

Globalisation of R&D and China

Part 1

Key observations & Quantitative mapping

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Outline:

1. Background: Globalisation of R&D & China:

- **Some key observations on globalisation of R&D and China.**

2. A "narrow" definition of globalisation of R&D and China:

- **The importance of foreign firms in the manufacturing sector.**

3. A "broad" definition of globalisation of R&D and China:

- **New actors, new interactions and new measures.**

Background : Key observations (1)

- The R&D intensive and knowledge-seeking FDI, by both *large* and more recently by *small- and medium-sized enterprises (SMEs)* in China.
- Associated with competition pressure and improved innovation conditions, FDI firms *diversify* their R&D activities in China.
- The *technology and R&D gaps* b/w foreign and domestic firms:
 - + : Give foreign firms the opportunity to grasp "high-end" market.
 - : Opportunity for strategic partnership with local actors limited.

Importance of foreign LMEs in Chinese manufacturing: (1)

FDI firms' share in the manufacturing sector among LMEs, %							
	Total	FDI firms (% of total)	Value-added	R&D	Tech-Import	Export	Employment
1998	15887	3489 (22% of total)	26%	21%	20%	58%	14%
2004	24547	8745 (36% of total)	40%	29%	48%	76%	34%
FDI firms' share in high-tech industries among LMEs , %							
1998	1551	533 (34% of total)	53%	32%	63%	82%	25%
2004	3117	1750 (56% of total)	79%	42%	86%	94%	59%

Importance of small firms in Chinese manufacturing (1)

	Year	Large	Medium	Small
Number of firms (Share of S&T-based)	2000	1427 (83%)	17680 (44%)	143785 (11%)
Number of firms (Share of S&T-based)	2004	2136 (75%)	25574 (35%)	248813 (9%)
Increase in total	2000-2004	709	7894	105028
Increase in S&T-based	2000-2004	412	1202	7182

Source: Lundin and Sjöholm (2006)

Importance of small firms in Chinese manufacturing: (2)

Industry	Number of firms	Number of S&T-based	Share of S&T-based
Textile	21745	1164	5%
Basic chemicals	17096	2260	13%
Pharmaceuticals	3958	1166	29%
Machinery, general	18919	2326	12%
Machinery, special	9923	1798	18%
Transport equipment	10157	1197	12%
Electronics	14384	1973	14%
Computer & Communication	7228	1539	21%
Office machinery	3526	930	26%

Source: Lundin and Sjöholm (2006)

Importance of small *foreign/ FDI* firms in Chinese manufacturing

	Nr of firms	S&T based	VA	R&D	Patent (Item)	Export	Employ. 1000 pers
2000	24135	11%	822	1,9	400	310	4211
2004	48268	9%	1982	4,2	1282	733	8047
Growth	100%	52%	141%	121%	221%	136%	91%

Source: Lundin and Sjöholm (2006), VA, R&D and Export in billion RMB

A (simplified) comparison b/w S&T-based Large & Small enterprises by ownership, 2004 (%)

	Small S&T based firms				Large S&T based firms			
	R&D/ Sales	(New) Export /sales	Tech import /sales	Patent/ 100 pers	R&D/ Sales	(New) Export /sales	Tech import /sales	Patent/ 100 pers
SOE	1.19	0.29	0.19	0.51	0.91	1.55	0.32	0.06
JV-HTM	0.97	4.22	0.21	0.37	1.01	23.01	0.40	0.41
JV-Foreign	1.64	4.22	0.64	0.42	1.30	6.44	1.18	0.74
Foreign	1.44	6.61	0.22	0.79	0.99	24.37	0.15	0.25
Private	1.55	3.21	0.13	0.66	0.74	5.90	0.05	0.90

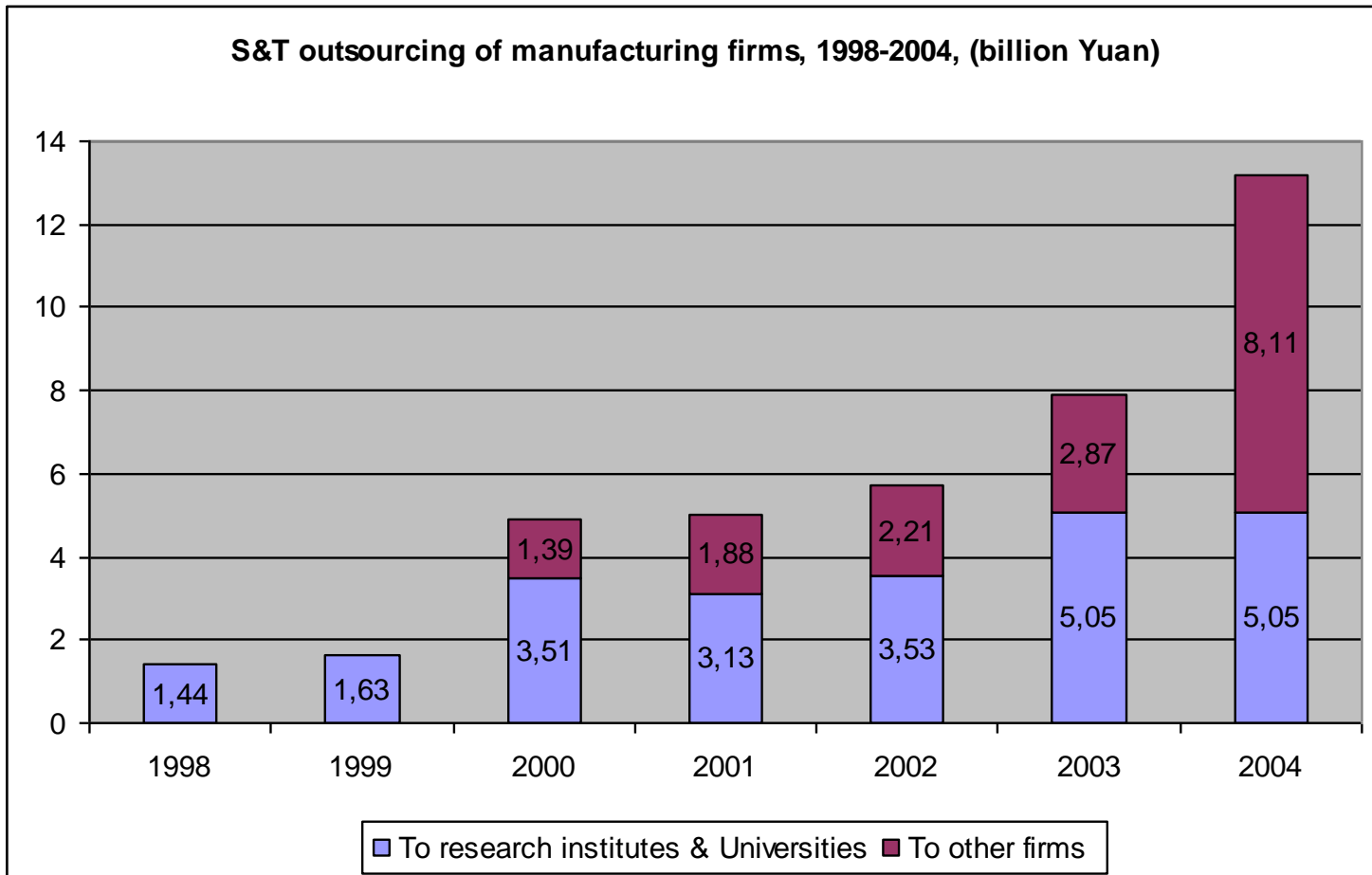
Source: Lundin and Sjöholm (2006)

A "broad" definition of Globalisation of R&D (1)

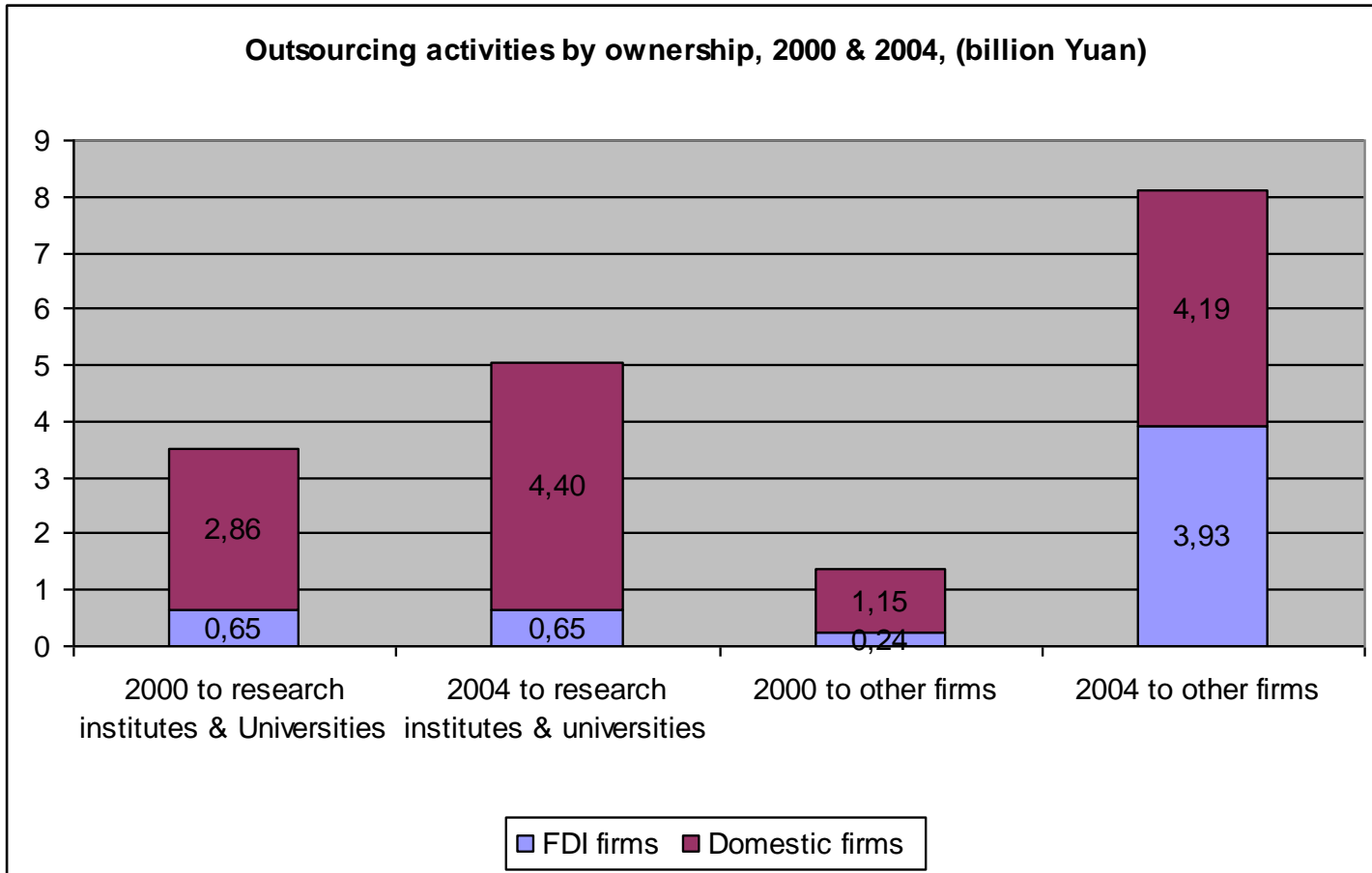
A few quantitative examples to measure globalisation of R&D in a "broad" context:

- ***Co-funding of R&D by foreign & domestic actors.***
- ***Outsourcing of S&T activities b/w domestic and foreign actors.***
- ***Co-operation in R&D projects b/w domestic and foreign actors.***

A "broad" definition of Globalisation of R&D (2)



A "broad" definition of Globalisation of R&D (3)



Conclusion: Beyond the quantitative mapping

- To identify ***strategic partnership*** and ***technology alliance*** with new partners and in new forms.
- To identify (sector-specific) strong ***innovative environments*** for innovation activities in China.
- To better understand ***strategic reactions of Chinese firms*** and their participation in the process of globalisation of R&D.
- To better understand the link between ***R&D*** and ***innovative behaviour*** in a China-specific context (***R&D survey versus Innovation survey***).

Many thanks !

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