Trade Policy Sentiment and Corporate Investment

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Motivation

- Beginning in early 2025, the U.S. imposed substantial new tariffs — average effective rate reached levels not seen since the 1940s
- Estimating the effects of these policies is challenging:
  - Measures are heterogeneous across countries and products
  - Multiple transmission channels
  - Macroeconomic conditions confound simple comparisons
- Our approach: use firm-level data to examine how tariff perceptions are associated with investment decisions

Key Innovation

Large language models allow us to measure not just whether firms mention tariffs, but how they perceive them — as opportunities or threats

What we do

Research Design

We construct firm-level tariff sentiment from earnings call transcripts and link it to actual investment outcomes from balance sheet data

Data Sources

- 21,500 earnings calls from ∼3,000 U.S. firms (2024Q1–2025Q4)
- Compustat quarterly financials
- LLM sentiment scoring: -1 (threat) to +1 (opportunity)

Methods

- Cross-sectional regressions
- Synthetic control analysis
- Two-sector open economy model

Main Finding

Firms expressing negative tariff sentiment show significantly lower investment growth — cross-sectional differential of 7.5pp. Calibrated structural model implies aggregate investment decline of ∼5%

Measuring tariff sentiment with LLMs

Two-step approach:

1. Identify "tariff" mentions in earnings call transcripts
2. Extract 50 words before + 50 words after each mention
3. Pass to LLM (Claude Sonnet) for sentiment scoring

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Classify the sentiment expressed toward tariffs in this excerpt.
Score from -1.0 to +1.0 in increments of 0.1:
-1.0:  Tariffs are a major threat or significant cost
 0.0:  Neutral or no clear sentiment
+1.0:  Tariffs are a major opportunity or advantage
Focus on the firm's assessment of tariff impact on their business, operations, costs, and
competitive position.
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Validation: Human validation (n=193, correlation = 0.68, $p < 0.001$, 72% agreement within ± 0.2); internal consistency with stated investment plans

Examples from earnings calls

Positive Sentiment (+0.6)

"We at Cleveland-Cliffs appreciate the recently announced 25% tariffs on steel imports. These tariffs are critical to addressing the problem, and we thank the administration for having the courage to implement them (2/25/2025)"

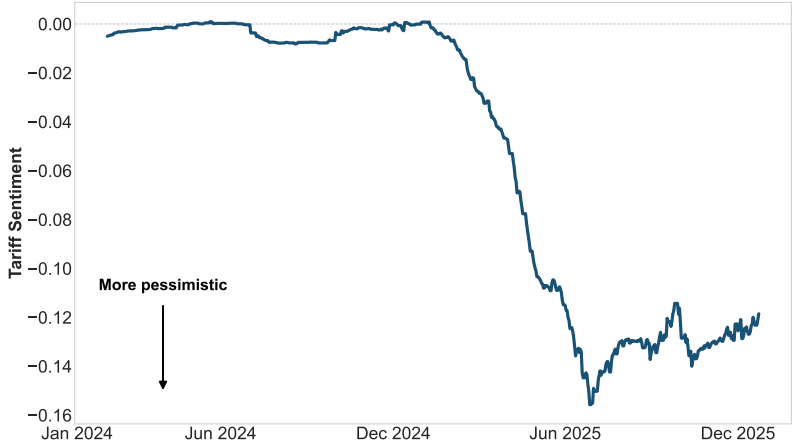
Negative Sentiment (-0.7)

"The current tariff rates have driven us to delay about $375 million of Capex projects [...]. The unpredictable environment has resulted in delays in our customers' investment plans (5/6/2025)"

Negative Sentiment (-0.4)

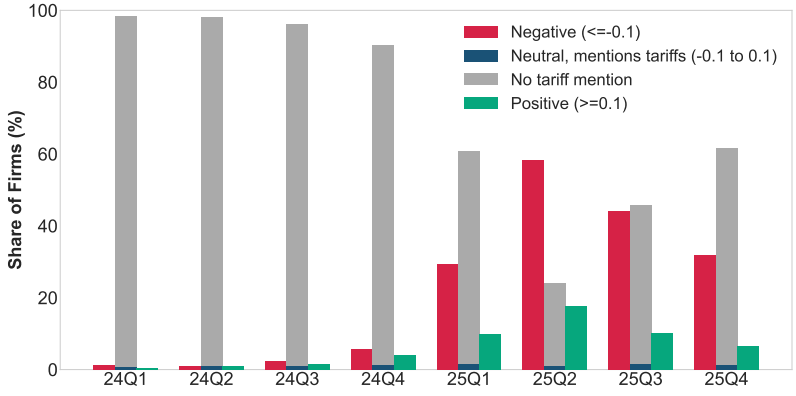
"With respect to possible tariffs, we are working across our supply chain logistics network and assembly plants so that we are prepared to mitigate near-term impacts. Many of these actions are no cost or low cost. **What we won't do is spend a large amount of capital without clarity.** (GM, 1/28/2025)"

Tariff Sentiment in 2024 and 2025



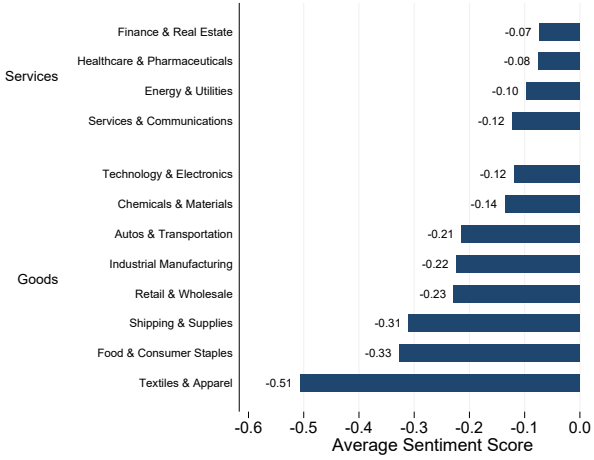
Average tariff sentiment of U.S. firms (90-day MA). Scale: -1 (major threat) to +1 (major opportunity).

Heterogeneity over time and across firms



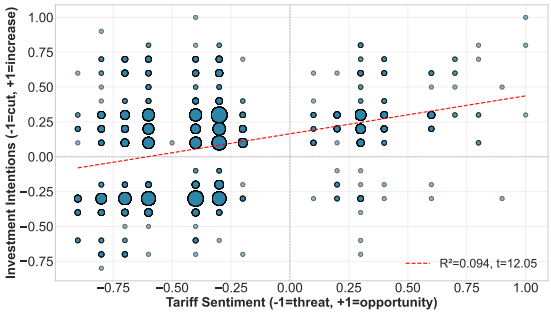
Quarterly distribution of tariff sentiment. By 2025Q2, ∼55% of firms express negative sentiment, 15% positive, remainder neutral or no mention.

Industry heterogeneity: trade exposure matters



Average tariff sentiment by industry, 2025. Trade-intensive sectors (textiles, autos) show more negative sentiment than services (healthcare, real estate).

Sentiment predicts investment intentions



Tariff sentiment vs stated investment plans from same earnings call. Strong positive relationship validates sentiment measure.

Validation

- **Human coding:** Team of RAs score 193 snippets; correlation = 0.68 ($p < 0.001$), 72% agreement
- **Internal:** LLM scores planned investment in same transcript; correlation = 0.81

Patterns

- Among firms with *positive* tariff sentiment: 90% report positive investment plans
- Among firms with *negative* tariff sentiment: $\sim 1/3$ report negative plans, 2/3 still plan to invest (e.g., supply chain adaptation)

Regression evidence: sentiment predicts investment growth

Cross-sectional regression of firm-level investment growth between 2025 and 2024:

$$\Delta I_i = \alpha + \beta \, \text{sentiment}_i + \varepsilon_i$$

	(2) All firms	(7) Top 100
Sentiment	23.20**	46.36***
	(9.16)	(17.81)
Obs.	1,812	100

Standard errors in parentheses.

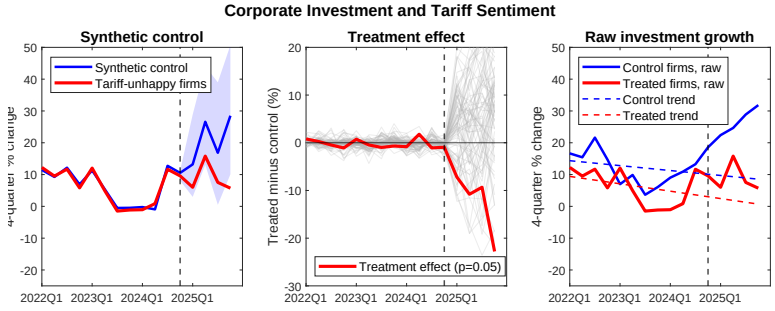
Key Results

- Positive, significant association between sentiment and investment growth
- 0.16 decrease in sentiment associated with 4pp lower investment growth
- Association **twice as large** for top 100 firms by capex ($\beta = 0.35$)
- Robust to controls for AI sentiment, lagged investment, industry
- Large firms account for disproportionate share of aggregate investment

Synthetic control: investment dynamics

Experiment:

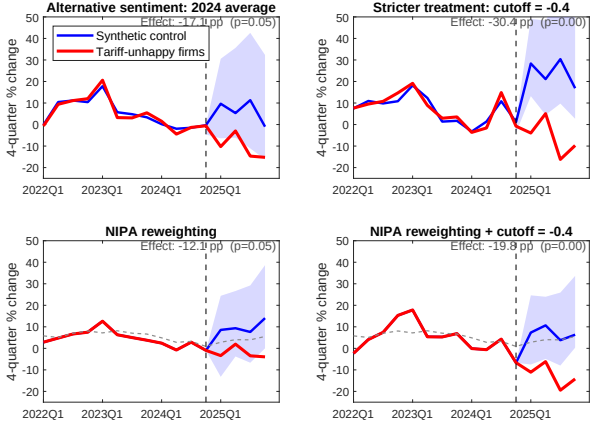
- **Treated group**: 830 firms with average sentiment < -0.1 (tariff-concerned)
- **Control group**: Weighted combination of 767 firms with neutral/positive sentiment, matched on pre-2025 investment dynamics



Synthetic control: robustness checks

Robustness tests:

- **Alternative treatment definitions**: 2024 sentiment, stricter cutoff (-0.4)
- **Representative weighting**: Reweight firms to match NIPA aggregate investment growth



What firms talk about when they talk about tariffs

Firms with Negative Sentiment

1. **Postponement**: Option value of waiting rises under policy uncertainty
   - "Customers pausing to reevaluate larger investments"
2. **Reallocation**: Shift from capacity expansion to cost reduction
   - "Productivity initiatives and tariff mitigation strategies"
3. **Supply chain**: Investment in reshoring/diversification rather than expansion

Firms with Positive Sentiment

1. **Market share**: Tariffs raise rivals' costs
   - "Insofar as tariffs are concerned, fabulous. Almost couldn't be better"
2. **Domestic focus**: Concentrate investment in tariff-insulated segments
3. **Subsidies**: Production credits for reshoring
   - "$35 million to free cash flow annually from U.S. production credits"

From micro to macro: structural model

Goal: Measuring Aggregate Macro Effects of Tariff Policy in 2025

Cross-sectional estimates identify *relative* effects (tariff-pessimistic vs others) but not *absolute* effects accounting for general equilibrium spillovers

Two-Sector Standard Open Economy Monetary Model:

- Two countries: US and rest of world
- Two sectors: Goods (trade-exposed) and Services (largely domestic)
- Nominal rigidities + investment adjustment costs
- Trade in consumption, intermediates, and capital goods

Key model equations: from tariffs to investment

1. Tariffs raise the price of the investment bundle p^I (cost channel):

$$p_t^I = \left[\omega\, p_{\text{dom},t}^{1-\eta} + \ (1-\omega)\,(\tau_t\, p_{\text{imp},t})^{1-\eta}\right]^{\frac{1}{1-\eta}}$$

where ω is the domestic share in investment goods and η is the trade elasticity.

2. Shadow price of capital (q) tracks the investment price:

$$q_t = p_t^I\,[1 + \text{Adj. Costs}] - \beta E_t\,[\text{Future Adj. Savings}]$$

With adjustment costs ψ on investment, shadow price q rises with replacement cost p^I.

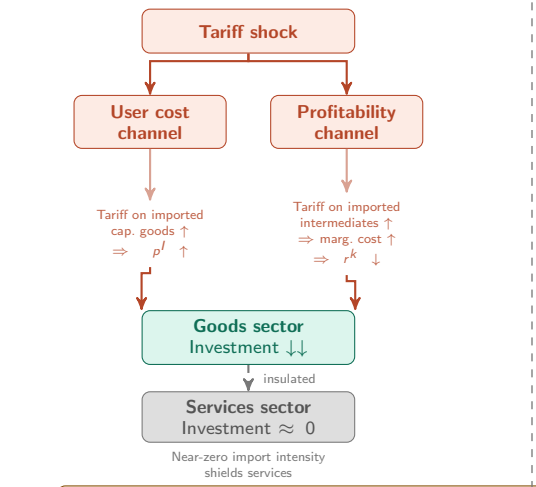
3. Capital Euler Equation (profitability channel):

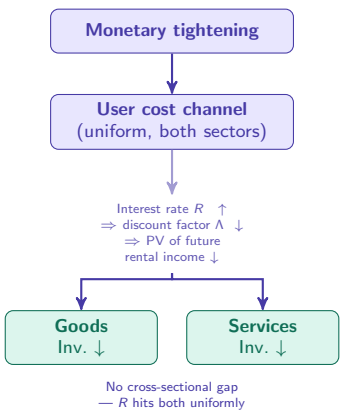
$$q_t = E_t\left[\Lambda_{i,t+1}\left(r_{t+1}^k + (1-\delta_k)q_{t+1}\right)\right]$$

Tariffs on intermediates lower MPK r^k, further depressing capital accumulation.

Tariffs $\uparrow \Longrightarrow$ $p \uparrow \Longrightarrow$ cost of new capital $q \uparrow \Longrightarrow$ Investment $\downarrow$

Investment channels: why tariff shocks create a cross-sectional gap





Identification: cross-sectional gap (7.5 pp) pins down ψ (inv. adj. costs)
monetary agg. (-2% per 100 bp) pins down κ (price rigidity)

Modeling the tariff shock: two components

1. **Unrealized Bad News about Future Tariffs (News Shocks)**
   - **2025Q1**: 5pp expected increase for Q2 (Liberation Day announcements, Feb–Apr)
   - **2025Q2**: 5pp expected increase for Q3 (post-Liberation Day escalation)
   - **2025Q3**: Downward revision as realized tariffs come in below expectations
   - Captures forward-looking investment decisions based on expected policy

2. **Actual Realized Tariff Increases**
   - **Baseline** (pre-2025): 2.5% effective tariff rate
   - **2025Q2**: 8.0% (+5.5pp)
   - **2025Q3**: 10.7% (+8.2pp)
   - **2025Q4**: 11.25% (+8.75pp)
   - Based on customs duties / import values

Key finding: News shocks drive early investment decline; realized shocks dominate later

Calibration strategy

Joint calibration of two key parameters:

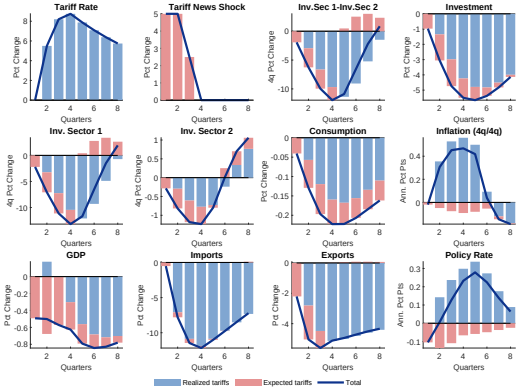
- **Nominal rigidity** κ + **adjustment costs** ψ jointly calibrated to match:
  1. **Tariff shock**: 7.5% differential investment decline to tariff shock — our evidence
  2. **Monetary shock**: 2% average investment decline to 100bp rate hike — from literature

Key insight

Monetary affects both sectors uniformly (no cross-sectional gap, mostly through κ);
Tariff creates differential response (cross-sectional gap), mostly through ψ.

Result: The cross-sectional evidence from our regressions and synthetic control pins down ψ, while monetary policy benchmarks pin down κ

Model results: Aggregate responses to Tariff Shock



Calibrated model predictions:

- Aggregate investment: -5% in first year
- GDP: -0.6% in first year
- Accounts for price adjustments, reallocation, monetary policy response

Conclusion

Main Findings

- LLM-based sentiment measure reveals substantial heterogeneity in firms' tariff perceptions
- Strong association: firms with negative sentiment show significantly lower investment growth
- Synthetic control: 7.5pp differential decline in investment growth
- Calibrated structural model implies: aggregate investment $\downarrow$5%, GDP $\downarrow$0.6%

Methodological Contribution

- Moving beyond keyword counts to directional sentiment measures
- LLMs enable large-scale, nuanced text analysis

Key Takeaways

- Large, heterogeneous associations between sentiment and investment across firms
- Model-implied aggregate effects are economically significant