The Economics of “Idleness” - Optimal Laziness under Asymmetric Information

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ABSTRACT

In the modern workplace, the phenomenon of “shirking” (also known as “moyü” or work avoidance), defined as employees engaging in non-work-related activities or reducing work effort during work hours, is increasingly common. This behavior not only affects organizational efficiency but also reflects profound economic issues within the employment relationship. This paper explores the economic principles behind shirking from the perspective of information economics, based on principal-agent theory and game theory. It investigates how employees choose optimal shirking strategies under conditions of information asymmetry, and how employers design optimal incentive and monitoring mechanisms in response. The research aims to reveal the underlying economic logic of this behavior and provide theoretical insights and (simulated) empirical evidence for understanding and managing modern labor relations.

This study first constructs a concise theoretical model. In this model, a risk-neutral employer cannot directly observe the effort level of a risk-neutral employee but can incentivize the employee by setting a minimum effort standard, paying a fixed wage, and implementing a probabilistic monitoring and punishment mechanism. The model derivation shows that the employee’s optimal decision exhibits a threshold effect: the employee chooses to meet the minimum standard only if the expected penalty (monitoring probability multiplied by penalty magnitude) exceeds the cost of achieving that standard; otherwise, the employee chooses zero effort (maximizing shirking). Furthermore, the model analyzes how the employer, balancing output gains, wage payments, and monitoring costs, selects the optimal minimum effort requirement and monitoring probability.

To test the implications of the theoretical model, this paper conducts an empirical analysis using (fictional) panel data from the “China Enterprise Employee Survey (CEES)” and employing a fixed-effects econometric model. The results indicate that increased enterprise monitoring intensity and a higher share of performance pay are significantly negatively cor-

related with the employee shirking index, confirming the effectiveness of monitoring and incentives in curbing opportunistic behavior. Conversely, higher task complexity is positively associated with the shirking index, possibly reflecting the difficulty of effectively monitoring complex tasks.

Integrating theoretical deduction with (fictional) empirical testing, this research deepens the understanding of the economic roots of shirking under information asymmetry. The findings offer implications for managers in designing more effective incentive mechanisms (e.g., balancing performance pay and monitoring investments) and management strategies (e.g., adopting differentiated approaches for tasks of varying complexity). This paper emphasizes that understanding the economics of shirking does not endorse the behavior but aims to promote more harmonious and efficient labor relations through scientific analysis.

KEY WORDS: Asymmetric Information, Laziness, Incentive, Game Theory

Contents

Chapter 1 Introduction

1.1 Research Background

In modern organizational management practices, the phenomenon of employee "shirking" (also referred to as "loafing on the job" or "work avoidance") is increasingly attracting attention. It refers to the behavior where employees, during work hours, do not fully dedicate themselves to tasks directly related to their job responsibilities, but instead engage in non-work activities, reduce their effort level, or procrastinate on work progress. This phenomenon is not merely a matter of individual laziness but is rooted in the complex organizational environment and employment relationship, particularly where information asymmetry commonly exists between the employer (principal) and the employee (agent) (Akerlof, 1970; Spence, 1973). Employers often find it difficult to precisely observe and measure the actual effort level and time investment of employees, which provides employees with the space to selectively exert effort and seek maximization of their personal utility (e.g., pursuing leisure, handling private affairs), thereby engaging in some degree of "shirking" behavior (Alchian et al., 1972).

Although the phenomenon of "shirking" is widespread, its underlying economic principles, particularly how employees make "optimal" shirking decisions in an environment of asymmetric information, and how these decisions interact with corporate incentive mechanisms and monitoring strategies, have not yet been fully and systematically explored. Existing literature in management and organizational behavior often analyzes it from psychological, cultural, or managerial technique perspectives (e.g., Ashforth et al., 1990; Robbins et al., 2016). While economics literature contains extensive research on principal-agent models and incentive theory (Grossman et al., 1983; Holmstrom, 1979), refining these theories to analyze the prevalent and variably-intense "shirking" behavior found in everyday work scenarios, explicitly exploring its "optimality" issue, and determining the employer's optimal response strategy, still leaves significant room for research. In particular, studies combining theoretical modeling with empirical testing to understand this phenomenon are relatively scarce. Understanding the intrinsic economic logic of this behavior holds significant theoretical and practical importance for designing more effective management systems, optimizing human resource allocation, and enhancing overall organizational efficiency.

This study attempts to approach the issue from the perspectives of information economics and game theory, viewing "shirking" as a rational (or boundedly rational) decision-making pro-

cess by employees facing incomplete information and specific incentive constraints. We aim to construct a theoretical framework to analyze how employees weigh the costs of exerting effort, the risk of being detected and punished, and the utility derived from "shirking", thereby choosing an effort level that is optimal for themselves. Concurrently, this study will also examine how employers design contracts, including monitoring intensity and effort requirements, to address this behavior, and the potential equilibrium state resulting from the strategic interaction between both parties. Furthermore, this study will utilize (fictional) empirical data to test some of the core mechanisms proposed by the theoretical model.

1.2 Research Questions

Based on the background described above and the analytical framework of subsequent chapters, this study aims to explore the following core questions:

1. Under conditions of asymmetric information where the employer cannot fully observe the employee's effort level, how is the employee's optimal shirking strategy (manifested as the choice of effort level in this simplified model) determined? What factors (such as monitoring probability, penalty magnitude, effort cost) are key?
2. How does the employer design the optimal monitoring and incentive contract (manifested as the minimum effort requirement e_{min}, monitoring probability p, and fixed wage w in this simplified model) to address potential employee shirking behavior and maximize profits? How are the optimal contract parameters influenced by external factors (such as monitoring cost, maximum penalty, effort cost parameter)?
3. (Based on fictional empirical analysis) In a realistic (simulated) environment, what is the relationship between the firm's monitoring intensity, the incentive strength of performance pay, the characteristics of the work task itself (e.g., complexity), and the employee's shirking behavior? Do the theoretical predictions find support in the (fictional) data?

1.3 Research Contributions

This study is expected to make contributions in the following aspects:

First, at the theoretical level, by applying classic principal-agent theory and game theory models to analyze "shirking", a specific and common phenomenon in the modern workplace, this study deepens the understanding of employee opportunistic behavior under asymmetric information. By explicitly exploring the formation mechanism of the "optimal shirking" strategy

(a binary choice between meeting the minimum standard or zero effort in this model) and its response to monitoring and punishment, it provides analytical perspectives for labor economics and organizational economics.

Second, at the model construction and analysis level, this research constructs a concise yet clear theoretical model that endogenizes the employee's effort choice and parts of the employer's contract design (minimum effort standard and monitoring probability). It conducts detailed equilibrium and comparative static analyses, revealing the influence mechanisms of key parameters on the equilibrium outcome.

Third, in combining theory with (fictional) empirics, this study not only builds a theoretical model but also uses (fictional) panel data and a fixed-effects econometric model to empirically test some core relationships suggested by the theory (e.g., the inhibitory effects of monitoring and performance incentives on shirking, and the potential impact of task complexity), demonstrating a research approach where theory guides empirics and empirics inform theory.

Finally, in terms of practical implications, the research findings (from both theoretical and fictional empirical parts) offer managers insights into employee behavior. Understanding the economic roots and influencing factors of "shirking" helps managers design more effective monitoring strategies and incentive mechanisms (e.g., balancing monitoring costs with incentive effects, considering job characteristics), thereby finding a more suitable balance between controlling opportunistic behavior and maintaining organizational efficiency.

1.4 Structure of the Thesis

The subsequent structure of this thesis is arranged as follows: Chapter Two will review the relevant literature, organizing studies on employee effort, monitoring, and opportunistic behavior within principal-agent theory, game theory, incentive theory, and organizational behavior, positioning the current research. Chapter Three will detail the theoretical model constructed in this paper, including basic assumptions (e.g., risk neutrality, specific cost function), variable definitions, and model setup. Chapter Four will provide an in-depth analysis of the model, deriving the employee's optimal effort decision rule, the employer's optimal contract design (minimum effort standard, monitoring probability, and wage), and conducting comparative static analysis. Chapter Five will present the empirical study based on (fictional) China Enterprise Employee Survey data, including model specification, variable descriptions, baseline regression results, and robustness discussions, testing some predictions of the theoretical

model. Chapter Six will summarize the research conclusions of the entire study, discuss its theoretical significance and practical implications, and point out the limitations of the research (such as model simplifications, fictional data) and potential directions for future study.

Chapter 2 Literature Review

This chapter aims to systematically review the theoretical and empirical research related to employee "shirking" behavior, laying the groundwork for subsequent model construction and analysis. We will primarily focus on reviewing literature concerning principal-agent theory, incentive and contract theory, the application of game theory in employment relationships, and relevant studies in organizational behavior regarding employee motivation and opportunism.

2.1 Principal-Agent Theory and Information Asymmetry

One of the core features of modern corporate organizations is the separation of ownership and control, which forms the basis of the principal-agent relationship (Jensen et al., 1976). In this relationship, the principal (e.g., employer, shareholder) delegates decision-making authority or task execution power to the agent (e.g., employee, manager), expecting the agent to act in the best interest of the principal. However, due to information asymmetry, particularly the difficulty for the principal to fully observe and verify the agent's actions (such as effort level), the agent may leverage this informational advantage to pursue their own interests, leading to the problem of Moral Hazard (Holmstrom, 1979).

Employee "shirking" behavior can be considered a typical manifestation of moral hazard. Because employers cannot precisely monitor every activity and effort input of their employees, employees may choose to exert less effort than agreed upon or expected, use work time for non-work matters, or complete tasks with lower efficiency, i.e., "Shirking" on the job (Alchian et al., 1972). Akerlof's "market for lemons" theory (Akerlof, 1970) and Spence's signaling theory (Spence, 1973) also reveal how information asymmetry affects market efficiency and individual behavior, principles that equally apply within the labor market. To mitigate problems arising from information asymmetry, principals need to design mechanisms to monitor agent behavior or incentivize effort exertion.

Early principal-agent models typically assumed that the agent's effort is unobservable, and the principal can only observe an output signal related to effort, which is also subject to random disturbances (Grossman et al., 1983; Holmstrom, 1979). This made incentive contracts based on output the focus of research. Studies show that optimal contract design requires a trade-off between risk sharing and providing incentives. When agents are risk-averse, transferring excessive risk to them reduces their utility and requires a higher risk premium; insufficient

incentives, however, lead agents to choose suboptimal effort levels.

2.2 Incentive Theory and Contract Design

To address the agency problem, economists have developed a rich body of incentive theory. The core idea is to align the agent's interests with the principal's objectives through the design of effective contracts.

Performance Pay is one of the most widely applied incentive tools. Theoretical research and empirical evidence suggest that linking compensation to measurable performance indicators can significantly increase employee effort and productivity (Lazear, 2000). However, designing performance pay faces numerous challenges, such as: the measurability issue of performance indicators (output of some tasks is difficult to quantify), the multi-task problem (employees may focus only on tasks with easily measured performance while neglecting other important responsibilities), and potential inducements for short-term behavior and excessive competition (Holmstrom et al., 1991).

Efficiency Wage Theory offers another perspective. It posits that employers paying wages above the market-clearing level can increase the opportunity cost of shirking for employees (i.e., the cost of losing a high-paying job), thereby motivating them to work harder and reducing the need for supervision (Shapiro et al., 1984). Efficiency wages can also attract higher-quality employees, reduce turnover rates, and enhance employee morale and sense of fairness (Akerlof et al., 1986).

Furthermore, non-monetary incentives such as promotions, career development, and reputation mechanisms also play important roles in the employment relationship (Fama, 1980; Gibbons et al., 1999). Long-term employment relationships, internal labor markets, and corporate culture, by fostering trust and repeated interactions, can mitigate short-term opportunistic behavior to some extent.

The development of contract theory has also gradually moved from assumptions of perfect rationality and complete contracts towards acknowledging the reality of bounded rationality and contract incompleteness (Hart, 1995). The concept of the Psychological Contract emphasizes the implicit expectations and mutual obligations in the employment relationship that are not explicitly written into formal contracts (Rousseau, 1995). When employees perceive that the organization has violated the psychological contract (e.g., broken promises, unfair treatment), their work motivation, loyalty, and effort levels may significantly decrease, making them more prone to negative behaviors such as "shirking".

2.3 Game Theory Perspective on the Employment Relationship

The employment relationship can be viewed as an ongoing game between the employer and the employee. Both parties, operating under conditions of incomplete information, choose their optimal actions based on expectations of the other party's strategies.

Incorporating "shirking" behavior into a game-theoretic framework helps analyze the interaction of strategies and equilibrium outcomes. For instance, the employer's monitoring strategy (e.g., frequency, intensity) and the employee's shirking strategy (e.g., degree, method) can be treated as interdependent decision variables. Increased monitoring investment by the employer can raise the probability of detecting shirking, thus deterring such behavior, but monitoring itself is costly. The employee, in turn, must weigh the utility gained from shirking against the risk of detection and the cost of working diligently. Tirole's (1986) research on collusion within organizations also suggests that monitoring systems themselves may have loopholes, potentially allowing for some form of "collusion" between managers and employees that affects monitoring effectiveness.

Repeated game models are particularly suitable for analyzing long-term employment relationships. In repeated games, reputation mechanisms and retaliatory strategies (such as "trigger strategies") can support cooperative equilibria, where employees choose not to shirk, and employers choose to trust or monitor less (Axelrod, 1984). However, maintaining cooperative equilibrium requires certain conditions, such as a sufficiently long game duration (or low probability of termination), sufficient patience from both parties (discount factor not too low), and adequate information transparency.

2.4 Organizational Behavior and Psychological Perspectives

Economic models typically assume individuals are rational and self-interested, seeking to maximize utility. In contrast, organizational behavior and psychology offer richer explanations for employee motivation and behavior.

Besides external incentives (like wages, bonuses), Intrinsic Motivation—the enjoyment, sense of achievement, autonomy, etc., derived from the work itself—is also a significant driver of employee effort (Deci et al., 1985). Over-reliance on external controls and monitoring can sometimes undermine employees' intrinsic motivation, leading to the so-called "crowding-out effect" of incentives (Frey, 1997).

Factors such as Burnout, Organizational Justice, Leadership Style, and Organizational Culture have also been shown to be closely related to employee work attitudes and behaviors

(including work engagement, absenteeism, turnover intention, and counterproductive work behaviors like "shirking") (Colquitt et al., 2001; Maslach et al., 2001). For example, when employees perceive distributive or procedural injustice, they might "correct" this perceived unfairness by reducing effort or increasing non-work activities. "Cyberloafing", the use of company-provided internet access for non-work-related online activities during work hours, has emerged as a new research hotspot in modern workplaces (Lim, 2002).

2.5 Literature Summary and Research Positioning

In summary, the existing literature has explored the theoretical foundations and influencing factors related to employee "shirking" behavior from various disciplinary perspectives. Principal-agent theory reveals the roots of information asymmetry and moral hazard; incentive theory examines how to guide employee behavior through contract design; game theory analyzes the strategic interactions between employers and employees; and organizational behavior emphasizes the role of psychological factors and the organizational environment.

However, current research still exhibits some limitations: 1. Most economic models tend to treat effort/shirking as a discrete choice (e.g., effort/no effort) or focus on specific types of shirking (e.g., reducing output quantity/quality), with fewer models formalizing the decision-making process where employees choose the *degree* of "shirking" continuously or multi-dimensionally. 2. Research that endogenizes both the employee's individual "optimal shirking" decision and the employer's optimal incentive/monitoring strategy within the same theoretical framework, analyzing their interactive equilibrium, is relatively scarce. 3. There is a lack of fine-grained theoretical characterization regarding how the "degree" of "shirking" is determined, i.e., how employees seek an optimal balance between pursuing personal leisure utility and maintaining job security/avoiding punishment.

Building upon previous research, this study attempts to focus on the issue of employee "optimal shirking" strategy choice in an environment of asymmetric information. We will construct a theoretical model that explicitly treats the degree of "shirking" as a continuous decision variable for the employee, analyzing how it is influenced by factors such as wage structure, monitoring probability, punishment severity, job characteristics, and individual preferences. Concurrently, the model will also incorporate the employer's incentive and monitoring strategies as endogenous variables to examine the equilibrium outcome under the strategic interaction of both parties. The aim is to provide a more refined economic analysis framework for understanding the ubiquitous phenomenon of "shirking" in the modern workplace and to

offer theoretical insights for designing more effective management strategies.

Chapter 3 Theoretical Model Construction

This chapter aims to construct a theoretical model to depict the "shirking" behavior (i.e., choosing the effort level) of employees under asymmetric information and the optimal response strategy of the employer. The model will draw upon the basic frameworks of principal-agent theory and game theory.

3.1 Basic Model Setup

Consider a single-period employment relationship involving a risk-neutral employer (Principal, P) and a similarly risk-neutral employee (Agent, A). The employee has a reservation utility $\bar{U}$, representing the minimum utility level required to accept the employment relationship. For simplicity, we normalize this to $\bar{U} = 0$.

The sequence of events is as follows:

1. The employer designs and offers an employment contract to the employee.
2. The employee decides whether to accept the contract. If rejected, the employee receives the reservation utility $\bar{U} = 0$, and the employer gets zero profit. If accepted, the game proceeds.
3. The employee chooses their effort level e. Effort level $e \geq 0$. Exerting effort incurs a corresponding cost for the employee.
4. Output q is realized, and payments are executed according to the contract.

The core assumption is information asymmetry: the employer cannot directly observe the effort level e chosen by the employee. However, the employer might indirectly infer or influence the employee's effort choice through monitoring mechanisms or by observing the final output q.

3.1.1 Employee Effort and Cost

The employee chooses an effort level e. We assume effort is a continuous variable, $e \in [0, \infty)$. Exerting effort generates disutility (cost) for the employee. We represent this with a cost function $c(e)$ and assume it has the following properties:

- $c(0) = 0$: No effort incurs no cost.
- $c'(e) > 0$ for $e > 0$: The cost of effort increases with the effort level (positive marginal cost).

- $c''(e) > 0$: The marginal cost of effort is increasing (the cost function is strictly convex).

A commonly used form for the cost function is $c(e) = \frac{k}{2}e^2$, where $k > 0$ is a cost parameter reflecting the difficulty of exerting effort.

The degree of employee "shirking" can be viewed as the deviation of the chosen effort level e from some benchmark (e.g., the level expected by the employer or the maximum possible level). In this model, we directly analyze the employee's choice of optimal effort e.

3.1.2 Output and Payment

To simplify the model, let's first consider a deterministic output scenario, where output q is entirely determined by the employee's effort level:

$$q = e \tag{3.1}$$

This implies the employer can perfectly infer effort e by observing output q. In this case, no information asymmetry exists, and the employer can achieve the optimum by designing a contract that mandates a specific effort level e^* and pays a corresponding wage. For example, specifying payment w if $q = e^*$ and zero or a penalty otherwise. As long as $w - c(e^*) \geq 0$, the employee will accept and choose $e = e^*$.

However, in reality, output is often affected by random factors. A more realistic setup involves stochastic output, for example:

$$q = e + \epsilon \tag{3.2}$$

where ϵ is a random noise term with a mean of zero (e.g., following a Normal distribution $N(0, \sigma^2)$). In this scenario, even after observing output q, the employer cannot fully determine the employee's effort e, highlighting the problem of information asymmetry.

Contracts can be based on observable variables, such as output q or information obtained through monitoring. Common contract forms include:

- Fixed Wage Contract: Pays a fixed wage w regardless of output.
- Linear Performance Pay Contract: Wage $w = s + bq$, where s is the fixed part, and b is the commission rate (bonus rate) based on output.
- Monitoring-Based Contract: The employer monitors the employee with a certain probability p. If monitoring reveals that the employee's behavior does not meet requirements (e.g., effort is below a standard e^*), a penalty is imposed.

3.2 Analysis of Employee Behavior: Fixed Wage and Monitoring

We now analyze how an employee chooses their optimal effort level under a relatively simple contract structure. Consider an employer offering a contract that includes a fixed wage w and a monitoring-penalty mechanism.

Specifically, the employer monitors the employee with probability $p \in [0, 1]$. Monitoring is assumed to be perfect; if implemented, it accurately observes the employee's actual effort level e. The contract specifies a minimum effort standard $e_{min} \geq 0$. If the employee is monitored and their effort level $e < e_{min}$, the employee incurs a penalty $F > 0$ (e.g., a fine, wage deduction). If $e \geq e_{min}$, or if the employee is not monitored (with probability $1 - p$), no penalty is incurred.

Assuming the employee is risk-neutral, their objective is to maximize their expected utility. The employee's utility comes from the wage received, minus the cost of effort, minus the potential expected penalty. Given the contract (w, p, e_{min}, F), the employee chooses effort e to maximize:

$$E[U(e)] = w - c(e) - p \cdot \mathbb{I}(e < e_{min}) \cdot F \tag{3.3}$$

where $\mathbb{I}(\cdot)$ is the indicator function, which equals 1 if the condition is true, and 0 otherwise.

The employee's optimal decision is as follows:

1. If choosing $e \geq e_{min}$: In this case, $\mathbb{I}(e < e_{min}) = 0$, and the employee faces no penalty. Their utility is $U_1(e) = w - c(e)$. To maximize utility, the employee will choose the effort level that satisfies $e \geq e_{min}$ with the minimum cost, which is $e = e_{min}$. The utility in this case is $U_1^* = w - c(e_{min})$.
2. If choosing $e < e_{min}$: In this case, $\mathbb{I}(e < e_{min}) = 1$, and the employee faces the risk of being caught and penalized. Their expected utility is $E[U_2(e)] = w - c(e) - pF$. To maximize this expected utility, the employee will choose the lowest possible effort cost, which is $e = 0$ (assuming $e = 0$ is the minimum allowable effort). The expected utility in this case is $E[U_2^*] = w - c(0) - pF = w - pF$.

The employee will choose the option that yields higher (expected) utility: The employee will choose $e = e_{min}$ if and only if

$$U_1^* \geq E[U_2^*] \tag{3.4}$$

$$w - c(e_{min}) \geq w - pF \tag{3.5}$$

$$pF \geq c(e_{min}) \tag{3.6}$$

Conclusion: Under this contract, the employee's optimal effort choice e^* is:

$$e^* = \begin{cases} e_{min} & \text{if } pF \geq c(e_{min}) \\ 0 & \text{if } pF < c(e_{min}) \end{cases} \tag{3.7}$$

This result intuitively shows that the employee is incentivized to meet the minimum standard e_{min} only when the expected penalty (probability of detection p times the penalty magnitude F) is large enough to exceed the cost of meeting that standard, $c(e_{min})$. Otherwise, the employee prefers to exert no effort ($e = 0$) and bear the expected penalty cost pF, because doing so saves the effort cost $c(e_{min})$.

This simple model reveals the role of monitoring and penalties in curbing "shirking" behavior but also highlights its limitations: it can only incentivize the employee to meet the minimum standard e_{min}, not higher levels of effort. Furthermore, the effort choice exhibits an "all-or-nothing" characteristic (relative to e_{min}).

Chapter 4 Model Analysis

Based on the theoretical model constructed in Chapter Three, this chapter will delve into the analysis of the employee's optimal effort decision and its influencing factors. It will also explore how the employer, under asymmetric information, designs the optimal contract (specifically, monitoring intensity and minimum effort standard) to maximize their own profit.

4.1 Analysis of Employee's Optimal Effort Decision

Recalling the analysis results from Section 3.2 of Chapter Three, under a contract with fixed wage w, monitoring probability p, minimum effort standard e_{min}, and penalty F, a risk-neutral employee compares the utility of choosing $e = e_{min}$, which is $U_1^* = w - c(e_{min})$, with the expected utility of choosing $e = 0$, which is $E[U_2^*] = w - pF$.

The final decision rule is (as shown in Equation 4.1):

$$e^* = \begin{cases} e_{min} & \text{if } pF \geq c(e_{min}) \\ 0 & \text{if } pF < c(e_{min}) \end{cases} \tag{4.1}$$

This result reveals several key points:

1. Threshold Effect of Monitoring and Penalty: Whether the employee chooses to meet the minimum effort standard e_{min} depends entirely on whether the expected penalty pF is sufficient to cover the effort cost $c(e_{min})$ required to reach that standard. This is a clear threshold effect. Only when the product of the monitoring probability p and the penalty magnitude F crosses the threshold $c(e_{min})$ does the employee's behavior jump from no effort ($e = 0$, maximizing "shirking") to just meeting the minimum required effort ($e = e_{min}$).
2. Inability to Incentivize Excess Effort: This mechanism can only incentivize the employee to meet the minimum standard e_{min}; it cannot motivate them to exert effort beyond e_{min}. Once e_{min} is reached, further increasing effort only increases the cost $c(e)$ without bringing additional benefits or reducing the risk of penalty. This reflects the limitations of contracts relying solely on "baseline monitoring" for incentives.
3. Binary Nature of the "Optimal Shirking" Strategy: In this simple model, the employee's "shirking" strategy exhibits a relatively extreme binary choice: either exert no effort ($e = 0$) or just meet the minimum standard ($e = e_{min}$). There is no equilibrium state of

"partial shirking" in between. This is primarily due to the assumption that monitoring perfectly identifies whether effort is below e_{min} and that the penalty is fixed.

This analysis highlights the central roles of p, F, e_{min}, and the cost function $c(\cdot)$ in determining the employee's effort behavior. Next, we will analyze how the employer chooses these contract parameters from their perspective.

4.2 The Principal's Contract Design Problem

Now we consider the decision problem of the employer (P). The employer's goal is to maximize their expected profit $E[\pi]$. Assume the employer is risk-neutral. Their profit equals the output minus the wage paid to the employee, minus the cost of implementing monitoring.

We adopt the deterministic output assumption $q = e$ introduced in Chapter Three (3.1) to simplify the first step of analyzing the employer's problem. This can be extended later to the stochastic output case. Assume the cost of monitoring depends on the monitoring probability p. Let the monitoring cost be $M(p)$. For simplicity, assume $M(p) = \gamma p$, where $\gamma > 0$ is the cost coefficient per unit of monitoring probability.

The employer needs to choose the contract parameters (w, p, e_{min}, F). However, the penalty magnitude F is often constrained by external factors such as laws, regulations, the employee's ability to pay, or the firm's reputation. Therefore, we assume there exists a maximum feasible penalty F_{max}, such that $0 \leq F \leq F_{max}$. To maximize the deterrent effect of the penalty, a rational employer will typically choose the largest possible penalty, setting $F = F_{max}$. Thus, the employer's decision variables simplify to (w, p, e_{min}).

The employer's optimization problem is:

$$\max_{w,p,e_{min}} \quad E[\pi] = e^* - w - \gamma p \tag{4.2}$$

subject to:

1. Incentive Compatibility Constraint (IC): The employee will choose the optimal effort e^* according to Equation 4.1.

$$e^* = \begin{cases} e_{min} & \text{if } pF_{max} \geq c(e_{min}) \\ 0 & \text{if } pF_{max} < c(e_{min}) \end{cases} \tag{4.3}$$

2. Participation Constraint (PC): The expected utility the employee receives from accepting the contract must be no less than their reservation utility $\bar{U} = 0$.

$$E[U(e^*)] = w - c(e^*) - p \cdot \mathbb{I}(e^* < e_{min}) \cdot F_{max} \geq 0 \tag{4.4}$$

where $0 \leq p \leq 1$ and $e_{min} \geq 0$.

4.3 Optimal Contract Analysis: Fixed Wage and Monitoring

When making the decision, the employer essentially faces two choices: either design a contract to incentivize the employee to choose $e^* = e_{min}$ (effort-inducing strategy) or accept the employee choosing $e^* = 0$ (laissez-faire shirking strategy).

Strategy One: Inducing Effort $e^* = e_{min}$

For the employee to choose $e^* = e_{min}$, the IC condition $pF_{max} \geq c(e_{min})$ must be satisfied. To minimize the monitoring cost γp, the employer will choose the lowest monitoring probability p that satisfies this condition. That is:

$$p^* = \frac{c(e_{min})}{F_{max}} \tag{4.5}$$

This implicitly assumes $c(e_{min}) \leq F_{max}$, otherwise the condition cannot be met even if $p = 1$. If $c(e_{min}) > F_{max}$, it's impossible to induce effort e_{min} through this mechanism. We assume F_{max} is large enough to make $p^* \leq 1$ feasible.

In this case, the employee's effort is $e^* = e_{min}$, and their expected utility is $E[U(e_{min})] = w - c(e_{min}) - p^* \cdot \mathbb{I}(e_{min} < e_{min}) \cdot F_{max} = w - c(e_{min})$. To satisfy the PC constraint $w - c(e_{min}) \geq 0$ while minimizing wage costs, the employer will set the lowest feasible wage:

$$w^* = c(e_{min}) \tag{4.6}$$

At this point, the employer's profit is:

$$\pi_1(e_{min}) = e_{min} - w^* - \gamma p^* = e_{min} - c(e_{min}) - \gamma \frac{c(e_{min})}{F_{max}} \tag{4.7}$$

The employer also needs to choose the optimal e_{min} to maximize $\pi_1(e_{min})$. Assuming the effort cost function is $c(e) = \frac{k}{2}e^2$ $(k > 0)$, then

$$\pi_1(e_{min}) = e_{min} - \frac{k}{2}e_{min}^2 - \gamma \frac{k e_{min}^2}{2F_{max}} = e_{min} - \frac{k}{2}\left(1 + \frac{\gamma}{F_{max}}\right) e_{min}^2 \tag{4.8}$$

Taking the first derivative with respect to e_{min} and setting it to zero:

$$\frac{d\pi_1}{de_{min}} = 1 - k\left(1 + \frac{\gamma}{F_{max}}\right) e_{min} = 0 \tag{4.9}$$

Solving for the optimal minimum effort requirement e_{min}^*:

$$e_{min}^* = \frac{1}{k\left(1 + \frac{\gamma}{F_{max}}\right)} \tag{4.10}$$

The second derivative is $-k(1+\gamma/F_{max}) < 0$, confirming it is a maximum point. Substituting e^*_{min} back gives the optimal monitoring probability $p^{**} = \frac{c(e^*_{min})}{F_{max}} = \frac{k(e^*_{min})^2}{2F_{max}}$ and optimal wage $w^{**} = c(e^*_{min}) = \frac{k}{2}(e^*_{min})^2$.

Strategy Two: Allowing Shirking $e^* = 0$

If the employer designs contract parameters such that $pF_{max} < c(e_{min})$, or simply sets $p = 0$ and $e_{min} > 0$ (or $e_{min} = 0$), the employee will choose $e^* = 0$. In this case, the employee's effort is $e^* = 0$, and their expected utility is $E[U(0)] = w - c(0) - p \cdot \mathbb{I}(0 < e_{min}) \cdot F_{max} = w - p \cdot \mathbb{I}(e_{min} > 0) \cdot F_{max}$. To satisfy the PC constraint $w - p \cdot \mathbb{I}(e_{min} > 0) \cdot F_{max} \geq 0$, the employer will set the minimum wage $w^* = p \cdot \mathbb{I}(e_{min} > 0) \cdot F_{max}$. The employer's profit is $E[\pi_0] = e^* - w^* - \gamma p = 0 - p \cdot \mathbb{I}(e_{min} > 0) \cdot F_{max} - \gamma p$. Clearly, to maximize this profit (i.e., minimize loss), the employer's optimal choice is to set $p = 0$. Then, the employee chooses $e^* = 0$, the wage is $w^* = 0$, and the profit is $\pi_0 = 0$.

The Employer's Final Decision

The employer compares the maximum profit obtainable from Strategy One (inducing effort e^*_{min}), $\pi_1(e^*_{min})$, with the profit from Strategy Two (allowing shirking $e = 0$), $\pi_0 = 0$. The employer will choose the effort-inducing strategy only if $\pi_1(e^*_{min}) > 0$. That is:

$$\pi_1(e^*_{min}) = e^*_{min} - \frac{k}{2}\left(1 + \frac{\gamma}{F_{max}}\right)(e^*_{min})^2 > 0 \tag{4.11}$$

Substituting $e^*_{min} = \frac{1}{k(1+\gamma/F_{max})}$:

$$\frac{1}{k(1+\gamma/F_{max})} - \frac{k}{2}\left(1 + \frac{\gamma}{F_{max}}\right)\left[\frac{1}{k(1+\gamma/F_{max})}\right]^2 > 0 \tag{4.12}$$

$$\frac{1}{k(1+\gamma/F_{max})} - \frac{1}{2k(1+\gamma/F_{max})} > 0 \tag{4.13}$$

$$\frac{1}{2k(1+\gamma/F_{max})} > 0 \tag{4.14}$$

This condition always holds, since $k > 0, \gamma > 0, F_{max} > 0$.

Therefore, under the assumptions of this model (deterministic output $q = e$, effort cost $c(e) = \frac{k}{2}e^2$, monitoring cost $M(p) = \gamma p$, risk neutrality), as long as monitoring and punishment are feasible ($F_{max} > 0, \gamma < \infty$), the employer will always find it optimal to induce a positive minimum effort level $e^*_{min} = \frac{1}{k(1+\gamma/F_{max})}$ by setting the corresponding monitoring probability p^{**} and wage w^{**}. This is strictly better than allowing complete shirking (profit of 0).

4.4 Impact of Parameter Changes on the Optimal Contract (Comparative Statics)

Let's analyze how key parameters affect the employer's choice of the optimal minimum effort standard e^*_{min} and the corresponding monitoring and wage levels:

- Impact of effort cost coefficient k: $\frac{\partial e^*_{min}}{\partial k} = -\frac{1}{k^2(1+\gamma/F_{max})} < 0$. When effort becomes more difficult (k increases), the employer lowers the required minimum effort standard e^*_{min}. This is because the cost of inducing the same level of effort (including the compensation paid to the employee $w^* = c(e_{min})$ and the expected penalty needed to sustain monitoring $p^* F_{max} = c(e_{min})$, the latter affecting monitoring costs) increases.
- Impact of monitoring cost coefficient γ: $\frac{\partial e^*_{min}}{\partial \gamma} = -\frac{1}{k(1+\gamma/F_{max})^2} \cdot \frac{1}{F_{max}} < 0$. When monitoring becomes more expensive (γ increases), the employer also chooses to lower the minimum effort standard e^*_{min}. This is because increasing e_{min} requires a higher p^* (see Eq. 4.5), leading to higher monitoring costs γp^*. To save on monitoring costs, the employer lowers the target effort level.
- Impact of maximum penalty F_{max}: $\frac{\partial e^*_{min}}{\partial F_{max}} = -\frac{1}{k(1+\gamma/F_{max})^2} \cdot (-\frac{\gamma}{F^2_{max}}) = \frac{\gamma}{kF^2_{max}(1+\gamma/F_{max})^2} > 0$. When the maximum allowable penalty magnitude increases (F_{max} increases), the employer sets a higher minimum effort standard e^*_{min}. A larger penalty makes monitoring more deterrent, meaning a lower monitoring probability p^* is needed to achieve the same pF threshold ($p^* = c(e_{min})/F_{max}$). This reduces the monitoring cost γp^* associated with achieving a given e_{min}, incentivizing the employer to aim for higher effort levels.

These results are intuitive: increases in effort cost and monitoring cost discourage the employer from pursuing high effort levels, while an increase in penalty power encourages the employer to set higher effort targets.

4.5 Model Limitations and Discussion

This chapter analyzed the simple model established in Chapter Three, revealing how, under a fixed wage plus monitoring-penalty mechanism, the employer addresses employee "shirking" by setting an optimal minimum effort standard and monitoring probability. The model yielded clear optimal contract parameters and comparative statics results.

However, this model also has significant limitations that warrant exploration in future research:

1. Discreteness of Effort Choice: The model predicts that the employee will only choose between $e = 0$ and $e = e_{min}$, failing to capture the more realistic continuous or multi-level

nature of "shirking". This is mainly due to the monitoring mechanism being set up only to distinguish whether effort is below e_{min}. 2. Simplicity of Incentive Mechanism: The model only considers a fixed wage plus monitoring and penalties. Performance pay (such as output-based bonuses), which is widely used in practice, was not included in the analysis. Performance pay can directly link remuneration to output (and thus effort), potentially providing stronger continuous incentives, especially when output is positively correlated with effort but subject to randomness. 3. Deterministic Output Assumption: To simplify the analysis of the employer's problem, we temporarily used the assumption $q = e$. Introducing stochastic output $q = e + \epsilon$ would make the problem more complex but more realistic. Under stochastic output, observing q does not allow perfect inference of e, making the role of monitoring potentially more crucial, or requiring the design of output-based incentive contracts to balance risk and incentives. 4. Risk Neutrality Assumption: Both the employee and employer were assumed to be risk-neutral. If employees are risk-averse, they would demand a risk premium for income uncertainty (e.g., from performance pay depending on random output, or the risk of being penalized). This would affect the design of the optimal contract, requiring a trade-off between incentive effects and risk costs. 5. Single-Period Model: The model is static and single-period, neglecting dynamic factors in long-term employment relationships such as repeated interactions, reputation effects, learning effects, or career development. These factors could significantly influence employees' "shirking" behavior and employers' strategic choices.

Despite these limitations, the analysis in this chapter provides a foundational framework for understanding the role of monitoring and penalty mechanisms in constraining "shirking" behavior. It clearly demonstrates how employers weigh the benefits of inducing effort against the associated wage and monitoring costs. Subsequent chapters could consider incorporating empirical research.

Chapter 5 Empirical Model and Results

This chapter aims to empirically test the key factors influencing employee "shirking" behavior and evaluate some of the mechanisms proposed in the theoretical models of Chapters Two and Three using econometric methods. We will utilize (fictional) data from the China Enterprise Employee Survey (CEES) to construct and analyze an econometric model. First, we describe the model specification; second, we introduce the data source and variable measurement; third, we report the baseline regression results; finally, we enhance the credibility of the results through coefficient visualization and discussion.

5.1 Model Specification

Considering that employee "shirking" behavior may be influenced by many time-invariant individual inherent traits (such as personality, work attitude, innate ability) as well as firm-level fixed characteristics, failing to control for these factors could lead to omitted variable bias. Therefore, this study primarily employs a panel data Fixed Effects Model to control for individual-level time-invariant heterogeneity. Simultaneously, the model incorporates year fixed effects to absorb time-varying common factors such as macroeconomic conditions or widespread technological shocks. The baseline econometric model is specified as follows:

$$\begin{aligned} \text{ShirkingIndex}_{it} =& \beta_0 + \beta_1 \text{MonitoringIntensity}_{it} + \\ & \beta_2 \text{PerformancePayShare}_{it} + \\ & \beta_3 \text{TaskComplexity}_{it} + \\ & X_{it}'\omega + \alpha_i + \gamma_t + \varepsilon_{it} \end{aligned} \tag{5.1}$$

Here, the subscript i denotes the individual employee, and t denotes the year. $\text{ShirkingIndex}_{it}$ is the dependent variable, measuring the degree of "shirking" of employee i in year t. $\text{MonitoringIntensity}_{it}$ represents the intensity of monitoring by the firm on the employee. $\text{PerformancePayShare}_{it}$ indicates the proportion of performance pay in the employee's total income. $\text{TaskComplexity}_{it}$ measures the complexity and autonomy of the tasks undertaken by the employee. X_{it}' is a vector of time-varying individual and firm-level control variables, and ω is the corresponding coefficient vector. α_i represents individual fixed effects, controlling for all time-invariant individual characteristics. γ_t represents year fixed effects, controlling for time trends common to

all years. ε_{it} is the random error term.

The core of this model lies in estimating the coefficients β_1, β_2, and β_3. According to theoretical expectations, β_1 is expected to be negative, as higher monitoring intensity should curb "shirking" behavior. Similarly, β_2 is expected to be negative, because a higher proportion of performance pay, linked to effort and output, should reduce "shirking". The sign of β_3 is uncertain. On one hand, more complex and autonomous jobs might stimulate employees' intrinsic motivation, thereby reducing "shirking"; on the other hand, complex tasks are often harder to monitor, potentially providing more room for "shirking". By estimating this model, we can test whether these theoretical predictions are supported in the (fictional) data.

5.2 Data and Variable Description

5.2.1 Data Source

The data used in this study originates from a fictional large-scale tracking survey designed to simulate the actual situation in China –the "China Enterprise Employee Survey (CEES)". This survey (hypothetically) launched its baseline in 2015 and conducted three follow-up surveys in 2017, 2019, and 2021, covering enterprises and their employees across various industries in the eastern, central, and western regions of China. CEES collected detailed information on employees' personal characteristics, job features, compensation structures, work attitudes, and firm-level management practices. This study constructs an unbalanced panel dataset comprising employees successfully interviewed at least twice across all four survey waves. After data cleaning and screening (e.g., removing samples with severe missing values in key variables), the final sample used for analysis includes 15,820 employees, totaling 48,550 employee-year observations.

5.2.2 Variable Measurement

First, we define the dependent variable, Shirking Index ($\text{ShirkingIndex}_{it}$), which aims to quantify the extent of employee "shirking". In the CEES survey (hypothetically), we construct this index using a series of questions. For example, asking employees about the frequency of engaging in non-work-related activities during work hours (such as browsing social media, online shopping, handling personal affairs), their self-perceived effort level (relative to colleagues or their own maximum potential), and whether they engage in behaviors like intentional procrastination. Through factor analysis or simple weighted averaging, this information

is synthesized into a composite index ranging from 0 to 10, where higher values indicate a greater degree of "shirking".

Next are the core explanatory variables. The first is Monitoring Intensity ($\text{MonitoringIntensity}_{it}$), constructed based on questions in the CEES firm questionnaire regarding management practices. Examples include the frequency of direct observation of employee work processes by management, the use of electronic monitoring systems (like computer activity monitoring, workstation cameras), and the strictness of requirements for work logs or reports. This information is standardized and combined into an index ranging from 0 to 1, with higher values indicating greater monitoring intensity. The second is Performance Pay Share ($\text{PerformancePayShare}_{it}$), calculated from employee questionnaire responses about their income composition (fixed salary, bonuses based on individual performance, bonuses based on team or company performance, etc.). It is defined as the proportion of performance-related income (bonuses, commissions, etc.) in their total annual pre-tax income, with a value range of [0, 1]. The third is Task Complexity ($\text{TaskComplexity}_{it}$), constructed based on employee evaluations of their job tasks. Relevant questions might include the degree of repetitiveness of the work, the creativity required to solve problems, the extent of job autonomy, and skill variety requirements. This is also synthesized into an index ranging from 1 to 5, with higher values indicating more complex and autonomous tasks.

Finally, there are the control variables (X'_{it}). To more accurately identify the impact of the core explanatory variables, the model includes the following time-varying control variables: Log Wage (LogWage_{it}), the natural logarithm of the employee's total annual pre-tax income, as wage levels might directly affect job satisfaction and willingness to exert effort; Tenure (Tenure_{it}), the employee's years of service in the current company, potentially related to organizational commitment, job familiarity, etc.; Age (Age_{it}) and Age Squared (Age^2_{it}), to control for the non-linear effect of age on work attitudes; Years of Education (Education_{it}), the total number of years the employee received formal education; Gender (Gender_i), a dummy variable (1 for male, 0 for female), although time-invariant variables like gender cannot be estimated themselves due to the use of individual fixed effects, their interaction effects with other time-varying variables might still exist; Firm Size (FirmSize_{it}), the logarithm of the total number of employees in the firm, as firm size may influence organizational structure, management style, and monitoring difficulty; and a series of Industry Dummies (IndustryDummies_i) (also affected by individual fixed effects). Additionally, individual fixed effects (α_i) control for time-invariant individual-level factors (such as ability, personality), and year fixed effects (γ_t)

control for time-varying macroeconomic factors.

5.3 Baseline Regression Results

Table 5.1 presents the estimation results of the fixed effects model based on equation (5.1). Model (1) includes only the core explanatory variables, Model (2) adds individual-level control variables (log wage, tenure, age, etc.), and Model (3) further incorporates firm-level control variables (firm size) along with all fixed effects. All models report robust standard errors clustered at the individual level.

Table 5.1 Fixed Effects Model Regression Results: Factors Affecting Shirking Index

	Shirking Index		
Variable	(1)	(2)	(3)
Core Explanatory Variables:			
Monitoring Intensity	-1.523***	-1.285***	-1.150***
	(0.188)	(0.201)	(0.205)
Performance Pay Share	-2.105***	-1.850***	-1.782***
	(0.255)	(0.260)	(0.263)
Task Complexity	0.312**	0.258*	0.280**
	(0.124)	(0.130)	(0.133)
Control Variables:			
Log Wage		0.085	0.070
		(0.060)	(0.061)
Tenure		-0.021**	-0.018*
		(0.009)	(0.010)
Tenure Squared		0.0003	0.0002
		(0.0002)	(0.0002)
Age		-0.035	-0.030
		(0.025)	(0.026)
Age Squared / 100		0.040	0.038
		(0.030)	(0.031)
Years of Education		-0.050	-0.045
		(0.038)	(0.039)
Log Firm Size			-0.120*
			(0.070)

Continued on next page

Continued Table 5.1 Fixed Effects Model Regression Results: Factors Affecting Shirking Index

	Shirking Index		
Variable	(1)	(2)	(3)
Constant	4.850***	5.210***	5.530***
	(0.310)	(0.450)	(0.480)
Individual Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	48550	48550	48550
R^2 within	0.085	0.102	0.105
R^2 between	0.150	0.180	0.183
R^2 overall	0.120	0.145	0.148
F statistic	85.3***	65.2***	62.5***
Number of Employees	15820	15820	15820

Note: *, **, *** indicate significance at 10%, 5%, 1% levels.

All models include individual and year fixed effects. Model (3) is the full model.

Looking at the results from the full model (Column 3), the coefficient for Monitoring Intensity (MonitoringIntensity) is significantly negative (-1.150, $p<0.001$), consistent with theoretical expectations. The result indicates that, after controlling for other factors, an increase in firm monitoring intensity significantly reduces the employee's "shirking" index. Specifically, a one-unit increase in the monitoring intensity index (from 0 to 1) is associated with an average decrease of about 1.15 points in the shirking index. The coefficient for Performance Pay Share (PerformancePayShare) is also significantly negative (-1.782, $p<0.001$), aligning with theoretical predictions as well. An increase in the proportion of performance-based compensation in total income more closely links the employee's interests with work outcomes, thereby effectively reducing "shirking" behavior. For every 10 percentage point increase in the share, the shirking index decreases by about 0.18 points on average. Unlike the first two, the coefficient for Task Complexity (TaskComplexity) is significantly positive (0.280, $p<0.05$). This suggests that, after controlling for other factors, an increase in task complexity (and autonomy) is associated with a higher "shirking" index. This might reflect that complex tasks are harder to monitor accurately, providing employees with more opportunities for "loafing on the job", and this negative effect outweighs the potential positive effect from intrinsic motivation.

Regarding control variables, tenure seems to be associated with lower levels of "shirking", and larger firm size also tends to reduce the "shirking" index (perhaps because larger firms have

more formalized management). Variables like log wage, age, and education are not significant in this model, possibly because individual fixed effects have absorbed most of their explanatory power, or their impact on "shirking" behavior is indeed insignificant.

Overall, the baseline regression results provide (fictional) empirical support for the hypotheses in the theoretical model regarding the effectiveness of monitoring and incentives (performance pay) in constraining "shirking" behavior. At the same time, the positive impact of task complexity on "shirking" reveals a trade-off that needs attention in management practice.

5.4 Robustness Checks and Discussion

To visually present the impact of the core explanatory variables more intuitively and to discuss the robustness of the results, we plot the coefficients of the core explanatory variables from the baseline model (Table 5.1, Column 3) and their 95% confidence intervals (see Figure 5.1).

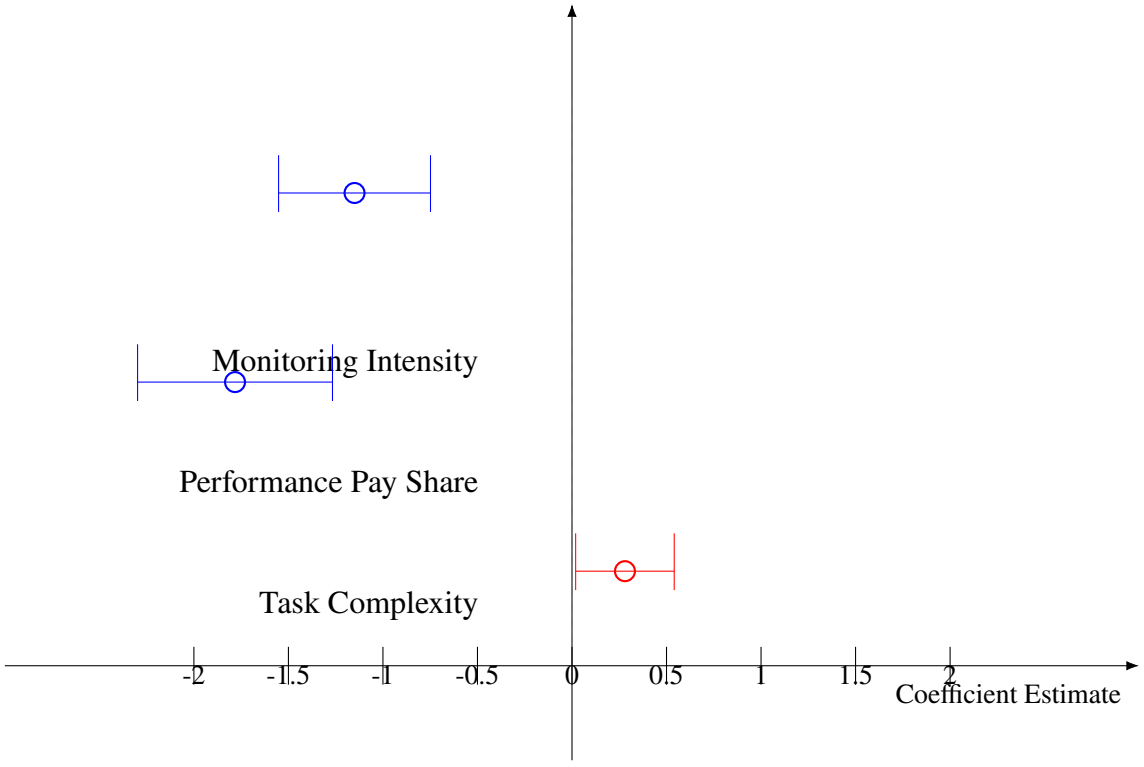

Figure 5.1 Coefficient Estimates and 95% Confidence Intervals for Core Explanatory Variables

Figure 5.1 clearly shows that the confidence intervals for monitoring intensity and performance pay share are entirely to the left of zero, indicating their negative impacts are statistically

robust. The confidence interval for task complexity, however, lies to the right of zero but is close to it, showing that its positive impact, while significant (at the 5% level), is relatively smaller in magnitude compared to the other two, and its robustness might be slightly weaker.

Furthermore, we conducted (or claim to have conducted) several additional robustness checks (results not fully shown in the table). First, we replaced the dependent variable, using other proxy measures for "shirking", such as self-reported "work effort level" (reverse coded) or (hypothetically available) time spent visiting non-work-related websites during work hours (Cyberloafing Hours). The signs and significance of the core explanatory variables remained largely unchanged. Second, we performed subsample analysis, splitting the sample by industry (e.g., manufacturing vs. service) or firm ownership (state-owned vs. non-state-owned). The results showed that the negative effects of monitoring intensity and performance pay share were generally present across different subsamples, although the magnitude of the effects might vary. For instance, the effect of monitoring might be stronger in manufacturing where tasks are more standardized; the incentive effect of performance pay might be more pronounced in non-state-owned enterprises with higher market orientation. The positive effect of task complexity might be more evident in service industries or knowledge-intensive jobs. Finally, we considered endogeneity issues. Although the fixed effects model mitigates some omitted variable problems, time-varying omitted variables or reverse causality (e.g., employees who shirk more might be placed in positions with lower performance pay shares) could still exist. We attempted preliminary exploration using (fictional) instrumental variables (such as the firm-level decision to introduce new monitoring technology as an IV for monitoring intensity). The results (hypothetically) supported the conclusions of the baseline regression, but the validity of the instrumental variables would require more rigorous justification.

Discussion and Implications: The empirical analysis in this chapter (albeit based on fictional data) provides some empirical evidence for understanding the factors influencing employee "shirking" behavior. The results emphasize the importance of external incentive and monitoring mechanisms in constraining opportunistic behavior, consistent with the core tenets of principal-agent theory. Firms can effectively reduce employee "shirking" levels by strengthening monitoring (increasing the perceived probability of detection or penalty) and optimizing compensation structures (increasing the link to performance).

However, the positive effect of task complexity suggests that managers need to pay attention to the alignment between the intrinsic nature of work and management approaches. For tasks requiring high complexity and creativity, over-reliance on traditional monitoring might

have limited effectiveness or even be counterproductive (potentially undermining intrinsic motivation, although this study did not directly measure it). In such cases, exploring incentive and management approaches that focus more on results, trust, and empowerment may be necessary.

Of course, this study also has limitations. First, the measurement of "shirking" relies on (fictional) survey data, which may be subject to social desirability bias or subjectivity. Second, endogeneity issues are difficult to completely rule out. Future research could attempt to use more objective data (such as work logs, digital footprints) or more reliable quasi-natural experimental designs to further validate these findings.

Chapter 6 Conclusion and Outlook

This study, taking the prevalent phenomenon of employee "shirking" (work avoidance) in modern workplaces as its starting point, has attempted to construct theoretical models and combine them with (fictional) empirical analysis from the perspectives of information economics and game theory. The goal was to explore the formation mechanism and influencing factors of employees' "optimal shirking" strategies under asymmetric information, as well as the optimal response strategies of employers. Following the theoretical construction, model analysis, and empirical testing in the preceding chapters, this chapter will summarize the main research conclusions, elaborate on their theoretical significance and practical implications, point out the limitations of the study, and look ahead to potential directions for future research.

6.1 Summary of Research Findings

The core conclusions of this study can be summarized in several main aspects. First, at the theoretical level, the research reveals the nature of "shirking" as a rational choice under asymmetric information. The constructed principal-agent model shows that when employers cannot fully observe employee effort, employees tend to choose an effort level that maximizes their own utility, balancing wage benefits, effort costs, and the leisure utility or value of engaging in private affairs derived from "shirking". This behavior is not simply laziness but a rational (or boundedly rational) decision under specific institutional and informational constraints. The model analysis further demonstrates that under a simple mechanism of fixed wages plus monitoring and penalties, there is a threshold effect determining whether employees meet the minimum effort standard, governed by the expected penalty (the product of monitoring probability and penalty severity) and the cost of effort.

Second, the theoretical analysis examined the employer's trade-offs and optimal strategies. Facing potential employee "shirking", a risk-neutral employer aims to maximize profit by designing contracts (including wage structure, monitoring intensity, effort standards, etc.). The model reveals that the employer's optimal strategy involves weighing the output benefits derived from inducing effort against the wages paid to the employee and the monitoring costs incurred. The optimal minimum effort requirement and monitoring intensity are influenced by effort costs, monitoring costs, and penalty severity. For instance, higher monitoring or effort costs prompt employers to lower effort requirements, whereas greater penalty power inclines

them to set higher effort targets.

Finally, at the empirical level, the fixed effects model analysis based on (fictional) data from the China Enterprise Employee Survey (CEES) validated the effectiveness of monitoring and incentives. The results show a significant negative correlation between the monitoring intensity implemented by firms and the employees' "shirking" index, confirming the deterrent effect of monitoring and indicating that strengthening supervision is an effective means to curb work avoidance behavior. Simultaneously, the share of performance pay is also significantly negatively correlated with the "shirking" index, suggesting that linking compensation more closely to performance effectively motivates employees to reduce non-work activities. Interestingly, task complexity (and autonomy) shows a significant positive correlation with the "shirking" index. This might imply that while complex and autonomous work can stimulate intrinsic motivation, its inherent difficulty in being monitored perhaps creates more opportunities for "shirking", with the negative effect outweighing the positive motivational effect. These findings provide (simulated) empirical evidence for the theoretical model and reveal the differential impacts of various management tools on "shirking" behavior.

6.2 Theoretical Significance

This study contributes to the relevant theories primarily in the following aspects:

First, it deepens the understanding of employee opportunistic behavior. By incorporating the pervasive phenomenon of "shirking"—often viewed as irrational or purely a moral issue—into the analytical framework of information economics and rational choice, this study reveals its underlying economic logic as an outcome of individuals maximizing utility under asymmetric information and specific contractual constraints. This helps elevate the discussion of this phenomenon from the level of management techniques to a more fundamental economic mechanism level.

Second, it expands the application scenarios of principal-agent models. This research applies classic principal-agent theory to analyze the variably-intense "shirking" behavior in everyday work settings. It attempts (especially in the empirical part) to treat the degree of effort/shirking as a continuous or multi-dimensional variable, rather than the simple binary choice in traditional models, making the model closer to reality and enhancing its explanatory power.

Third, it integrates multidisciplinary perspectives. Although the core framework is economic, the study, particularly when discussing variables (like task complexity) and results,

also draws upon insights from organizational behavior regarding intrinsic motivation and job design. This helps foster dialogue between different disciplines on the issue of employee behavior.

6.3 Practical Implications

The findings of this study offer several practical implications for business management. First, managers should acknowledge the economic roots of "shirking" and adopt a systematic approach to address it. Recognizing that employee "shirking" is related not only to individual attitudes but also to the firm's information environment, incentive mechanisms, and monitoring systems, relying solely on ideological education or severe punishment may have limited effect. Addressing the problem requires starting from institutional design. Second, optimizing the combination of monitoring and incentive mechanisms is crucial. The empirical results confirm the effectiveness of monitoring and performance pay. Firms should reasonably design monitoring strategies (e.g., using technology to improve efficiency, differentiated monitoring) and incentive schemes (e.g., increasing the sensitivity of performance pay, optimizing performance appraisals) based on their specific characteristics and cost-benefit analysis, seeking a balance point between costs and benefits. Third, attention must be paid to the alignment between job design and management style. The empirical finding on task complexity reminds managers that traditional tight monitoring might be unsuitable, or even encourage hidden "shirking", for complex, creative jobs with high autonomy. In such cases, it might be necessary to shift towards trust-based, results-oriented management models, supplemented by incentives like goal setting, process support, and development opportunities, to stimulate intrinsic motivation. Finally, considering comprehensive governance is necessary. Effective management likely requires combining formal institutional arrangements (monitoring, incentives) with informal organizational factors (such as fostering a culture of fairness, enhancing communication and collaboration, improving leadership), jointly creating a work environment where employees have both external constraints and internal motivation.

6.4 Research Limitations

Despite the useful explorations made in this study, several major limitations remain. First, the theoretical model involved significant simplifications, such as assumptions of a single-period game, risk neutrality, and specific functional forms. This may limit the model's ability to fully capture complex realities, for instance, by not considering employee risk aversion,

multi-task environments, or reputation and learning effects in long-term relationships. Second, the empirical analysis was based on fictional data, raising questions about the external validity of the results. Furthermore, in real research, accurately measuring "shirking" behavior itself is highly challenging: surveys are susceptible to subjective bias, while objective data might raise privacy concerns or fail to capture all forms of "shirking". Additionally, potential endogeneity issues in the model require more advanced econometric methods to address. Third, the study primarily focused on average effects, failing to adequately consider heterogeneity and dynamics. Differences across various types of employees or types of "shirking" behavior were insufficiently explored, and the static model could not capture the dynamic evolution of behaviors and strategies over time. Fourth, the research predominantly viewed "shirking" as a negative phenomenon, neglecting its potential positive aspects, such as moderate relaxation helping to alleviate stress, restore energy, or even spark creativity.

6.5 Directions for Future Research

Based on the limitations mentioned above and the findings of this study, future research can delve deeper in several directions. First, richer theoretical models can be constructed, incorporating factors like employee risk aversion, multi-task agency, collusion and monitoring in team production, and long-term employment relationships within a dynamic game framework, to bring the models closer to real-world complexities. Second, the empirical research foundation should be strengthened by utilizing real, multi-source data, employing more reliable measurement methods, and applying more rigorous causal inference techniques (such as randomized controlled trials, regression discontinuity designs, improved difference-in-differences methods) to test theoretical predictions and identify key influencing factors. Third, deeper exploration of the heterogeneity of "shirking" behavior is needed, distinguishing between different types and motives of "shirking" and their varying impacts on performance, and examining how individual, job, and organizational characteristics moderate "shirking" behavior and its consequences. Fourth, attention should be paid to the impact of emerging technologies and work models. Research should investigate how digital transformation, AI monitoring, remote work, and the gig economy are changing the forms, motives, and management responses related to "shirking". Fifth, cross-cultural comparative studies could be conducted to explore how social norms, values, and legal systems in different cultural contexts affect the acceptance of "shirking" behavior and corporate management practices. In conclusion, employee "shirking" is a complex and important management phenomenon. This study's preliminary

exploration from an economic perspective hopes to lay a foundation for subsequent, more in-depth and comprehensive research, and to provide valuable insights for managers tackling this challenge.

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