Industrial Structure and Financial Capital Flows

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Introduction

- "Two Engines of Integration:"
  - Commodity Trade
  - Financial capital Flows
- Two types of trade
  - Intratemporal trade
  - Intertemporal trade

- This paper: develops a framework that integrates factor-proportions (intratemporal) trade with financial capital flows (intertemporal trade)

- Investigate how their *interplay* determines:

– Financial capital flows

– Sectoral and Aggregate Asset Prices

A Multi-country, Multi-sector Setup

- Two Countries: Home and Foreign
- Two Commodities: Cotton (labor-intensive) and Steel (capital-Intensive)
- Two Factors: Capital (K) and Labor (N)

– Labor: immobile internationally
– Capital: mobile internationally
– Adjustment costs break factor price equalization (FPE)

What changes with multiple sectors?

Consider a permanent labor force increase in Foreign:

- Two forces at work in determining capital flows:
  - Standard effect: capital flows to where it is relatively scarce—(Home to Foreign)
  - New: **"composition effect"**—capital flows to the location that specializes more in capital-intensive goods (Foreign to Home)

If composition effect dominates:

- "Reverse Capital Flows"
- Investment comovement
- Asset Price comovement

$\Rightarrow$ With basic ingredients, sharp and surprising results.

In a multi-sector model, 3 cases are encompassed:

- No factor-intensity differences: **standard, neoclassical force**
- Multiple sectors: **neoclassical + composition effect**
- Multiple sectors where most labor-intensive sector uses only labor as an input: **composition effect**

Model Ingredients

- **Two-country OLG model** with capital accumulation (Abel (Econometrica 2003))
- **Free and costless trade** in goods and financial assets
- **Multiple sectors** that differ in factor intensity
- **Adjustment costs** to pin down capital stock and analyze the price of capital

Model

- **Preferences:**

$$u(c_t) = \frac{(c_t)^{1-\rho}}{1-\rho}$$

- **Production of Intermediate Goods**:

$$Y_{it} = (K_{it})^{\alpha_i}(A_t N_{it})^{1-\alpha_i}$$

$i = 1, 2$, $\alpha_1 < \alpha_2$

- **Capital accumulation equation** :

$$K_{i,t+1} = a I_{it}^{\phi} K_{it}^{1-\phi}$$

- Consumption index:

$$C_t = \left[\sum_{i=1}^{m} \gamma_i^{\frac{1}{\theta}} c_{it}^{\frac{\theta-1}{\theta}} \right]^{\frac{\theta}{\theta-1}}$$

Consumers

- Objective:

$$\max \quad u(c_t^y) + \mathbb{E}_t u(c_{t+1}^o)$$

- Constraints:
  Young:

$$c_t^{y,h} = w_t^h - \sum_{j=h,f} \sum_{i=1}^{2} q_{it}^j k_{i,t+1}^{h,j} - \sum_s Q(s) b_{t+1}^h(s)$$

  Old:

$$c_{t+1}^{o,h} = \sum_{j=h,f} \sum_{i=1}^{2} R_{i,t+1}^j q_{it}^j k_{i,t+1}^{h,j} + b_{t+1}^h(s)$$

Equilibrium

Home's Investment: $I_t^h \propto \eta_t Y_t^g$

one sector: $$\eta_t = \lambda \sum_{k=0}^{\infty} (1-\lambda)^k \mathbb{E}_t \left[\frac{Y_{t+k+1}^h}{Y_{t+k+1}^g} \right]$$

two sectors: $$\eta_t = \underbrace{\left[\frac{\alpha_1 \gamma}{\alpha_1 \gamma + \alpha_2 (1-\gamma)} \eta_{1t} + \frac{\alpha_2 (1-\gamma)}{\alpha_1 \gamma + \alpha_2 (1-\gamma)} \eta_{2t} \right]}_{\text{weighted-average share of global production}}$$

In determining investment, more weight is put on the expected future share of capital-intensive-goods production $\Rightarrow$ Investment depends on the composition of production

The Composition Effect

Special case: $\alpha_1 = 0$

- Commodity trade $\Rightarrow$

$$\begin{aligned} w_t &= w_t^* = p_{1t} \\ \Rightarrow k_{2t} &= k_{2t}^* \qquad\qquad \forall t \end{aligned}$$

  - ► achieved through **labor reallocation** across sectors

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- The "**neoclassical effect**" is effectively **shut down**

How is a marginal unit of savings allocated?

- Rental $\alpha_2 p_{2t} k_{2t}^{\alpha_2 - 1}$, is equalized across countries
- Thus, Foreign allocates the marginal unit of savings to both countries, rather than locally, and in such a way that marginal adjustment costs are equalized $\Rightarrow$

$$\eta_t = \frac{I_t}{I_t^g} = \frac{K_{init}}{K_{init}^g}$$

Home's investment share of world GDP in any period t is determined by its initial capital intensity. If countries were initially symmetric, $\eta_t = 1/2$.

Results (1)

- **Investment comovement**:

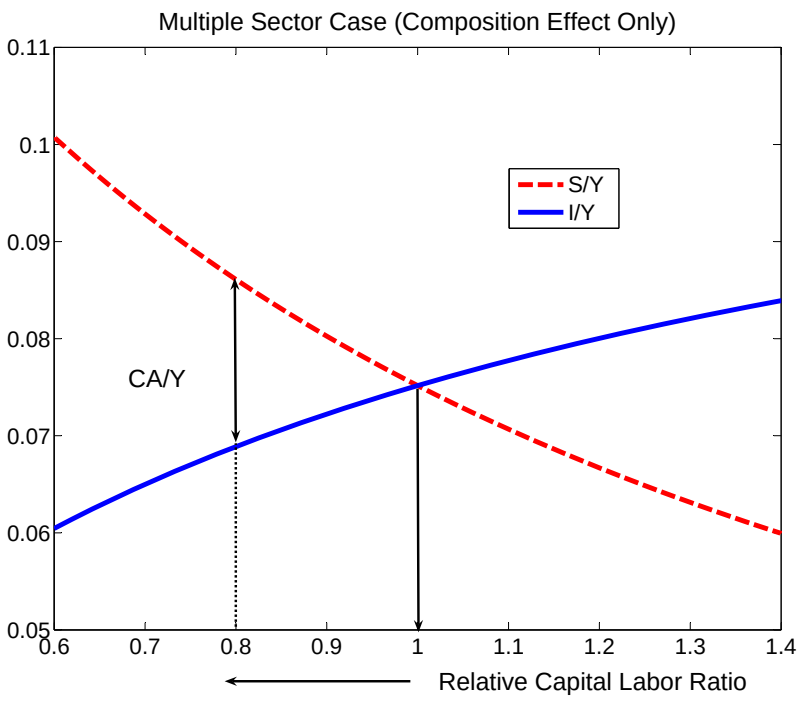
$$I_t \propto \eta Y_t^g$$

- **Current account** $CA = S - I \downarrow$ at Home
- **Path dependence**: (labor share: $s_l = 1 - \alpha\gamma$)

$$\tilde{k}_{t+1} = \Theta \eta^{\phi s_l} \left(\frac{\tilde{N}_t^g}{\tilde{N}_t} \right)^{\phi s_l} (\tilde{k}_t)^{1-\phi s_l} e^{-(\epsilon_{N,t+1} + \epsilon_{A,t+1})}$$

Opposite of the one sector results.

Composition vs. 'Neoclassical' Effect



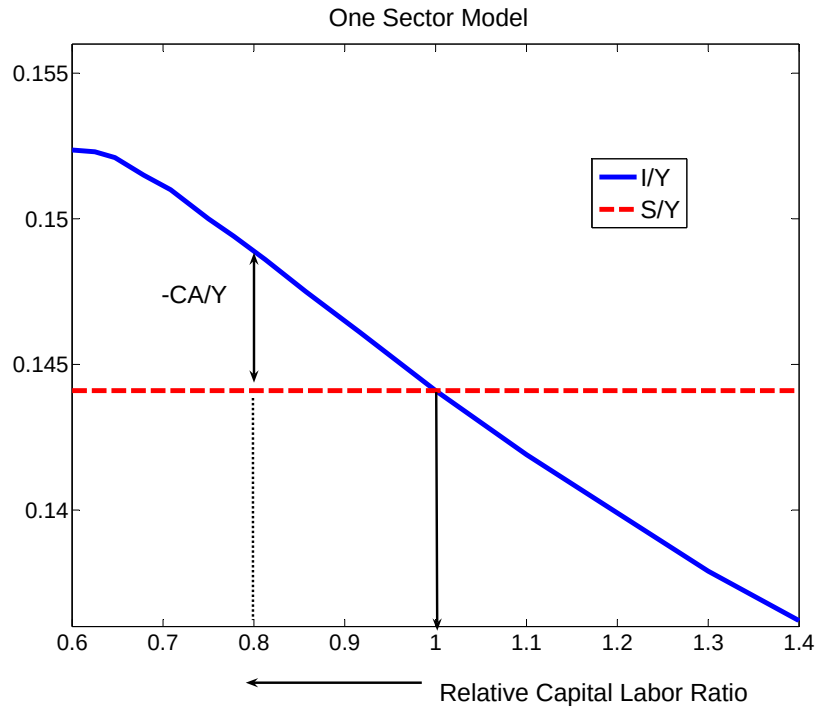


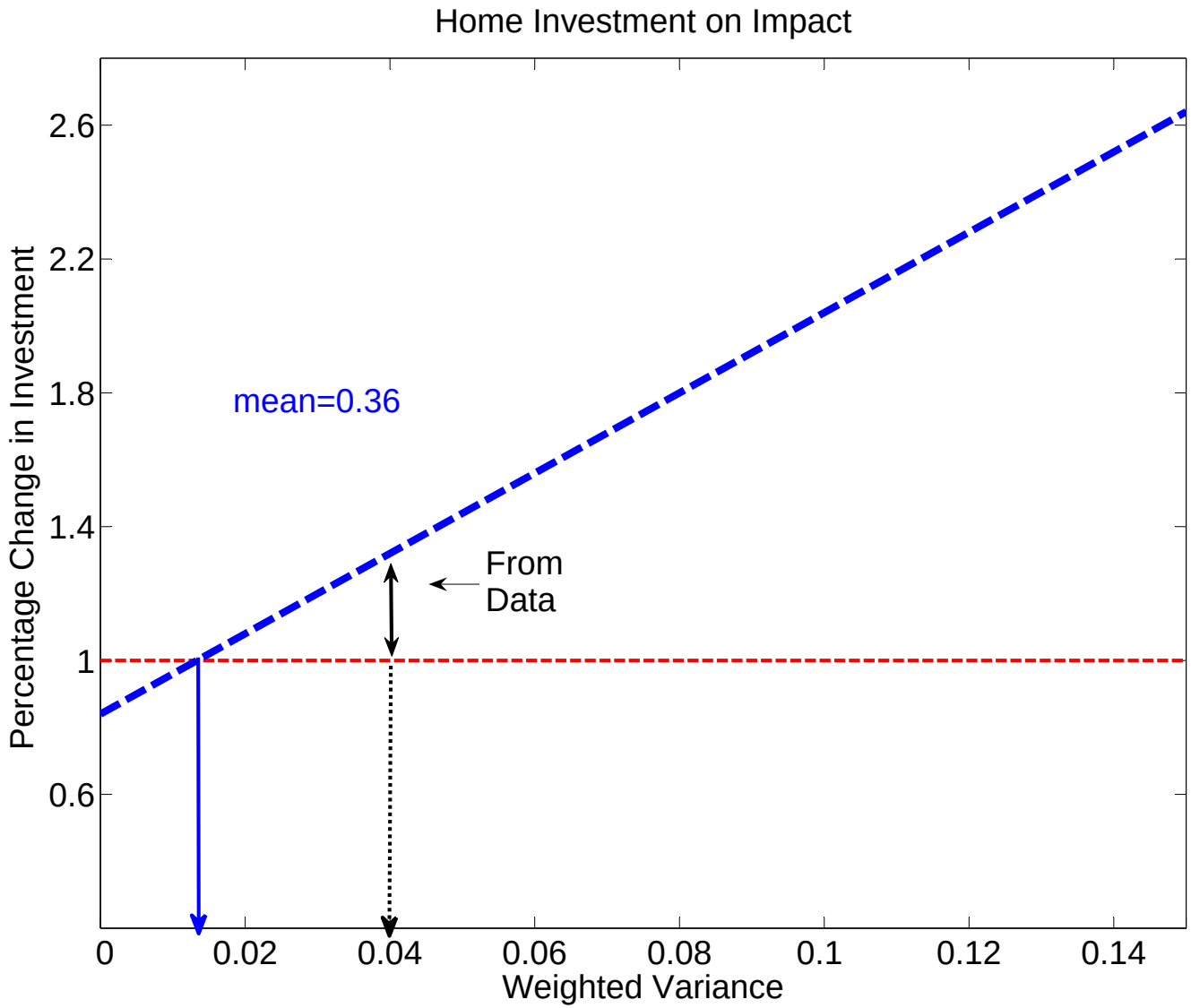
Figure: Impact effect of a change in $\frac{k^j}{k^w}$

The General Case

- **Special Case** ($\alpha_1 = 0$):
  - FPE occurs after one period (through labor reallocation)
  - Investment and Asset Prices always comove
- **General Case**:
  - $k_{it} \neq k_{it}^*$
  - composition effect and "neoclassical" effect are competing
  - Quantitative exercise: composition effect dominates
  - Show conditions under which one dominates the other

When is the Composition Effect Strong Enough?

5 Sectors



Conclusion

- Potentially important interactions between **intertemporal** and **intratemporal trade**
- Link between global imbalances and specialization patterns
- Lucas puzzle revisited: trade drives capital flows
- Asset pricing implications: developing countries may purchase assets in advanced economies, with portfolios tilted towards capital-intensive assets