



**stars China symposium 2019**  
**China's Moment of Truth - Thinking Big and Moving Fast**  
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## **Trends and Challenges of Innovation and IP in China**

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**Jason Shengce Ren**  
**Tongji University**



**上海国际知识产权学院**  
SHANGHAI | International College  
of Intellectual Property

# Content

## □ Trends of Innovation and IP in China

## □ Challenge of Innovation and IP in China

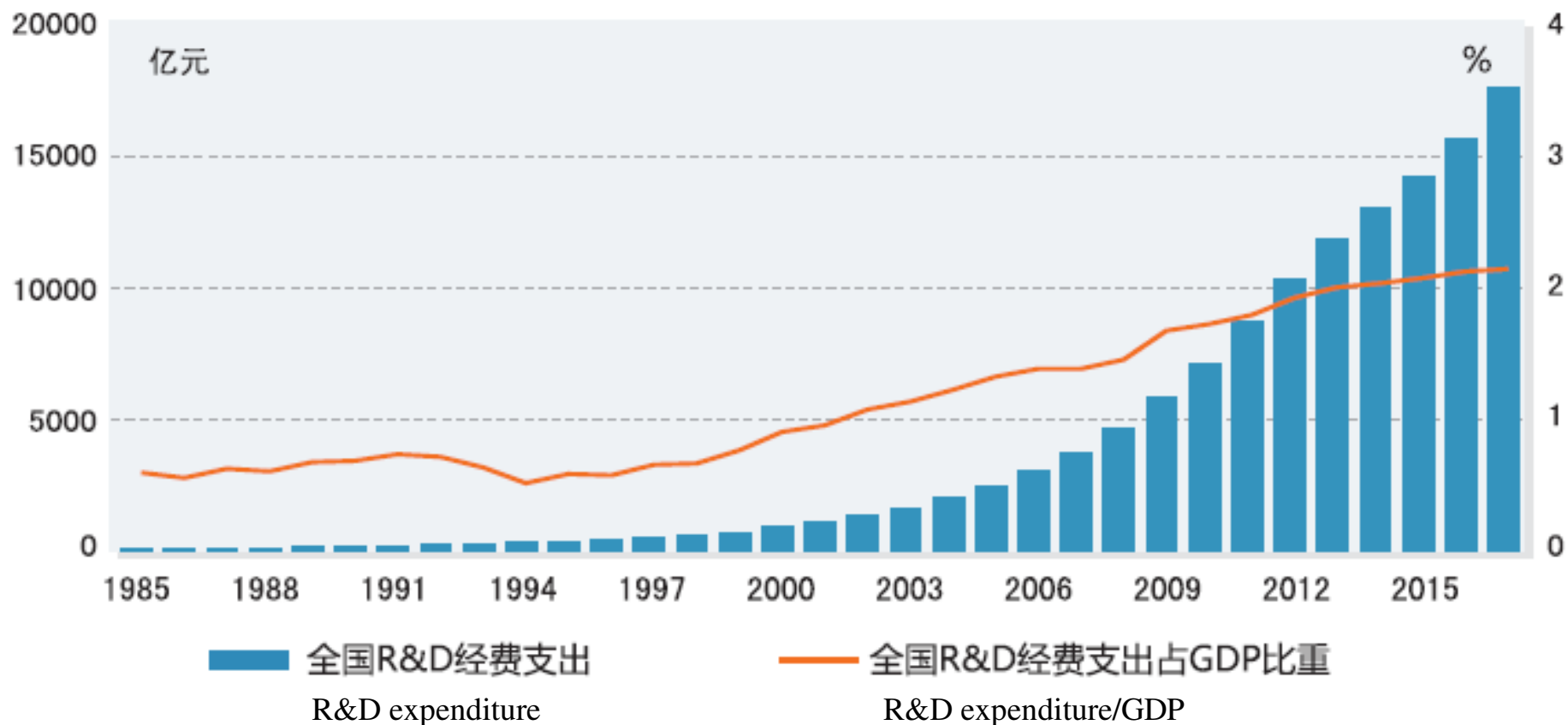


# The trends of innovation in China

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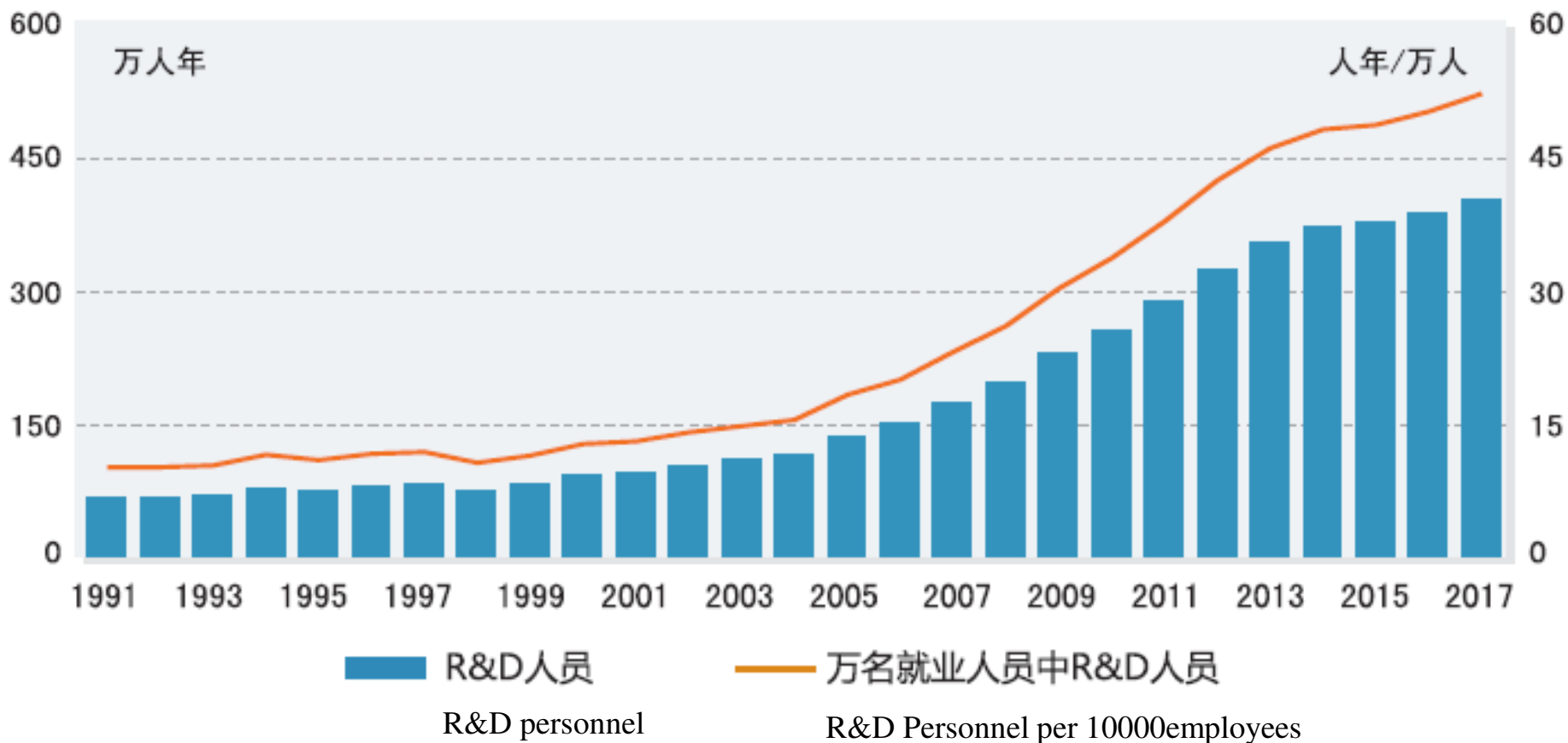
- R&D input
- R&D output
- Policy related to Science & Technology

## R&D Input: R&D expenditure increased dramatically



Sources: China Science and technology Indicators 2018, 中国科技统计指标2018 ([www.sts.org.cn](http://www.sts.org.cn))

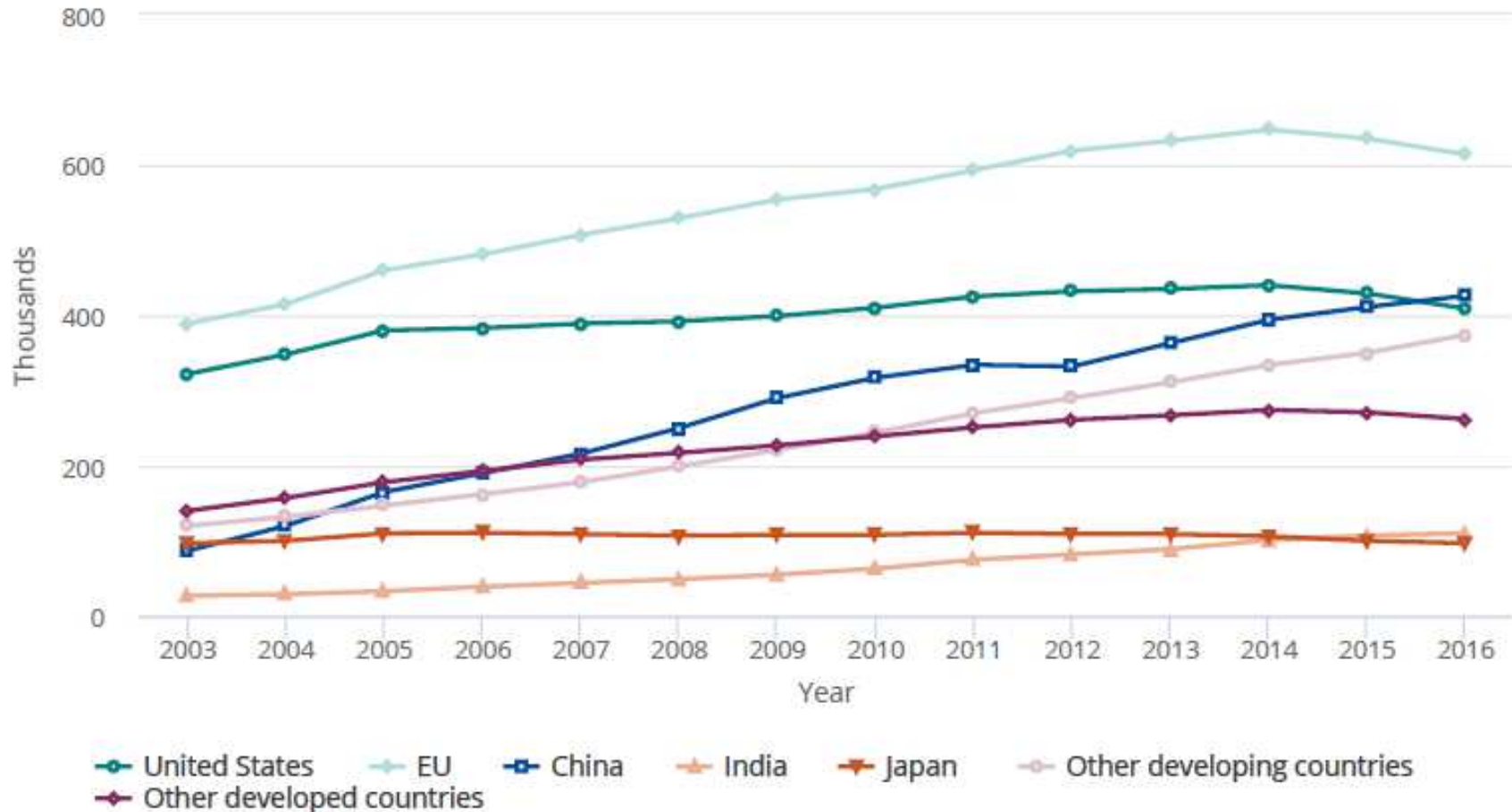
## R&D Input: R&D personnel also increased dramatically



Sources: China Science and technology Indicators 2018, 中国科技统计指标2018 ([www.sts.org.cn](http://www.sts.org.cn))

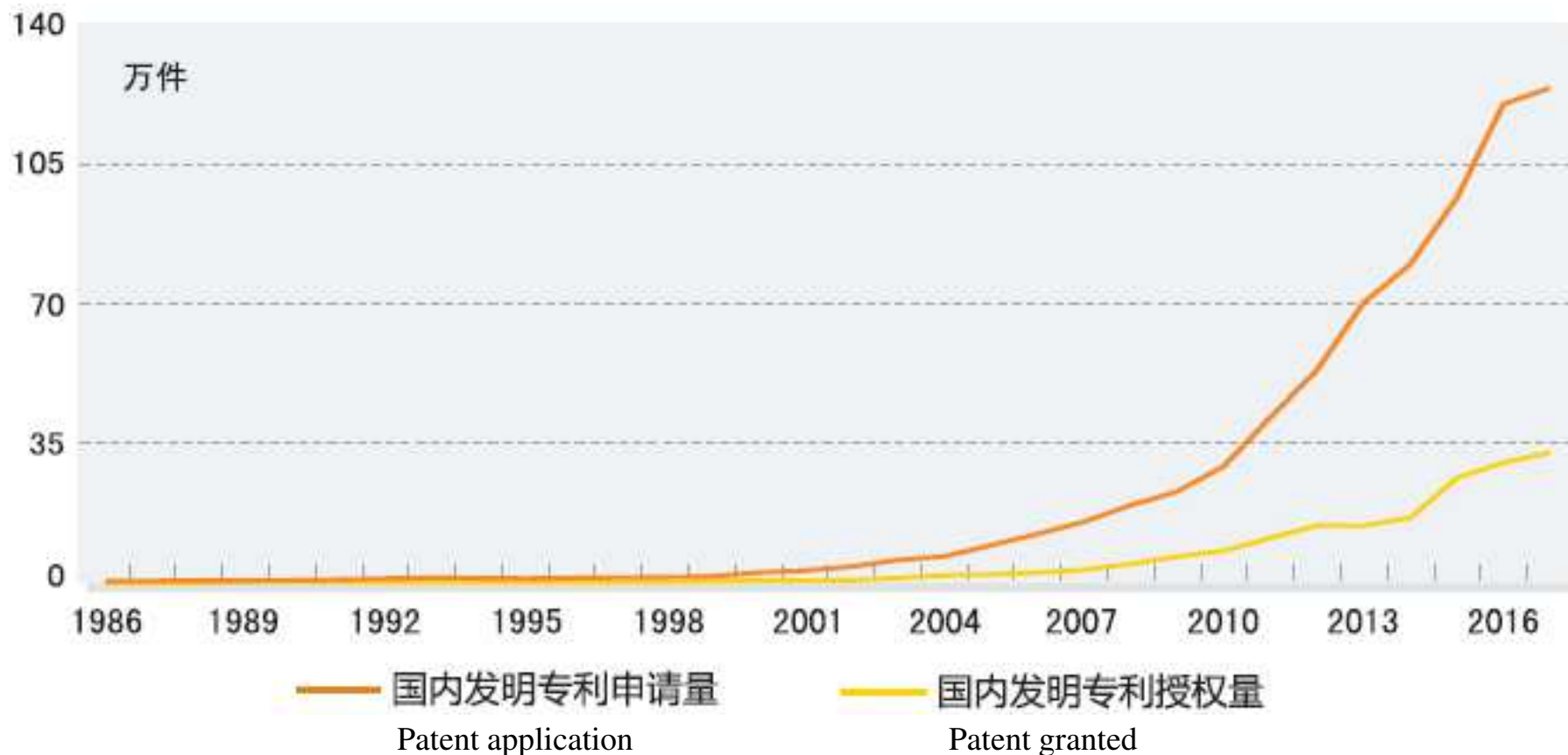
# R&D output: S&E publication is catching up

S&E articles, by selected region, country, or economy: 2003–16



Sources: US Science and Engineering Indicators 2018

## R&D output: the number of patent increased significantly



Sources: China Science and technology Indicators 2018, 中国科技统计指标2018 ([www.sts.org.cn](http://www.sts.org.cn))

# China GII (Global Innovation Index) rises up to 17<sup>th</sup> global

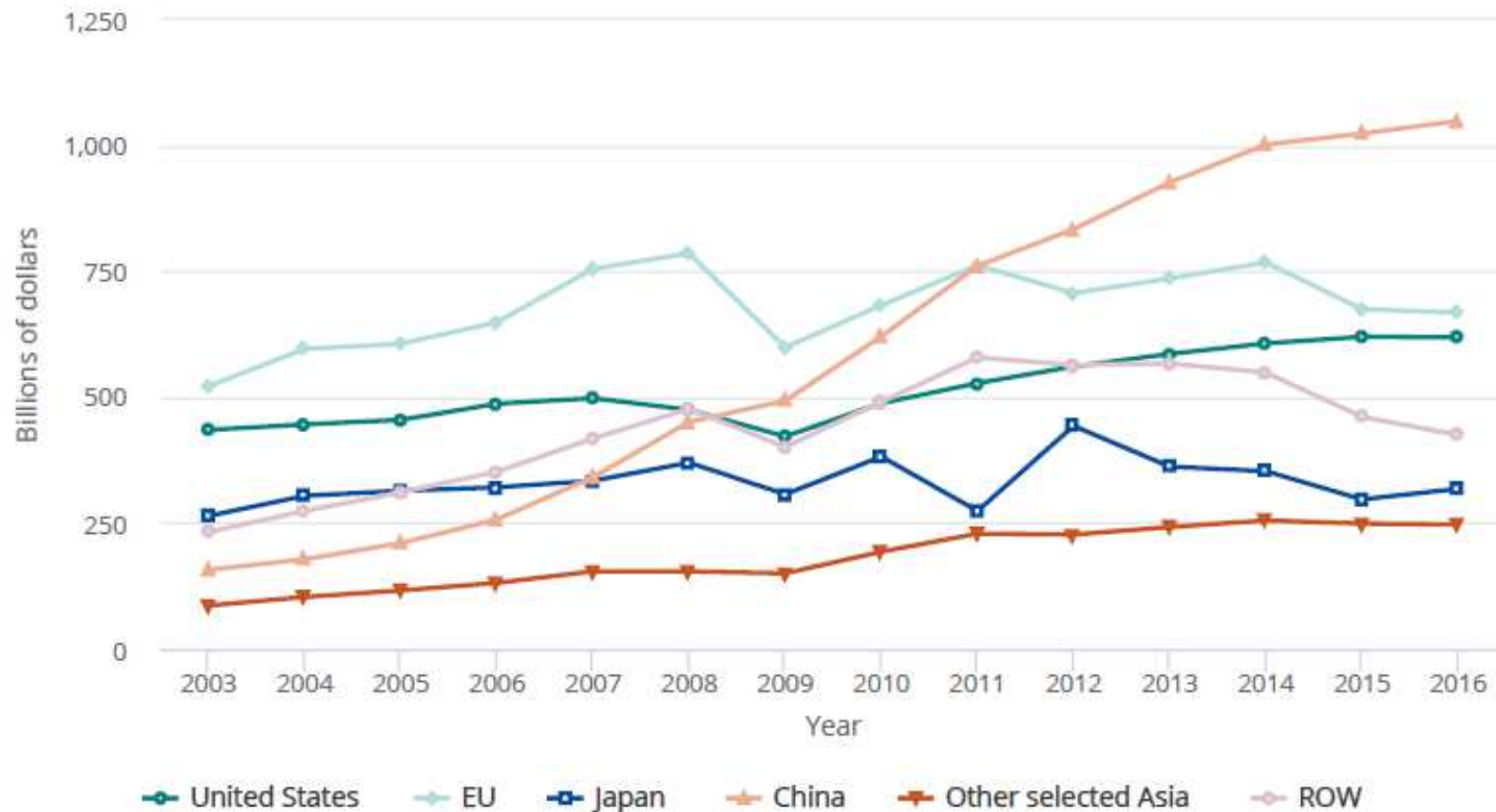
	Global Innovation Index	Innovation Input Sub-index	Innovation Output Sub-index	Innovation Efficiency Ratio
<b>High-Income economies (47 In total)</b>				
1	<b>Switzerland (1)</b>	Singapore (1)	<b>Switzerland (1)</b>	<b>Switzerland (1)</b>
2	<b>Netherlands (2)</b>	<b>Switzerland (2)</b>	<b>Netherlands (2)</b>	Luxembourg (2)
3	<b>Sweden (3)</b>	<b>Sweden (3)</b>	<b>Sweden (3)</b>	<b>Netherlands (4)</b>
4	United Kingdom (4)	United Kingdom (4)	Luxembourg (4)	Malta (7)
5	Singapore (5)	Finland (5)	Germany (5)	Hungary (8)
6	United States of America (6)	United States of America (6)	United Kingdom (6)	Germany (9)
7	Finland (7)	Denmark (7)	United States of America (7)	<b>Sweden (10)</b>
8	Denmark (8)	Hong Kong (China) (8)	Finland (8)	Estonia (12)
9	Germany (9)	<b>Netherlands (9)</b>	Ireland (9)	Ireland (13)
10	Ireland (10)	Canada (10)	Israel (11)	Israel (14)
<b>Upper-middle-income economies (34 In total)</b>				
1	<b>China (17)</b>	<b>China (27)</b>	<b>China (10)</b>	<b>China (3)</b>
2	<b>Malaysia (35)</b>	<b>Malaysia (34)</b>	<b>Bulgaria (34)</b>	Iran, Islamic Rep. (11)
3	<b>Bulgaria (37)</b>	<b>Croatia (42)</b>	<b>Malaysia (39)</b>	<b>Bulgaria (19)</b>
4	<b>Croatia (41)</b>	Russian Federation (43)	<b>Croatia (42)</b>	Turkey (25)
5	<b>Thailand (44)</b>	<b>Bulgaria (44)</b>	Turkey (43)	<b>Thailand (33)</b>
6	Russian Federation (46)	South Africa (48)	<b>Thailand (45)</b>	<b>Croatia (37)</b>
7	<b>Romania (49)</b>	<b>Romania (49)</b>	Iran, Islamic Rep. (46)	Costa Rica (43)
8	Turkey (50)	Colombia (50)	<b>Romania (48)</b>	<b>Romania (47)</b>

Sources: WIPO, 2018 Global innovation index



# Middle-High tech output goes steadily up

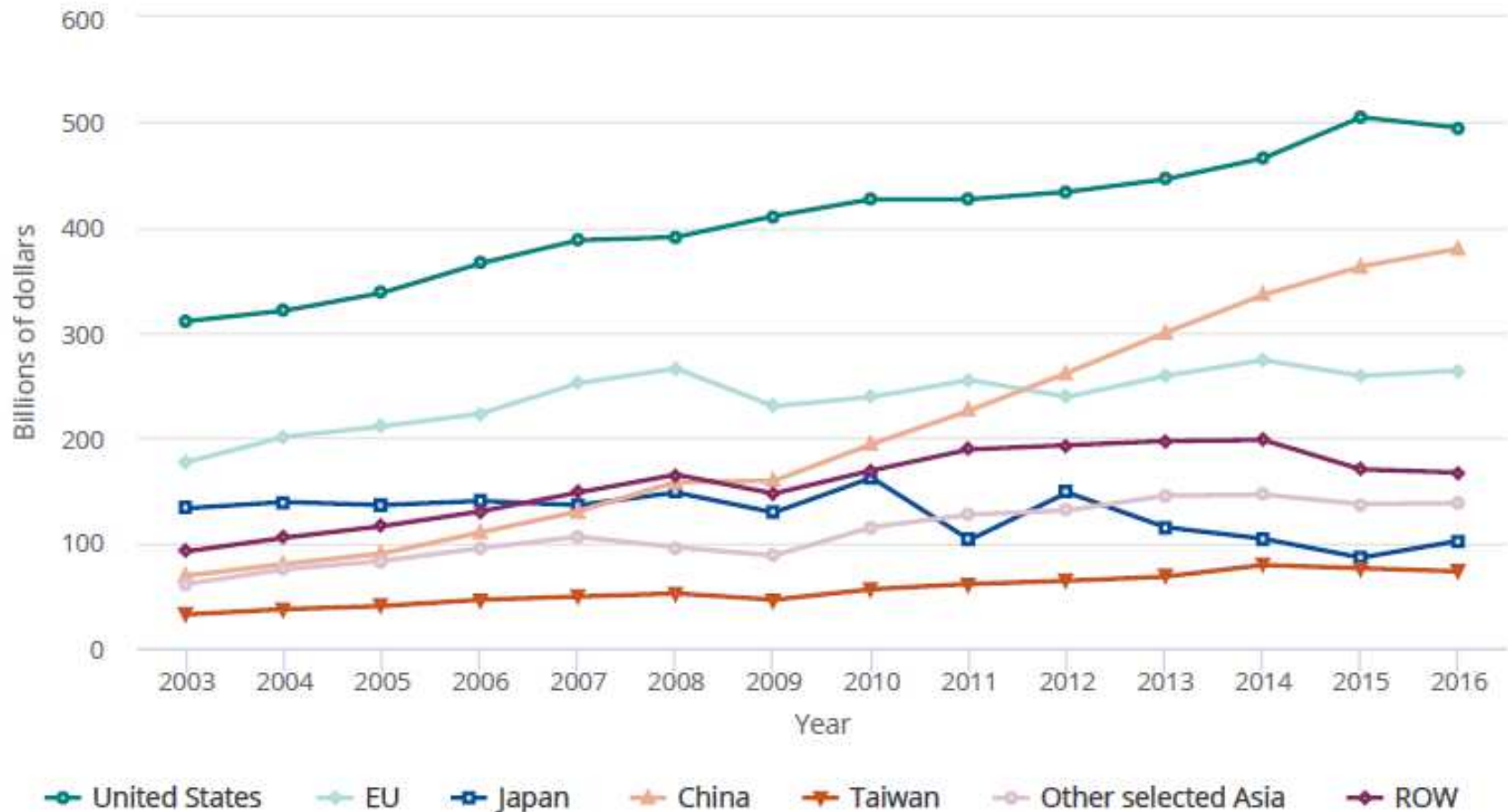
Output of MHT manufacturing industries for selected regions, countries, or economies: 2003–16



Sources: US Science and Engineering Indicators 2018

# Hightech output is still in the process of catching up

Output of HT manufacturing industries for selected regions, countries, or economies: 2003-16



Sources: US Science and Engineering Indicators 2018

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## R&D policy coming into the center of national strategy

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- 1978, **National Conference on Science**
  - The spring of Science.
- 1985, **Decision of the Central Committee of the Communist Party of China on Reforming the System of Science and Technology**
- 1995, **Decision on Accelerating Scientific and Technological Progress**,
  - the strategy of invigorating the country through science and education
- **2001, Tenth Five-Year Plan (2001-2005)**
  - Proposing the **Construction of National Innovation System**
- 2006, **National Conference on Science**
  - Put forward the strategy of **independent innovation and building an innovative country**
  - Outline of the National Medium-and Long-Term Science and Technology Development Plan (2006—2020)
- 2012, Eighteenth National Congress of the Communist Party of China (2012)
  - **Implementing Innovation-driven Development Strategy**
- 2016, **Outline of National Innovation-Driven Development Strategy**
- 2017, Nineteenth National Congress of the Communist Party of China:
  - **Innovation is the first driving force to lead China development**
  - **speed up to construct innovative country**

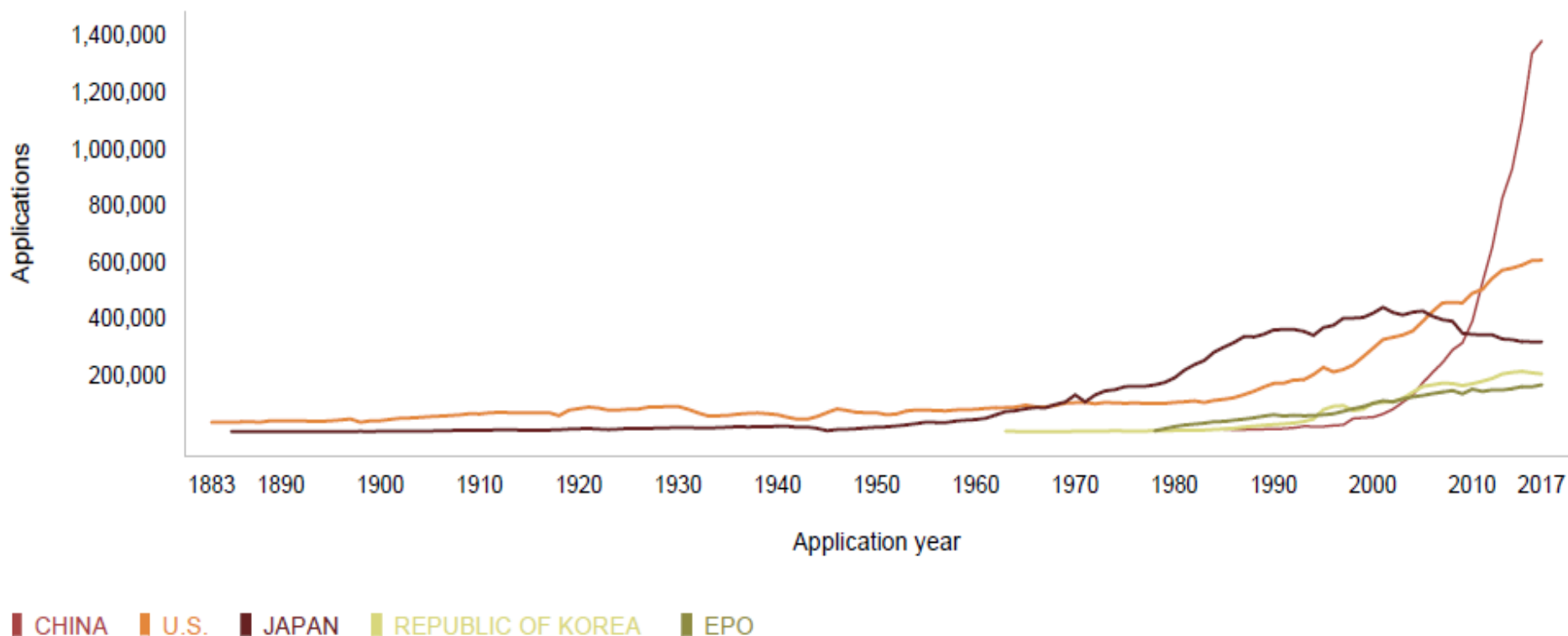
## The trends of IP in China

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- Amount of patent
- Patent legal system and Policy

# The amount of patents application come from 0 in 1984 to N in 2017

## A7. Trend in patent applications for the top five offices, 1883–2017



Sources: WIPO, World Intellectual Property Indicators 2018

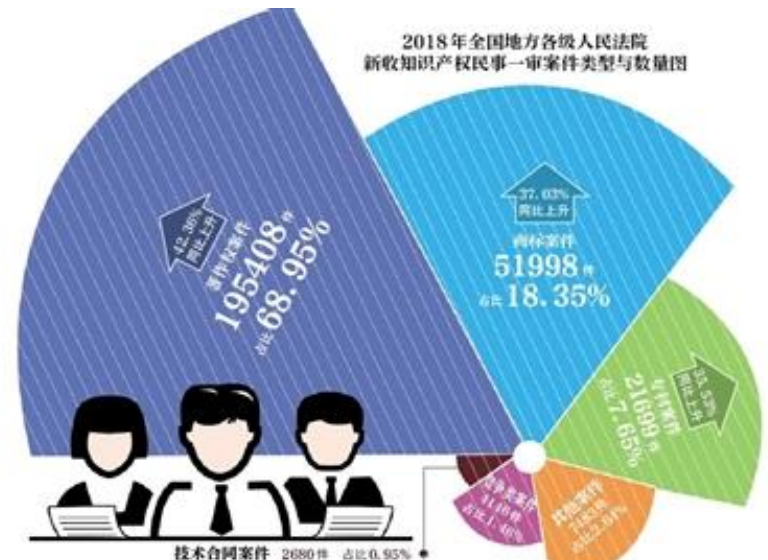
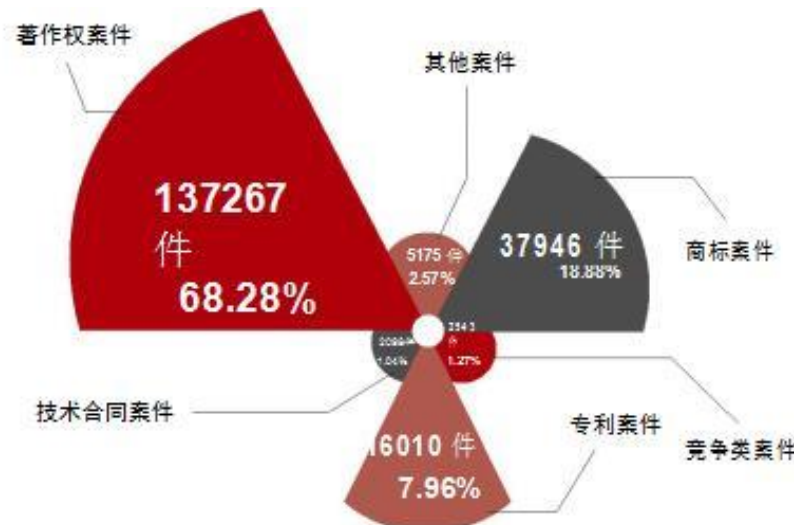
# The judicial practices in IP is strengthened

## ■ Increasing number of intellectual property cases(知识产权案件数量攀升)

– 2018: **334,951** New case ,this number increase **97,709**, 41.19% more than 2017 .

## ■ The trial quality is steadily improving(审判质效稳步向好)

- Over the past five years, the national courts have concluded **683,000** cases of first instance of various intellectual property rights, an average annual increase of 19.4%
- The average annual closing rate of civil first instance cases of intellectual property rights is **94.24%**. The number of cases concluded has risen sharply and a high rate of cases closed has been maintained all the time.



Source: Supreme People's court, *Judicial Protection of Intellectual Property Rights in Chinese Courts White book*

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# The patent related law and policy is strengthened

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## ■ Patent Law

- 1985 v1
- 1992 v2 Patents for Pharmaceuticals, Chemicals and Foods
- 2000 v3 WTO
- 2019 v4 Strengthen the protection of intellectual property rights, improve the system of punitive damages for infringement, and substantially increase the cost of infringement

## ■ Strategy:2008:Outline of National Intellectual Property Strategy

## ■ Judicial practice

- On August 31, 2014, the 10th Session of the Standing Committee of the Twelfth National People's Congress voted to adopt the Decision on the Establishment of Intellectual Property Courts in Beijing, Shanghai and Guangzhou. (2014年8月31日，十二届全国人大常委会第十次会议表决通过了《关于在北京、上海、广州设立知识产权法院的决定》)
- On Jan.1,2019, the Intellectual Property Court of the Supreme People's Court was inaugurated in Beijing.(2019年1月1日，最高人民法院知识产权法庭在北京揭牌成立) If an intellectual property case is appealed or applied for reconsideration, it shall be tried by the Intellectual Property Court of the Supreme People's Court (知识产权案件上诉或者申请复议的，由最高人民法院知识产权法庭审理)
- Since 2017, 16 central cities, including Nanjing, Suzhou, Wuhan, Chengdu, Hangzhou, Ningbo, Hefei, Fuzhou, Jinan, Qingdao, Shenzhen, Tianjin, Zhengzhou, Changsha, Xi'an and Nanchang, have established intellectual property courts(2017年以来，在16个城市设立知识产权法庭)

# Content

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□ Trends of Innovation and IP in China

□ Challenge of Innovation and IP in China



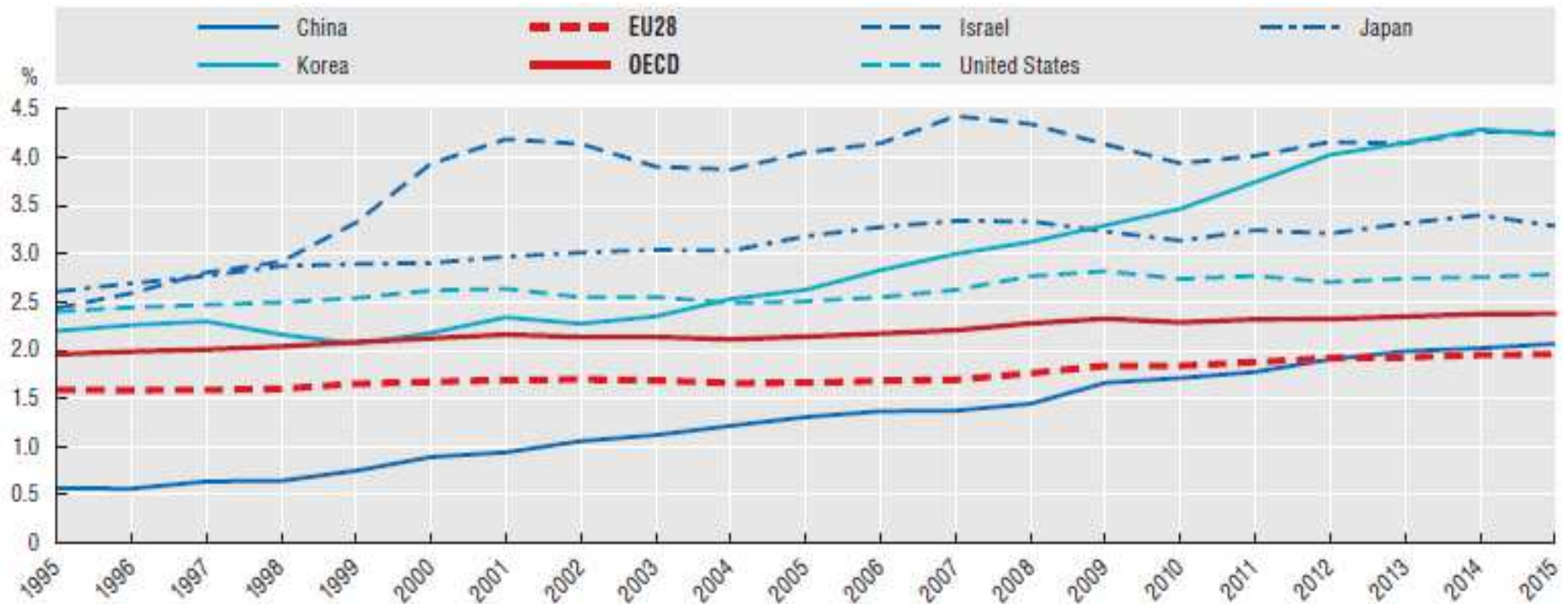
# The Challenges of Innovation in China

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- Quality of Innovation
- Originality of Innovation
- Institution and policy for Innovation

# R&D expenditure need to grow rapidly

Trends in total R&D performance, OECD and selected economies, 1995-2015



Source: OECD, Main Science and Technology Indicators Database, <http://oe.cd/msti>, July 2017.

# Quality of innovation should keep upgrading

**Figure 5.1: Metrics for quality of innovation: Top 10 high- and top 10 middle-income economies**

**Source:** Global Innovation Index Database, Cornell, INSEAD, and WIPO.

**Note:** Numbers to the left of the economy name are the innovation quality rank. Economies are classified by income according to the World Bank Income Group Classification (July 2017). Upper- and lower-middle income categories are grouped together as middle-income economies.

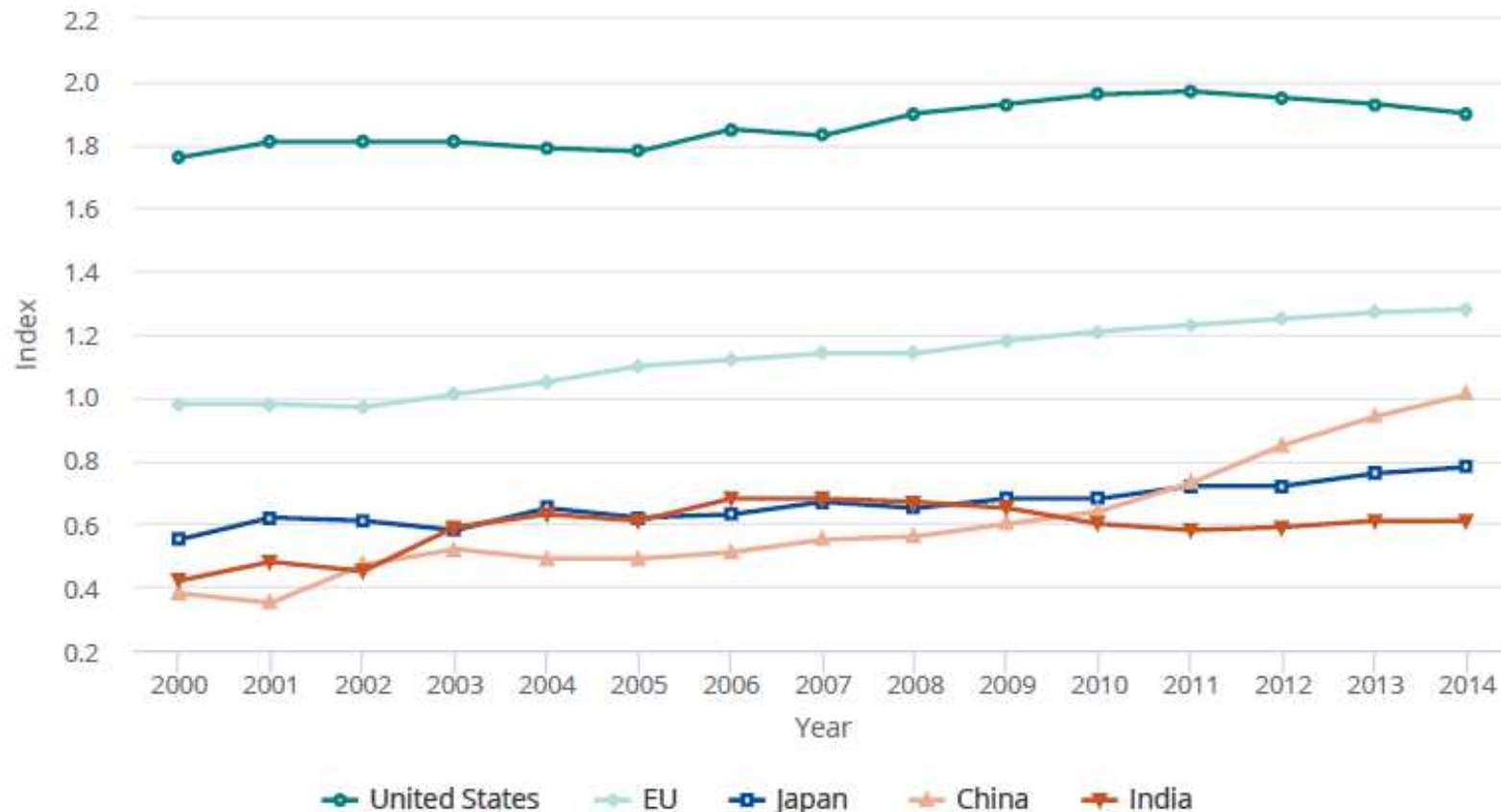


Sources: WIPO, 2018 Global innovation index

# Quality of innovation need to be improved

## ■ Originality of innovation need to be increased

S&E publication output in the top 1% of cited publications, by selected region, country, or economy: 2000-14



Sources: US Science and Engineering Indicators 2018

## **Institution and policy of innovation need to be optimized**

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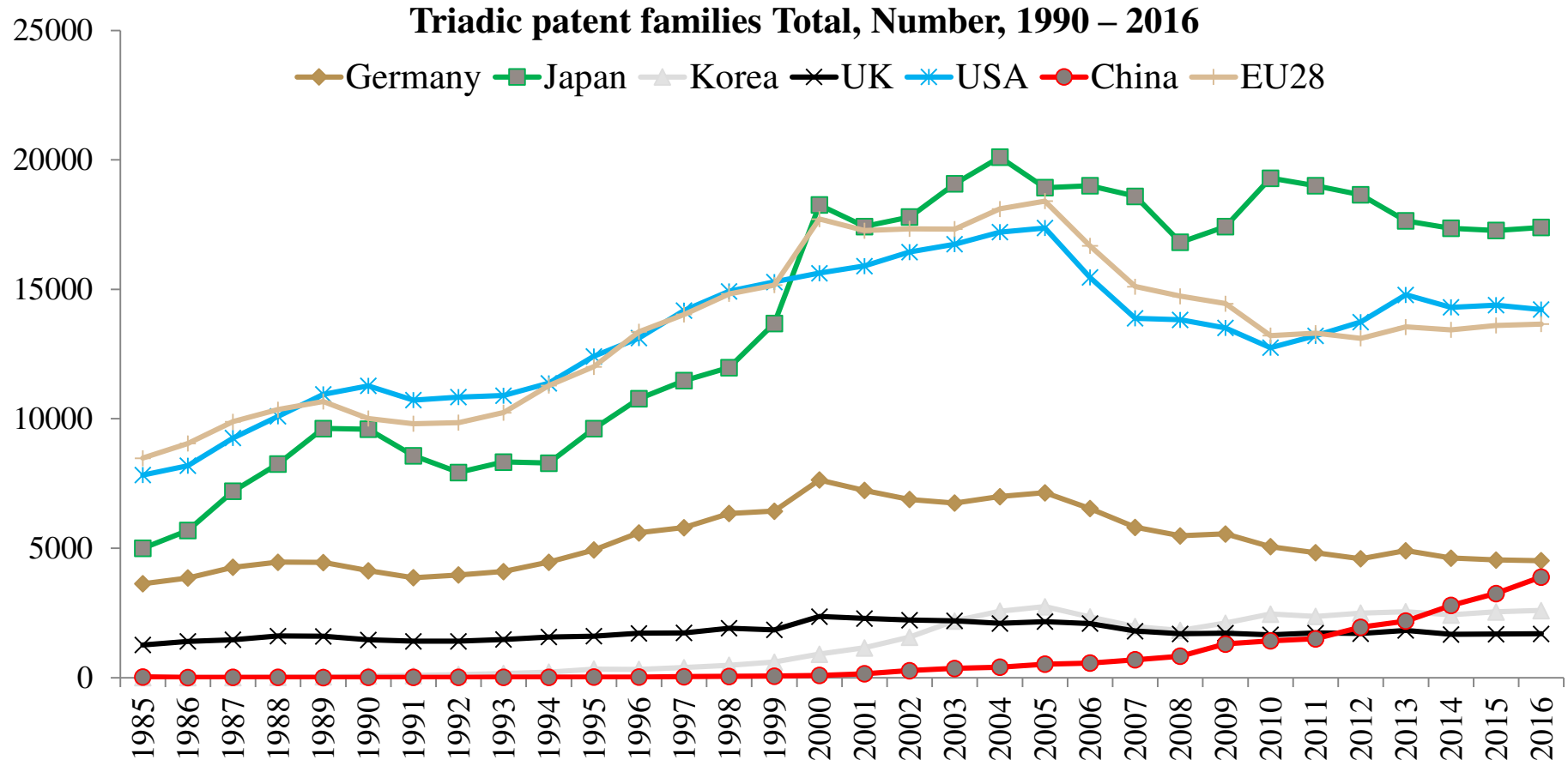
- Talent Assessment and so many things related- to abolish five ‘only’(破五唯) :
  - Only Diploma
  - Only Title
  - Only professional ranks
  - Only papers
  - Only Awards
- Research Project : to be more autonomic (科研自主权)
- Technology Transfer and commercialization: to motivate stakeholders
- Among others

# The Challenges of IP in China

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- Quality of IP
- Quality of IP Policy and other IP capacity

# Quality of IP need to be improved



Source: OECD Triad patent data. [https://www.oecd-ilibrary.org/industry-and-services/triadic-patent-families/indicator/english\\_6a8d10f4-en](https://www.oecd-ilibrary.org/industry-and-services/triadic-patent-families/indicator/english_6a8d10f4-en)

## Quality of IP Policy and other IP capacity need to be strengthened

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- Commercialization of IP need to be strengthened
- Protection of IP need to be strengthened
  - Strict Protection, Great Protection, Quick Protection and Equal Protection(严保护、大保护、快保护、同保护)
- Institution and policy related to IP need to be optimized



## Conclusions

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- Trends of Innovation in China
  - R&D input
  - R&D output
  - Policy
- Trends of IP in China
  - Amount of patent
  - Law and Policy
- Challenges of Innovation in China
  - Quality of Innovation
  - Originality of Innovation
  - Institution for Innovation
- Challenges of IP in China
  - Quality of IP
  - Quality of IP Policy and other IP capacity

**Thanks!**

**Jason Shengce Ren,  
PhD., Professor  
renshengce@tongji.edu.cn  
Phone:13564497769(Wechat)**



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