

Does the Increase of Patent in China Means the Improvement of Innovation Capability?

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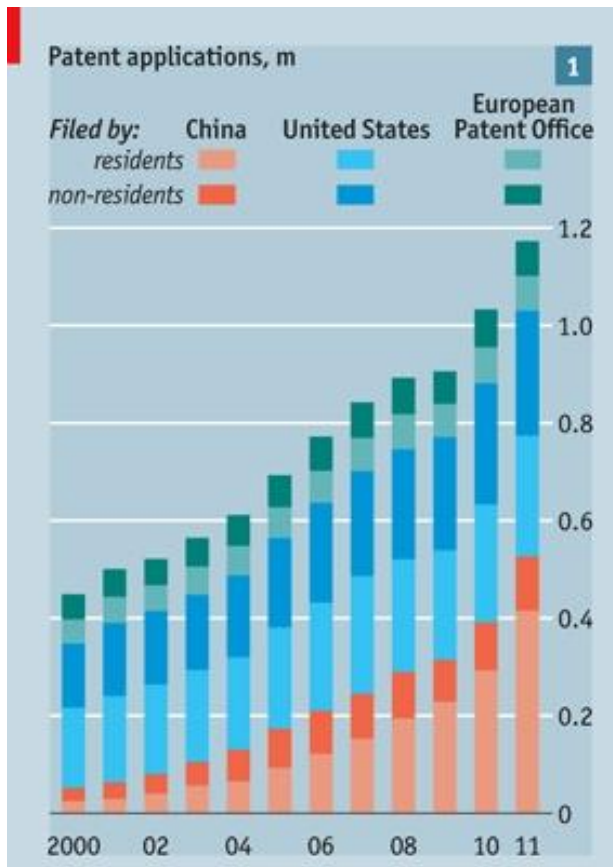
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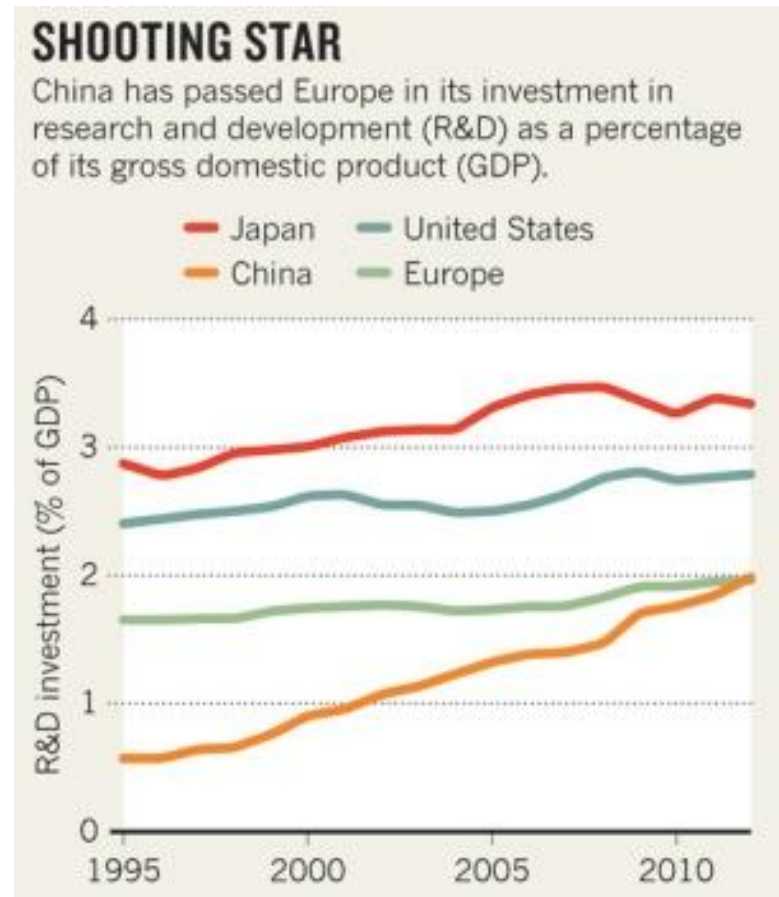
Outline

- Miracles
- Puzzles
- Questions
- Possible Perspectives on different levels
- Conclusions

Miracles

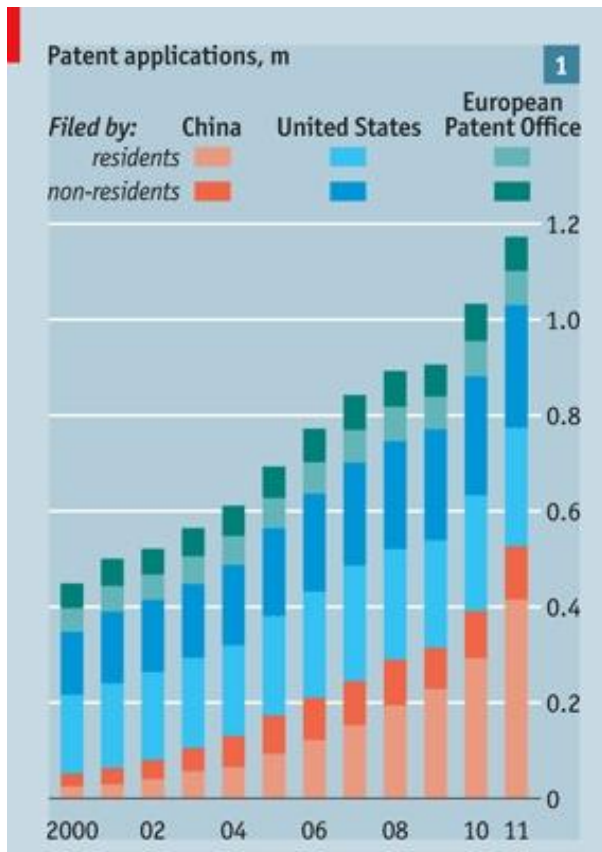


The Economist, 2013. "How innovative is China? Valuing patents." Jan 5, 2013

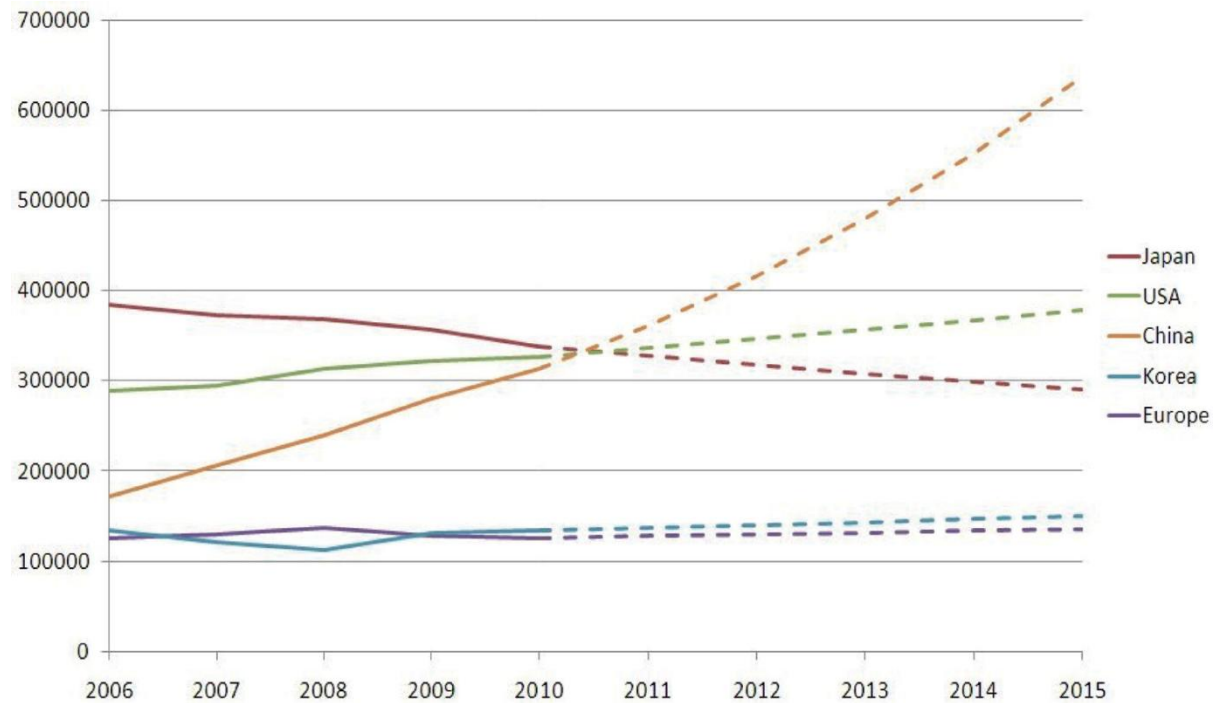


Nature, China tops Europe in R&D intensity, 08 January 2014

Miracles

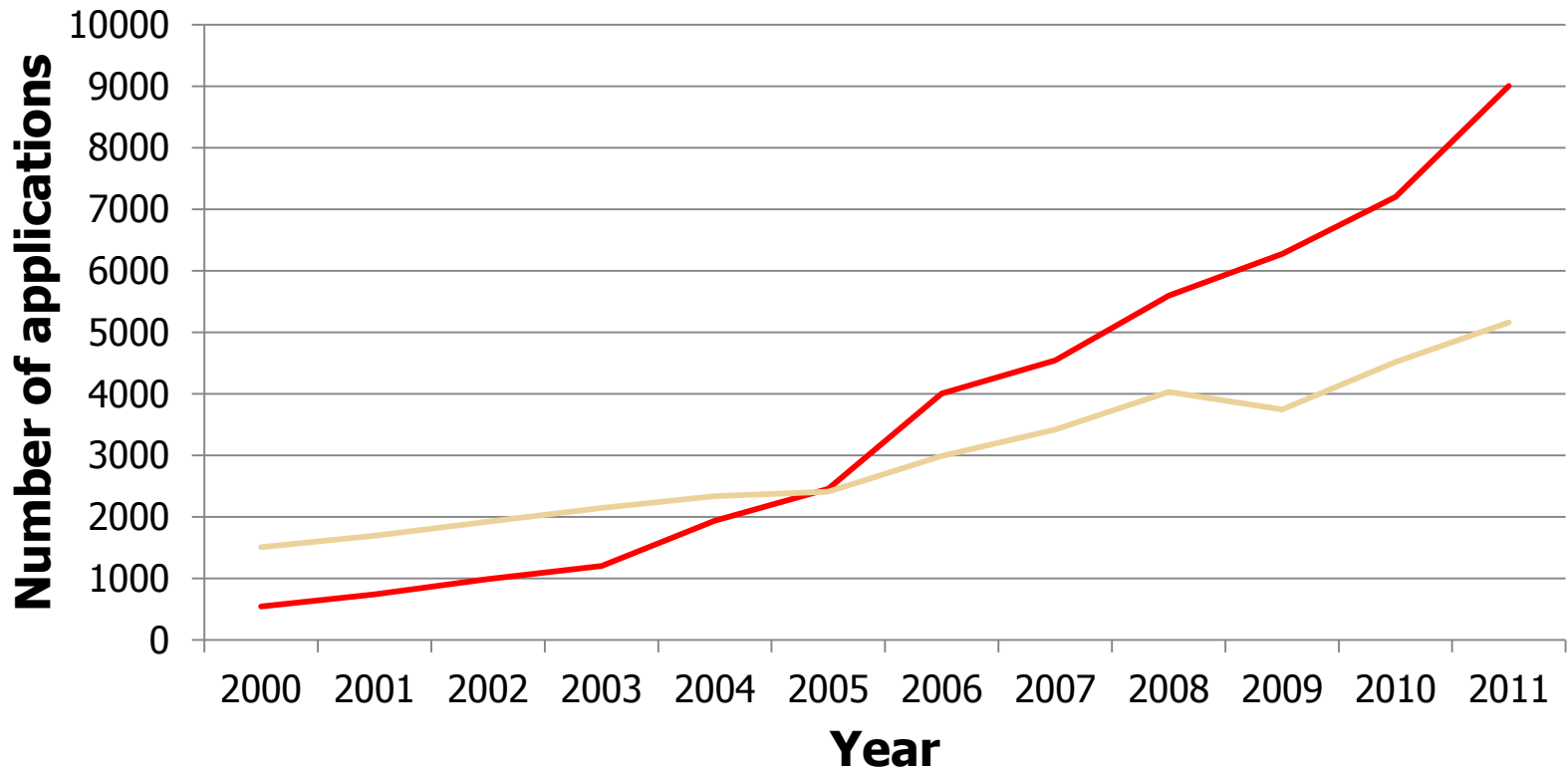


The Economist, 2013. "How innovative is China? Valuing patents." Jan 5, 2013



Thomson Reuters, 2011, CHINESE PATENTING REPORT ON THE CURRENT STATE OF INNOVATION IN CHINA

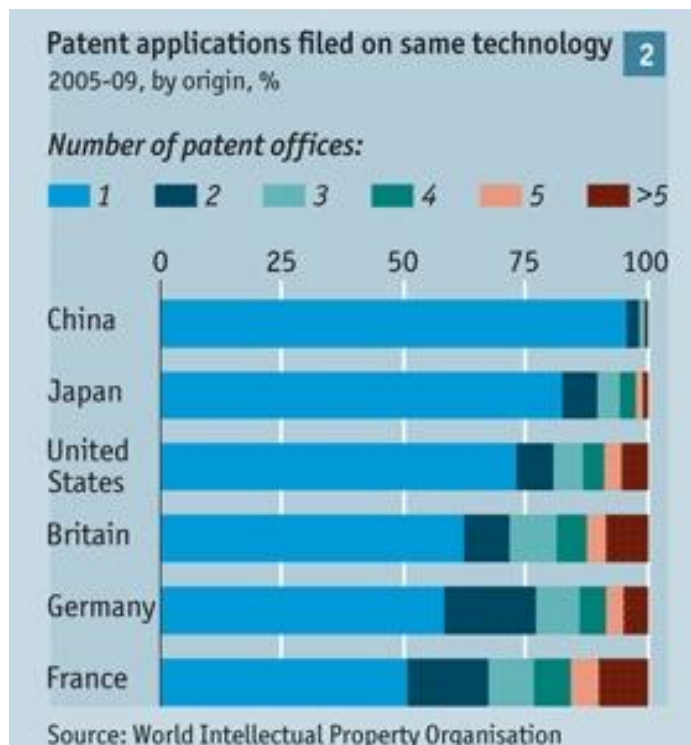
Miracles



— China — Other Emerging

Growth in utility patent applications to USPTO from China and other emerging economies since 2000, Source: USPTO, 2013

Puzzles



- Hardly any Chinese inventors seek to patent their ideas abroad. Between 2005 and 2009 fewer than 5% did (see chart 2). In America, the figure was 27%; in Europe, more than 40%. Geeks in the West should not relax, but it is not clear that their Chinese rivals have yet outstripped them.

- There are no Chinese Companies in Thomson Reuters Top 100 Global Innovators (2013) Korea:3 Taiwn:1

The Economist, 2013. "How innovative is China? Valuing patents." Jan 5, 2013

Questions

- Although the quantity of patent application in China increased very fast, the quality is still poor.
- How to evaluate the innovation capability of China, especially from the viewpoints of patent?

Possible Perspectives

-Sector level

亚太地区十大专利权人
半导体材料及工艺

Semiconductor Materials and Process

	公司/机构	国家/地区	专利数量
1	SAMSUNG (三星)	韩国	1485
2	TOSHIBA CORPORATION (东芝株式会社)	日本	1068
3	LG	韩国	1008
4	HYNIX SEMICONDUCTOR (海力士半导体)	韩国	869
5	SHANGHAI HUALI MICRO-ELECTRONICS (华力微电子)	中国	758
6	RENESAS ELECTRONICS (瑞萨电子)	日本	652
7	PANASONIC CORPORATION (松下株式会社)	日本	649
8	TOKYO ELECTRON, LTD. (东电电子株式会社)	日本	572
9	SEMICONDUCTOR MANUFACTURING INTERNATIONAL (中芯国际)	中国	527
10	TAIWAN SEMICONDUCTOR MANUFACTURING (台积电)	台湾	503

数据来源: 汤森路透德温特世界专利索引 (DWPI)

Possible Perspectives

-Sector level

北美地区十大专利权人
半导体材料及工艺

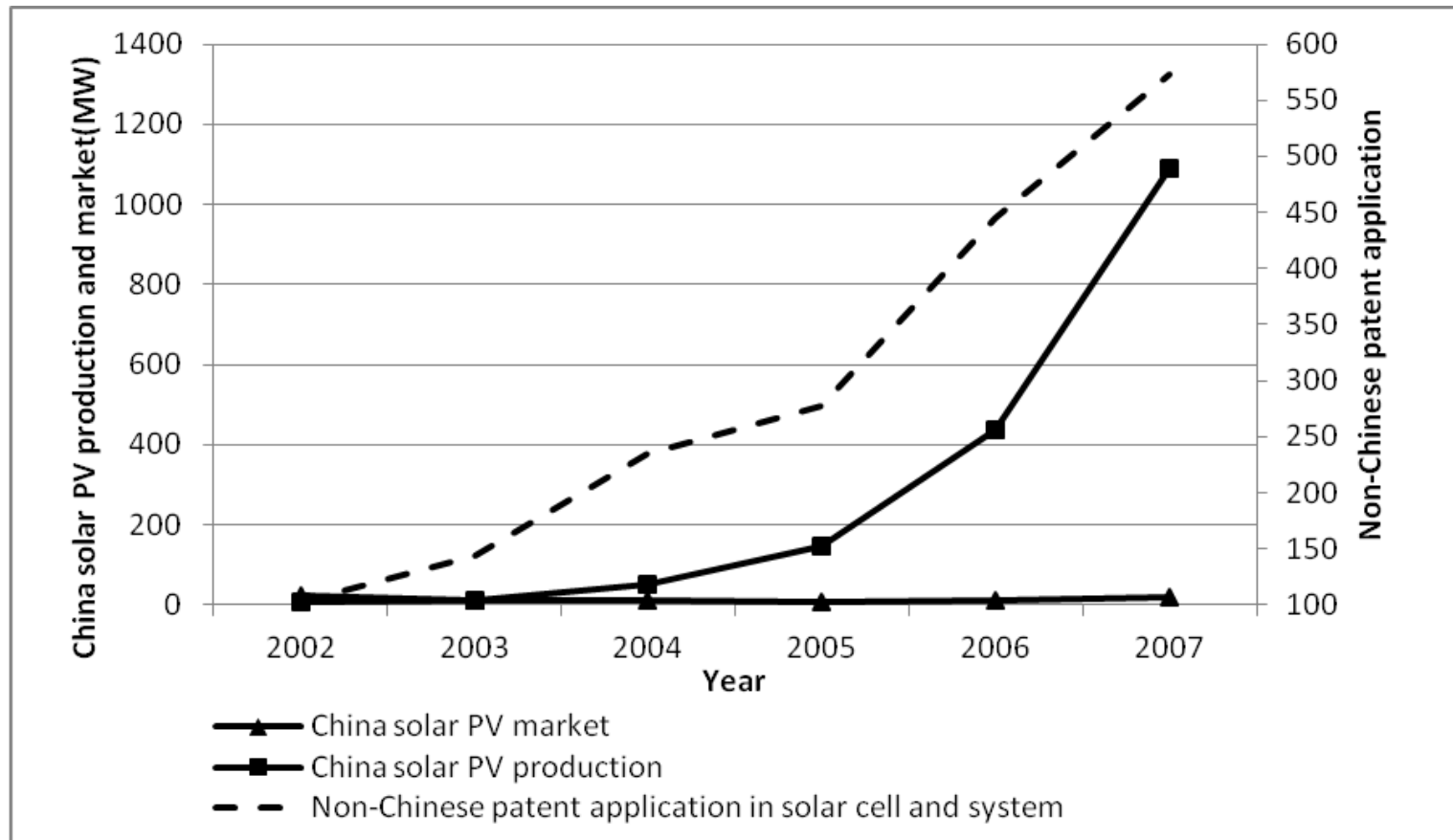
Semiconductor Materials and Process

	公司/机构	国家/地区	专利数量
1	INTERNATIONAL BUSINESS MACHINES CORP (IBM)	美国	1017
2	APPLIED MATERIALS (应用材料公司)	美国	273
3	MICRON TECHNOLOGY (美光科技)	美国	261
4	TEXAS INSTRUMENTS (德州仪器)	美国	197
5	DUPONT (杜邦)	美国	105
6	FREESCALE SEMICONDUCTOR (飞思卡尔半导体)	美国	81
7	XILINX	美国	80
8	LAM RESEARCH (林氏研究)	美国	74
9	INTEL (英特尔)	美国	74
10	ROHM AND HAAS ELECTRONIC MATERIALS (罗门哈斯电子材料)	美国	57

数据来源: 汤森路透德温特世界专利索引 (DWPI)

Possible Perspectives

-Sector level



Source: Zhen Lei and Yuxi Meng, Blocking Competitors at Their Home bases: Foreign Patenting in Solar PV Technology in China, 2013

Possible Perspectives

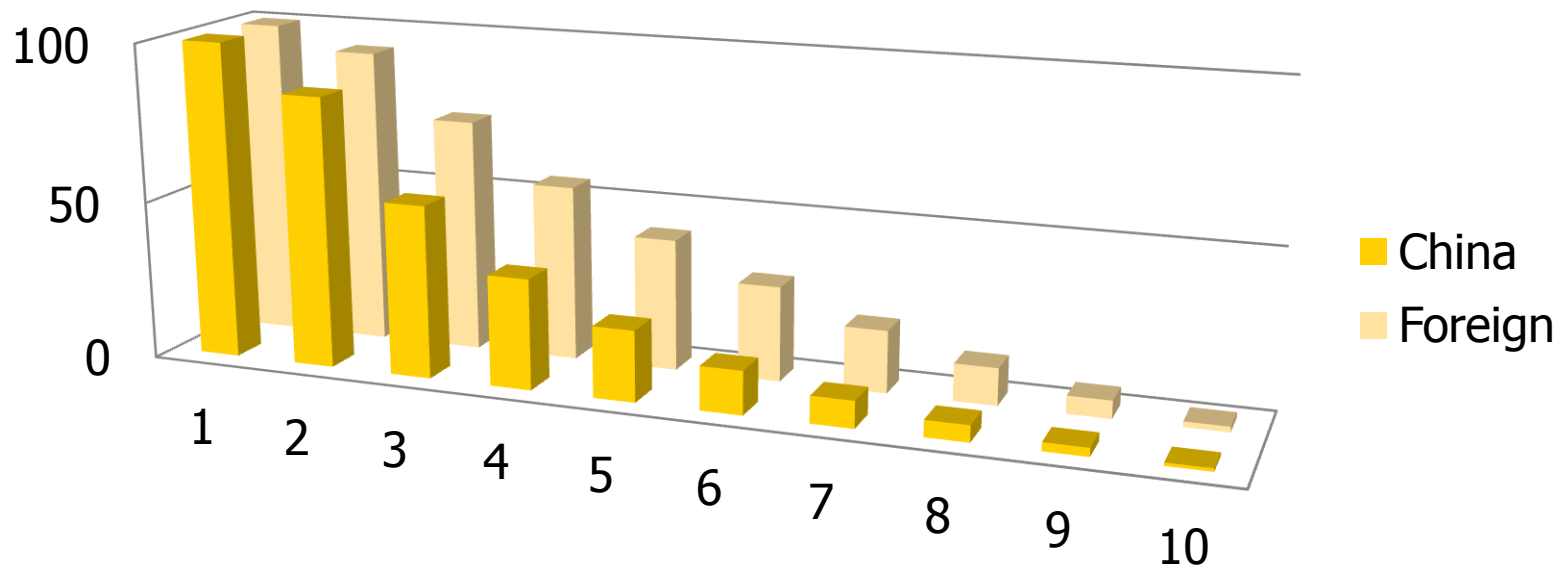
-Firm level

Experiences of Huawei

- Every year, pays out approximately US\$300 million in royalties in order to legitimately use the patented technologies of industry peers.
- totally paid around 1.2B USD for IPR till now.
- invests 12%~14% of its sales revenue in R&D every year. In 2012, we spent 4.8 billion USD on R&D.
- total R&D expense over the past decade amounts to around US\$19 billion.
- filed over 5,000 standards proposals in total. As of December 31, 2012, Huawei has filed a total of 41,948 patent applications in China, 12,453 PCT patent applications and 14,494 patent applications outside of China. A total of 30,240 patent applications have been granted.

Possible Perspectives -Value level

UMP Maintenance - 10 Year Period Percentages



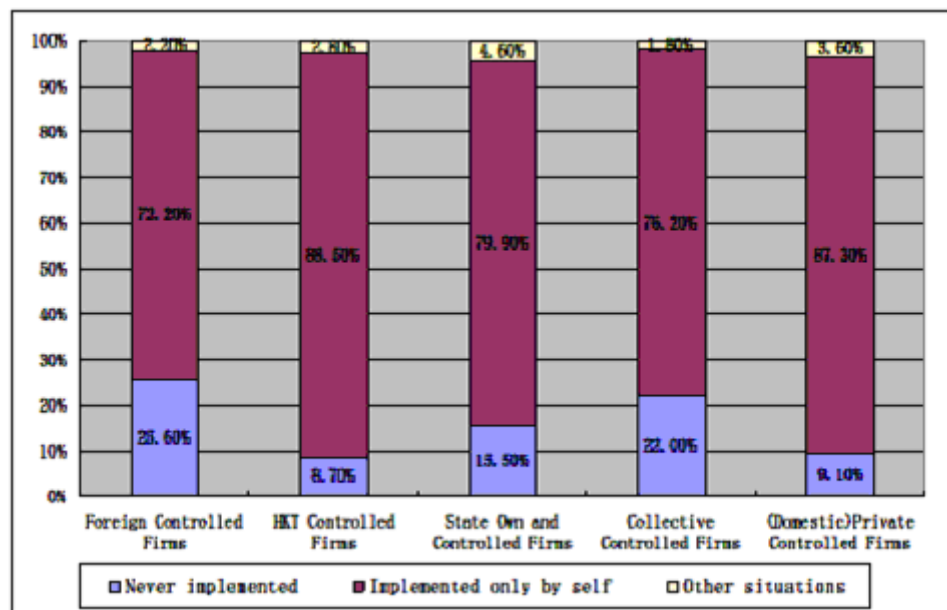
Source: Mark Cohen, Roads Less Traveled: Using Empirical Data to Revisit Assumptions About IP in China, March 2013, "Tsinghua University-UC Berkeley Workshop on Chinese Innovation and Intellectual Property Protection", Tsinghua University, Beijing

Possible Perspectives

-Value level

- Among different kinds of firms, the patent implementing ratio of foreign controlled firms is lowest, nearly 26% of the total patent applications had never been implemented.
- Among all the invention patent applications issued by foreign controlled firms, even more than half (51.8%) had never been implemented.

Figure 9 The Situations of Patent Implementations of Different Kinds of Firms



Zheng liang and Lan Xue, 2010

Possible Perspectives

-Value level

Innovation in Pharma: Enforcement Issues in China



35 cases, Injunction Ratio (non-weighted average): 34%, 30% weighted average, Source: CIELA database (www.ciela.cn):

Possible Perspectives

-Behavior level

	Foreign	Domestic
Patent Type of Applications	Invention dominant	Utility Model and Design dominant
Growth of Applications	After 1992, distinct increase After 2000, distinct increase	After 1992, no distinct increase After 2000, distinct increase
Character of Applicants	Invention: In-service dominant Utility Model: In-service dominant Design: In-service dominant	Invention: In-service just exceed Non-service recently Utility Model: Non-service dominant Design: Non-service dominant
Granting Ratio	High	Low, especially for invention
Valid Ratio	Invention: High Utility Model: High Design: High	Invention: low, no big gap Utility Model: low, big gap Design: low, big gap
Implementing Ratio	Invention: low Utility Model: low, relatively Design: similar	Invention: high Utility Model: high, relatively Design: similar
Infringement Litigation	Very few	Quite a lot, concentrated on Utility Model and Design

Source: Liang and Xue, 2010

Conclusions

- Although the evaluation on innovation capability is really complicated, or even confused, the detailed patent analysis still could tell us many things.
- More indicators except patent filing including maintenance, implementations, enforcements should be involved in innovation capability evaluation, as well as the strategy and behaviors investigation on micro level.

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Thank You!
Comments are welcome

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