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## **For Love or Money? Motivating Workers**

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**PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS**

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**For Love or Money?  
Motivating Workers**

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## ABSTRACT

We conducted a field experiment and tested how employers can use socioemotional resources, such as appreciation and recognition, in order to signal intentions and create positive reciprocal relationships with employees. Results showed that these resources led to a significant gain in productivity. The study was extended to account for relative wage concerns both with and without appreciation treatment. Efficiency gains with appreciation appeared to be robust even after including information regarding relatively disadvantageous wage discrimination. However, workers' without socioemotional resources exhibited strong resentment toward relatively lower wages by showing a significant systematic decrease in their labour supply. Our results suggest that workers not only compare their wages, as pointed out in previous literature, but also compare the socioemotional resources provided by their employer. This provides important evidence against one-dimensional comparisons of relative wages relevant to worker productivity.

*JEL classification:* C93, M5, J31, J32, J53

*Keywords:* Appreciation, Recognition, Symbolic Gift Exchange, Wage Comparisons

## I. INTRODUCTION

People value their self-image and also how others perceive them. Others' intentions sometimes influence our emotional states, and these emotions can affect our subsequent actions [Cox, *et al.* (2007); Levine (1998)]. For purposes of the current paper, we restricted our analysis to employment relationships: the economic relationship between the principal and the agent is based on material gains in the presence of conflicting interests. However, several studies indicate that principal-agent relationships work beyond wage-effort exchanges; organisational theory has argued that employees' loyalty towards their employer enhances job effort and profitability of the organisation [Rhoades and Eisenberger (2002); Ellingsen and Johannesson (2008)]. Campbell and Kamlani (1997) have provided survey evidence that employers care for workers' loyalty and commitment to the organisation. Similarly, employees also value commitment from their employer in regard to respect, wages, quality work environment, and career growth. Employees develop perceived organisational support (POS) beliefs in order to meet their socio-emotional needs.<sup>1</sup> Employees with higher POS beliefs are more likely to reciprocate their employer's commitment through higher job performance and reduced absenteeism [Armeli, *et al.* (1998); Cropanzano and Mitchell (2005)]. Dur (2009) also argues that attention and care from an employer is repaid with higher loyalty, which might evolve into a symbolic gift exchange relationship between employer and employee.

Conventional economic wisdom has exclusively focused on material incentives as a tool for signalling positive intentions to help alter employees' behaviour [Ellingsen and Johannesson (2008); Arbak and Kranich (2005)]. Research on non-monetary incentives remained scarce until very recently. Indeed, the literature on socially integrated exchanges in the principal-agent

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<sup>1</sup>Data from Gallup surveys also confirm that employees who feel that their employers care about them are more satisfied on their job and in turn provide higher job efforts [Wagner and Harter (2006)].

context has found an association between stronger signalling power and hence higher reciprocal responses on the one hand and non-monetary payments on the other [Kube, *et al.* (2011); Mahmood and Zaman (2010)]. Dur (2009) extended this argument to show that employers can signal good attitudes through care and attention to employees in order to develop social relationships even when providing lower wages. Other exceptions include research on non-material incentives such as reward [Kosfeld and Neckermann (2010)], respect (Eriksson and Villeval, 2010), trust [Dickinson and Villeval (2008)], and punishment [Masclot, *et al.* (2003)]. Wiscombe (2002) argued that such non-monetary motives improve workers' morale without hurting an organisation's cost structure; recognition of employee's contribution is among the strongest motives.

In this paper, we analysed the ability of employers to provide care and attention as a way to motivate their employees. This paper is mainly divided into two parts. The first addresses two important questions: (i) Can employers signal positive intentions through care and appreciation? (ii) How do these signals alter employees' behaviour in terms of higher job effort? The extent of a reciprocal response by an employee relies on the strength and credibility of the positive gestural signal; this issue might become even more important for a job with a limited duration. To overcome this limitation, we used written forms of appreciation (i.e., appreciation letters from a research team whom a group of students knew).<sup>2</sup> These appreciation letters provided no information on performance expectation; these letters just included a thank you statement and encouragement to join a future project as a goodwill gesture. The letters were provided *ex ante* (before starting the job) to all workers. We trusted that workers would value this positive signal of care and appreciation as a credible socio-emotional resource and reciprocate by increasing their job efforts. We consulted previous work that investigated trust, respect, and appreciation as incentives within a labour market context; however, our study differs from most of these in two ways. First, Kosfeld and Neckermann (2010) and Eriksson and Villeval (2010) used "award" within a performance-contingent environment (i.e., only after observing the work effort), while our appreciation treatment was provided unconditionally to everyone in a trust-based setting. Second, Falk and Kosfeld (2006) and Dickinson and Villeval (2008) used *ex ante* trust signals within a laboratory setting, while our treatment did not explicitly use trust (the letter did not include any expectation for performance). Our treatment of appreciation works as a token of expression of employer's care and attention for workers and deals with their contributions implicitly.

In the second part, we extended our research to analyse relative wage concerns in the presence of socio-emotional resources. A large body of the

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<sup>2</sup>The Social Research Unit is jointly working with the Higher Education Commission, International Islamic University, and Harvard University.

existing literature has been dedicated to relative wage concerns since the work of Keynes (1936). The idea here is that reciprocity has its basis in beliefs about fairness compared to a reference wage, mostly in regard to wages of individuals with similar merit, status, gender, job, etc. Although several studies have highlighted the importance of relative wage concerns for labour supply decisions, the theoretical discussion on the effect of relative positions on performance is somewhat inconclusive. While some theories propose lower job performance resulting from frustration with low wages or positions [Clark, *et al.* (2010); Torgler, *et al.* (2006)], others demonstrate the motivational aspects of larger differences in achieving higher performance. However, most of these concerns have been studied in terms of social and economic status. In contrast, we investigated how employees respond to relative wage concerns if they are provided with socio-emotional incentives. We argue that if employees value these socio-emotional resources, they might substitute monetary incentives for such resources, at least for smaller wage differentials.<sup>3</sup> If so, workers might show fewer concerns for their relatively disadvantageous wage position compared to when they are not provided with such incentives. This idea contradicts the standard uni-dimensional wage comparisons cited as important determinants of labour supply in many labour market textbooks. The idea of adverse relative wage effects is based on the idea of fairness that implicitly ignores heterogeneity among workers [Abeler, *et al.* (2009)] and employers' intentions [Gachter and Thoni (2010)]. Abeler, *et al.* (2009) provide interesting evidence for relative wage comparisons; they reported that employees not only compare their absolute relative wages but also care about the effort workers exert in their performance. Wage differentials do not always indicate discrimination; information on peer effort and productivity can affect standard gift exchange mechanisms through equity norms. Similarly, intentional wage discrimination among workers is more detrimental than non-intentional differentials. Gachter and Thoni (2010), in a three-player gift exchange game, showed that workers reacted adversely to relative wage differentials if employers intentionally discriminated between their workers, rather than merely providing absolute wage differentials. We extend this argument in a similar manner. For instance, we argue that absolute wage discrimination might not hurt employees if they are compensated with other socio-emotional resources. As far as we know, no previous study has analysed relative wage concerns in the presence of socio-emotional incentives.

Finally, an interesting point is related to preference-decision mismatches for monetary incentives [see Kube, *et al.* (2011); Mahmood and Zaman (2010);

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<sup>3</sup>This study is extended from doctoral research of Saima Naeem. In additional treatment groups, we also tested information of relative wage concerns for larger wage differentials. The introduction of higher wage differentials in this group decreased output significantly by 6 percent as compared to AT, yet we found no productivity loss as in CI.



Hsee (1999)]. These studies assessed cross-comparisons of monetary and non-monetary incentives and revealed a generally higher preference for money during joint valuation. However, workers perform more efficiently when provided non-monetary incentives in isolation. In addition, these studies compared material non-monetary incentives with money, and a fondness for money is explained by a preference-mismatch in case of non-monetary incentives [Kube, *et al.* (2011)] and the high fungibility of money [Hsee (1999)]. Thus, no systematic study has been conducted to assess how employees value non-material incentives.

In order to test our hypothesis, we hired five groups of twenty-five students for a data entry project. Our first group was paid an announced wage for standard data entry; this group was the benchmark for the other treatment groups. Our main treatment group was an appreciation group that received an *ex ante* appreciation letter along with an announced wage. The third group was given an unexpected wage increase of 17 percent; this group served as a benchmark for the final two treatment groups. To examine whether identical information on similar wage differentials can trigger different reciprocal responses, our final two treatment groups were either provided (or not provided) with an appreciation letter.

The results of this study strongly supported our initial hypothesis. The groups provided with appreciation letters were significantly more productive; the observed gift exchange behaviour was even higher than that resulting from an unexpected 17 percent wage increase. Results also confirmed that information regarding a small wage differential had no effect on productivity when workers were provided with appreciation letters. However, there was a substantial loss in productivity for the same wage differentials when workers were not provided with socio-emotional resources. Information regarding higher relative wages for other groups resulted in lower job satisfaction, less positive evaluation of employers' kindness signals, and greater relative wage concerns. However, such concerns were significantly decreased when participants were provided with socio-emotional resources. These results should be interpreted carefully. Workers might not be willing to substitute social incentives with money and might react adversely to larger wage differentials. Similarly, the credibility of the employer and socio-emotional signals can affect reciprocal responses. However, our experiment does provide counter-evidence to assessments of one-dimensional wage comparisons and suggests that workers compare not only relative wages but also socio-emotional resources provided. This is very important evidence that conflicts with uni-dimensional wage comparisons cited as important determinants of labour supply in many labour market textbooks.

The remainder of this paper is organised as follows. Section 2 presents the experimental design and procedures. Section 3 provides an analysis of the results, and Section 4 the conclusion.

## II. THE EXPERIMENT

### II.1. Subject Detail

The experiment was conducted during the first quarter of 2009 at the International Islamic University. For the experiment, 150 students were randomly selected through an advertisement displayed on students' notice boards, announcing a three-hour, one-time job opportunity. The wage was announced as PKR 120 per hour. These subjects were hired without any knowledge of being part of an experiment. The students were hired for a data entry project to develop a comprehensive database for a personality test used in a separate research study. Selected students belonged to different departments (economics, business management, finance, and electronics). The age range of our subjects was 19-25 years, with an average age of 21.4 years. Most of our experimental subjects were male; only 11 female students volunteered.

### II.2. Treatment Detail

Students were randomly divided into five groups of twenty-five students each (i.e., control group (C0), small gift (C17), appreciation treatment (AT), appreciation-information (AI), and control information (CI)).

The first group, C0, was given the announced protocol. They were provided an announced wage for the standard data entry protocol; this served as benchmark for our group comparisons. For the AT group, an appreciation letter was awarded along with the announced wage (see Appendix D for the letter). Our third group was paid an unexpectedly higher wage (17 percent higher); the unanticipated wage increase was announced after a training session. The final wage payment for this group, C17, was PKR 140 per hour. Both letters and wage increases were announced after a training session in order to make sure both types of incentives were presented at the same time. We then created two information treatment groups, one with socio-emotional incentives and the other without. While the first information treatment group, AI was given the appreciation letter, the project coordinator informed this group that another group performing the same job would be given a 17 percent wage increase instead of the letter. In the second information group, CI, students were paid the announced wage (PKR 120 per hour) and were informed about the wage increase for the C17 group.

Table 1

<i>Treatment Detail</i>					
	C0	C17	AT	AI	CI
Wage	120	140	120	120	120
% Wage Increase	–	– 17%	–	–	–
Relative Wage Information	No	No	No	Yes	Yes
Letter	No	No	Yes	Yes	No
N	25	24	25	25	21

### **II.3. Experimental Setup**

All students were asked to report to work during university hours on separate days. Upon arrival, students were given a separate university office with a computer for data entry. In the office, we placed some newspapers and magazines (sports and fashion); similarly, an icon of a famous game was placed close to the data entry portal icon on the computer. Students were provided 30 minutes of training to familiarise them with the data entry protocol. The first fifteen minutes were reserved for demonstration, and the final fifteen minutes were reserved for practice. Materials for the practice session were kept the same for all workers. This practice in data entry was used to control for differences in skills across the participants. To help keep the setting more formal, workers were also paid for the training session. The experimenter made it clear that the job should be taken very seriously. The task was made boring enough to be affected by incentives only. After training, participants were exposed to the aforementioned treatment manipulation.

During the experimental phase, workers were left unsupervised except for a coordinator who was sitting in the next room in order to provide technical help, if needed. Furthermore, to eliminate experimenter effects, we ensured that all workers interacted with the same project coordinators. To observe shirking behaviour in the participants, we recorded data entry times without their knowledge. Time not spent entering data was used as a proxy for shirking behaviour.

Exactly after three hours, the project coordinator ended the session, making sure that all data were saved. Each student filled out a post-experimental questionnaire. Additional questionnaires included items on gender, subject major, job satisfaction, fairness of their contract, employers' kindness, and preference for monetary and non-monetary incentives (Appendix B).

## **III. RESULTS AND DISCUSSION**

We based our subsequent efficiency analysis on effective output. Effective output (which we will refer to as output hereafter) was calculated as the difference between total output and data entry errors; this was the dependent variable for our efficiency analysis. Our experimental data produced two additional variables for each subject during the allotted job time: (i) time wastage and (ii) quality of observed output. Our main variable for efficiency did not take into account the cost of incurring errors; thus, we evaluated the quality of output for each worker. Quality of output is measured as the percentage of effective output relative to total output. Workers in our experiment were left unsupervised except that data entry time was recorded without their knowledge. Times were recorded as "shirking" if the time duration between two data entries exceeded two minutes. Since the data on these two variables showed only minor differences across treatment groups, we have included a brief discussion to support our main findings based on these two variables in Section 3.3.

### III.1. Appreciation Works

Table 2 presents the development of output over time within all treatment groups. A comparison of average hourly output suggests that workers in the AT group entered 29.8 percent more output compared to the benchmark group.<sup>4</sup> This observation clearly supports our hypothesis that appreciation and recognition of trust seems to be profitable for employers; the productivity increase is significant at the 5 percent level. This productivity gain is even higher than the efficiency increase due to an unexpected wage increase in the C17 group; the announcement of an unexpected 17 percent increase in wages resulted in a 21.4 percent increase in output compared to the C0 group.<sup>5</sup> Output elasticity in the AT group was 1.4 in comparison to the C17 group. This positive wage-effort trend is consistent with previous work on gift exchange and incentive research [Berg, *et al.* (1995); Fischbacher, *et al.* (2001); Bewley (1999); Fehr and Gächter (2000); Falk (2007)].

Table 2

	Hour 1	Hour 2	Hour 3	Total
C0	67.99	65.93	65.35	66.42
C17	77.48	83.44	80.92	80.61
AT	80.82	90.64	87.19	86.22
AI	75.23	89.18	89.29	84.57
CI	59.90	60.20	61.94	60.68

The comparisons of average output between all treatment groups, using the Wilcoxon rank-sum test, are summarised in Table 3. Results indicate significantly stronger observed gift exchange effects within the AT as compared to the C17 group ( $p = .01$ ). This interesting result not only confirms our behavioural prediction that socio-emotional resources create a symbolic exchange mechanism but also suggests that money is an expensive source of motivation.

Table 3

<i>Average Output of All Treatment Groups</i>				
	C17	CI	AI	AT
C0	4.9***	2.3**	5.1***	5.1***
AT	2.6**	5.3***	1.0	–
AI	1.9*	5.2***	–	–
CI	5.2***	–	–	–

Values in parenthesis are p-value of Mann-Whitney U test.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

<sup>4</sup>However, we cannot rule out the possibility of psychological and social costs associated with these incentives.

<sup>5</sup>The elasticity of output with respect to associated cost is 1.26 in the C17 group.

Results are summarised as follows:

Result 1: Workers produced significantly higher amounts of output when provided with socio-emotional resources, such as appreciation and recognition. The observed gift exchange effect from the appreciation letter was significantly stronger than the effect of a 17 percent wage increase.

### III.2. Relative-Wage Concerns

We next discuss results from our two information treatments, AI (appreciation letter with relative wage information) and CI (no appreciation letter with relative wage information). Our results suggest that identical information about relatively disadvantageous wage positions generated systematically different reciprocal responses for the two information groups. The information regarding wage differentials for the CI group resulted in a significant 8.6 percent decrease in productivity compared to the benchmark group (Wilcoxon rank-sum test:  $p = .02$ ). Our results confirm the findings of Fischer and Steiger (2009) that employees decide to reduce their labour supply as a result of the frustration created by lower relative wages. However, Hennig-Schmidt, *et al.* (2008) provide evidence against the adverse effects resulting from relative wage comparisons.

The adverse effect of relative wage concerns is not severe for a similar wage differential if workers are provided with an appreciation letter. Output entered by the AI participants decreased by 2 percent compared to the AT group (Wilcoxon rank-sum test:  $p > .05$ ); nevertheless, there was a remarkable productivity gain of 27 percent compared to the benchmark group at no additional physical cost. The differences between productivity gains in the AI and C17 groups remain non-significant at the .05 level. While we cannot rule out the possibility that the size of the wage differential affects relative wage concerns, there is still a clear indication that on average, workers reacted less negatively to disadvantageous wage discrimination in the AI than in the CI treatment group. These results can be summarised as follows:

Result 2: Information on relative wages in the presence of socio-emotional incentives does not significantly decrease productivity compared to the original appreciation treatment. However, relative wage concerns in the absence of an appreciation letter results in a significant loss in productivity.

Our observation of a decreased adverse reaction in the AI condition seems to conflict with findings of Kube, *et al.* (2011), Hsee (1999), and Mahmood and Zaman (2010); these studies reported that people tend to overestimate money when jointly evaluating money with non-monetary commodities. The differences in our results might be explained in two ways. First, previous studies used non-monetary payments. In such cases, people start to compare the monetary worth of both incentives. The lack of

relativity of such abstract, non-monetary incentives might hinder people from making direct monetary comparisons. [Ariely (2008) gives a comprehensive discussion over relativity problems].<sup>6</sup> This difficulty in conducting a comparison removes this exchange from a conventional market context, and workers engage in pro-social behaviour [for details, see Heyman and Ariely (2004)]. Second, mismatched preferences might arise when non-monetary incentives are used. Money, owing to its versatility in satisfying human physical needs, dominates non-monetary commodities; appreciation, trust, and recognition are usually ranked higher than physical incentives in many motivational theories because of their ability to satisfy psychological needs [Pink (2009); Herzberg (1959)].

To explain workers' behaviour among different treatment groups, we estimated random effects GLS models. Treatment dummies measured the treatment effects. Part (1) of Table 4 provides the treatment effect at the aggregate level using OLS regression. The results are consistent with those presented in Table 3. We extended the model by including time effects and the interaction of treatment effects with time (30 minutes and 15 minutes). Part (2) of Table 4 provides estimates on the treatment effect after incorporating a 30-minute temporal dimension by using panel data analysis. Part (3) uses the 15-minute data for a similar analysis. The random effects model with GLS specification is estimated after controlling for job specific and socio-economic variables. Job related variables included job skill, job satisfaction, perception of fairness with job contract, and kindness of the employer. The socio-economic variables included gender, age, and major subject at the university (summary statistics are provided in Appendix A, Table 3). Results remained robust after these sets of variables were controlled for.

All of the treatment effects remained significant in both the 15 and 30-minute sessions, except for the CI condition. The significance of productivity loss in this condition, especially of shirking time, decreased during the shorter time span when socioeconomic and job variables were controlled for. This clearly indicates that relative wage information in the CI condition resulted in greater overall shirking on the job as a result of frustration. Interestingly, the learning effect was not significant, but the interaction terms, especially with the appreciation treatments (AT and AI), remained significant. This indicated that adaptation behaviour/learning over time seems to be related to these specific treatments. Shirking behaviour also significantly affected the performance of workers.

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<sup>6</sup>Relativity of comparative goods facilitates comparison; people tend to avoid difficult comparisons [Ariely (2008), p. 8].

Table 4

Variable	<i>Regression Analysis</i>					
	Aggregate (1) <sup>a</sup>		30 Minutes (2) <sup>b</sup>		15 Minutes (3) <sup>b</sup>	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Constant	797.1	20.05***	155.7	21.17***	76.2	10.47***
C17	170.3	28.36***	22.0	8.99**	12.0	4.25***
AT	226.8	28.36***	21.7	8.94**	12.2	4.21***
AI	237.5	28.66***	14.6	8.98*	8.9	4.24***
CI	217.7	28.65***	-11.6	8.10	-5.0	3.75
T	175.9	28.36***	-1.4	1.26	-0.3	0.3
T*C17	4.6	1.79**	1.1	0.43**		
T*AT	6.9	1.80***	1.7	0.43***		
T*AI	8.4	1.80***	2.0	0.43***		
T*CI	2.3	1.87	0.5	0.44		
Shirking	-5.5	0.47***	-4.8	0.26***		
Wald Statistics	Wald	p-value	Wald	p-value	Wald	p-value
C17 Vs. AT	2.3	0.22	0.1	0.0965	0.1	0.950
C17 Vs. AI	1.6	0.104	0.9	0.333	0.9	0.376
C17 Vs. CI	8.0	0.000	3.5	0.000	3.8	0.000
AT Vs. AI	0.7	0.499	0.9	0.366	0.9	0.356
AT Vs. CI	10.1	0.000	3.5	0.000	3.9	0.000
AI Vs. CI	9.5	0.000	2.8	0.005	3.1	0.001
R <sup>2</sup> – Adj	58.3	38.6	30.0			
F-Test	42.2	0.000	15.8	0.000	35.0	0.000

<sup>a</sup> Column (1) contains aggregate results for the OLS estimates.

<sup>b</sup> Columns (2) and (3) give results for the random effects model with GLS regression. There were no significant differences when clustered error panel regression was used, so we have reported random effects with GLS only. These estimates were obtained after controlling for certain job-related and socio-economic variables. Job-related variables were skill level (calculated from the practice period), job satisfaction, employers' kindness signals, and fairness of the job contract. Socio-economic variables were age, gender, and major subject of study. Summary statistics of these variables are provided in Table 3, Appendix A.

### III.3. Supportive Analysis through Quality and Shirking

We analysed two additional behaviour variables (quality of output and shirking time) to test whether these two variables supported our findings from the efficiency analysis. Our behavioural hypothesis was that if workers valued the socio-emotional incentives, the relative wage concerns might not significantly decrease their morale. Relative wage concerns in the group with no socio-emotional resources should induce decreased motivation that could result in higher shirking times and lower output quality.

We first considered the quality of output; workers' faulty output induces additional costs to the employer and cannot be ignored when assessing their efficiency. However, our preceding analysis of effective output does not take into account the cost of faulty output. The quality of output is defined as the percentage of the effective output relative to the total output produced. Our results showed negligible differences in quality among all treatment groups

except the CI condition. The quality of output varied from 99.24 percent (in C0 and C17 ) to 99.41 percent (in AI ). Quality in the CI group was 98.89 percent, which was a significant decrease compared to the other treatment groups (Table 6 in Appendix A). Statistics for the quality analysis are in line with our main findings.

With regard to shirking times, our regression analysis has already highlighted the importance of shirking behaviour. Table 5 exhibits shirking time over 30-minute sessions in all treatment groups. We observed a general tendency for breaks after the first hour, especially in the C0 and C17 groups. Similarly, workers in all groups, except for the C0 and AI groups, stopped working before the three hours were complete; this resulted in decreased output over the final session. Summary statistics of shirking times show that on average, students in the two appreciation treatments wasted the least time (Table 6 in Appendix A). Conversely, lower morale in the C1 group resulted in significantly more time wasted than in the other treatment groups. However, the C17 group provided average output but also displayed significantly more time wasted than both the appreciation treatment groups did ( $p < .10$ ).

Table 5

<i>Shirking Time Over 30-minute Sessions</i>							
Treatment Groups	1	2	3	4	5	6	Total
C0	1.7	1.6	3.1	1.3	2.0	1.7	1.9
C17	2.0	1.4	2.2	1.5	1.7	3.7	2.1
AT	1.0	1.1	1.5	1.6	1.8	2.8	1.6
AI	1.5	1.9	1.7	2.0	2.0	1.5	1.8
CI	2.9	2.6	2.9	2.6	2.2	3.1	2.7
Total	1.8	1.7	2.3	1.8	1.9	2.5	2.0

#### III.4. Supportive Analysis through the Post-Experimental Questionnaire

At the end of the job assignment, we asked participants to fill out a questionnaire. The questionnaire asked them to rank their perception of fairness of their job contract, employers' kindness, and job satisfaction, and provide socio-demographic information. These variables were selected to address our hypothesis on the following theoretical basis. Many studies show that fairness considerations are important (see, for example, the surveys conducted by Sobel (2002); Camerer (2003); Fehr and Schmidt (2003)]. Concerns for fairness strongly affect incentive properties of the contracts. This might affect labour supply decisions because of an employee's perception that the principal did not fairly distribute the available incentive. Similarly, Kube, *et al.* (2011) and Mahmood and Zaman (2010) have shown that non-monetary incentives send stronger signals of kindness that facilitate more reciprocal behaviour. To test our assumption that socio-emotional resources can also signal kind sentiments from



employers, we asked workers to report employers' kindness on a Likert scale. Finally, we included job satisfaction on the basis that the mutual exchange of positive sentiments influences employees' overall attitude toward their job [Witt (1991)].

Before analysing any of these variables in detail, we ran a reliability analysis on our three main variables; Cronbach's alpha values were at least 0.75, indicating that participants consistently answered all three questions.<sup>7</sup> The summary statistics of these three variables are consistent and supportive of our hypothesis. The data show lower levels of job satisfaction, employer kindness, and greater concerns about fairness that resulted in the lowest reciprocal behaviour within the CI group. We found no significant differences in fairness, job satisfaction, and kindness within the AI or other "uninformed" groups. This was reasonably consistent with our main findings.

#### IV. CONCLUSIONS

According to the basic idea of the "labour market as a partial GEM," worker loyalty is exchanged for high wages, and this loyalty can be translated into high productivity through effective management [Akerlof (1984)]. However, non-cash incentives are not only cost effective but might also substantially contribute to boosting morale; increasing productivity; and improving work quality, safety standards, and customer service [Wiscombe (2002)]. The results from our controlled field experiment support the view that socio-emotional resources like appreciation and recognition can also be used to induce reciprocal gift exchange to enforce incomplete contracts. We found strong gift exchange effects within our appreciation treatment; efficiency gains were even higher than the more costly high wage treatment, where we paid wages that were 17 percent higher.

This study was extended to test relative wage concerns in the presence of socioemotional resources. We provided two groups of workers—one with appreciation and the other without it—the same information regarding relative disadvantageous wage positions. The treatment group with a 17 percent higher wage served as a reference point for our information treatments. Results clearly showed that workers given appreciation showed systematically decreased concerns for the relative wage differential. Additionally, there was only a slight decrease in productivity compared to the pure appreciation treatment. Nevertheless, workers in this group entered significantly more output compared to our benchmark group. Workers with no appreciation responded more adversely; we found significant losses in productivity compared to the benchmark treatment. A parsimonious interpretation of our results can be

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<sup>7</sup>Cronbach's alpha is one of the most popular reliability statistics [Cronbach (1951)]. It determines the internal consistency, or average correlation among items. Along with proper theoretical backing, a higher Cronbach's alpha value indicates greater consistency among test items.

provided by the social gift exchange theory. Workers can positively judge the fairness of a contract and employers' kindness, and systematically provide higher job effort only if they sufficiently value appreciation more than the relative wage differentials. This observation provides important evidence against results of studies using only one-dimensional wage comparisons.

Our results have several important implications, both theoretically and practically. First, the adverse consequences of wage differentials are based on a notion of fairness that implicitly violates worker heterogeneity [Abeler, *et al.* (2011)]. We suggest that this argument ignores the social costs an employer pays to create a socially acceptable relationship with the worker. These efficiency-enhancing social ties, in turn, create stronger reciprocal behaviours [Brandts and Sola (2010)]. We argue that workers compare the social bond with their employer (and peer group), along with absolute wages; this observation also explains decreased job turnover rates compared to existing wage differentials. The results of this experiment should not be interpreted as evidence of absolute substitutability of socio-emotional incentives for monetary incentives. The size of the wage differential and credibility of social incentives play important roles in determining the reciprocal effect. Furthermore, how workers respond to social incentives in different institutional settings, their framing of these incentives, and cultural and economic situations still need additional research.

## V. APPENDICES

### V.1. Appendix A

Table 1  
*Workers' Overview*

Control Group				C17			
#	Y	Q	T	#	Y	Q	T
1	729	99.45	15	1	1107	99.55	11
2	830	99.52	12	2	1056	98.97	16
3	820	98.56	13	3	946	99.89	19
4	873	99.77	15	4	870	98.64	14
5	707	98.88	3	5	814	99.39	11
6	799	99.25	6	6	936	99.05	16
7	741	99.20	7	7	712	98.34	16
8	765	98.97	7	8	821	99.15	13
9	929	99.25	7	9	839	99.06	15
10	823	98.80	3	10	986	99.60	4
11	772	99.87	16	11	1009	99.70	14
12	832	99.64	7	12	878	98.99	12
13	697	99.43	16	13	974	99.29	19
14	713	99.17	11	14	1038	98.67	8
15	785	99.12	9	15	959	99.17	12
16	835	99.64	9	16	1007	99.21	9
17	876	98.65	8	17	949	99.16	14
18	784	100.00	13	18	1118	99.38	11
19	721	98.50	11	19	960	99.59	12
20	941	98.74	6	20	1015	99.71	7
21	828	99.40	12	21	995	99.20	15
22	736	99.46	13	22	1031	99.52	8
23	711	98.61	15	23	1057	98.97	15
24	796	99.50	26	24	988	99.20	8
25	884	99.66	22	25	1119	99.56	12

*Note:* Y,Q and T denote output, Quality and shirking time respectively.

Table 1

*Workers' Overview (cont.)*

AT				AI				CI			
#	y	Q	T	#	y	Q	T	#	y	Q	T
1	1024	98.65	14	1	995	99.10	8	1	686	98.14	10
2	1074	99.44	11	2	1153	99.57	7	2	818	99.88	20
3	1042	98.67	8	3	1141	99.56	6	3	805	98.77	14
4	1162	99.66	9	4	1077	99.17	7	4	784	99.49	9
5	1043	99.90	7	5	1040	99.43	9	5	746	98.68	17
6	1050	99.34	10	6	1012	99.41	14	6	659	98.80	11
7	1085	99.45	9	7	1015	99.71	12	7	875	99.89	8
8	1106	99.55	12	8	992	99.10	15	8	574	98.80	23
9	742	99.07	30	9	1150	98.97	12	9	803	98.41	11
10	1116	98.85	10	10	1153	99.74	12	10	735	98.79	8
11	767	99.35	12	11	1076	98.99	4	11	870	99.32	14
12	1166	99.83	5	12	1035	99.62	13	12	670	98.97	16
13	1107	99.82	8	13	993	99.90	13	13	737	99.06	14
14	910	99.34	13	14	1068	98.16	11	14	640	99.22	24
15	833	99.64	13	15	1048	99.71	11	15	496	98.02	35
16	919	99.89	8	16	1123	99.65	8	16	632	98.14	21
17	1027	99.42	6	17	1107	99.82	6	17	760	98.57	19
18	1054	99.62	9	18	1056	99.06	6	18	842	99.06	9
19	1057	99.06	11	19	946	99.68	10	19	763	99.09	21
20	1116	99.55	6	20	870	99.32	17	20	742	99.07	15
21	1141	99.83	7	21	814	99.39	16	21	655	98.50	23
22	1107	99.28	5	22	936	99.15	9				
23	1166	99.32	6	23	734	99.73	15				
24	1016	99.32	4	24	821	99.64	13				

Note: Y, Q and T denote output, Quality and shirking time respectively.

Table 2

*Summary Statistics of Variables in Experiment*

Output	Mean	Std. Dev.	Min.	Max.
C0	797.1	69.36	697	941
C17	967.4	100.68	712	1119
AT	1034.6	118.60	742	1166
AI	1014.8	113.62	734	1153
CI	728.2	97.51	496	875
Shirk	Mean	Std. Dev.	Min.	Max.
C0	11.3	5.46	3	26
C17	12.4	3.71	4	19
AT	9.7	5.15	4	30
AI	10.6	3.59	4	17
CI	16.3	6.79	8	35
Errors	Mean	Std. Dev.	Min.	Max.
C0	0.5	0.98	0	6
C17	0.6	1.04	0	4
AT	0.5	0.98	0	5
AI	0.5	1.07	0	9
CI	0.7	1.12	0	5
Quality	Mean	Std. Dev.	Min.	Max.
C0	99.2	0.43	98.5	100.0
C17	99.2	0.37	98.3	99.9
AT	99.4	0.36	98.7	99.9
AI	99.4	0.39	98.2	99.9
CI	98.9	0.51	98.0	99.9

Table 3  
*Summary Statistics of Variables in Experiment*

Age	Mean	Std. Dev.	Min.	Max.
C0	21.2	1.76	19	25
C17	21.2	1.76	19	25
AT	22.3	1.55	19	25
AI	20.9	1.23	19	23
CI	21.3	3.20	19	24
Satisfaction	Mean	Std. Dev.	Min.	Max.
C0	4.5	0.96	3	7
C17	4.6	1.12	3	7
AT	4.9	1.25	3	7
AI	4.3	1.23	3	7
CI	3.3	1.35	1	7
Fairness	Mean	Std. Dev.	Min.	Max.
C0	4.0	0.87	2	5
C17	4.3	1.03	2	6
AT	4.4	1.10	3	7
AI	3.9	1.42	1	7
CI	2.9	1.06	1	4
Kindness	Mean	Std. Dev.	Min.	Max.
C0	3.6	1.50	1	6
C17	4.9	1.30	2	7
AT	5.0	1.33	2	7
AI	4.7	1.20	2	7
CI	3.1	1.24	1	6
Skill	Mean	Std. Dev.	Min.	Max.
C0	44.4	16.78	17	75
C17	36.2	14.50	12	65
AT	39.6	14.72	12	65
AI	40.5	18.33	16	65
CI	46.2	13.83	21	65

Table 4  
*Cross Comparisons of Post Experiment Variables*

	Fairness	Satisfaction	Kindness
Co vs C17	1.12 (0.26)	0.20 (0.84)	2.90 (0.00)
Co vs AT	1.13 (0.26)	0.99 (0.32)	3.24 (0.00)
Co vs AI	0.49 (0.62)	1.26 (0.21)	2.45 (0.01)
Co vs CI	3.41 (0.00)	3.33 (0.00)	1.31 (0.19)
C17 vs AT (0.93)	0.08 (0.42)	0.81 (0.63)	0.49
C17 vs AI	1.31 (0.19)	1.19 (0.23)	0.61 (0.54)
C17 vs CI	3.94 (0.00)	3.24 (0.00)	3.92 (0.00)
AT vs AI	1.39 (0.17)	1.91 (0.06)	1.12 (0.26)
AT vs CI	3.96 (0.00)	3.67 (0.00)	4.16 (0.00)
AI vs CI	2.44 (0.01)	2.47 (0.01)	3.73 (0.00)

Note: Test statistics reported is Wilcoxon Rank-Sum Test, values in parentheses are p-values.

Table 5

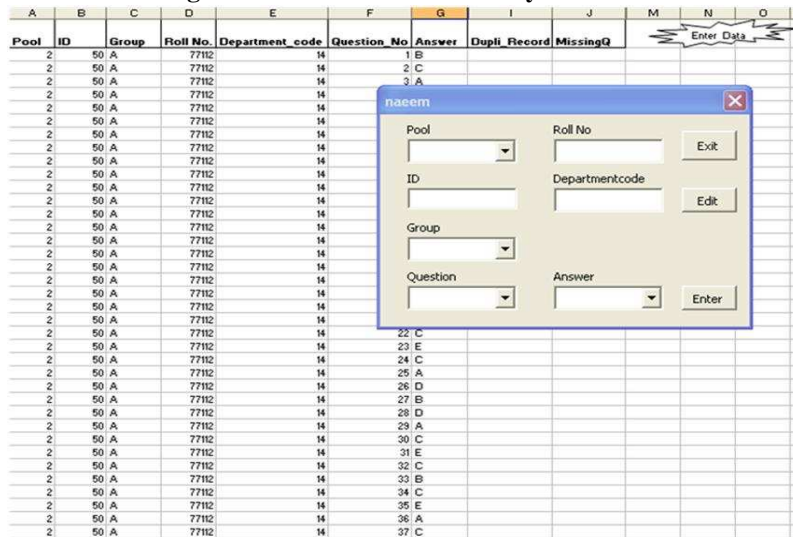
*Cross Comparisons of Shirking Time and Quality*

	Shirk	Quality
Co vs C17	-1.25 (0.21)	-2.11 (0.04)
Co vs AT	-1.35 (0.18)	-3.11 (0.00)
Co vs AI	-0.23 (0.82)	-3.21 (0.00)
Co vs CI	-2.59 (0.01)	-1.73 (0.08)
C17 vs AT	-2.97 (0.00)	-1.76 (0.08)
C17 vs AI	-1.69 (0.09)	-1.78 (0.08)
C17 vs CI	-1.88 (0.06)	-0.07 (0.95)
AT vs AI	-1.40 (0.16)	-0.03 (0.98)
AT vs CI	-3.71 (0.00)	-1.50 (0.13)
AI vs CI	-3.01 (0.00)	-1.39 (0.17)

Note: Test statistics reported is Wilcoxon Rank-Sum Test, values in parentheses are p-values.

**V.2. Appendix B**

**Fig. 1. Screen Shot of Data Entry Software**



**V.3. Appendix C****QUESTIONNAIRE**

1. Name \_\_\_\_\_

2. Assigned Code \_\_\_\_\_

3. Registration No. \_\_\_\_\_

4. Department: \_\_\_\_\_

5. University \_\_\_\_\_

6. Contact No. \_\_\_\_\_

7. Age: \_\_\_\_\_ years

8. Gender

Male Female 

9. Previous Job Experience

Yes No 

10. How many hours on average you spend using computer per week?

\_\_\_\_\_ hours

11. Please rate the following statements on a scale from 1 to 7, where “1” means “fully Disagree” and 7 means “Fully Agree”.

11.1: I am satisfied with my Job

1	2	3	4	5	6	7
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11.2: I am treated kindly by employer

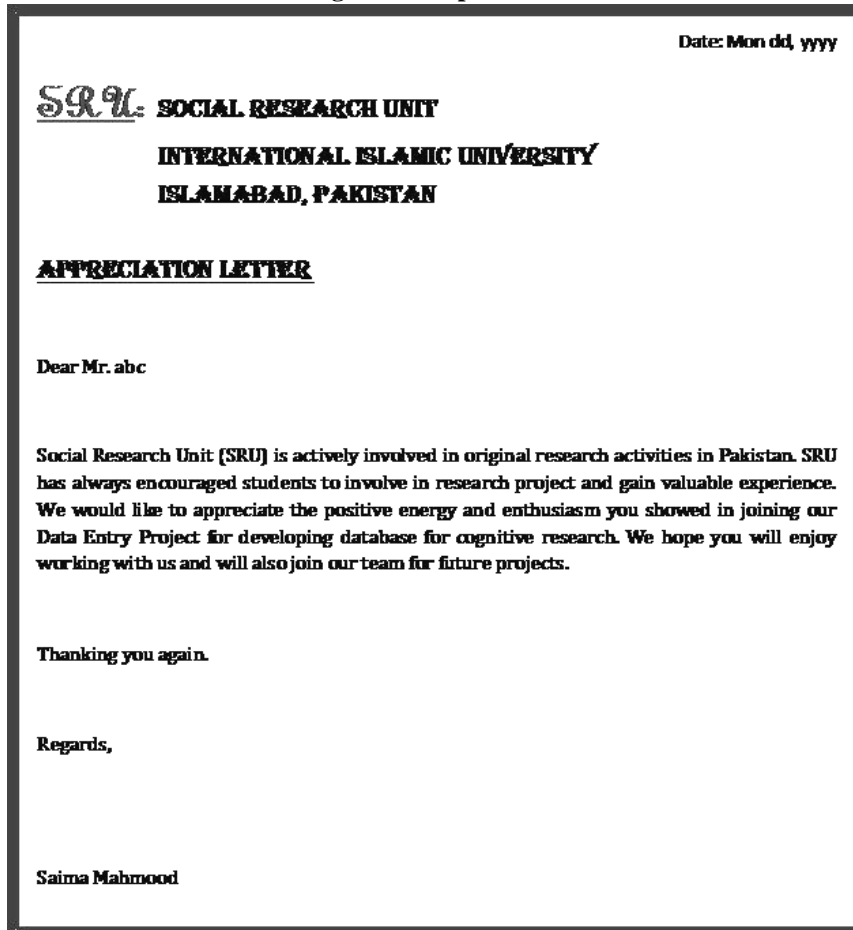
1	2	3	4	5	6	7
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11.3: I consider my job contract as “Fair”

1	2	3	4	5	6	7
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## V.4. Appendix D

Fig. 2. Example Letter



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