



Comments on “A Tale of Two Cities: A Comparison of
Patent-based Innovative Performances of Domestic and
Multinational Companies in China”
by Zheng Liang and Xue Lan

by Michael J. Ferrantino
October 23, 2009

These comments are solely those of the presenter. They are not meant to represent the views of the U.S. International Trade Commission or any of its Commissioners.



Smaller firms do more patenting in China

- China's biggest 500 companies (652 related corporations) did 4.62 percent of domestic invention applications from 1985-2004
- Foreign firms on the Fortune Global 500 list (775 related companies) accounted for 30.47 percent of foreign invention applications in the same period.
- Thus, 95 percent of domestic invention applications and 70 percent of foreign invention applications were done by firms outside the top 500



Maintenance of patents through annual filing fees show that invention patents are more valuable than petit patents, and foreign patents are more valuable than domestic patents

Similar findings would be expected in other countries

Percent of Patent Grants 1985:4-2007:12
still in force at the end of 2007

	Inventions	Utility Models	Designs
Domestic	66.26	30.05	34.88
Foreign	80.09	58.03	66.02



Question: What is the pattern of “high-quality” Chinese innovations?

- Other potential measures of quality:
 - Number of Chinese patents registered outside of China
 - Number of Chinese patents registered in the United States (easier)



Chinese invention applications for large firms are more concentrated

- The top 9 Chinese firms account for 69 percent of domestic applications among top-500 firms
- If parts of SINOPEC are included together, 54 percent of domestic applications of top-500 firms are either Huawei or SINOPEC
- By contrast, the top 2 foreign firms account for 21 percent of foreign applications, and the top 10 account for 51 percent



Top applicants for Patent, Trademark and Copyright 2008 (WIPO)

PCT Applicant Name: Business Sector	Origin	PCT Filings
HUAWEI TECHNOLOGIES CO., LTD.	CN	1,737
PANASONIC CORPORATION	JP	1,729
KONINKLIJKE PHILIPS ELECTRONICS N.V.	NL	1,551
TOYOTA JIDOSHA KABUSHIKI KAISHA	JP	1,364
ROBERT BOSCH GMBH	DE	1,273
SIEMENS AKTIENGESELLSCHAFT	DE	1,089
NOKIA CORPORATION	FI	1,005
LG ELECTRONICS INC.	KR	992
TELEFONAB LM ERICSSON (PUBL)	SE	984
FUJITSU LIMITED	JP	983
QUALCOMM INCORPORATED	US	907
NEC CORPORATION	JP	825
SHARP KABUSHIKI KAISHA	JP	814
MICROSOFT CORPORATION	US	805
MOTOROLA, INC.	US	778
BASF SE	DE	721
INTERNATIONAL BUSINESS MACHINES CORPORATION	US	664
3M INNOVATIVE PROPERTIES COMPANY	US	663
SAMSUNG ELECTRONICS CO., LTD.	KR	639
E.I. DUPONT DE NEMOURS AND COMPANY	US	517

11 of the next 19 (after Huawei) are among the top 20 in applications to China over 1985-2004. The main global innovators file in China too.



China's overall specialization in "foreign-oriented patent families" – domestic or foreign firms?

$$RSI = \log \left(\frac{F_{c,j} / \sum_c F_{c,j}}{\sum_i F_{c,i} / \sum_{c,i} F_{c,i}} \right)$$

Country's share in FOPFs
in a sector/Country's
share in all FOPFs

Source: WIPO 2009

China's top categories in relative patent specialization, 2002-2006

Digital communication	1.09
Telecommunications	0.68
Audio-visual technology	0.34
Computer technology	0.30
Thermal processes, apparatus	0.23

China's bottom categories in relative patent specialization, 2002-2006

Transport	-0.96
Engines, pumps, turbines	-0.87
Textile and paper machines	-0.79
Big molecules, polymers	-0.68
Mechanical elements	-0.63