Capital misallocation & state ownership policy in Vietnam

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Research Questions

Broader – What are the impacts of capital misallocation on Vietnam's aggregate manufacturing productivity?

Broad – How do different sources of capital misallocation impact manufacturing productivity? *Adjustment costs, uncertainty & policy distortions.*

Specific – To what extent does state ownership policy* in Vietnam affect capital misallocation and manufacturing productivity?

** State's preferential policies towards SOEs*

What's new?

- Assess multiple sources of capital misallocation in a *unified* framework.

  Previous studies often assume only one source of misallocation is present.

- Allow distortions to affect both capital and labour choice by firms.

  Other capital-misallocation studies assume perfectly competitive labour market.

- Estimate the severity of state ownership policy relative to other sources of misallocation.

  Previous studies often analyse state ownership policy in isolation from other distortions.

Preview of findings

What are the impacts of capital misallocation on Vietnam's aggregate manufacturing productivity?

TFP gap of 147 percent relative to the undistorted first-best level

How do different sources of capital misallocation impact manufacturing productivity?

TFP gap by: Adjustment costs – 1.5 percent
Uncertainty – 35.4 percent
Policy distortions – 110 percent

To what extent does state ownership policy in Vietnam affect capital misallocation and aggregate productivity?

28 percent of capital misallocation & 38 percent of TFP losses

Introduction.

Why SOEs?

The model.

Data.

Results.

1. Main outcomes.
2. Robustness checks.

Conclusion.

An ideal candidate for misallocation

- Government never given up on the ‘leading role’ of SOEs

  Iron fists, economic engine, backbone…

- SOEs receive preferential treatments over domestic private firms

  Preferential access to credits and foreign currencies from state-owned banks

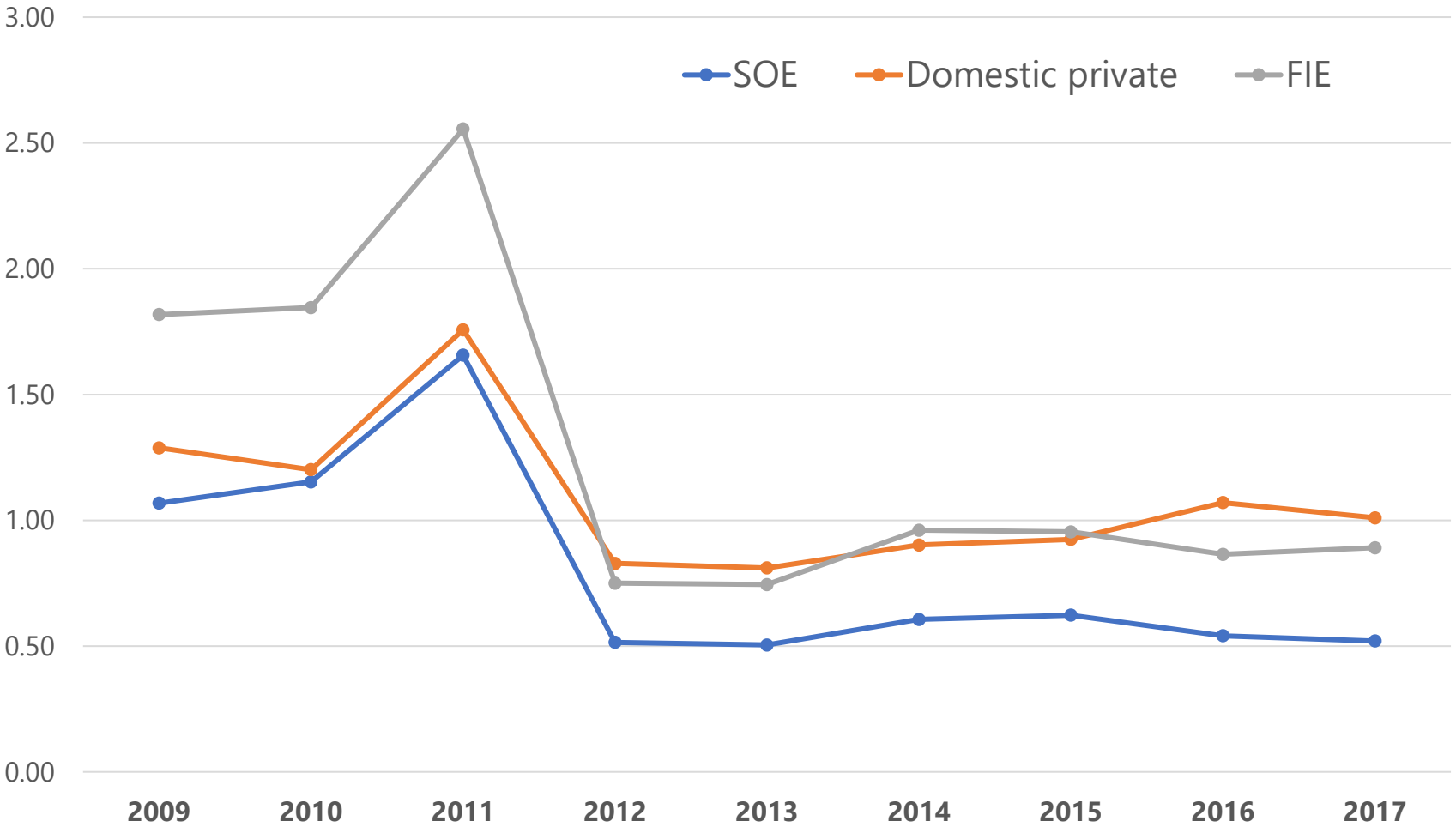
  Access to prime-location land at lower than market price

- SOEs do not see profit maximisation as the key objective

  Sell essential commodities below marginal costs in high-inflation periods

  Invest in poor, remote or mountainous areas for social equality

Average revenue product of capital



Source: Author's compilation.

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The model

- **Extended** version of David and Venkateswaran (2019) stochastic dynamic programming model *(The first to link adjustment costs, uncertainty & policy distortions to capital misallocation in a unified framework).*

- **What gets extended?**
  - Distortions in labour market. Larger magnitude for policy distortions.
  - State ownership policy role in policy distortions

Basic set-up

- Discrete time, infinite-horizon economy
- **Demand-side:** Representative household supplying fixed quantity of labour & consuming a final good. *Limited role.*
- **Production-side:**
  - Intermediate goods: *Cobb-Douglas* production (K and N as inputs)
  - Final good: Aggregated from intermediate goods under *constant elasticity of substitution*
- **Input choices:** At each period's end, profit-maximising firms make investment for the next period
  - Labour: competitive wage W_t, subject to employee turnover and *various distortions*
  - Capital: subject to depreciation and *the same distortions*
- **Stationary equilibrium:** A set of value and investment policy functions that
  - Clear labour market
  - Solve the firm's optimisation problem

Investment distortions

- **Undistorted first-best utopia:** K efficiently allocated

  Marginal productivity of capital equalized across firms

- Things change with the presence of distortions
  - **Adjustment costs (ξ):** The cost associated with investment expenditures of the firm

    e.g. Installation of new machineries

    - Restructuring production line
    - Training workers to master new production techniques
    - Hiring external experts to implement the change

High adj. costs:
- Deter firms from making big investment for next period
- Lower investment variability across firms

Investment distortions

- **Uncertainty (V)**:

  Imperfect knowledge about business fundamentals, e.g. future profitability or productivity

  Cause firms to temporarily pause investment and hiring

  Freeze efficient input reallocation across firms & slow down aggregate TFP growth

Investment distortions

- **Policy distortions:** $\tau_{it} = \gamma a_{it} + \epsilon_{it} + \chi_i$
  - τ_{it} is the (log) overall policy distortions
  - Correlated (γ): γ<0 means distortions discourage investment by higher-productivity firms

    e.g. Rigid labour policies
  - Transitory (ϵ_{it}): Short time, uncorrelated with productivity level

    e.g. Covid-19 lockdown policy
  - Permanent (χ_i): Longer time and more strategic

    e.g. Preferential treatments towards ownership forms, regions, priortity sectors

The three questions return

What are the impacts of capital misallocation on Vietnam's aggregate manufacturing productivity?

$$a = a^* - \frac{\theta}{2}\sigma^2_{mrpk} \quad (1)$$

where a^* is the undistorted first-best level of (log) aggregate TFP

a is the actual level of (log) aggregate TFP

θ is the elasticity of substitution

σ^2_{mrpk} is the (observed) variance of marginal productivity of capital

Intuition: Higher σ^2_{mrpk} (misallocation) leads to higher TFP losses relative to first-best level

Sources of capital misallocation

How do different sources of capital misallocation impact manufacturing productivity?

UNOBSERVED DISTORTIONS

Adjustment cost: ξ

Uncertainty: V

Correlated: γ

Transitory: σ_{ϵ}^{2}

Permanent: σ_{χ}^{2}

OBSERVED MOMENTS

Investment variance (σ_{k}^{2})

Inv. autocorrelation ($\rho_{k,k_{-1}}$)

Inv. and past prod. correlation ($\rho_{k,a_{-1}}$)

mrpk and prod. Correlation ($\rho_{mrpk,a}$)

mrpk variance (σ_{mrpk}^{2})

Moment matching technique:

Minimise distance between simulated values and observed values of targeted moments

State ownership policy

To what extent does state ownership policy in Vietnam affect capital misallocation and manufacturing productivity?

- Permanent distortions (σ_χ^2) is mapped with σ_{mrpk}^2
- To see the role of state ownership policy in permanent distortions:

$$\text{mrpk}_{\text{it}} = ownership_i + \epsilon_{it}$$

$$\sigma_{mrpk}^2 = \sigma_{ownership}^2 + 2Cov(ownership, \epsilon) + \sigma_\epsilon^2$$

$$1 - \frac{\sigma_\epsilon^2}{\sigma_{mrpk}^2} = \frac{\sigma_{ownership}^2 + 2Cov(ownership, \epsilon)}{\sigma_{mrpk}^2} \approx \frac{\sigma_{ownership}^2}{\sigma_\chi^2}$$

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Data: Vietnam Enterprise Surveys 2008-17

Variables	**Description**
Capital	Year-end value of physical assets divided by capital deflators
Output	Gross output deflated by industrial producer price index at 2010 baseline
Intermediate inputs	Gross intermediate inputs deflated by 2-digit sector deflator
Marginal product of capital	Log real value-added minus log real capital plus log α
Net investment growth	First differencing of log real capital
Total factor productivity	Log real value-added – α*log real capital
Elasticity of substitution	$\theta = 3$ as in Hsieh & Klenow (2009); $\theta = 6$ for robustness check
Depreciation/Turnover	$\delta = 0.10$
Discount rate	$\beta = 0.95$

Data cleaning: - Missing/negative/duplicate data on value-added, capital/labour
- Firms with annual investment growth > 100% in absolute values
- 3-percent tail of *mrpk* series

N=76,988

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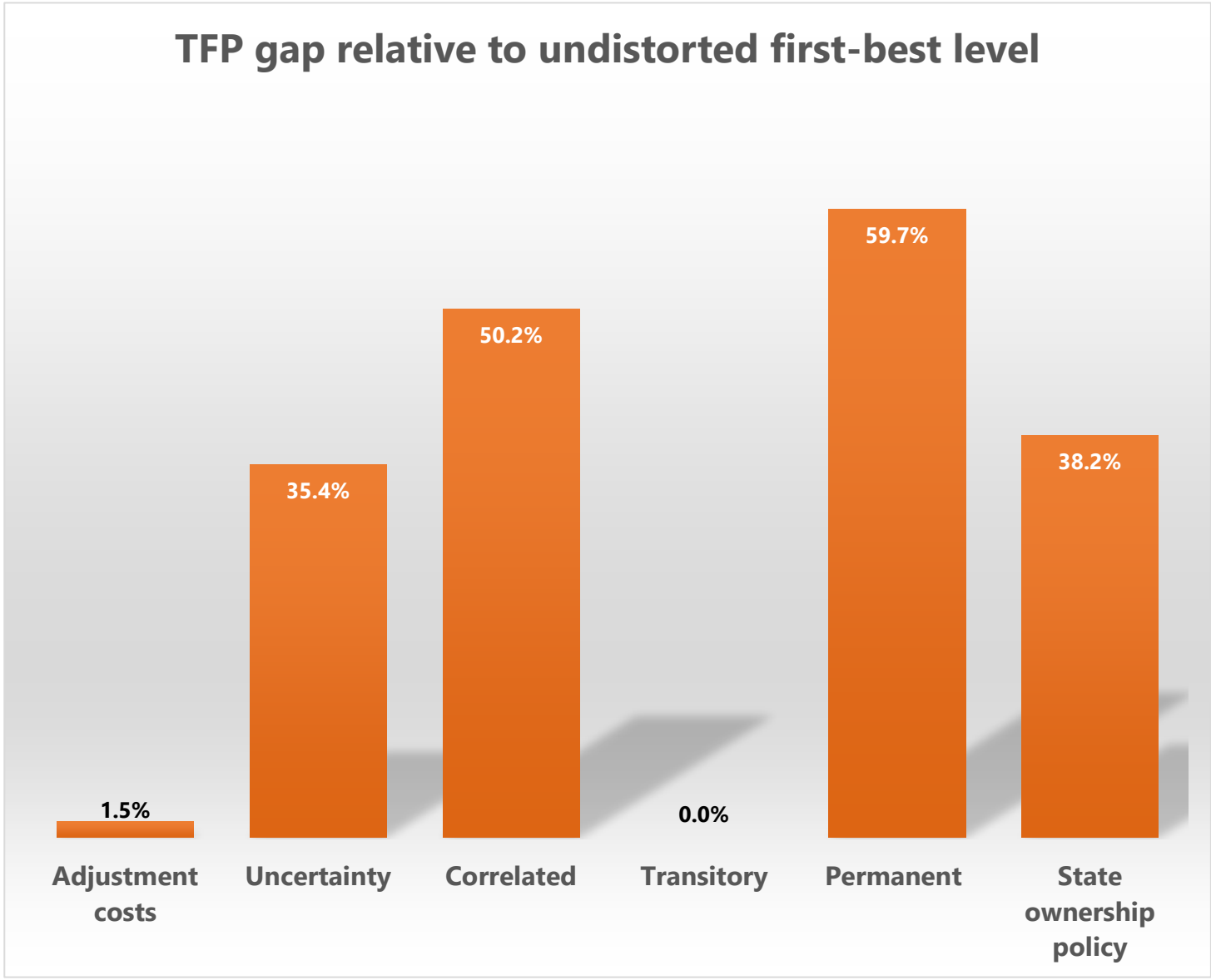
Main outcomes

- Capital misallocation creates a TFP gap of 147%
- Uncertainty accounts for 35.4% TFP gap (GFC, 2008 oil shock)
- Correlated & Permanent distortions are the main source of misallocation
- State ownership policy alone creates a 38% agg. TFP loss

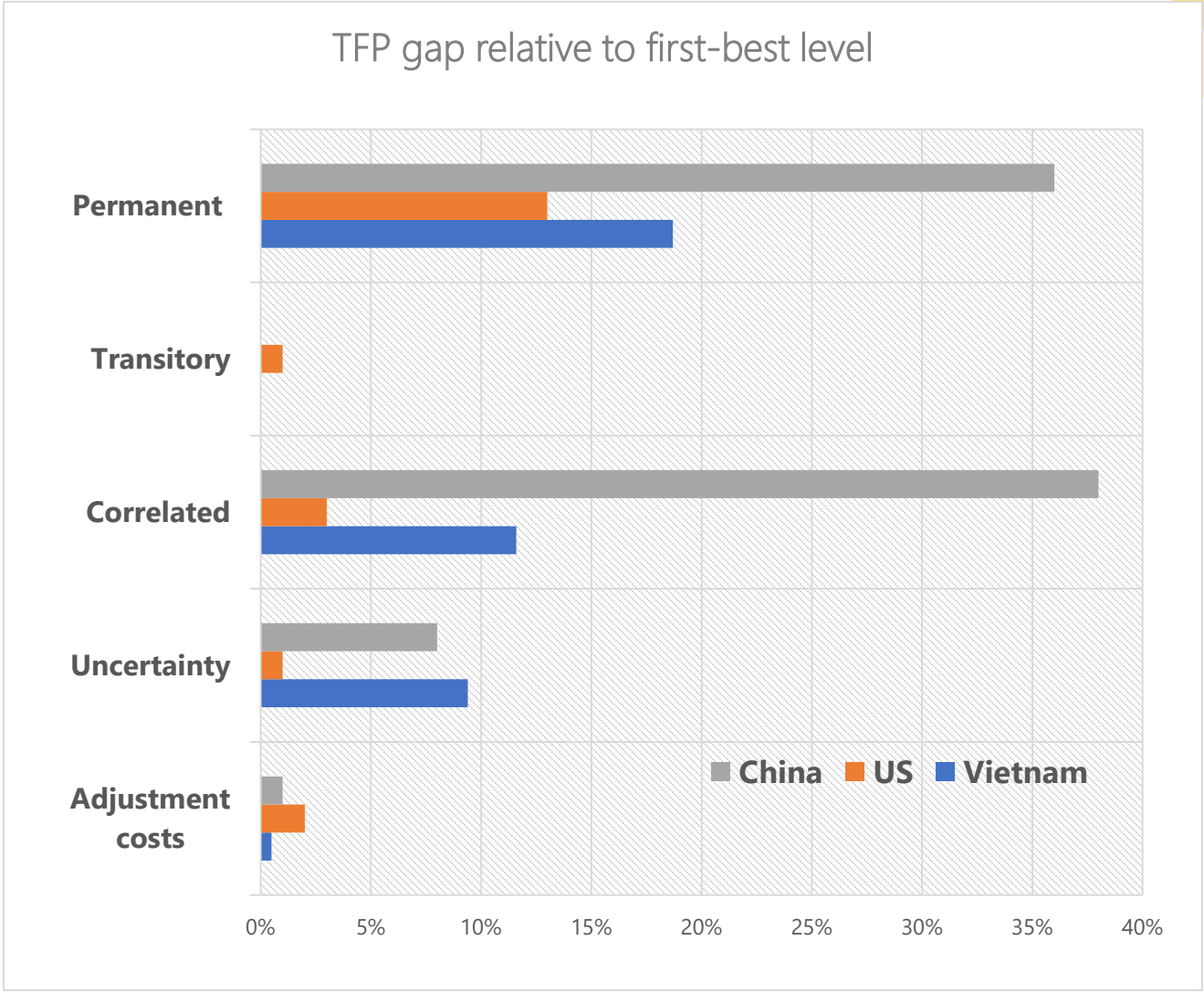


Robustness checks

Set-up as in **David and Venkateswaran (2019)**

- No labour distortion & $\theta = 6$
- Data for US and China: 1998-2009

- China has significant room to improve TFP through input reallocation
- US has highest TFP loss from adjustment costs → high variation in tech. level
- Vietnam needs to improve information provision to firms to reduce uncertainty



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- **Big picture:**

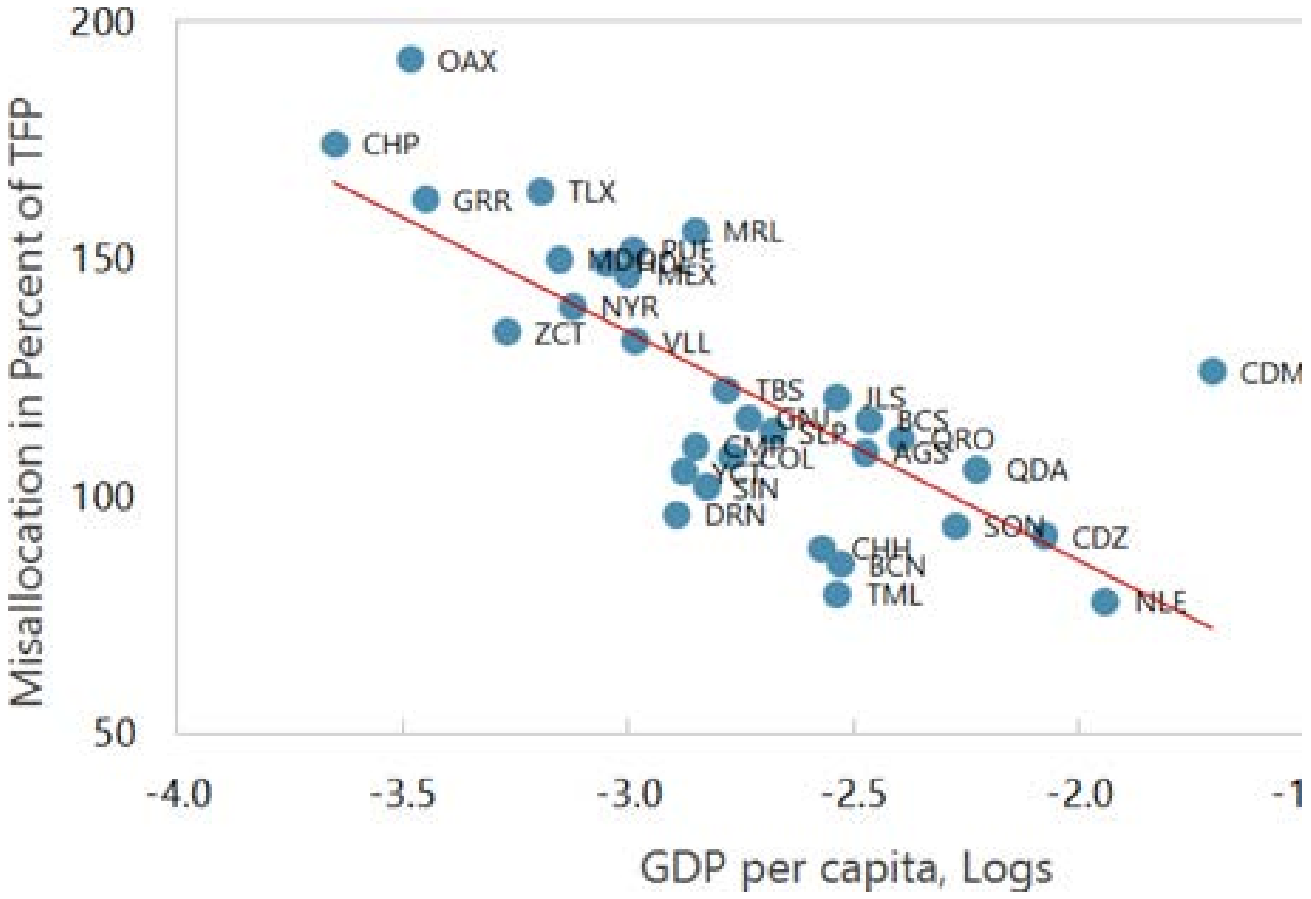
For developing countries, the path to become more productive is not out of their reach.

- **Vietnam:**

There are significant room to reallocate inputs more efficiently.

Reforming SOEs should be given top priority.

Ensuring a level-playing field!



THANK YOU!