KDI Global Forum on
Development Cooperation

SMEs, Innovation and Economic Growth

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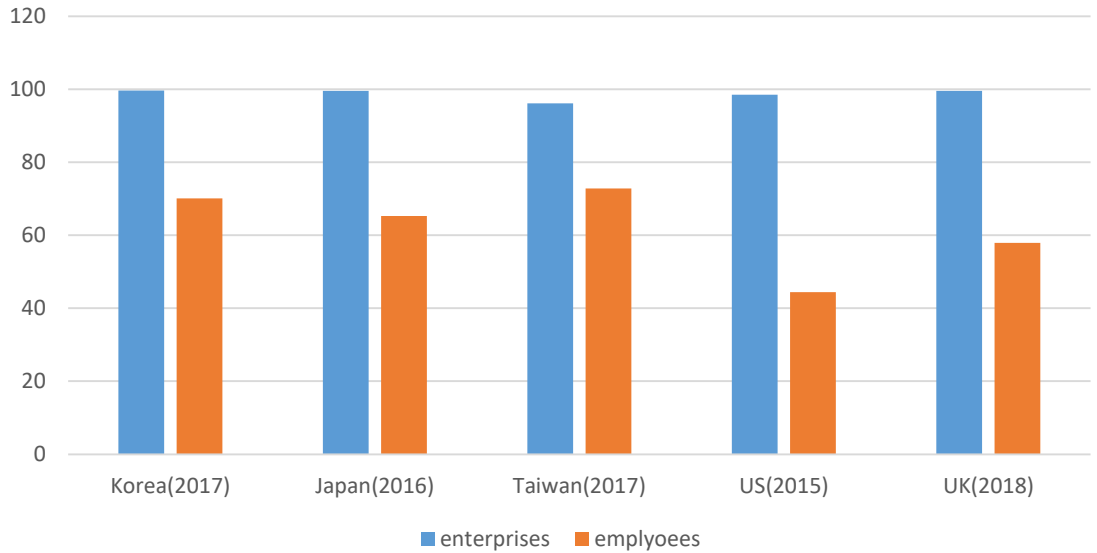
1 SMEs and their impact on economy

Small and Medium-sized enterprises (SMEs) account for the majority of firms and employees



Source : KBIZ (unit: %)

1 SMEs and their impact on economy

SMEs have organizational advantages …BUT they lack of resources for innovation.

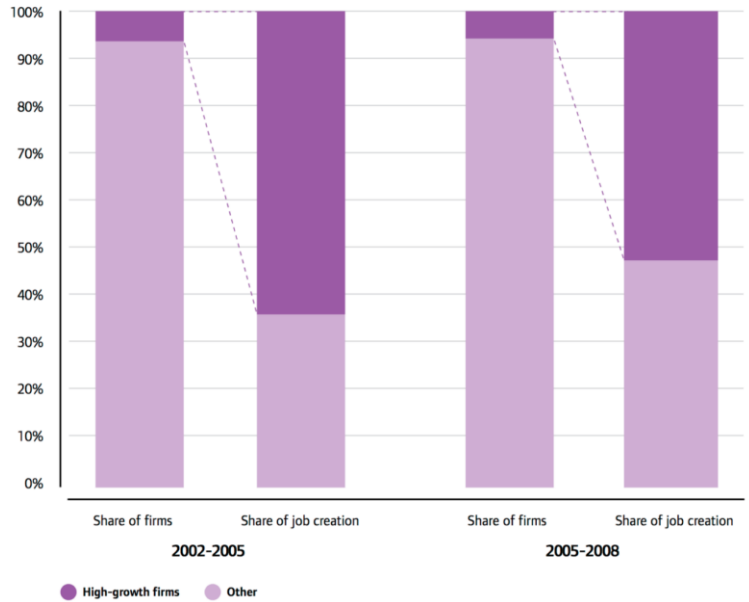
	SMEs	Large firms
Advantages	Behavioral advantage - High flexibility	Material advantage - Abundant resources
Structure	Simple hierarchy Organic	Stratified hierarchy Bureaucratic
Culture	Company wide single culture	Several different cultures
Procedure	Informal - Low degree of standardization - Heuristic process	Formal - High degree of standardization - Rigid process
Decision making	Centralized to a few key people	Decentralized to each division

Source : Adapted from Vossen (1998), Rothwell and Dodgson (1994), and Ghobadian and Gallear (1997).

1 SMEs and their impact on economy

High growth SMEs are rare, but they generate a majority of job !

We need high-growth innovative SMEs !

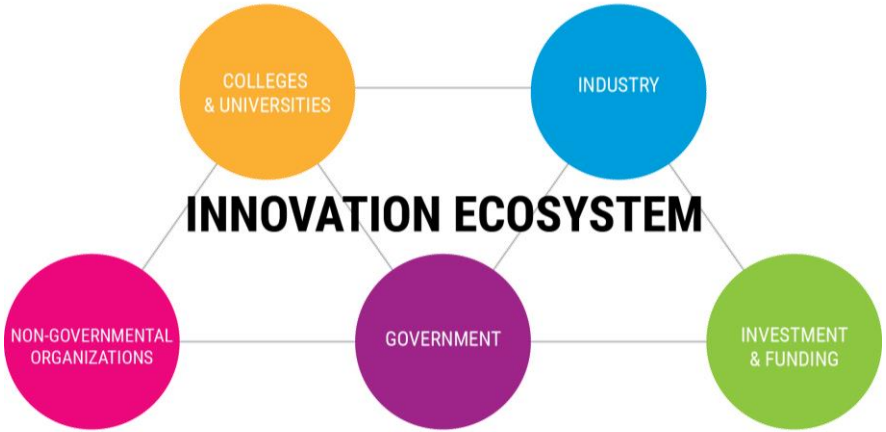


Source : Vital 6 per cent (NESTA, 2009)

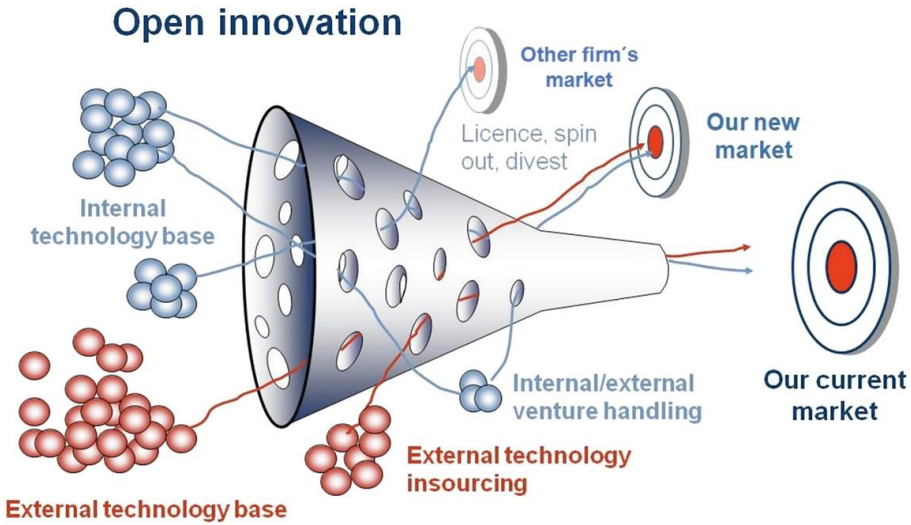
2 Innovation policy for SMEs

SMEs alone may not survive in fierce innovation competition

Policy makers consider not only input additionality but also behavioral additionality



Source : Interreg Europe (2018)



Source : Chesbrough (2006)

2 Innovation policy for SMEs

Every country has a different development stage of National Innovation System (NIS)

Policy benchmarking without considering NIS may cause substantial discrepancy between policy and reality

Developed NIS	Cluster 1.1 - Dynamic innovation systems
	Cluster 1.2 - Performing innovations systems
	Cluster 1.3 - Unevenly developed NISs
Developing NIS	Cluster 2.1 - Catching up NISs
	Cluster 2.2 – Hesitating NISs
	Cluster 2.3 - Unformed NISs

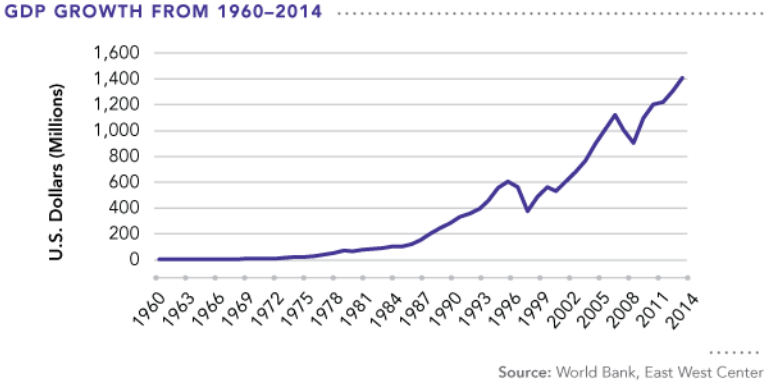
Source : Godinho et al. (2005)

3 Korean Experiences

GDP growth averaged 9-10% a year

From agriculture to Manufacturing, ICT and more …

Start from NIS 2.3 (unformed) to 1.1 (dynamic) and 2nd in innovation (Bloomberg innovation index)



2020 Bloomberg Innovation Index

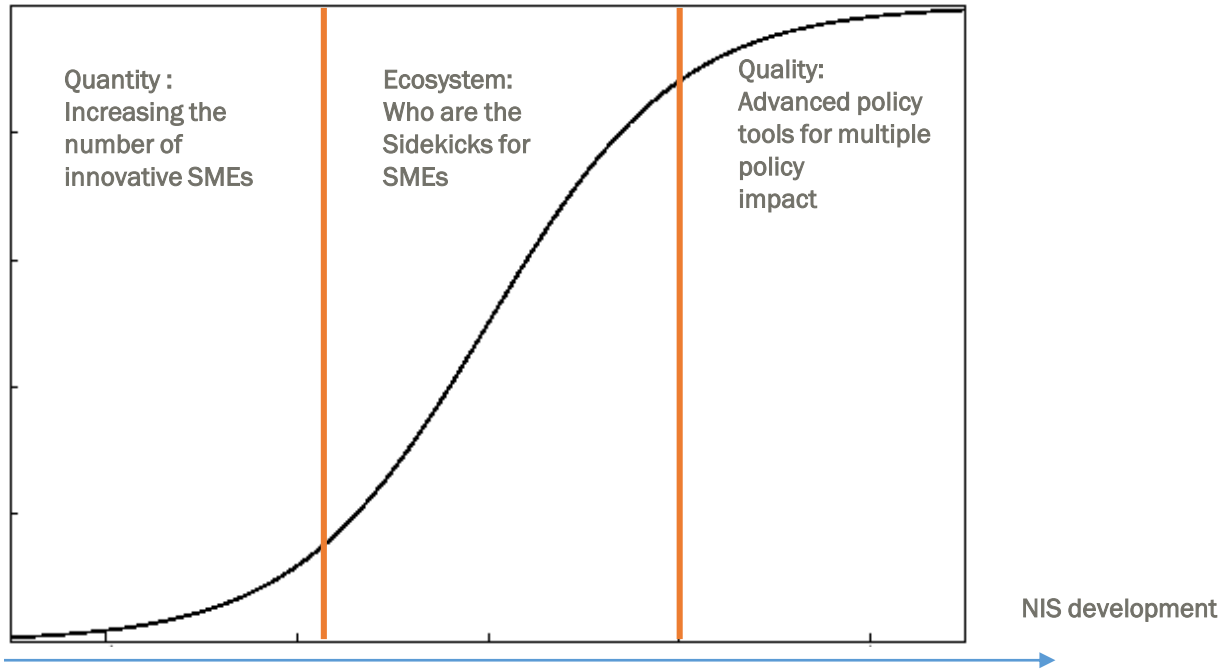
2020 Rank	2019 Rank	YoY Change	Economy	Total Score	R&D Intensity	Manufacturing Value-added	Productivity	High-tech Density	Tertiary Efficiency	Researcher Concentration	Patent Activity
1	2	+1	Germany	88.21	8	4	18	3	26	11	3
2	1	-1	S. Korea	88.16	2	3	29	4	16	5	11
3	6	+3	Singapore	87.01	12	2	4	17	1	13	5
4	4	0	Switzerland	85.67	3	6	14	10	17	3	19
5	7	+2	Sweden	85.50	4	16	19	7	13	7	18
6	5	-1	Israel	85.03	1	31	15	5	32	2	7
7	3	-4	Finland	84.00	10	15	9	14	24	9	10
8	11	+3	Denmark	83.22	7	24	6	8	31	1	24
9	8	-1	U.S.	83.17	9	27	12	1	47	29	1
10	10	0	France	82.75	13	39	16	2	20	17	8
11	12	+1	Austria	82.40	6	11	13	19	12	8	16
12	9	-3	Japan	82.31	5	5	35	9	30	16	12
13	15	+2	Netherlands	81.28	17	28	17	6	36	12	14
14	13	-1	Belgium	79.93	11	25	11	13	49	14	13
15	16	+1	China	78.80	15	14	47	11	5	39	2
16	14	-2	Ireland	78.65	34	1	1	12	39	20	34
17	17	0	Norway	76.93	16	51	5	20	10	10	22
18	18	0	U.K.	76.03	21	44	27	15	6	19	21
19	21	+2	Italy	75.76	24	23	21	16	33	25	20
20	19	-1	Australia	74.13	18	55	8	21	15	31	6
21	31	+10	Slovenia	73.93	19	8	20	40	14	15	26
22	20	-2	Canada	73.11	22	35	26	26	35	21	9

Source : Bloomberg (2020)

4 Policy Implications - Korean Experiences

There is a fit between a type of policy and a NIS development stage of a country

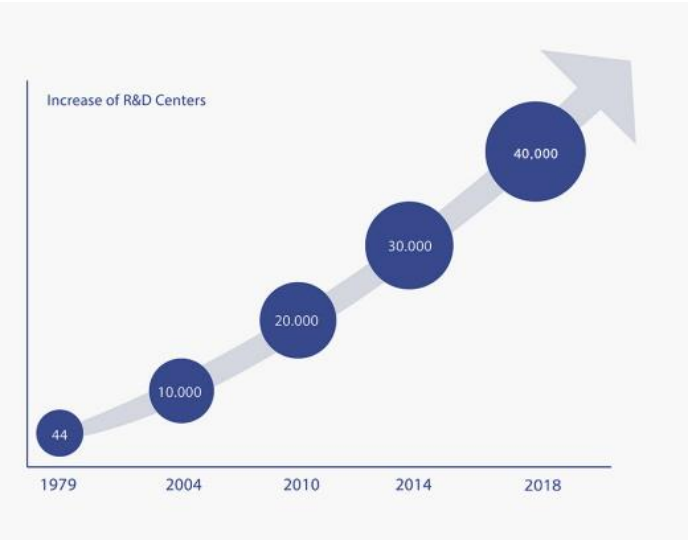
Korea has implemented many policies – some worked but others did not



4 Policy Implications - Korean Experiences

For quantity

(1) Cooperate R&D center Accreditation and Management (1981 ~)



Source : KOITA (2019)

Drastic increase of R&D centers

Total R&D expenditure $ 50 billion (79.4%)

340,000 researchers (71.1%)

Various incentives (Tax, funding, manpower)

4 Policy Implications - Korean Experiences

(2) ACT ON SPECIAL MEASURES FOR THE PROMOTION OF VENTURE BUSINESSES

Legal foundation of venture firm promotion

- Venture firm accreditation : 36,065 (2018)
- Venture capital and Korean Fund of Funds : 4.1 billion USD → 15.7 billion USD investment
- KOSDAQ : special stock market for innovative SMEs, such as venture firms

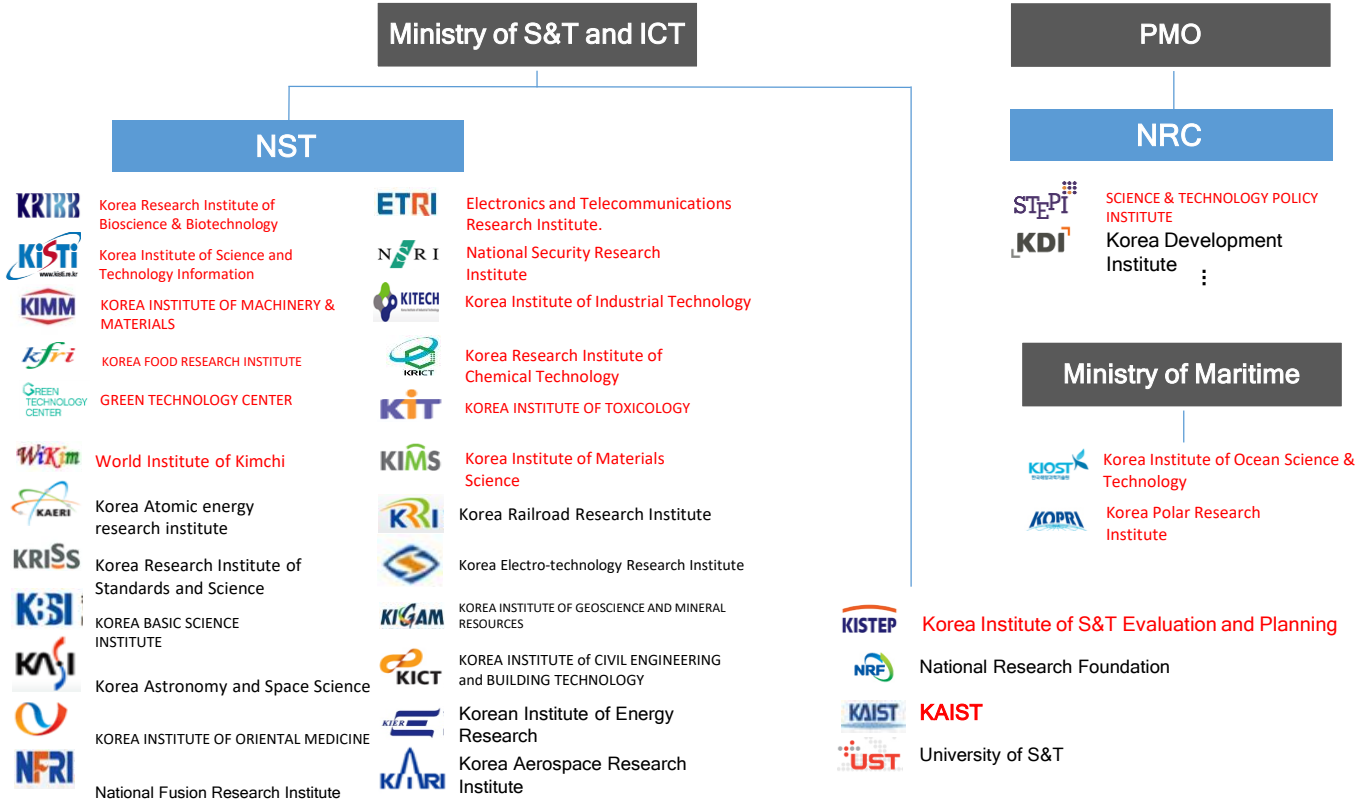
KVIC
한국벤처투자(주)
Korea Venture Investment Corp

Source : KVIC (2019)

4 Policy Implications - Korean Experiences

For Ecosystem Building

(1) Government-sponsored Research Institutes



4 Policy Implications - Korean Experiences

(2) Innovation cluster (R&D specialized zone) : Innopolis Daedeok (since 1973)

	Government Policy	Effect on Daedeok	Major Events
 2010s	Era of Creativity and Cnvergence	International Science Business Belt, the heart of creative economy	Designation of additional INNOPOLI (Gwangju, Daegu, Busan, Jeonbuk) Science Business Belt, Center for Creative Economy & Innovation
 2000s	Activation of commercialization and start-ups	Proclamation of INNOPOLIS Daedeok	Creating venture ecosystem (Activate start-ups)
 1990s	Academia R&D capacity increased	R&D capacity such as KAIST boosted	Rapid increase of academia's R&D expenditure (Frontier plan, BK21, etc.)
 1980s	Industry R&D capacity increased	Private R&D Institute move-in	Starting in 1982, higher private R&D investment than government
 1970s	GRIs based R&D	Daedeok Science Town established	Government invests over 80% of R&D expenditure

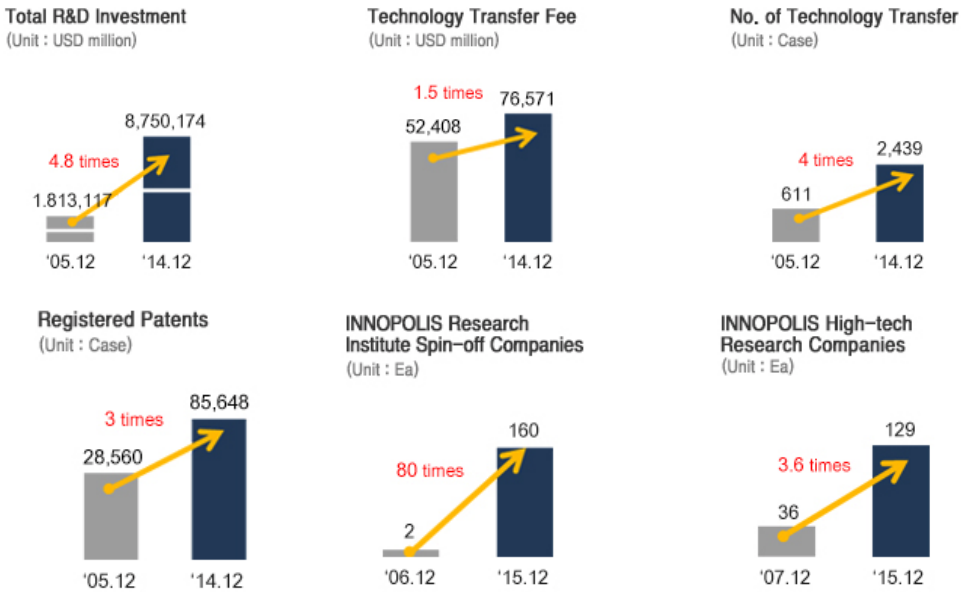
Source : Innopolis (2018)

4 Policy Implications - Korean Experiences

- Innopolis Daedeok

- 12 % of R&D spending, 11.8% of PhD level researchers

- 60 (25 public and 35 private) research institutes within the ecosystem

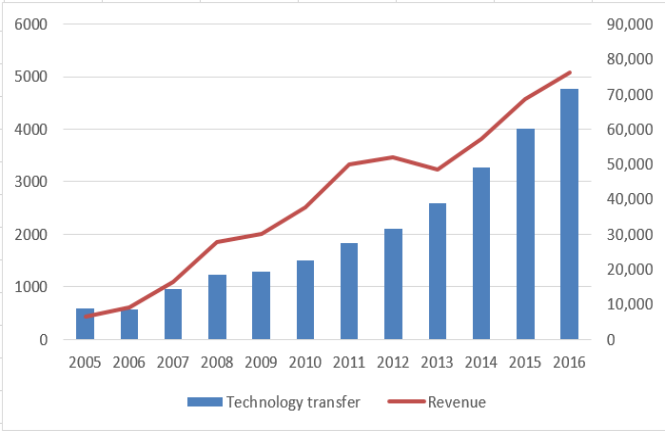


Source : Innopolis (2018)

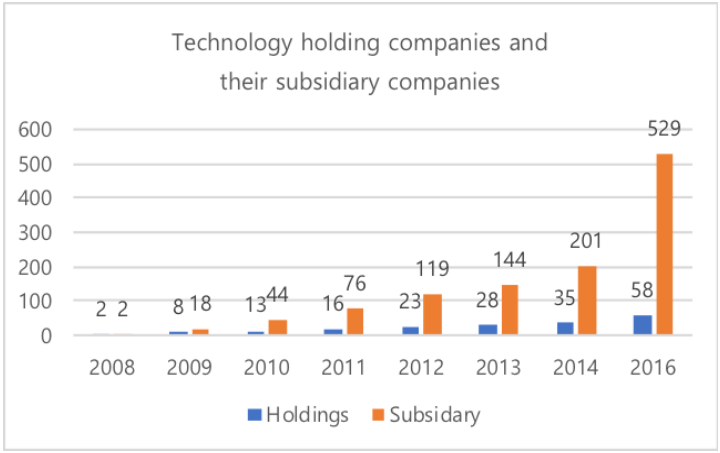
4 Policy Implications - Korean Experiences

(3) Nurturing University – Industry Collaboration

- Industrial education enhancement and industry-academia-research cooperation promotion act
- Industry-Academic Cooperation Foundation (IACF) : more than TTOs
- Various routes for technology transfer: beyond IP licensing



Source : NRF (2018)



Source : NRF (2018)

4 Policy Implications - Korean Experiences

For quality

(1) Innovation Voucher : solving mismatch issue between needs and demands

(2) Innovation Procurement : to establish lead market using buying power of public sector to conduct specialized R&D for social issues

(3) R&D Tax system reform : introducing a new R&D tax incentive for open innovation

2019 Japan Tax Reform Proposals

Issue 142, January 2019

(iii) "Open innovation" R&D tax credits

The scope of R&D expenditure that qualifies as "open innovation" will be expanded to include B2B outsourced R&D activities (i.e., R&D conducted jointly with certain R&D focused venture corporations, or R&D expenditure arising from contracts with certain R&D focused venture corporations). In addition, 25% of the R&D tax credit ratio will applied to R&D expenditures involving R&D focused corporations (i.e., joint R&D and contracted R&D); currently, the ratio is 20%.

The tax credit limitation for open innovation R&D expenditure will be increased from the current rate of 5% to 10%.

Source : Ahn and Mortara (2019)

4 Policy Implications - Korean Experiences

Lessons from failure

(1) Venture policies have been (too much) focused on an initiation (not on termination)

- Neglected the benefit of M&A
- Did not adequately consider innovation ecosystem (inhibited the participation of CVC)

(2) Mistake in policy benchmarking

- Not like SBIR in the US, KOSBIR did not work effectively
- Did not benchmarked governance of SBIR driven by US Congress

Q & A

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