

R&D investment and its challenges in Korea

2019. 6. 12

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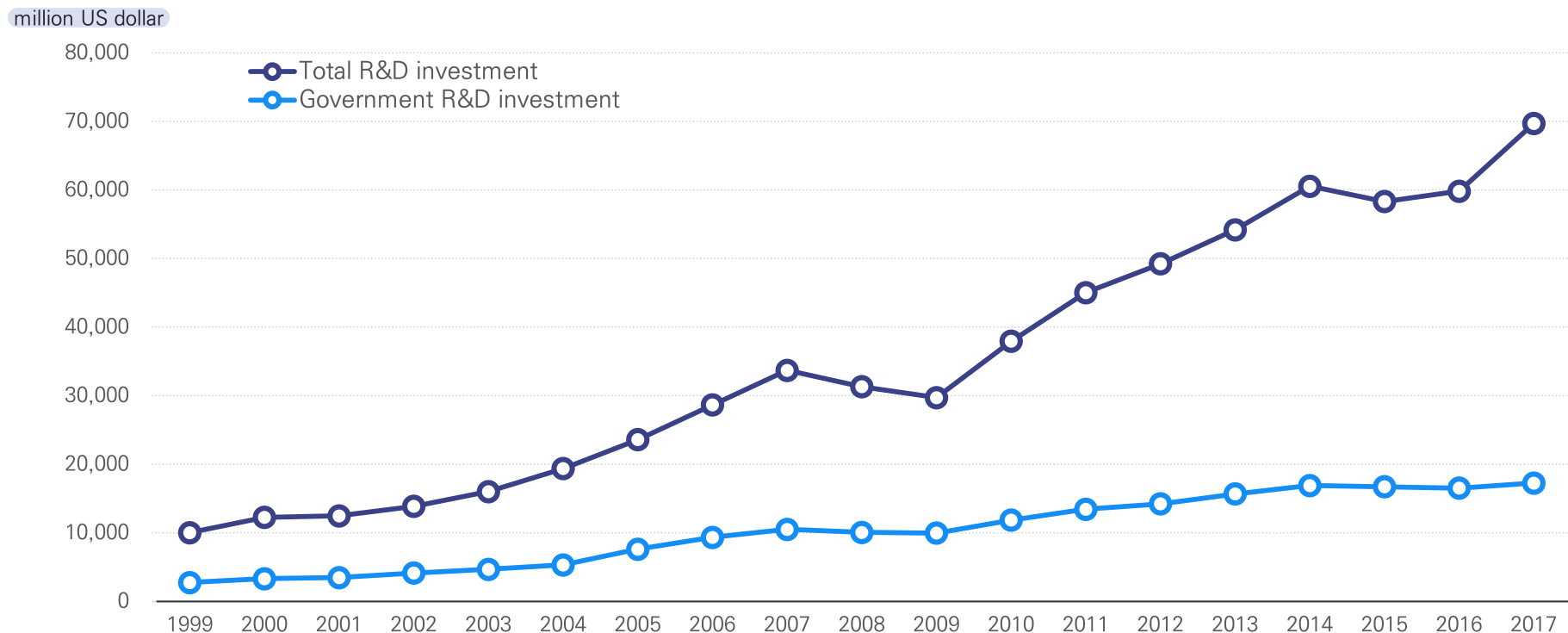
**KISTEP
(Korea Institute of Science and Technology
Evaluation and Planning)**

Total R&D Investment increase trends ('99~'17)

→ Ratio of Total R&D investment is 4.55% of GDP('17): 1st among OECD countries

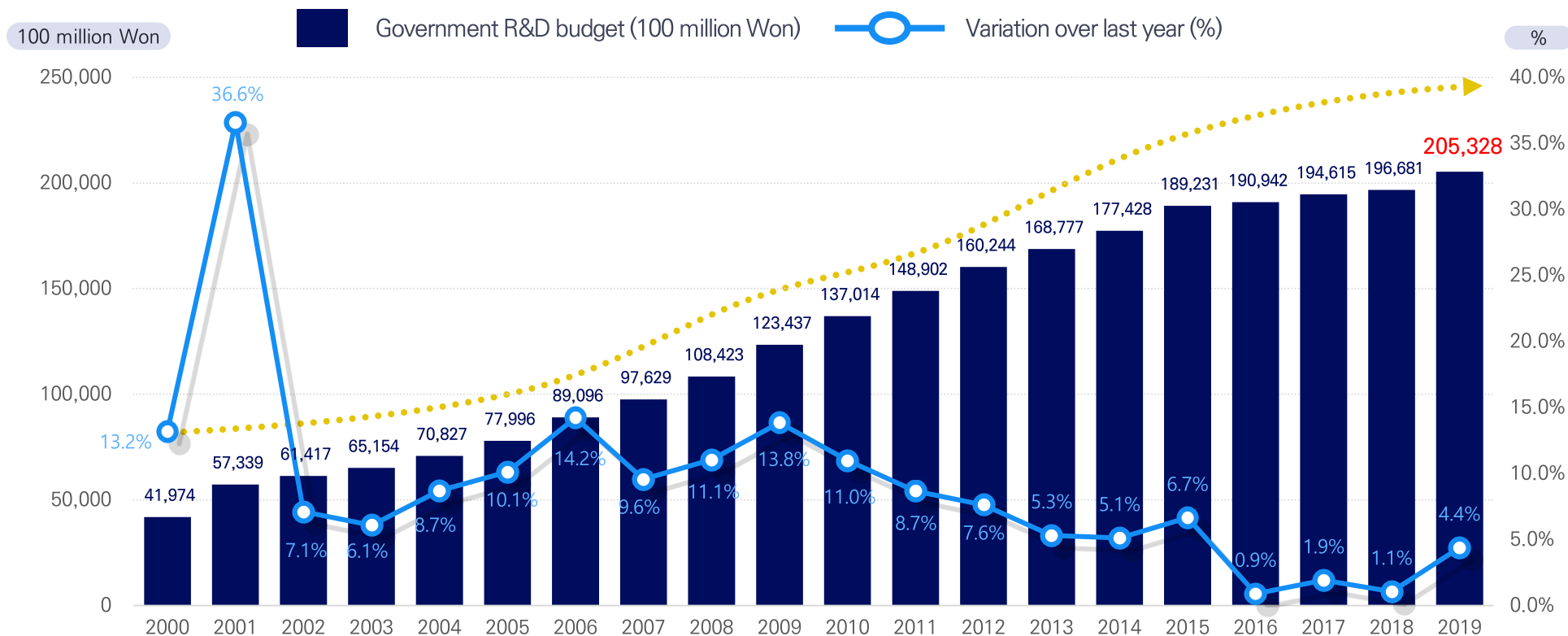
4.55% is composed of private sector (3.43%) and government (1.12%)

Total R&D Investment Vs. Government R&D investment)



When government R&D budget amounts to 20 trillion Won('19), performance against investment became rising issue

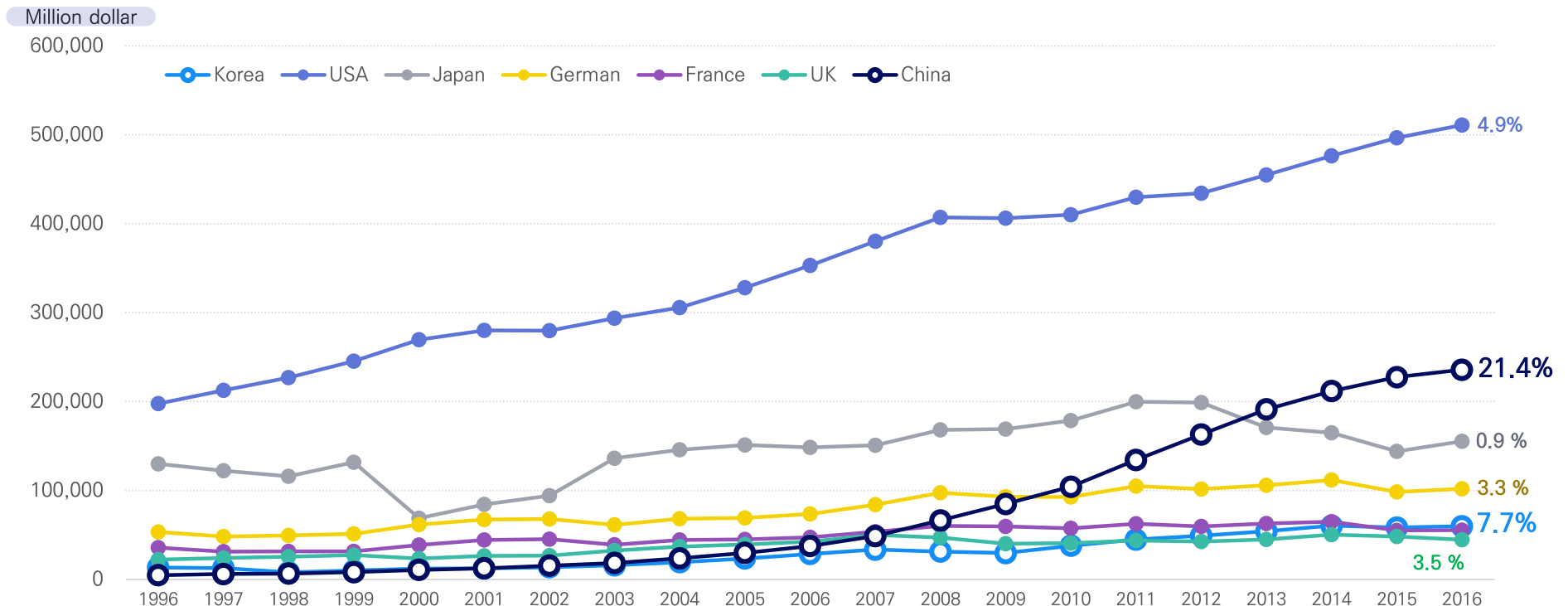
Korea government R&D budget trends



Major countries' total R&D budget is gradually increasing ('99~'16)

➔ Average Annual Increasing Rate : China (21.4%), Korea (7.7%), USA (4.9%), UK (3.5%)

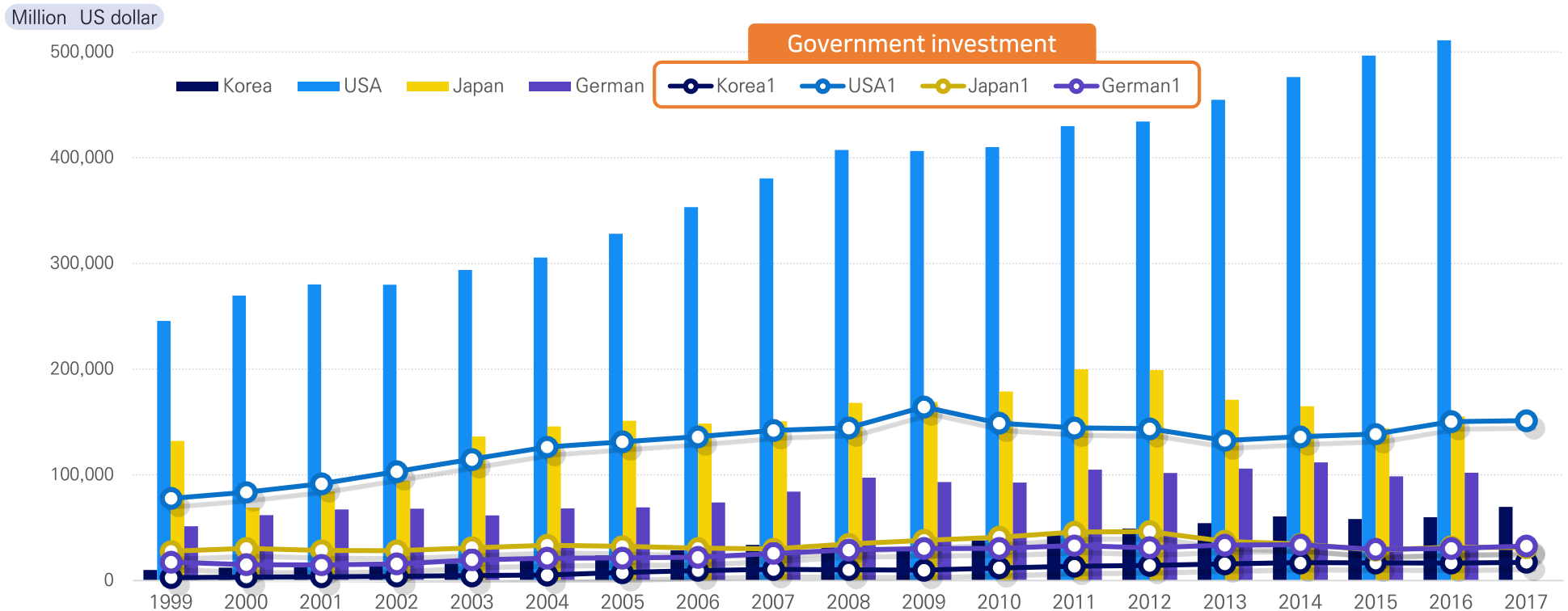
Major countries' total R&D investment trends



The rate of increase of private sector in R&D investment is higher than that of government

→ Korea follows this trend

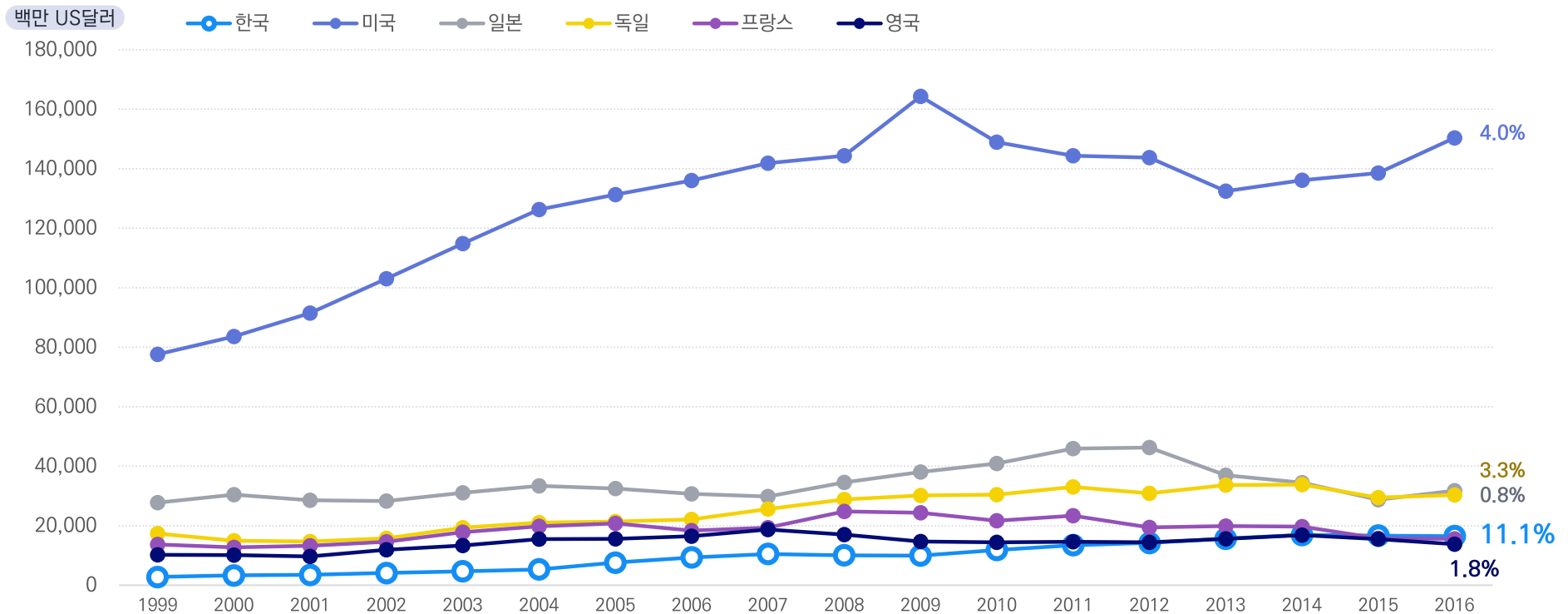
Major countries' private and government investment trends



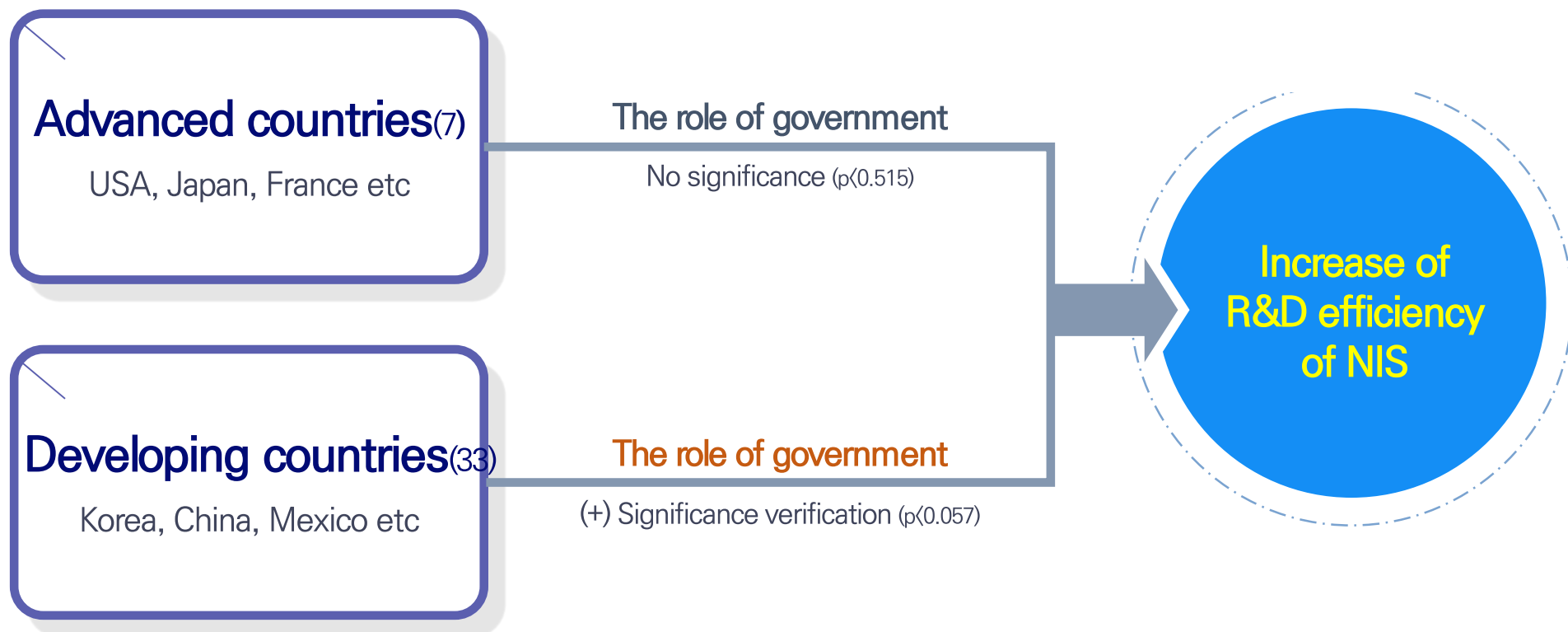
Major countries' government R&D budget is gradually increasing ('99~'16)

➔ Average Annual Increasing Rate: Korea(11.1%), USA(4.0%), German(3.3%)

Major countries' government R&D budget trends



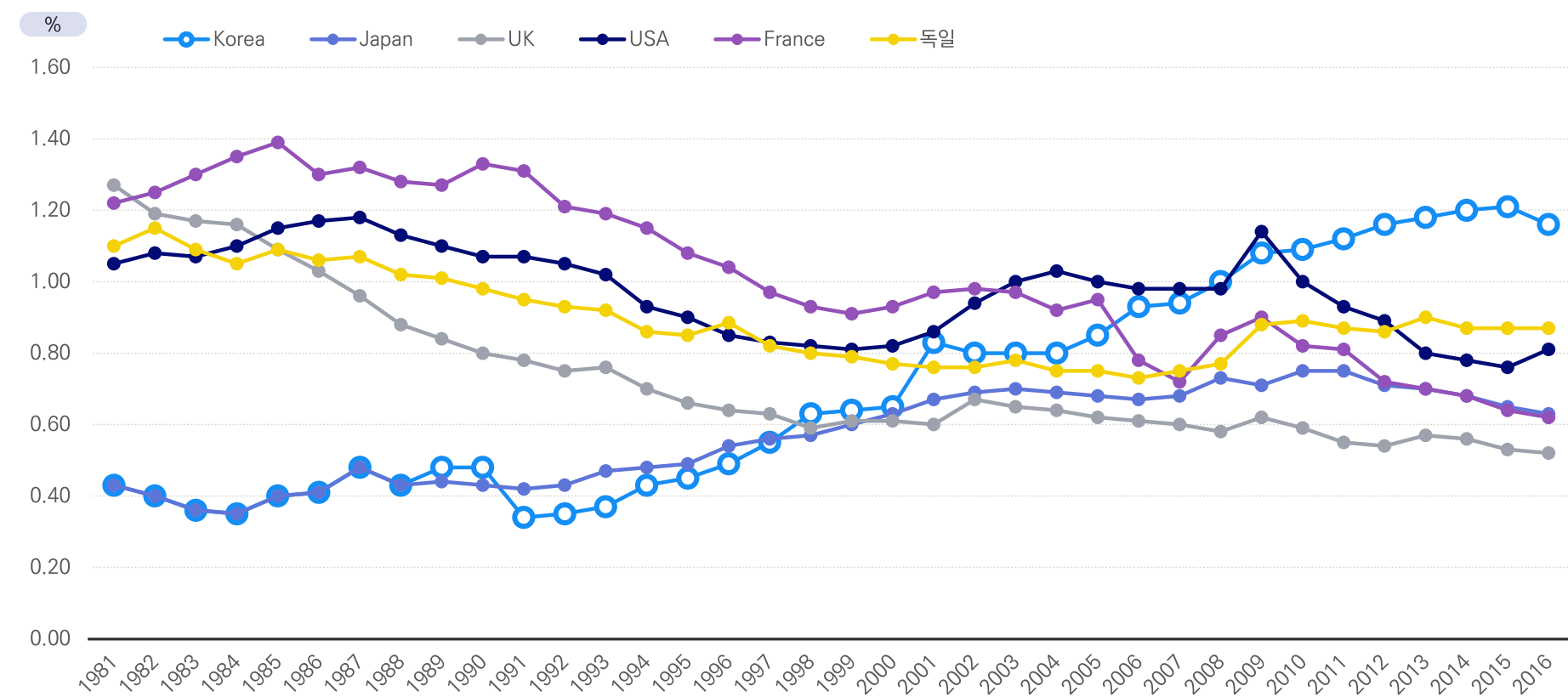
The role of developing countries' government is more important



source KISTEP internal research (2018)

Korea government has ranked 1st since 2010_1.12%(17)

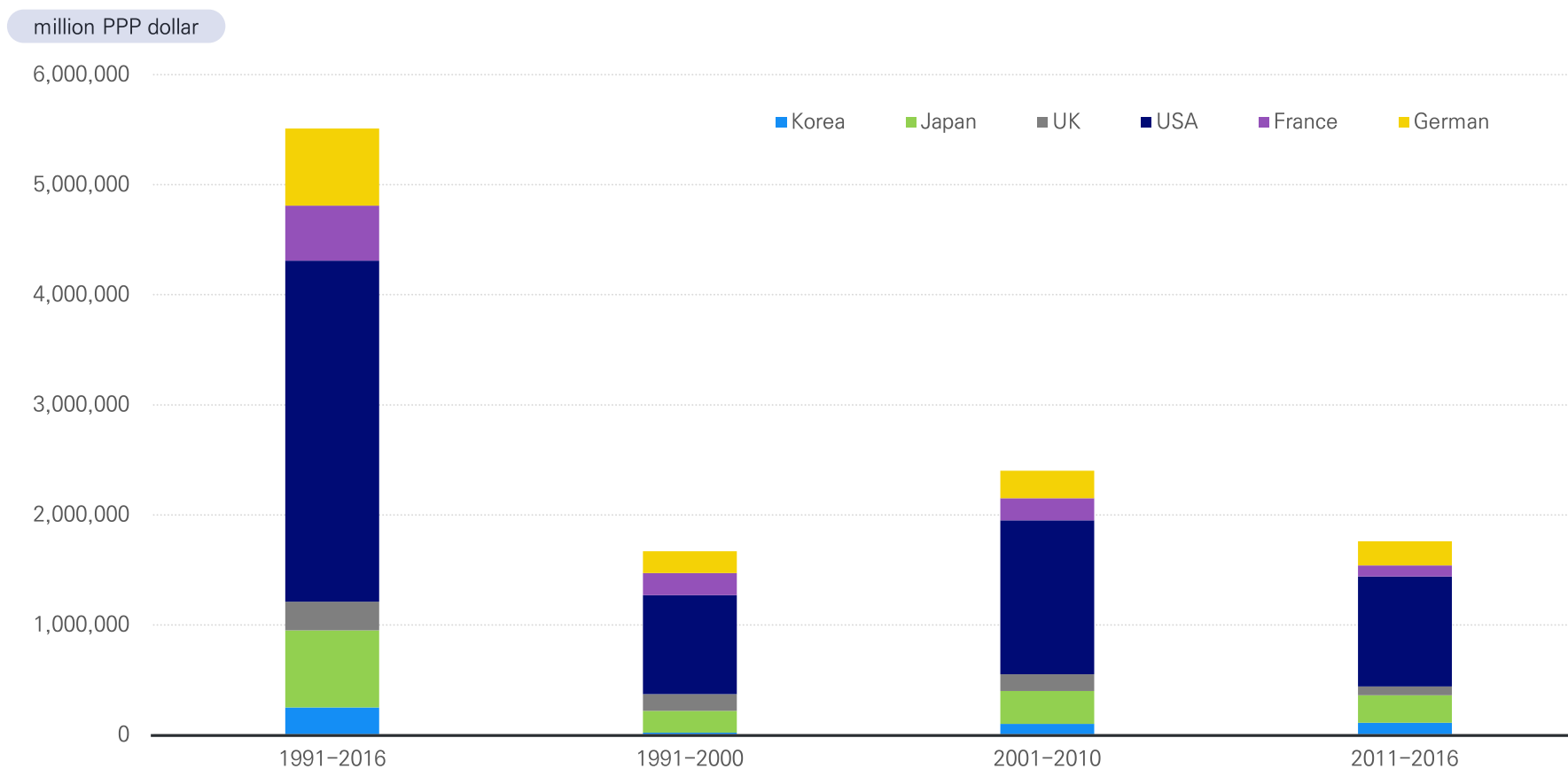
Major countries' government R&D intensity of GDP trends



source OECD, (2018). 「Main Science and Technology Indicators」 2018-1.

R&D investment stock('91~'16년): Korea: 1.0; USA: 12.3; Japan: 2.4; German: 2.3

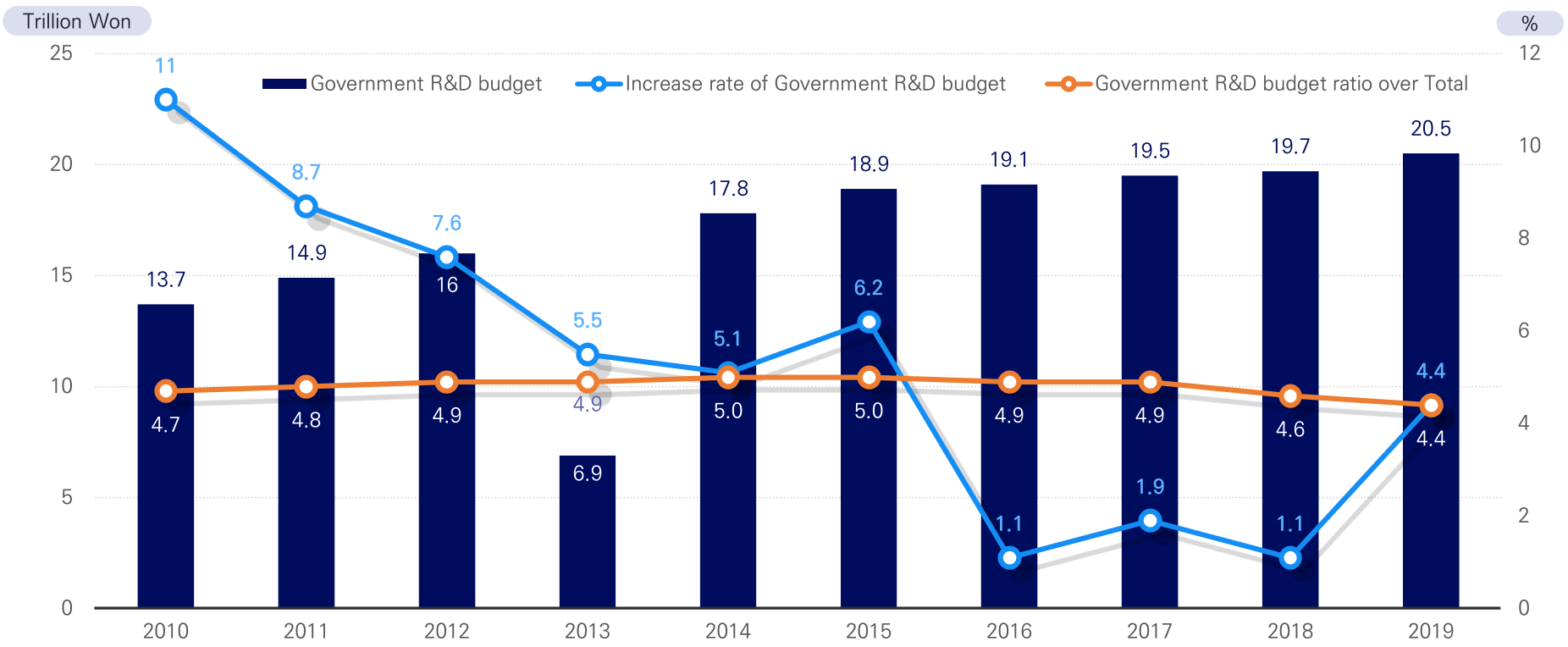
Comparison of major countries' government R&D budget stock



source OECD, (2018). 「Main Science and Technology Indicators」 2018-1.

The ratio of government R&D budget over whole budget was highest in 2014 as 5.0%

The ratio of government R&D budget trends

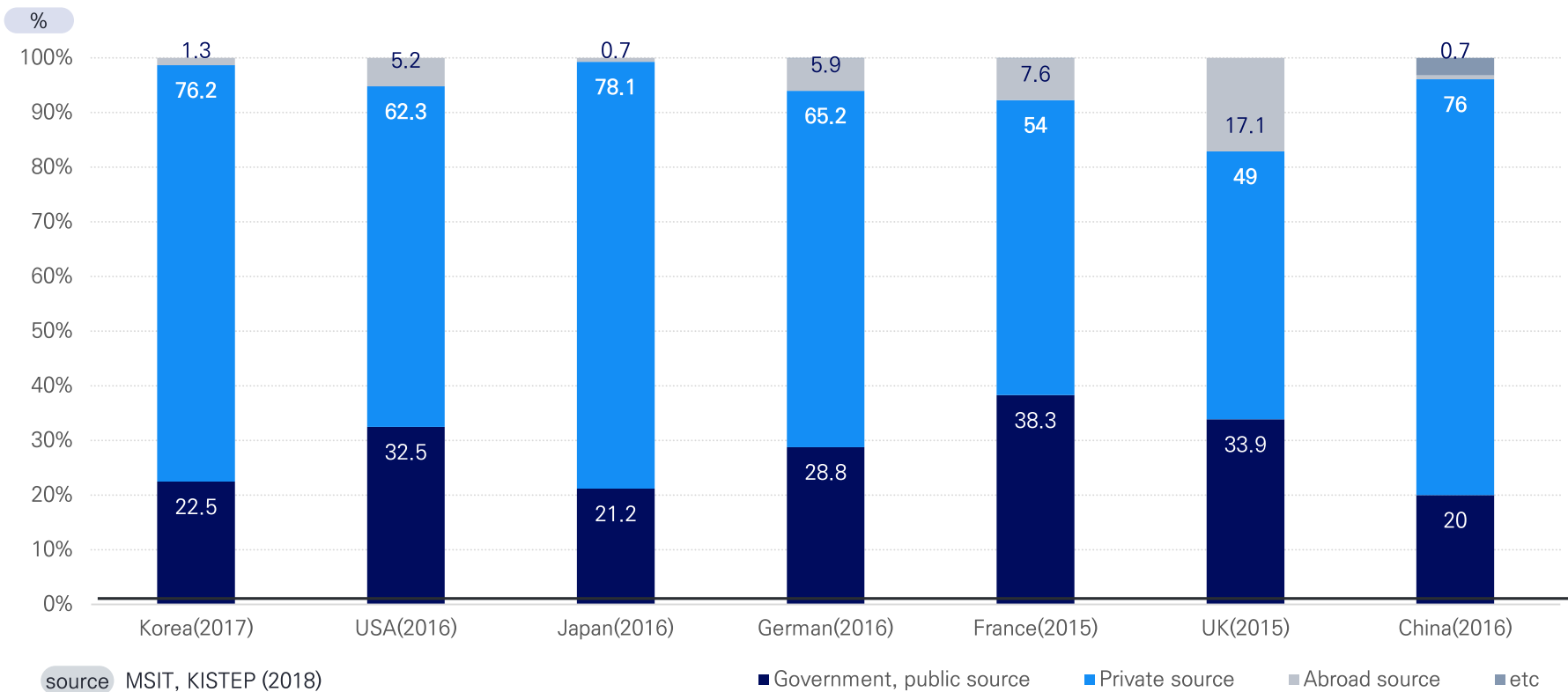


source KISTEP (2019)

Government R&D investment ratio (22.5%, '17) is second lowest level among major countries

➔ The highest ratio was 28.7% ('09) and the ratio is getting lower

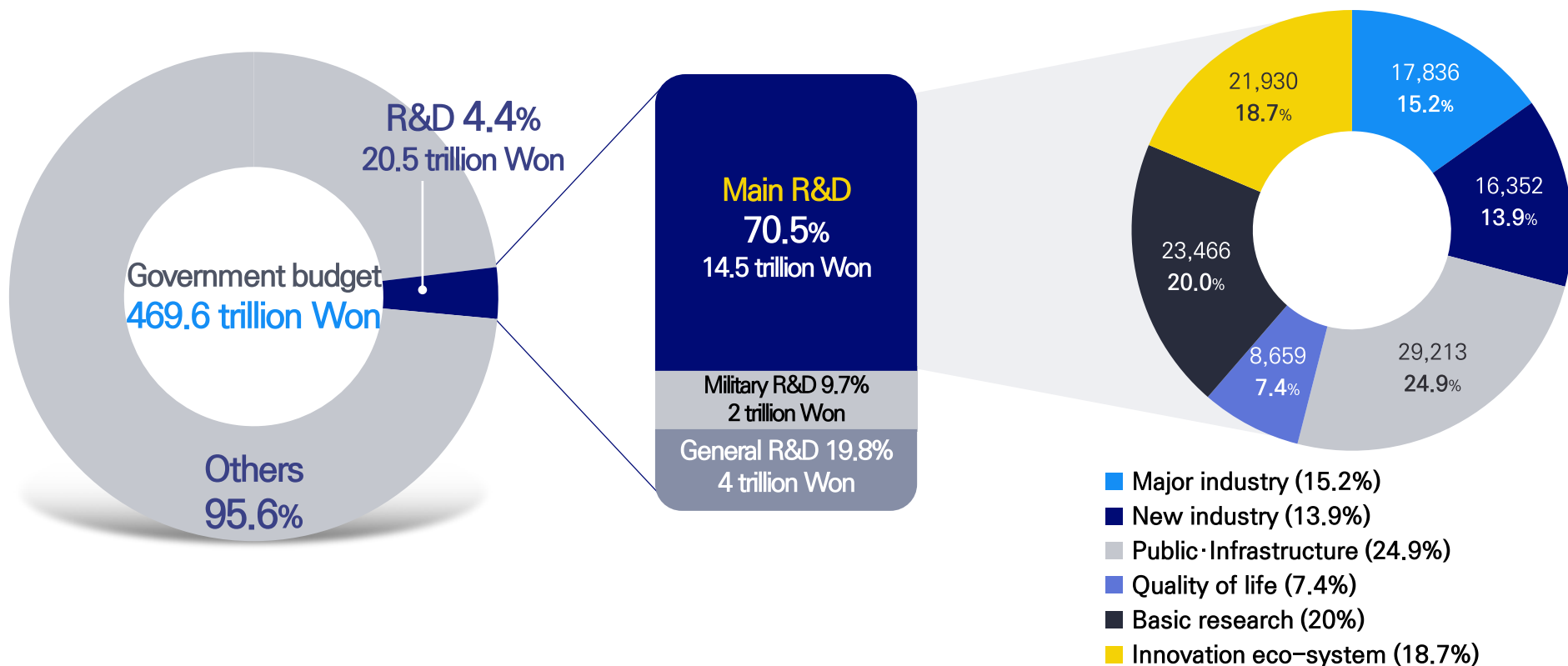
Government and private R&D budget ratio



The ratio of main parts of government R&D budget : 70% (2019)

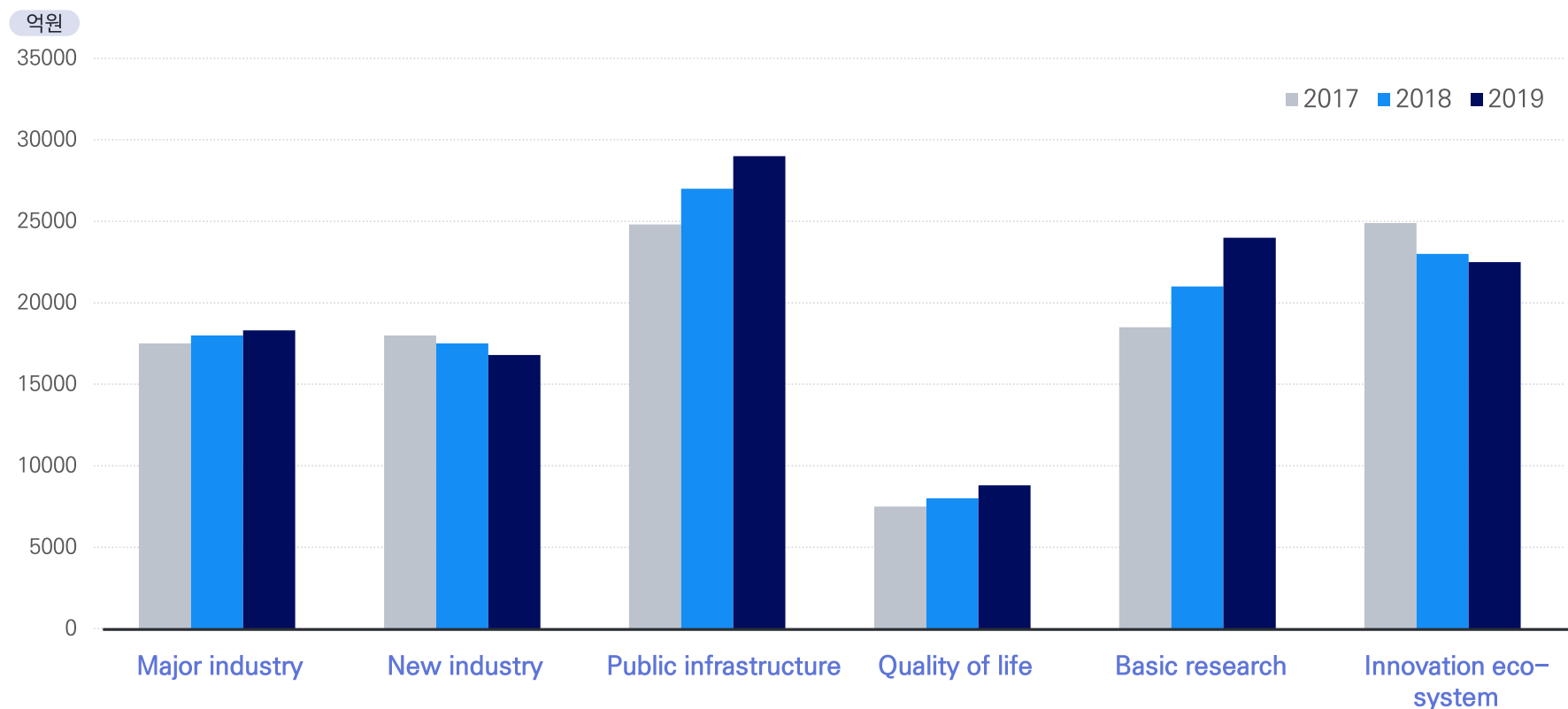
- Public infrastructure (24.9%), Basic research(20.0%), Innovation eco-system(18.7%)

Ratio of Government R&D budget parts



Budget in public infrastructure, quality of life and basic research is increasing

Composition of government R&D budget trends



Accountability of R&D investment

- The limitation of R&D investment increase
- Low quality of performance compared to quantity of performance
 - Dramatic increase in terms of quantitative performance vs. Qualitative level is not satisfactory

Size of R&D investment vs. Direction of investment

- Economic growth through inclusive innovation
- Social problem resolving R&D and participation of people

Thank you for your attention

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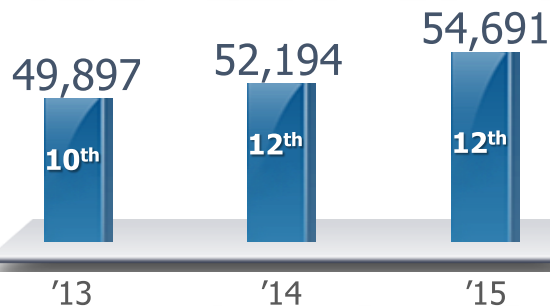
Quantitative performance



It shows the dramatic increase in terms of quantitative performance in Korea

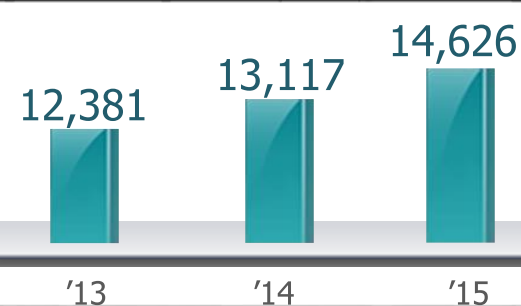
Paper

No. of paper (SCI)



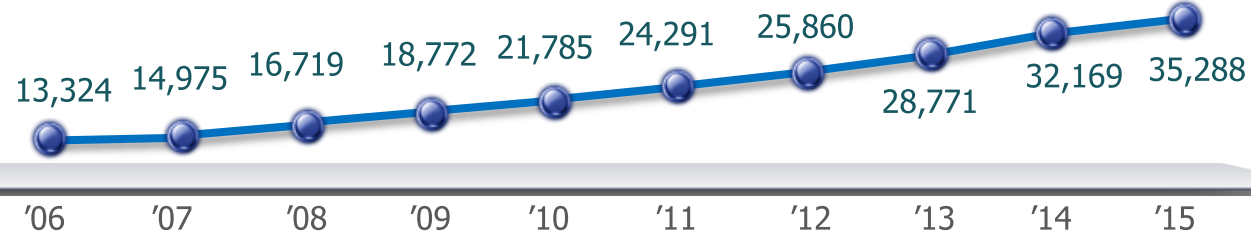
Patent

No. of patent (PCT)



R&D center

No. of corporate R&D centers(private sector)



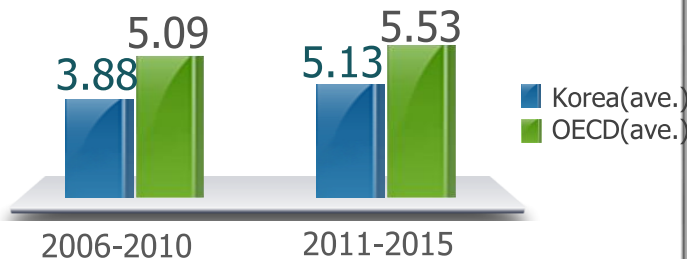
Qualitative performance



Qualitative level is not satisfactory from a viewpoint of productivity and impact.

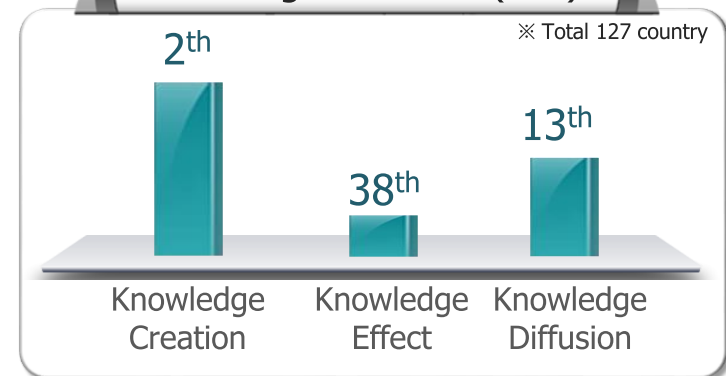
Paper

cited number per paper(ave.)



Knowledge

Index of global innovation(2017) (GII,WIPO)



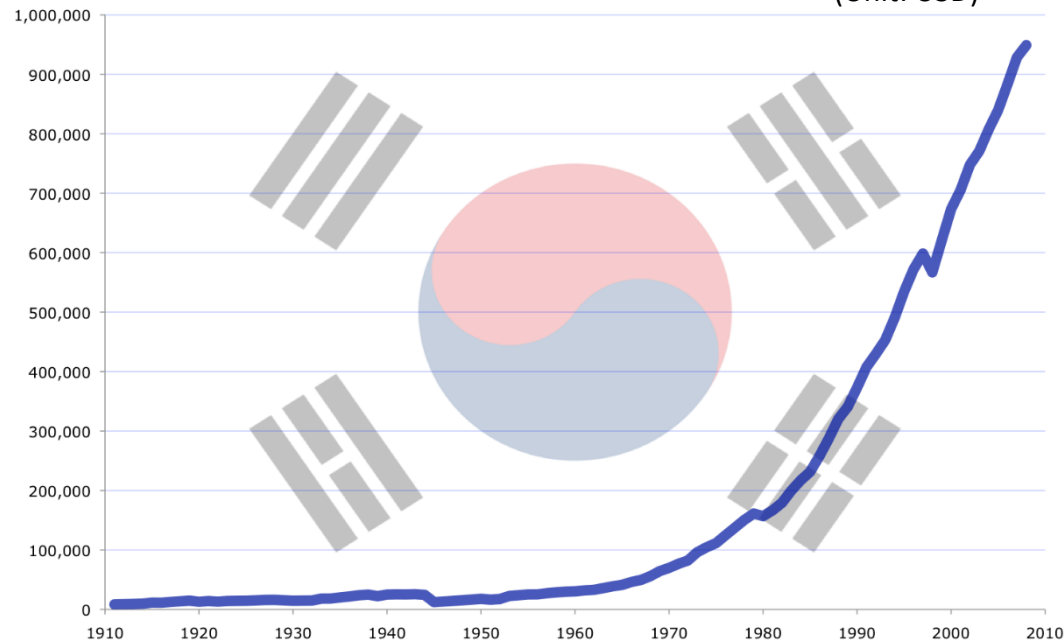
※ KC(no. of paper, patent), KE(commercialization etc.),
KD(export of computer, communication service, etc.)

Economic growth vs. Quality of life

- Korea has achieved compressed economic growth in line with the investment to R&D
- Meanwhile, the quality of life issues were given less priority in the process

South Korea GDP(PPP) Evolution (1911-1990)

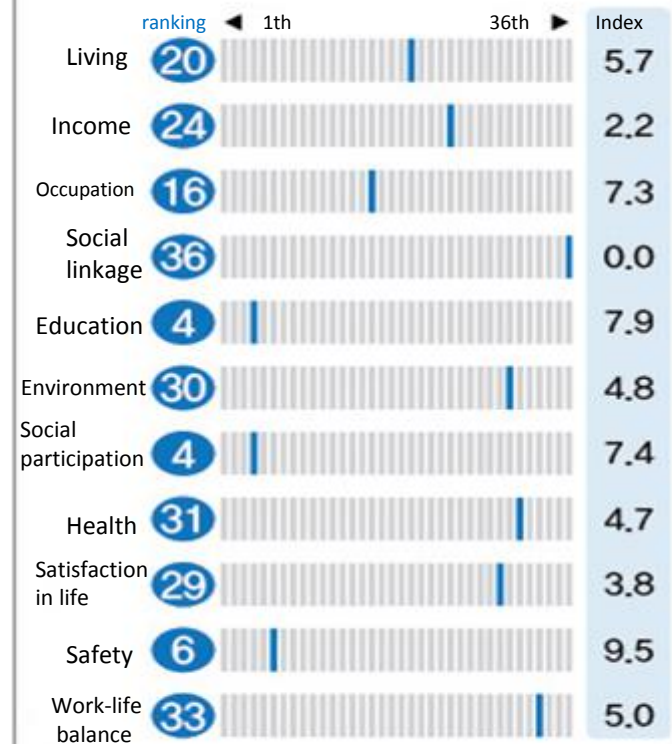
(Unit: USD)



OECD 'A Better Life Index'

Covers 34 OECD members as of 2015 and Brazil, Russia

Korea's Ranking and Index in Major Factors



※Scores nearing 10 means higher levels

Resources / OECD

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