

Misallocation and Capital Market Integration: Evidence From India

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Motivating Question

How does opening up to foreign capital affect **capital misallocation** in low-income countries?

Ex-ante Ambiguous

- Domestic capital markets likely to be imperfect in low-income countries.
 - Political capture with state-owned banks
 - Domestic regulation
- Foreign capital = simple policy lever.
 - Not bound by historical, political, regulatory, or institutional domestic constraints.
- **But** on the other hand, foreign investors may be less able to **process** and **monitor** soft information.

This Paper

Exploit staggered foreign capital liberalization across disaggregated Indian manufacturing industries during the 2000s to:

- Measure the effect of foreign capital liberalization on misallocation using within-country variation.
- Develop an aggregation methodology to use D-in-D estimates of policies' effects to bound changes in the treated industries' Solow Residual.

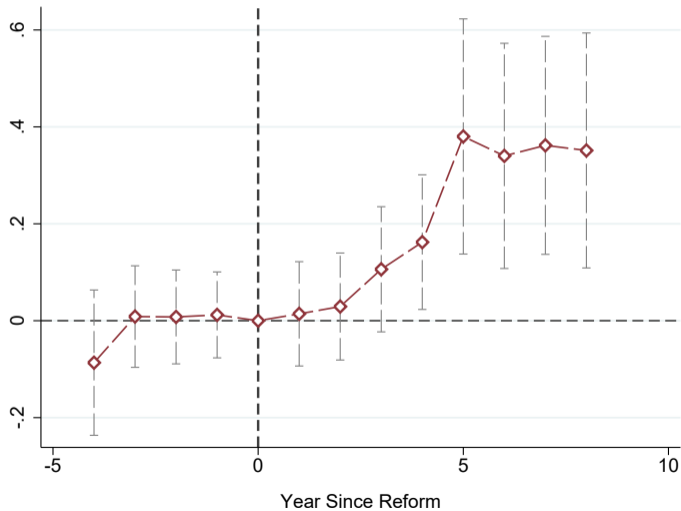
Empirical Strategy: D-in-D with Heterogeneous Effects

$$Y_{ijt} = \beta_1 \text{Reform}_{jt} + \beta_2 \text{Reform}_{jt} \times \text{High MRPK}_i + \alpha_i + \delta_t + X_{ijt} + \epsilon_{it}$$

- *High MRPK_i*: Firm's average MRPK in 1995–2000 > 4-digit industry median
- β_2 : Key coefficient for determining if *misallocation decreased*
 - *Within-industry* variation \Rightarrow *weaker* identification assumption than standard DiD
 - Most conservative: 5-digit industry \times year FE
- β_1 : Needed to estimate *aggregate effects* of the policy
 - Requires parallel trends for treated / untreated
 - \rightarrow Validate with event study

Event Study for Average Effect on Capital

≈ + 30% capital increase



Average Effect

Heterogeneity by Pre-treatment MRPK (Y/K Calculation)

- Growth concentrated in **MRPK firms**

<i>Dependent Variable</i>	Revenues	Capital		
	(1)	(2)	(3)	(4)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.245*** (0.071)	0.565*** (0.063)		
$Reform_{jt}$	-0.030 (0.115)	-0.009 (0.077)		
<hr/>				
<i>Fixed Effects</i>				
Firm	✓	✓		
Firm Age	✓	✓		
Size × Year	✓	✓		
Observations	62,924	65,393		

Heterogeneity by Pre-treatment MRPK (Y/K Calculation)

- Growth concentrated in **MRPK firms**
- Complementarities in firms' demand for labor

<i>Dependent Variable</i>	Revenues	Capital	Wages	
	(1)	(2)	(3)	(4)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.245*** (0.071)	0.565*** (0.063)	0.265*** (0.058)	
$Reform_{jt}$	-0.030 (0.115)	-0.009 (0.077)	0.022 (0.095)	
<i>Fixed Effects</i>				
Firm	✓	✓	✓	
Firm Age	✓	✓	✓	
Size × Year	✓	✓	✓	
Observations	62,924	65,393	63,999	

Heterogeneity by Pre-treatment MRPK (Y/K Calculation)

- Growth concentrated in **MRPK firms**
- Decline in MRPK dispersion \Rightarrow **misallocation** \downarrow

<i>Dependent Variable</i>	Revenues	Capital	Wages	MRPK
	(1)	(2)	(3)	(4)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.245*** (0.071)	0.565*** (0.063)	0.265*** (0.058)	-0.353*** (0.101)
$Reform_{jt}$	-0.030 (0.115)	-0.009 (0.077)	0.022 (0.095)	0.021 (0.113)
<i>Fixed Effects</i>				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size \times Year	✓	✓	✓	✓
Observations	62,924	65,393	63,999	61,342

Aggregate Effect on Treated Industries' Solow Residual

Use difference-in-differences estimates to arrive at a first order approximation of the aggregate effect of the policy on treated industries' Solow Residual.

	Increase in Solow Residual
Lower Bound	3.7%
Upper Bound	16.9%

- Lower bound estimate indicates that even at a lower bound the policy meaningfully increased treated industries' Solow residual.

Conclusion

- Foreign capital liberalization can play an important role in **reducing capital misallocation**
- Exploit natural experiment to identify the **aggregate effects** of the policy
 - Reform raised treated industries aggregate productivity by **4-17%**
 - Upper bound estimates include substantial effects.
 - Many more results in the paper we didn't have time for today!

Thank you!

Average Effect

	(1)	(2)	(3)	(4)
$Reform_{jt} \times I_i^{High\ MRPK}$	0.245*** (0.071)	0.565*** (0.063)	0.265*** (0.058)	-0.353*** (0.101)
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<i>Fixed Effects</i>				
Firm	✓	✓	✓	✓
Firm Age	✓	✓	✓	✓
Size × Year	✓	✓	✓	✓
Observations	62,924	65,393	63,999	61,342