Developing Inland China: Do Coastal FDI and Export Really Matter?

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Research Highlights

- Develop a panel estimation method to evaluate the inter-regional impacts of coastal FDI and export with distance adjusted
- Positive for overall FDI, but not export
- Positive for CJVs, little or negative for EJVs; and no difference across FDI or exporters' origin
- SOEs protectionist behavior and shallow integration of Chinese firms in international trade

Presentation Outline

- Introduction
- China's coastal FDI, exp & inland development
- Econometric model specification
- Data and construction of key variables
- Impacts: overall FDI & exp, 1993-2008
- Impacts: heterogeneous FDI & exp, 2002-07
- Conclusion

Introduction (1/3)

Backdrop:

- High concentration of FDI & exp in coastal China
- Inland economies lag far behind
- "Harmonious society" & global financial crisis → new round of reform

Questions:

- Do costal FDI and export help with the inland economies?
- If not, what to do to improve the policy effectiveness?

Introduction (2/3)

Our approach:

- Both FDI & exp, simultaneously

- Specific modes
  - different FDI structures: WFFEs, CJVs, EJVs
  - different origins: FDI & exporters

Introduction (3/3)

In theory

- no definite answers, because
  competition v.s spillover effects

Stylized features

- exp: non-SO SME under-funded
  → low VA, L-int
  → under CJV, dom firm w/ no access to core trade secret
- FDI: EJVs w/ SOEs (high-tech, imp competing)

Speculations

- EJVs, FDI from advanced country, and foreign exporters may not do better

Coastal FDI, exp & inland development (1/5)

Mechanisms of coastal-inland interactions

- positive spillovers v.s. negative competition effects
- brain drain v.s. remittance & returning workers
- production linkage: vertical v.s. horizontal
- exp: different from FDI, a unique asset, (+, -)
- access to coastal market
- distance matters
- inland absorptive capacity (L, K F)

Coastal FDI, exp & inland development (2/5)

Key reform initiatives during 1993-2008

- Deng Xiaoping's South tour in early 1992
- FDI inflow: preferential policies towards FDI

  1997 Asian financial crisis

  China's WTO accession
- Exp surge: FDI driven processing export
- Evaluation criteria for local officials: GDP, exp, FDI
- SOE failures and discrimination against private firms (Huang, 2003)

Coastal FDI, exp & inland development (3/5)

Specific FDI & exp and inter-regional spillovers

	K-int, imp competing SOE monopolistic	L-int, exp non-SO SME competitve
US EU High-tech	EJVs, MA political elites	
HK Macau Taiwan Low-tech		CJVs, L cost/exp migrant workers

Coastal FDI, exp & inland development (4/5)

Inter-regional impact estimation (literature)

overall FDI or exp, not both

- Madariaga and Poncet (2007): geographic proximity but zero weights to long distance
- Ouyang and Fu (2012): distance-adjusted, only FDI
- Fu (2004): distance-adjusted, only export

Coastal FDI, exp & inland development (5/5)

Inter-regional impact estimation (literature): heterogeneity

- Abraham et al (2010): FDI heterogeneity, local spillovers

receiving end: region's specific characters → absorptive capacity

- human capital (Borensztein et al, 1998)
- R&D (Kinoshita, 2000; Kuo and Yang, 2008)
- technological level (Durham, 2004; Girma, 2005)
- industrial development (Ouyang and Fu, 2012)

  (but for tractability, not part of this paper)

This paper: heterogeneous and both FDI & exp, distance-adj

Econometric model specification

$$Y_{it} = A_{it} K_{it}^{\alpha} L_{it}^{\beta} F_{it}^{\gamma},$$

$$A_{it} = f(CFDI_{it}, CEXP_{it}, other\ factors).$$

$$\begin{aligned} \ln GDP_{it} = {} & \alpha + \beta_1 \ln CFDI_{it} + \beta_2 \ln CEXP_{it} + \beta_3 \ln Domestic\ Capital_{it} \\ & + \beta_4 \ln Employment_{it} + \beta_5 \ln Foreign\ Capital_{it} + \beta_6 \ln Market\ Access_{it} \\ & + Year\ Dummies + Province\ Fixed\ Effects + \varepsilon_{it}, \end{aligned}$$

Data and construction of key variables (1/3)

Data

- Statistical Yearbooks published by Chinese provinces, made available by the China Data Center at UM

  two datasets

  1. for the period of 1993-2008,
  2. w/ info on specific FDI & exp, 2002-07
- provincial CPI from China Statistical Yearbooks
- distances: Geographic Information System

Data and construction of key variables (2/3)

Key variables

$$CFDI_{it} = \sum_{j \in c} FDI_{jt}^{c} \times e^{-\delta D_{ij}},$$

$$CEXP_{it} = \sum_{j \in c} EXP_{jt}^{c} \times e^{-\delta D_{ij}},$$

$$Market\ Access_{it} = \sum_{j \in c} GDP_{jt}^{c} \times e^{-\delta D_{ij}},$$

This paper adopts $\delta = 1$ (as in R&D regional spillovers study (Keller, 2002)

Data and construction of key variables (3/3)

Summary statistics

	Mean	Std. Dev.	Min	Max
Dataset 1: 1993-2008				
Real GDP (billion Yuan)	119.17	107.62	2.65	785.57
Effective coastal FDI (billion Yuan)	48.46	30.24	0.21	136.00
Effective coastal exports (billion Yuan)	373.00	386.00	0.48	1,760.00
Coastal market access (billion Yuan)	987.12	773.24	1.83	3,439.80
Employment (10000 persons)	1,961.82	1,397.69	112.35	5,829.27
Domestic capital stock (billion Yuan)	234.58	227.15	6.01	1,722.37
Foreign capital stock (billion Yuan)	10.67	10.77	0.20	53.25
Dataset 2: 2002-2007				
Real GDP (billion Yuan)	168.08	121.19	7.05	685.52
Effective coastal FDI (billion Yuan)	63.76	35.42	0.21	136.00
Effective coastal exports (billion Yuan)	636.00	433.00	1.51	1,760.00
Coastal market access (billion Yuan)	1,474.38	859.61	4.70	3,439.80
Employment (10000 persons)	2,029.18	1,446.74	128.80	5,772.72
Domestic capital stock (billion Yuan)	359.08	240.65	19.74	1,378.99
Foreign capital stock (billion Yuan)	14.28	13.10	0.23	53.25

Overall FDI/exp, 1993-2008, fixed effects

Dependent variable: log of real GDP of an inland province

	(1)	(2)	(3)	(4)	(5)	(6)
Coastal FDI	0.076*	0.099**	-	-	0.11**	0.22***
	(1.78)	(2.57)			(1.97)	(4.24)
Coastal Exports	-	-	0.059	-0.091	-0.17	-0.55***
			-0.43	(-0.75)	(-0.95)	(-3.42)
Coastal Market Access	-0.064	-0.26*	0.033	-0.044	-0.022	-0.13
	(-0.38)	(-1.69)	(0.19)	(-0.28)	(-0.12)	(-0.88)
Employment	-	0.15*	-	0.15*	-	0.21**
		(1.7)		(1.69)		(2.4)
Domestic Capital Stock	-	0.47***	-	0.46***	-	0.52***
		(8.83)		(8.54)		(9.55)
Foreign Capital Stock	-	0.00056	-	0.011	-	-0.0041
		(0.035)		(0.72)		(-0.26)
Constant	5.44***	2.53**	4.82**	3.64**	7.34***	8.03***
	(4.46)	(2.01)	(2.45)	(2.02)	(3.14)	(3.96)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	294	294	294	294	294	294
R-squared	0.97	0.98	0.97	0.98	0.97	0.98

Overall FDI/exp, 1993-2008, random effects

Dependent variable: log of real GDP of an inland province

	(1)	(2)	(3)	(4)	(5)	(6)
Coastal FDI	0.071*	0.048	-	-	0.089*	0.17***
	(1.68)	(1.16)			(1.70)	(3.62)
Coastal Exports	-	-	0.067	-0.34***	-0.097	-0.55***
			(0.51)	(-3.42)	(-0.59)	(-4.73)
Coastal Market Access	0.027	-0.042	0.073	0.33***	0.082	0.39***
	(0.21)	(-1.03)	(0.47)	(3.39)	(0.53)	(3.89)
Employment	-	0.36***	-	0.40***	-	0.42***
		(8.98)		(9.85)		(10.30)
Domestic Capital Stock	-	0.72***	-	0.67***	-	0.67***
		(15.80)		(14.80)		(15.00)
Foreign Capital Stock	-	0.031*	-	0.035**	-	0.016
		(1.89)		(2.29)		(1.04)
Constant	4.80***	-1.83***	4.37***	1.28	5.67***	1.92**
	(5.05)	(-5.49)	(2.72)	(1.53)	(3.20)	(2.25)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	294	294	294	294	294	294
R-squared	0.97	0.98	0.97	0.97	0.97	0.98

Overall FDI/exp, 1993-2008, robustness check

Dependent variable: log of real GDP of an inland province

	Alternative variable definitions		Exclude extreme observations	
	Another distance discounted effective coastal FDI flow	Coastal foreign capital stock	Without the 1th and 99th percentile of real GDP	Without the 1th and 99th percentile of real GDP per capita
	(1)	(2)	(3)	(4)
Coastal FDI	0.43***	0.72***	0.21***	0.21***
	(4.66)	(5.99)	(4.14)	(4.17)
Coastal Exports	-0.39***	-0.93***	-0.59***	-0.51***
	(-2.93)	(-6.69)	(-3.75)	(-2.92)
Observations	294	294	288	272

Heterogeneous FDI/exp, 2002-07

Dependent variable: log of real GDP of an inland province

	Fixed Effects		Random Effects	
	(1)	(2)	(3)	(4)
EJVs	-0.081**	-0.045	-0.088**	-0.087***
	(-2.28)	(-1.60)	(-2.37)	(-2.66)
CJVs	0.072***	0.042**	0.072***	0.068***
	(2.89)	(2.14)	(2.68)	(2.91)
WFFEs	0.13	0.074	0.14	0.14*
	(1.47)	(1.08)	(1.48)	(1.67)
Coastal Exports	-0.53**	-0.27	-0.52**	-0.75***
	(-2.16)	(-1.40)	(-2.07)	(-4.49)
Coastal Market Access	0.76	0.27	0.59**	0.60***
	(1.62)	(0.71)	(2.09)	(3.64)
Employment	-	-0.024	-	0.46***
		(-0.24)		(9.58)
Domestic Capital Stock	-	0.29***	-	0.53***
		(5.33)		(9.22)
Foreign Capital Stock	-	0.053**	-	0.051**
		(2.42)		(2.12)
Constant	8.55***	5.86**	9.75***	5.92***
	(2.67)	(2.25)	(3.70)	(3.52)
Year Dummies	Yes	Yes	Yes	Yes
Observations	114	114	114	114
R-squared	0.98	0.99	0.98	0.98

Heterogeneous FDI/exp, 2002-07

Dependent variable: log of real GDP of an inland province

	Fixed Effects		Random Effects	
	(1)	(2)	(3)	(4)
FDI from Asia	-0.03	0.0017	-0.12	-0.041*
	(-0.27)	(0.02)	(-1.52)	(-1.67)
FDI from Europe	0.0061	-0.04	-0.019	-0.024
	(0.15)	(-1.21)	(-0.57)	(-0.82)
FDI from U.S.A.	0.018	0.0064	0.026	0.067**
	(0.56)	(0.25)	(0.76)	(2.43)
FDI from Other Origins	0.013	0.0052	0.0087	-0.000024
	(1.31)	(0.68)	(0.86)	(-0.0027)
Coastal Exports	(0.18)	-0.1	-0.28	-0.65***
	(-0.64)	(-0.46)	(-1.02)	(-3.68)
Coastal Market Access	0.21	0.4	0.76**	0.72***
	(0.34)	(0.80)	(2.03)	(3.93)
Employment	-	-0.083	-	0.43***
		(-0.74)		(8.01)
Domestic Capital Stock	-	0.28***	-	0.52***
		(4.60)		(8.31)
Foreign Capital Stock	-	0.062**	-	0.066**
		(2.60)		(2.55)
Constant	8.16*	3.09	6.79**	5.01***
	(1.93)	(0.90)	(2.32)	(2.73)
Year Dummies	Yes	Yes	Yes	Yes
Observations	105	105	105	105
R-squared	0.98	0.99	0.98	0.98

Heterogeneous FDI/exp, 2002-07

Dependent variable: log of real GDP of an inland province

	Fixed Effects		Random Effects	
	(1)	(2)	(3)	(4)
Exp by Foreign Firms	-0.16	-0.19	-0.17	-0.60***
	(-0.83)	(-1.26)	(-0.89)	(-5.79)
Exp by Dom Firms	0.29***	0.13	0.22**	-0.081
	(2.77)	(1.44)	(2.25)	(-1.25)
Coastal FDI	-0.11	-0.049	-0.017	0.088*
	(-1.32)	(-0.72)	(-0.26)	(1.70)
Coastal Market Access	0.87*	0.53	0.22	0.57***
	(1.74)	(1.33)	(0.83)	(5.17)
Employment	-	0.02	-	0.48***
		(0.19)		(10.40)
Domestic Capital Stock	-	0.29***	-	0.52***
		(5.48)		(9.58)
Foreign Capital Stock	-	0.045**	-	0.052**
		(2.04)		(2.26)
Constant	-1.15	0.99	4.30**	3.45***
	(-0.30)	(0.30)	(2.08)	(3.89)
Year Dummies	Yes	Yes	Yes	Yes
Observations	114	114	114	114
R-squared	0.98	0.99	0.98	0.98

Conclusion

- Two contributions to the literature

  1. a single econometric model to incorporate both distance-adjusted FDI and export

  2. apply it to provincial level panel data for both overall and heterogeneous coastal FDI & exp
- The findings do not fully justify China's coastal development strategy that intended to help pull the inland economy forward
- New round of reform: further liberalization of domestic goods and factor markets