

New Perspectives on Innovation and Intellectual Property Policy in China: What Does the Evidence Say?, May 18-19, San Diego

Innovation driven development and its implication for innovation and IPR

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Outline

- * Investment driven development and its implication for IPR
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- * conclusion

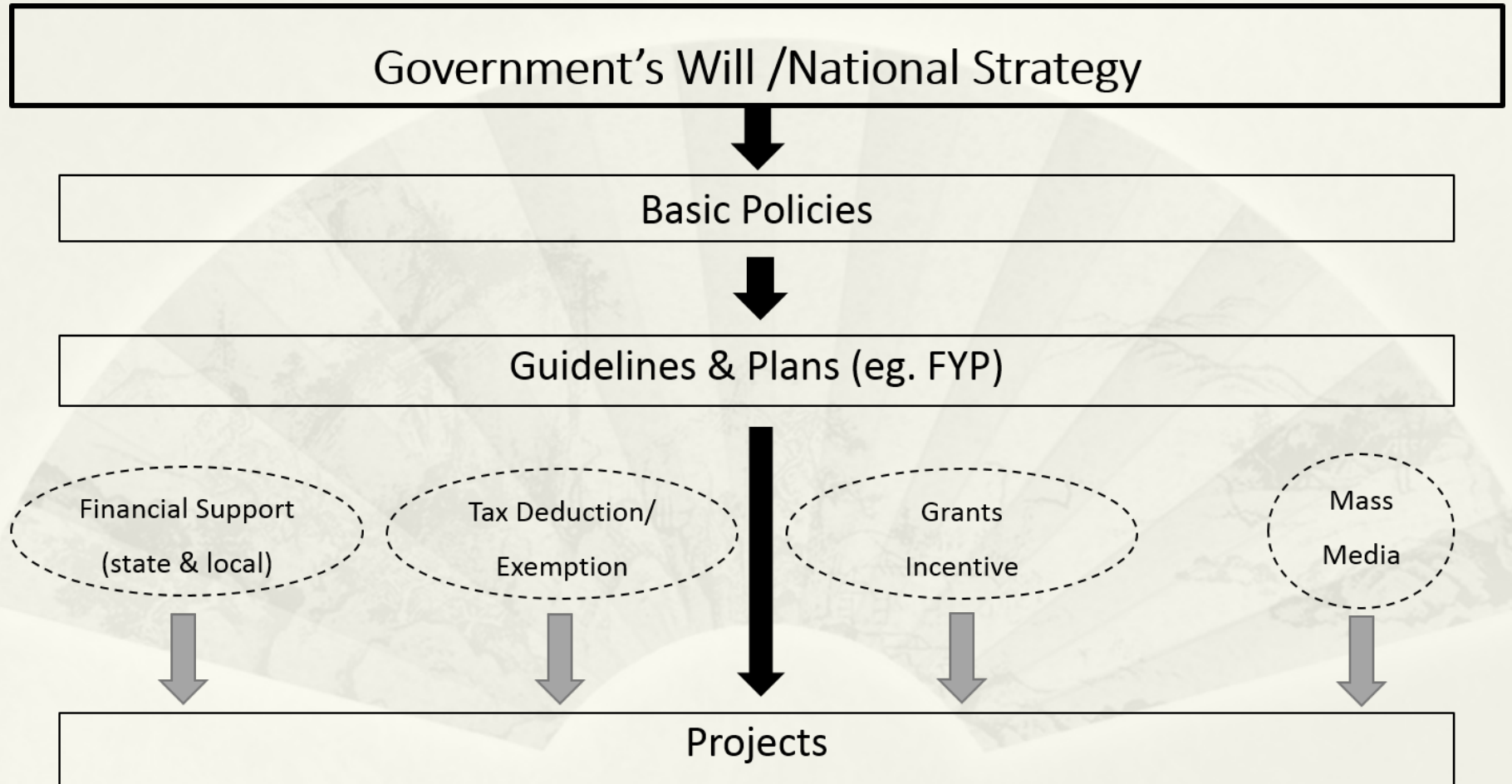
Questions on IPR and innovation of China

- * It is said that IPR can promote economic development with good market structure(Maskus,2000), but it is also true that economic development level can enhance business to protect IPR.
- * The cost of imitation matters: As gap between developing and developed countries is narrowed, the space for imitation is limited, the desire for recreation will build up.
- * The existing model sets the limitation of resources and degree of pollution, creation and IPR are demanded
- * The global competition: will teach Chinese companies to learn the lessons of IPR protection(WTO, and going global). Or will kick multinationals go away.

1. Investment driven development model and its implication to IPR

- * The pace of industrialization is fastest in the world and it transforms China from a poor country to second largest country.
- * Technology import and imitation are the most important channels for economic development given the GDP per capital level.
- * FDI plays important role in the process
- * Investment driven not friendly to innovation and IPR: limited understanding the function of IPR for innovation.

1.1 Top-Down Innovation Paradigm in China but the result is catching up



China's Mid- to Long-Term Plan for the Development of Science and Technology 2006–2020),

- * The Plan reiterated that science and technology were the “leading driving force between economic and social development”. Furthermore, it emphasized the importance of innovation “as the critical step to spur its [China’s] economic restructuring, improve the ways in which its economy grows, and sharpens its overall competitive edge, and building China into an innovative country”.
- * IPR creation and protection was highly emphasized

Targeting existing technology

- * There has been a strong focus on catching up to existing technology with the aim of reducing dependence on foreign technology, rather than on focusing on societal needs or societal challenges as drivers of technological change.

examples

- * Examples of technology policy aimed primarily at catching up and reducing dependence on foreign technology include
 - * TD-SCDMA,
 - * integrated circuits
 - * microprocessor.
 - * Large airplane
 - * High-speed rail
 - * Baidou北斗(GPS)

1.2 SOEs as main actor for innovation

- * SOEs being selected as main actor for innovation
- * Since 2008, MOST together with the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) and All-China Federation of Labor Unions (ACFTU) elected dozens of innovative firms each year. The majority of the firms selected are SOEs in manufacturing industries.
- * SOEs such as China National Machinery Industry Corporation, Power Construction Corporation of China, and the China General Technology (Group) Holding Cooperation.
- * http://www.most.gov.cn/jscxgc/jscxxgwj/200810/t20081029_64625.htm

For IT sector

- * Most SOEs are run by a very bureaucratic organization, they often operate in monopolistic business fields, and have little to no incentive to innovative.
- * To provide an example, China has invested huge sums into micro chips with very little payback.
- * In total, the central government of China invested around 29 billion RMB for S&T development in the field of electronics and information technology from 2008 to 2013 through three national major projects, said Wan Gang, the minister of MoST.
<http://www.chinanews.com/gn/2015/03-11/7120336.shtml>

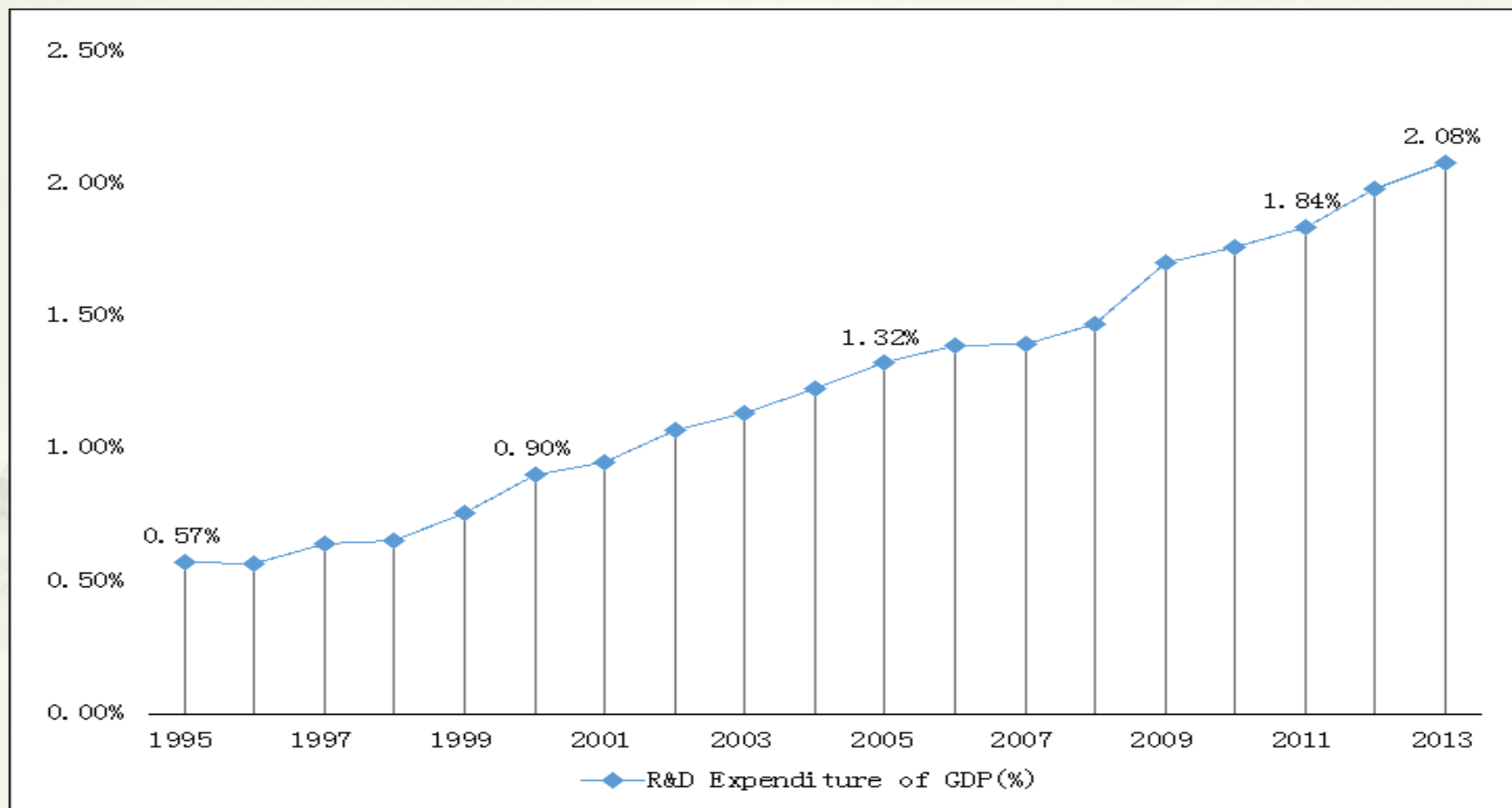
SMIC

- * Semiconductor Manufacturing International Corporation (SMIC) received grants from multi local governments, including Shanghai, Wuhan, Chengdu and Shenzhen, and became the biggest semiconductor manufacturer in China.
- * Though the governments helped SMIC free from unbearable funding demands, the company was never out of trouble with many scattered factories, which are neither sizable nor flexible, all over the country.
- * Since its going public in 2004, the company was never profitable until 2009, when governments began to be less involved in the business.

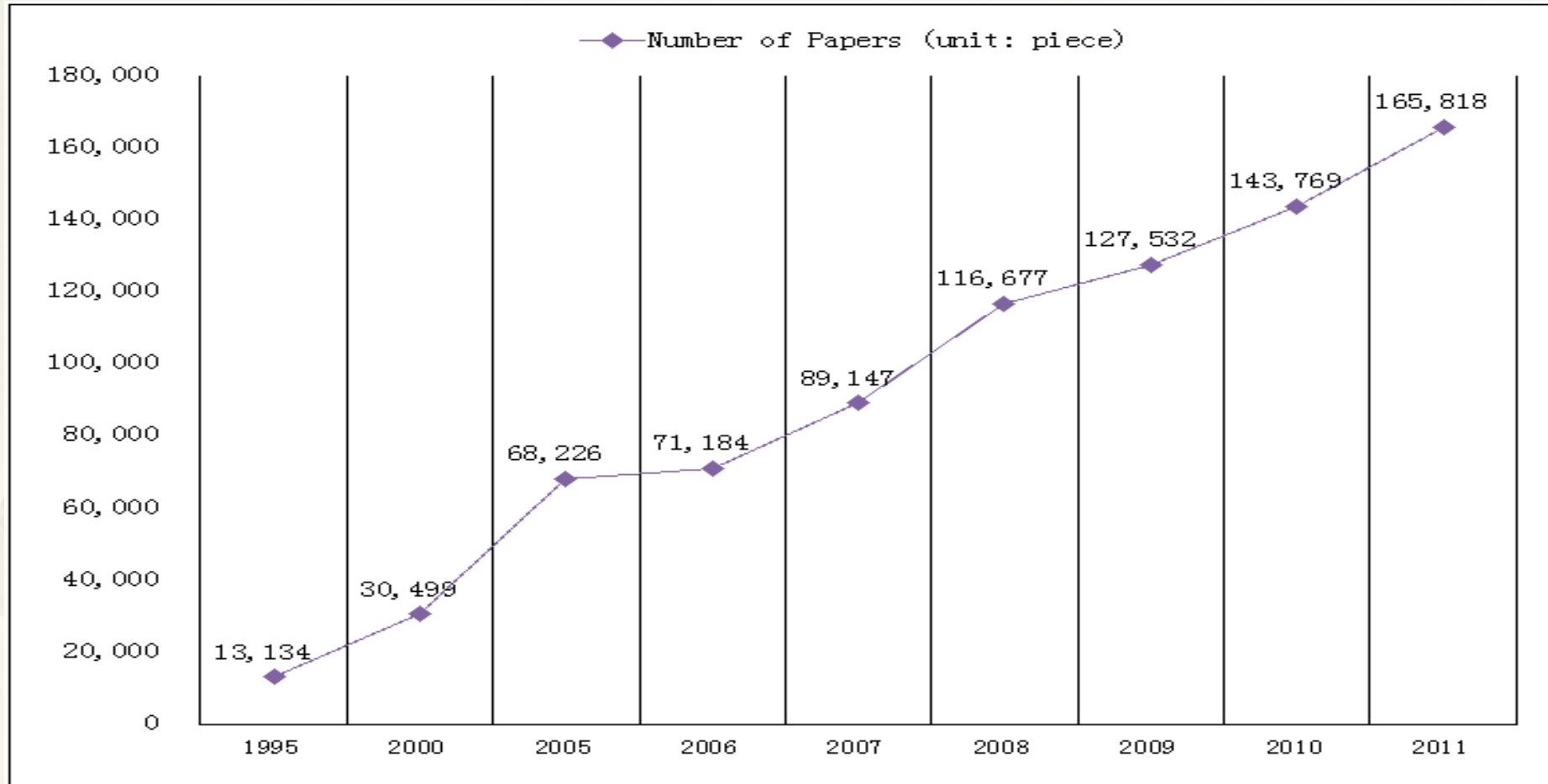
<http://www.ftchinese.com/story/001024573>

* 1.3. the performnce of R&D system:

China's R&D Expenditure of GDP (%) 1995-2013

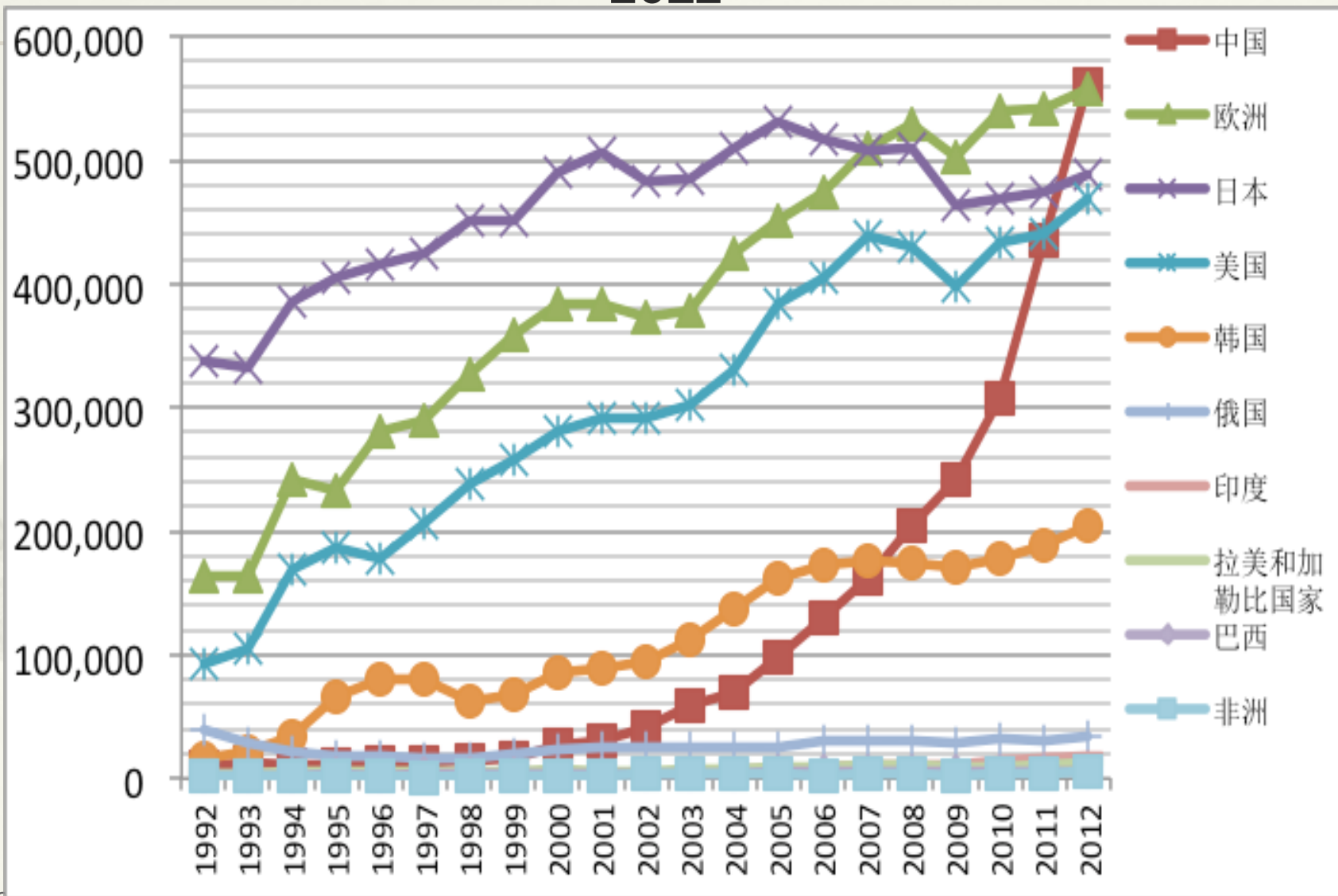


Number of Chinese Papers according to SCI



The performance of patent and comparing with other countries

中国专利申请:发明专利申请数增长情况的国际比较：1992-2012



Science progress fast then innovation

- * As the number of SCI publications is used as a major indicator for the evaluation of individuals, institutions, and programs, we can see what some scholars call “publication inflation” (Fu et al, 2013, p.18).
- * This means that publications no longer necessarily reflect scientific achievements.

1.4. Attention for IPR: Low response to IPR protection under catching up model

- * Subsidy to IPR creation from different levels of government
- * Protectionism for local company by regional government
- * Low understanding the meaning of IPR protection

Limitation of institutes of IPR: administrative(AIC) route - drawbacks

- * Low deterrent value – no damages, low costs awards
- * Local protectionism – consequences of shutting down a big, local employer
- * Conflict of interest – AIC responsible for collecting fees for business licences, also tasked with law enforcement role
- * Lack of resources (budget/manpower)
- * Variation in IP competency level (awareness of and experience in dealing with infringer)
- * Consequences of taking wrongful raid action
- * Carries less weight than a judicial decision
- * Right of appeal to Court

Civil litigation (Wragge's Xu Jian's contribution)

- * Most litigation is between Chinese companies although increasing number of foreign IP litigants
- * In 2010, a total of 1,369 foreign-related IP civil cases of first instance were tried by People's courts at all levels
- * Courts in Beijing are most popular with foreign IP right holders (specialist judges familiar with IP cases)
- * Other Courts such as Shenzhen are also gaining popularity
- * Win/partial win rates (IP rights holder) for all types of IP infringement
 - * Average - 76%
 - * Beijing - 80%

Civil litigation – damages for IP infringement

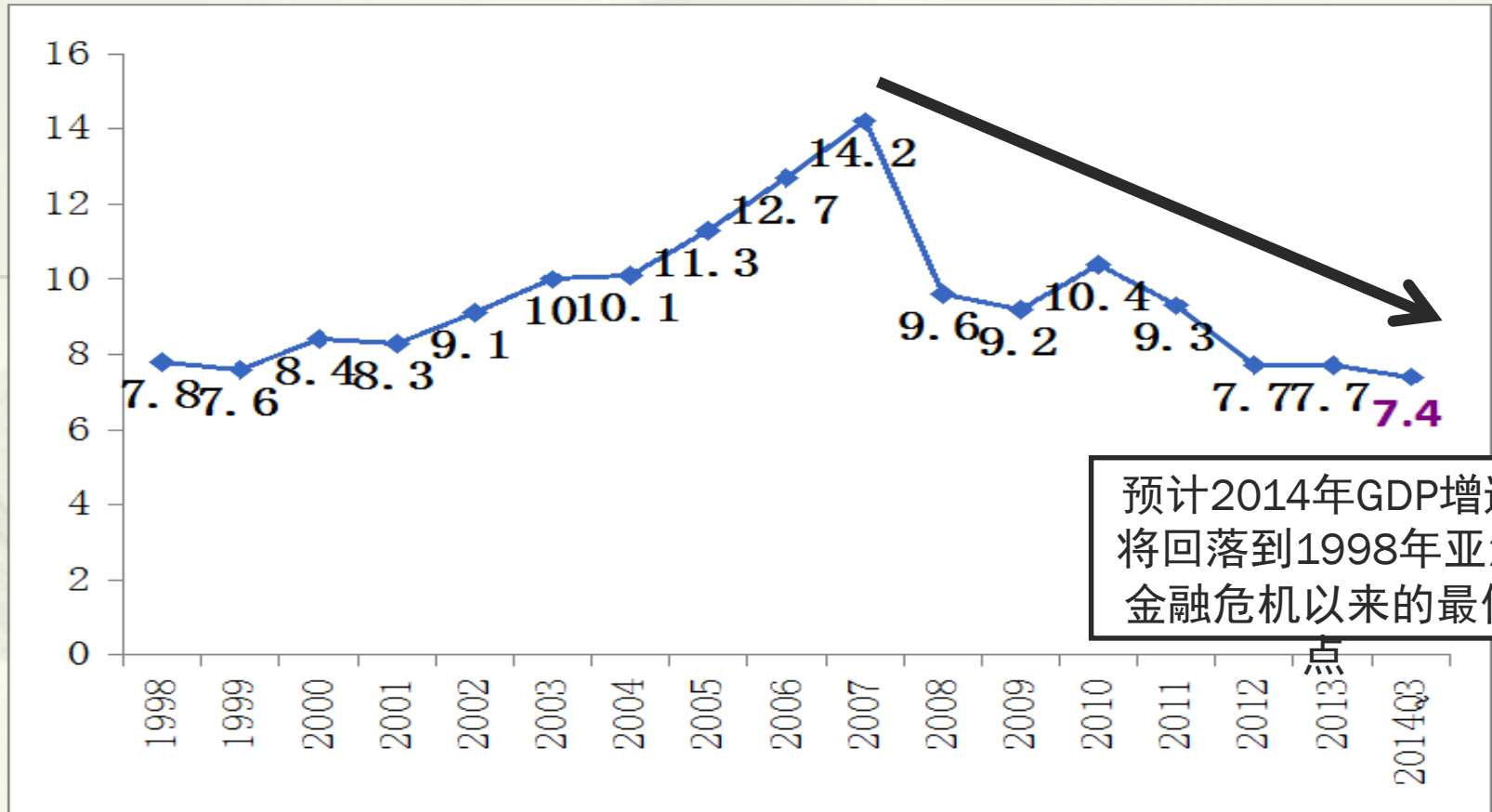
- * Generally, low level of damages (unofficial sources say about RMB 87,000)
- * Amendments now permit Court to order statutory damages up to 1 million RMB
- * Evidential difficulty in obtaining information required from the defendant to determine appropriate level of damages
- * Average awards by city:
 - * Beijing RMB 59,000
 - * Changsha (Hu'nan) RMB 91,500
 - * Shenzhen (Guangdong) RMB 33,500

2: The turning point for innovation driven development

- * 2.1 The investment driven model is not sustainable

As the technology gap with global level is close, business has to care more creation than imitation

1998年以来的GDP增速 (%)

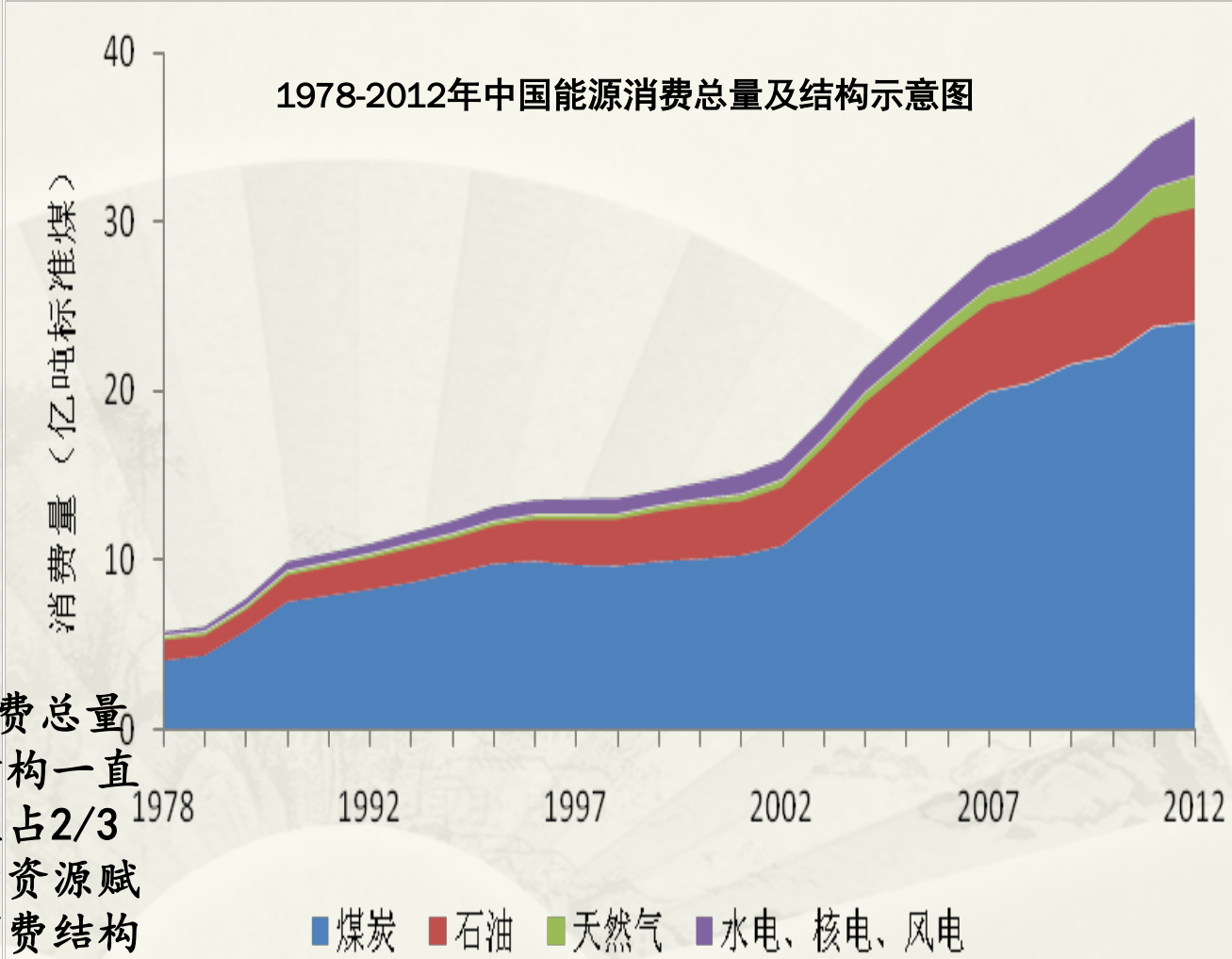


□数据来源：国家统计局

The energy challenge after investment driven strategy 中国的能源消费及挑战

Coal becomes the most important energy source for economic system, big challenge for air pollution

中国近20年一次能源消费总量整体呈上升趋势，且消费结构一直以煤炭为主，煤炭消费一直占2/3以上的份额。以煤炭为主的资源赋存与生产现状，决定了其消费结构也必然并且长期是以煤炭为主。



The challenge for innovation after thirty years high growth

- * As explained by a report co-authored by the World Bank and the Development Research Center of the State Council (2012), “China is turning to innovation as a means of achieving rapid and sustainable growth while coping with looming challenges associated with resource scarcities, climate change, and environmental degradation” (p.34).

2.2.From technocrats to economic leaders

- * In contrast to the third and fourth generation, the fifth generation – defined by Li (2008) as political elites born in the 1950s or later, and to which Xi Jinping and Li Keqiang belong, consists of a much more varied cohort in terms of academic education.
- * In particular, Li (2008) finds a “decline of the technocrats” and the concurrent “rise of leaders trained in economics, social science and law” (p.73)

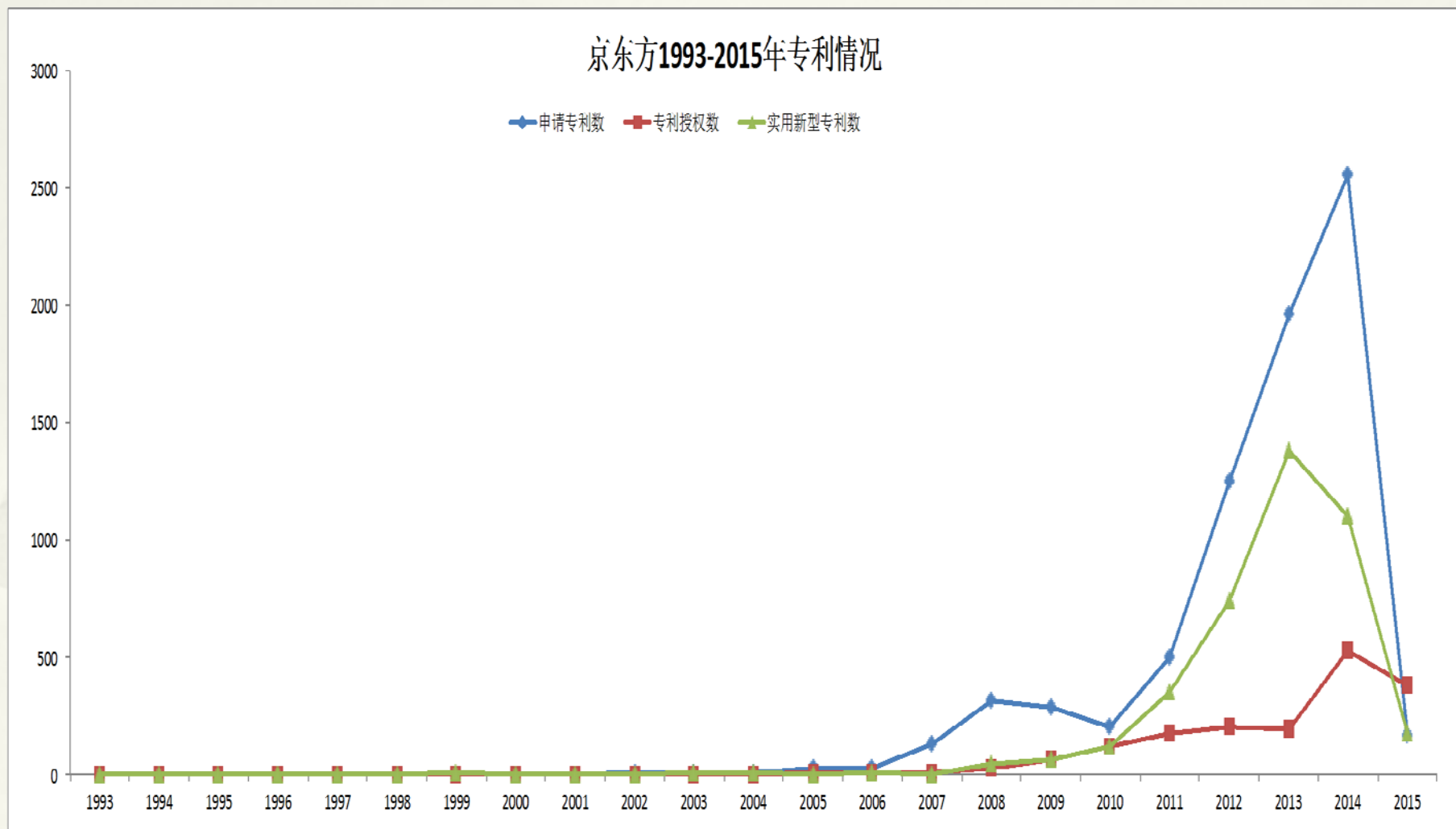
Different emphasize

- * While former President Hu Jintao and Prime Minister Wen Jiabao focused on science and technology as drivers of innovation,
- * President Xi Jinping and Prime Minister Li Keqiang have shifted the emphasis more towards markets, entrepreneurship and institutional development as key enablers and drivers of innovation.
- * Internet+ and entrepreneurship been highly emphasized by premier LI

2.3 Demand from global competition

- * The more close the gap with world leading company, the more R&D and awareness of IPR
- * Both private and SOEs follow the call of IPR after going global
- * Some industries such as Internet+ are running with equivalent pace with that of silicon valley,

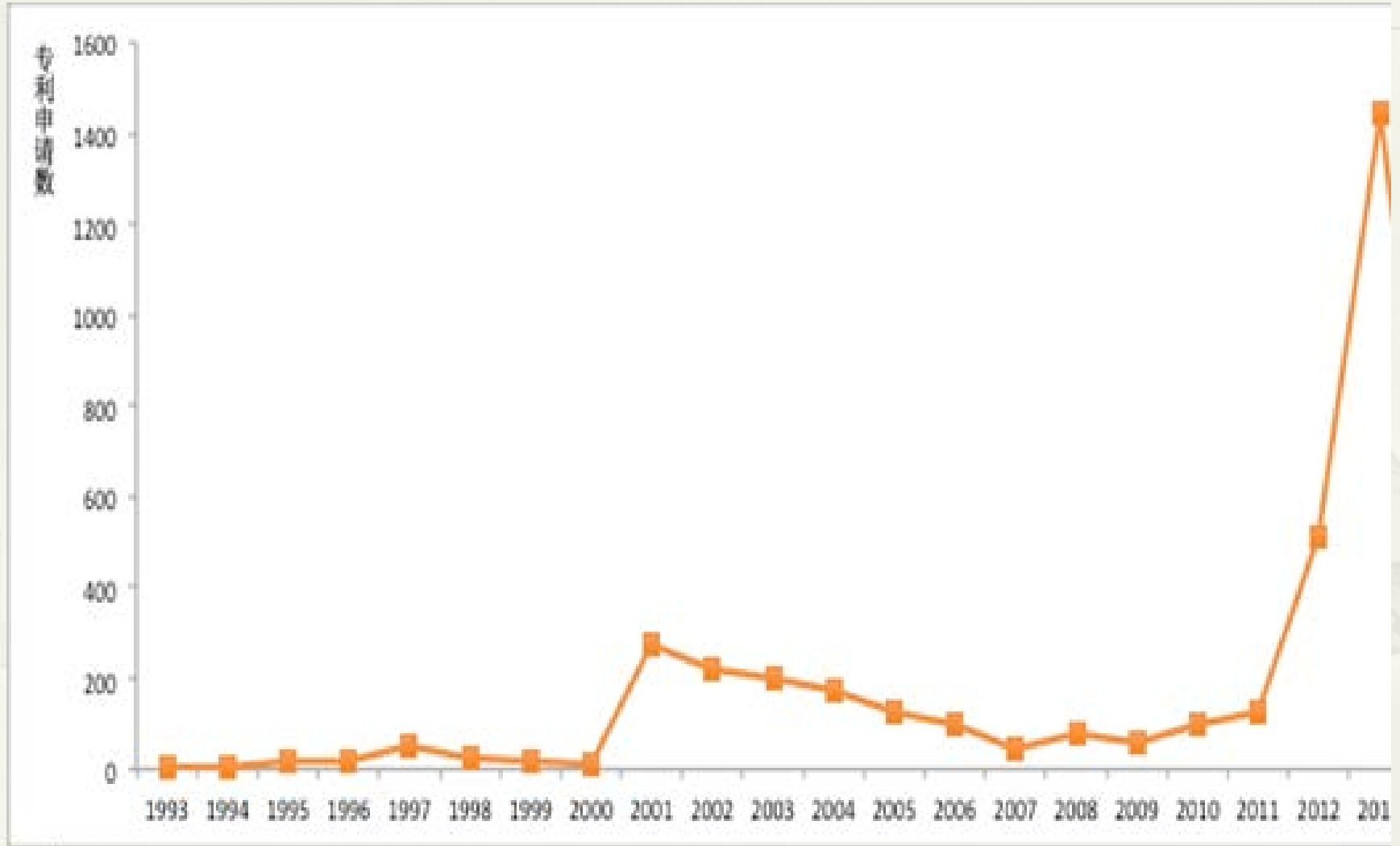
The case of Beijing Orient Enterprises BOE in TFT-LCD sector



Why there is patent boom for Patent in this large SOE, by interview

- * The set up of R&D center by 2011
- * The shift from technology driven to market driven
- * The building of 8.5 generation line for TFT-LCD
- * More global with many foreign experts hired for their R&D lab

Global patent application by BOE(domestic excluded , from 1993 on)



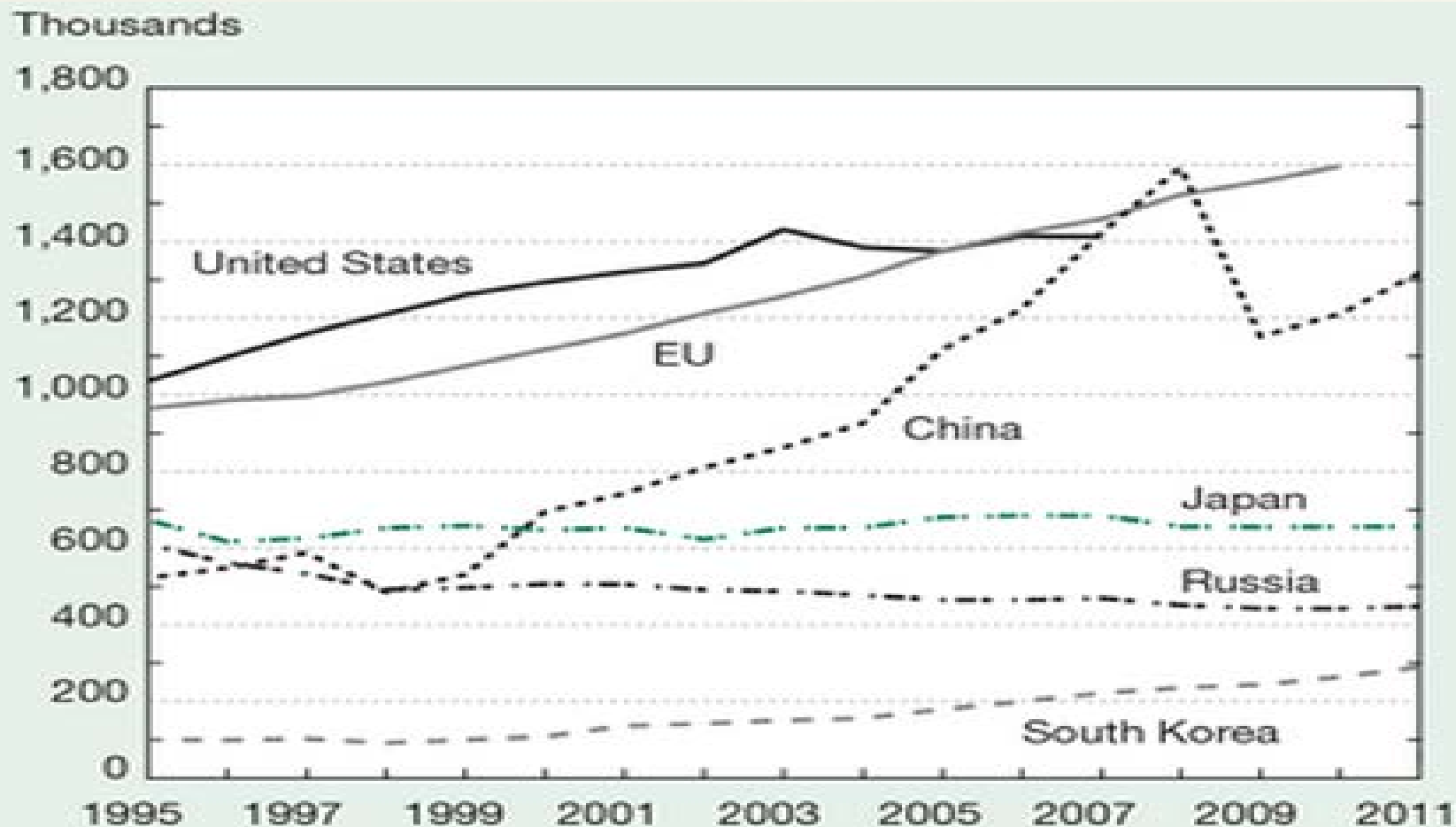
The contribution from foreign experts

Country of inventors 发明人国家	人数 number of inventor	所占百分比
CN (中国)	2481	94.01%
KR (韩国)	55	2.08%
US (美国)	28	1.06%
NO (挪威)	27	1.02%
DK (丹麦)	26	0.99%
FR (法国)	7	0.27%
BE (比利时)	6	0.23%
GB (英国)	3	0.11%
DE (德国)	2	0.08%
AR (阿根廷)	1	0.04%
CH (瑞士)	1	0.04%
IT (意大利)	1	0.04%
JP (日本)	1	0.04%

2.4 contribution from size of R&D people and returnees

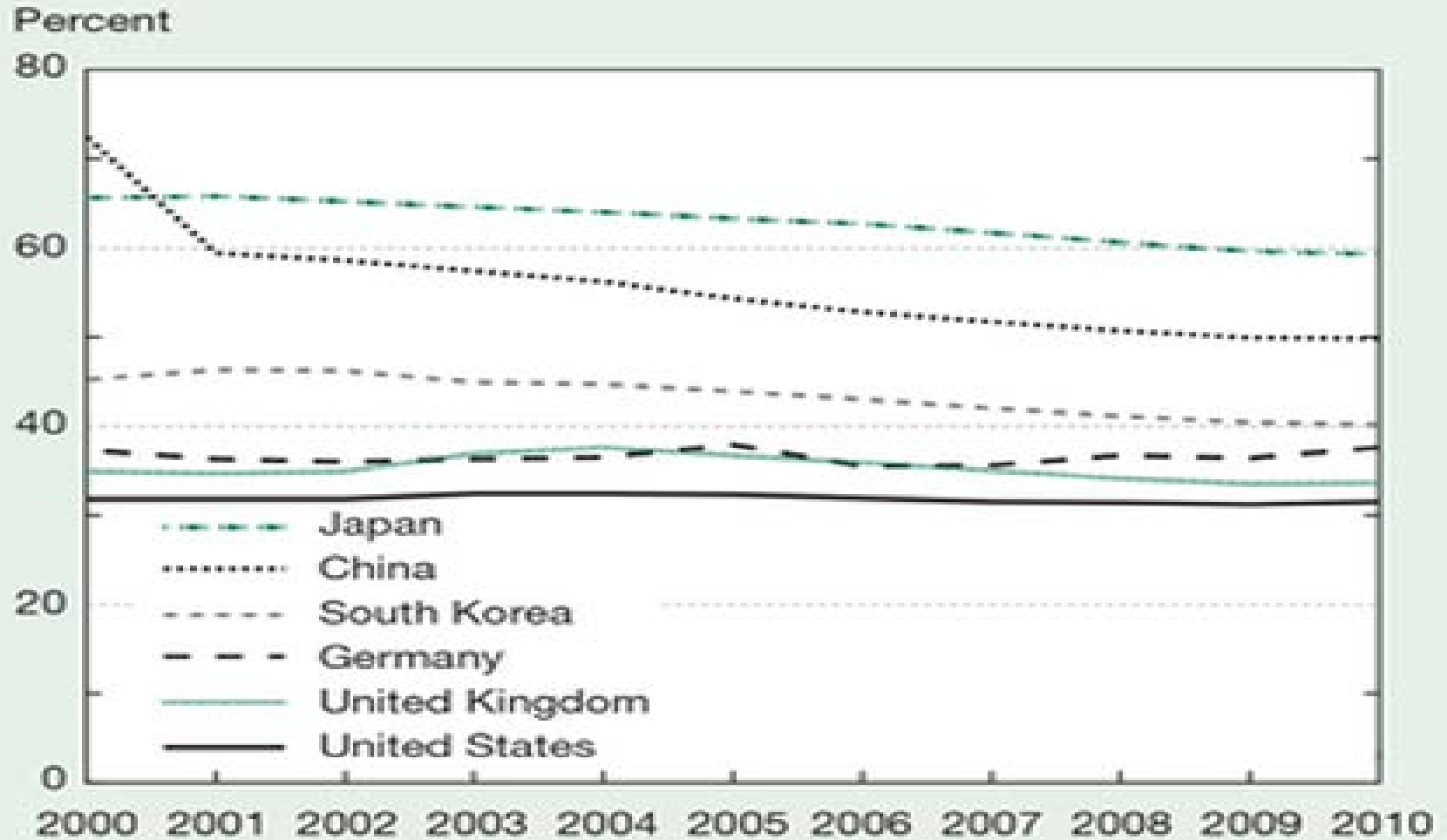


Fig. Estimated number of researchers in selected countries/regions: 1995-2011



Sources: National Science Board , 《Science and Engineering Indicators 2014》

Fig. S&E first university degrees as a share of all first university degrees, by countries: 2000-2010



Sources: National Science Board , 《Science and Engineering Indicators 2014》

图 2000-2013 R&D people in main countries 年主要国家 R&D人员总量变化情况

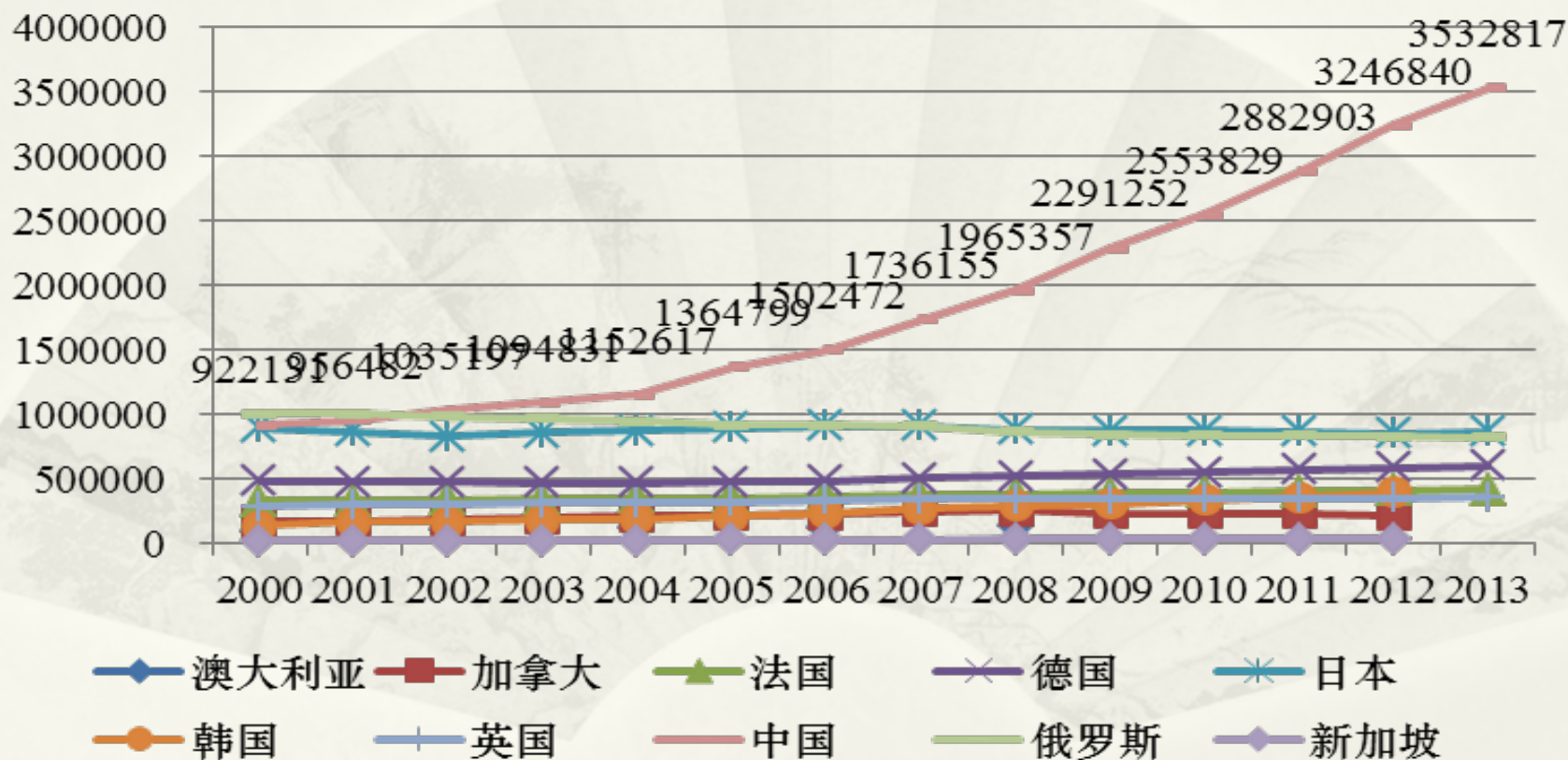
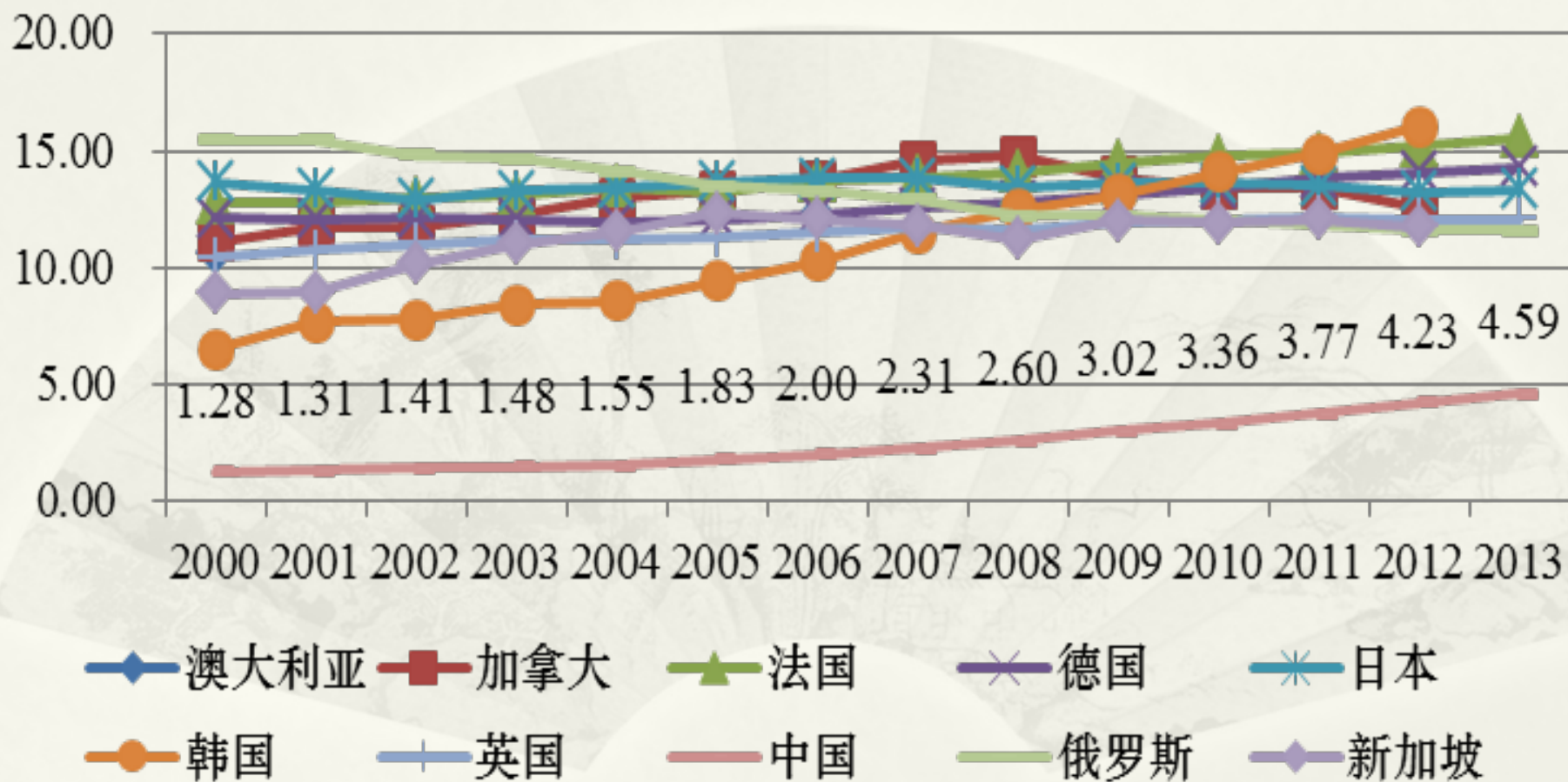


图 2000-2013年千名就业人员中R&D人员数量变化



数据来源: OECD Dataset: 《Main Science and Technology Indicators 2015》

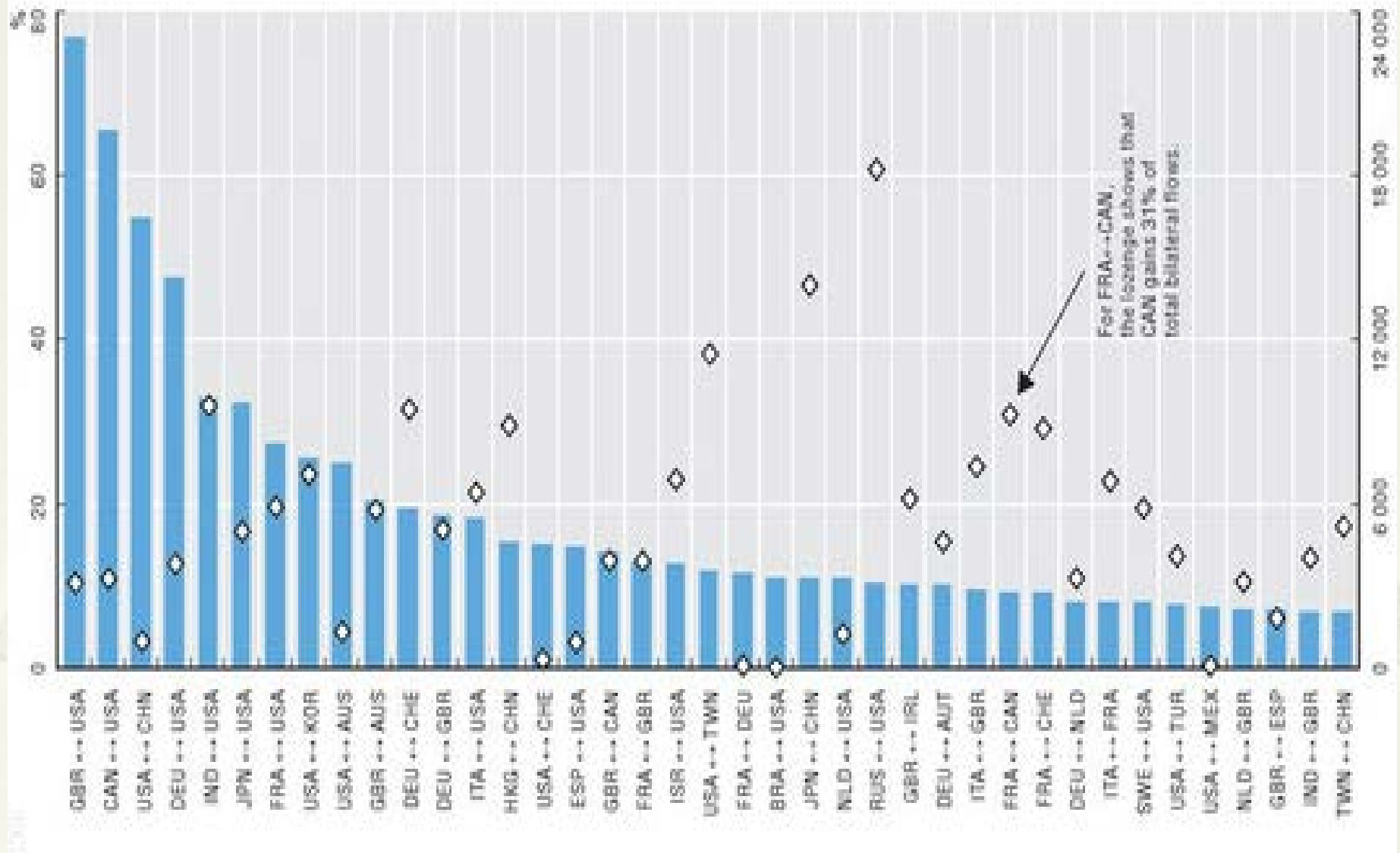
More Highly cited researchers in China

- 2014年6月，汤森路透（Thomson Reuters ISI Web of Knowledge）公布了全球“Highly Cited Researchers2014”（2014高引用科学家）名录，该名单由汤森路透采用最新数据和先进算法，通过对21个学科领域2002年至2012年被SCI收录的自然和社会科学领域论文进行分析和评估，并将所属领域同一年度他引频次在前1%的论文进行排名统计后得出。全球有3215名科学家入选，其中，排在前四位的是美国（1702人）、英国（304人）、德国（163人）和中国（含港澳台157人）

表 入选全球高被引科学家排名前十的国家

Country	Highly Cited Researchers 2014	Ratio (%)
America	1702	52.94%
UK	304	9.46%
German	163	5.07%
China	157	4.88%
Japan	98	3.05%
Canada	88	2.74%
France	82	2.55%
Netherland	77	2.4%
Switzerland	67	2.08%
Australia	65	2.02%

Fig. International flows of scientific authors,1996-2011,Largest bilateral flows, by first and last affiliation



For FRA-->CAN, the footnote shows that CAN gains 31% of total bilateral flows.

Different plans for talent returnees rather than production lines

➤ 千人计划thousand talents program

✓ “千人计划”首个国家级的海外高层次人才引进计划，2008年12月启动至今，已引进4180余名高层次人才创新创业人才。

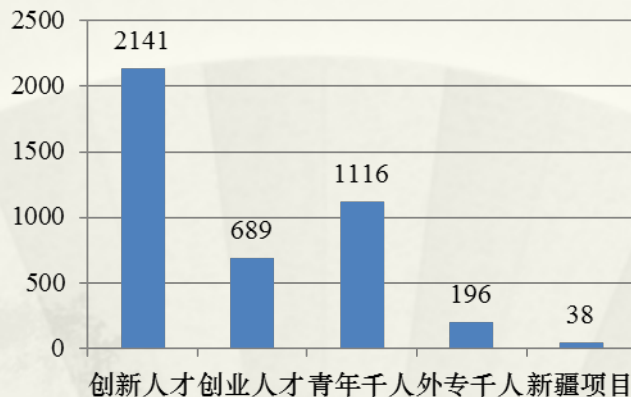


图 1-10批千人计划人才项目分布

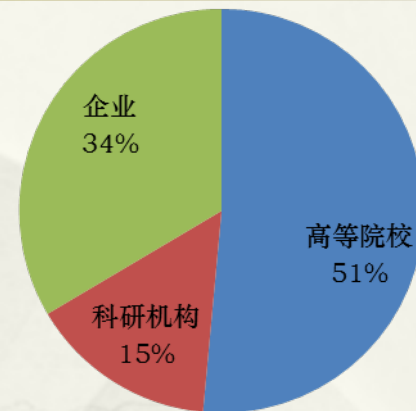


图 1-10批千人计划人才所在机构分布

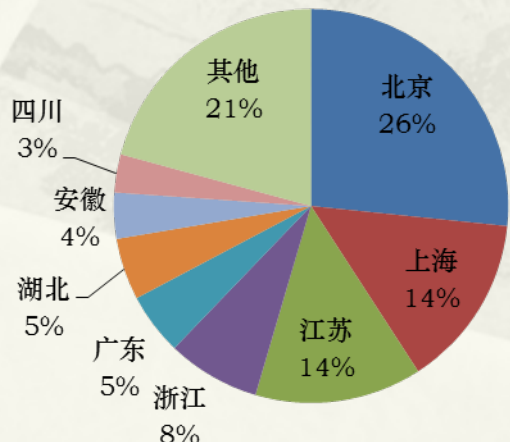


图 1-10批千人计划人才落地省份分布

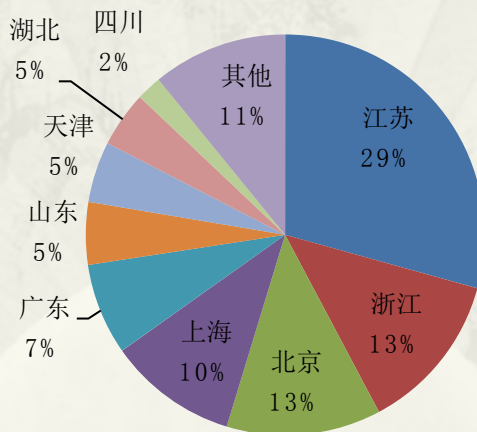


图 1-10批千人计划创业人才落地省份分布

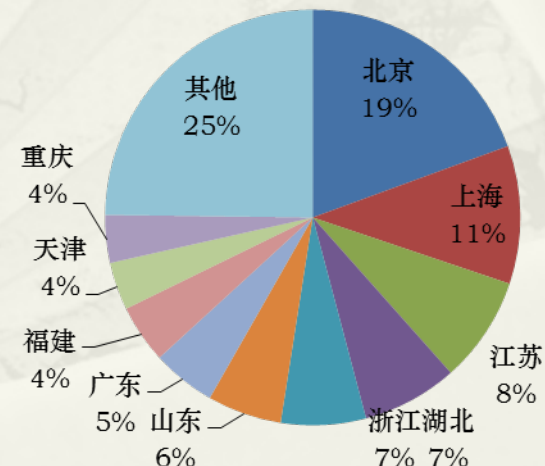


图 1-10批千人计划外专千人落地省份分布

2.5 Institutional reform for IPR protection according the latest national strategy for innovation driven development March 12,2015

- * IPR must be the basic institution for promoting innovation in china
- * Protection of IPR as mechanism for fair competition: civil criminal action, high compensation,
- * Three in one: Civil right, administration and national bureau of IPR into one, Special court for IPR
- * IPR securitization; bonds, financing,
- * New BD system: liberate of enforcement right of IPR to the hands of IPR creation agency

3. Conclusion

- * Chinese industrialization enters its second face and it calls for IPR than the earlier stage
- * Innovation driven development will push Chinese company to care more about creation
- * The closing gap with leading companies and the global competition
- * All contributes the shift from imitation to innovation and IPR protection
- * But the transformation is going on incrementally rather than in leap frog way.