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DETERMINANTS OF FIRMS’ INFLATION EXPECTATIONS:
EVIDENCE FROM A RANDOMIZED CONTROLLED TRIAL

Data Governance and Statistics Department

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Outline

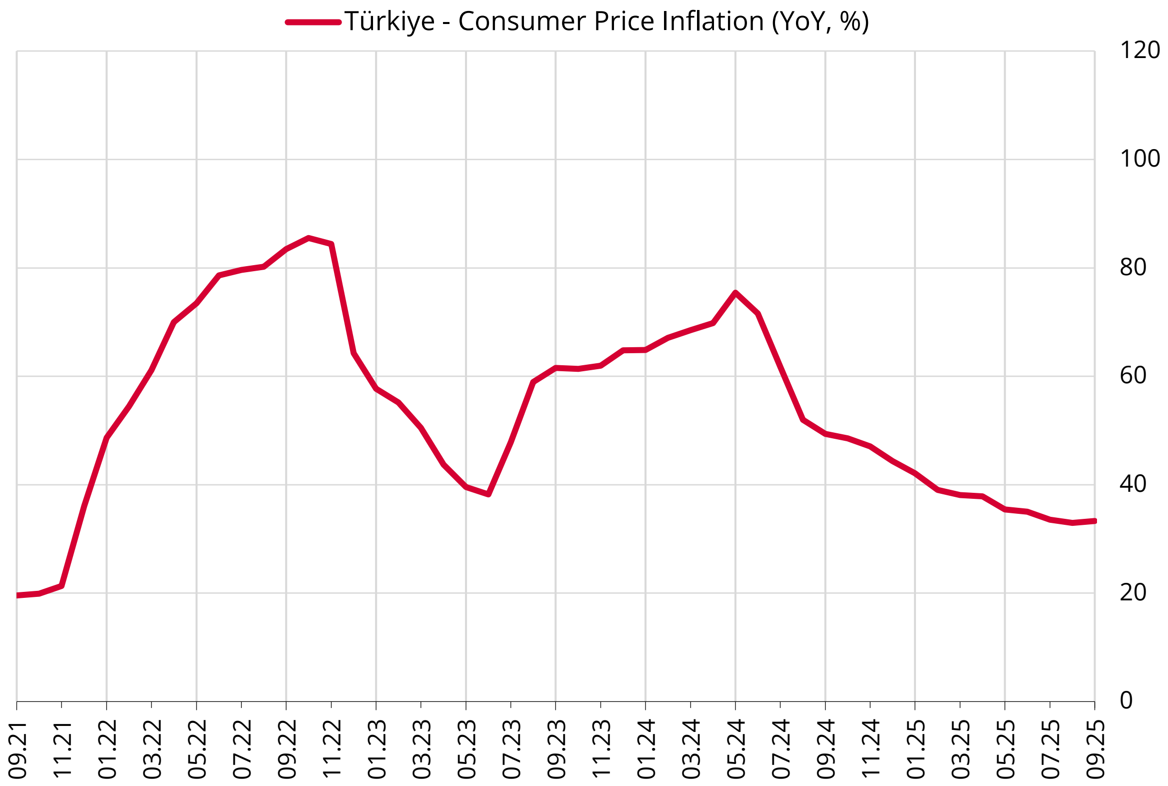
- **Motivation**
  - Why do firms' inflation expectations matter?
- **Randomized Controlled Trial Design (RCT) & Methodology**
  - Assignment to control/treatment groups
  - Questionnaire
  - Treatment and Survey Implementation
- **Main Results**
  - Inflation expectations

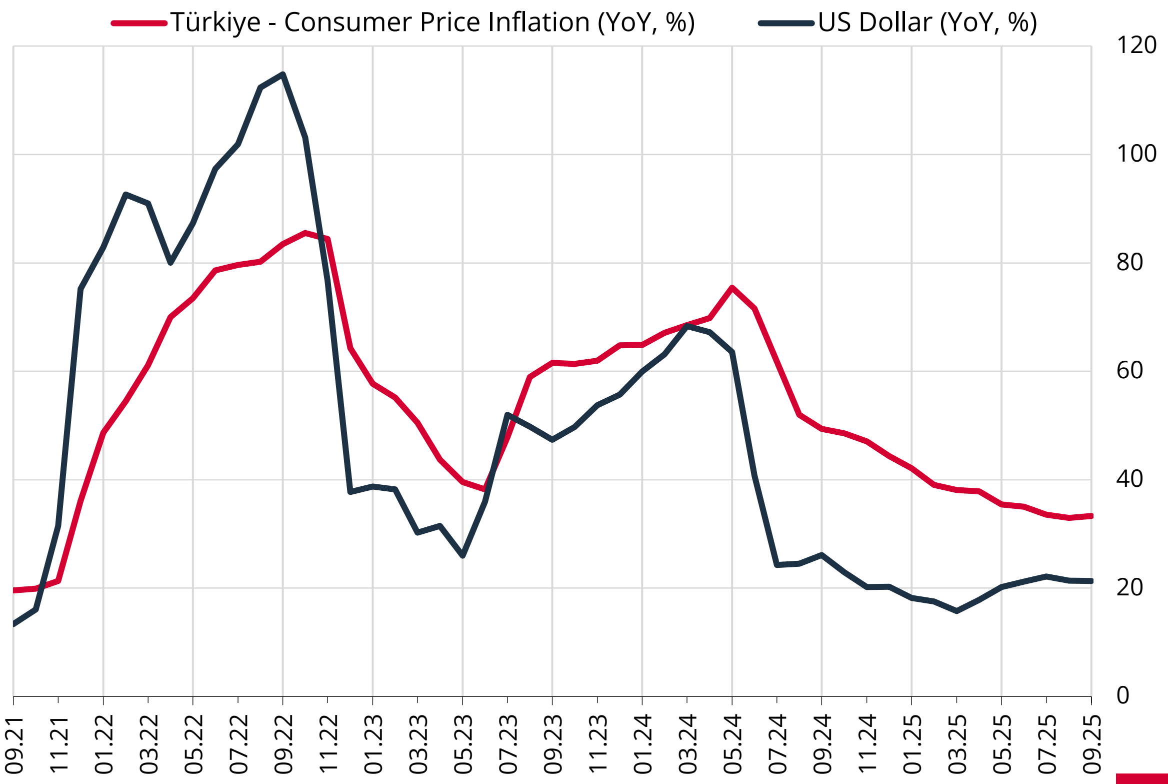
Why do firms' inflation expectations matter?

- Price-setting behavior
  - Higher expected inflation leads to earlier and larger price increases, reinforcing inflation dynamics
- Wage negotiations
  - Salary offers are based on expected costs; inflation expectations feed directly into wage-setting and household income
- Investment decisions
  - Stable expectations encourage long-term projects, while high uncertainty delays or reduces investment
- Policy transmission
  - Expectations are crucial for monetary policy; stable expectations make policy actions more effective

Inflation Dynamics in Türkiye

- Persistently high inflation
- Peak in October 2022 (85.51%)
- Tight monetary policy → disinflation started





High-Inflation Settings

- Firms tend to adopt **pessimistic views**
- Increases **uncertainty**
- **Complicates** decision making
- Expectations and business sentiment are **closely linked**

→ Measuring and managing expectations became even more important recently

RCT Design & Methodology

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Survey Implementation

- **Target Group:** Manufacturing firms participating in the Industry Survey of Türkiye (Business Tendency Survey – BTS)
- **Survey Period:** May 2024 (after the regular May 2024 BTS round)
- **Duration:** 7 days
- **Respondents:** 1422 firms (participation rate 67%)
- **Survey Mode:** Online
- **Randomization:** Conducted before survey launch
    - Assignment to 5 groups (1 control & 4 treatment)

Group Assignment

- **Stratification:** Balanced by
  - Sector Distribution
  - Number of Employees
  - Sales
- **Post-Randomization Checks:** Mean characteristics compared across groups
  - ✓ Groups are balanced

RCT Design

Descriptive Statistics

	Control	Treatment 1	Treatment 2	Treatment 3	Treatment 4
Number of Firms	425	421	431	425	421
Sum of Share of Production Value*	21.00	19.60	21.15	18.98	19.27
Net Sales (billion TL)	1.31	1.34	1.57	1.47	1.32
Number of Employees	506	489	524	554	500
Prior CPI Expectation	59.14	61.35	59.85	58.78	59.81
Prior Capacity Utilization Rate	69.14	69.80	69.70	69.97	69.32

*Production value is used as weight for aggregating Business Tendency Survey results.

Questionnaire

- Inflation expectations:
  - Consumer price inflation (CPI)
  - Producer price inflation (PPI)
- Business Activity
  - Expected change in salaries
  - Expected change in unit cost
  - Expected change in employment
  - Expected change in selling prices
  - Expected change in domestic and export orders
- General Course of Business
  - Expectations about credit conditions
  - General course of the company
  - General course of the country’s economy

** Full questionnaire available at the end.*

RCT Design

Information Treatments

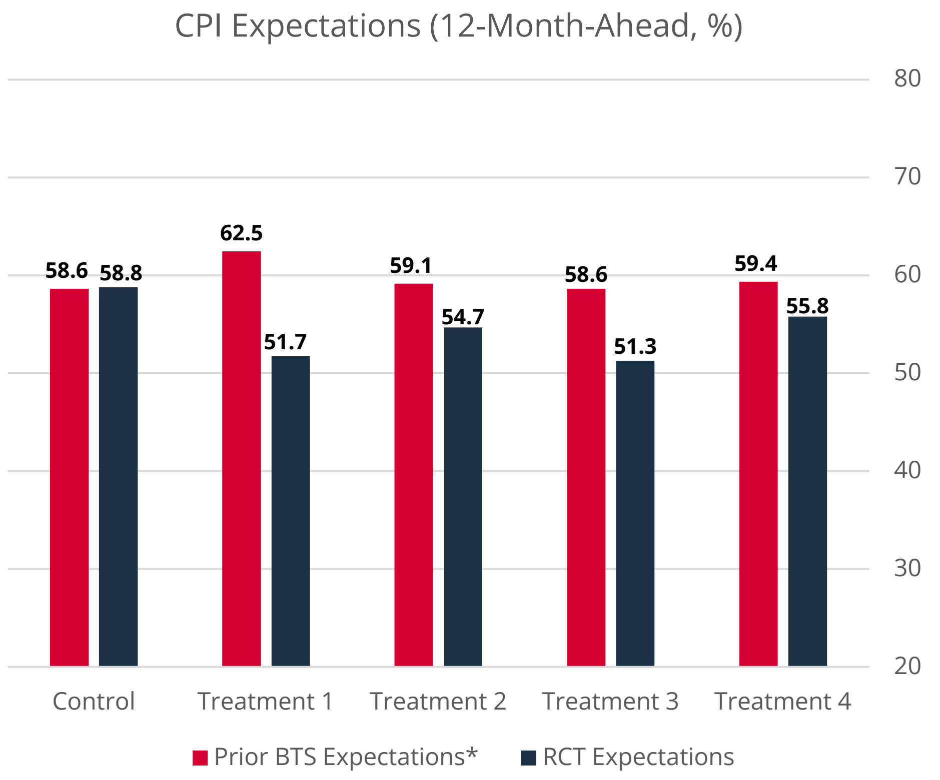
Group	**Information Provided**
Control	No additional information
Treatment 1	Market participants' 12-month ahead CPI expectation*: **33.21%**
Treatment 2	CBRT year-end 2024 inflation forecast: **38%**
Treatment 3	CBRT year-end 2025 inflation forecast: **14%**
Treatment 4	CBRT medium-term inflation target: **5%**

*Compiled via the Survey of Market Participants conducted monthly by CBRT to gather expectations of decision makers and experts from financial and real sectors.

MAIN RESULTS

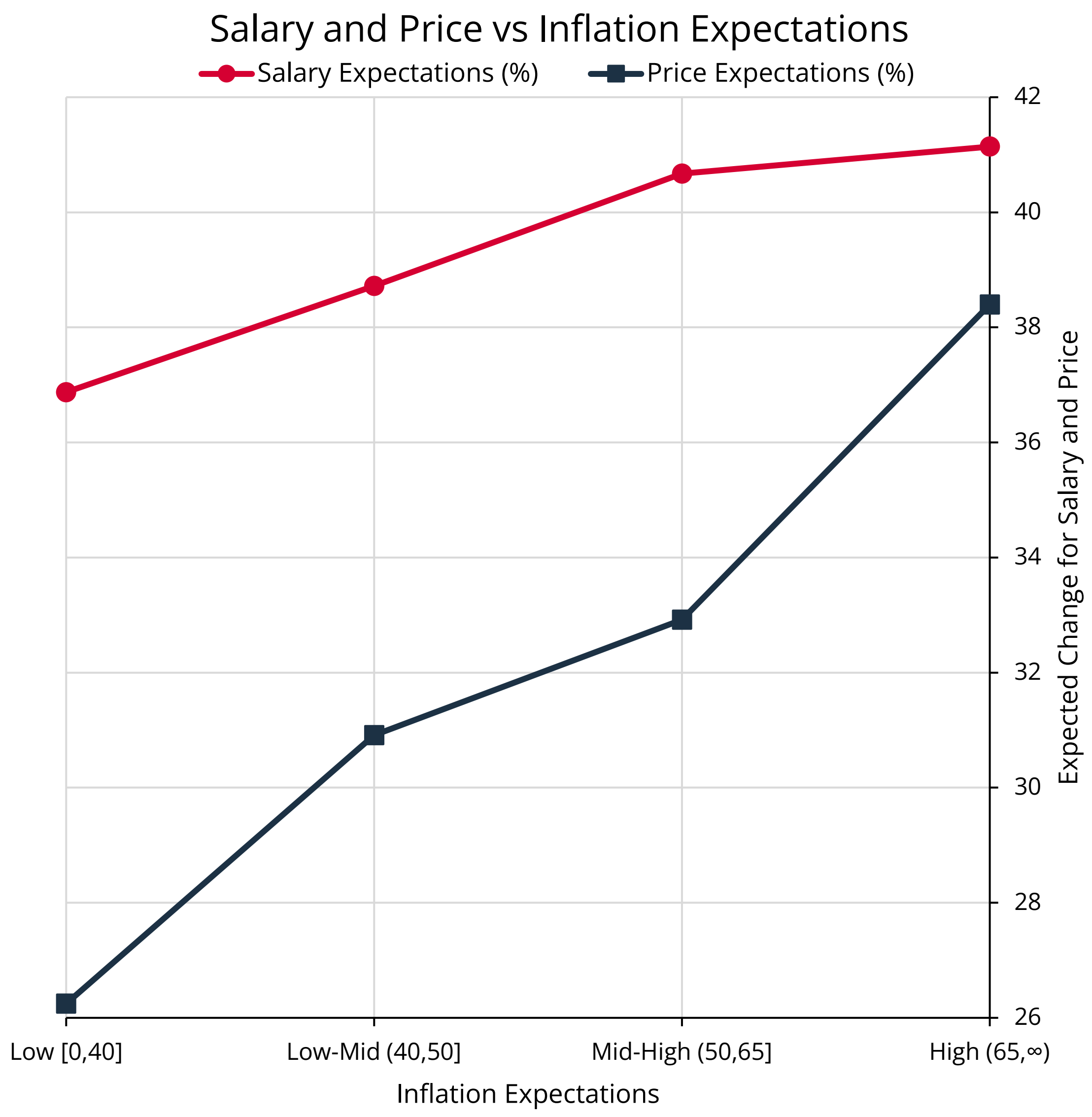
Main Results

	Treatment
Control	-
Treatment 1	Market participants' **12-month ahead** CPI expectation: **33.21%**
Treatment 2	CBRT **year-end 2024** inflation forecast: **38%**
Treatment 3	CBRT **year-end 2025** inflation forecast: **14%**
Treatment 4	CBRT **medium-term** inflation target: **5%**



*Prior BTS expectations are calculated from the May 2024 BTS responses.

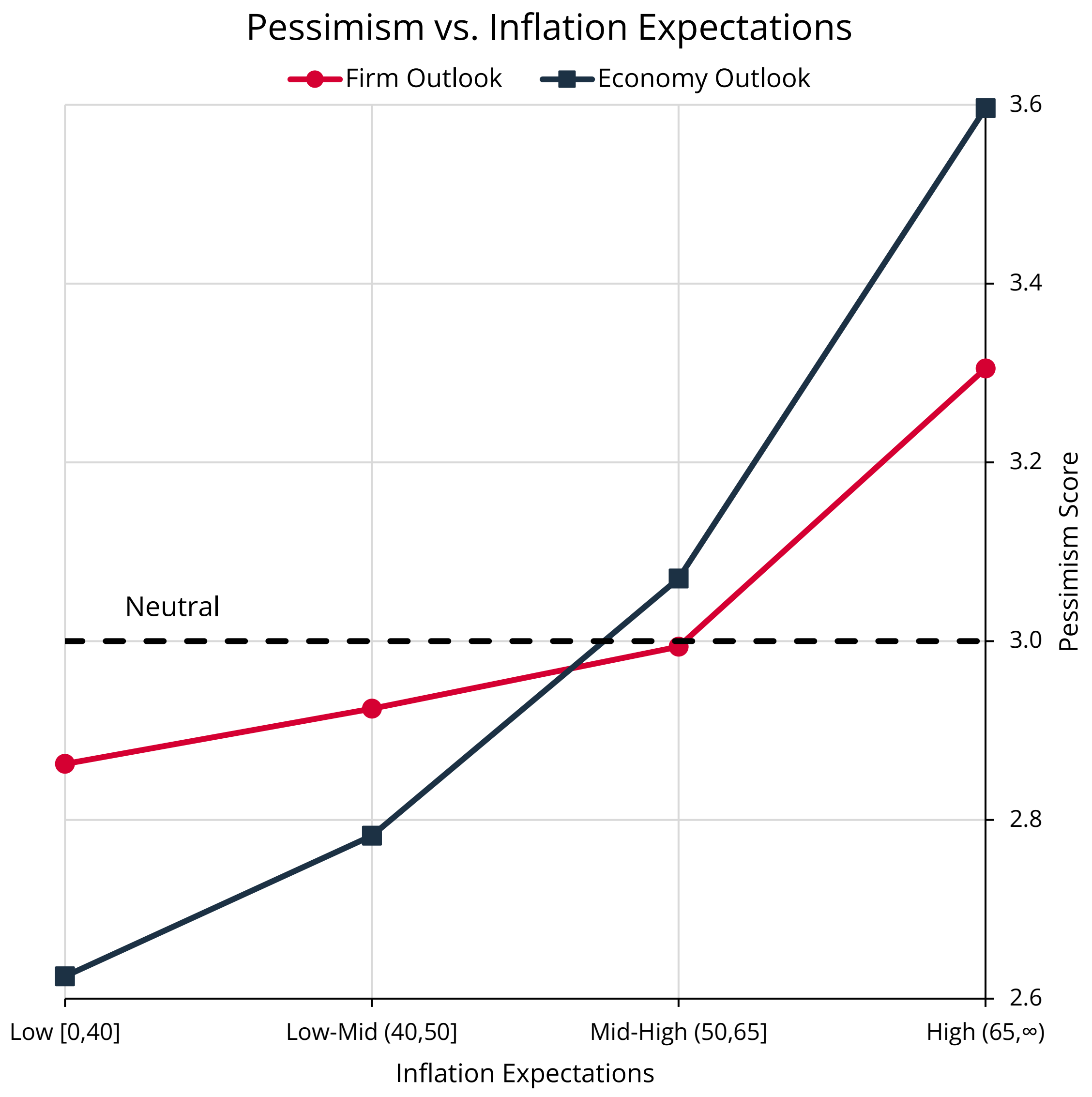
Main Results



- **Question 4:** Compared to today, in what direction and by what percentage (%) do you expect the salaries of company employees to change by the end of the next 12-month period?

- **Question 7:** Compared to today, in what direction and by what percentage (%) do you expect the prices of your main products to change by the end of the next 12-month period?

Main Results



- **Question 12:** Compared to today, your expectation for the general trend of your company in the next 12-month period: (Much more optimistic, more optimistic, the same, more pessimistic, much more pessimistic)

- **Question 13:** Compared to today, your expectation for the general trend of the country's economy in the next 12-month period: (Much more optimistic, more optimistic, the same, more pessimistic, much more pessimistic)

Conclusion

- Firms’ inflation expectations are sensitive to new information
- Different types of information have different effects
- Clear and effective communication is essential for monetary policy in shaping and managing expectations
- Experimental surveys may provide valuable input for policy makers

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RCT-Survey Detailed Questionnaire-1

- **Question 1:** In the past 12 months:
  - **Q1.1** What percentage do you think prices have changed? (Annual CPI inflation rate)
  - **Q1.2** What percentage have your main product prices changed?
  - **Q1.3** What percentage have your company employees’ salaries changed?

- **After the first question, we provide treatment information to each of the treatment groups.**

• **Group 1 (control)**: No information is provided.
• **Group 2**: "According to the results of the Market Participants Survey for May 2024: The participants’ expectation for the Consumer Price Index (CPI) 12 months from now is 33.21%. In other words, professionals expect general prices to increase by 33.21% over the next 12 months.“
• **Group 3**: "According to the Central Bank of the Republic of Türkiye’s Inflation Report for May 2024: The Central Bank predicts that annual inflation will be 38% by the end of 2024. In other words, the Central Bank expects general prices to increase by 38% in 2024.“
• **Group 4**: "According to the Central Bank of the Republic of Türkiye’s Inflation Report for May 2024: The Central Bank predicts that annual inflation will be 14% by the end of 2025. In other words, the Central Bank expects general prices to increase by 14% in 2025.“
• **Group 5**: "Within the framework of the inflation targeting regime, the Central Bank’s inflation target is 5%. In other words, the Central Bank aims for the general price level to rise by approximately 5% annually in the medium-term.”

- **Question 2:** What is your expectation for the Consumer Price Index (CPI) inflation rate at the end of the next 12 months? In other words, how much do you think the general level of consumer prices will increase over the next 12 months? Additionally, what are your lowest (optimistic) and highest (pessimistic) inflation rate estimates at the end of the next 12 months? (Please specify as a percentage.)
  - **Q2.1** At the end of the next 12 months, my annual (CPI) inflation estimate is:
  - **Q2.2** My lowest (most optimistic) inflation (CPI) estimate is:
  - **Q2.3** My highest (most pessimistic) inflation (CPI) estimate is:

RCT-Survey Detailed Questionnaire-2

- **Question 3:** What is your expectation for the Producer Price Index (PPI) inflation rate at the end of the next 12 months? In other words, how much do you think the general level of producer prices will increase over the next 12 months? Additionally, what are your lowest (optimistic) and highest (pessimistic) inflation rate estimates at the end of the next 12 months? (Please specify as a percentage.)
    - **Q3.1** At the end of the next 12 months, my annual (PPI) inflation estimate is:
    - **Q3.2** My lowest (most optimistic) inflation (PPI) estimate is:
    - **Q3.3** My highest (most pessimistic) inflation (PPI) estimate is:
- **Question 4:** Compared to today, in what direction and by what percentage (%) do you expect the salaries of company employees to change by the end of the next 12-month period?
- **Question 5:** Compared to today, in what direction and by what percentage (%) do you expect your company's unit cost to change by the end of the next 12-month period?
- **Question 6:** Compared to today, in what direction and by what percentage (%) do you expect your company's employment to change by the end of the next 12-month period?
- **Question 7:** Compared to today, in what direction and by what percentage (%) do you expect the prices of your main products to change by the end of the next 12-month period?

RCT-Survey Detailed Questionnaire-3

- **Question 8:** Compared to today, disregarding price effects, in what direction and by what percentage (%) do you expect the quantity of export orders to change in real terms by the end of the next 12-month period?
- **Question 9:** Compared to today, disregarding price effects, in what direction and by what percentage (%) do you expect the quantity of domestic market orders to change in real terms by the end of the next 12-month period?
- **Question 10:** How many times do you plan to change your main product prices in the next 12- month period?
- **Question 11:** Compared to today, how difficult do you think it will be to obtain credit conditions or secure a new loan in the next 12-month period? (Easier, The same, Harder)
- **Question 12:** Compared to today, your expectation for the general trend of your company in the next 12-month period: (Much more optimistic, more optimistic, the same, more pessimistic, much more pessimistic)
- **Question 13:** Compared to today, your expectation for the general trend of the country's economy in the next 12-month period: (Much more optimistic, more optimistic, the same, more pessimistic, much more pessimistic)
- **Question 14:** Compared to today, in what direction do you plan to change your profit margin in the next 12-month period? (I will decrease it, it will remain the same, I will increase it)

Assignment into Treatment – Randomness Check

	Dependent Variable: Treatment dummy				
	(1)	(2)	(3)	(4)	(5)
Number of Employees	0.006	0.005	0.005	0.006	0.002
	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)
Age		0.009	0.009	0.010	0.013
		(0.019)	(0.018)	(0.019)	(0.021)
Export Share			-0.001	-0.002	-0.002
			(0.002)	(0.002)	(0.002)
Profit Margin			0.009	0.014	0.015
			(0.038)	(0.039)	(0.036)
Leverage			0.002	0.001	0.001
			(0.004)	(0.005)	(0.006)
Constant	0.771***	0.784***	0.793***	0.791***	0.792***
	(0.046)	(0.071)	(0.069)	(0.062)	(0.059)
Province FE	No	No	No	Yes	Yes
Sector FE	No	No	No	No	Yes
Observations	1,390	1,390	1,390	1,390	1,390
R-squared	0.0004	0.0006	0.0006	0.0007	0.0009
p-value (F-stat)	1.000	0.782	0.924	1.000	0.964

Notes: The table presents results from a linear regression where the dependent variable is binary, set to 1 if a firm is treated and 0 otherwise. Since group assignment (treatment or control) is fixed and cannot change after the initial assignment, all regressors represent averages over the survey period. The p-value (F-statistic) indicates the probability that all non-constant regressors have zero coefficients. *** p<0.01, ** p<0.05, * p<0.1

- To verify randomness, we conducted a regression analysis using a treatment dummy as the dependent variable and firm characteristics as independent variables. The results show no significant correlation between treatment assignment and firm characteristics, with a consistent constant term (0.77–0.79), indicating that approximately 80% of firms were treated as intended. This confirms the random assignment aligned with survey targets.