

# Un-incorporation and Misallocation: Firm-level Evidence from Sri Lanka

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# Motivation: Incorporation and misallocation



- Incorporation is an important legal institution
  - Incorporated – separate legal entity
  - Unincorporated – business and the owner are the same
- Legal factors in un-incorporation affect productivity and misallocation
  - Unlimited liability
    - Risk of expansion
    - No delegation of management
  - Probable progressive income tax schedules

# Literature and research gap

- Studies on incorporation and firm-level productivity ([Quadrini, 2000](#); [Cagetti and De Nardi, 2006](#); [Alp, 2020](#); [Barro and Whwaton, 2020](#))
  - Unincorporated firms are less productive
  - Tax wedges decrease firm-level productivity
- Studies on misallocation across firms ([Hsieh and Klenow, 2009](#); [Kumari et al, 2021](#))
  - Misallocation leads to aggregate TFP loss
- No studies on incorporation and misallocation across firms
- Important to study the impact of un-incorporation on aggregate productivity

# Research question

What is the relative magnitude of misallocation and its impact on aggregate productivity?

- across unincorporated and incorporated firms
- in Sri Lanka's manufacturing sector
- during 2005-2017

# Sri Lanka

- Sri Lanka is an appropriate candidate for this study:
  - Around 60% of firms are unincorporated ([Advocata, 2020](#))
  - Sole proprietorships are less productive ([Kumari et al, 2021](#))
  - Different tax schedules ([DIR of Sri Lanka,2021](#))
  - Financial frictions ([Thilakaweera, 2016](#); [Wijewardena, 2021](#))
  - Data availability ([DCS 2006-2018](#))

# Analytical framework

## Methodology

- Adopted by Hsieh and Klenow (2009)

$$Y_{si} = A_{si} K_{si}^{\alpha_s} L_{si}^{1-\alpha_s} \quad TFPR_s = \frac{P_s Y_s}{K_s^{\alpha_s} L_s^{1-\alpha_s}}$$

## Firm-level distortions (tax wedge)

- Output distortions  $(\tau_{Y_{si}})$
- Capital distortions  $(\tau_{K_{si}})$

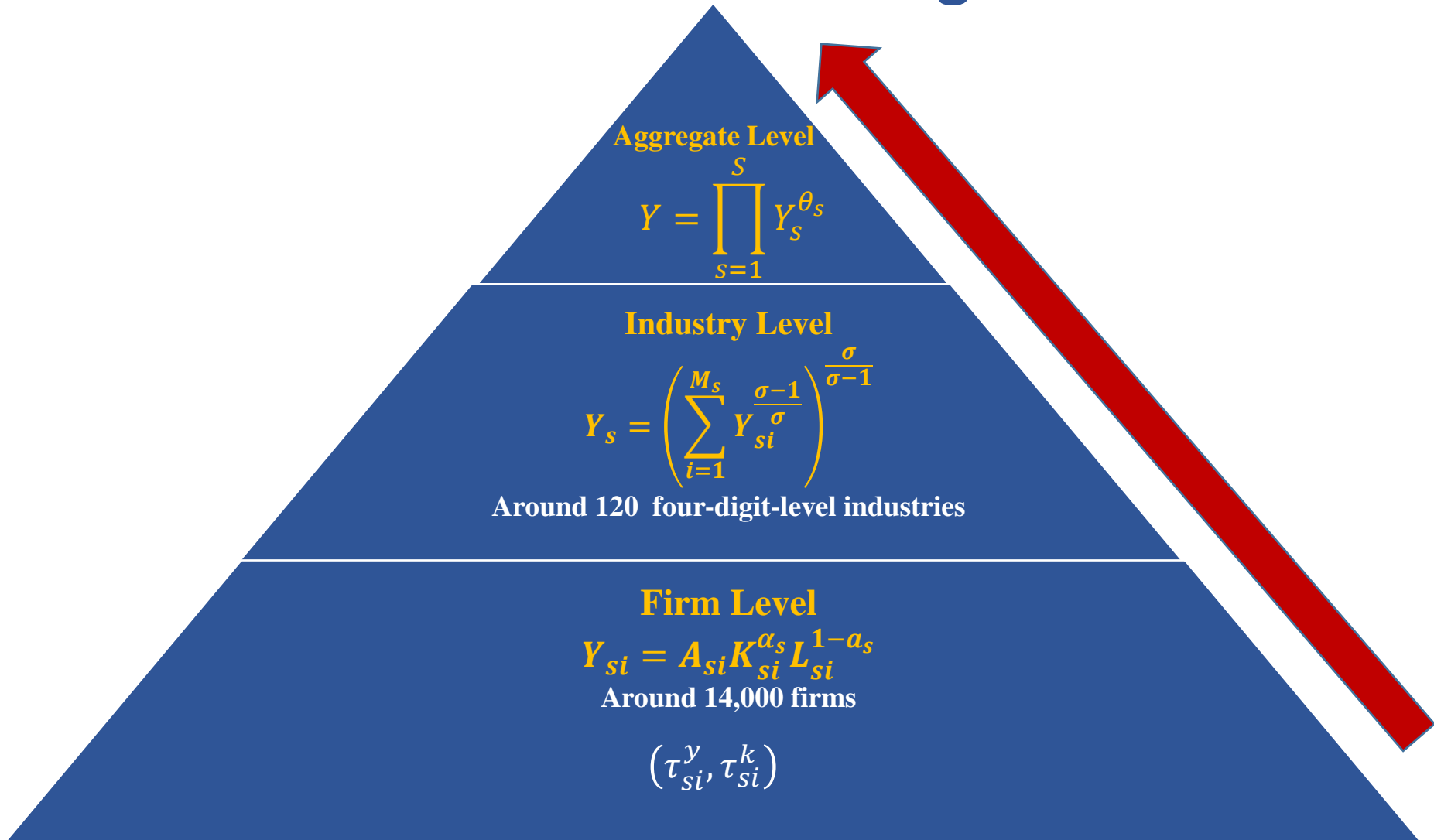
## Misallocation: Symptoms and Measurement

- Firm-level TFP
- Aggregate TFP gains/losses
- Correlation between un-incorporation and misallocation
- Sources of misallocation

# Data

- Firm-level data in Sri Lanka's manufacturing sector for 2005-2017 from Annual Survey of Industries
- Around 14,000 firms per year
- Firms with five or more employees
- 120 industries at four-digit level

# Structure of the Manufacturing Sector





# Variables

## From ASI 2006-2018

- $K_{si}$  = year end capital stock adjusted for depreciation
- $L_{si}$  = number of persons engaged
- $w$  = total wage bill/total persons engaged
- $\alpha_S$  = 1- (wage bill/value added) [Hsieh and Klenow, 2009](#)
- Ownership: Unincorporated = sole + partnership  
Incorporated = private + public

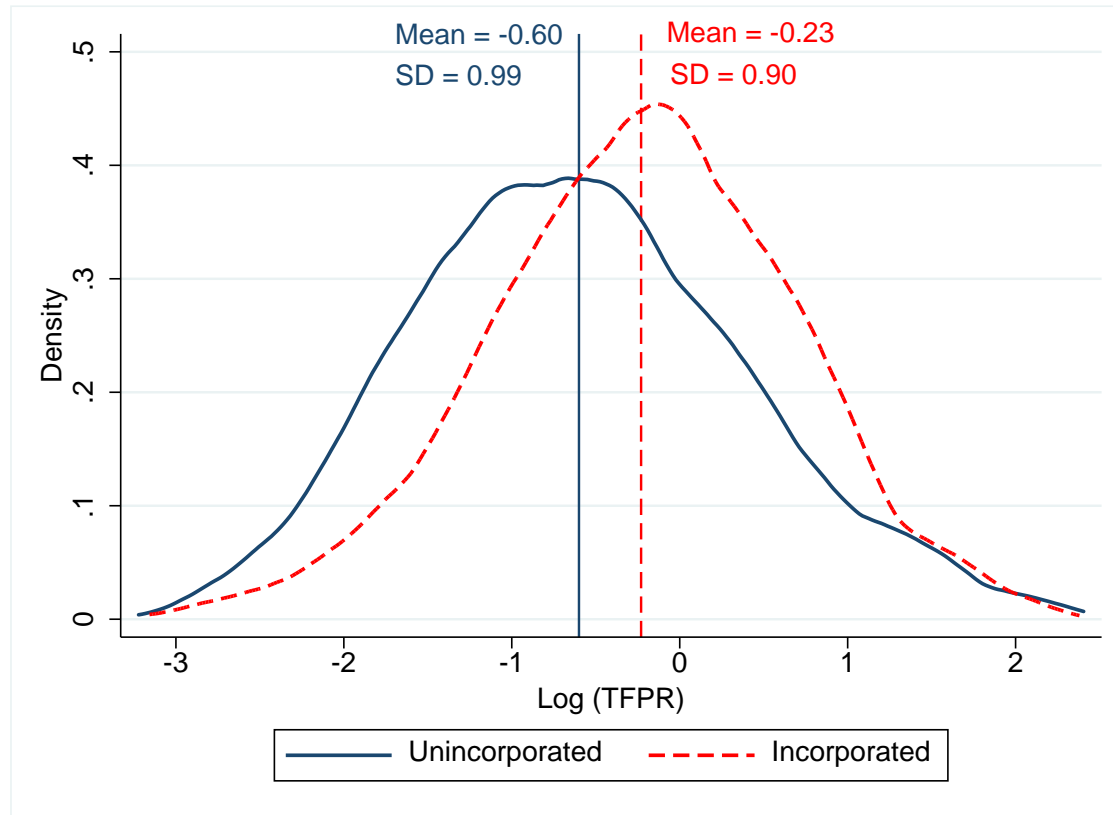
# Stylized facts

Variable (unit)	Mean		
	Un-incorporated	Incorporated	Difference (times)
	(1)	(2)	(2)/(1)
Labour (Number)	41	260	6.3
Capital (LKR 000')	20,600	179,000	8.7
Output (LKR 000')	51,400	510,000	9.9
Value-added (LKR 000')	21,600	203,000	9.4
Wage bill (LKR 000')	15,400	153,000	9.9
Age (Years)	18	24	1.3

- Unincorporated firms are relatively small and young

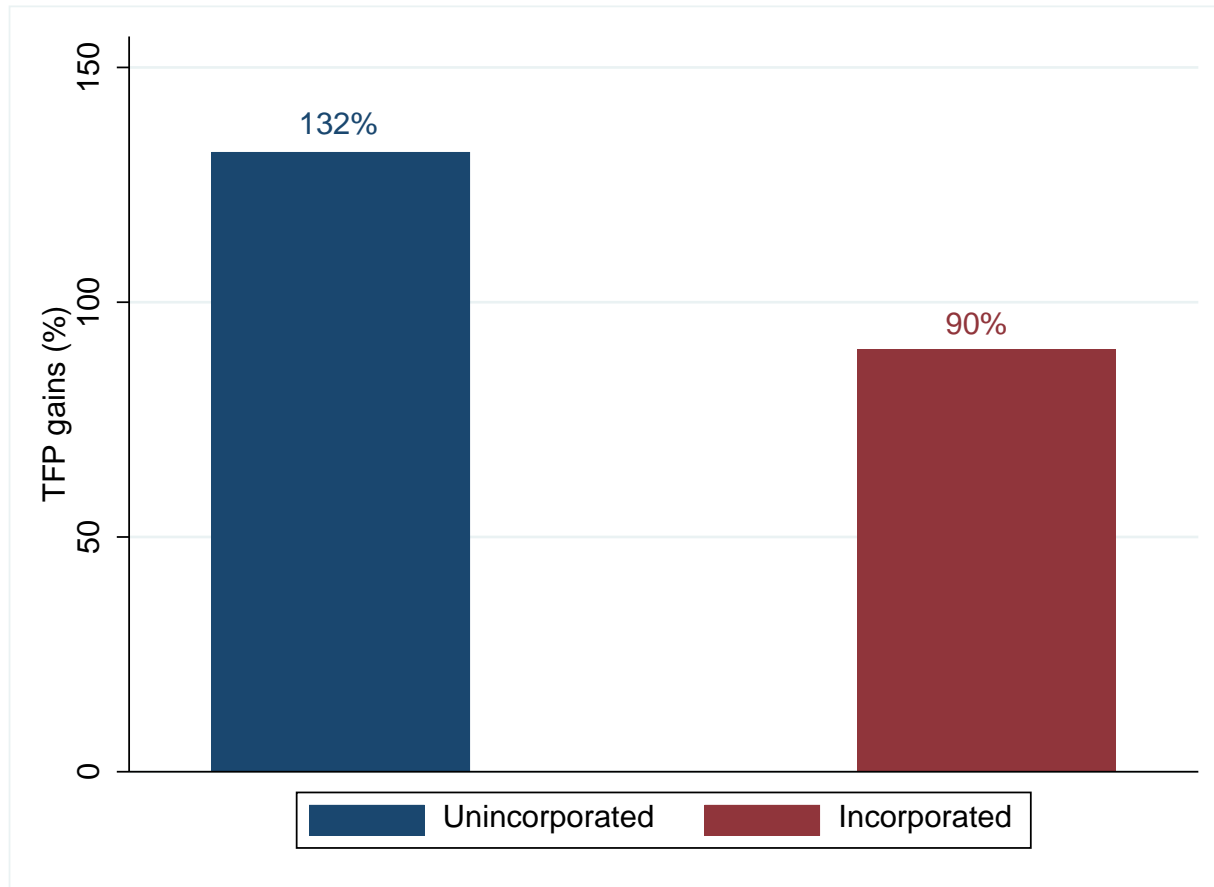
# Results: Dispersion in Revenue Productivity

(A) Revenue productivity



- Productivity dispersion is high in unincorporated firms
- Higher dispersion leads to high level of misallocation

# Results: Aggregate TFP gains



- Aggregate TFP gains of unincorporated firms are higher than that of incorporated firms by 42%.

# Results: Incorporation and Misallocation

$$\text{Log}(TFPR_{sit}) = \sum_{p=1}^2 \lambda_p \times \text{ownership}_{ist}^p + \sum_{p=1}^2 \mu_p \times \text{ownership}_{ist}^p \times \text{Log}(TFPQ_{sit}) + \gamma_t + \eta_{ist}^a + \varepsilon_{sit}$$

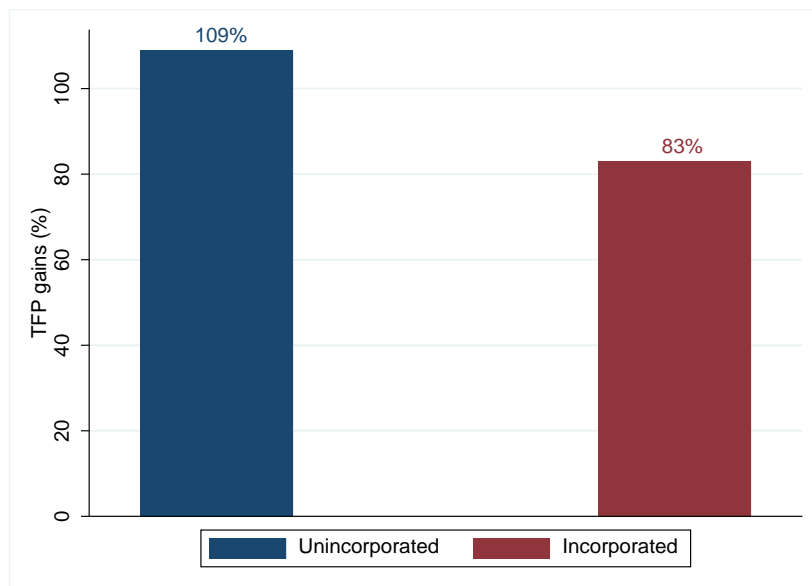
	TFPR (1)	TFPR (2)
Unincorporated	2.083*** (0.036)	2.300*** (0.054)
Incorporated	1.633*** (0.032)	1.858*** (0.051)
TFPQ * Unincorporated	0.502*** (0.004)	0.504*** (0.004)
TFPQ * Incorporated	0.444*** (0.004)	0.452*** (0.004)
Year FE	Yes	Yes
Age FE	No	Yes
N	10669	10669
R <sup>2</sup>	0.762	0.902

- Positive correlation between TFPQ and TFPR implies misallocation
- Both types face misallocation
- High coefficients show more productive firms face more misallocation
- Unincorporated firms are highly misallocated

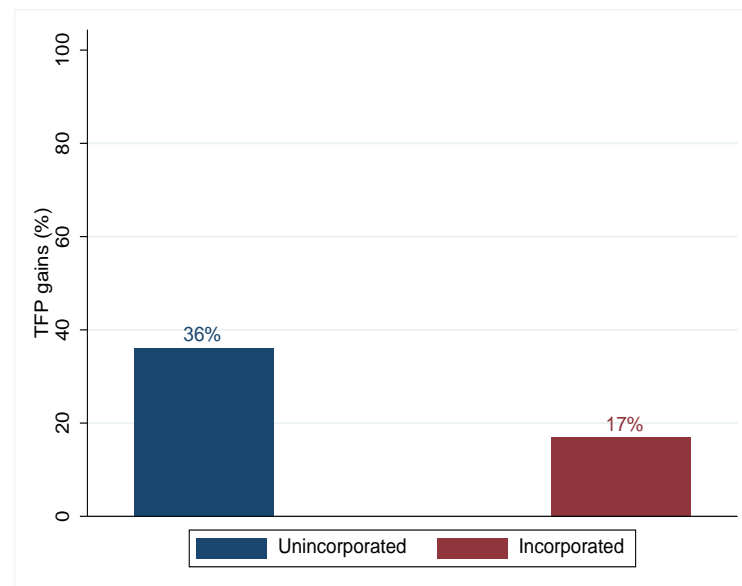
Note: TFPQ and TFPR are relative to industry mean

# Results: Causes of Misallocation

(A) Output distortions



(B) Capital distortions



- Output distortions are higher relative to capital distortions in both types
- Capital misallocation in unincorporated firms is 112% of incorporated whereas output distortion is just 31%

# Conclusions

- TFP of unincorporated firms is lower than incorporated firms.
- Misallocation is more severe in unincorporated firms.
- Stronger positive correlation between TFPQ and misallocation among unincorporated firms.
- Capital is more misallocated in unincorporated firms

# Available Qualitative Evidence from Sri Lanka

- Sole-proprietors, lacking management skills and financial literacy, lack access to finance ([Wijewardena, 2021](#))
- Access to finance is a critical problem for micro and small sized firms in Sri Lanka ([Advocata,2020](#))
- Unfavourable credit market frictions coming to SME sector from state-owned banks ([Thilakaweera, 2016](#); [CID, 2018](#))
- Small firms face challenges due to taxes and para-tariff ([ICT, 2011](#))



# Contributions

- Provide innovative evidence on the relationship between incorporation and misallocation
- Lay important empirical foundation for further theoretical analyses.

# Thank You!