NBER WORKING PAPER SERIES

# NON-LINEAR INCENTIVES AND WORKER PRODUCTIVITY AND EARNINGS: EVIDENCE FROM A QUASI-EXPERIMENT

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Working Paper 25507
http://www.nber.org/papers/w25507

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
January 2019

We thank Daniel Berkowitz, Hanming Fang, Wenlan Qian, David Reeb, Aloysius Siow, and participants at the CCER Summer Institute for helpful comments. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 25507
January 2019
JEL No. J00,J22,J3,M5,M52

## ABSTRACT

Firms often use non-linear incentive systems to motivate workers to achieve specified goals, such as paying bonuses to reach targets in sales, production, or cost reduction. Using administrative data from a major Chinese insurance firm that raised its sales targets and rewards for insurance agents greatly in 2015, we find that increased incentives induced agents to increase sales of the increasingly incentivized life insurance products, bunched around the new targets, albeit in part with some low quality sales that led to canceled contracts, while reducing sales of products outside the new incentive system. The greater non-linear incentives raised agent incomes and lowered turnover and substantially increased firm revenues net of the increase in payments to agents. The stock market reacted to the new system with a jump in the firms' share price relative to its main competitor by 15-20% in the days surrounding introduction of the new system.

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Non-linear incentive systems which pay workers bonuses for meeting a target are common in the labor market, particularly for sales agents (Oyer, 2000). By incentivizing agents to attain a specified target[1] these forms of compensation produce distributions of output and earnings bunched around targets that reveal responses to incentives more transparently than do estimated income and substitution effects to changes in standard pay.[2] But non-linear incentives also induce agents to game the system – reducing effort in non-incentivized activities or in less easily measurable aspects of output that can lower profitability, which raises questions about the net effects and wide use of non-linear incentives (Lazear and Oyer, 2012).[3]

In this paper, we analyze the impact of a quasi-experimental change in a non-linear compensation scheme for newly recruited sales agents by a leading insurance firm in China (hereafter, "the firm"). Before the change, the firm paid new insurance agents a lump-sum bonus for meeting thresholds in life insurance commission, which produced a bunching of commissions just above threshold levels. The new compensation scheme raised the thresholds, increased the bonuses for meeting them, and extended the incentive system to agents for another three months. Administrative data on agents' commission two years prior to the change and two years after the change shows a change in the bunching of commissions from the old threshold values to the new threshold values for agents covered by the new system compared to no change in values for agents not covered by the

[1] Shaw, Gupta, and Delery (2000); Misra and Nair (2011); Chung et al. (2013) provide agency-based theoretic rationale for the use of commission and other output-based incentives.

[2] The bunching pattern has also been documented in analysis of responses to taxes and transfers, e.g., Saez (2010), Chetty (2012), and Kleven and Waseem (2013). See Kleven (2016) for a comprehensive review.

[3] Oyer (1998) attributes the increase in manufacturing firms' sales from the beginning to end of the fiscal year to non-linear incentives that lead agents to manipulate prices to influence the timing of customer purchases. Tzioumis and Gee (2013) show that mortgage officers increase output towards the end of a month to meet monthly quota, with the result that mortgages on the last working day of a month have a higher likelihood of delinquency than mortgages given earlier. Larkin (2014) shows that sales agents game the timing of deal closure to take advantage of a commission scheme. Benson (2015) shows that managers game the staffing and incentives of their subordinates in response to quotas. Larkin and Leider (2012) suggest that the use of non-linear incentives arises because convex piece rate systems attract and retain highly overconfident subjects, which may be beneficial in the sales function.

new system. The new system extended the non-linear compensation to a tenure group that had previously been excluded, and their sales increased particularly rapidly.

Some of the increased life insurance sales came at the expense of falling sales of insurance products not included in the new incentive plan. In addition, the new system led sales agents to sign up more life insurance customers for whom the policies did not fit, leading the firm's screening department to reject them as unhealthy/unqualified customers, and increasing the number of consumers who themselves withdraw from a contract. But the sales increases in life insurance dwarfed the lost sales of uncovered insurance products and the sales that were later withdrawn or cancelled so that the income of the sales agents and net revenues to the firm both increased. Seemingly anticipating the success of the incentives, the firm's share price jumped after it introduced the new system. By examining the level of commissions before and after the change in incentives, we identify the causal impact of non-linear incentives on productivity more definitively than is possible with cross section analysis that focuses on the bunching of sales around non-linear targets.

The paper enfolds in four parts. Section 1 describes the organizational background and data. Section 2 presents our analytic framework. Section 3 reports the results. Section 4 gives a cost-and-benefit assessment of the division of net gains to agents and the firm.

## 1. ORGANIZATIONAL BACKGROUND AND DATA

On January 1st, 2015 the firm we study increased its thresholds and rewards to newly hired insurance agents to sell life insurance. To assess the impacts of the new incentive system on worker productivity, we obtained administrative data on agents' monthly commissions and bonuses before and after the change from January 2013 to December 2016 in the largest branch of the firm. The branch employed more than 20,000 agents and recruited about 3,200 new agents annually during our sample period. It paid the newly recruited agents a commission from selling life insurance as a predetermined percentage of each years' premium and also paid bonuses for meeting threshold

targets specified in the incentive plan.[4] Agents who sold short-run insurance not covered by the non-linear plan received a lump sum commission when the customer signed the contract.[5] To limit the number of life insurance contracts sold to less healthy customers, the firm has a department that screens the qualification of new customers, with the power to require that customers take a formal physical examination before approving the sales contract, and the power to cancel the sales if it judges the purchaser unqualified. The possibility of having the department cancel sales discourages agents from selling contracts to less healthy customers as well as weeding out some of those sales.

The firm promotes or demotes agents quarterly based on an algorithm that assesses their sales of insurance[6] and the number of new agents (referrals) the agent sends to the firm in the previous quarter.[7] Agents are promoted to the next rung on the firm job ladder for exceeding a rung-specific threshold; demoted for falling below a basic requirement; and left on the same rung otherwise.[8]

The firm's employee handbook "*Regulations of Agents*" (the regulations, hereafter) describes the compensation scheme, promotion algorithm, and other aspects of the agent job. The firm updates the regulations every two or three years based on feedback from its more than 250 branches across the country and on developments in the insurance industry.[9] While agents know the regulations can be updated, neither they nor branch managers know the timing of an update nor the substance

[4] The insurance companies in China sign agency contracts with sales agents and thus agents are not covered by minimum wages.
[5] Life insurance covers the insured person for the whole of life and pays out the benefits to the beneficiary upon the death of the insured. Short-term insurance offers cover only a short period of time and pays out for various prearranged conditions. The insurance premium of each contract is standard so that agents cannot game the firm by lowering price when a few extra sales would reach a hurdle per Larkin's (2014) analysis.
[6] The assessment months are January, April, July, and October. There are five rungs for sales agents, junior level I-III and senior level I-II; three rungs for managers, including team, department, and district managers where team is lowest rung and district is highest. Department and district managers manage other lower-level managers as well as their own teams. We assign 1-8 to rungs from sales agent junior I to district manager.
[7] Since the firm gets revenue from every sales agent, it is almost always seeking additional agents. As existing agents may lose sales to new agents, they need a special incentive to refer them to the firm.
[8] The firm discourages out-of-algorithm promotion and such events rarely occurred during our sample period.
[9] The firm has major competitors, who use high-powered incentive schemes to attract agents to work for them. Therefore, when the firm adjusts its regulations, it invariably considers its major competitors' strategies.

of the changes.[10] As the agents and branch managers had no fore-knowledge the firm would change the compensation system in January 2015, we treat the change as a before/after quasi-experiment that identifies agent responsiveness to new incentives.

Like other insurance firms, the firm has high turnover.[11] Prior to the change, agents with tenure fewer than 12 months had turnover of about 5.8% per month so that over half of new recruits were gone within a year. Turnover then decreased to average monthly rates of 1.7%, 0.5%, and 0.1%, in the $13^{th}$-$24^{th}$, $25^{th}$-$36^{th}$, and $37^{th}$-$48^{th}$ tenure months. The non-linear incentive system is partially designed to reduce the turnover of the most productive new recruits.

*The compensation scheme for new recruits*. Prior to its 2015 change, the firm had a non-linear compensation scheme for life insurance sale[12], with much lower rewards for meeting targets. Agents' whose monthly life insurance commission satisfied a given threshold in their $1^{st}$-$9^{th}$ tenure months received a bonus.[13] The dashed lines in Figure 1 show the bonuses at different tenure months for the older system. Agents in the $1^{st}$-$3^{rd}$ tenure months received bonuses of 500, 800, 1,200, or 1,600 CNY for achieving 400, 800, 1,600, or 3,200 CNY in commission respectively, and thus earned a total income that ranged from below 400 CNY for those who failed to surpass the first hurdle to 900 CNY for reaching the first hurdle, 1,600 CNY for reaching the second, 2,800 CNY for the third, and 4,800 CNY for sales above the highest hurdle. A top seller thus earned more

[10] Prior to the January $1^{st}$, 2015 update, the firm had updated the regulations on March $1^{st}$, 2006, January $1^{st}$, 2010, and April $1^{st}$, 2013. The update time interval ranged from 2 to 3 years, and involved different changes in content. Therefore, neither the branch management or agents were likely to have predicted the update date nor the nature of changes.

[11] A 2016 PayScale comparison of turnover in Fortune 500 companies reported high rates for insurance companies, with Massachusetts Mutual Life Insurance having the highest turnover of all and average employee tenure of about 9 months.

[12] Management told us that it gave incentives solely for life insurance sales because life insurance products were more profitable due to higher premium and premium being paid annually for three to twenty years whereas other insurance premium are paid in a lump-sum when a contract is signed.

[13] Agents who started before or on the $10^{th}$ of a month, were covered for the month. Agents who begin working after that are counted as starting from the next month. By plotting the distribution of contract start date of each month during our sample period, we do not find any evidence of the manipulation of contract start date.

than 10 times as much as an agent who sold below the first hurdle and 5.3 times more than an agent who just reached the first hurdle.

On January 1st, 2015 the firm issued the new regulations that we study. It raised commission thresholds and bonuses and extended the period covered from the 9th tenure month to the 12th tenure month for newly recruited agents. The solid lines in Figure 1 show the new compensation scheme. When agents in their 1st-3rd tenure months earned life insurance commission of 500, 1,000, 2,000, 4,000, and 8,000 CNY, they received bonuses of 600, 1,100, 1,500, 2,200, and 3,500 CNY, respectively, producing incomes of 1,100, 2,100, 3,500, 6,200, and 11,500 CNY. The new system greatly steepened the non-linear incentives so that a top seller now earned more than 20 times an agent unable to surpass the first hurdle and 10.2 times more than an agent who just reached the first hurdle.

### *1.1. Data Source and Sample Construction*

The firm provided us with data for the job performance, personal attributes, and insurance claims for agents employed between January 2013 and December 2016. The *job performance* data consists of monthly commission from life insurance and other insurances sold, bonuses, insurance commission lost when customers or the firm's screening department cancelled a contract (which we call withdrawn commission, hereafter), and job ladders.[14] To study the response of agents to the steepening of incentives, we focus on agents with tenure ranging from 1 to 18 months from October 2014 to March 2015 divided into five tenure-month groups, the 1st-3rd, 4th-6th, 7th-9th, 10th-12th, and 13th-18th tenure months that match the variation in the compensation scheme by tenure. This gave us data on 1,710, 1,564, 953, 597, and 693 agents respectively during the sample period.

[14] Panels (A), (B), and (C) in Figure A.1 present the fluctuations of life insurance, other insurance, and withdrawn commission by tenure month, respectively.

We treat agents with $13^{th}$-$18^{th}$ tenure months who are ineligible for both the new and old compensation scheme as the control group.

The *personal information* records agents' gender, age, highest education differentiated between polytechnic-school, high-school, 2-3 year college graduates, and bachelors and above; an indicator for whether the agent sells insurance mainly in urban areas or not; and the start and end dates of their contract.[15] Table 1 shows that 34% of newly recruited agents are male, so about 2/rds are female, which is normal in the insurance industry in China and that the average education level is high-school graduate. The contract start and end dates enable us to measure agent turnover. We compare the probability of leaving the firm for agents who joined between January and June 2015 and thus were "treated" by the new policy and agents who joined the firm between January and June 2013 and thus were not covered by the new policy. We track each agent for 18 months with our sample period ending in December 2016.

The *insurance-claim* data covers every consumer who purchased insurance from an agent before 2016. It tells us whether agents sold more insurance products to unhealthy/ unqualified customers under the new non-linear incentive scheme. We gather data on claims for agents who joined the firm between October 2013 and April 2015, divided into six groups by their contract start time, i.e., Oct-Dec 2013, Jan-March, April-June, July-Sept, and Oct-Dec 2014, and Jan-April 2015.[16] Except for the Oct-Dec 2013 recruits, agents in the groups were partially or fully covered by the new incentive scheme in their first 12 months in the firm.[17]

## 2. EMPIRICAL STRATEGY

[15] The contract end date for an agent cannot be identified if she left the firm after the end of our sample period.
[16] Agents who joined the firm after April 2015 are excluded because very few of them have insurance claims cases in 2016. Our results are unchanged by extending the sample period to June or September 2015.
[17] Appendix Table A1 shows the treatment status of the six groups.

To examine the effects of the new non-linear incentive scheme on agent productivity, we employ a before-after approach, comparing commission/sales of agents from October to December 2014 as the before the change of the compensation scheme group, and agents from January to March 2015 as the after group. In regression analysis, the treatment group includes agents whose firm tenure is less than or equal to 12 months divided according to tenure: the 1st-3rd, 4th-6th, 7th-9th, and 10th-12th tenure months. Agents in their 13th-18th tenure months in the period are our control group. For each category of the agents, we employ the following specification:

$$C_{iym} = \alpha_0 + \alpha_1 After_y + X'_{iym}\alpha_2 + Tenure_{iym} + \delta_{ym} + \varepsilon_{iym}, \quad (1)$$

where $C_{iym}$ is the outcome of interest for agent $i$ in year $t$ and month $m$, such as life insurance, other insurance, and withdrawn commission. $After_y$ is a dummy variable that equals to 1 after the new system's initiation. $X'_{iym}$ is a vector of covariates, including gender, urban status, education levels, and age. In the analysis, we can also replace $X'_{iym}$ with $\mu_i$ which represents the agent fixed effects that absorb differences in individual ability. $Tenure_{iym}$ refers to the tenure month fixed effects. $\delta_{ym}$ is the calendar month linear trend, which captures any time trend in market demand for insurance products. $\varepsilon_{iym}$ is an idiosyncratic random error term. Standard errors in all regression analyses are clustered at the agent level.

The coefficient $\alpha_1$ in Equation (1) captures the average monthly post-change productivity response for each agent category compared to the October to December 2014 benchmark. Since agents in their 13th-18th tenure months are not eligible for either the old or new compensation scheme, we expect their estimated coefficient should be neither statistically nor economically significantly different from zero.

Moving from productivity to turnover, we track each agent's 1st-18th months in the firm. We compare the time when agents leave by agents recruited between January and June 2015, whose

1st-18th tenure months are exposed to the new scheme with agents recruited two years earlier between January and June 2013, whose 1st-18th tenure months are solely exposed to the old scheme. Combining the two groups, we examine turnover by estimating the following equation:

$$Leave_{iym} = \gamma_0 + \gamma_1 After_y * Tenure_{iym}^{1^{st}-12^{th}} + \gamma_2 After_y + \gamma_3 Tenure_{iym}^{1^{st}-12^{th}} + W'_{iym}\gamma_4 + \pi_m + \epsilon_{iym}, \quad (2)$$

where $Leave_{iym}$ is a dichotomous dummy variable that takes the value of 1 for workers who leave in month m. $Tenure_{iym}^{1^{st}-12^{th}}$ is a binary variable equal to1 if year *y* month *m* is in *i*'s 1st-12th tenure months. $W'_{iym}$ is a vector of demographic variables, including gender, urban status, education levels, and age. $\pi_m$ refers to the calendar month fixed effects, capturing the seasonal variations of the insurance demand. $\epsilon_{iym}$ denotes an idiosyncratic random error term. The other notations are as in Equation (1). The key coefficient is $\gamma_1$, which measures the average effect of the new compensation scheme on the probability of leaving the firm. The coefficient $\gamma_2$ captures the turnover of workers in the 13-18th tenure month group who were not covered by the new nor old scheme and thus should be effectively zero. Standard errors are clustered at the agent level.

## 3. RESULTS

Figure 2 displays the distribution of monthly life insurance commission around the lowest commission threshold of the old and new compensation schemes. If agents respond to the threshold incentives the distribution of output should be bunched around the old threshold when that was the relevant threshold and around the new threshold when that was the relevant threshold. Panel (A) shows that in the 1st-3rd tenure months, when the lowest commission threshold was 400 CNY under the old system, life insurance commission was indeed bunched just above 400 CNY. While this supports the notion that agents responded to the non-linear incentive system it does not rule out the possibility that the bunching at the threshold reflected a sorting mechanism whereby those who

could not reach the threshold left the firm or a selectivity mechanism in which the firm selected the threshold so most sales agents could pass it. The shift in bunching to the new 500 CNY commission threshold for workers covered by the new incentive system provides strong evidence the non-linear incentives in fact altered agent sales behavior.[18]

Panel (B) of Figure 2 displays the distribution of monthly life insurance commission around the bottom commission threshold (800 CNY) for the $4^{th}$-$6^{th}$ tenure months. Since the bottom commission threshold did not change with the new compensation scheme, we expect no change in the bunching. Indeed, commissions bunch around the same threshold before and after the introduction of the new system. By contrast, the distributions around the top commission threshold for the $4^{th}$-$6^{th}$ tenure month group for whom incentives changed show a bunching around 2,000 CNY under the new compensation scheme compared to a relatively uniform distribution of commissions under the old system (see Figure A.3 Panel (B)). Panels (C) and (D) show similar bunching in the distribution of life insurance commission for agents in their $7^{th}$-$9^{th}$ and $10^{th}$-$12^{th}$ tenure months, respectively.

### *3.1. The Average Response of Agent Productivity*

Table 2 records estimates of the average effects of the new compensation scheme on performance per Equation (1), where the outcome measure is life insurance commission net of withdrawn commission due to cancelled contracts. Panel (A) presents the estimate from a "pure" before-after regression with no controls for agent characteristics. Columns (1)-(4) show that the new compensation scheme significantly raised the average life insurance commission for agents in different tenure month groups by 244.9 ($1^{st}$-$3^{rd}$), 169.2 ($4^{th}$-$6^{th}$), 104.7 ($7^{th}$-$9^{th}$) and 136.4 CNY

[18] Appendix Figure A.2 gives the distribution of monthly life insurance commission around other commission thresholds of the old and new compensation schemes for the $1^{st}$-$3^{rd}$ tenure month group. Bunching distortions are more salient at the lower commission thresholds than at the higher ones, possibly because fewer agents have the ability to manipulate productivity at the higher thresholds.

($10^{th}$-$12^{th}$). By contrast, column (5) shows no change in the commission for $13^{th}$-$18^{th}$ tenure month agents not covered by the new compensation scheme.

Panel (B) adds observable measures of agent characteristics, which yields similar coefficients to those in Panel (A). Panel (C) adds dummy variables for each agent to capture agent fixed effects and also yields coefficients comparable to those in Panel (A). With the agent fixed effects, the Panel (C) regression focuses on the sales of the same agent over time and thus provides the strongest test of the impact of incentives on behavior. It shows that virtually all of the effect of the new incentive scheme occurred by changing the behavior of the same agents. [19]

Finally, we note the large increase in commission for agents in the $10^{th}$-$12^{th}$ tenure months in all Table 2 specifications. As agents in this group were not included in the old incentive system, the estimated coefficient for them reflects the change in behaviour of sales agents changing from no incentive system to a non-linear incentive. The increase for this group is second highest to agents in the $1^{st}$-$3^{rd}$ month group among those covered by the new system. Appendix Table A2 shows that the key factor in raising performances for the affected agents is through the increased probability that the agents attained the higher thresholds. [20] Appendix Table A3 shows that the new compensation scheme raised the amount of bonuses going to agents through both the increased bonus for meeting a target and increased probability of attaining the target.

[19] We conduct additional tests to examine whether our main results are somewhat driven by the heterogeneity between the $1^{st}$-$12^{th}$ and $13^{th}$-$18^{th}$ tenure-month groups. Given that the performance on life insurance commission may vary for agents in different tenure months (the $1^{st}$-$12^{th}$ and $13^{th}$-$18^{th}$ tenure months, specifically) in every start of a year. If so, the effects of the new compensation scheme on life insurance commission that we estimate are contaminated by some unobservable confounding factors. To address this concern, we repeat our main analysis by using the sample period from October 2013 to March 2014, assuming there was a change in the non-linear incentive system in January 2014. Appendix B (Table B5) presents the related discussions.

[20] Panel (A) shows that the probability of reaching the thresholds increased for each of the $1^{st}$-$12^{th}$ tenure months groups. The one exception is the bottom commission threshold for $4^{th}$-$6^{th}$ tenure-month group. This is possibly because that commission threshold did not change in the new compensation scheme. Panel (B) shows no change in meeting thresholds for the $13^{th}$-$18^{th}$ tenure-month group uncovered by the incentives.

All told, the new compensation system had a huge effect on agent performance and income. The new policy increased life insurance sales for the four tenure groups by 38.5% ($1^{st}$-$3^{rd}$ months), 40.6%, ($4^{th}$-$6^{th}$ months) 42.2%, ($7^{th}$-$9^{th}$ months) and 53.7%, ($10^{th}$-$12^{th}$ months), respectively. Given that the increase in the threshold was smallest for the $1^{st}$-3th month tenure group and largest for the $10^{th}$-$12^{th}$ month group, the percentage increase in sales divided by the percentage increase in income – the elasticity of sales with respect to agent income – evidently falls with tenure, possibly reflecting the greater difficulty that more tenured employees had in reaching the higher thresholds at the higher tenure.[21]

Figure 3 turns to the monthly dynamics of adjustment reflected in the difference in life insurance commission between treatment and control groups for six months after the change. It treats the December 2014 group as the reference group with coefficients normalized to zero. Before the January 2015 change the coefficients for the treatment and control groups are around zero. After the change, the commission of agents in the treatment group increased sharply and remained stable while the commission of agents in the control group did not change significantly. The sharp change in the first month suggests that agents quickly figured out how to raise sales to meet the new targets and then kept doing what worked thereafter.

### *3.2. Gaming the Incentive System via Reduced Sales of Non-Incentivized Insurance and Increased Withdrawn and Cancelled Contracts*

By increasing payments only for life insurance, the compensation scheme gave agents incentives to divert efforts from selling other products.[22] Table 3 presents estimates of the impact of the new compensation scheme on the commission of *non-life insurance* items for agents in the $1^{st}$-$3^{rd}$, $4^{th}$-

[21] The elasticity for the four tenure groups is 1.5, 1.2, 1.2, and 0.8. Taking the first tenure group as an example, the elasticity is computed as 38.5%/26%=1.5. The percentage increase in income (26%) is a combination of the effect on life and other insurance commission and bonuses, i.e., the estimates in Table 2, 3, and A3. For the other three tenure groups, the income increased by 32.8%, 35.0%, and 60.7%, respectively.

[22] This is captured by theories on multi-tasking (Holmstrom and Milgrom, 1991)

$6^{th}$, $7^{th}$-$9^{th}$, and $10^{th}$-$12^{th}$ tenure months. The commission earned on these products decreased by 20 to 25 CNY for the various groups – significantly greater than zero in most cases but costing only 15% of the estimated increase in life insurance commission induced by the new incentives.

The high-powered compensation scheme also gives agents an incentive to trade-off the quality of a sale for numbers of sales.[23] In their pitch to customers, agents may overstate the benefits of the life insurance to some at the risk that the customers will later decide that the contract does not fit their needs and withdraw from it. On the other side, agents may accept unhealthy (unqualified) consumers at the risk that the firm's screening department cancels the sale. Both of these situations show up as "withdrawn commission" – a negative line on the commission accounting.[24] Table 4 shows that the new compensation scheme increased the withdrawn commission in all tenure month groups subject to the new system relative to the control group, which had no significant change. The increased withdrawn commission is about 27% of the increased life insurance commission inclusive of the withdrawn commission, implying that agents significantly reduced the quality of sales on the margin, presumably to reach threshold hurdles.[25]

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[23] This fits with other studies of the effects of monetary and nonmonetary incentives on performance. For instance, DellaVigna and Pope (2017) compare the effect of monetary and non-monetary incentives on effort. Ager et al. (2016) find that German pilots during World War II won only a few additional victories but died at a significantly higher rate. Li and Lu (2018) document that the subsequent performance of award winners becomes worse under peer pressure.

[24] Agents normally receive their last-month salary in the middle part of the current month, at which time all withdrawn cases have been dealt. In other words, to win the bonuses, agents cannot sell insurance to "fake" customers who withdraw their contracts later on.

[25] We use the insurance claim data to examine whether the new compensation scheme led agents to sell more insurance to unhealthy (unqualified) customers. We divide the sample into six groups by their contract start time to differentiate longer and shorter coverage by the new incentive scheme in their first 12 months in the firm, groups $G_i^1$-$G_i^5$, compared to the reference group of agents hired between October and December 2013. We estimate an equation $Claims_i$ which measures the number of life insurance claim cases on binary variables for the groups covered at least in part by the new compensation scheme relative, $Claims_i = \beta_0 + \beta_1 G_i^1 + \beta_2 G_i^2 + \beta_3 G_i^3 + \beta_4 G_i^4 + \beta_5 G_i^5 + Z_i^{'} \beta_6 + \varphi_i$, where $G_i^1$-$G_i^5$ are dummy variables for the five groups, $Z_i^{'}$ is a vector of control variables, including tenure month in January 2016, gender, urban status, education levels, and age in 2016. $\varphi_i$ is a random error term. We use the heteroscedasticity-consistent standard errors in this analysis. Given the five groups have different exposures to the new compensation scheme, we would expect that $\beta_5 > \beta_4 > \beta_3 > \beta_2 > \beta_1 > 0$, if agents with more time covered by the new system sold more insurance products to unhealthy (unqualified) customers. Appendix Table A4 shows no statistically significant difference in life insurance claims for the two groups.

### *3.3. The Promotions and Demotions*

As noted in section one, the firm assesses agents at the beginning of each quarter on their previous quarters' performance, and moves them along the job ladder if performance was above or below specified criterion. Since commission earnings factor into promotion, the new system of compensation should increase promotions and reduce demotions. Defining the dependent variable in Equation (1) as changes in the agent position on the firm's job ladder with the values of 1 for promotion, 0 for no change, and -1 for demotion, we estimate an ordered logistic model of the effects of the new system on those changes.

Table 5 shows that the new compensation scheme was associated with a significant increase in the position of agents in their $1^{st}$-$12^{th}$ tenure months in the firm's job ladder compared to the $13^{th}$-$18^{th}$ tenure-month control group. Converting the estimated coefficients into probabilities, agents in their $1^{st}$-$12^{th}$ tenure months had a higher probability of being promoted under the new compensation scheme by 1.26% and a lower risk of being demoted by 1.44%. By contrast, the job ladders of the control group of $13^{th}$-$18^{th}$ tenure month agents did not change significantly. Columns (3) and (4) show that the estimated coefficients of promotion and demotion of agents in their $4^{th}$-$6^{th}$ and $10^{th}$-$12^{th}$ tenure months are significantly higher while the coefficients for the $1^{st}$-$3^{rd}$ and $7^{th}$-$9^{th}$ tenure-month groups are positive but statistically insignificantly higher under the new system.

## 4. CONCLUSION: NET BENEFITS TO AGENTS AND THE FIRM

The evidence that agents' income increased greatly under the new system does not invariably translate into comparable improvements in their net well-being. Much of the increase in income could have come at the expense of longer and more stressful work hours, offsetting in part the higher incomes per Bryson et al.'s (2012) finding that higher paid British workers suffered from increased job anxiety. Absent reports on job satisfaction from agents, we use the data on turnover to assess the magnitude of the net welfare benefit to agents from the new system. If agents "paid"

for the higher performance through more stressful work, some would likely have found the job no longer attractive and have left more quickly than under the previous incentive system, raising turnover. Those who stayed would also have paid a price for their higher income. If, on the other side, the income gain from the new system *dominated* the cost of greater time and effort to attain targets, the job would have gotten more attractive, reducing turnover.

Figure 4 shows that in fact in their first 12 months in the firm, turnover was markedly lower for agents fully covered by the new compensation system compared to those covered by the old compensation. The implication is that the higher income under the new system made working for the firm more attractive relative to whatever the increase was in worker stress.

Table 6 estimates the magnitude and statistical significance of the change in compensation on turnover with a regression model that compares the turnover of agents recruited in 2015 and paid by the new incentive system and those recruited in 2013 and paid by the old system. The estimates in columns (1) and (2) show a 2.2 percentage point lower turnover rate of agents in the $1^{st}$-$12^{th}$ tenure months in the new system relative to those in the same tenure months in the old incentive system. By contrast, the turnover rate of the agents in their $13^{th}$-$18^{th}$ tenure months, for whom the incentive system did not change, did not differ significantly. Columns (3) and (4) give estimates of the effect on the turnover rate for each tenure-month group separately. Compared to the $13^{th}$-$18^{th}$ tenure-month group, the turnover rate of agents in all other tenure month groups decreased significantly for all but the $1^{st}$-$3^{rd}$ tenure-month group.

The reduction in turnover thus suggests the new incentive system created a large “welfare surplus” for agents rather than costing them so much in effort and time to be just marginally beneficial. Perhaps the improvement in productivity came more from faster learning on the job individually or collectively or thinking harder about how to do their job and identify good potential customers

quickly or to improve their sales pitch to prospective customers – than through more painful greater effort. [26]

What about benefits to the firm?[27]

One way to assess the value of the new incentives on the firm is to examine how the stock market responded to the January 1, 2015 changes. Figure 5 displays the share price of the firm (Panel (A)) and of its share price relative to the share price of its major competitor in the insurance market (Panel (B)) from 200 days before the introduction date to 200 days after the introduction data. Both share prices are scaled to be 1 on the day of the change to better preserve the identity of the firm. The figure shows a marked jump in the absolute and relative share price in the narrow interval surrounding the introduction of the new policy. The magnitude of the jump suggests the market valued the new system as improving net future revenues on the order of 10-15% of the value of the firm.

To see how the workers and the firm divided the benefits of the new system, we used our statistical calculations to estimate the revenue going to sales agents and to the firm net of costs. We further made a crude estimate of the potential administrative cost of developing and implementing the new system. Table 7 shows the results of our estimates. The gains from increased sales of life insurance due to the commission mode of pay dominates the revenue lost from other insurance sales and cancellations of sales and from the decline in sales on non-incentivized products to be the major factor in the breakdown of benefits. If bonuses, which are a cost to the firm while a benefit to agents, were the main source of the gain in agents' income, the firm would have ended up with relatively little of the increased revenue stream from the new system. But most of the gain in agents' income comes from the increased commission on sales. With a commission rate of 15%

[26] See Kahn et al. (2018) and Kaur, Kremer, and Mullainathan (2015).
[27] Reviewing the literature on the downside of non-linear incentive schemes, Lazear and Oyer (2012) raise the question of why agents' gaming a non-linear system does not undermine it.

on sales, 85% of the additional revenues went to the firm, giving it the bulk of the increased net revenue stream.

But these data provide no information on the administrative cost to the firm of developing and implementing the new incentive system, which must be deducted from the firms' return. To assess this cost, we made back-of-the-envelope cost estimates based on annual reports of the firm. The annual reports showed administrative costs in 2014 and 2015 that averaged 7.9% of insurance revenue. If the additional life insurance commission revenues in the table had the same administrative cost, they would have cost the firm another 55 CNY for each agent, which we deduct from the return to firm and total return columns in the table.[28] Our estimate is that 63% of the total return from the new non-linear system went to the firm.

In sum, our analysis provides strong support that the firms' steepening incentives induced large supply responses from workers that, given the division of rewards, justified the firms' decision to bring in the new compensation system. While the large gains from the new system raises a question about why the firm did not increase incentives earlier, the increase in agents' income and fall in turnover, and the higher firm net revenues and share price that followed the introduction of the new system show the power of non-linear incentive schemes to affect economic performance.

[28] The 55 CNY could be higher if the firm had additional implementation costs and could be lower, due to reduced turnover, which almost surely lowered some labor costs. At best it is a plausible magnitude. Even if the expense of the system was double the 55 CNY, the benefit from the increased sales commission would dominate the calculation, producing a high total return to the firm.

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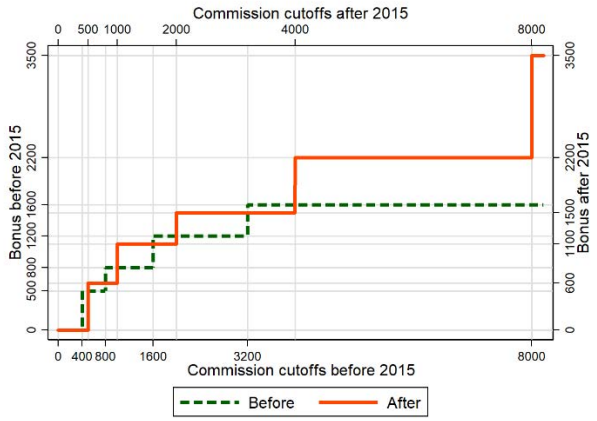
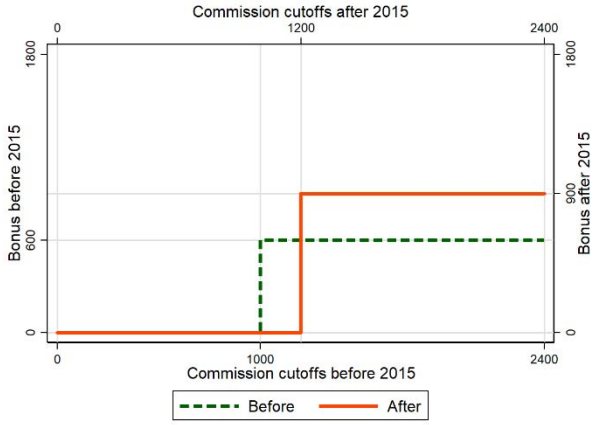
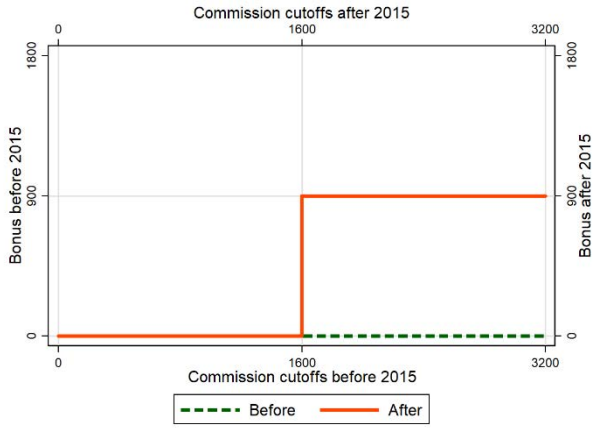



(A) 1st-3rd tenure months


(B) 4th-6th tenure months



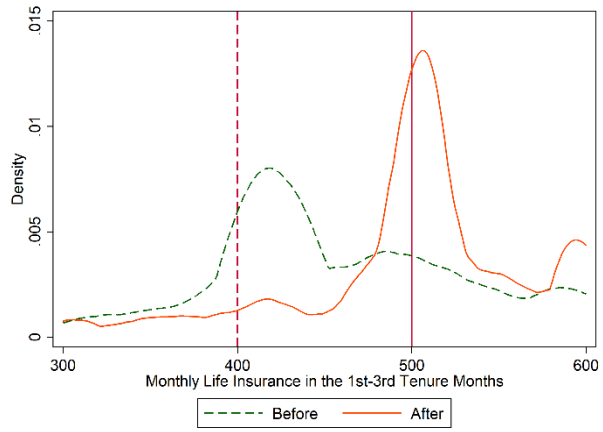

(C) 7th-9th tenure months



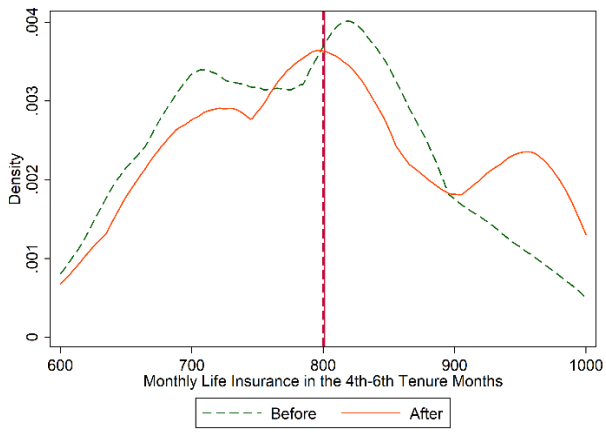

(D) 10th-12th tenure months

**Figure 1: The Compensation Schemes for the Newly Joined Agents**

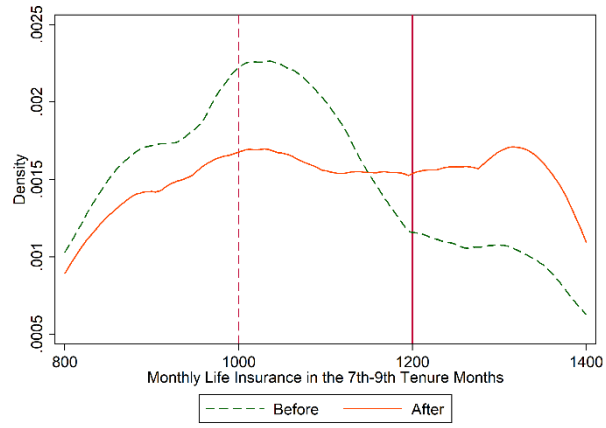
**Notes:** The figure displays the two compensation schemes for the newly joined agents before and after January 1st, 2015. The green-dash and red-solid lines represent the compensation scheme before and after the change, respectively. To illustrate the compensation scheme, we take agents in the 1st-3rd tenure months before 2015 as an example. When their life insurance commission in any months of their 1st-3rd tenure months reaches 400, 800, 1,600, or 3,200 CNY, the corresponding bonuses are 500, 800, 1,200, or 1,600, respectively. Their income will be 900, 1,600, 2,800, and 4,800, respectively.



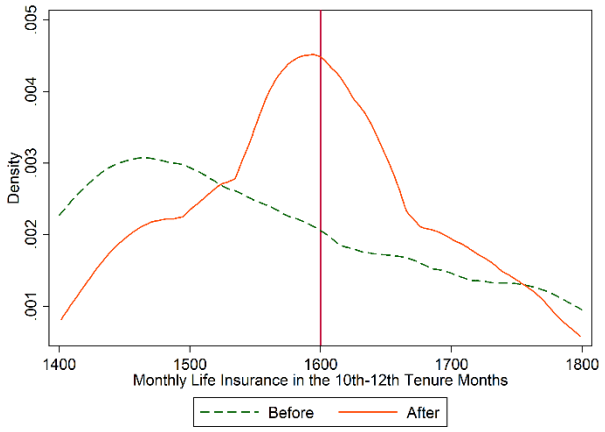

(A) 1st-3rd tenure months




(B) 4th-6th tenure months




(C) 7th-9th tenure months




(D) 10th-12th tenure months

**Figure 2: The Distributions of Life Insurance Commission Around the Commission Thresholds**

**Notes:** The figure presents the distributions of life insurance commission around the commission thresholds of the old (green dash lines) and new (red solid lines) compensation schemes. For the 1st-3rd tenure months, we select the distribution of life insurance commission around the lowest commission threshold of the old and new compensation schemes, as can be seen in Panel (A). The distributions around other levels of commission thresholds for the 1st-3rd tenure months are displayed in Figure A2. In Panel (B) we plot the distribution of life insurance commission around the lowest commission threshold (800 CNY). The distributions around the top commission threshold for the 4th-6th tenure months are drawn in Figure A3. Panels (C) and (D) show the distributions for the 7th-9th and 10th-12th tenure months, respectively.

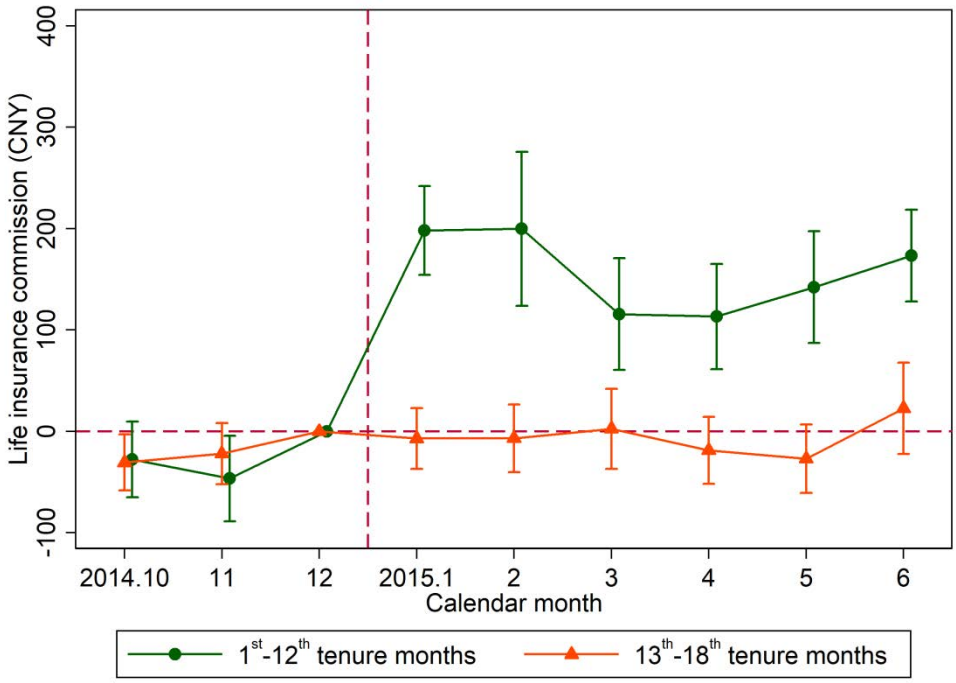



**Figure 3: Estimated Dynamic Effect on the Life Insurance Commission**

**Notes:** This figure presents the estimated dynamic response to life insurance commission of the agents. We use the time period from 2014.10 to 2015.6 and plot the average life insurance commission by month for agents in their $1^{st}$-$12^{th}$ and $13^{th}$-$18^{th}$ tenure months, respectively. December 2014 is the reference group (normalized to be zero). The x-axis denotes the calendar months, and the y-axis shows the estimated response to life insurance commission (CNY).

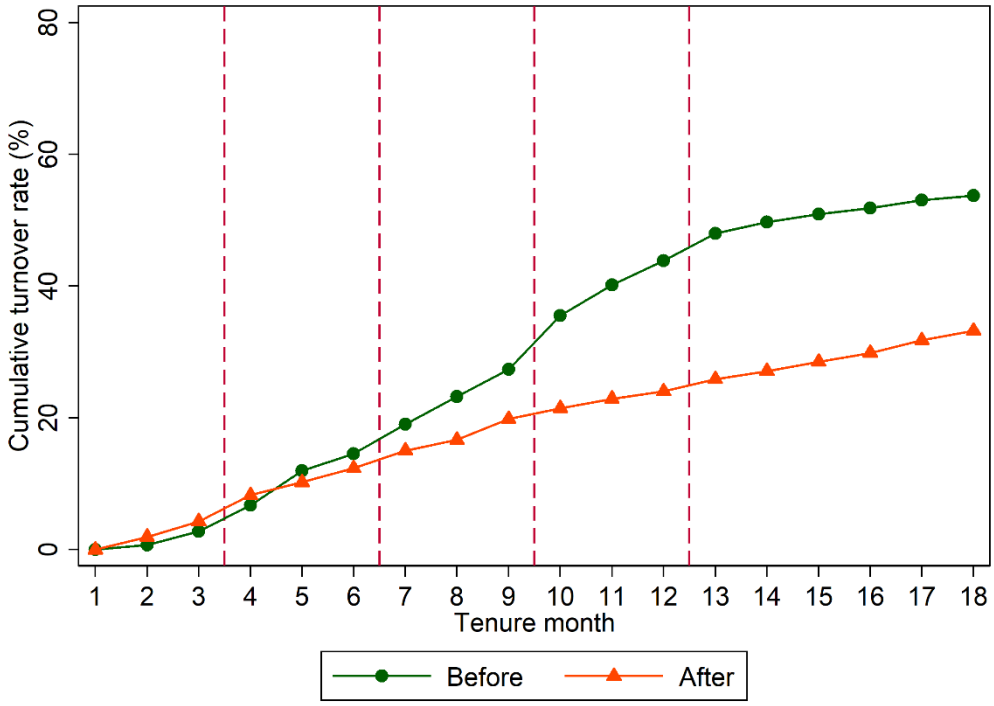
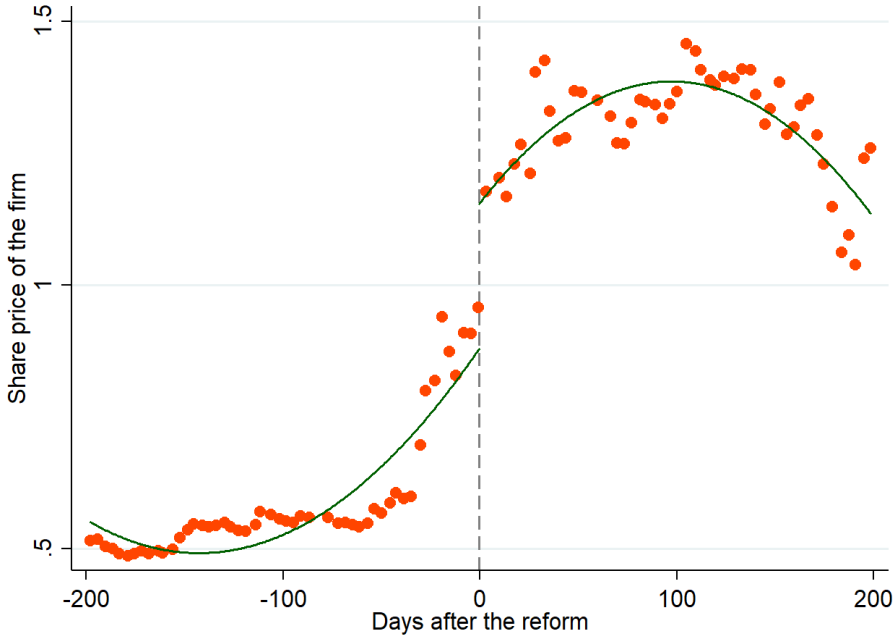



**Figure 4: Turnover Rate by Tenure Month**

**Notes:** The figure displays how the turnover rate is cumulated by tenure month. The green-circle line denotes the agents who joined the firm between January and June 2013. The red-triangle line represents the agents who joined the firm between January and June 2015.




(A) Share price of the firm


(B) Share price of the firm relative to its main competitor

**Figure 5: Share Price of the Firm and of the Firm relative to its Main Competitor**

**Notes:** The figure shows the share price of the firm (Panel (A)) and of the firm relative to its main competitor (Panel (B)) during the period from 200 days before to 200 days after the introduction of the new non-linear incentive system. In Panel (A) the Y-axis is the share price of the firm, which is scaled to be 1 on the policy announcement date. In Panel (B) the Y-axis denotes the ratio between the share price of the firm and its main competitor, which is scaled to be 1 on the policy announcement date. Each dot in the two figures represents the average share price in a four-day bin. The green lines are the quadratic fit based on the daily share price data.

**Table 1: Summary Statistics for Performance and Personal Characteristics of Agents in the Analysis Sample**

| VARIABLES | (1) Obs. | (2) Mean | (3) SD | (4) Min | (5) Max |
|---|---|---|---|---|---|
| **Performance** | | | | | |
| Life insurance commission (CNY) | 13,319 | 347.87 | 1,310.48 | 0.00 | 39,195.60 |
| Other insurance commission (CNY) | 13,319 | 64.18 | 474.69 | 0.00 | 23,418.80 |
| Withdrawn commission (CNY) | 13,319 | 50.98 | 546.55 | 0.00 | 32,000.00 |
| Bonus (CNY) | 13,319 | 148.88 | 388.06 | 0.00 | 4,000.00 |
| Tenure months | 13,319 | 6.91 | 4.94 | 1.00 | 18.00 |
| **Personal Characteristics** | | | | | |
| Male | 13,319 | 0.34 | 0.47 | 0.00 | 1.00 |
| Urban status | 13,319 | 0.50 | 0.50 | 0.00 | 1.00 |
| Age | 13,319 | 34.98 | 8.00 | 19.00 | 58.00 |
| Polytechnic-school graduate | 13,319 | 0.40 | 0.49 | 0.00 | 1.00 |
| High-school graduate | 13,319 | 0.20 | 0.40 | 0.00 | 1.00 |
| College graduate | 13,319 | 0.32 | 0.47 | 0.00 | 1.00 |
| Bachelor and the above | 13,319 | 0.09 | 0.28 | 0.00 | 1.00 |

**Notes:** This table provides descriptive statistics for our main analysis sample. Each observation denotes an agent-month cell. The sample period is from October 2014 to March 2015. In the sample, we keep the agents who are in their 1$^{st}$-18$^{th}$ tenure months during the time period. *Tenure months* is the length of stay (in months) in the firm in each calendar month. *Male* is an indicator of being male. *Urban status* is an indicator of selling insurance mainly in the urban areas. *Age* is the age in years. Education levels are divided into four categories, including polytechnic-school, high-school, and college graduates and bachelors and the above.

**Table 2: The Impact of New Incentive System on Life Insurance Commission**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th | 13th -18th |
| Baseline sample mean of life insurance commission (CNY) | 766.5 | 328.3 | 282.2 | 271.9 | 256.6 |
| | **Panel A: Pure event study** | | | | |
| **After** | 244.9*** | 169.2*** | 104.7*** | 136.4** | -5.9 |
| | (41.4) | (49.4) | (36.4) | (61.3) | (35.1) |
| R-squared | 0.045 | 0.008 | 0.007 | 0.017 | 0.004 |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| | **Panel B: Estimates conditional on observable characteristics of agents** | | | | |
| **After** | 236.7*** | 169.2*** | 102.1*** | 128.2** | -9.9 |
| | (41.2) | (49.6) | (36.6) | (61.7) | (34.2) |
| R-squared | 0.053 | 0.026 | 0.015 | 0.023 | 0.014 |
| Demographic controls | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| | **Panel C: Estimates with agent fixed effects: before/after for the same agent** | | | | |
| **After** | 294.8*** | 133.2*** | 119.0*** | 145.9*** | -1.4 |
| | (43.5) | (48.8) | (37.6) | (53.2) | (36.5) |
| R-squared | 0.579 | 0.642 | 0.623 | 0.565 | 0.501 |
| Agent FE | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| No. of agents | 1,710 | 1,564 | 953 | 597 | 693 |
| Observations | 4,190 | 3,480 | 2,011 | 1,271 | 2,367 |

**Notes:** This table summarizes how life insurance commission respond to the new non-linear compensation scheme. The regression sample is restricted to a narrow time window from October 2014 to March 2015. Panel (A) are estimates of Equation (1) without controlling for agent characteristics or fixed effects. To compare, in Panels (B) and (C) we add a series of agent characteristics and agent fixed effects, respectively. Characteristic controls include gender, urban status, education levels, and age. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

**Table 3: The Impact of New Incentive System on Other Insurance Commission**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th | 13th -18th |
| Baseline sample mean of other insurance commission (CNY) | 119.6 | 57.3 | 48.3 | 42.3 | 56.7 |
| | **Panel A: Pure event study** | | | | |
| **After** | -32.6*** | -16.6** | -32.7** | -23.1 | -3.5 |
| | (9.8) | (8.3) | (14.6) | (15.1) | (3.6) |
| R-squared | 0.009 | 0.005 | 0.005 | 0.008 | 0.002 |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| | **Panel B: Estimates conditional on observable characteristics of agents** | | | | |
| **After** | -33.0*** | -16.9** | -33.6** | -24.6 | -4.2 |
| | (9.8) | (8.3) | (14.8) | (15.3) | (3.6) |
| R-squared | 0.018 | 0.017 | 0.015 | 0.024 | 0.013 |
| Demographic controls | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| | **Panel C: Estimates with agent fixed effects: before/after for the same agent** | | | | |
| **After** | -25.4** | -19.6** | -25.1 | -20.6** | -2.9 |
| | (10.2) | (8.7) | (18.2) | (8.7) | (3.7) |
| R-squared | 0.615 | 0.672 | 0.638 | 0.612 | 0.674 |
| Agent FE | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| No. of agents | 1,710 | 1,564 | 953 | 597 | 693 |
| Observations | 4,190 | 3,480 | 2,011 | 1,271 | 2,367 |

**Notes:** This table statistically summarizes how other insurance commission responses to the new non-linear compensation scheme. The sample period and specifications mirror those in Table 2. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table 4: The Impact of New Incentive System on Withdrawn Commission of Life Insurance**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th | 13th -18th |
| Baseline sample mean of withdrawn insurance commission (CNY) | 64.5 | 44.2 | 39.8 | 44.3 | 39.6 |
| | **Panel A: Pure event study** | | | | |
| **After** | 53.1*** | 45.2*** | 77.0*** | 47.1** | 1.8 |
| | (13.3) | (17.1) | (20.5) | (21.4) | (1.4) |
| R-squared | 0.008 | 0.004 | 0.011 | 0.009 | 0.003 |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| | **Panel B: Estimates conditional on observable characteristics of agents** | | | | |
| **After** | 52.4*** | 45.4*** | 76.2*** | 46.7** | 1.6 |
| | (13.3) | (17.1) | (20.2) | (22.2) | (1.4) |
| R-squared | 0.013 | 0.008 | 0.018 | 0.012 | 0.010 |
| Demographic controls | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| | **Panel C: Estimates with agent fixed effects: before/after for the same agent** | | | | |
| **After** | 61.9*** | 42.0** | 74.8*** | 56.6** | 1.9 |
| | (14.3) | (17.8) | (21.4) | (25.1) | (1.6) |
| R-squared | 0.424 | 0.493 | 0.432 | 0.469 | 0.343 |
| Agent FE | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| No. of agents | 1,710 | 1,564 | 953 | 597 | 693 |
| Observations | 4,190 | 3,480 | 2,011 | 1,271 | 2,367 |

**Notes:** This table statistically summarizes how withdrawn commission of life insurance responses to the new non-linear compensation scheme. The sample period and table structure mirror those in Table 2. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table 5: The Impact of New Incentive System on Promotion/Demotion**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Variables | Job ladder changes | | | |
| Baseline sample mean | 0.01 | | | |
| After*1st-12th tenure months | 0.363*** | 0.355*** | | |
| | (0.129) | (0.130) | | |
| After*1st-3rd tenure months | | | 0.104 | 0.096 |
| | | | (0.112) | (0.112) |
| After*4th-6th tenure months | | | 0.437*** | 0.429*** |
| | | | (0.146) | (0.147) |
| After*7th-9th tenure months | | | 0.248 | 0.238 |
| | | | (0.166) | (0.167) |
| After*10th-12th tenure months | | | 0.720*** | 0.711*** |
| | | | (0.221) | (0.221) |
| After | -0.064 | -0.098 | -0.066 | -0.101 |
| | (0.111) | (0.112) | (0.112) | (0.112) |
| Observations | 21,652 | 21,652 | 21,652 | 21,652 |
| R-squared | 0.009 | 0.013 | 0.013 | 0.016 |
| No. of agents | 1559 | 1559 | 1559 | 1559 |
| Tenure month FE | x | x | x | x |
| Calendar month FE | x | x | x | x |
| Demographic controls | | x | | x |

**Notes:** This table displays the estimates on the effects of the new non-linear compensation scheme on job ladder changes. The treatment group consists of the agents who were recruited between January and June 2015. The control group includes agents who were recruited between January and June 2013. The dependent variables in columns (1)-(4) are a measure on job ladder changes, which take on three values, i.e., -1 (demotion), 0 (unchanged), and 1 (promotion). All regressions are estimated by ordered logistic models. Controls and fixed effects are the same as in Equation (3). The reference group includes the agents who are in their 13th-18th tenure months. Demographic control variables include male dummy, urban status, education levels, and age. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

**Table 6: The Impact of New Incentive System on Turnover Rate**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Variables | Leave the firm (=1) | | | |
| Baseline sample mean | 0.05 | | | |
| After*1st-12th tenure months | -0.022*** | -0.022*** | | |
| | (0.005) | (0.005) | | |
| After*1st-3rd tenure months | | | 0.008 | 0.008 |
| | | | (0.006) | (0.007) |
| After*4th-6th tenure months | | | -0.019** | -0.019** |
| | | | (0.008) | (0.008) |
| After*7th-9th tenure months | | | -0.042*** | -0.041*** |
| | | | (0.009) | (0.009) |
| After*10th-12th tenure months | | | -0.050*** | -0.049*** |
| | | | (0.009) | (0.009) |
| After | -0.003 | 0.003 | -0.002 | 0.003 |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| Observations | 21,652 | 21,652 | 21,652 | 21,652 |
| R-squared | 0.009 | 0.013 | 0.013 | 0.016 |
| No. of agents | 1559 | 1559 | 1559 | 1559 |
| Tenure month FE | x | x | x | x |
| Calendar month FE | x | x | x | x |
| Demographic controls | | x | | x |

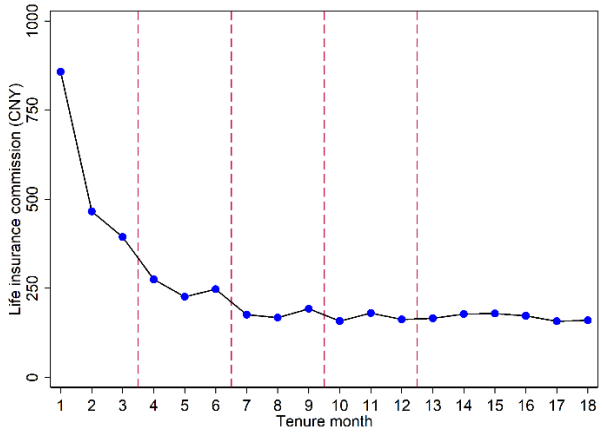
**Notes:** This table reports the estimates on the effects of the new non-linear compensation scheme on the turnover rate. The treatment group consists of the agents who were recruited between January and June 2015. The control group includes agents who were recruited between January and June 2013. The dependent variables in columns (1)-(4) are a binary variable indicating whether agents leave the firm or not. All the estimates are based on Equation (3). The reference group includes the agents who are in their 13th-18th tenure months. Demographic control variables include male dummy, urban status, education levels, and age. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table 7: Distribution of Net Benefits from the Non-linear Incentive Scheme**

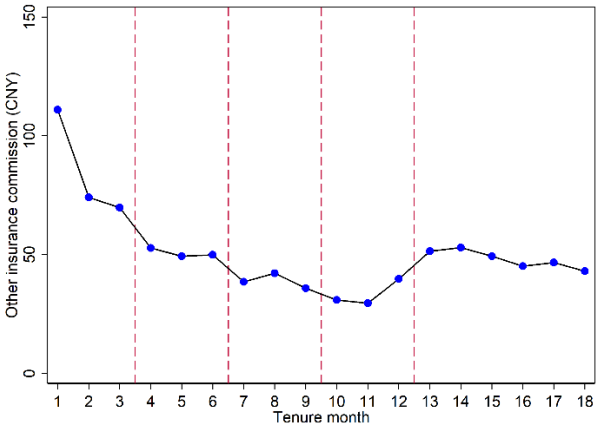
| | Return to Agents (CNY) | Return to Firm (CNY) | Total Return (CNY) |
|---|---|---|---|
| Life Insurance Commission | 232.1 | 696.2 | 928.2 |
| Other Insurance Commission | -22.7 | -68.0 | -90.7 |
| Withdrawn Commission | -58.8 | -176.5 | -235.3 |
| Bonus | 67.1 | -67.1 | 0 |
| Return from reduced turnover | 37.3 | 99.5 | 136.7 |
| Estimated Administrative Cost of Changes | 0 | -59.1 | -59.1 |
| Total Return | 254.9 | 424.9 | 679.8 |

**Notes:** This table reports the distribution of net benefits from the non-linear incentive scheme between agents and the firm. The return to the agents from the increased life insurance commission is computed based on the estimates in Table 2 and 4. Specifically, we take the average of the effect on the net life insurance commission in Table 2 and plus the average withdrawn commission derived from Table 4. The return to the firm from the increased life insurance sales is computed by the following procedures. We first divide the return to the agents by the commission rate (15%) and minus the return to the agents and average claim cost (40% of the insurance premium). The return from other insurance and withdrawn commission is computed in a similar way based on the estimates in Tables 3 and 4. Average increased bonuses are calculated based on the estimates in Table A3. Based on the firm's annual report, we know that the cost of implementing the changes (or administration costs) occupies about 8% of total insurance premium revenue. Therefore, we compute the administration costs by summing up the commission in column (3) together with the benefits from reduced turnover times 8%. The total returns are the summation of the items in all the other rows.

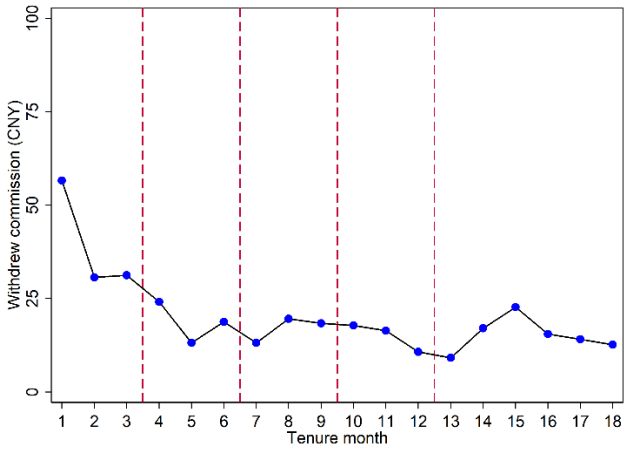
# Appendix A




(A) Life insurance commission



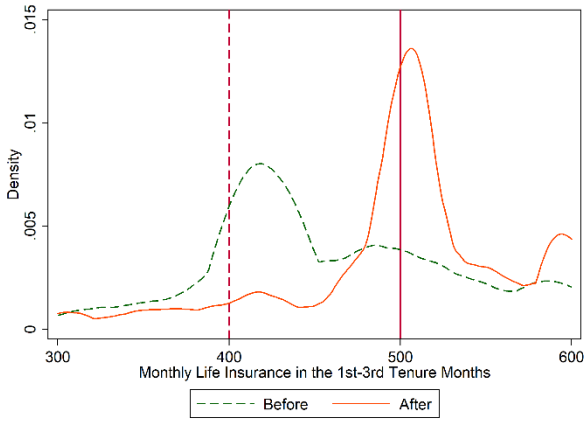

(B) Other insurance commission



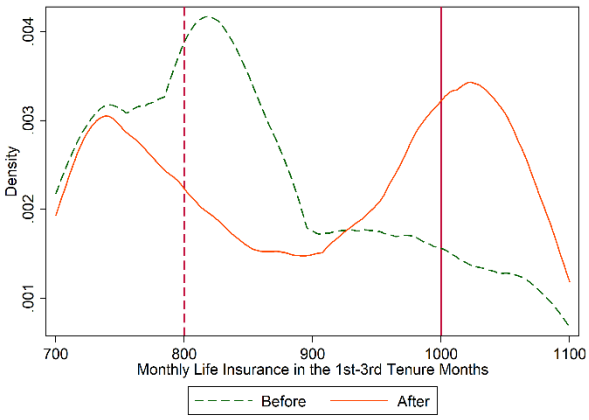

(C) Withdrawn commission

**Figure A1: The productivity of sales agents in the 1st-18th tenure months**

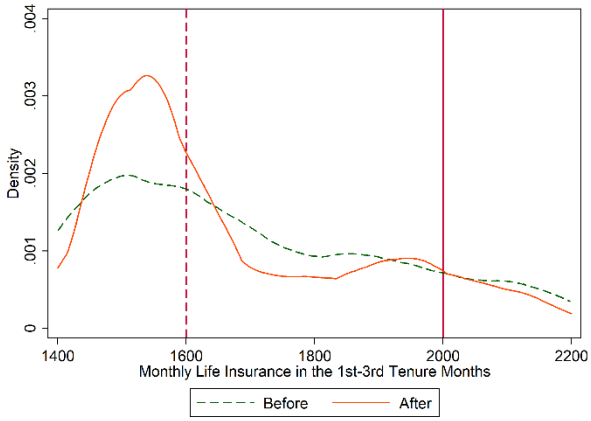
**Notes:** The figure displays the monthly performance of sales agents in their 1st-18th tenure months before the new compensation scheme's initiation. Panels (A), (B), and (C) present the fluctuations of life insurance, other insurance, and withdrawn commission by tenure month, respectively.



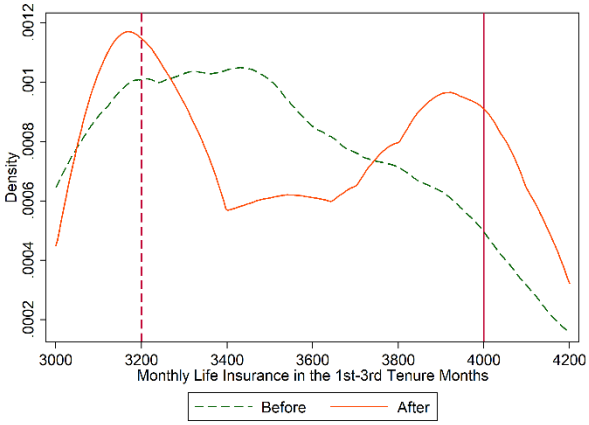

(A) The first level commission threshold



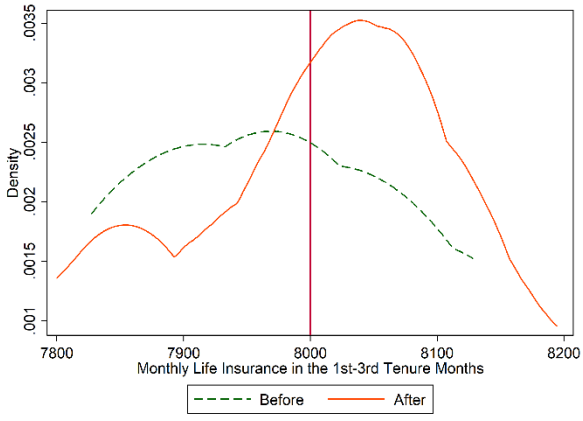

(B) The second level commission threshold




(C) The third level commission threshold



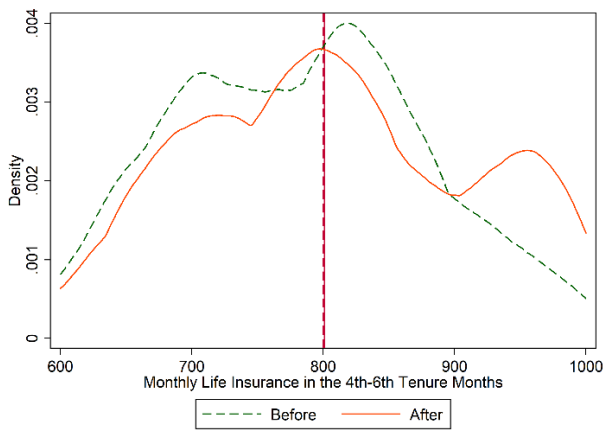

(D) The fourth level commission threshold



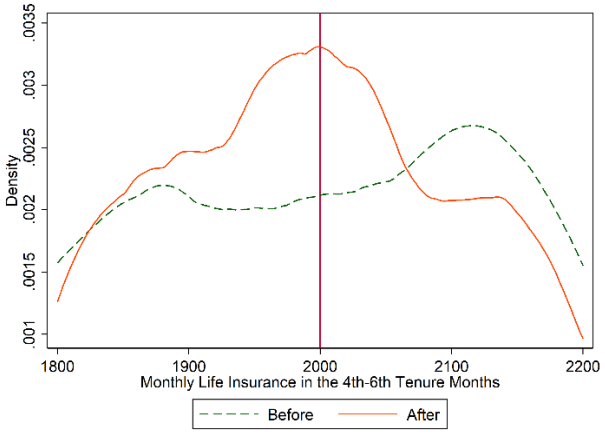

(E) The fifth level commission threshold

**Figure A2: The distributions of life insurance commission around the commission thresholds for 1st-3rd tenure months**

**Notes:** The figure plots the distributions of life insurance commission around the commission thresholds of the old (green dash lines) and new (red solid lines) compensation schemes for the 1st-3rd tenure months. Panels (A)-(E) present from the lowest to the highest commission threshold, respectively.




(A) The first level commission threshold




(B) The second level commission threshold

**Figure A3: The distributions of life insurance commission around the commission thresholds for 4th-6th tenure months**

**Notes:** The figure plots the distributions of life insurance commission around the commission thresholds of the old (green solid lines) and new (red solid lines) compensation schemes for the 4th-6th tenure months. Panels (A) and (B) present from the lowest to the highest commission threshold, respectively.

**Table A1: The Treatment Status for Agents by Contract Start Time**

| | Tenure months covered by the new incentive scheme | | | |
|---|---|---|---|---|
| Contract start time | $1^{st}$-$3^{rd}$ | $4^{th}$-$6^{th}$ | $7^{th}$-$9^{th}$ | $10^{th}$-$12^{th}$ |
| Oct.-Dec., 2013 | No | No | No | No |
| Jan.-Mar., 2014 | No | No | No | Partially |
| Apr.-Jun., 2014 | No | No | Partially | Yes |
| Jul.-Sep., 2014 | No | Partially | Yes | Yes |
| Oct.-Dec., 2014 | Partially | Yes | Yes | Yes |
| Jan.-Apr., 2015 | Yes | Yes | Yes | Yes |

**Notes:** This table summarizes the tenure months that covered by the new incentive scheme in agents' first 12 months in the firm. For the group recruited during October-December 2013, the agents are not covered by the new incentive scheme in their $1^{st}$-$12^{th}$ tenure months. For individuals who joined the firm in 2014, they are partially covered by the new incentive scheme in their $1^{st}$-$12^{th}$ tenure months. For the group joined during January-April 2015, the agents are fully covered by the new incentive scheme in their $1^{st}$-$12^{th}$ tenure months.

**Table A2: Main Result – Changes to the Probability of Being Bonus Winners scheme**

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| | Bonus winner (=1) | | | | | | | | |
| | **Panel A: Treatment group** | | | | | | | | |
| **After** | 0.029*** | 0.083*** | 0.125*** | 0.123*** | 0.065** | 0.059*** | 0.015 | 0.111*** | 0.071*** |
| | (0.007) | (0.011) | (0.016) | (0.023) | (0.026) | (0.015) | (0.019) | (0.026) | (0.022) |
| Baseline sample mean | 0.009 | 0.032 | 0.089 | 0.234 | 0.356 | 0.043 | 0.113 | 0.067 | 0.049 |
| Observations | 4,190 | 4,190 | 4,190 | 4,190 | 4,190 | 3,480 | 3,480 | 2,011 | 1,271 |
| R-squared | 0.441 | 0.542 | 0.539 | 0.520 | 0.548 | 0.584 | 0.614 | 0.576 | 0.483 |
| Sales commission threshold | >=8000 | >=4000 | >=2000 | >=1000 | >=500 | >=2000 | >=800 | >=1200 | >=1600 |
| **Tenure months** | **1st-3rd** | **1st-3rd** | **1st-3rd** | **1st-3rd** | **1st-3rd** | **4th-6th** | **4th-6th** | **7th-9th** | **10th-12th** |
| No. of agents | 1710 | 1710 | 1710 | 1710 | 1710 | 1564 | 1564 | 953 | 597 |
| Agent FE | x | x | x | x | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x | x | x | x | x |
| | **Panel B: Control group** | | | | | | | | |
| **After** | 0.005 | 0.007 | 0.002 | 0.003 | -0.005 | 0.002 | 0.001 | 0.002 | -0.000 |
| | (0.005) | (0.009) | (0.011) | (0.014) | (0.015) | (0.011) | (0.015) | (0.013) | (0.014) |
| Baseline sample mean | 0.005 | 0.015 | 0.036 | 0.064 | 0.087 | 0.036 | 0.071 | 0.057 | 0.044 |
| Observations | 2,367 | 2,367 | 2,367 | 2,367 | 2,367 | 2,367 | 2,367 | 2,367 | 2,367 |
| R-squared | 0.241 | 0.344 | 0.416 | 0.457 | 0.511 | 0.416 | 0.449 | 0.460 | 0.398 |
| Sales commission threshold | >=8000 | >=4000 | >=2000 | >=1000 | >=500 | >=2000 | >=800 | >=1200 | >=1600 |
| **Tenure months** | **13th-18th** | **13th-18th** | **13th-18th** | **13th-18th** | **13th-18th** | **13th-18th** | **13th-18th** | **13th-18th** | **13th-18th** |
| No. of agents | 1710 | 1710 | 1710 | 1710 | 1710 | 1564 | 1564 | 953 | 597 |
| Agent FE | x | x | x | x | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x | x | x | x | x |

**Notes:** This table reports the probability of meeting the life insurance commission thresholds the new compensation scheme. The regression sample is restricted to a narrow time window, i.e., from October 2014 to March 2015. Panel A presents the estimates for agents in their 1st-12th tenure months. As a placebo test, in Panel B we displays the estimates for agents in their 13th-18th tenure months. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table A3: The bonus changes received by agents**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th |
| Variables | Bonus (CNY) | | | |
| Baseline sample mean | 519.2 | 138.4 | 76.3 | 0 |
| | **Panel A: Pure event study** | | | |
| **After** | 54.1* | 71.4*** | 37.6** | 64.6*** |
| | (28.1) | (18.5) | (18.7) | (19.9) |
| R-squared | 0.052 | 0.017 | 0.004 | 0.026 |
| Tenure month FE | x | x | x | x |
| Calendar month linear trend | x | x | x | x |
| | **Panel B: Estimates conditional on observable characteristics of agents** | | | |
| **After** | 51.1* | 71.6*** | 37.7** | 61.4*** |
| | (28.1) | (18.5) | (18.9) | (20.1) |
| R-squared | 0.058 | 0.030 | 0.009 | 0.033 |
| Demographic controls | x | x | x | x |
| Tenure month FE | x | x | x | x |
| Calendar month linear trend | x | x | x | x |
| | **Panel C: Estimates with agent fixed effects: before/after for the same agent** | | | |
| **After** | 96.0*** | 58.4*** | 48.5** | 65.5*** |
| | (28.9) | (18.1) | (20.6) | (18.9) |
| R-squared | 0.624 | 0.630 | 0.608 | 0.492 |
| Agent FE | x | x | x | x |
| Tenure month FE | x | x | x | x |
| Calendar month linear trend | x | x | x | x |
| No. of agents | 1,710 | 1,564 | 953 | 597 |
| Observations | 4,190 | 3,480 | 2,011 | 1,271 |

**Notes:** This table reports the changes to the bonuses received by the agents under the new non-linear compensation scheme. The sample period and specifications mirror those in Table 2. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table A4: Side Effect - More Unqualified Customers?**

| Variables | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Life insurance claims (=1) | | Claims amount of life insurance (1,000 CNY) | |
| Baseline sample mean | 0.01 | | 0.24 | |
| Joined between Jan.-Apr. 2015 | -0.02 | -0.02 | -0.39 | -0.32 |
| | (0.01) | (0.01) | (0.55) | (0.50) |
| Joined between Oct.-Dec. 2014 | -0.01 | -0.01 | -0.15 | -0.06 |
| | (0.01) | (0.01) | (0.48) | (0.45) |
| Joined between Jul.-Sept. 2014 | -0.00 | -0.00 | 0.22 | 0.28 |
| | (0.01) | (0.01) | (0.50) | (0.46) |
| Joined between Apr.-Jun. 2014 | -0.01 | -0.01 | -0.12 | -0.09 |
| | (0.01) | (0.01) | (0.23) | (0.19) |
| Joined between Jan.-Mar. 2014 | -0.00 | -0.00 | 0.27 | 0.29 |
| | (0.01) | (0.01) | (0.35) | (0.38) |
| Tenure month | -0.00 | -0.00 | -0.03 | -0.02 |
| | (0.00) | (0.00) | (0.04) | (0.03) |
| Observations | 3,264 | 3,264 | 3,264 | 3,264 |
| R-squared | 0.002 | 0.003 | 0.002 | 0.004 |
| Demographic controls | | x | | x |

**Notes:** This table presents the effects of the new non-linear compensation scheme on the claims of life insurance. The dependent variables in columns (1)-(2) and (3)-(4) are dummies on whether an agent encountered claims and claims amount of life insurance, respectively. All the estimates are based on Equation (2). The reference group includes the agents who were recruited by the firm between October and December 2013. Demographic control variables include male dummy, urban status, education levels, and age. All standard errors are heteroscedasticity-consistent. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

# Appendix B

***We conducted two additional staistical analyses as a check on the robustness of our main finding that agents responded substantially to the new incentives. First, we estimated the responses of agents with different observed demographic features to see if some groups responded more than others. Second, we conducted a "placebo" type analysis on the assumption that the change in incentive occurred a year earlier, which tests whether agent responses were impacted by their months of tenure. We find some differences in responses of workers by demographic characteristics but no month effects a year earlier. The impact on behavior thus varies among groups but our estimated responses are to acual change in incentives and no contaminated by some month effect.***

To examine potential differences in response3s to the new compensation system among demographic groups, we divided the sample into subgroups based on the education level of the agents, their gender, urban status, and age, respectively, and estimated our basic life insurance commision equation separately for the subgroups. In each case we split agents into two groups, for instance college graduates and above compared to high-school graduates and below ("low-education group"); females vs males; urban vs rural agents; and workers above and below age 35.. Panels (A) and (B) of Table B1 show larger and more significant responses for high school graduates and below than for college graduates with the effects for the $4^{th}$-$12^{th}$ tenure-month groups of college graduates postivie but not statistically significant at the traditional level while neither the high- nor low-education group not covered by the new compensation scheme show any effect. Table B2 shows a mixed pattern of statisticallyt insignificant differences between men and women varying by group. Table B3 shows greater impacts among rural agents save for the $10^{th}$-$12^{th}$ tenure month group,while Table B4 shows no clear pattern of differences by age group. In sum, while there is some heterogeneity in responses, the only one that might merit further analysis is the difference by education group.

***To see whether our estimates of effects might be contaminated by differences*** in performance for agents in different tenure months (the $1^{st}$-$12^{th}$ and $13^{th}$-$18^{th}$ tenure months, specifically) in every start of a year, we we repeated our main analysis by using the sample period from October 2013 to March 2014, assuming contrary to reality that the comensation system changed in January 2014. Table B5 presents the estimates from this placebo-type analysis . The estimates in columns (1)-(4 for agents in the $1^{st}$-$3^{rd}$, $4^{th}$-$6^{th}$, $7^{th}$-$9^{th}$, and $10^{th}$-$12^{th}$ tenure months do not change statistically or by

economically meaningful amounts but are similar to those for the 13th-18th tenure month control group. Thus our analysis passes this placebo-type test.

Finally, in Table B6, we employ a difference-in-differences specification that tests the robustness of our main results in a different way. Specifically, in columns (1)-(4) the dependent variable is the difference between the life insurance commision of the treatment groups in their 1st-3rd, 4th-6th, 7th-9th, and 10th-12th tenure months minus the commions of agents in their 13th-18th tenure months. Besides the agent and tenure month fixed effects, we control the year-by-month fixed effects. Panels (A), (B), and (C) display the results for life insurance, other insurance, and withdrawn commission, respectively. The estimated effects on life insurance are positive; those on other insurance products are negative and those on withdrawn commission are positive, all with similar magnitudes to those in Tables 2-4.

**Table B1: Estimated Impact on Life Insurance Commission by Education Level**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th | 13th -18th |
| Variables | Life insurance commission (CNY) | | | | |
| Baseline sample mean | 816.6 | 334.8 | 293.4 | 294.5 | 254.3 |
| | **Panel A: College graduates and above** | | | | |
| **After** | 160.0** | 52.4 | 20.7 | 87.1 | 6.6 |
| | (69.5) | (73.3) | (52.4) | (66.7) | (59.3) |
| Regression sample | College graduates and above | | | | |
| No. of agents | 737 | 624 | 414 | 222 | 267 |
| Observations | 1,704 | 1,461 | 844 | 472 | 943 |
| R-squared | 0.615 | 0.615 | 0.644 | 0.551 | 0.499 |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| Baseline sample mean | 663.1 | 317.5 | 267.5 | 246 | 258.8 |
| | **Panel B: High-school graduates and below** | | | | |
| **After** | 361.8*** | 199.8*** | 188.6*** | 181.1** | -3.0 |
| | (55.4) | (64.7) | (52.4) | (77.5) | (46.3) |
| Regression sample | High-school graduates and below | | | | |
| No. of agents | 973 | 940 | 539 | 375 | 426 |
| Observations | 2,486 | 2,019 | 1,167 | 799 | 1,424 |
| R-squared | 0.558 | 0.661 | 0.614 | 0.569 | 0.503 |
| Agent FE | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |

**Notes:** This table reports how the life insurance commission of agents with different education levels responds to the new non-linear compensation scheme. The regression sample is restricted to a narrow time window, i.e., from October 2014 to March 2015. Panel A presents the estimates for agents whose education levels are college graduate and above. In contrast, Panel B displays the results for agents whose education levels are high-school graduate and below. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table B2: Estimated Impact on on Life Insurance Commission by Gender**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th | 13th -18th |
| Variables | Life insurance commission (CNY) | | | | |
| Baseline sample mean | 797.1 | 335.4 | 296.2 | 282.5 | 268.1 |
| | | | **Panel A: Female** | | |
| **After** | 297.8*** | 160.1** | 128.5*** | 100.6* | -4.5 |
| | (53.7) | (64.2) | (49.0) | (53.5) | (43.4) |
| Regression sample | | | Female | | |
| No. of agents | 1,124 | 1,020 | 622 | 419 | 464 |
| Observations | 2,762 | 2,255 | 1,342 | 881 | 1,586 |
| R-squared | 0.576 | 0.667 | 0.647 | 0.616 | 0.507 |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| Baseline sample mean | 712.8 | 315.6 | 256.6 | 252.0 | 233.7 |
| | | | **Panel B: Male** | | |
| **After** | 287.5*** | 83.8 | 94.0* | 209.9* | 3.1 |
| | (73.5) | (73.6) | (56.1) | (112.5) | (67.8) |
| Regression sample | | | Male | | |
| No. of agents | 586 | 544 | 331 | 178 | 229 |
| Observations | 1,428 | 1,225 | 669 | 390 | 781 |
| R-squared | 0.587 | 0.552 | 0.577 | 0.506 | 0.497 |
| Agent FE | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |

**Notes:** This table reports how the life insurance commission of female and male agents, respectively, responds to the new non-linear compensation scheme. The regression sample is restricted to a narrow time window, i.e., from October 2014 to March 2015. Panel A presents the estimates for female agents. In contrast, Panel B displays the results for male agents. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table B3: Estimated Impact on Life Insurance Commission by Urban Status**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th | 13th -18th |
| Variables | Life insurance commission (CNY) | | | | |
| Baseline sample mean | 808.6 | 316.3 | 259.3 | 259.8 | 232.4 |
| | **Panel A: Urban agents** | | | | |
| **After** | 199.9*** | 86.5 | 47.8 | 152.1** | -37.6 |
| | (60.0) | (68.5) | (54.0) | (72.9) | (55.8) |
| Regression sample | Urban | | | | |
| No. of agents | 861 | 764 | 464 | 308 | 362 |
| Observations | 2,091 | 1,702 | 971 | 662 | 1,222 |
| R-squared | 0.608 | 0.673 | 0.634 | 0.466 | 0.452 |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| Baseline sample mean | 730.0 | 338.6 | 302.3 | 283.0 | 278.7 |
| | **Panel B: Rural agents** | | | | |
| **After** | 366.8*** | 176.9** | 184.9*** | 125.4 | 39.0 |
| | (62.8) | (70.4) | (52.8) | (76.9) | (46.0) |
| Regression sample | Rural | | | | |
| No. of agents | 862 | 805 | 490 | 289 | 335 |
| Observations | 2,099 | 1,778 | 1,040 | 609 | 1,145 |
| R-squared | 0.558 | 0.616 | 0.615 | 0.631 | 0.579 |
| Agent FE | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |

**Notes:** This table reports how the life insurance commission of urban and rural agents, respectively, responds to the new non-linear compensation scheme. The regression sample is restricted to a narrow time window, i.e., from October 2014 to March 2015. Panel A presents the estimates for urban agents. In contrast, Panel B displays the results for rural agents. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table B4: Estimated Impact on Life Insurance Commission by Age**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th | 13th -18th |
| Variables | Life insurance commission (CNY) | | | | |
| Baseline sample mean | 909.9 | 400.9 | 360.3 | 335.2 | 343.7 |
| | | | **Panel A: Age ≥ 35** | | |
| **After** | 350.3*** | 179.9** | 100.1 | 99.5 | 57.4 |
| | (61.0) | (79.6) | (62.3) | (68.9) | (59.4) |
| Regression sample | | | Age ≥ 35 | | |
| No. of agents | 871 | 795 | 424 | 275 | 327 |
| Observations | 2,222 | 1,697 | 910 | 594 | 1,100 |
| R-squared | 0.568 | 0.692 | 0.628 | 0.654 | 0.542 |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| Baseline sample mean | 638.5 | 260.0 | 203.9 | 206.1 | 160.1 |
| | | | **Panel B: Age < 35** | | |
| **After** | 230.7*** | 90.7 | 133.5*** | 182.9** | -56.5 |
| | (60.8) | (60.8) | (45.4) | (79.7) | (45.3) |
| Regression sample | | | Age < 35 | | |
| No. of agents | 839 | 769 | 529 | 322 | 366 |
| Observations | 1,968 | 1,783 | 1,101 | 677 | 1,267 |
| R-squared | 0.589 | 0.549 | 0.617 | 0.476 | 0.417 |
| Agent FE | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |

**Notes:** This table reports how the life insurance commission of agents in different ages responds to the new non-linear compensation scheme. The regression sample is restricted to a narrow time window, i.e., from October 2014 to March 2015. Panel A presents the estimates for agents above 35 years old. In contrast, Panel B displays the results for agents below 35 years old. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table B5: Placebo Test - Assuming the Change were on January 1, 2014**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Tenure months | 1st-3rd | 4th-6th | 7th -9th | 10th -12th | 13th -18th |
| Variables | Life insurance commission (CNY) | | | | |
| Baseline sample mean | 492.5 | 186.0 | 197.1 | 158.9 | 183.8 |
| | **Panel A: Pure event study** | | | | |
| **After** | 15.4 | 48.3 | 52.0 | -9.7 | 48.7 |
| | (47.9) | (42.0) | (35.2) | (62.1) | (31.4) |
| R-squared | 0.081 | 0.001 | 0.008 | 0.000 | 0.002 |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| | **Panel B: Estimates conditional on observable characteristics of agents** | | | | |
| **After** | 12.0 | 47.7 | 53.2 | -18.5 | 44.0 |
| | (47.8) | (42.1) | (35.2) | (60.8) | (31.0) |
| R-squared | 0.085 | 0.005 | 0.024 | 0.011 | 0.009 |
| Demographic controls | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| | **Panel C: Estimates with agent fixed effects: before/after for the same agent** | | | | |
| **After** | 23.3 | 49.3 | 38.2 | -41.5 | 26.8 |
| | (48.7) | (45.1) | (36.1) | (73.3) | (32.1) |
| R-squared | 0.668 | 0.595 | 0.613 | 0.632 | 0.487 |
| Agent FE | x | x | x | x | x |
| Tenure month FE | x | x | x | x | x |
| Calendar month linear trend | x | x | x | x | x |
| No. of agents | 909 | 912 | 760 | 506 | 584 |
| Observations | 1,939 | 2,080 | 1,668 | 1,026 | 1,919 |

**Notes:** This table demonstrates the results of a placebo test by assuming that the compensation scheme were changed on January 1, 2014. Similar to that in Table 2, the regression sample is restricted to a narrow time window, i.e., from October 2013 to March 2014. All specifications mirror those in Table 2. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table B6: Estimates based on the difference-between the specified treatment goup and the $13^{th}$ -$18^{th}$ month tenure group not covered by the new compensaton policy**

| Variables | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Treatment group | $1^{st}$-$3^{rd}$ | $4^{th}$-$6^{th}$ | $7^{th}$ -$9^{th}$ | $10^{th}$ -$12^{th}$ |
| | **Panel A: Life insurance commission (CNY)** | | | |
| **After*treatment** | 290.2*** | 140.7** | 120.3** | 157.6*** |
| | (56.6) | (61.1) | (52.5) | (56.4) |
| | **Panel B: Other insurance commission (CNY)** | | | |
| **After*treatment** | -23.6** | -13.6 | -19.4 | -17.1** |
| | (10.9) | (9.3) | (18.6) | (7.7) |
| | **Panel C: Withdrawn commission (CNY)** | | | |
| **After*treatment** | 57.7*** | 39.6** | 70.8*** | 53.6** |
| | (14.1) | (18.2) | (21.6) | (25.5) |
| Observations | 6,557 | 5,847 | 4,378 | 3,638 |
| Agent FE | x | x | x | x |
| Tenure month FE | x | x | x | x |
| Year-month FE | x | x | x | x |

**Notes:** This table reports the estimates based on the difference-in-differences specification. Panels (A), (B), and (C) present the effects on life, other, and withdrawn commission, respectively. Each cell represents an independent regression. The treatment groups in columns (1)-(4) are the $1^{st}$-$3^{rd}$, $4^{th}$-$6^{th}$, $7^{th}$-$9^{th}$, and $10^{th}$-$12^{th}$ tenure months, respectively. The control group is the $13^{th}$-$18^{th}$ tenure months. The regression sample is the same as that in Tables 2-4, i.e., from October 2014 to March 2015. All standard errors are clustered at the agent level. Standard errors are reported in parentheses under the coefficient estimates, and ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.