The Long and Short-Run Spatial Impacts of Trade

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To Recap...

- Model predicted changes in key outcomes after China's accession to the WTO:

	Small Exposure	Large Exposure
Short Run	Skill Ratio ↑ Pop (Unskilled workers) ↓ Schooling ▼ Capital ▲	Skill Ratio ↓ Pop (Unskilled workers) ↑ Schooling ↓ Capital ↑
As time ellapses	physical/human capital accumulation migration/reallocation of skilled and unskilled workers	
Mechanisms	Skill-capital complementarity Agglomeration induced skill-biased technology change	
Long Run	Skill Ratio ↓ Pop (both Skilled and Unskilled workers) ↓ Schooling ↓ Capital ↓	Skill Ratio ↑ Pop (both Skilled and Unskilled workers) ↑ Schooling ↑ Capital ↑

This Discussion...

- More on the empirical front:
  - A puzzle and a potential data issue
  - Out-of-sample tests to validate the model

A Small Puzzle

- The capital accumulation equation:

$$k_{it+1} = \xi\beta\left(1 - \delta + \frac{r_{it}}{p_{it}}\right)k_{it}$$

- How did the WTO accession serve as a catalyst for the initiation of capital accumulation in China? By raising the real return to capital r_{it}/p_{it}.
- Wait... Doesn't the textbook example tell us that China is labor abundant/capital scarce, and hence opening up to trade would reduce the real return to capital?
- It is not as simple as it may see. Recall that it is a three-factor model: unskilled workers, skilled workers, and capital.

A Small Puzzle (cont.)

- It turns out that the unskilled labor intensive sectors are **more** capital intensive in China.

  $\Longrightarrow$ China is unskilled labor abundant and has a comparative advantage in low-skill intensive sectors.

  $\Longrightarrow$ Low-skill intensive sectors expand after China's WTO accession, raising demand for capital

- Somewhat contradicts the impression that skill intensity and capital intensity are positively aligned (e.g., textile v.s. chemical sector)

- The measurement of skill intensity and capital intensity across sectors are the key for the quantitative results!
  - The dynamics may show an opposite pattern if the unskilled labor intensive sectors are **less** capital intensive in China

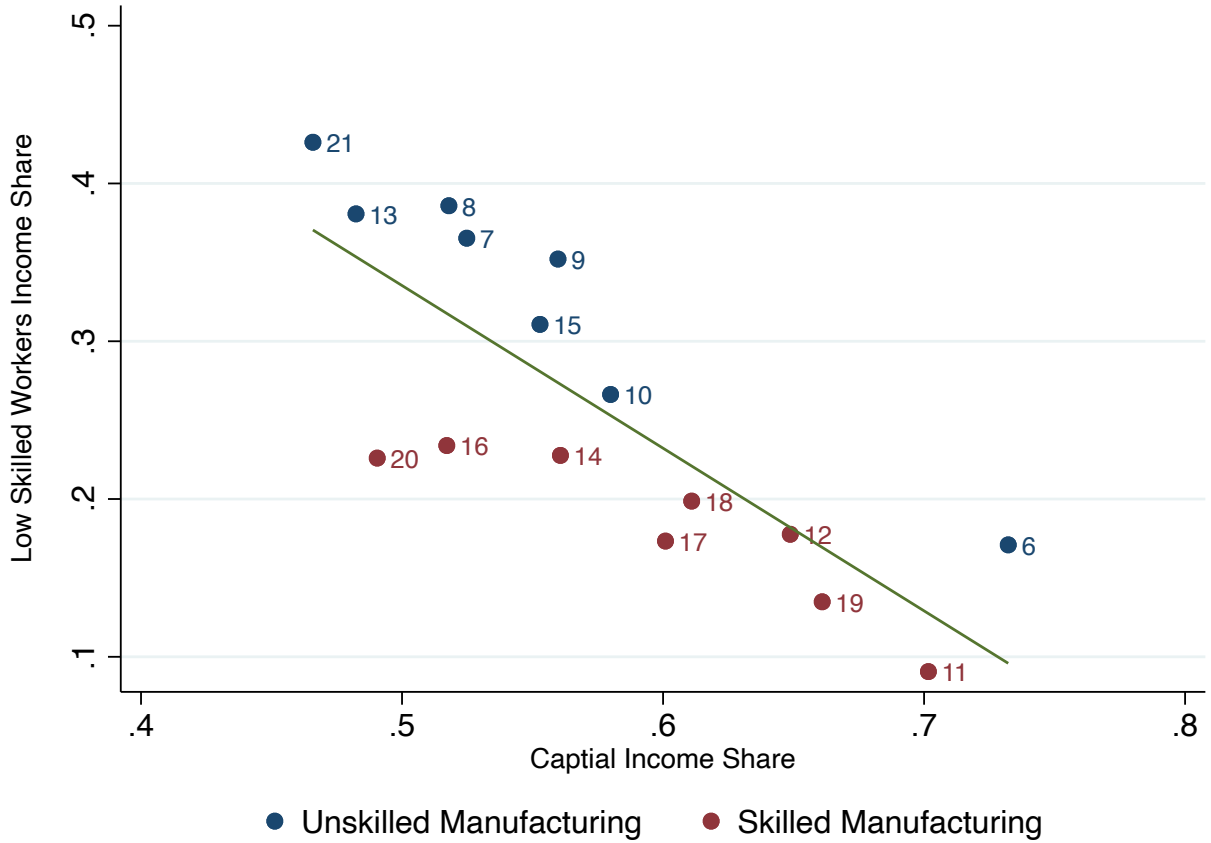
A Small Concern

- Calculate share of labor v.s. capital in value added based on the 2002 China Input-Output Table.
- Calculate income share of unskilled v.s. skilled workers from 2005 One Percent Population Survey

$\Longrightarrow$ Shares of incomes accrued to capital, unskilled and skilled workers

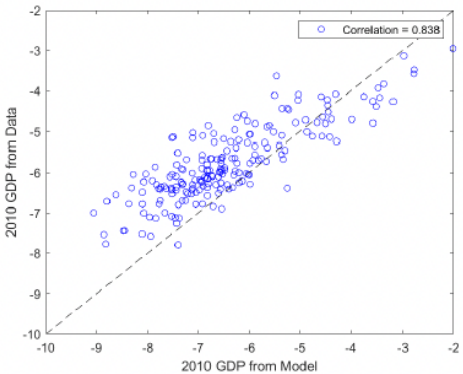
Panel A: Unskilled Manufacturing				Panel B: Skilled Manufacturing			
IO	Description	GB 2002	NACIS	IO	Description	GB 2002	NACIS
06	Food&Tabacco	C13-16	311-312	11	Petroleum	C25	324
07	Textile	C17	313	12	Chemicals	C26-30	325-326
08	Clothing	C18-19	314-316	14	Primary metals	C32-33	327
09	Wood&Furniture	C20-21	321,337	16	Machinery	C35-36	333
10	Paper&Printing	C22-24	322-323	17	Transportation equipment	C37	336
13	Nonmetallic mineral products	C31	327	18	Electrical equipment	C39	335
15	Manufactures of metal	C34	332	19	Telecommunication equipment	C40	334
21	Other manufactures	C42	339	20	Instruments	C41	334

A Small Concern (cont.)

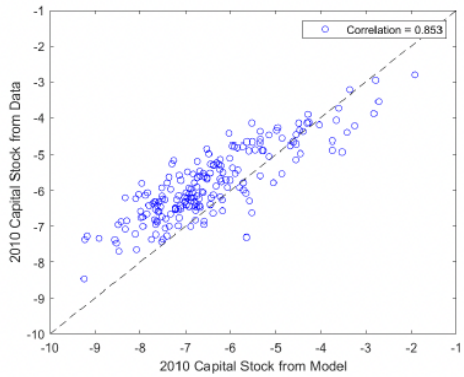


- Low-skill sectors are less capital intensive.

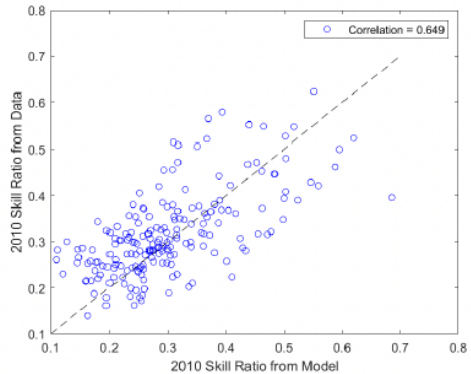
Untargeted Moments



(a) GDP



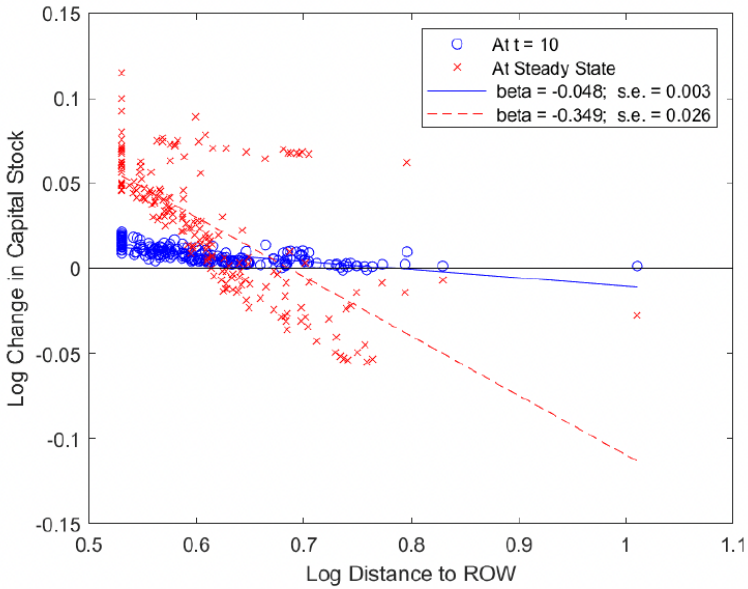
(b) Capital Stock



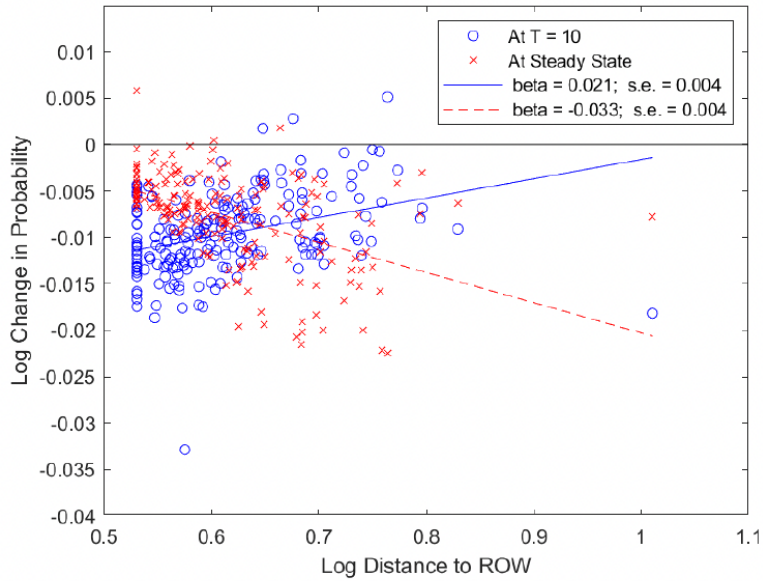
(c) Skill Ratio

- The simulated spatial distribution of several key outcomes in 2010 match well with their data counterparts.
- The model fit for the cross-sectional moments is unsurprising:
  - The calibration targets prefecture-level GDP, capital stock, industry composition and skill ratios in 2000, and these variables are highly persistent in the data.
  - In the model, adjustment is very slow along the transitional path

Untargeted Moments (cont.)



Capital Accumulation

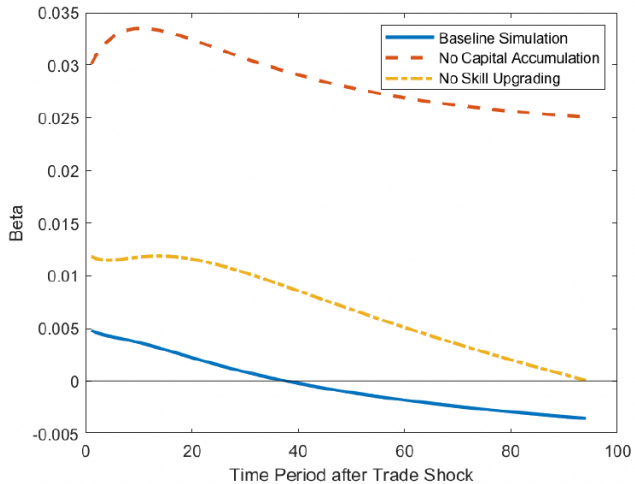


Skill Acquisition

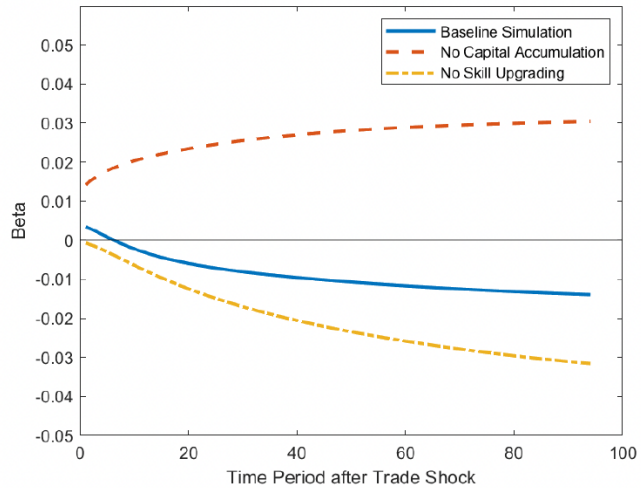
- More tests to validate the model. In regions with larger exposure to trade liberalization:
  - Do we see faster capital accumulation?
  - Does the decline in skill acquisition moderate over the medium term (15 years) compared to the short term (5 years)?

Untargeted Moments (cont.)

Distance Elasticity Over Time



Impacts of Trade on Skill Ratios in Migrant Flows



Impacts of Trade on Skill Ratios in Labor Force

- More tests to validate the model. In regions with larger exposure to trade liberalization:
  - Does the skill ratio in migrant flows increase over time?
  - Do we observe a reversal of skill ratio in labor force around 10 years after the WTO accession?