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Working Paper

Awards at work

ZEW Discussion Papers, No. 12-004

Provided in Cooperation with:

ZEW - Leibniz Centre for European Economic Research

Suggested Citation: Neckermann, Susanne; Cueni, Reto; Frey, Bruno S. (2012) : Awards at work, ZEW Discussion Papers, No. 12-004, Zentrum für Europäische Wirtschaftsforschung (ZEW), Mannheim

This Version is available at:

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and Bruno S. Frey

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Zentrum für Europäische
Wirtschaftsforschung GmbH

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Non-technical summary

Awards increase in popularity in the corporate sector where managers consider innovative human resource practices such as awards to be essential for firm competitiveness. The prevalence and popularity of awards in the corporate sector suggest that awards fulfill important functions in principal-agent relationships. However, what exactly are awards, and in what respects do they differ from other kinds of incentives studied in the economic literature? In award schemes, an agent is given a symbolic reward for good performance in combination with positive performance feedback and social recognition from superiors and peers. Although awards contain features of other motivators, such as performance bonuses, pure feedback, gifts, praise, and tournament prizes, they can be clearly distinguished from these other motivators. To date, there is very little evidence on the effect of awards on performance.

This paper identifies the effect of receiving an award on subsequent employee performance in the call center of a Fortune 500 financial services provider. Our data set is unique in that the awards studied are not driven by the outcome measure that we look at. Specifically, the awards are directed towards valuable activities such as substituting for colleagues or making improvement suggestions, which are uncorrelated with the variation of the recorded performance in core call center activities such as the number of calls answered.

The effect of awards on subsequent performance is theoretically ambiguous a priori. On the one hand, awards provide no direct incentives to increase core performance. On the other hand, performance might decrease, for example, because award winners rest on their laurels. Alternatively, performance might increase sustainably when the award intensifies identity in the form of workers' self-images as job holders of the award-winning employees with the company. The heightened attention resting on award winners during the month of the award could also induce a temporary improvement of call center performance that is driven by a desire to live up to the honor.

Our analysis yields four main findings. First, we report a positive spillover effect from the rewarded job dimension to another one that does not qualify for an award: the receipt of an award for social activities like volunteering or making improvement suggestions causes a statistically significant and sizeable increase in core call center performance. Second, we document an ex post effect of rewards on subsequent performance. Hence, it is not sufficient to only look at ex ante incentive effects when assessing the overall impact of a reward. Third, we document the motivating power of non-pecuniary rewards. Fourth, the data allow us to distinguish between different hypotheses that could theoretically explain the performance increase. The analysis suggests that the effect is driven by those individuals who previously performed poorly and is reflected most clearly in dimensions of the job that are hard to observe. This implies that a desire to live up to the honor or affective reactions rather than more sustainable mechanisms such as a shift in employee identity is at work. Finally, we can show that awards exhibit decreasing marginal impacts: the spillover effect is substantially larger when agents win their first award than when they win further awards.

While the form the non-material reward takes might be specific to this setting, the essence of the results is of general interest. The fact that awards affect subsequent performance in a job dimension that does not qualify for it indicates that social incentives might, more generally, be important for solving agency problems. Awards may be of particular value in situations prone to multi-tasking or motivation crowding. This has important implications for how workers respond to the provision of non-material work incentives and sheds light on how compensation schemes can be enriched with non-material components like awards.

Das Wichtigste in Kürze

Auszeichnungen sind ein in der Unternehmenspraxis weit verbreitetes Instrument zur Motivationssteigerung von Mitarbeitern. Ihre Verbreitung und Beliebtheit legt nahe, dass sie eine wichtige Funktion in der Firma haben. Was genau sind Auszeichnungen und in welcher Hinsicht unterscheiden sie sich von anderen Anreizen? Bei einer Auszeichnung erhält ein Mitarbeiter eine symbolische Belohnung für gute Leistung in Kombination mit positivem Leistungsfeedback und sozialer Anerkennung von den Vorgesetzten und Kollegen. Auszeichnungen enthalten Elemente von anderen Anreizen wie Leistungsboni, Feedback, Geschenken, Lob und Turnierpreisen. Dennoch können sie ganz klar von diesen Motivatoren unterschieden werden.

Bisher gib es wenig verlässliche Studien, die analysieren, wie sich Auszeichnung auf die Leistung der Mitarbeiter auswirken. Insbesondere ist unklar, wie sich die Gewinner und Nichtgewinner im Anschluss an die Vergabe verhalten. Die Auswirkung von Auszeichnungen auf Gewinner ist aus theoretischer Sicht a priori unklar. Auf der einen Seite könnte die Leistung nach Auszeichnungserhalt sinken, wenn sich die Gewinner auf ihren Lorbeeren ausruhen. Auf der anderen Seite, könnte die Leistung steigen, falls die Auszeichnung die Motivation und die Identifizierung mit der Firma verstärkt. Gleichmaßen könnten Nichtgewinnern angespornt oder frustriert werden.

Diese Arbeit füllt diese Forschungslücke. Mittels Daten aus einem Call Center eines Fortune 500-Finanzdienstleisters zeigen wir, dass Auszeichnungen die nachfolgende Leistung der Empfänger signifikant erhöhen. Dies trifft vor allem auf solche Gewinner zu, die im Durchschnitt eher weniger gut Leistung erbringen. Nichtgewinner verändern ihre Leistung nicht. Die Daten zeigen damit, dass nicht-finanzielle Belohnungen einen signifikanten und substantiellen Einfluss auf die nachfolgende Arbeitsleistung haben. Außerdem wirken Belohnungen sich auch nach der Vergabe noch auf das Verhalten aus.

Diese Ergebnisse haben Implikationen für die optimale Ausgestaltung von Anreizsystemen. Sie zeigen einerseits, dass nichtfinanzielle Belohnungen wie Auszeichnungen für Unternehmen ein gutes Instrument sind, um die Mitarbeiter zu höheren Leistungen anzuspornen. Zum anderen dokumentieren wir, dass Belohnungen auch nach ihrer Vergabe auf die Leistung wirken. Zur Evaluation der Wirkung eines Instruments muss also der ex ante Anreizeffekt wie auch der ex-post Effekt berücksichtigt werden. Außerdem wirken Auszeichnungen unterschiedlich auf unterschiedliche Typen von Mitarbeitern. In unserem Fall reagierten vor allem die Mitarbeiter, die im Schnitt unterdurchschnittliche Leistung erbringen.

AWARDS AT WORK

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Abstract

Social incentives like employee awards are widespread in the corporate sector and may be important instruments for solving agency problems. To date, we have little understanding of their effect on behavior. Unique panel data from the call center of a Fortune 500 financial services provider allow us to estimate the impact of awards on performance. Winning an award for voluntary work behaviors significantly increases subsequent core call center performance. The effect is short-lived, mainly driven by underperforming agents, and is reflected mostly in dimensions of the job that are hard to observe. We discuss various theories that could explain the effect.

JEL classifications: C23, J33, M52

Keywords: Awards, Motivation, Non-monetary Compensation, Insider Econometrics.

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1 Introduction

Awards increase in popularity in the corporate sector where managers consider innovative human resource practices such as awards to be essential for firm competitiveness (Ichniowski and Shaw 2003). In his book *1001 Ways to Reward Employees*, Nelson (2005) provides ample evidence of the number and variety of awards in companies. The prevalence and popularity of awards in the corporate sector suggest that awards fulfill important functions in principal-agent relationships.¹ However, what exactly are awards, and in what respects do they differ from other kinds of incentives studied in the economic literature? In award schemes, an agent is given a symbolic reward for good performance in combination with positive performance feedback and social recognition from superiors and peers. Often awards are accompanied by some modest monetary prize. Although awards contain features of other motivators, such as performance bonuses, pure feedback, gifts, praise, and tournament prizes, they can be clearly distinguished from these other motivators. To date, there is very little evidence on the effect of awards on performance.²

This paper identifies the effect of receiving an award on subsequent employee performance in the call center of a Fortune 500 financial services provider. Our data set is unique in that the awards studied are not driven by the outcome measure that we look at. Specifically, the awards are directed towards valuable activities such as substituting for colleagues or making improvement suggestions, which are uncorrelated with the variation of the recorded performance in

¹There is a major discrepancy between the practitioner literature and the academic literature with respect to recognition programs like awards. On the one hand, the practitioner literature frequently advocates recognition programs to improve safety (Pardy 1999), reduce turnover (Davidson 1999; Wallsten 1998), increase job satisfaction (Davidson 1999), improve performance and productivity (Schneier 1989), and reduce absenteeism (Boyle 1995). Furthermore, numerous books and manuals have been written detailing how to structure recognition programs (Townsend and Gebhardt 1997; Glasscock and Gram 1999; Ventrice 2003; Podmoroff 2005). On the other hand, there is a paucity of academic research targeted at recognition programs. This disparity is probably driven by the lack of a clear definition of what constitutes a corporate award system from an academic point of view. When practitioners discuss recognition programs, they refer to a variety of interventions that represent incentive instruments designed to reward at a low cost. From an academic point of view, this represents an ambiguous concept with little theoretical basis, which is why academic research has focused on studying money, praise, and feedback in isolation. Despite these concerns, we consider the study of awards worthwhile given their prevalence in the corporate sector, where they are used as instruments to induce effort in addition to monetary compensation schemes.

²Previously, when economists studied incentives in organizations, the focus was on incentives in the form of monetary payments in exchange for performance in specific, measurable dimensions. This is illustrated by the large literature on incentive pay to align the interests of principal and agent starting with the pioneering works by Alchian and Demsetz (1972) and Jensen and Meckling (1976). Potential problems with performance pay have been acknowledged and analyzed. One example is the discussion of multi-tasking problems (Holmstrom and Milgrom 1991). Starting with Lazear and Rosen (1981), the analysis of work incentives in the form of tournaments has been a popular field of study. Another popular thread of literature that is important for studying awards is the literature on signaling (Spence 1973, 1974). Prendergast (1999) provides an overview of the economic literature on the provision of incentives in firms. This study complements the traditional economic analysis with respect to non-material incentives, ex-post effects of rewards, rewards for vague performances such as volunteering, and spillover effects of rewards for good performance in one job dimension to performance in another.

core call center activities such as the number of calls answered. We test and corroborate this feature of the data and conclude that core performance does in fact not have predictive power for the receipt of an award. Hence, this feature of the award system can be used as an exogenous source of variation, which allows us to make causal inference about the effect of awards on performance. Moreover, it allows us to address how an award for one type of behavior spills over to another type of behavior.

The effect of awards on subsequent performance is theoretically ambiguous a priori. On the one hand, core performance might be unaffected because the awards recognize activities that are not related with performance. For the same reason, increasing core performance does not increase the likelihood of winning the award again. Hence, the awards provide no direct incentives to increase core performance. On the other hand, performance might decrease, for example, because award winners rest on their laurels.³ Alternatively, performance might increase when the award intensifies workers' identification with the company (Akerlof and Kranton 2005) or causes them to respond reciprocally in all dimensions of their job.⁴ The heightened attention resting on award winners during the month of the award could induce a temporary improvement of call center performance that is driven by a desire to live up to the honor or by the positive emotions caused by receiving the award. Such mechanisms include self-image concerns (Bénabou and Tirole 2002), image motivation (Ariely et al. 2009), peer effects (Mas and Moretti 2009), and mood effects (Isen and Simmonds 1978).

Our analysis yields four main findings. First, we document that rewards affect performance *ex post* and not only *ex ante* (incentive effect). Second, we document the motivating power of one particular kind of rewards: employee awards. While economists have a good understanding of why and how financial rewards affect performance, we are still at the beginning of understanding the motivating power of other kinds of rewards, such as awards, and this paper addresses this research gap. Third, we report a positive spillover effect from the rewarded job dimension to another one that does not qualify for an award: the receipt of an award for social activities like volunteering or making improvement suggestions causes a statistically significant and sizeable increase in core call center performance. This result is robust to alternative specifications that check the validity of the identifying assumption and a variety of robustness checks. This suggests that awards are meaningful for employee motivation, which in turn influences job performance generally. The results also show that those spillover effects are short-lived. Thus, awards are motivators that can serve as valuable instruments in principal-agent relationships. Nevertheless, managers will not be able to use awards in one dimension as a primary motivator

³Malmendier and Tate (2009) show that CEOs who win titles like “CEO of the Year” subsequently underperform both relative to their prior performance and relative to a matched sample of non-winning CEOs.

⁴See Dufwenberg and Kirchsteiger 2004 and Falk and Fischbacher 2006; Fehr and Gächter 2000 and Gneezy and List 2006 provide surveys on lab and field experimental evidence.

for effort in another dimension. Fourth, the data allow us to distinguish between different hypotheses that could theoretically explain the performance increase. The analysis suggests that the effect is driven by those individuals who previously performed poorly and is reflected most clearly in dimensions of the job that are hard to observe. This implies that a desire to live up to the honor or affective reactions rather than more sustainable mechanisms such as a shift in employee identity are at work. Further, the results are hard to reconcile with direct peer pressure or mechanisms that apply to both under- and overperforming winners at the same time. Finally, we can show that awards exhibit decreasing marginal impacts: the spillover effect is substantially larger when agents win their first award than when they win further awards.

Transitory ex-post effects of material rewards have been documented in the gift-exchange literature (see, e.g., Fehr and Gächter 2000 and Gneezy and List 2006). This study complements previous research in this field with a focus on non-material rewards. Our finding of the positive spillover effect of an award for social activities on core performance adds to the literature on motivation crowding out and multi-tasking that mainly focuses on negative spillovers. This study extends the study of work incentives, which have predominantly analyzed simple tasks (Prendergast 1999), to a task that is characterized by many different job dimensions. Additionally, the significant behavioral effect of these social incentives also fits well into the current discussion on the disparity between the impact of monetary incentives in the lab and in the field. While lab studies find a large behavioral effect of wage increases, effort reacts relatively little in the field. Some authors (see, e.g., Dur 2008) argue that this divergence is caused by the fact that employers in the field typically use motivators other than wages, e.g. recognition, to signal kind intentions. Therefore, employees do not reciprocate wage increases in the field to the extent they do in the lab, where money is the only means of signaling kind intentions.

While the form the non-material reward takes might be specific to this setting, the essence of the results is of general interest. The fact that awards affect subsequent performance in a job dimension that does not qualify for it indicates that social incentives might, more generally, be important for solving agency problems. Awards may be of particular value in situations prone to multi-tasking or motivation crowding. This has important implications for how workers respond to the provision of non-material work incentives and sheds light on how compensation schemes can be enriched with non-material components like awards.

To our knowledge, there are only few papers so far that explicitly study awards. Hansen and Weisbrod (1972) and Frey (2005) address awards as incentives in general. Markham et al. (2002) show in a quasi-experimental setting that the introduction of a public recognition program to reduce absenteeism decreases the latter by 52 percent. Moldovanu et al. (2007) study the optimal design of status categories in organizations, assuming that agents care about their

relative positions. Gavrilu et al. (2005) describe the optimal solution for the management of awards over time, considering that their incentive effect depends on the number of awards that are presented. Besley and Ghatak (2008) analyze a principal-agent setting with status incentives, such as job titles or awards. The decisive feature of these rewards is that they have zero marginal costs, so it is incentive-compatible for the principal to award them even if the payoff is not verifiable. Neckermann and Frey (2008) and Kosfeld and Neckermann (2011) show that awards act as incentives, significantly influencing performance before they are presented. Malmendier and Tate (2009) show how the receipt of a title like *CEO of the Year* affects subsequent performance. However, their paper is concerned with extra-organizational awards that differ in essential ways from intra-organizational awards as the bestower is not part of the organization, i.e. of the central principal-agent relationship.⁵

Section 2 presents the data and the estimation technique. In Section 3, the empirical findings are discussed, and Section 4 concludes.

2 Data

The data set comprises information on awards as well as the employee performance of the 155 call center agents of a credit card service company of a Fortune 500 financial services provider and covers the period from January 2004 to October 2007. The call center is responsible for handling customer complaints and questions and consists of six workgroups, one supervisor each.

2.1 The Performance Measure

The company records daily performance for a number of different performance dimensions, starting in the second month of employment. On a monthly and yearly basis, these measures are transformed into rankings and aggregated into a single performance index. In particular, for each dimension, the percentage deviation between individual performance and the average monthly performance of all call center agents is calculated and transformed into a rating between 5 (very good) and 1 (unsatisfactory), according to a matrix set up by the head of department. As an example, an agent who performs 120 percent of the average performance in a dimension receives a rating of 5 in that dimension, and an agent whose performance is 80 percent or lower receives a rating of 1. On a monthly basis, employees are informed via email about their rating

⁵There are related branches of literature in organizational psychology and management. Stajkovic and Luthans (2003) provide an overview of the organizational behavior literature. However, there is a general paucity of empirical evidence, specifically on measured rather than stated behavior.

and about how it compares to the average performance in the call center. The company refers to the performance measure for the semi-annual appraisal interview and for decisions about layoffs.

The relative nature of the performance measurement is an advantage for our study because it is unaffected by all time-varying factors that affect the absolute performance of all call center agents at the same time. In our setting, absolute performance does not exhibit a systematic trend, and average performance typically changes only very little between two months in all dimensions. Any change in absolute performance that we observe might reflect changes in working conditions that should be filtered out. Specifically, the ranking is not affected by an increase in the number or difficulty of calls or by improvements in the technical infrastructure. Both of these factors render absolute performance incomparable over time. The relative rating further ensures that a certain number of calls answered translates into a higher rating in slow rather than in busy months. We use the same index as the company to ensure that our performance measure corresponds to the company's assessment of performance. Because the company alters the exact calculation of its performance index from time to time by adding and removing different performance dimensions from it, a core performance measure was constructed in collaboration with the call center manager. The performance index comprises the following six dimensions that have been part of the company's index in all of the periods covered:⁶

1. Calls Taken Per Hour: Average number of phone calls handled per hour.
2. Call Handling Time: Average length of phone call.
3. After Call Worktime: Average amount of time needed to process the request after the call has been ended.
4. Transfer Rate: The average ratio between calls handled by the employee and the number of phone calls that were transferred to colleagues or other service units.
5. Lates: Number of days on which the employee showed up late for work.
6. Quality: Quality of client handling is assessed both externally and internally.⁷

⁶The company's changes in the index do not reflect systematic and sustained improvements of performance evaluation, which would have suggested us to use the changing index, too. Rather, all dimensions that are not captured in our core rating were added and removed at various instances. Examples are the two dimensions *Training*, which measures an employee's performance in in-house training courses, and *Write-off Policy*, which measures the degree to which employees follow company guidelines on goodwill issues. Both dimensions were in the company's index only in 2006.

⁷The external and the internal component of the rating each account for 50 percent of the quality rating. Internal quality is assessed by a supervisor who periodically monitors conversations of each agent. The assessment follows a clear set of rules and guidelines that leave virtually no room for subjectivity. Evaluation criteria are, for example, whether the agents correctly introduce themselves and ask the correct set of questions in the prescribed order. The external quality rating is generated by an outside company that conducts surveys with the company's customers.

Of these dimensions, only the dimension *Lates* is not evaluated relatively but according to an absolute scale (no absence corresponds to a rating of 4, one absence to a rating of 3, and more than one absence to a rating of 1). The resulting six ratings are then combined to a single overall rating, which provides an overall assessment of performance. It captures all the relevant trade-offs the company faces, ensuring that employees do not improve their rating, for instance, by answering more calls at the expense of a higher transfer rate. This renders the assessment of performance via the index preferable to a study of the individual performance dimensions. *Quality* enters with a weight of 50 percent and the five other dimensions with 10 percent each. The weighting scheme suggests that the company places equal emphasis on technical measures, such as the number and durations of calls, and content measures, which capture the actual interaction between employee and customer. Figure I exhibits the distribution of performance ratings.

[Figure I ABOUT HERE]

The performance ratings are approximately normally distributed with an average of 3.02 and a standard deviation of 0.66 and do not exhibit a time trend. The mean and variation corroborate the objective, quantitative nature of our performance data, as subjectively determined evaluation data typically cluster around high values (on the leniency bias see, e.g., Murphy and Cleveland 1995; Yariv 2006) and may cause endogeneity problems because managers might assess award-receiving individuals more favorably.

2.2 The Awards

While the company offers a multitude of different awards to its employees, only the *Gold Reward* is relevant for the call center agents. The *Gold Reward* remunerates exceptional efforts that benefit the entire work group. Examples of behaviors that qualify for a *Gold Reward* are volunteering as a substitute during vacation times, initiating and implementing team events, making improvement suggestions, and helping others with good advice. The company encourages employees to engage in these activities because they are important for its efficient functioning. Nominations can be made by colleagues as well as supervisors. About half of the nominations come from group supervisors and the other half from colleagues. The reasons provided for the nominations do not differ systematically between the two. The Human Resources Department communicates the criteria for nominations well; thus, almost all nominations result in an award. Interviews with group supervisors and employees further suggest that everyone who deserves an award receives one. This is guaranteed by the fact that so many individuals can nominate, and a close connection between effort and likelihood of nomination is ensured. Hence, individuals can actively pursue winning an award. An award is presented by the call center manager in front

of the worker's colleagues in the middle of the following month. Award winners, as well as their colleagues, only learn about the award at that ceremony. There is no additional announcement of the award winners; however, the management tries to present the award when many colleagues are present. The award is accompanied by a certificate for the wall, which serves as a reminder and ensures that agents not present at the ceremony learn about it. Further, it comes with a small bonus of around \$ 150, which equals about 3 percent of monthly income. Importantly, awards are not presented for the performance used as the dependent variable in our analysis. In fact, core performance has nothing to do with the activities that lead to an award. Therefore, the effect of an award on core performance can be identified by comparing the performance of winners and nonrecipients subsequent to winning. If awards depended on performance, they would always be—at least in part—a reflection of good performance, and a careful creation of control groups would be necessary to identify the causal effect.

The call center agents are paid a fixed monthly wage of CHF 4,500 (about \$4,500). The exact sum the individual receives depends on their level of experience, knowledge of languages, and length of employment at the call center. The *Gold Reward* complements the company's salary scheme because it incentivizes activities such as substituting for colleagues or organizing team events that are not part of an agent's job description. The management asserted that receiving a *Gold Reward* had no effect on future promotion decisions and that award winners did not receive special attention, training, or other advantages, for which we cannot control.

The award system of the company has been in place since 2001. Therefore, we cannot estimate how the presence of the award system per se changes performance because there is no control group without awards. Rather, this ex-ante incentive effect of awards is part of the baseline motivation of each employee and constant throughout the period of our study.⁸

2.3 Descriptive Statistics

The data set covers 46 months from January 2004 to October 2007. Each month, the employees had the opportunity to win *Gold Rewards* (*Gold Reward January 2004* to *Gold Reward October 2007*). The data set comprises a total of 1408 individual-month observations. In total we observe 150 individuals and 137 *Gold Rewards*. As expected, the distribution is skewed to the right. One agent received a total of eight *Gold Rewards*, whereas 75 received none.⁹ These numbers suggest that the award is sufficiently scarce for it to be valuable to its recipients, and the sample

⁸This incentive effect potentially changes with winning an award. One might argue that the motivation to win decreases once an award has been won. However, such a potential change in baseline motivation renders the detection of a positive change in performance caused by the receipt of an award more difficult.

⁹Figure A.1 in the Appendix shows the entire frequency distribution of the number of *Gold Rewards* per employee.

is well balanced between winners and nonrecipients because about half of the agents never received an award. On average, 3.4 awards are presented per month with a minimum of zero and a maximum of 11.

63 percent of the agents in the sample are female, and the average length of tenure at the call center is 15.77 months. On average, three awards are handed out per month and about half of all the men and women in the sample receive a *Gold Reward* (see Table I). The mean time that elapses between two awards is 5 months.¹⁰ Table A.1 in the Appendix presents the number of *Gold Rewards* for each month that we observe at the call center.

[TABLE I ABOUT HERE]

3 Awards and Performance

3.1 Empirical Specification

We estimate period-specific effects both before and after a *Gold Reward* is won. The absence of any significant difference between the performance of winners and non-recipients prior to the award supports our assumption that the probability of winning an award is decoupled from an agent’s core performance.¹¹ Then, any divergence in performance subsequent to winning can be interpreted as being caused by the award. We control for individual fixed effects to account for individual difference in the level of core call center performance. The relative nature of our performance measure implies that we identify the effect of winning an award via the change in performance of the award-winning employees.

The following table presents an overview of the three dimensions used to identify and quantify the effect of a *Gold Reward* on employee performance:

[TABLE II ABOUT HERE]

According to the identification strategy presented above, the causal effect of receiving an award on employee performance is estimated by fitting the following equation to the data:

$$Y_{it} = \alpha + \sum_{\tau=\underline{T}}^{\bar{T}} \pi_{\tau} W_{i\tau} + \mu_i + \beta X_{it} + \xi_{it}. \quad (1)$$

¹⁰On average, an agent receives their first *Gold Reward* after 14 months at the call center. The mean time elapsed between first and second award is 7.6 months; further awards follow, on average, within less than 6 months.

¹¹*Gold Rewards* are directed towards behaviors such as supporting colleagues and organizing team events that are not captured in the core performance rating.

The dependent variable Y_{it} represents the performance rating of employee i in period t . Because Y_{it} is constructed as the weighted average of the ratings in the individual performance dimensions discussed above, it takes on many different values and can be treated as continuous. The index τ denotes the time period relative to t and is measured in months. τ runs from -6 to $+6$ and is normalized so that $\tau = 0$ refers to the current month t ; $\tau < 0$ refers to months prior to t ; $\tau > 0$ refers to months after t . The range of τ determines the size of the event window. The indicator variable μ_i controls nonparametrically for employee fixed effects, such as level of education and gender.¹² Because the resulting panel is unbalanced, we use dummy variables rather than fixed effects as controls for individual-specific effects. X_{it} is a vector of time-varying observable characteristics of the individual. In our case, this is the length of employment in the call center and its squared term. α represents a constant, and ξ_{it} is a stochastic error term. To calculate standard errors, we cluster on the workgroup level per year.¹³ Alternative ways of adjusting standard errors are discussed below.

The key variables in this regression are the $W_{i\tau}$ indicator variables. $W_{i\tau}$ equals one for a person i who receives a *Gold Reward* τ periods from the current period t , and zero otherwise. As the *Gold Reward* is open to all employees in all periods, $W_{i\tau}$ captures all the relevant information because each employee is either a winner or a nonrecipient in each month. The vector π_τ are the parameters of interest in this equation and capture the period-specific effects on performance of winning a *Gold Reward* τ months from the current time period t as compared to not winning an award, conditional on all covariates. By including an indicator variable for each period, the effect of being a winner is allowed to vary with τ . The time series of the coefficients π_τ around the event ($\tau = 0$) allows us to detect the causal effect of an award on performance. If the coefficients were significantly positive before the award was presented, there would be concerns about reverse causality. In case the performance of winners and nonrecipients is indistinguishable prior to an award for a large number of periods, we can be confident that our identifying assumption holds.

As all individuals are winners or nonrecipients with respect to multiple awards, every performance observation simultaneously helps to identify all 13 different π_τ from π_{-6} , the performance of winners relative to nonrecipients six months prior to an award, to π_{+6} , the

¹²In principle, one could also control for time- and award-specific effects. However, the relative nature of our performance measure already eliminates period-specific, exogenous shocks to performance. In addition, the *Gold Rewards* in the individual months that we cover are identical, so there is no reason to expect independent award-specific effects.

¹³We do not have obvious problems with grouped errors as the unit of observation corresponds with the unit of variation, i.e. the award. However, clustering on workgroups accounts for possible correlations of ratings within teams. As team composition varies between years due to employee fluctuation, workgroup-per-year clusters are used. This also increases the number of clusters, which improves inference due to the asymptotic properties of the clustering procedure (Kiefer 1980; White 1980).

performance of winners relative to nonrecipients six months after an award.

[FIGURE A.1 ABOUT HERE]

Figure II shows the data, ie. the average quarterly performance of winners and nonrecipients around the award.¹⁴ The performance of winners has a higher standard error and varies more because there are fewer observations for the winners than for nonrecipients. Naturally, the average, mean-corrected performance rating of the large number of nonrecipients centers around zero. The illustration suggests that the performance of winners and nonrecipients is indistinguishable prior to an award and that the performance of winners increases relative to nonrecipients in the period following the award.

[FIGURE II ABOUT HERE]

3.2 Results

The regressions in Table III confirm that awards cause a statistically significant spillover effect as winners substantially increase their core call center performance in the month following the award. We control for individual fixed effects and length of employment and cluster on a workgroup per year level in all regressions to account for any type of correlation within the observations of each group.¹⁵ Table III presents the results. The first model includes all id-months observations. The second model uses clean event windows. This means that only those id-month observations are included where at most one of the winner dummies, W_{it} , equals one to eliminate confounding effects of other awards received in the event window. According to Model 1, the performance of winners is 0.15 higher than that of nonrecipients one month after the award. Restricting the model to clean award windows increases the effect to 0.23, which is equivalent to a performance increase by 7.4 percent or 0.36 standard deviations.¹⁶ This increase is substantial, especially when taking into account the large number of *Gold Reward* winners

¹⁴The performance is corrected for individual fixed effects to ensure the comparability with the results of the regressions presented below.

¹⁵As is the case in most event studies, our residuals exhibit positive serial correlation. The Huber-White sandwich estimates of variance we report correct for this. Moreover, Bertrand et al. (2004) show that, if the intervention variable is not serially correlated, OLS standard errors are consistent, despite the positive serial correlation in the residuals. This is true in this study. As a further robustness check, we used the two-way cluster approach (Cameron et al. 2006), which provides cluster-robust inference when there is non-nested, two-way clustering. The two dimensions that we checked were id and month because one could imagine errors to be clustered for all observations of one individual and within one month. The results are robust to this specification.

¹⁶As most individuals receive their second or third *Gold Reward* within one year after their first *Gold Reward*, most of these repeated awards are lost when using clean event windows (see Table I). In the regressions that ensure clean event windows, there are substantially less id-month observations for second, third and fourth awards as repeated awards are usually granted within the span of one year. Therefore, the increase of the coefficient between Models 1 and 2 is a first indication that first awards have a bigger impact on performance than further ones. This issue will be discussed and tested in more detail below.

at the call center and that we use performance in a job dimension that is not incentivized with the award as the dependent variable. Two months after the award, the difference in performance becomes insignificant. One may be concerned that the particular construction of the index drives our result. To check the robustness of our result, we constructed a different index that weights all performance dimensions equally. The results are reported in Model 3, which confirms that our results are not driven by the large weight of 50 percent of *Quality* in the company index. The pattern of performance, both in terms of the size of coefficients and significance levels, is similar to that in the other models presented.

[TABLE III ABOUT HERE]

Consistent with our homogeneity assumption, we find no significant difference in performance ratings prior to an award conditional on the co-variates. In fact, the mean-adjusted performance ratings are statistically indistinguishable for this relatively large number of periods. The only exception is the performance 5 months prior to the award in Model 1. This can be explained by the fact that individuals receive a second award on average 5 months after their first award. To exclude such confounding effects, the remainder of the discussion will be based on the model specification with clean event windows. The long time series of insignificant coefficients prior to winning an award supports our identifying assumption that awards are not driven by performance in core call center duties. As an additional robustness check, we ran probit regressions of the likelihood of receiving an award on lagged performance levels, controlling for tenure and its squared term, and do not find a statistically significant relationship. Only the length of tenure has a significant impact, which provides an additional rationale for including it in the regressions presented above.¹⁷ The control variable *job tenure* does not have a robust, statistically significant effect on performance.

A closer look at performance in the individual performance dimensions (see Table IV) shows that the overall result (i.e. the sizes of the coefficients and their significance levels) is reflected in the *Quality* dimension and, to a lesser extent, in the dimension *After Call Worktime*. Performance also increases in all other dimensions, but the effect size and the specific lags that exhibit significant coefficients differ between dimensions and are not strong enough to have a significant effect on the overall rating. However, these findings should be interpreted with care because only the aggregate rating is a useful measure of performance due to the trade-offs

¹⁷Coefficients and standard errors on the first and second lag of performance are -0.10 (s.e. 0.11) and -0.11 (s.e. 0.11), respectively. There is also no indication for an Ashenfelter Dip here because the award is independent of the performance in core call center tasks (Ashenfelter, 1978). Interestingly, the fixed effects of winners are, on average, higher than that of agents who never receive an award. However, this seems to be a level effect that does not compromise our analysis and findings. As an additional robustness check, we checked whether the likelihood of receiving an award depended on lagged core call center performance for the different levels of the individual fixed effect, which is not the case.

between the different dimensions. Interestingly, agents respond most clearly in those dimensions of the job that are hard to observe. In contrast to *Number of Calls Taken* or *Transfer Rate*, *Quality* and *After Call Worktime* are hard to assess for colleagues and are also not immediately visible to the team supervisor. This suggests that the performance increase is caused by some intrinsic or affective mechanism rather than by peer pressure or image motivation.

[TABLE IV ABOUT HERE]

[TABLE V ABOUT HERE]

How sustainable is this effect? We have seen that the effect only lasts for the month following the award, but can the company exploit this spillover effect by handing awards to agents every now and then? Or do the awards lose power the more often a person receives them? To approach this question, we split the sample into first-time and repeated winners (columns 1 – 3 of Table V). These models are estimated without clean event windows to retain ALL the repeated winners in the sample. The first column repeats the baseline model from the main regression table. The second model only retains those observations where individuals have one award maximum. The third model drops all observations for first-time award winners, i.e. it contains observations for individuals with zero or with two or more awards. As one can see, the coefficient of winning the award is substantially larger for first-time award winners than in the overall model (0.15 versus 0.24, which correspond to performance increases by 5 and 8 percent, respectively). Hence, repeated awards seem to be less powerful. This is confirmed in column 3, which shows that repeated awards do not even have a statistically significant impact on performance.¹⁸

Recipients may feel a need to live up to the honor of having received an award for their voluntary work behaviors, and this may affect their core performance either for intrinsic self-image reasons, affective reasons or because the increased exposure in the month of the award induces pressure to improve core call center performance. We hypothesized that these mechanisms might be more pronounced for individuals that previously underperformed. The data allow us to test this hypothesis by separating the winners into two groups: those individuals who performed below average prior to winning and those who performed above average. To account for mean reversion,¹⁹ we use the three periods preceding an award to classify individuals as

¹⁸Unfortunately, we do not know the award history of individuals at the start of our observation period. Whenever these individuals receive the first *Gold Reward* in our sample, this is counted as their “first” award. However, this procedure only biases our estimate of first awards downwards as the *Gold Reward* received might in fact present a repeated one.

¹⁹Individuals who achieved a very good performance rating have likely been lucky that month. Their next draws from the performance distribution are unlikely to meet or exceed prior realizations, causing their individual perfor-

high- or low-performing. Specifically, we look at $\tau = +2$, $\tau = +1$, and $\tau = 0$. Individuals that perform worse than average in two or three of those periods are classified as low performers.²⁰ Columns 4 and 5 in Table V show that low-performing winners increase their rating statistically significantly by 0.46 or 17.3 %, while the awards have no statistically significant impact on the performance of the other call center agents. The average rating of high performers in the month they win an award is 3.28 (std. dev. 0.57), which suggests that the performance of high performers is not bounded from above, and they have the scope to increase their performance the same as low performers.²¹ As was discussed above, some of the models without clean event windows show statistically significant effects 5 or 6 months before the award that are due to the fact that repeated awards are typically received five or six months after the first *Gold Reward*. This differential impact suggests that the motivational channel at work affects over- and under-performing winners differently, and, hence, that the theory to account for the spillover effect that we detect needs to account for this.

Figure III illustrates that the documented increase in core performance is mainly caused by the catching up of previously low-performing agents. The figure shows that all performance ratings that were below 2.8 in the month prior to the award shift up and center around the average performance.

[Figure III ABOUT HERE]

The results do not change with a variation in the event window size (we tested event windows ranging from plus/minus 3 to 12 months). In addition, the inclusion of time fixed effects has no effect on the results because the relative rating already eliminates any impact of time-varying changes in the business environment (see column (6) in table V). Moreover, the same result holds when we only look at agents at the beginning of their career at the call center. Then, they have not had the time yet to establish a personal relationship with the supervisor, which renders it unlikely that politicking or collusion with the supervisor play a role in determining who wins and award. Finally, the inclusion of individual-specific linear time trends does not affect the pattern of performance described above.

mance to revert to the population mean.

²⁰This particular scheme was suggested to us by the management of the company. The results are robust to alternative ways of categorizing individuals.

²¹Also, there is no significant difference in the variance of performance ratings between the two samples.

3.3 Discussion

We find that underperforming call center agents increase their core call center performance subsequent to winning an award for exceptional efforts unrelated to core call center duties. The effect is short-lived and most pronounced in tasks that are difficult to observe.

These findings are hard to reconcile with a number of established theories. One would, for example, expect that the effect would have been more sustainable, had the award succeeded in positively affecting employee identification with the company (Akerlof and Kranton, 2005).²² Psychological evidence also suggests that a positive event, which induces a good mood, increases subsequent voluntary behavior when this is in line with the positive cognitions evoked by the event (Isen and Simmonds 1978). While this mechanism could explain an increase in the behavior that lead to the award, it cannot explain an increase in core call center performance.

At the same time, receiving an award can also induce reciprocal actions (e.g., Fehr and Gächter 2000; Kube et al. 2008). The transitory effect that we find is in line with the evidence on gift exchange literature (e.g., Gneezy and List 2006). According to reciprocity theories typically used to explain these effects (e.g., Dufwenberg and Kirchsteiger 2004; Falk and Fischbacher 2006), winners increase their efforts to reciprocate to the monetary bonus or the value of the gift associated with winning the *Gold Reward*. However, it is highly unlikely that the entire effect we document is driven by reciprocity to the monetary value of the bonus or gift. The amount is small – only 3 percent of the average monthly salary of around CHF 4,500 – and field studies have shown that the wage elasticity of workers’ outputs ranges from roughly 0.15 to 0.44 (Fehr et al. 2008). Thus, the observed increase of 7.5 percent would require a wage increase between 15 to 50 percent. This corresponds to a bonus of between CHF 750 and CHF 2,500, which is much higher than the actual amount of CHF 150. Any effect related to the agents reciprocating to the social recognition value of the award is in line with our argumentation that purely social rewards influence performance. However, the differentiated impact on under- and overperforming winners is hard to reconcile with a standard reciprocity story where individuals reciprocate to the honor of having received the award, which should apply to both types of winners. One could, however, argue that underperforming agents might feel a stronger need to “pay back” the recognition in terms of core performance than individuals that generally perform well.

²²(Akerlof and Kranton, 2005) state that employees who identify with their company perform better and that employers can actively influence whether employees identify with the company. Specifically, initiation rites, such as award ceremonies, can be used to change self-perception. Our evidence, however, suggests that a *Gold Reward* does not cause a sustainable change in preferences (i.e., employee identity) because the effect is limited to the month subsequent to winning.

That underperformers react mainly in those dimensions of the job that are relatively unobservable, suggests that the mechanism might be intrinsic rather than an attempt to satisfy the colleagues. Such behavior is consistent with models on self-image concerns and image motivation (Ariely et al. 2009; Bénabou and Tirole 2002), assuming that individuals feel bad about themselves when being honored in one dimension of the job but performing insufficiently in another. Moreover, the mere effect of being in the center of attention for the month of the award might render agents more self-conscious so that they work harder in all dimensions of the job. Again, this applies more to under- than to overperforming agents and might be related to Hawthorne effects as discussed in the literature.²³

Arguments explaining the observed effect without resorting to social motives are unlikely to play a role here. The award system is well established, and the criteria are clear to all employees. Therefore, handing out the award should not change the relevant information of the agents on the type of behavior and the required effort level to win.²⁴ A *Gold Reward* has no impact on future promotion decisions, and employees know that. Furthermore, a *Gold Reward* has no value as a signal of ability and motivation. Managers and employees both confirmed that they would not mention a *Gold Reward* in their CV. Any motive related to the agent trying to win the award again also cannot explain the finding because any increase in core performance is by definition of the award criteria not linked to a higher chance of winning another *Gold Reward* because these reward activities are not captured in the core rating.

We can also rule out that the effect is caused by award winners focusing on those activities that lead to the award at the expense of core performance prior to winning. If the argument was true, the performance after the award would be the normal level of core performance, and winners and nonrecipients would not be homogeneous despite the similarity of their performance prior to the award. While such an effect could be imagined if one only looked at the three months prior to an award—the maximum time span that an activity eligible for winning lasts—the long time series of insignificant performance differences prior to an award renders the conjecture invalid. In addition, the difference in performance after an award should then also be sustained for more than one month. The same holds for the argument that utility is concave in the number of awards won. Then, award-winning employees may substitute effort for award-

²³Generally, the classic Hawthorne effect (Mayo 1933; Roethlisberger and Dickson 1939; Levitt and List 2009 provide a recent critical assessment) cannot explain the documented impact of the award because both the treatment and the control group are subject to the award system, which has been in place for several years. The data we use were collected as part of normal business procedures prior to us contacting the organization. A wider interpretation that refers to the potential motivating power of managerial and peer attention directed towards the winners is consistent with our findings.

²⁴Further, the small bonus of CHF 150 is unlikely to cause an income effect that could explain the result. Moreover, if there was any income effect, it would affect performance in the opposite direction and only strengthen the result that winning the award triggers employees to work harder.

eligible activities by effort in core performance dimensions because they do not care as much about winning another award. Employees being homogenous ex ante then simply reflects that prior to the award everyone tries to win an award. Again, this argument is hard to reconcile with the short-lived nature of the effect.

Regarding the size of the effect, it is worth observing that the sizes of the documented effects only present a lower bound of the effect size of awards on performance due to three reasons specific to this study. First, the *Gold Reward* is low in the hierarchy of awards at the company, and one would expect to find even larger effects for more important awards. Second, awards at the company are presented for beneficial behaviors that are not included in the company's core performance measure, which we use as the dependent variable. Thus, the estimated effect of awards on core performance presents only the spillover effect of the presumably larger effect on those behaviors that are rewarded. One standard objection to award systems is that they induce individuals to exert unproductive efforts to increase their chances of winning. Our result, however, provides evidence to the contrary, as we observe an increase in productive effort. Hence, even if some rent seeking is in progress, it does not come at the expense of productivity. Third, we only measure the impact of the award subsequent to being presented. However, the award system as such does have an incentive effect that, while it cannot be captured in this study, probably has a substantial impact on the performance of all employees as they work towards the award. In a field experiment, Kosfeld and Neckermann (2011) find that the introduction of an award system increases performance by about 10 percent.²⁵

4 Conclusion

In general, the use of incentives is indispensable in principal-agent relationships within organizations. Advances in behavioral economics have recently addressed and presented models of a wide set of human motivations such as the desire for status and positive self-image. However, awards as incentive instruments tapping a number of such motives have so far been neglected in economics despite their widespread use in the corporate sector and elsewhere.

Using unique panel data from the call center of a Fortune 500 financial services provider, this paper shows that receiving an award for uncontractible, voluntary work behaviors such as organizing team events or substituting for sick employees increases core performance—those efforts that are more immediately linked with business success by 7.5 percent when compared to nonrecipients. Hence, we show in the field that awards have a sizeable and robust positive

²⁵Receiving an award may also have other beneficial side effects that cannot be measured as part of this study. For example, one might conjecture that awards have an additional positive effect on the retention rates of the award winners.

spillover effect on employee performance. Moreover, awards influence behavior after they have been received, that is, beyond the incentive effect normally considered as people work towards receiving the award.²⁶ This clearly contradicts the notion that awards only influence behavior due to their effect on future monetary income and that awards only reflect high ability and performance but do not cause it. Additionally, awards have a positive spillover effect on dimensions of the job that they do not target. The effect is short-lived and only occurs for first-time award winners. The richness of the data set allows us to distinguish between different hypotheses that could theoretically explain the effect. Examples include reciprocity and a change in employee identification with the company. We conclude that our results are most consistent with the desire to live up to the honor, which can be interpreted as one form of image-motivation.

This study is among the first to analyze formal recognition programs – awards – in the field. There is much scope for future research. One important limitation of the study is that we cannot observe performance in the rewarded task. Future research should address this issue as well as whether managers can strategically exploit such spillover effects to incentivize, for example, activities that are prone to motivation crowding out when incentivized directly.²⁷ Another relevant question concerns the optimal number of awards and award categories. Additionally, a deeper understanding of all channels through which awards affect performance might improve our understanding of incentive provision in principal-agent relationships.

²⁶Hence, the documented ex-post performance enhancement adds to the presumably positive impact on the awarded activity itself and the incentive effect of the award system per se.

²⁷See, e.g., Frey 1997 and Bénabou and Tirole 2003 on the crowding out of motivation.

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Tables and Figures

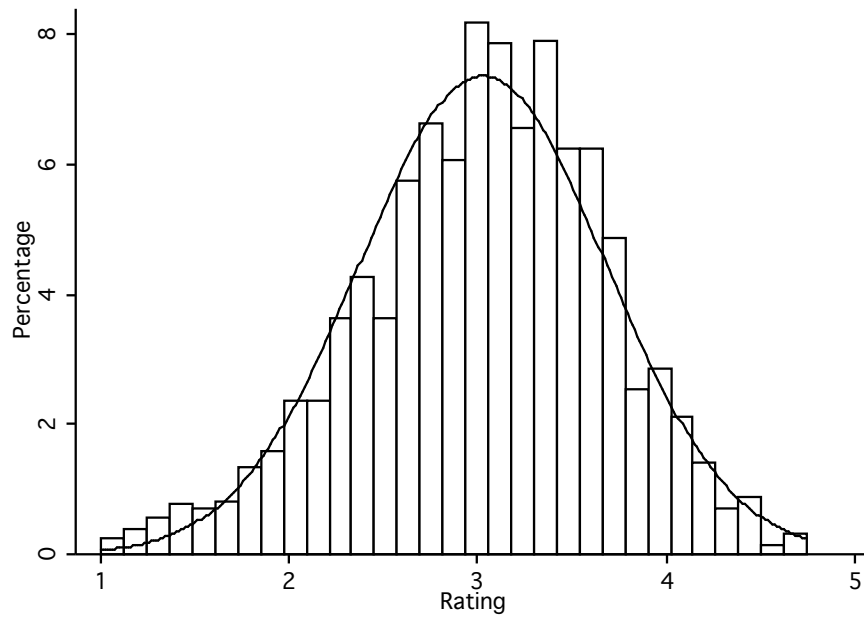


Figure I: Distribution of Performance Ratings Against a Normal Distribution

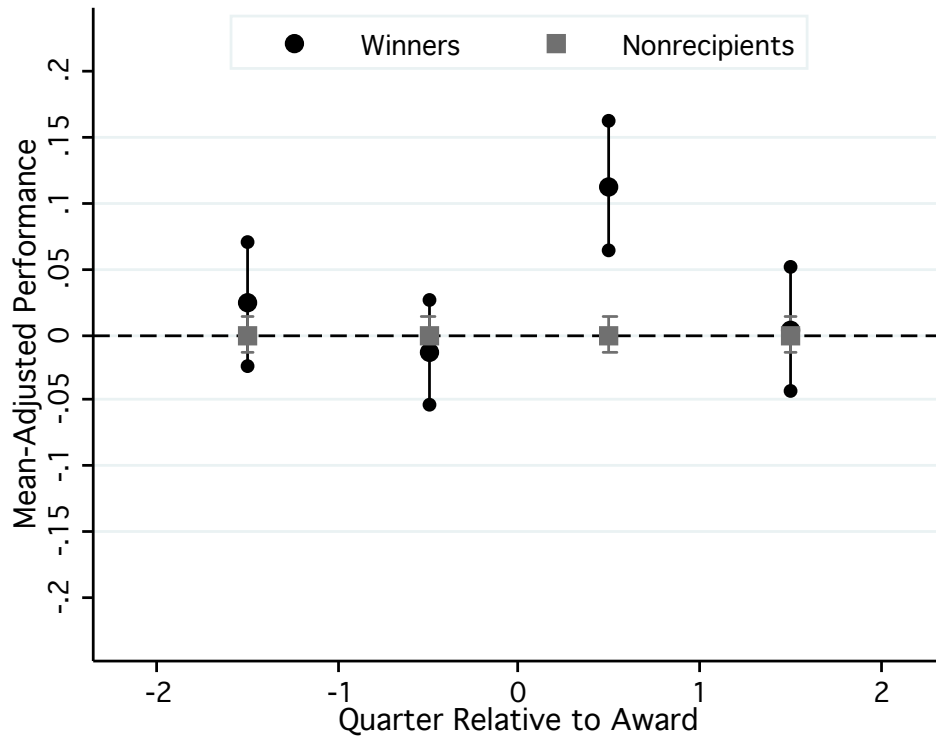


Figure II: Quarterly Performance of Winners and Nonrecipients Prior to and After an Award (With Standard Error Bars)

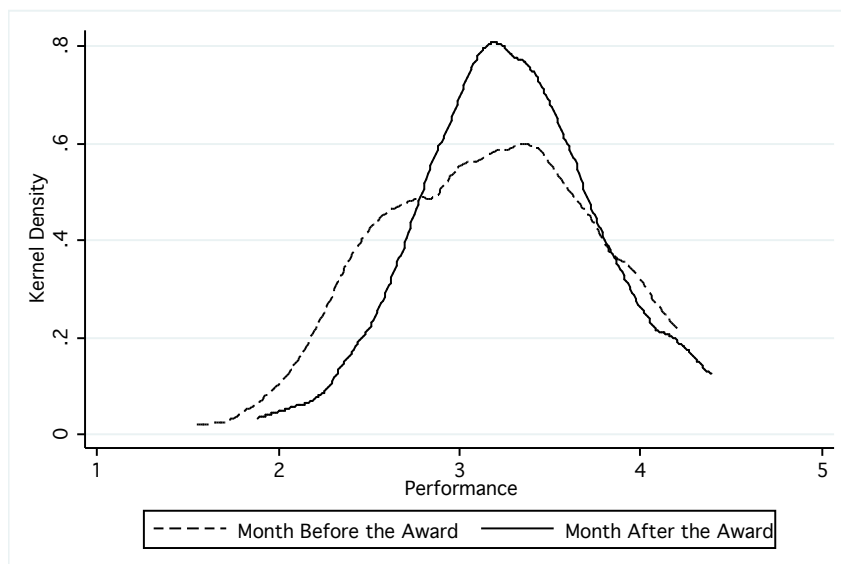


Figure III: Kernel Density of the Winners' Performance Before and After the Award

Table I: Descriptive Statistics

Number of agents		
Winners	75	50%
Nonrecipients	75	50%
Total	150	100%
Number of observations		
Winners	709	48%
Nonrecipients	771	52%
Total	1480	100%
	without clean event windows	with clean event windows
Total awards in sample	137	60
Months covered	46	46
Average number of awards per month	2.98	1.30

Table II: Dimensions of Identification Strategy

Dimension	Value	Use
Time relative to event	Before bestowal of <i>Gold Reward</i> (-1 to - 6 months) vs. after bestowal of <i>Gold Reward</i> (+1 to + 6 months)	Allows testing whether the performance of winners deviates from the average performance prior to winning.
Type of performance	Core performance vs. behaviors that qualify for a <i>Gold Reward</i> ^a	Ensures exogeneity of event (<i>Gold Reward</i>) on our performance measure.
Treatment	Winner of <i>Gold Reward</i> vs. nonrecipient	Identification of the size of the effect of a <i>Gold Reward</i> on core performance.

^a The *Gold Reward* recognizes exceptional efforts that are unrelated to core call center duties. Examples of behaviors that qualify for a *Gold Reward* are volunteering as a substitute during vacation times or implementing team events.

Table III: Impact of an Award on Performance (Six Months Before and After the Event)

	Model 1 All Obs	Model 2 Clean Event Windows	Model 3 Alternative Index
π_{-6}	0.037 (0.046)	-0.055 (0.103)	0.056 (0.085)
π_{-5}	0.092** (0.041)	0.123 (0.090)	0.165* (0.091)
π_{-4}	0.053 (0.042)	0.100 (0.071)	0.144 (0.086)
π_{-3}	0.058 (0.062)	0.076 (0.101)	0.082 (0.105)
π_{-2}	0.008 (0.048)	-0.013 (0.097)	-0.037 (0.076)
π_{-1}	-0.016 (0.039)	-0.028 (0.071)	-0.087 (0.089)
π_0	0.000 (0.034)	-0.034 (0.068)	-0.078 (0.075)
π_{+1}	0.150*** (0.045)	0.234*** (0.086)	0.188* (0.097)
π_{+2}	0.064 (0.051)	0.015 (0.124)	-0.067 (0.120)
π_{+3}	0.115 (0.097)	0.172 (0.167)	0.100 (0.155)
π_{+4}	0.009 (0.087)	-0.006 (0.108)	-0.020 (0.118)
π_{+5}	0.147** (0.068)	-0.050 (0.059)	-0.050 (0.055)
π_{+6}	0.069 (0.061)	0.005 (0.108)	-0.061 (0.099)
<i>Tenure</i>	0.010 (0.007)	0.013 (0.008)	0.011 (0.011)
<i>Tenure</i> ²	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Observations	1480	1202	1202
<i>R</i> ²	0.981	0.980	0.981

Fixed effect OLS regression, robust standard errors in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

The dependent variable is a performance index between 1 (very poor) and 5 (very good) that aggregates a call center agent's performance in their 6 different performance dimensions (company weights). π_{-6} to π_{+6} measure the period-specific spillover effects of receiving an award on performance ranging from 6 months prior to an award to 6 months after the receipt of an award. *Tenure* and *Tenure*² account for the length of employment at the call center. *Model1* includes all id-month observations; *Model2* uses clean event windows, i.e. only those id-month observations where at most one of the winner dummies equals one to eliminate confounding effects; *Model3* is based on *Model2* and uses an index as dependent variable in which the different performance dimensions are weighted equally. Standard errors are clustered on a workgroup per year level.

Table IV: Effect of an award in the different performance dimensions

	Index	Quality	After Call Worktime	Calls taken per hour	Call Duration	Late	Transfer Rate
π_{-6}	-0.055 (0.103)	-0.222 (0.177)	0.055 (0.245)	0.186* (0.093)	0.143 (0.134)	-0.011 (0.191)	0.183 (0.150)
π_{-5}	0.123 (0.090)	0.059 (0.132)	0.376 (0.239)	0.178 (0.142)	0.312** (0.124)	0.019 (0.115)	0.046 (0.163)
π_{-4}	0.100 (0.071)	0.034 (0.116)	0.349* (0.197)	0.219 (0.156)	0.229 (0.156)	-0.078 (0.143)	0.115 (0.234)
π_{-3}	0.076 (0.101)	0.068 (0.127)	0.118 (0.241)	0.152 (0.165)	0.061 (0.156)	-0.054 (0.161)	0.145 (0.265)
π_{-2}	-0.013 (0.097)	0.023 (0.168)	-0.281 (0.169)	0.090 (0.155)	0.147 (0.163)	-0.307* (0.160)	0.110 (0.286)
π_{-1}	-0.028 (0.071)	0.061 (0.084)	-0.063 (0.193)	-0.043 (0.131)	-0.013 (0.158)	-0.403* (0.203)	-0.061 (0.270)
π_0	-0.034 (0.068)	0.030 (0.081)	-0.045 (0.210)	0.012 (0.123)	-0.028 (0.199)	-0.197 (0.327)	-0.237 (0.293)
π_{+1}	0.234** (0.086)	0.303** (0.120)	0.445* (0.249)	0.199 (0.132)	0.350 (0.238)	-0.038 (0.227)	-0.133 (0.194)
π_{+2}	0.015 (0.124)	0.139 (0.168)	-0.175 (0.151)	0.070 (0.200)	-0.084 (0.206)	-0.173 (0.203)	-0.178 (0.258)
π_{+3}	0.172 (0.167)	0.280 (0.209)	-0.129 (0.296)	0.050 (0.254)	0.130 (0.218)	-0.145 (0.279)	0.413 (0.307)
π_{+4}	-0.006 (0.108)	0.017 (0.138)	-0.243 (0.281)	-0.016 (0.137)	-0.141 (0.183)	-0.108 (0.262)	0.369 (0.283)
π_{+5}	-0.050 (0.059)	-0.049 (0.123)	-0.163 (0.221)	-0.106 (0.120)	-0.129 (0.204)	0.017 (0.268)	0.132 (0.374)
π_{+6}	0.005 (0.108)	0.104 (0.143)	-0.521** (0.201)	-0.054 (0.122)	-0.161 (0.150)	0.202 (0.256)	0.062 (0.400)
<i>Tenure</i>	0.013 (0.008)	0.017** (0.007)	-0.051** (0.023)	0.024 (0.014)	0.035 (0.020)	0.029*** (0.010)	0.008 (0.016)
<i>Tenure</i> ²	-0.000 (0.000)	-0.000 (0.000)	0.001 (0.000)	-0.000 (0.000)	-0.001 (0.000)	0.000 (0.000)	-0.000 (0.000)
Observations	1202	1202	1202	1202	1202	1202	1202
<i>R</i> ²	0.980	0.949	0.923	0.956	0.949	0.902	0.905

Fixed-effect OLS regression, robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The dependent variable is a performance index between 1 (very poor) and 5 (very good). Column 1 presents the company index that aggregates a call center agent's performance in their 6 different performance dimensions (company weights). The other columns display the six different performance dimensions. π_{-6} to π_{+6} measure the period-specific spillover effects of receiving an award on performance ranging from 6 months prior to an award to 6 months after the receipt of an award. *Tenure* and *Tenure*² account for the length of employment at the call center. The models use clean event windows, i.e. only those id-month observations where at most one of the winner dummies equals one to eliminate confounding effects. Standard errors are clustered on a workgroup per year level.

Table V: Heterogeneity and Sensitivity

	(1) All Obs	(2) First Award	(3) Repeated Awards	(4) Under- performers	(5) Over- performers	(6) With Month Fixed effects
π_{-6}	0.037 (0.80)	0.001 (0.01)	0.100* (1.78)	-0.114 (-0.61)	-0.006 (-0.04)	-0.035 (-0.33)
π_{-5}	0.092** (2.22)	0.135 (1.64)	0.072 (0.97)	0.066 (0.28)	0.180 (1.62)	0.130 (1.54)
π_{-4}	0.053 (1.27)	0.131 (1.69)	0.025 (0.37)	0.022 (0.17)	0.092 (1.08)	0.113 (1.27)
π_{-3}	0.058 (0.93)	0.141 (1.29)	-0.003 (-0.04)	-0.172 (-1.33)	0.098 (0.71)	0.121 (1.33)
π_{-2}	0.008 (0.17)	0.048 (0.50)	-0.017 (-0.30)	-0.014 (-0.07)	-0.012 (-0.10)	0.020 (0.22)
π_{-1}	-0.016 (-0.42)	-0.022 (-0.29)	-0.033 (-0.79)	-0.179 (-0.95)	0.031 (0.31)	-0.024 (-0.40)
π_0	0.000 (0.01)	-0.017 (-0.22)	-0.006 (-0.09)	-0.046 (-0.40)	-0.019 (-0.26)	-0.003 (-0.04)
π_{+1}	0.150*** (3.35)	0.239** (2.99)	0.077 (1.36)	0.329** (2.53)	0.129 (0.85)	0.280*** (3.21)
π_{+2}	0.064 (1.25)	0.056 (0.47)	0.056 (1.73)	-0.018 (-0.09)	-0.011 (-0.08)	0.053 (0.48)
π_{+3}	0.115 (1.19)	0.193 (1.04)	0.062 (0.77)	0.525* (2.02)	0.030 (0.15)	0.172 (1.06)
π_{+4}	0.009 (0.10)	0.062 (0.55)	-0.021 (-0.24)	-0.001 (-0.01)	-0.100 (-0.98)	-0.016 (-0.16)
π_{+5}	0.147** (2.16)	0.022 (0.28)	0.194* (2.02)	-0.024 (-0.31)	-0.145 (-1.12)	-0.017 (-0.24)
π_{+6}	0.069 (1.14)	0.126 (1.16)	0.030 (0.43)	0.175 (1.57)	-0.155 (-1.03)	0.039 (0.31)
<i>Tenure</i>	0.010 (1.41)	0.018* (2.10)	0.010 (1.15)	0.018** (2.43)	0.014* (2.10)	-0.020 (-0.73)
<i>Tenure</i> ²	-0.000 (-0.97)	-0.000 (-1.62)	-0.000 (-0.45)	-0.000 (-1.21)	-0.000 (-0.44)	-0.000 (-0.85)
Observations	1480	1149	1015	898	775	1202
<i>R</i> ²	0.981	0.980	0.981	0.979	0.985	0.981

Fixed-effect OLS regressions, robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The dependent variable is a performance index between 1 (very poor) and 5 (very good) that aggregates a call center agent's performance in their 6 different performance dimensions (company weights). π_{-6} to π_{+6} measure the period-specific spillover effects of receiving an award on performance ranging from 6 months prior to an award to 6 months after the receipt of an award. *Tenure* and *Tenure*² account for the length of employment at the call center. Column (1) includes all id-month observations; Column (2) is restricted to observations with zero or one award, i.e. to individuals with one award maximum. Column (3) drop all observations for first time award winner, i.e. it keeps individuals with zero or more than one award. Columns (4) and (5) report the results for over- and underperformers separately. Column (4) only contains events, i.e. awards, where the recipient performed below average in at least two out of the three months preceding the award. Column (5) contains all awards with above average or average performance of the individual prior to winning. In both models, the reference group consists of all id-month observations that are not part of any award window. Column (6) adds month fixed effects. Standard errors are clustered on a workgroup per year level.

Appendix

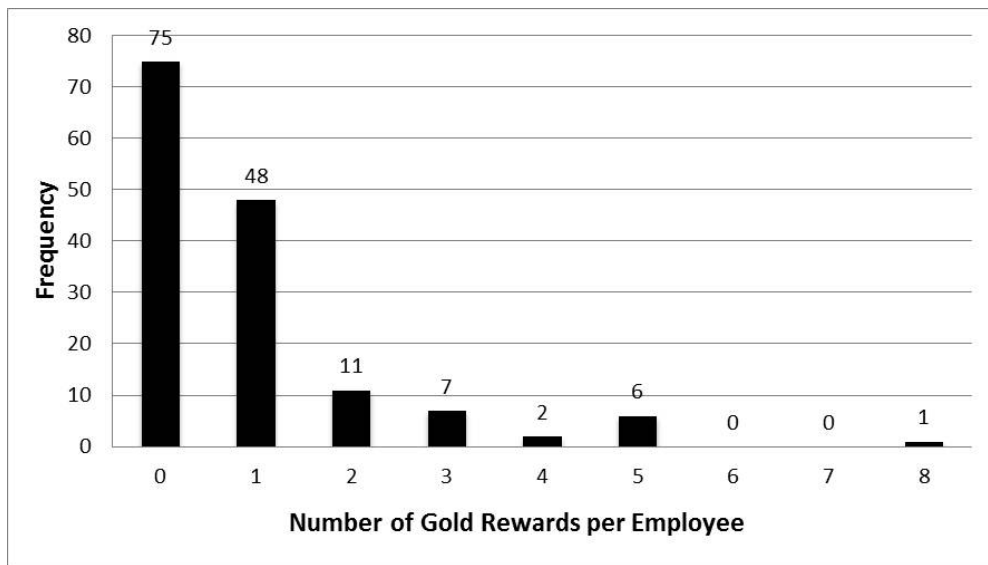


Figure A.1: Distribution of *Gold Rewards* per Employee

Table A.1: Frequency of *Gold Rewards* per Month

Year	Month	Without Clean Event Windows	With Clean Event Windows	Difference
2004	January	0	0	0
2004	February	4	3	1
2004	March	0	0	0
2004	April	0	0	0
2004	May	0	0	0
2004	June	0	0	0
2004	July	1	0	1
2004	August	4	2	2
2004	September	9	5	4
2004	October	4	2	2
2004	November	0	0	0
2004	December	4	0	4
2005	January	3	0	3
2005	February	1	0	1
2005	March	3	1	2
2005	April	1	0	1
2005	May	4	1	3
2005	June	4	4	0
2005	July	6	4	2
2005	August	4	2	2
2005	September	1	0	1
2005	October	1	0	1
2005	November	10	7	3
2005	December	6	3	3
2006	January	1	1	0
2006	February	0	0	0
2006	March	2	1	1
2006	April	1	0	1
2006	May	0	0	0
2006	June	3	1	2
2006	July	3	2	1
2006	August	4	1	3
2006	September	2	1	1
2006	October	2	0	2
2006	November	3	1	2
2006	December	8	5	3
2007	January	3	0	3
2007	February	5	1	4
2007	March	6	2	4
2007	April	4	2	2
2007	May	5	2	3
2007	June	1	1	0
2007	July	5	1	4
2007	August	4	2	2
2007	September	1	0	1
2007	October	4	2	2
	Total	137	60	77

This Table presents the number of *Gold Rewards* per month. Column 3 presents the sample used for the first model in the main regression Table III without clean event windows. The fourth column presents the sample used in Models 2 and 3 in the main regression table (clean event windows). With clean event windows, only those id-month observations are used in the analysis where at most one of the winner dummies equals one to eliminate confounding effects.