

The Illusion of Foreign Capital: Estimating Round-Trip FDI in China using Firm-Level Data

Jiakun Jack Zhang, Samantha A. Vortherms, Chengyu Fu, and N. Uras Demir

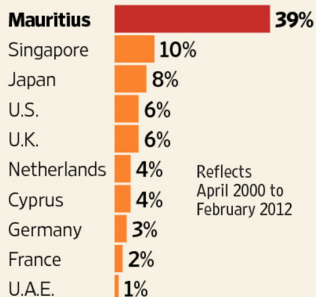
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Motivation: What is Really Foreign in FDI?

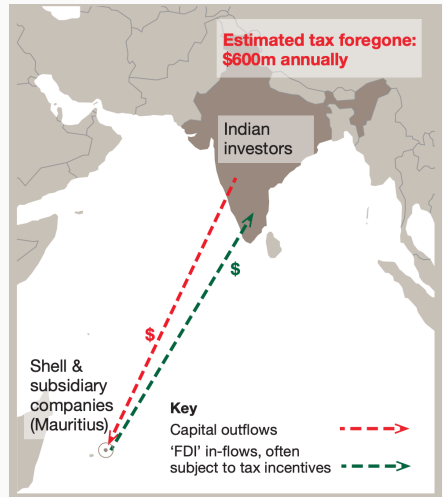
Money Route

Percentage of India's foreign direct investment inflows from:



Reflects
April 2000 to
February 2012

Source: Ministry of Commerce and Industry



Motivation: What is Really Foreign in FDI?

Table 1 | FDI inward and outward stocks of Russia, 2011 (millions of dollars)

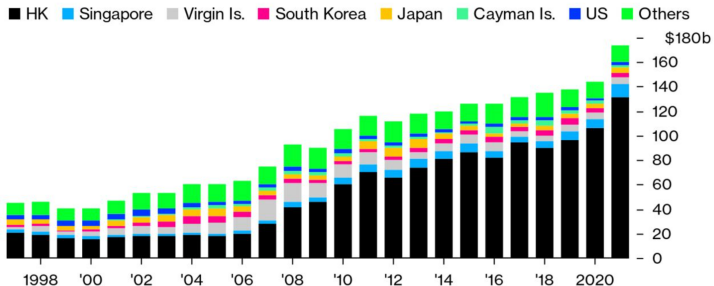
Inward 2011		Outward 2011	
Total	455,904	Total	361,738
Cyprus	128,816	Cyprus	121,596
Netherlands	59,745	Netherlands	57,291
BVI	56,442	BVI	46,137
Bermuda	32,545	Switzerland	12,679
Bahamas	27,089	Luxembourg	11,599
Luxembourg	20,316	UK	10,662
Germany	18,741	USA	9,501
Sweden	16,088	St.Kitts & Nevis	7,035
France	15,420	Jersey	6,692
Ireland	8,893	Germany	5,701

Source: Central Bank of Russia, 2012.

Motivation: What is Really Foreign in FDI?

Hong Kong Dominates

Three quarters of inbound FDI was from Hong Kong last year



Source: Ministry of Commerce

Bloomberg

Round-tripping: Domestic firms investing in foreign firms to re-invest domestically.

- Regulatory arbitrage, tax advantages, raising capital advantages, etc.
- Round-trip FDI is common in major economies such as India, Russia, China, Brazil, Italy, Canada, Indonesia but notoriously difficult to measure
- Estimated between 3% and 70% in China (Haberly, 2024; Vlcek, 2010; Xiao, 2004; Huang, 2003)

- **Theories of FDI in international political economy depend on capital being “foreign”**
 - **Home-host country dynamics** (Zeng and Eastin, 2007; Prakash and Potoski, 2007; Reiter and Steensma, 2010; Blanton and Blanton, 2012; Malesky and Mosley, 2018; Kim, 2018; Chilton et al., 2020): Norm difference and diffusion; regime affinities
 - **Firm strategies** (Betz and Pond, 2023; Vekasi, 2019; Plouffe, 2019): JV vs. WFOE; political connections; regulatory compliance
 - **Political risk** (Wellhausen, 2014; Vortherms and Zhang, 2024): Nationality shapes investors' public exposure, bargaining power, and corporate strategies amid policy change and enforcement uncertainty
- **Measurement issues**
 - FDI measures (capital accounts, investor data) hide round-tripping
 - All investment from tax havens: both over- and under-estimates

Do round-trip firms react differently to political risk than truly foreign firms?

- Brief Answer: **Yes!**
- Theoretical contribution: Round-trip FDI matters
- Empirical contribution: Novel method to estimate prevalence of round-trip FDI in China over time

Estimating Round-trip FDI with Supervised Learning

Firm-level data: Foreign-Invested Enterprises in China Dataset (2014-2023)

- Census of foreign-invested enterprises operating in China registered with the Ministry of Commerce
- 545,244 unique firms
- Handcoded sample of 3,306 FIEC firms for parent company characteristics using internet queries
 - 600 randomly sampled firms from Beijing, Nanjing, and Taiyuan
 - 2,706 subsidiaries of Fortune 500 companies

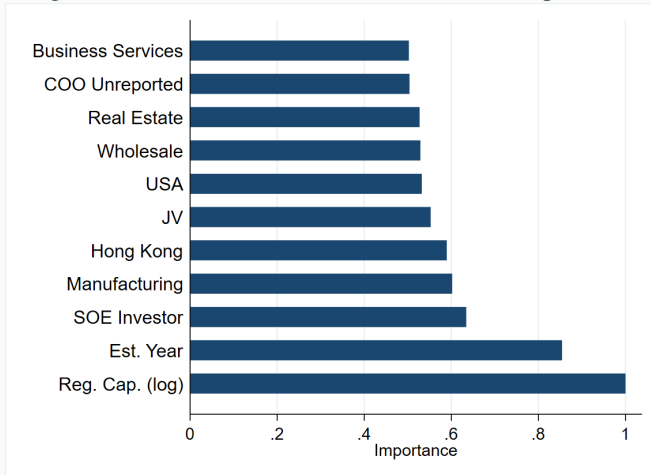
- **Objective:** Predict which firms are likely to engage in **round-tripping FDI** using supervised learning.
- **Method:** Random Forest classifier.
- **Data:** Firm-level attributes:
 - Structural: joint venture (JV), registered capital, firm age
 - Ownership/affiliation: state-owned enterprise (SOE) investor, currency used
 - Country-of-origin indicators: Hong Kong, China, US, missing COO
- **Model Specification:**

$$Y_i = f(\text{JV}_i, \text{Capital}_i, \text{FirmAge}_i, \text{Currency}_i, \text{SOE}_i, \text{HK}_i, \text{China}_i, \text{US}_i, \text{MissingCOO}_i,)$$

- **Performance:** Out of Bag Error Rate for the models (12.6%).

Random Forest Model: Top Predictors

Figure: Random Forest Predictions: Variable Importance



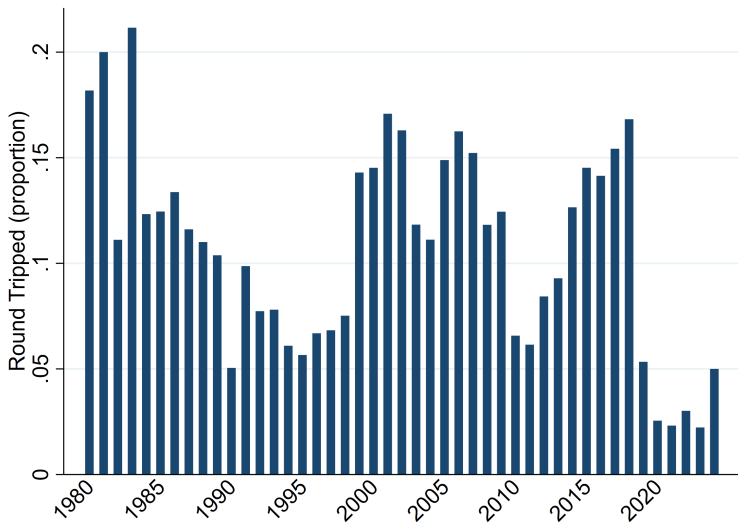
Factors with an importance greater than 0.5 shown for visual clarity.

Results: Overall Distribution of Round-Trip Investment

Table 1: Predicted Round-Tripping Classification Summary

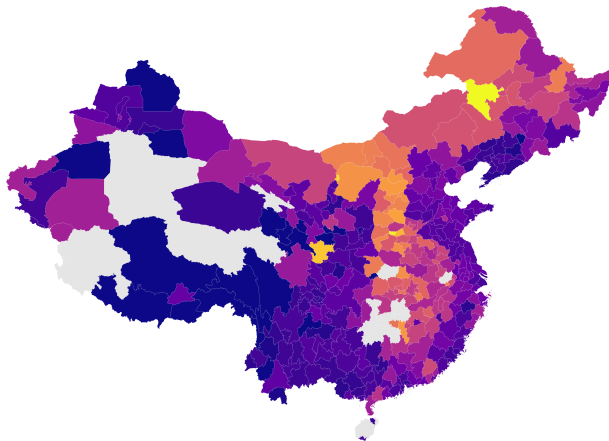
	Training		FIEC	
	n	%	n	(%)
Foreign	2,210	66.85	492,677	90.36
Round-tripped	1,096	33.15	52,567	9.64
Total	3,306	100	545,244	100

Results: Variation over Time of Establishment



Results: Regional Distribution of Round-Trip Investment

Prefecture-level Share of Round-tripped Firms



% Round-tripped
0 10 20 30 40 50

Application: Round-Trip FDI and Political Risk

Replication: Vortherms and Zhang (2024)

Original Argument: Trade war increase political risks for foreign firms operating in China, albeit unevenly.

- Blunt effect (initiation of trade war) significantly increased firm exits
- Targeted effect (tariff exposure, US origins) marginally increased firm exits

Replication: Round-tripped indicator and sub-sample analysis

- H1: Round-trip firms are just as likely to exit as foreign firms, in the face of *blunt* political risks.
- H2: Round-trip firms are less likely to exit than foreign firms, in the face of *targeted* political risks.

Round-Tripping in the Sample

- 35,597 firms of 303,402 (11.73%) classified as round-tripped

Table 2: Exits and Round-tripping

	Year Pre the Trade War		Year Post Trade War	
	Average	Difference	Average	Difference
Round-tripped	0.086		0.112	
Foreign	0.094	-.008***	0.115	-.004*

Table 3: Replication Table Using Random Forest Predictions, Baseline model

VARIABLES	(1) Original	(2) RT Indicator	(3) Foreign	(4) Round-Tripped
Round Tripped		-0.0713*** (0.0202)		
Trade War	0.316*** (0.0239)	0.315*** (0.0240)	0.325*** (0.0332)	0.271*** (0.0142)
Tariff	0.0291* (0.0174)	0.0226 (0.0159)	0.0244 (0.0262)	-0.0502 (0.0475)
Trade War X Tariff	0.0314* (0.0172)	0.0319* (0.0171)	0.0306 (0.0265)	0.000774 (0.0393)
Constant	0.0381 (0.712)	0.0498 (0.710)	-0.231 (0.740)	-0.151 (0.451)
Observations	568,278	568,157	501,725	66,422
Number of groups	194	194	193	125

Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
 Hierarchical models of firm exit. Models include firm and sending country control variables.

Table 4: Replication Using Random Forest Predictions, Triple difference model

VARIABLES	(1) Original	(2) RT Indicator	(3) Foreign	(4) Round-Tripped
Round Tripped		-0.0884*** (0.0189)		
Trade War X Tariff X US	0.0366*** (0.0132)	0.0376*** (0.0131)	0.0917*** (0.0195)	-0.283*** (0.0609)
Trade War X US	-0.0358** (0.0154)	-0.0367** (0.0154)	-0.0627*** (0.0227)	0.0692* (0.0379)
Trade War X Tariff	0.0366** (0.0167)	0.0369** (0.0168)	0.0302 (0.0254)	0.0322 (0.0311)
US X Tariff	0.0244 (0.0495)	0.0253 (0.0485)	-0.0225 (0.0578)	0.215*** (0.0552)
Trade War	0.298*** (0.0218)	0.297*** (0.0221)	0.309*** (0.0314)	0.254*** (0.0146)
US	0.0191 (0.0970)	0.0216 (0.0966)	0.0700 (0.108)	0.0612 (0.127)
Tariff	0.00340 (0.0205)	-0.00424 (0.0192)	0.00402 (0.0293)	-0.0846** (0.0398)
Observations	568,278	568,157	501,725	66,422

Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Hierarchical models of firm exit. Models include firm and sending country control variables.

Summary of Findings

Round-tripping was approximately 10 percent with significant variation

- Round-tripping is more common in inland provinces and in earlier phases of China's development
- Round-tripping likelihood also varies by company type (joint-stock & SOE), industry (construction, manufacturing), and location of origin (Hong Kong)

Round-trip firms react differently to political risks than truly foreign firms

- Round-trip exits are lower than foreign MNC exits
- The U.S.-China Trade War had a large *blunt* effect that increases exits for both round-trip and foreign firms
- Round-trip firms are significantly less likely than genuinely foreign MNCs to exit under *targeted* tariff exposure during Trade War

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