



# Labor Supply and Firm Capital Structure

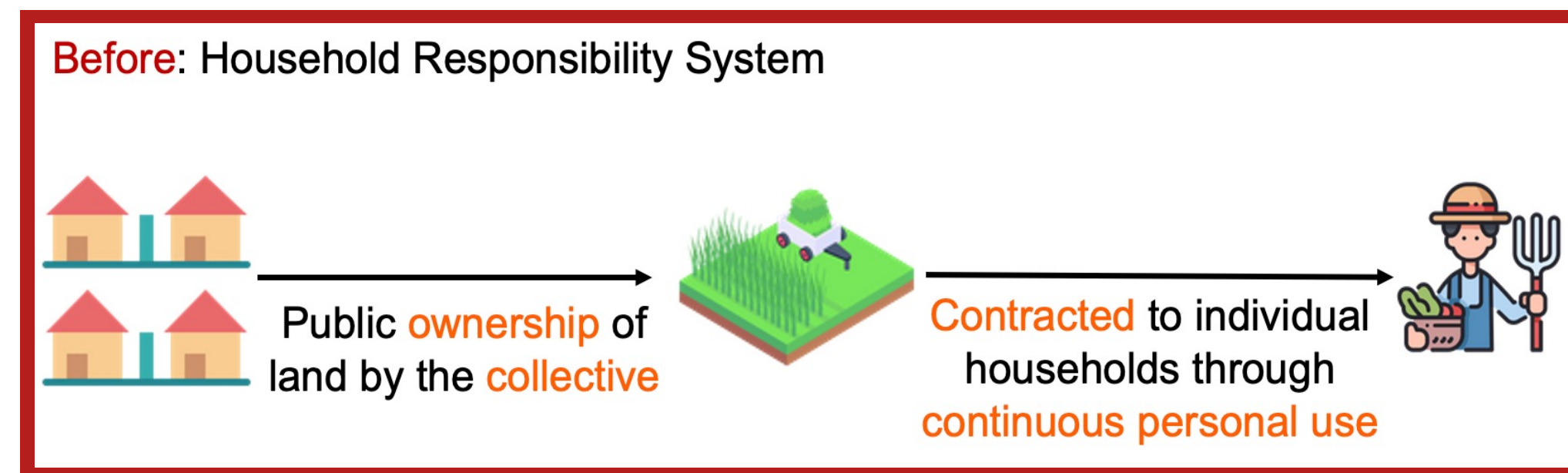
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## An important question

- The workforce becomes a central focus for modern firms.
- There is a growing body of research dedicated to understanding how labor market search friction can significantly impact a firms' capital structure (e.g., Agrawal and Matsa, 2013; Almazan et al., 2015; Bronars and Deere, 1991; Kim, 2020; Matsa, 2010; Sanati, 2022).
- Existing literature has centered around labor laws and labor demand.
- Research question:** How **private and publicly-traded firms** respond to an abrupt increase in **labor supply** in the local labor markets where firms operate?

## Identification strategy

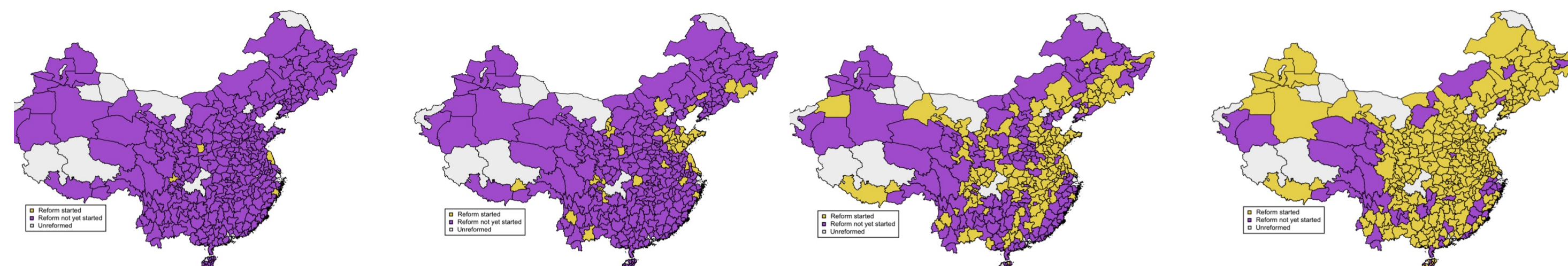
- A unique setting: the **Land Titling Program (LTP)** initiated across China in 2008.
- Historically, property rights over rural land in China were established through continuous personal use rather than formal land titles.
- People were discouraged from leaving their land unused or in the hands of others due to the fear of losing their property rights.



- The introduction of clear land property rights through LTP has empowered rural households to find jobs in cities, reducing their reliance solely on their farm-based activities.



- Use the staggered rollout of the reform to conduct a **difference-in-differences (DiD)** analysis.



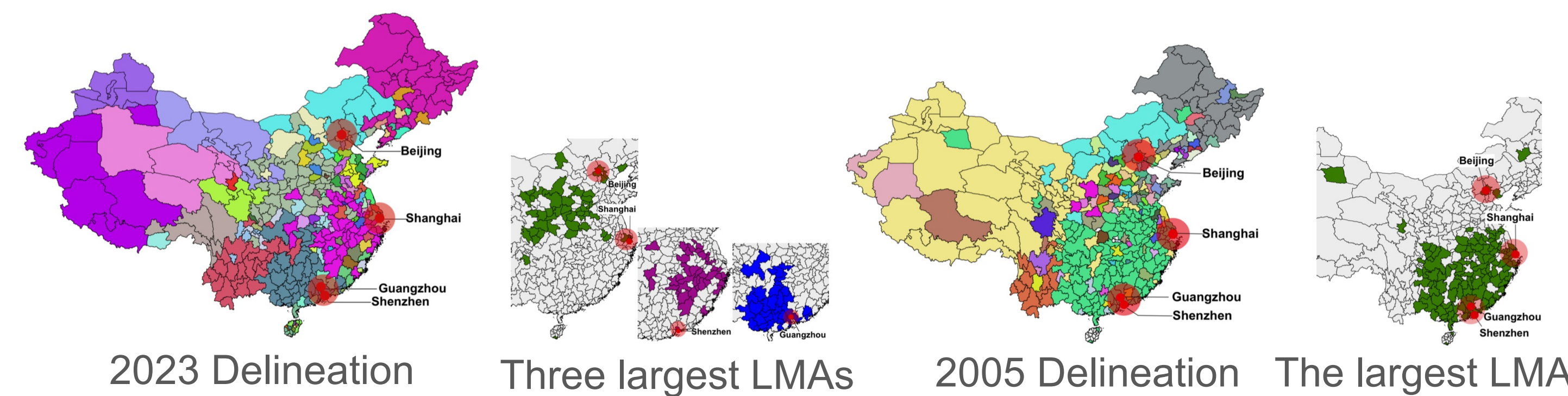
Land Titling Program Roll-out: 2012—2015

## Data

- Sample period: 2008—2015
- Land reform program 2011—2015: Ministry of Agricultural and Rural Affairs.
- Private firm-level financial data: Chinese Industrial Enterprise Database (CIED), 339,832 firm-year observations covering 42,479 enterprises in 345 cities.
- Public firm-level financial data: China Stock Market and Accounting Research (CSMAR) database, 3,112 firm-year observations comprising 389 enterprises in 149 cities.

## Labor Market Areas (LMAs)

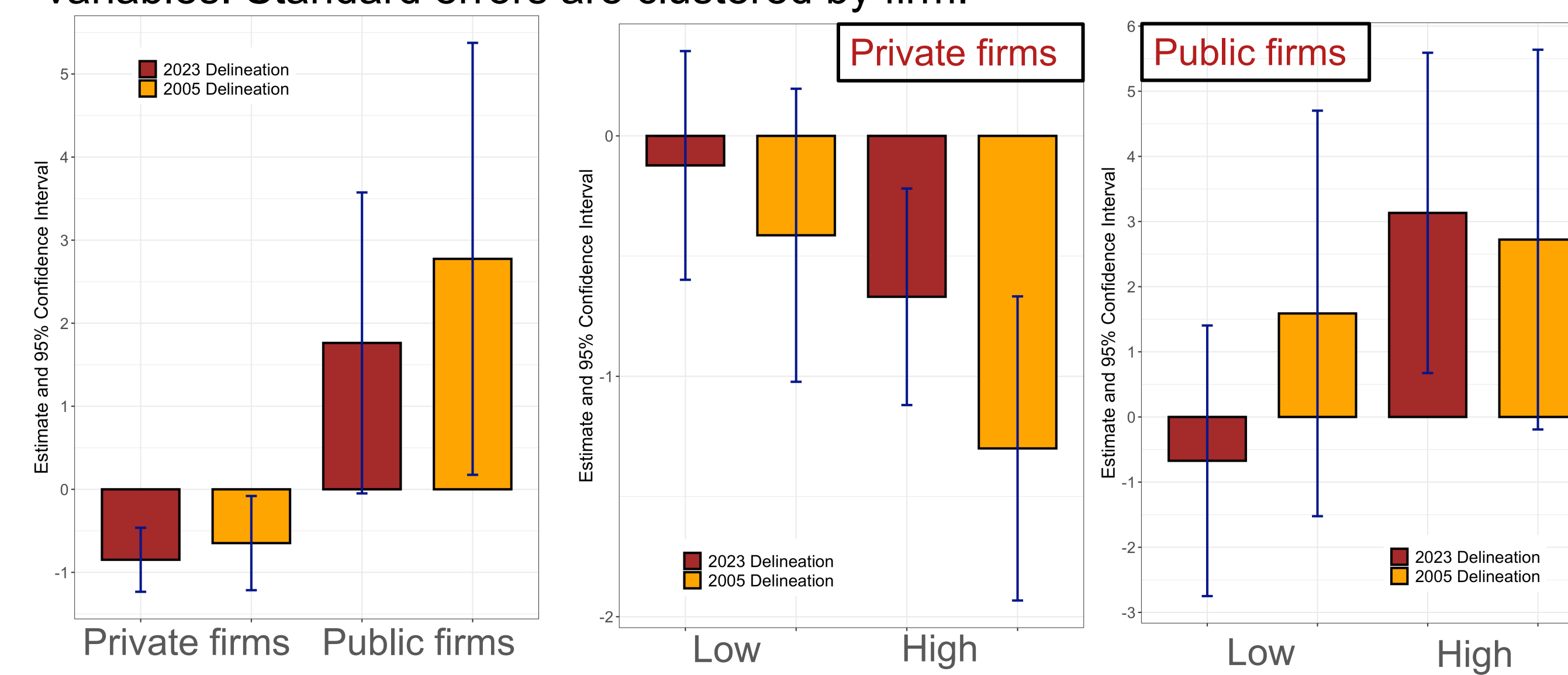
- Geographical boundaries may not precisely reflect the economic connections in labor migration (see, Tolbert and Sizer (1996)).
- Economic local labor markets:** Hierarchical agglomerative clustering method used by Tolbert and Sizer (1996) and two different datasets to construct labor markets before and after the land titling reform:
  - Baidu Qianxi (Baidu Mobility) migration data from January 1, 2023, to February 12, 2023: The Spring Festival travel rush
  - 2005 China 1% National Population Survey



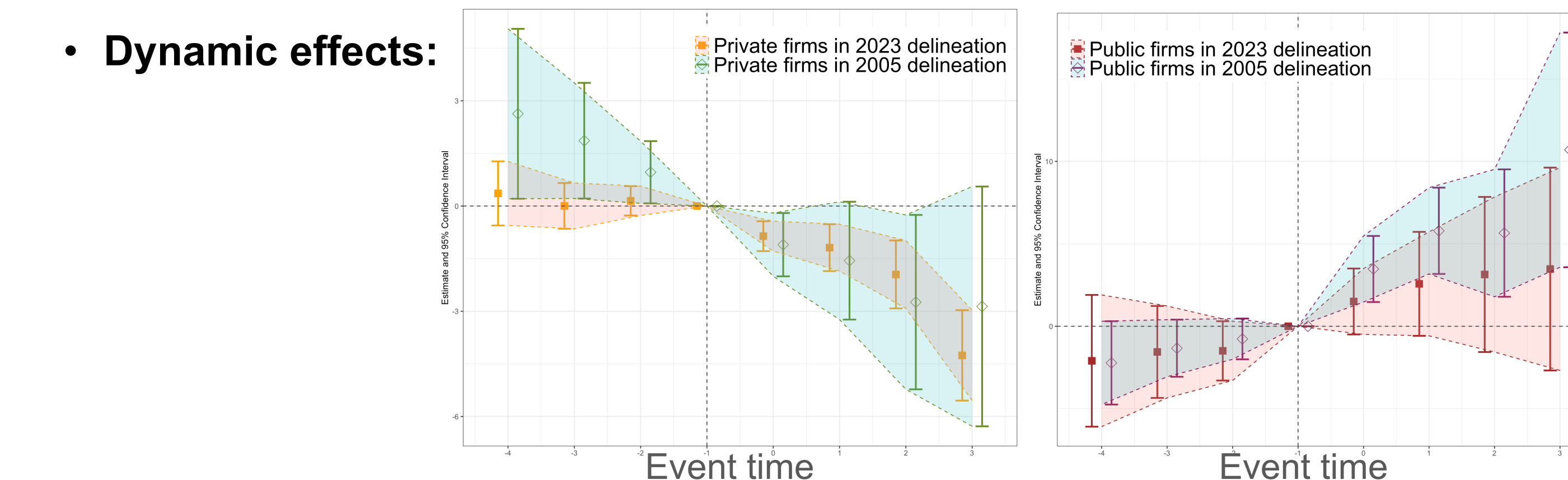
## Land titling reform and leverage

$$Y_{ijt} = \beta_1 TreatedLMA_{ijt} + \beta_2 X_{ijt} + \beta_3 Z_{ijt} + \varepsilon_{ijt}$$

- TreatedLMA<sub>ijt</sub>**: an indicator variable equal to one if a firm *i* operates in the LMA *j* where the land reform has been implemented by year *t*, and zero otherwise.
- Leverage<sub>ijt</sub>**: debt-to-capital ratio of firm *i* located in LMA *j* in year *t*.
- X<sub>ijt</sub>**: a vector of firm and year fixed effects; **Z<sub>ijt</sub>**: a vector of firm-level control variables. Standard errors are clustered by firm.



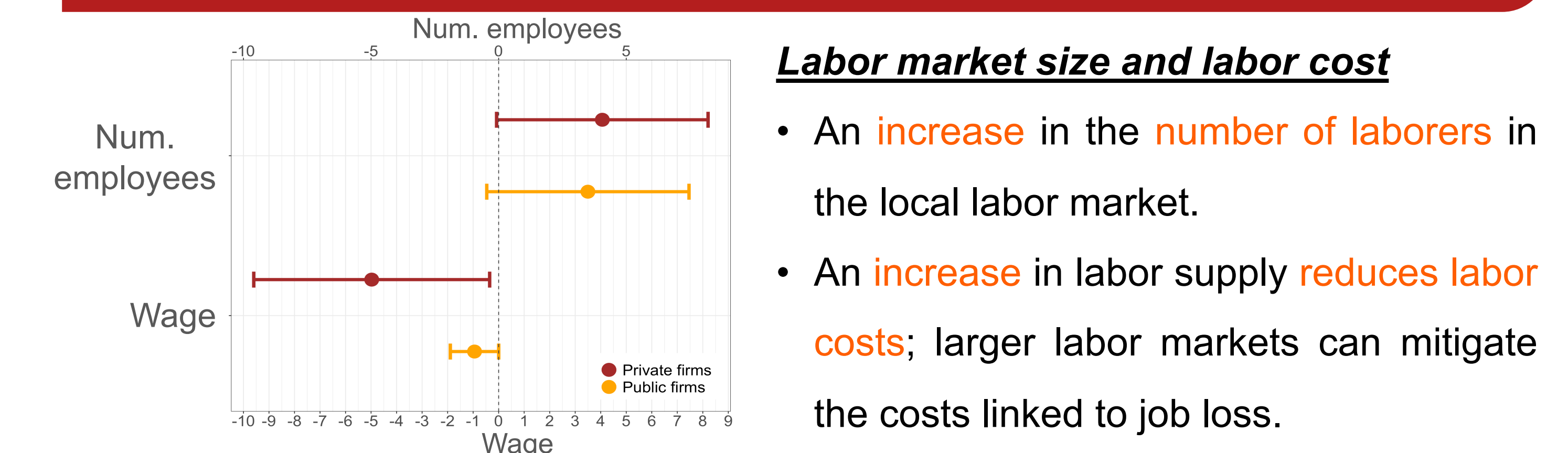
- The reform leads to:
  - a **decrease** in leverage for **private firms**
  - an **increase** in leverage for **public firms**
- Treatment intensity:** The effect of the land titling reform is more significant for firms operating in labor market areas with a **greater number** of affected counties.



## Heterogenous effects

- The effect of reform is significant only in firms operating in **labor import cities** within the LMAs.
- The reform results in:
  - reduced leverage for **small, financially constrained, and labor-intensive private non-SOEs**
  - increased leverage for **large, financially constrained, and capital-intensive public SOEs**

## Economic mechanisms



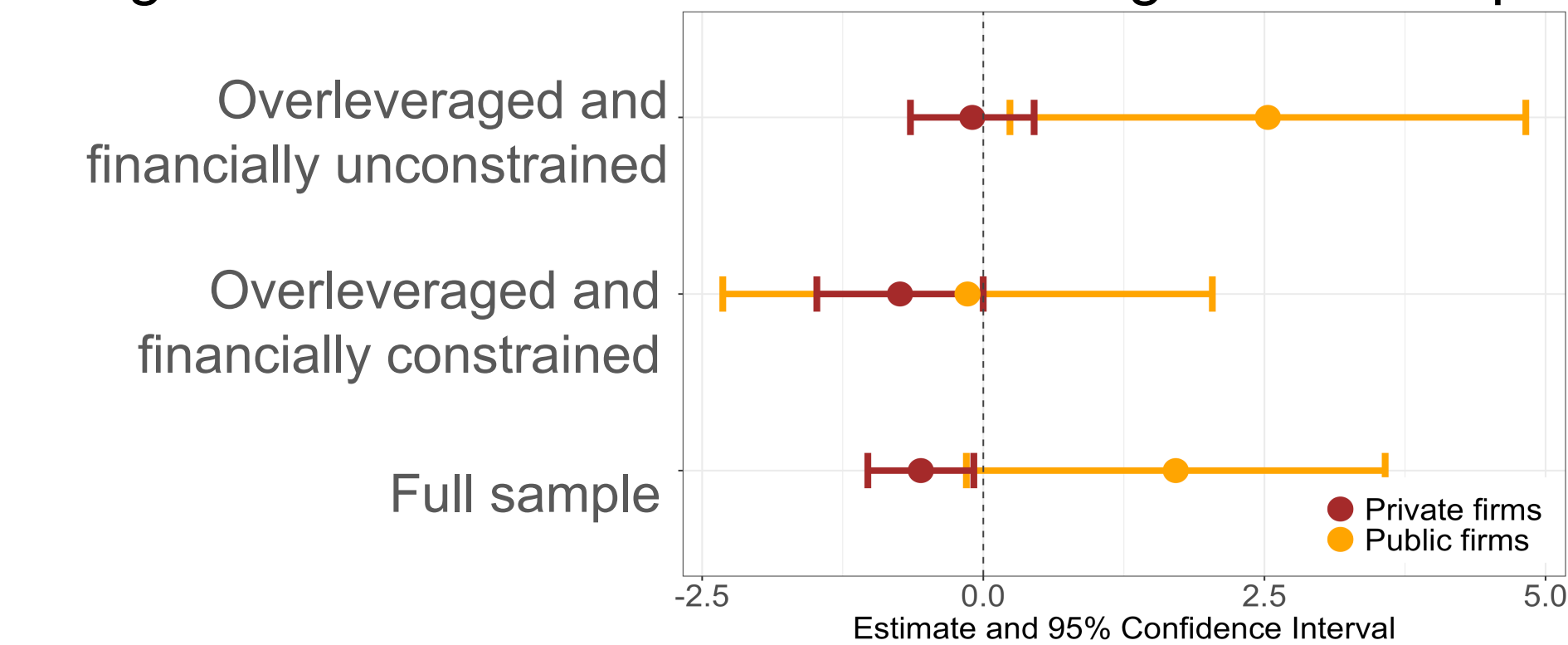
## Operating and financing activities

- The reduced labor costs benefit operating activities of **private firms only**.
  - Increased **operating profits** and operating cash flow
  - More internal financing** rather than external debt.
  - Increased **productivity**

Sample	Private firms					
	(1)	(2)	(3)	(4)	(5)	(6)
	OpCost	OpProfit	OpCF	ΔNetEquity	ΔRE	Productivity
TreatedLMA	-0.003*** (0.001)	0.005*** (0.001)	0.003** (0.001)	-0.688*** (0.229)	0.840*** (0.159)	1.299** (0.526)

## Different response from private and public firms:

- Leverage deviation: excess of actual leverage over the optimal target leverage.



- Overleveraged private firms with high financial constraints:** **reduce** leverage to optimal level; **financial flexibility** prediction (e.g., Byoun, 2011; Clark, 2010; Denis and McKeon, 2012, RFS).
- Overleveraged public firms with low financial constraints:** further **increase** leverage; "**leverage ratchet effect**" (Admati et al., 2018) and modified trade-off theory (Titman, 1984, JFE; Berk et al., 2010, JF)

## Conclusion

- Private and public firm** respond differently to the increased labor supply in the **local labor markets**.
- Private firms benefit from the reduced labor market frictions.
- Public firms exhibit risky behaviors to capitalize on the low labor costs.