Everyone in the company then finds out if the market is good or bad.

Francs and Points

As in Part 1, the Francs you earn each period are converted to points. The employer's Francs convert into points at a different rate than the workers' Francs. Both conversion rates are the same as they were in Part 1.

Depending on the share value offered in Contract B, the employer and workers can earn any one of a number of different Franc values each period. Thus, two expanded "Francs to Points" conversion sheets have been provided; one for workers and one for employers. (See attached.) You should use these conversion sheets for both Contract A and Contract B. As in Part 1, the maximum is 1000 points and the minimum is 0 points.

Effort and Output

As in Part 1, retained workers make a choice to exert low or high effort. Low effort costs a worker 150 points. High effort costs a worker 215 points. For each worker, low effort has a 25% chance of producing 2 units and a 75% chance of producing 1 unit. High effort has a 75% chance of producing 2 units and a 25% chance of producing 1 unit.

Drawing for Dollars

Later, you will make a second draw from the bag of 1000 chips for a chance to win either $5 or $25. For this draw you will use the average number of points you've earned across all periods of Part 2. If the number on the chip you draw is less than or equal to your average points for Part 2, you win $25. If the number on the chip you draw is greater than your average points for Part 2, you win $5. The higher your average points for Part 2, the more likely you are to win the $25.

Example 3

When the study is over each of you will be called to the back. After making your draw for Part 1 you will replace your chip, mix up the bag, and make a second draw for Part 2.

Suppose at the end of Part 2 you have earned an average of 460 points.

Also suppose for Part 2 you draw chip 311 from the bag.

Because 311 is less than or equal to your Part 2 average of 460 points, you win $25.

Example 4

Suppose that both workers vote for Contract B when the employer offers them a share of 50% of total revenue. The choice of Contract B is then announced to the company.

Also suppose that the market is determined to be bad. This is also announced to the company.

Finally suppose that each worker chooses to exert low effort and that the computer determines total output to be 3 units.

The employer sells the 3 units for a total revenue of ₮1,800.

The workers equally split ₮900 (₮1800 * 50%) with each worker receiving ₮450. The employer keeps the remaining ₮900.

Each worker's ₮450 converts to 625 points. The employer's ₮900 converts to 699 points.

Choosing low effort costs each worker 150 points. So, each worker earns 475 points (625 - 150) for the period.

Part 2 Instructions

In this part of the study, the employer offers the workers in his company a choice between two employment contracts: Contract A or Contract B. In addition, 5 of the workers have been randomly assigned to the role of **reporter** and 5 to the role of **verifier**. (These roles will be explained below.) Workers keep their role for the remainder of the study.

As in Part 1, every period begins with the computer randomly pairing each employer with two workers (one a reporter and one a verifier) to form a company. Part 2 will last at least 30 periods. Starting with the 31st period, each subsequent period has a 70% chance of being the last.

At the end of Part 2, you'll make a second draw from the bag of 1000 chips for a chance to win either $5 or $25. For this draw, you will use the average number of points you've earned during Part 2. If the number on the chip you draw is less than or equal to your average points for Part 2, you win $25. If the number on the chip you draw is greater than your average points for Part 2, you win $5. The higher your average points for Part 2, the more likely you are to win the $25.

Choosing a Contract

Before anyone learns whether the market is good or bad, the employer gives the workers a choice between Contract A and Contract B. Each worker then privately votes for the contract he or she would like to work under. After the votes have been cast, everyone in the company learns which contract will be used for the period. Importantly, unless both workers vote for Contract B, then Contract A will be used for the period.

The Two Employment Contracts

Contract A

Under Contract A, all events occur as they did in Part 1. After learning whether the market is good or bad, the employer decides whether or not to lay off one worker. If a layoff occurs, the computer randomly chooses which worker is laid off. Next, retained workers choose to exert high or low effort, after which each worker is shown the other worker's effort choice. The computer then determines total output, which the employer sells in the market. Finally, the employer pays each retained worker ₮800 (regardless of the worker's effort choice) and keeps the remaining Francs. A laid-off worker earns ₮0.

Contract B

Contract B has three main features.

First, there are no worker layoffs. After learning if the market is good or bad, each worker chooses high or low effort. Next, each worker is shown the other worker's effort choice.

Second, workers are not paid a fixed ₮800. Instead, the employer pays the workers a share of the total revenue earned from selling the company's output in the market. The employer can choose to share between 40% and 100% of total revenue with the workers. The employer keeps the remaining revenue. The two workers split their share of revenue, each getting half.

Example 1

Suppose workers are hired under Contract B and the employer sets the workers' share of total revenue at 60%. Also suppose that total revenue is ₸2,400.

The workers' share is ₸1,440, which is 60% of total revenue. Thus, each worker receives ₸720 and the employer keeps the remaining ₸960.

Example 2

Suppose workers are hired under Contract B and the employer sets the workers' share of total revenue at 50%. Also suppose that total revenue is ₸3,000.

The workers' share is ₸1,500, which is 50% of total revenue. Thus, each worker receives ₸750 and the employer keeps the remaining ₸1,500.

Third, both workers participate in an effort reporting process. In this reporting process, which is explained next, one worker (the reporter) reports an effort choice for each worker to the company. The other worker (the verifier) then either accepts or rejects this effort report.

Effort Reporting Under Contract B

Under Contract B, effort reporting takes place *after* workers are shown each other's effort choice, but *before* the computer determines total output. There are three steps in the effort reporting process. Each step has either a penalty or bonus, in points, associated with it. (See Figure 1 on the Green Sheet)

Step One: The worker assigned to the role of **reporter** begins by indicating whether each worker chose high effort or low effort. This report is shown to everyone in the company.

Step Two: After viewing the effort report, the worker assigned to the role of **verifier** decides to either accept or reject the report. The verifier's accept/reject decision is also shown to everyone in the company.

NOTE: The next step, Step Three, only takes place if the effort report is rejected, otherwise, the reporting process is over and everyone sees the total output, total revenue, and their personal earnings.

Step Three: If the effort report is rejected, then the computer automatically checks to see if the report contains an error. An effort report has "No Errors" if and only if each worker's reported effort matches their actual effort choice. Otherwise, an effort report has "At Least One Error." Next, the computer announces to the company that the effort report has either "No Errors" or "At Least One Error." (The computer is 100% accurate at detecting errors in an effort report.)

Penalties and Bonus:

Effort Penalty – If the effort report filed in Step One indicates that a worker chose low effort, then that worker is fined **40 points.**

Reporting Penalty – If the verifier rejects the effort report in Step Two, then the reporter is fined **45 points**.

Verification Penalty/Bonus – If the verifier rejects the effort report in Step Two and the computer announces the effort report as having "No Errors," then the verifier is fined a *verification penalty* of **20 points**. Alternatively, if the verifier rejects the effort report in Step Two and the computer announces the effort report as having "At Least One Error," then the verifier earns the *verification bonus* of **20 points**.

NOTE: The computer, not the employer, collects any penalty or pays any bonus.

Effort and Output

As in Part 1, low effort costs a worker 150 points; high effort costs 215 points. For each worker, low effort has a 25% chance of producing 2 units and a 75% chance of producing 1 unit. High effort has a 75% chance of producing 2 units and a 25% chance of producing 1 unit.

Francs and Points

The Francs you earn each period are converted to points at the same rates as they were in Part 1. Depending on the share value offered in Contract B, the employer and workers can earn a number of different Franc values (the maximum is 1000 points and the minimum is 0 points). Thus, two expanded "Francs to Points" conversion sheets have been provided; one for workers and one for employers. (See the attached Yellow Sheet.) You should use these "Francs to Points" conversion sheets for both Contract A and Contract B.

Example 3

Suppose both workers vote for Contract B, when the employer sets the share at 55%. Next, everyone learns that workers are hired under Contract B and that the market is good.

Also suppose each worker chooses to exert high effort and, that after seeing the other worker's effort choice, the reporter reports his effort as High and his co-worker's effort as Low.

Because the verifier was reported to have chosen Low Effort, he is fined the *Effort Penalty* of 40 points.

Next, suppose the verifier chooses to reject the report. Because the report is rejected, the reporter is fined the *Reporting Penalty* of 45 points.

After the company learns that the report has been rejected, the computer automatically checks the report for errors.

Because the report incorrectly indicated that the verifier chose Low Effort, the computer assesses the report as having "At Least One Error." Therefore, the verifier earns the *Verification Bonus* of 20 points for rejecting a report with an error. This is also announced to the company.

Finally, suppose the computer determines total output to be 4 units which sell for ₮3,000.

The workers' share of revenue is ₮1650 (55%* ₮3,000) and the employer keeps ₮1,350 (₮3,000 – ₮1,650). The employer's ₮1,350 convert to 849 points.

The two workers split their share of revenue in half, each receiving ₮825 (½ * ₮1,650). Each worker's ₮825 convert to 850 points.

The worker-reporter earns 850 points - 215 points for choosing high effort - 45 points for the Reporting Penalty = 590 net points.

The worker-verifier earns 850 points - 215 points for choosing high effort - 40 points for the Effort Penalty + 20 points for the Verification Bonus = 615 net points.

Worker

Francs to Points Conversion

Francs	Points	Francs	Points
0	0	775	829
25	51	800	840
50	100	825	850
75	147	850	860
100	191	875	870
125	233	900	878
150	273	925	887
175	311	950	895
200	347	975	903
225	381	1000	910
250	414	1025	917
275	445	1050	924
300	475	1075	930
325	503	1100	936
350	530	1125	941
375	555	1150	947
400	580	1175	952
425	603	1200	957
450	625	1225	962
475	645	1250	966
500	665	1275	970
525	684	1300	974
550	702	1325	978
575	719	1350	982
600	735	1375	985
625	751	1400	988
650	766	1425	992
675	780	1450	994
700	793	1475	997
725	806	1500	1000
750	818		

Employer

Francs to Points Conversion

Francs	Points	Francs	Points
-300	297	775	657
-275	305	800	665
-250	314	825	674
-225	322	850	682
-200	330	875	690
-175	339	900	699
-150	347	925	707
-125	355	950	715
-100	364	975	724
-75	372	1000	732
-50	381	1025	740
-25	389	1050	749
0	397	1075	757
25	406	1100	766
50	414	1125	774
75	422	1150	782
100	431	1175	791
125	439	1200	799
150	448	1225	807
175	456	1250	816
200	464	1275	824
225	473	1300	833
250	481	1325	841
275	489	1350	849
300	498	1375	858
325	506	1400	866
350	514	1425	874
375	523	1450	883
400	531	1475	891
425	540	1500	900
450	548	1525	908
475	556	1550	916
500	565	1575	925
525	573	1600	933
550	581	1625	941
575	590	1650	950
600	598	1675	958
625	607	1700	967
650	615	1725	975
675	623	1750	983
700	632	1775	992
725	640	1800	1000
750	648		

REFERENCES

Arya, A., J. Fellingham, and J. Glover. 1997. Teams, Repeated Tasks, and Implicit Incentives. *Journal of Accounting and Economics* 23: 7-30.

Baker, G., M. Jensen and K. J. Murphy. 1988. Compensation and Incentives: Practice vs. Theory. *Journal of Finance* 43(3): 593-616.

Baumol, W. J., A. S. Blinder and E. N. Wolff. 2003. *Downsizing in America*. New York, NY: Russell Sage Foundation.

Berg, J.E., L. A. Daley, J. W. Dickhaut and J. R. O'Brien. 1986. Controlling preferences for lotteries on units of experimental exchange. *Quarterly Journal of Economics* 101: 281–306.

Bewley, T. F. 2002. *Why Wages Don't Fall during a Recession*. Boston, MA: Harvard University Press.

Davis, S. J., J. Haltiwanger, R. J. and J. Miranda. 2006. Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms. NBER Working Paper 12354. National Bureau of Economic Research.

Dynan, K., D. Elmendorf and D. Sichel. 2007. Financial Innovation and the Great Moderation: What Do Household Data Say? Presented at a conference on "Financial Innovations and the Real Economy" sponsored by the Federal Reserve Bank of San Francisco.

Fischbacher, Urs. 2007. z-Tree: Zurich Toolbox for Ready-made Economic Experiments. *Experimental Economics* 10(2): 171-178.

Gow, I. D., Ormazabal, G., and D. Taylor. 2007. Correcting for Cross-Sectional and Time-Series Dependence in Accounting Research. Working Paper, Stanford University.

Hacker, J. 2006. *The Great Risk Shift: The New Economic Insecurity—And What Can Be Done About It*. New York, NY: Oxford University Press.

Hacker, J. 2007. The New Economic Insecurity—And What Can Be Done About It. *Harvard Law and Policy Review* 1: 111-126.

Holden, S. 1999. Renegotiation and the Efficiency of Investments. *The RAND Journal of Economics* 30 (Spring): 106-119.

Howitt, P. 2002. Looking Inside the Labor Market: A Review Article. *Journal of Economic Literature* 40 (March): 125-138.

Hussein, M. E. and A. J. Rosman. 1997. The Ex Ante Role of Behavioral Research in Setting Financial Accounting Policy. In *Behavioral Accounting Research: Foundations and Frontiers*, edited by V. Arnold and S. G. Sutton: 222-246. Sarasota, FL: American Accounting Association.

Kachelmeier, S.J. and R. R. King. 2002. Using Laboratory Experiments to evaluate Accounting Policy Issues. *Accounting Horizons* 16(3): 219-232.

Kahneman, D. and R. Thaler. 1991. Economic Analysis and the Psychology of Utility: Applications to Compensation Policy. *The American Economic Review* 81 (May): 341-346.

Kahneman, D. and A. Tversky. 1979. Prospect Theory: An Analysis of Decision under Risk. *Econometrica* 47 (March): 263-292.

Kandil, M. 1996. Sticky Wage or Sticky Price? Analysis of the Cyclical Behavior of the Real Wage. *Southern Economic Journal* 63 (October): 440-459.

Kruse, D. L. 1992. Profit Sharing and Productivity: Microeconomic Evidence for the United States. *Economic Journal* 102(410): 24-36.

Ma, C. 1988. Unique Implementation of Incentive Contracts with Many Agents. *Review of Economic Studies* 55(4): 555-572.

Mitchell, D. J. B., D. Lewin and E. E. Lawler III. 1990. Alternative Pay Systems, Firm Performance, and Productivity. In *Paying for Productivity*, edited by A. S. Blinder, 15-87. Washington, DC: The Brookings Institution.

Nalbantian, H. R. and A. Schotter. 1997. Productivity Under Group Incentives: An Experimental Study. *The American Economic Review* 87(3): 314- 341.

Newman, K. 1999. *Falling from Grace: Downward Mobility in the Age of Affluence*. Berkeley, CA: University of California Press.

Nikias, A.D. 2006. Mutual Monitoring in a Multi-Period Team Setting: An Experimental Investigation. Working Paper, Texas A & M University, Kingsville.

Prendergast, C. 1999. The Provision of Incentives in Firms. *Journal of Economic Literature* 37(1): 7-63.

Radcliffe, V. S., D. R. Campbell and T. J Fogarty. 2001. Exploring Downsizing: A Case

Study on the Use of Accounting Information. *Journal of Management Accounting* 13: 131-157.

Sprinkle, G. B. 2003. Perspectives on Experimental Research in Managerial Accounting. *Accounting, Organizations, and Society* 28: 287-318.

Thomas, C. R. and S. C. Maurice. 2005. *Managerial Economics, 8th edition*. New York, NY: McGraw-Hill Irwin.

Towry, K. L. 2003. Control in a Teamwork Environment: The Impact of Social Ties on the Effectiveness of Mutual Monitoring Contracts. *The Accounting Review* 78(4): 1069-1095.

Tversky, A. and D. Kahneman. 1991. Loss Aversion and Riskless Choice: A Reference Dependence Model. *Quarterly Journal of Economics* 106(4): 1039-1061

Uchitelle, L. 2006. *The Disposable American*. New York, NY: Alfred A. Knopf.

Weitzman, M. L. 1984. *The Share Economy: Conquering Stagflation*. Cambridge, Massachusetts: Harvard University Press.

_____. 1985. "Profit Sharing as Macroeconomic Policy," *The American Economic Review*, Vol. 75, No. 2. (May): 41-45.

_____, and D. L. Kruse. 1990. Profit Sharing and Productivity. In *Paying for Productivity*, edited by A. S. Blinder, 95-141. Washington DC: The Brookings Institution.