

International Trade, Spillovers and Regional Income Disparity in China

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Outline

- ☐ Literature and contribution of this paper
 - ☐ Stylized facts
 - ☐ Methodology: Interregional Input-Output Model
 - ☐ Main results
 - ☐ Conclusion & discussion
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Literature

- Traditional convergence/disparities literature
 - Neoclassical growth theory
 - Regressions on panels of countries/regions (Barro and Sala-i-Martin, 1991, 1992, 2004)
 - Markov transition chains (Quah, 1996)
 - Closed economies or no explicit trade relations (Magrini, 2004)
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Contribution

- Externalities that may result from spillover effects (Brun *et al.*, 2002):
 - (i) Demand side externalities;
 - (ii) Trade externalities;
 - (iii) Supply side externalities.
 - Adding interregional interdependencies for China
 - Domestication 1997 IRIOT, and updating to 2002
 - Direct/indirect/interregional spillover VA-impact
 - Position in global supply chain \Leftrightarrow GDP/capita
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Stylised facts (1/3)

□ GDP/capita disparities, 31 Chinese Provinces

Year	Mean/Median	St.dev./Mean	Max/Min	σ
1995	1.29	0.57	7.94	0.20
2000	1.31	0.61	8.93	0.21
2001	1.39	0.64	10.11	0.22
2002	1.51	0.71	10.47	0.23
2003	1.38	0.71	10.40	0.23
2004	1.39	0.71	10.83	0.24
2005	1.41	0.67	9.71	0.23
2006	1.37	0.66	9.35	0.23
2007	1.37	0.64	8.79	0.23
2008	1.29	0.60	7.84	0.22
2009	1.32	0.56	6.20	0.21
2010	1.27	0.52	6.26	0.20

Stylised facts (2/3)

□ Chinese provinces and regions



Stylised facts (3/3)

Area properties, 8 Chinese regions

	NE	NM	NC	EC	SC	CR	NW	SW
RegSpecC %	12.47	24.91	10.66	12.08	11.97	8.53	14.64	12.38
Pop. density	133	864	456	648	361	351	31	77
GDP/capita	10.68	26.67	10.30	17.84	15.33	6.29	6.67	5.20
LQ agric.	0.94	0.22	1.10	0.61	0.75	1.37	1.32	1.56
LQ mining	2.60	0.66	1.38	0.15	0.51	1.16	1.94	0.68
LQ food	0.85	0.48	1.86	0.66	0.66	1.07	0.52	1.56
LQ textiles	0.40	0.42	1.07	2.12	1.26	0.70	0.30	0.21
LQ wood p.	1.19	0.27	0.55	0.73	2.09	1.27	0.27	0.60
LQ electron.	0.49	1.74	0.44	1.62	2.25	0.39	0.30	0.37
LQ services	0.85	1.79	0.85	1.03	1.05	0.89	1.05	0.99

Methodology (1/2)

□ China's 8 region/17 industries IRIOT adaptation

1997	Intermediate t.		Domestic final t.		For.	For.	Total
17 ind.	Region 1	RoC*7	Region 1	RoC*7	exp.	imp.	
Region 1	$Z^{rr}+M^r$	Z^{rC}	$F^{rr}+M^{fr}$	F^{rC}	e^r	$-m^r$	x^r
RoC*7	Z^{Cr}	$Z^{CC}+M^C$	F^{Cr}	$F^{CC}+M^{fC}$	e^C	$-m^C$	x^C
RoW	$+??$	$+??$	$+??$	$+??$	0	0	m
VA	v^r	v^C	0	0	0	0	v
Total	x^r	x^C	f^r	f^C	e	m	

- For 1997: 17 row-uniform foreign import coeff. per region
- for 2002: GRAS update of $Z/F/M$ with provincial row and column totals plus national IO cell totals as constraints

Methodology (2/2)

- Attributing regional VA/industry to final demand
 - $\mathbf{v}^r = \mathbf{V}_{rf}^r \mathbf{i} + \mathbf{V}_{cf}^r \mathbf{i} + \mathbf{v}_e^r$, regional value added due to **regional** domestic final demand, **inter-regional** final goods exports and regional **foreign** total exports
 - $\mathbf{V}_{rf}^r \mathbf{i} = \hat{\mathbf{C}}^r \mathbf{I} \mathbf{F}^{rr} + \hat{\mathbf{C}}^r (\mathbf{L}^{rr} - \mathbf{I}) \mathbf{F}^{rr} + \hat{\mathbf{C}}^r \sum_{s \neq r} \mathbf{L}^{rs} \mathbf{F}^{ss}$, decomposition into **direct**, regional **indirect** and interregional **spillovers**, all of value added due to regional domestic final demand

- $\mathbf{V}_{cf}^r \mathbf{i}$ and \mathbf{v}_e^r are decomposed analogously

Results (1/4)

Regional VA due to aggregate final demands

%	NE	NM	NC	EC	SC	CR	NW	SW
dom.fin.	85	67	87	71	61	92	92	94
direct	44	41	41	45	52	45	49	46
indirect	43	44	40	39	32	40	36	46
spillovers	13	14	19	16	16	15	15	8
for.exp.	15	33	13	29	39	8	8	6
direct	39	41	30	41	57	20	29	25
indirect	41	47	34	48	38	23	28	27
spillovers	20	12	36	11	5	57	43	48

Results (2/4)

VA due to local for. exports		Net (= outflow – inflow) spillovers from:							
		SC	EC	NM	NC	NE	SW	NW	CR
SC	882	-							
EC	764	24.7	-						
NM	202	7.9	5.3	-					
NC	174	23.8	28.2	3.4	-		0.1		
NE	160	8.3	9.6	0.1	1.3	-			
SW	50	21.9	7.5	0.3		0.4	-		
NW	41	7.6	7.1	0.9	1.0	0.6	0.1	-	
CR	103	45.1	41.3	3.3	2.6	2.5	0.9	0.1	-
	total	139.3	74.3	-5.3	-50.5	-15.9	-29.0	-17.2	-95.7

Results (3/4)

- GDP/capita & position in the global supply chain

	NM	EC	SC	NE	NC	NW	CR	SW
Y/C	26.7	17.9	15.3	10.7	10.3	6.7	6.3	5.2
net	-5.3	74	139	-16	-51	-17	-96	-29

- Moderate positive relation with **NM** as exception:
central government & independent exports

Results (4/4)

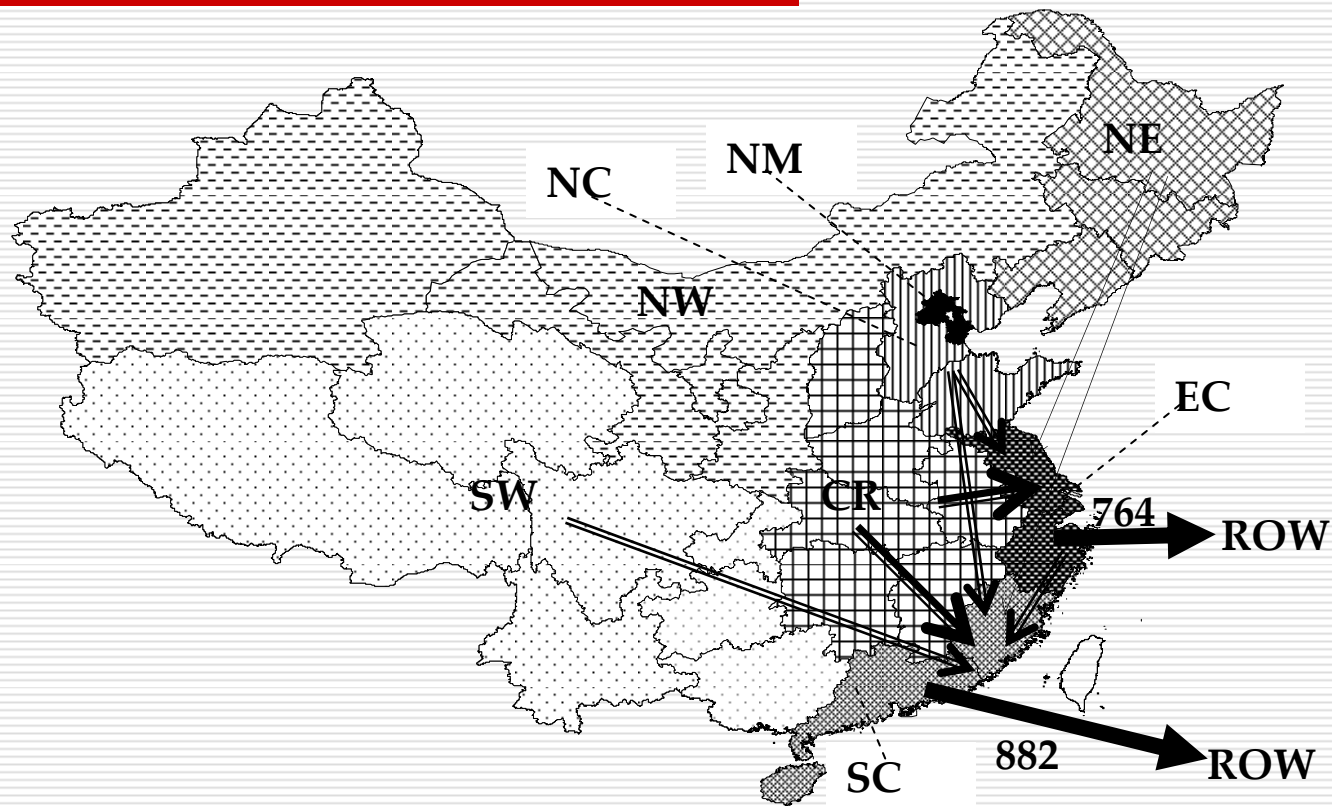


Fig. 3. 2002 China's regional positions in the global supply chain and interregional interdependencies, absolute values (billion RMB)

Other results

- ❑ Supply chains in major export **industries** (see paper) **stronger** than in aggregate exports (shown here)
 - ❑ Scenarios 1-2: 100 billion export reduction SC/EC gives small spillovers of max. 7 billion value added reduction in CR/EC/NC
 - ❑ Scenarios 3-5: 100 billion investment programs in CR/NW/SW give small spillovers max. **9** billion **also** in CR/EC/NC, but in different industries (see paper)
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Conclusion & discussion

- ❑ Impacts are shortrun **demand**-driven, **not** LR supply!
 - ❑ Position in global supply chains explains part of (**only** Chinese **or more?**) regional GDP/capita disparities
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Thanks for your attention!
