

# Social Security Contribution Collection, Corporate Responses, and the Labor Income Share: A Quasi-Natural Experiment from New Social Security Regulations

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**Abstract**—Taking the reform of national and local tax collection administration as a quasi-natural experiment, this paper adopts the difference-in-differences model to explore how tightened social security collection affects corporate labor income share and its transmission mechanisms. The baseline regression result shows that the core DID coefficient is  $-0.034$ , which is statistically significant at the 1% level, indicating that stricter social security enforcement significantly lowers firms' labor income share. Firms cope with rising labor costs via three strategies: replacing regular staff with outsourced flexible employment, shifting production abroad to avoid high domestic labor expenses, and conducting process innovation to substitute labor with capital. Heterogeneity evidence further demonstrates that the adverse impact is stronger for enterprises featuring higher payroll costs and weaker market power. From the firm-level strategic adjustment perspective, this study clarifies the inherent correlation between social security collection regulation and income distribution. It supplements new empirical evidence on institutional shocks to labor income share, and delivers policy suggestions for improving social security collection regimes and income distribution equity, alongside operational hints for firms to coordinate social security compliance and long-term growth.

**Keywords**—social security contribution collection reform, labor income share, difference-in-differences method, flexible employment, overseas production transfer, process innovation, quasi-natural experiment

## I. INTRODUCTION

Optimizing the social security system and improving the initial income distribution mechanism are key measures for promoting common prosperity in China. The 2018 reform transferring social insurance premium collection to tax authorities aims to strengthen enforcement and address widespread underpayment by enterprises. However, this reform coincides with a global decline in labor income share, rapid population aging, and accelerated AI substitution for traditional labor. The tightened collection enforcement has blocked enterprises' non-compliant cost-reduction channels, directly increased labor costs, and may thus significantly affect the labor income share.

Existing literature has extensively examined determinants of the labor income share but rarely focuses on the unified collection reform. More importantly, most studies treat social security contributions as an exogenous cost burden without investigating how enterprises' proactive responses transmit the impact to the labor income share. These questions await rigorous empirical examination.

This study employs a difference-in-differences approach and data on Chinese manufacturing A-share listed companies

from 2012 to 2024. The findings reveal that the new regulations significantly reduce enterprises' labor income share, a conclusion robust to various tests. Mechanism tests show that enterprises respond through three pathways—expanding flexible employment, transferring production overseas, and advancing process innovation—all of which subsequently lower the labor income share. Heterogeneity analysis indicates that the negative effect is more pronounced among enterprises with higher employee compensation or weaker product market positions.

This study integrates social security collection reform and labor income share into a unified framework, revealing how institutional shocks affect income distribution from the perspective of enterprises' dynamic responses. It provides practical guidance for enterprises and empirical evidence for policymakers in calibrating reform intensity and designing differentiated policies.

## II. LITERATURE REVIEW AND THEORETICAL ANALYSIS

### A. Literature Review

Since the 1970s, the global labor income share has been declining, and researchers have explored this trend along both macro and micro pathways. Early macro-level studies highlighted rising market concentration, globalization, weakening worker bargaining power, and structural factors such as industrial transformation and population aging as key contributors (Ciminelli *et al.*, 2022). At the micro level, scholars have identified financing constraints, capital-biased technological progress, and changes in relative factor prices as the main drivers. For instance, Luo and Chen (2012) found that firms facing financing constraints tend to compress labor compensation. Subsequently, Karabarbounis and Neiman (2014) demonstrated that capital-biased technological progress and the adoption of industrial robots reduce labor income share through capital-labor substitution. Meanwhile, when the relative price of labor rises, firms respond by substituting capital for labor.

Recognizing that social security contributions increase firms' labor costs, researchers have examined how firms cope with such regulatory burdens. Ma *et al.* (2014) noted that while firms can shift part of the burden to employees by reducing wages, the extent of such shifting is limited due to labor regulations. In response, firms have adopted various strategic adjustments. Following the transfer of collection authority to tax authorities, contribution evasion has been significantly compressed (Tang & Feng, 2019). Some firms resort to tax avoidance, investment cuts, or employment

reduction (Wei & Xia, 2020). More recently, others have pursued long-term adjustments by substituting capital for labor, adopting flexible employment arrangements, or using industrial robots (Tang & Jia, 2024).

Despite these advances, the existing literature has two main limitations. First, few studies have examined the impact of the new social security regulations from the perspective of firms' strategic responses. Second, there is a lack of systematic analysis of how firms' coping behaviors under the new regulations affect labor income share. To fill this gap, this paper takes the new social security regulations as a quasi-natural experiment and investigates the micro-level transmission pathways from the perspective of firms' strategic behaviors.

### B. Theoretical Analysis

The reform of social security contribution collection, which transferred the collection function to tax authorities, has significantly increased firms' compliance pressure, directly raising labor costs and exacerbating cash flow constraints (Tang & Jia, 2024). As a core indicator measuring the share of labor compensation, the labor income share is inevitably affected by this cost shock.

According to income distribution theory and resource dependence theory, when labor costs rise, firms actively seek substitute resources. Due to downward wage rigidity, firms cannot easily shift costs by reducing wages (Benzarti & Harju, 2021), which may lead to layoffs or adjustments in employment strategies (Ma, Meng, & Gan, 2014). These responses all reduce the labor income share.

Combining induced technological innovation theory and factor substitution theory, when labor costs rise relative to capital costs, firms tend to substitute capital for labor, thereby reducing employment levels (Tang & Feng, 2019). Existing studies show that increased social security contribution burdens prompt firms to increase equipment investment, enhance innovation, and optimize production processes (Xia, Wei, Zeng, & Lu, 2024). While improving production efficiency, these adjustments also reduce the labor income share. Accordingly, this paper proposes:

H1: The implementation of the new social security regulations leads to a decrease in firms' labor income share.

The preceding section has theoretically explained how strengthened social security collection reduces the labor income share. What specific strategies do firms adopt in response to cost shocks, and how do these strategies affect the labor income share? This paper analyzes the mechanisms through three dimensions: flexible employment, overseas production transfer, and process innovation.

Under the new regulations, traditional formal employment faces rising rigid costs and management costs. Based on transaction cost theory, when internal costs exceed market transaction costs, firms tend to adopt flexible employment by outsourcing social security responsibilities to third-party agencies (Tang & Jia, 2024). Outsourcing expenses are recorded as operating expenses rather than employee compensation, directly reducing the book value of compensation and lowering the labor income share. Accordingly:

H2: The new social security regulations promote firms' expansion of flexible employment, thereby reducing the labor

income share.

The new regulations increase labor costs and weaken firms' competitiveness, particularly for labor-intensive firms. According to resource dependence theory, firms seek substitute resources by transferring production to countries with lower labor costs (Zhang & Long, 2021). Overseas production transfer reduces domestic production scale and labor demand, lowering employee compensation expenditure and the labor income share (Jia & Lei, 2017). Accordingly:

H3: The new social security regulations promote firms' overseas production transfer, thereby reducing the labor income share.

Increased social security contributions raise labor costs and alter the relative price of labor versus capital (Xia *et al.*, 2024). According to induced technological innovation theory, firms respond by introducing automation technologies and optimizing production processes to substitute for high-cost labor. Process innovation enhances employee substitutability (Goldin, 2024), weakens bargaining power, reduces employment scale, and the accompanying increase in capital input further compresses the labor income share (He, Zhu, & Feng, 2023). Accordingly:

H4: The new social security regulations promote firms' process innovation, thereby reducing the labor income share.

## III. DATA, VARIABLES, AND MODEL

### A. Data and Sample

This paper selects Chinese manufacturing A-share listed companies from 2012 to 2024 as the research sample, with data mainly sourced from the CSMAR database. The following exclusions are applied: firms with ST or PT status during the sample period, firms in the financial industry, firms listed in or after 2018, and observations with missing year information. The final sample comprises 16,277 firm-year observations. Due to differences in variable availability across regression models, the effective sample size may vary slightly across specifications.

### B. Variables

#### 1) Dependent variable

Following (Shi, Gao, Lu, & Li, 2019), this paper measures the labor income share (LS) as the ratio of cash paid to and for employees to total operating revenue. Given that LS ranges between 0 and 1 and does not follow a normal distribution, we apply a logistic transformation and take the natural logarithm following (Li, Liu, & Wang, 2009):  $LNLS = \ln(LS/(1-LS))$ .

#### 2) Independent variable

The explanatory variable is a dummy variable defined as  $DID = Treat \times Policy$ . Following (Tang & Jia, 2024), we treat 2018 as the first year of the policy shock, with  $POST = 1$  for years from 2018 onward and 0 otherwise.

Following (Li, Li, & Xiao, 2023), we assign firms with above-median labor intensity to the treatment group ( $Treat = 1$ ) and others to the control group ( $Treat = 0$ ). Labor intensity is calculated as the average of the three years prior to the implementation of the new social security regulations and is measured as the ratio of the natural logarithm of the number of employees to the natural logarithm of operating revenue.

### 3) Control variables

We select the following control variables: firm Size (Size), Leverage (Lev), Return On Assets (ROA), firm Growth (Growth), Cash Flow ratio (CashFlow), Financing Constraints (FC), Fixed asset ratio (Fixed), Firm Age (FirmAge), number of Employees (Employee), shareholding ratio of the largest shareholder (Top1), capital-labor ratio (KL), total factor productivity estimated by the OP method (TFP\_OP), Current asset ratio (Ca), and ownership nature (SOE).

### C. Mode

$$LNLS_{i,t} = \beta_0 + \beta_1 DID_{i,t} + \beta_j Cons_{j,i,t} + \sum ID + \sum Year + \varepsilon_{i,t} \quad (1)$$

The coefficient  $\beta_1$  is the primary focus. A significantly positive  $\beta_1$  indicates that the new social security regulations increase firms' labor income share, whereas a significantly negative  $\beta_1$  indicates a decrease.  $\sum Id$  and  $\sum Year$  represent firm and year fixed effects, respectively. Controls is the vector of control variables, and  $\varepsilon$  is the error term. Standard errors are robust and clustered at the firm level.

## IV. RESULT AND DISCUSSION

### A. Summary Statistics

The labor income share has a mean of  $-2.020$  and a standard deviation of  $0.682$ , implying substantial cross-firm variation, with a subset of firms characterized by notably low labor compensation shares. The mean value of DID is  $0.299$ , confirming that the treatment and control groups are well-balanced and appropriate for the difference-in-differences framework. Control variables, including firm size, are largely in line with prior studies, and the data show no signs of abnormal distribution.

### B. Benchmark Regression

This paper tests the impact of social security collection reform on firms' labor income share using Model (1), with baseline results reported in Table 1. When only firm and year fixed effects are controlled for, the coefficient of DID is  $-0.053$ , significant at the 1% level, suggesting a negative association between the reform and labor income share. After sequentially including control variables, the DID coefficient remains significantly negative at the 1% level. Overall, the baseline results confirm that the new social security regulation significantly reduces firms' labor income share, thus supporting H1.

Table 1. Benchmark regression

|                   | LNLS                      | LNLS                      |
|-------------------|---------------------------|---------------------------|
| DID               | $-0.053^{***}$<br>(0.021) | $-0.034^{***}$<br>(0.013) |
| Constants         | $-2.193^{***}$<br>(0.011) | $-0.189$<br>(0.376)       |
| Control Variables | NO                        | YES                       |
| Firm and Year FE  | YES                       | YES                       |
| N                 | 16618                     | 16277                     |
| R-squared         | 0.071                     | 0.610                     |

<sup>1</sup> \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; standard errors in parentheses. The same applies to the following tables.

### C. Robustness Test

#### 1) Parallel trends test

The parallel trends test, with 2017 as the baseline, shows that all pre-policy coefficients (policy point  $< 0$ ) are insignificant, satisfying the parallel trends assumption. The post-policy coefficients (policy point  $\geq 0$ ) are significantly negative, indicating a negative impact of the new social security regulation on firms' labor income share, thus confirming the robustness of the baseline findings. The corresponding results are graphically depicted in Fig. 1.

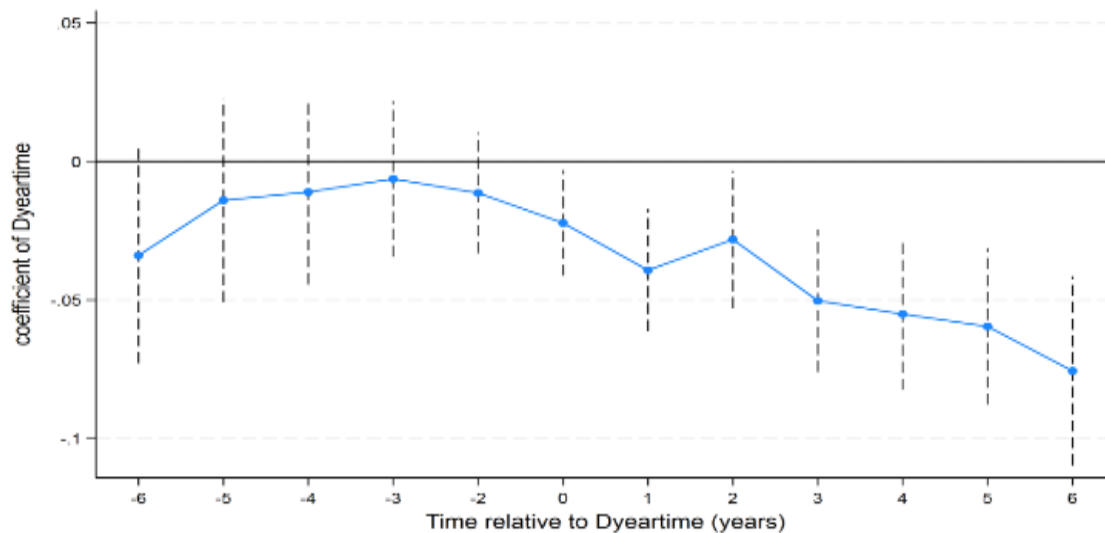


Fig. 1. Parallel trends figure.

#### 2) Placebo test

This paper conducts a placebo test by artificially advancing the policy shock timing by two and three years, respectively. The results show that the estimated coefficients of DID2016 and DID2015 are not statistically significant at the 10% level, indicating that the reducing effect of the new social security

regulation on firms' labor income share did not exist prior to the policy implementation.

To rule out the possibility that the policy effect is driven by randomness, this paper randomly generates treatment groups and constructs pseudo-interaction terms, repeating the regression 500 times. The results show that the 500 randomly estimated coefficients are concentrated around zero, while the

baseline regression coefficient of  $-0.034$  lies outside this distribution, indicating that our empirical findings are not attributable to random factors.

### 3) Alternative measurement of labor income share

For robustness, we construct three alternative labor income share measures: LS1 (cash paid to employees / operating revenue); LS2 ((cash paid to employees + ending accrued payroll - beginning accrued payroll) / operating revenue); and LS3 (cash paid to employees / (operating revenue - cost of sales + cash paid to employees + depreciation)).

### 4) Excluding Interference from other policies during the sample period

To rule out interference from other policies and accurately identify the net effect of the social security collection reform, this paper incorporates three policy dummy variables: the 2013 “Replacing Business Tax with Value-Added Tax” reform, the 2014 fixed asset investment incentive reform, and the 2015 supply-side structural reform.

### 5) Alternative grouping method

Firms are grouped according to the median of their average labor intensity in the two years before the new social security regulation. Those above the median are classified into the treatment group (more affected by the reform), and those below into the control group. Labor intensity is measured as the log of employee count divided by the log of operating revenue.

## D. Mechanism Test

### 1) Flexible employment.

Following (Tang & Yang 2024), this paper measures firms’ flexible employment level using outsourcing expenditure divided by total assets, multiplied by 100 (Flexem). The regression results show that the DID coefficient is significantly positive at the 1% level, indicating that the new social security regulation significantly increases the level of firm outsourcing. This implies that, under pressure from social security compliance, firms tend to transform formal employment relationships into market-based outsourcing to reduce expenditures on accrued employee compensation and avoid social security contribution burdens. Such an employment adjustment constitutes an important transmission channel through which the reform affects labor income share. The regression outcomes for this mechanism are reported in Table 2. Sample sizes vary across mechanism tables because some firms did not disclose outsourcing data in the early years after the 2012 CSRC mandate.

Table 2. Social security collection, flexible employment, and labor income share

|                   | LNLS                      | Flexem                   |
|-------------------|---------------------------|--------------------------|
| DID               | $-0.033^{***}$<br>(0.013) | $0.049^{***}$<br>(0.018) |
| Constant          | $-0.190$<br>(0.377)       | $0.577$<br>(0.491)       |
| Control Variables | YES                       | YES                      |
| Firm and Year FE  | YES                       | YES                      |
| N                 | 16137                     | 16137                    |
| R-squared         | 0.611                     | 0.039                    |

### 2) Overseas production transfer

The new social security regulation increases firms’ labor costs, and the profit-maximizing motive may drive firms to shift production to lower-cost regions. This paper measures overseas production transfer using the number of a firm’s production-related subsidiaries in non-OECD countries, retaining only overseas entities with actual manufacturing attributes. The coefficient of the interaction term is significantly positive at the 1% level, indicating that the social security collection reform significantly increases firms’ overseas production presence. This suggests that firms circumvent higher domestic social security contribution burdens by transferring production to lower-cost regions. The regression outcomes for this mechanism are reported in Table 3.

Table 3. Social security collection, overseas production transfer, and labor income share

|                   | LNLS                      | Oversea                   |
|-------------------|---------------------------|---------------------------|
| DID               | $-0.034^{***}$<br>(0.013) | $0.323^{***}$<br>(0.078)  |
| Constant          | $-0.189$<br>(0.376)       | $-9.713^{***}$<br>(2.167) |
| Control Variables | YES                       | YES                       |
| Firm and Year FE  | YES                       | YES                       |
| N                 | 16277                     | 16277                     |
| R-squared         | 0.610                     | 0.096                     |

### 3) Process innovation

Following (Liu, Huang, & Xiao, 2025), we measure process innovation (LNPRO) as the natural logarithm of one plus the number of “pure” process innovation patents, excluding mixed innovation types. The DID coefficient is significantly positive at the 1% level, indicating that the new social security regulation significantly promotes process innovation. This suggests that, in response to labor cost shocks from strengthened social security collection, firms optimize production through process innovation and reduce reliance on high-cost labor, thereby lowering labor income share. The regression outcomes for this mechanism are reported in Table 4.

Table 4. Social security collection, process innovation, and labor income share

|                   | LNLS                      | LNPRO                    |
|-------------------|---------------------------|--------------------------|
| DID               | $-0.034^{***}$<br>(0.013) | $0.100^{***}$<br>(0.036) |
| Constant          | $-0.189$<br>(0.376)       | $-0.749$<br>(0.997)      |
| Control Variables | YES                       | YES                      |
| Firm and Year FE  | YES                       | YES                      |
| N                 | 16277                     | 16277                    |
| R-squared         | 0.610                     | 0.169                    |

## V. FURTHER ANALYSIS

### A. Employee Compensation Level Heterogeneity

Since higher wages lead to higher social security contributions, the reform is likely to affect high-wage firms more. We split the sample into high- and low-wage groups based on the median average employee compensation. The results show that the reform has a stronger impact on the labor income share of high-wage firms.

### B. Firm Product Market Position Heterogeneity

High-position firms can pass on costs via price increases, whereas low-position firms struggle to do so and rely more on internal adjustments, leading to stronger labor income share suppression. Measuring product market position by customer concentration (higher concentration = lower position), median-split regressions show that the reform has a larger effect on the lower-position group.

## VI. CONCLUSIONS AND POLICY IMPLICATIONS

This paper examines the impact of strengthened social security collection on corporate labor income share using the unified collection reform as a quasi-natural experiment. The results show that the reform significantly reduces labor income share by increasing labor costs. Firms respond through three channels: expanding flexible employment, overseas production transfer, and promoting process innovation. This negative effect is more pronounced among firms with higher average employee compensation and weaker bargaining power.

To mitigate this impact, we propose the following:

- balance rigorous collection with moderate burden reduction, offering relief to labor-intensive and weak-bargaining firms;
- support compliant firms through subsidies and tax relief, steering them toward innovation-driven efficiency;
- strengthen social security rules for flexible employment and outsourcing, and enhance workers' bargaining power;
- coordinate social security with income distribution policies to stabilize labor share and promote fair distribution.

### CONFLICT OF INTEREST

The authors declare no conflict of interest.

### AUTHOR CONTRIBUTIONS

Tianjing Wang designed the study, conducted the empirical analysis, and wrote the paper. Zhebing Wang processed the data, assisted with the econometric analysis, and revised the manuscript. Both authors reviewed and approved the final version.

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