

2001 - 10

가

2001. 11

, ,

5 가 . ,

가

2001 11

.....	1
1	5
1.	5
2.	6
2 가	8
1. 가	8
2. 가	14
3. 가	16
3	19
1.	19
2.	28
3.	32
4.	35
5.	41
4	42
1. 가	42
2.	50

3.	59
4.	67
5.	가	72
6.	78
7.	83
5	87
1.	87
2.	90
3.	98
4.	111
6	114
1. 가	114
2.	117
3.	122
4.	129
5.	가	131
6.	133
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1.	144
2. 1960	147
3.	154

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< 5-1>	97
< 6-1> 가	125

가

가 .

가 . IMD(International Institute for Management Development) 가

1996 가 . (1994, 1995)

가 .

가

가 가 ,

2 가

“ (process)”, “ (path)” “ (position)”

가

가 Teece(2000)가 가

가 Teece 가 . Teece

가

“ ” , ,

(1996)

가 “ ” 가

“ ” , , ,

가 3

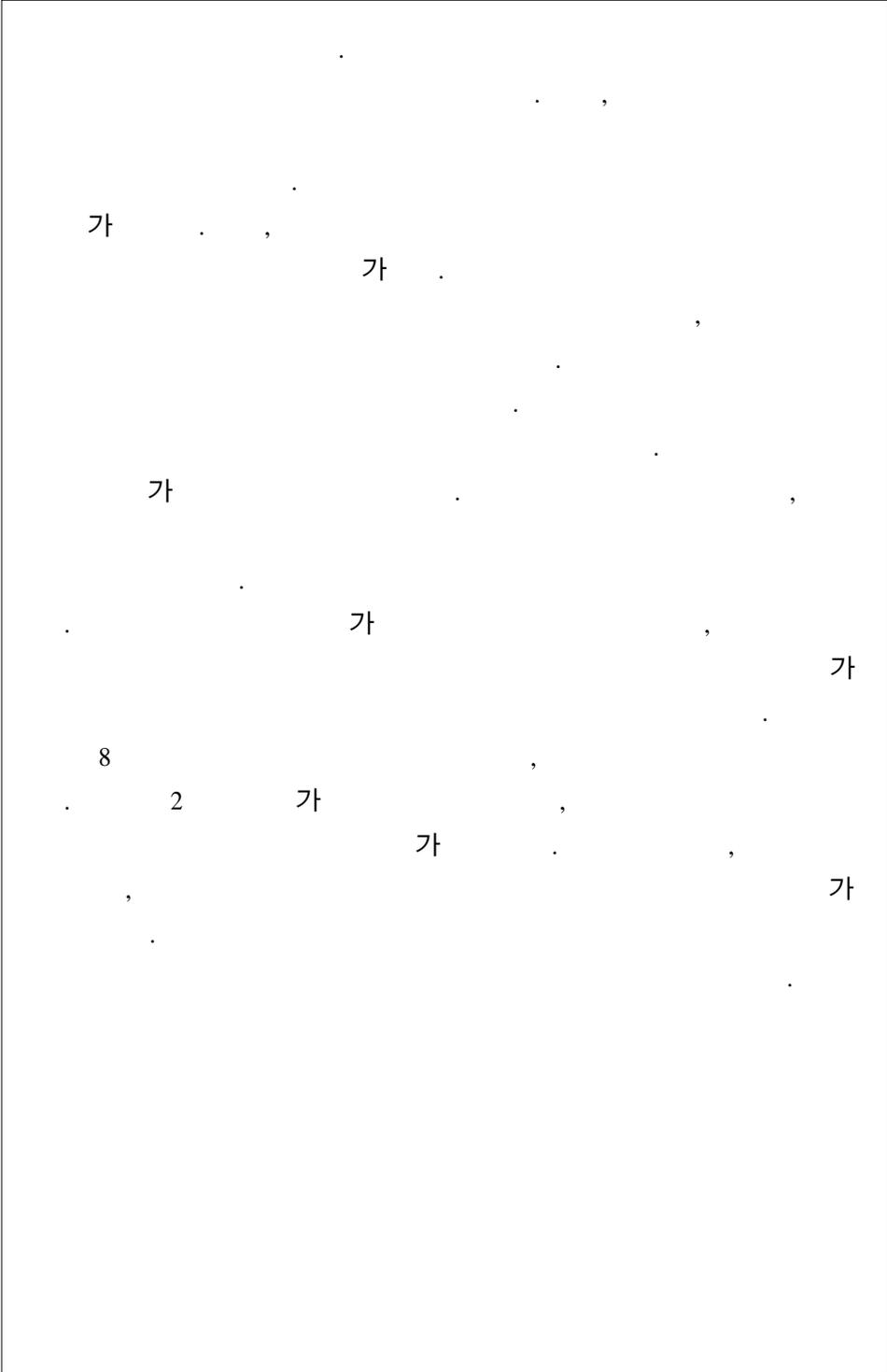
가

가 , 가

5.8 가

4 7 4

가 가



1

1

가

가

가

가

가

가

가

가

· IMD(International

Institute for Management Development)

가

1996

가

(1994, 1995)

가

(1997)

RTA (Revealed Technology Advantage Index) RCA

(Revealed Comparative Advantage Index)

.1)

가

1)

가 가 ,

가 가 가
가

가

가 가
가

가

가

가

2.

가 가

2

Teece(2000)

가

가

Teece

(process)", "(path)"

"(position)"

" "

가

가가

" "

" "

Teece

가

" "

(1996)

가 “ ” 가

가 , “

”

3

7

가

. 3

가 . 4

가 , 5

6

가

. 7

8

,

,

.

.

2 가

가 가 가 , 3 가 가 . 2
 가 가 가 , 가 . 4

1 가

IMD 가

IMD 가 1996
 . IMD 가 가 8

223 가 .
 , 가
 . 223 가 136

87 .
 IMD 가 가 ,

가 가 . ,
 ,

,
 ,

2 가

IMD 가 가 Porter(1990) 가

가 가

1996 2000 IMD 가 가
< -1> 가 IMF 가

< 2-1> 가 가 (49)

	1996	1997	1998	1999	2000
	27	30	35	38	28
	4	13	34	43	19
	43	45	46	40	30
	33	32	34	37	26
	40	43	45	41	34
	34	34	31	30	31
	28	26	34	42	33
	25	22	28	28	22
	21	22	22	31	26

: IMD, The World Competitiveness Report 1996-2000

10

IMD 2001 가 < 2-2> . 가

1 1

, 가 .
,
. 2001 25 21

< 2-2>

(49)

19		31		31		34	
	38		9		30		35
	33		15		35		25
	37		34		35		21
	9		44		39		30
가	30	,	32		23	가	40

: (IMD), 「 2001 」, 2001. 4. 25.

가 2000 10
2001 8 5 7
. 28 ,
34 . 32
, 34 .

IMD 가가 1990 가
, 가 (1994,1995) ,
가 가 .

가 ,

가 ,

, 12 (1990) 가 .

, ,

, 20 (1990) 가 .

가 , , , , ,

, 18 .

2010 .

가 . 2010

7 .

가 .

12 20

가 ,

가 .

(1995) .

가 .

가 . 가

.

,

.

UNDP (Human Development Report)

UNDP

(2001)

2

가

(technological achievement index)

2)

72

5

(investment in technology creation)

가

47

가

가 162)

(diffusion of technology)

47

가

5

가

가

(가 2),

(tertiary

science enrolment ratio)가

UNDP

2) UNDP, Human Development Report 2001 : Making New Technologies Work for Human Development, 2001. UNDP homepage

,
 .
 가
 IMD 가 가 가
 가 가 .
 ,
 가 .
 , IMD 가 가
 , IMD
 . IMD
 가 가
 ,
 가 가
 .
 IMD 가
 .
 IMD 가 가 ,
 가가 가 가 100%
 . 가
 가 IMD
 가
 .
 IMD 가 가 가가
 . IMD
 가 .
 가 가
 .
 가 .

2. 가

가 가

가

가가

가

Teece(2000)

가

가 가

가 가

가 가

가 가

가 가

PPP framework

Teece 가 PPP PPP

(Process), (Position), (Path)

가 /

(coordination/integration), (routinization), (learning),

(reconfiguration and transformation)

/

(technological assets), (complementary assets),
(financial assets), (locational assets)

가
가

가

(technological opportunities)

가

가

PPP framework
가 .

가

, .

가 가
가 가

가

가 가 , . , .

가 가 , 가

3. 가

가

, 가 가 . 가 .

가 가
가
(National Innovation System)
가

, 가
가

, ,

,

가 ,
가

. 가
가

가
가

가

가

가 ,

가

가

가

가가 가

,
가

가

가

가

가

< 2-3>

,

,

,
가
가

가
 . IMD 가
 , IMD
 가 .

< 2-3> 가

	가
(position)	- : GDP , , - : , , - : , cluster - :
(process)	- : , , , , - : , , , - : outsourcing, , , - : , ,
(paths)	- . , , : , -

< 2-3> 가
 가 Teece
 , 가 가

3

가 . ,
 , , ,
 가 가
 .
 가 가 가
 가 . 가
 가 .

1

가 , 가 .
 , , .
 .
 , < 3-1> .
 , , , .

< 3-1>

(:)

	('99)	('99)	('98)	('98)	('98)	('98)
	10,023	247,227	133,168	49,316	31,681	25,755
	10	24.7	13.3	4.9	3.2	2.6
(%)	2.46p)	2.84p)	3.06	2.29	2.18	1.83

註: 1)

2) p)

가

1990

. 1980

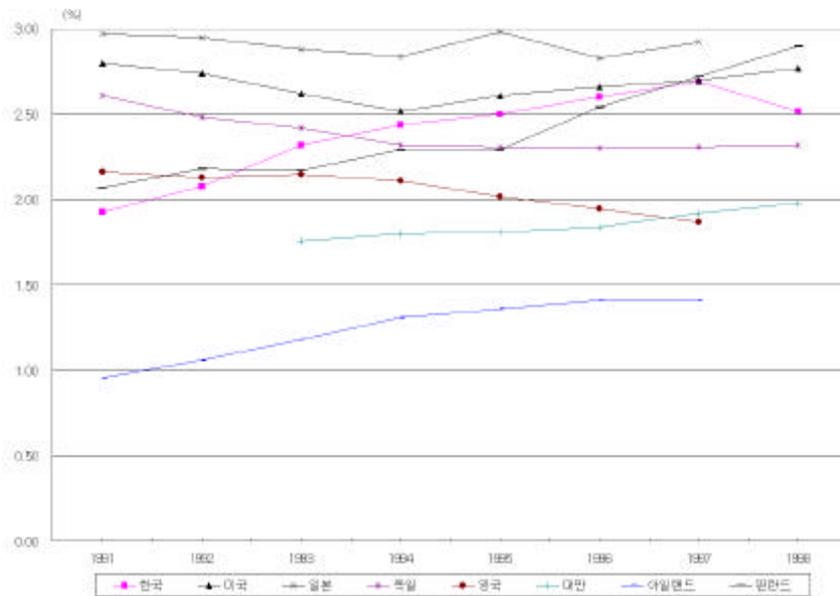
1%

, 1980

. 1990

< 3-1>

< 3-1>



: http://www.most.go.kr/inforoom/m01_02_01a.html

< 3-1> , 1990

가 , 가

1990

가 가 가

. < 3-1> 가 , 가

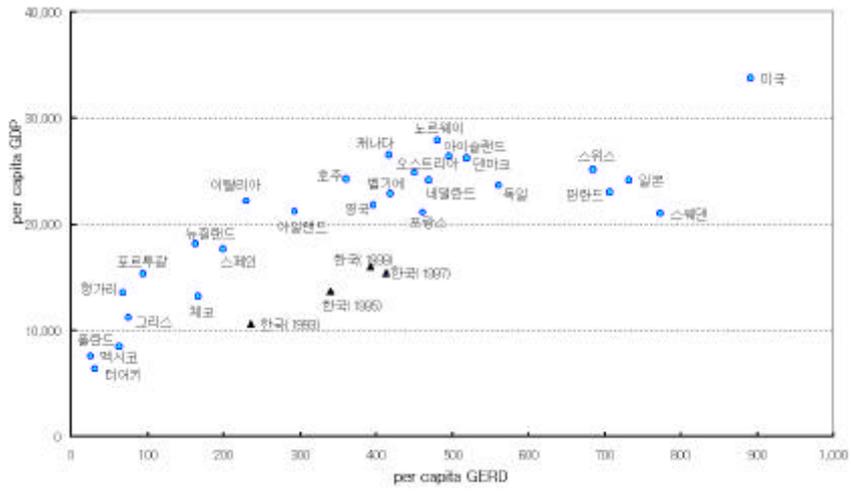
. OECD 0.39

39%

가 , 가

OECD

< 3-2 >



↑

1999

8 5,112

71.4%

1.65%

< 3-2 >

< 3-2>

(: , %)

	(99)	(99)	(98)	(98)	(98)	(98)	(99)
	11,814	184,379	65,974	29,592	15,423	17,289	3,320
GERD	714	75.7	71.2	67.9	65.8	62.0	51.5
GDP	1.65	2.01	2.17	1.54	1.20	1.35	0.47

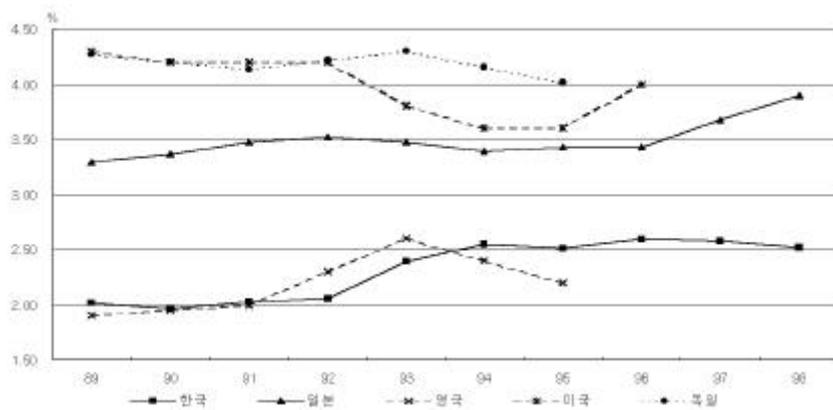
※ '98 (667.62)
 (: OECD, (2000-2), Main Science and Technology Indicators)

가
 가가 , 가가
 . 가가 가

< 3-4>

, 80 90 가 가

< 3-4> 가



1997 300 5
 가 103 , 가 167 ,
 LG 193 , 296 , SK 299 . 20
 7 8% , Microsoft, Lilly & Co.,
 15% .

가 . 1998, 1999
 가 가
 1996 3.7% 2001 4.3%
 . 2001 11 2002 ()
 4.6% .

< 3-3>

(: 10 , %)

	1996	1997	1998	1999	2000	2001
(A)	58,83	66,706	75,582	83,685	88,736	99,200
- 가	14.2	13.4	13.3	10.7	6.0	11.8
(B)	2,179	2,768	2,702	3,105	3,531	4,269
- 가	25.0	27.0	△2.24	14.9	13.7	16.2
()	(200.5)	(226.1)	(231.8)	(205.2)	(218.8)	(321.8)
(B/A)	3.70	4.15	3.57	3.71	3.98	4.30

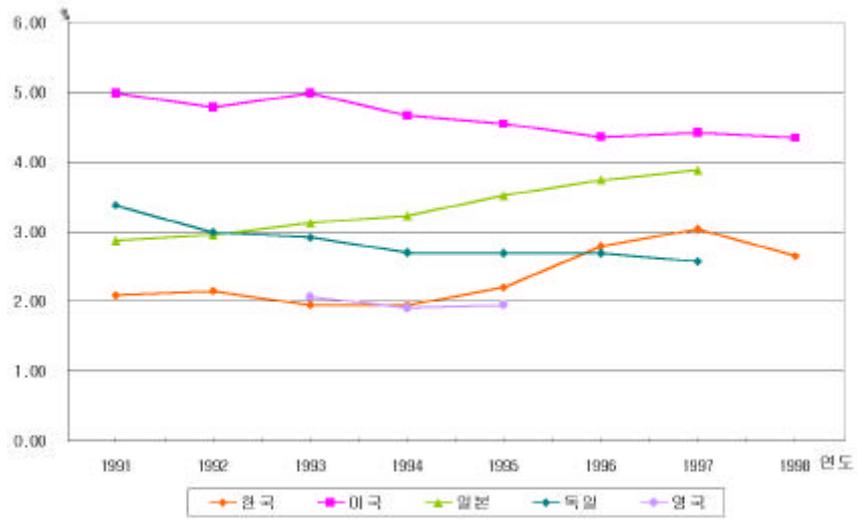
)

:

< 3-5>

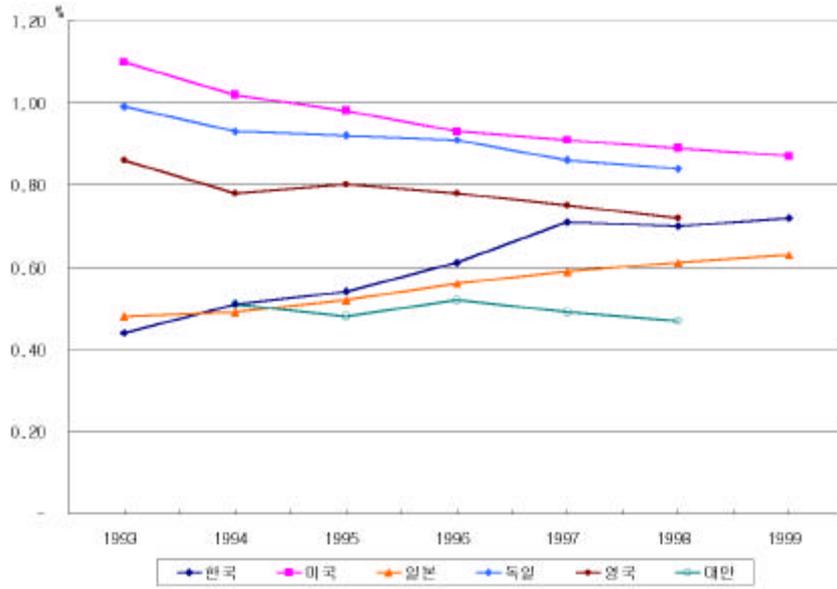
4%가 , 2001

< 3-5 >



AG : , , 1999.

< 3-6> GDP



: , , 2000(5).
 OECD, Main S & T Indicators, 2000-2.

가 ,
 NTT 가 ,
 가 .

< 3-4>

	('01)	('99)	('98)	('98)	('97)	('98)	('98)
(%)	28.6	31.5	27.2	35.9	41.8	35.8	40.5

※ : , ()

OECD

가

< 3-5> OECD

	('99)	('99)	('99)	('98)	('98)	('98)	('98)	('98)
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	22.40	52.80	4.60	8.70	24.80	39.50	2.60	6.10
	77.60	47.20	95.40	91.30	75.20	60.50	97.40	93.90
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	11.73	5.08	3.67	2.96	5.05	7.11	1.95	15.34
	29.38	1.27	7.44	13.36	7.58	1.49	8.32	17.36
	7.22	4.24	20.02	3.94	6.78	0.99	5.03	7.45
	3.87	5.51	3.25	1.86	0.80	2.64	0.62	5.54
	4.25	1.69	0.73	3.83	2.93	3.80	3.49	4.26
	6.31	41.95	3.88	3.50	7.31	23.97	5.75	12.46
	3.74	2.12	0.94	2.85	1.60	3.64	3.70	4.79
	2.06	2.33	1.57	2.08	1.20	2.31	1.64	6.39
	28.74	13.14	51.89	60.24	49.87	49.09	60.99	10.97
	2.71	22.67	6.60	5.15	14.49	4.30	8.52	12.03
	0.00	0.00	0.00	0.22	2.39	0.66	0.00	3.41

가

2.

가

가

1998 34%

1980

1997 IMF

가 1999

가 가

< 3-6 >

(: 10 , %)

	'95	'96	'97	'98	'99
○ (가) ()	201,661 (6.0%)	202,347 (0.3%)	212,117 (4.8%)	199,191 (△6.1%)	212,551 (6.7%)
- (가) ()	128,315 (9.3%)	132,023 (2.9%)	138,438 (4.9%)	129,767 (△6.3%)	134,568 (3.2)
- (가) ()	73,346 (0.7%)	70,324 (△4.1%)	73,679 (4.8%)	69,424 (△5.8%)	77,942 (12.3)
○ ()	28.5	29.0	30.1	27.9	28.7
○ ¹ ()	73,574	82,395	88,024	87,361	88,593

* :

가
가
가
가
가

< 3-7>

	('99)	('93)	('98)	('98)	('97)	('98)	('98)
-	100,210	964,800	652,845	237,937	155,302	158,394	71,118
	1	9.6	6.5	2.4	1.5	1.6	0.7
	214	37.4	51.7	29.0	26.6	27.0	32.5

: OECD, Main S&T Indicators(2000)
: (full-time equivalent) , < 3-6>
(head count)

가

, ,
, , ,
,

< 3-8>

(: %)

	('99)	('95)	('95)	('93)	('94)	('96)
	<u>23.1</u>	34	13.7	9.9	6.8	13.9

: ,

1998

6.0 R&D

18.4 , 15.4 , 13.2 , 12.3

,

< 3-9> 가 1,000

(:)

가	1995	1996	1997	1998
	7.3	6.4	6.3	6.0
	-	-	-	-
	14.2	13.3	13.2	13.7
	11.6	11.5	11.6	11.6
	9.5	-	-	-
	6.6	7.2	7.8	-
	13.3	-	16.4	18.4
	8.9	-	-	-
	10.8	11.4	11.9	-
	4.1	-	4.7	-
	5	5.4	5.3	5.9
	12.6	12.5	12.3	-
	6.1	6.1	6.0	-
	10.7	10.7	10.9	-
	6.6	-	-	-
	3.2	-	3.6	-
	14.5	-	15.4	-

: 1993

: OECD, Main Science and Technology Indicators (2000).

1999 31.3%, 34.4%,
30.0%, 4.3%

< 3-10>

(1999)

(:)

	134,568(100)	13,982(10.4)	50,155(37.3)	70,431(52.3)
	42,134(100)	5,614(13.4)	32,367(76.8)	4,153(9.8)
	46,231(100)	6,608(14.3)	16,327(35.3)	23,296(50.4)
	40,340(100)	1,561(3.9)	907(2.2)	37,872(93.9)
	5,863(100)	199(3.4)	554(9.4)	5,110(87.2)

: ()

: , 2000

(2001).

가 International Institute for
Management Development (IMD) The World Competitiveness
Yearbook (2000)

가 OECD “ (1996)”

< 3-11>

/

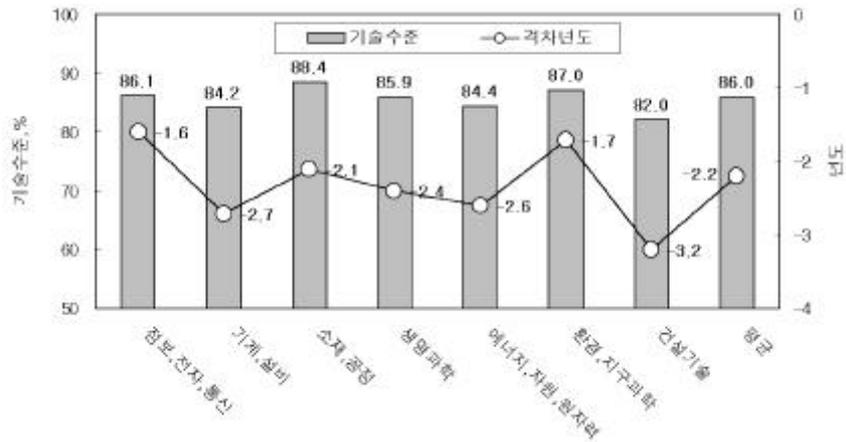
(: %)

	1985	1990	1999
	24/ 17	22/ 15	17/ 10
	10/ 36	7/ 30	12/ 37
	65/ 46	71/ 55	71/ 52

3.

가
 , 가 가
 가
 가
 100 가 가

< 3-7>



: , 1999. 8

가
 82% , 88.4 % , 가 가
 , 가 가 가
 , 가

82.6%, 86.2%, 85.0%

2.2 가

2.2

< 3-7>

가 가

1.6

2.1 ,

2.4 ,

2.6 ,

2.7 ,

3.2

가

가 1

1

가 3

1

가

< 3-7>

가

< 3-12>

	385	233	38	23	18	8
.	381	343	177	26	47	4
.	431	469	108	59	20	4
. .	436	191	38	36	7	2
	175	90	31	19	18	6
.	174	68	25	12	10	6
.	90	75	14	11	7	0
	2072	1469	431	186	127	30
	42.7	30.3	8.9	3.8	2.6	0.6

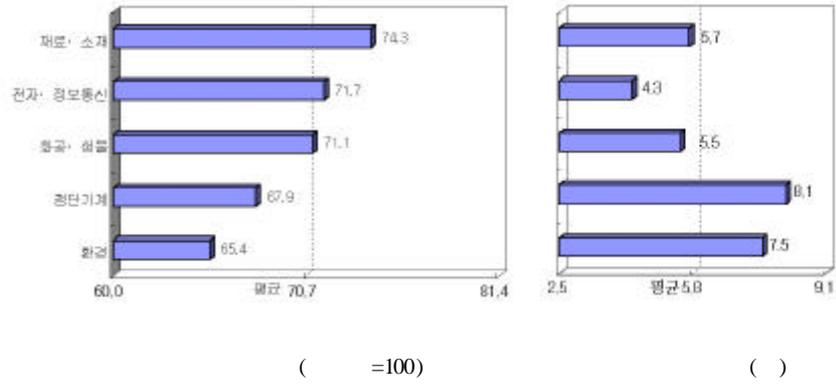
: , 「 , 1999

가 가

가

가 , 가 가 가
 가 가 . ,
 . 5 , 15 ,
 . 가 806 .
 가 100 ,
 70.7 가 . 가

< 3-12>



4.

가.

1990 가 .

, ,

가 25 23 (1997)

, 10

가 4 , 13

,

< 3-13> 가

(:)

	1993	1994	1995	1996	1997
	47,319	60,575	96,538	113,958	104,530
	189,371	207,255	232,174	218,642	230,336
	89,615	92,999	97,040	105,466	117,506
	379,415	369,821	387,666	399,435	415,698
	99,186	104,770	109,621	122,551	134,775
	15,350	19,242	22,281	63,768	82,944
	36,701	41,607	45,513	53,212	83,292
E U	457,528	496,657	506,239	641,639	812,729

: OECD, Main Science and Technology Indicators, 2000. 1

가 가 가

가가

, 가 . 가
 가 가
 가 가 가
 가 ,
 가 .

. < 3-13>

, 484 .
 43 .
 가 ,
 가 가

< 3-14> EPO () 가
(: , %)

가	(1996)	가 (1990-1996)
	484 (0.7)	26.5
	20,748 (28.0)	3.1
	13,026 (17.6)	0.1
	15,220 (20.5)	4.8
	4,034 (5.4)	2.2
	106 (0.1)	7.7
	781 (1.1)	10.5
E U	34,922 (47.2)	4.4
O E C D	72,828 (98.3)	3.2
	74,064 (100.0)	3.3

: OECD, *Science, Technology and Industry Outlook 2000*, p. 255.

< 3-15>

2.3%

가 35.9%

가

< 3-15> USPTO ()
가

(: , %)

가	(1999)	가 (1990-1999)
	3,562 (2.3)	35.9
	83,909 (54.7)	6.6
	31,105 (20.3)	5.3
	9,338 (6.1)	2.3
	3,572 (2.3)	2.8
	94 (0.1)	6.4
	649 (0.4)	8.8
E U	23,499 (15.3)	3.2
O E C D	147,799 (96.3)	5.8
	153,492 (100.0)	6.1

: OECD, *Science, Technology and Industry Outlook 2000*, p. 256.

가 가
 가 가
 (Science Citation Inde
 x : SCI) , 1981
 268 , 1990 1780 , 1990 25
 , 5 ,
 1990 ,
 ,
 . 1996 2000 4
 가 .

< 3-16>

(:)

	'96	'97	'98	'99	2000
	6,430	7,818	9,513	11,066	12,232
	21	18	16	16	16

(SCI)
 2000 16 .
 SCI '99 11,066 2000 12,232
 10.5% 가 , '99
 1.26% 0.12% 가 1.38% .
 가 30 1 .

< 3-17> SCI

1992	2,461	254,373	51,772	47,380	62,027	38,418	13,078
1994	3,910	267,125	55,142	49,552	65,159	38,623	14,498
1996	7,295	279,917	64,114	58,555	72,873	44,097	18,039
1998	11,102	286,766	72,977	70,455	79,021	48,883	20,488
2000	12,232	251,023	68,134	47,276	70,777	46,539	21,279

※ : OECD, (2000-2), Main Science and Technology Indicators

가 , 30
 31 ,

가
 . 5 ('96-2000) 1
 가 1.96 60 3.98

, ,
 , (technology licensing)
 .
 가 가 가

가 , 가
 < 3-18> . 1985
 가 , 가
 가 . 13 1998
 가 ,

< 3-18>

(: US\$, %)

가							/	
	1985	1998	1985	1998	1985	1998	1985	1998
	11	141	296	2,386	-285	-2,245	0.04	0.06
	6,678	36,808	1,170	11,292	5,508	25,516	571	326
	1,074	5,586	1,345	2,622	-270	2,964	80	213
	1,546	11,250	2,178	13,292	-632	-2,041	71	85
	1,468	5,565	1,305	2,903	163	2,662	113	192
	5	94	114	360	-109	-266	4	26
E U	7,439	21,869	10,365	22,234	-2,925	-365	72	98
O E C D	16,806	67,194	13,990	39,036	2,830	28,157	120	172

: OECD, *Science, Technology and Industry Outlook 2000*, p. 258.

(, , , 1999.7)

1960
 가
 /
 1985 1998
 가
 가 80%
 , 1999
 45%가 , 8%가
 9%

5.

가

가

가

5.8

가

가

가

가

가 . 가 (National Innovation System :
 NIS) . 가가
 NIS

가

가

Lundvall(1988) 가 (searching and
 exploring) ()
 (learning) (, ,)
 (, , .)

/ 가

NIS 가 가
 (country-specific)

(2)

(Regional Innovation System : RIS)

가

RIS NIS

가

가

가

가

가 가

가

가

(Silicon Valley)

가

(3)

RIS

. RIS가

-

< 4-1>

/

(science/research park),

(technopolis),

(technology incubation center)

'50

(industrial complex)

(< 4-1>)

(A)).

'60 - '70

가

. '60

'70

가

.(< 4-1>

(B)).

가

가

.(< 4-1> (C)

). '70

(incubator)가

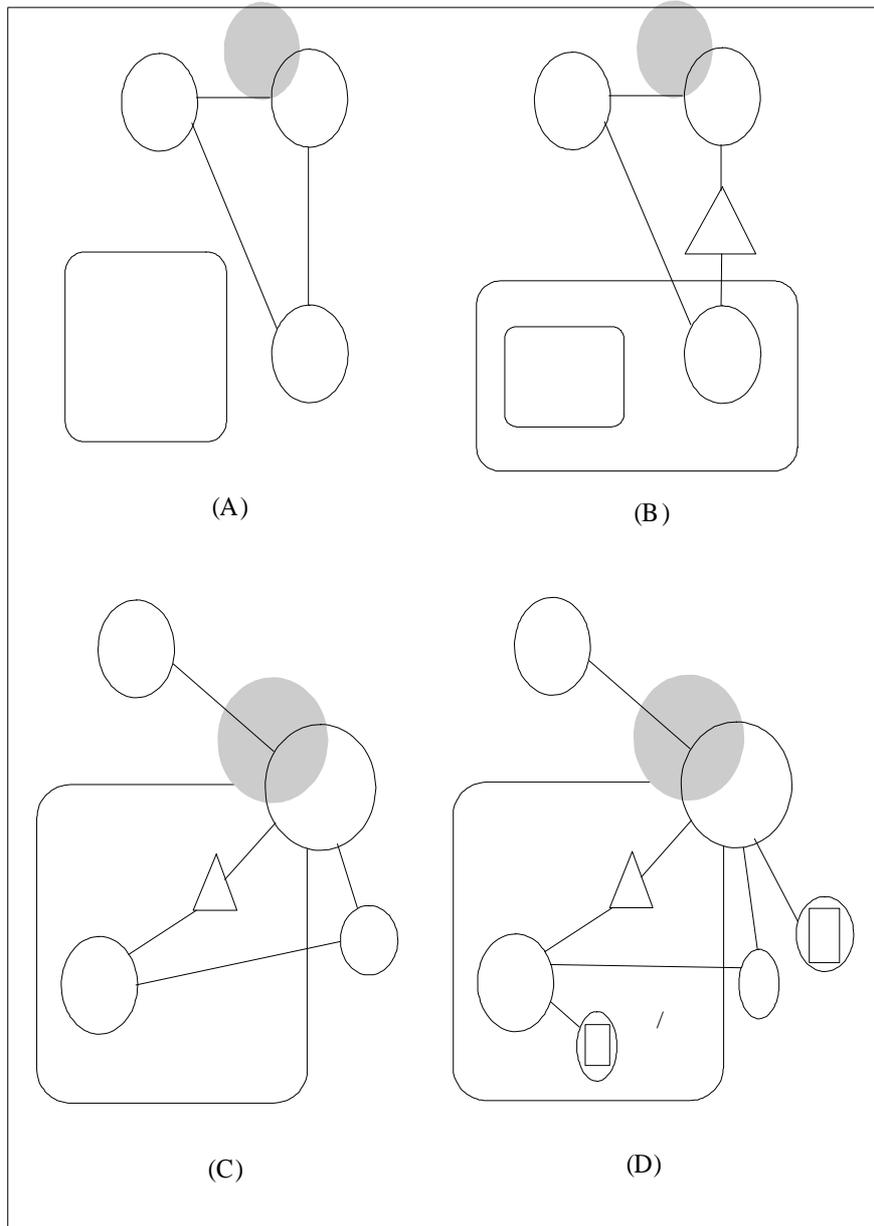
(< 4-1> (D)).

< 4-1>

/	- . .	- Stanford Research Park - Cambridge - 가 - Ulm , - Research Triangle
	-	- 新竹 - - Sophia-Antipolis
	-	- Clwyd - ,가
	- . .	- - KAIST

: , : (1995) ,
(1998) / .

< 4-1 >



: Yoshizawa et.al., Comparative Studies on Science and Technology Parks for Regional Innovation throughout the World, 1995.

(technopolis)

가

가

가

가

Sophia- Antipolis

가

가

가

가

가 가 가

(4)

(technology infrastructure) 가

(SOC) 가 가

Justman and Teubal(1996) ‘

가

가
가

(), ()

(GERD)

(clustering analysis)

가

(similarity)

(cluster or group)

OECD

database(1997),

가

ASEAN database(1997),

(1996)

9 가

가가 < 4-2>

< 4-2 >

	-								가
I	M	H	L	VL	L	VH	M	L/VL	, ,
II	MH	H	L	VL	M	H	M	VL	, , , 가
III	M	H	M	VL	L	H	H	VL	, ,
IV	M	M	M	VL	M	M	M	VL	,
V	ML	VH	L	L	ML	VH	ML	L	,
VI	H	ML	M	VL	H	ML	VH/H	L/VL	, ,
VII	H	L	H/M	VL	ML	ML	VH	L/VL	, ,
VIII	H	M	L	VL	H	M	L	VL	,
IX	VH	M	VL	VL	VH	M	VL	VL	,

: VH = very high, H = high, M = medium, L = low, VL = very low

(1) / - /
 ()
 ()
 50% ,
 30% 가 . 60%,
 25% . 10%
 가 , .

(2) / -

()

, ,

(40%)

20%

-

가

,

,

,

가

(3) - /

20%

(5%)

40%)

가

가

(4) -

가

40%

20%

20%

가 , , , .
(5)

65-70% 가 가 OECD

(6) /
가
(20%).
가

(critical mass)

가 , , .
(7) / -
(6)

가 , ,

(8) /

가 ,

(9)

(70%).

30%) 가 , 가 , (

가

가

/ 가

/

가

가

< 4-2>

가

/

가

(critical mass)

/

가
가

. '60

가 , '80

:

,

가

'60

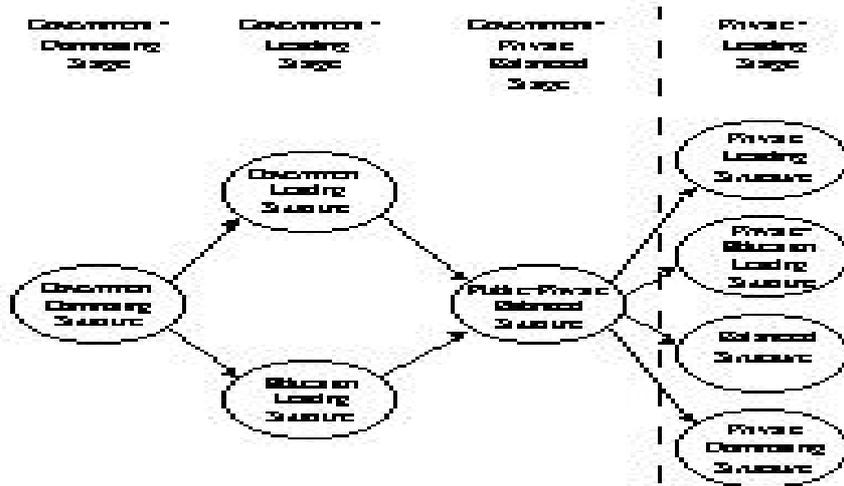
. '80

가

, ' 가

가

< 4-2 >



가

가

/

가

가
(business cycle)

가

가

IMF

'98
80%가

STEPI(1998)

12%

(concentration ratio)가

가

가

가

가

가

IMF

5

가

가

가

3.

2 (mission-oriented) 가 (diffusion-oriented) (Ergas, 1987). , (basic science), (big science),

가

가 (top-down, spin-off process) , (bottom-up, spin-on process)

가

가 , ,

60

. 가
가
가 '90

. '90
(convergence)
가

(1)

, 가 '80
(Advanced
Civilian Technology Strategy)

,
, '80
(transfer)
, '80 'Stevenson-Wydler ', '86
(Federal Technology Transfer Act)'

(CRADA) 가 - , -
가

(dual-use technology)

(NSF) (NASA)
가

(extension) - , -
가 /

'82 ' '
(SBA)

. MEP

(state)

, 가

,

(2)

가 .

가

가

· '90

'92

「

科

學技術政策大綱」

· '90

· '95

· '96

「

」

「

」

· 「

」

가

가

(mobility)

가

(3)

가 .
가 2

가 .
가

‘
(dual structure)’ 가 .
'80

- - (spin-off) 가

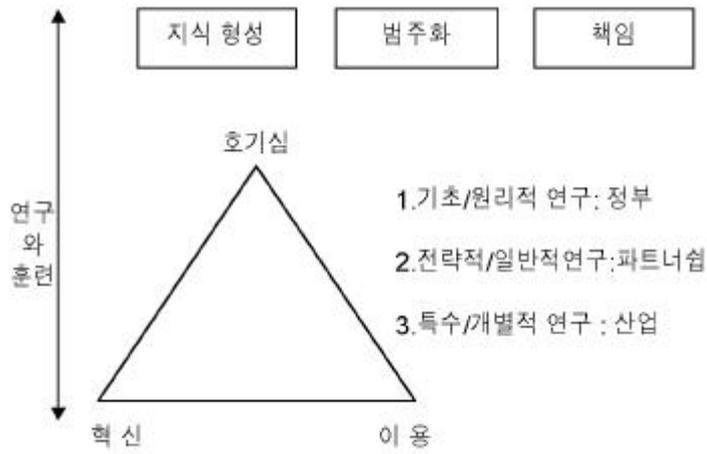
가 '93 「 .
」 .

R&D

가 .
(SERC)가 < 4-3>
‘ /
, ‘ /
‘ / ’

가

< 4-3> SERC



: SERC, "A Review of Support for Engineering", 1992

(4)

가

가

가

가

(apprenticeship system)

가

(traditional standard technology)

Bio-regio

Project Lead Project 가

Bio-regio Project

. Lead Project
Bio-regio Project

(targeting research)

(5)

가

가 가 .

가

2

2

'package

가

'90

'93 「 」

가

가

가

가

(ANVAR)

(CRT)

가

4.

(Silicon Valley)

가

가
가

(1)

가

(vertical)

(horizontal)

가

가 (feedback)

가

가

가

(2)

(RIS)

가

. Stanford

(UC-Berkeley) ,

executive program off-campus

(SJSU) ,

. SJSU ,

/ .

. Community College

(4)

가 . < 4-4>

sponsored research,

master agreement,

affiliated research,

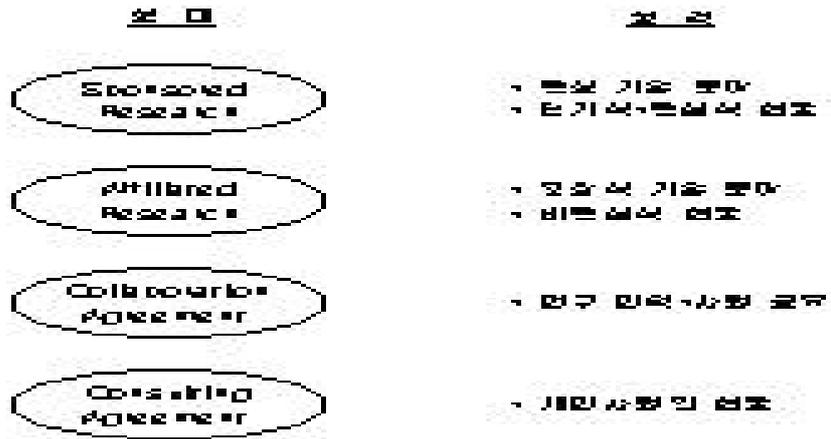
, collaboration

agreement,

consulting

agreement

< 4-4 >



(5)

(6)

가 (whole cycle)

(1)

가

(SCI) '96
 SCI 7,295 가 83% 6,050
 19
 GDP 11
 1/38, 1/8 (7,387)
 1.6 (10.8)
), (5.1), 가 (6.4), (3.5)

(IMD)

'99 28 , 2000 22 가

가 .

가

'81-'94 가 24.3%

가

(2)

. '98 가

11%

14- 15%, 14- 15%, 17- 18%, 14- 15%,
 19- 20%, 20- 21%

MIT 1/3 KAIST 1

가 10,000 가 50%

1 가 42 30.4

MIT 9.5 , 11.1 , 17.8

30 15 , 18 ,

12 12.5 9.1 , 10.2 ,

8.3 가 가

-'96 가 35.7% 가

가 21.7% '90 322 '97 817

6.9% '96 22.2% 가 '89

(1)

· '60

가 , '80

:

가

가

'78

'80

'90

'85 10% 3.9%, '89 '90

6.9% 가 '90 20%

(2)

(< 4-3>).

< 4-3> (%)

'85	24.6	75.2	0.2	19.4	80.5	0.1	46.6	50.7	2.7	39.2	59.5	0.3	41.4	52.9	5.7
'90	19.4	80.6	0.0	16.5	83.4	0.1	41.4	55.0	3.6	35.8	61.4	0.5	43.5	48.3	8.2
'93	16.7	83.1	0.2	20.4	79.5	0.1	37.5	58.5	4.0	37.1	60.1	0.1	47.0	43.5	9.5
'96	22.1	77.8	0.1	19.7	80.2	0.1	33.1	63.0	3.9	37.0	60.8	0.3	48.5	41.6	9.9
'98	26.9	73.0	0.1	20.4	79.2	0.3	29.4	66.6	4.0	35.6	61.7	0.3	50.3	40.2	9.5

: 「 」

(3)

1/3,

75%

10%

(< 4>).

SCI

'96

83%

< 4-4> ()

	1997			1998		
	28,529	19,299	714	31,740	16,906	2,482
	4,082	23,468	42,575	4,042	21,267	35,832
	5,248	7,232	2,539	4,825	5,904	1,720

: 「 」

< 4-6>

(IPR)

		(Share of Royalties)			
			/		
		sharing required by law			
	Stanford	33%	33%	33%	
					100% to owner
	BBRC	variable sharing			
	Max Planck	33%	33%	33%	
		25%	25%	50%	
	Hebrew	33%	33%	33%	
	Weizmann	40%	0%	60%	
					100% to owner
	KIST	up to 60%	0%	40%	

: OECD, Industry-Science Relationships, 2001

6.

,
 ,
 ,
 (Coursey &
 Bozeman, 1989)' .
 ,
 .
 가 가 .
 ,
 (outsourcing)

가

400

NSF

가

OECD

(2000)

가

가

(multi-disciplinary knowledge)

(market

for knowledge)

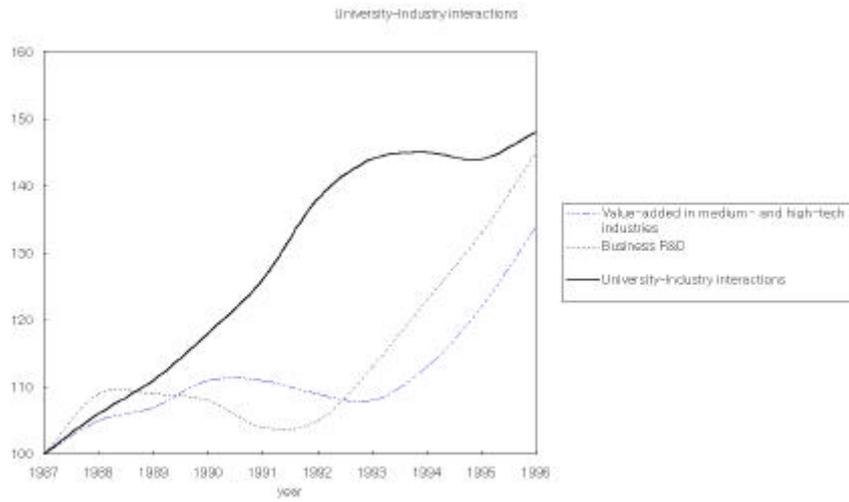
가

가

OECD (2000) , '80 가 가

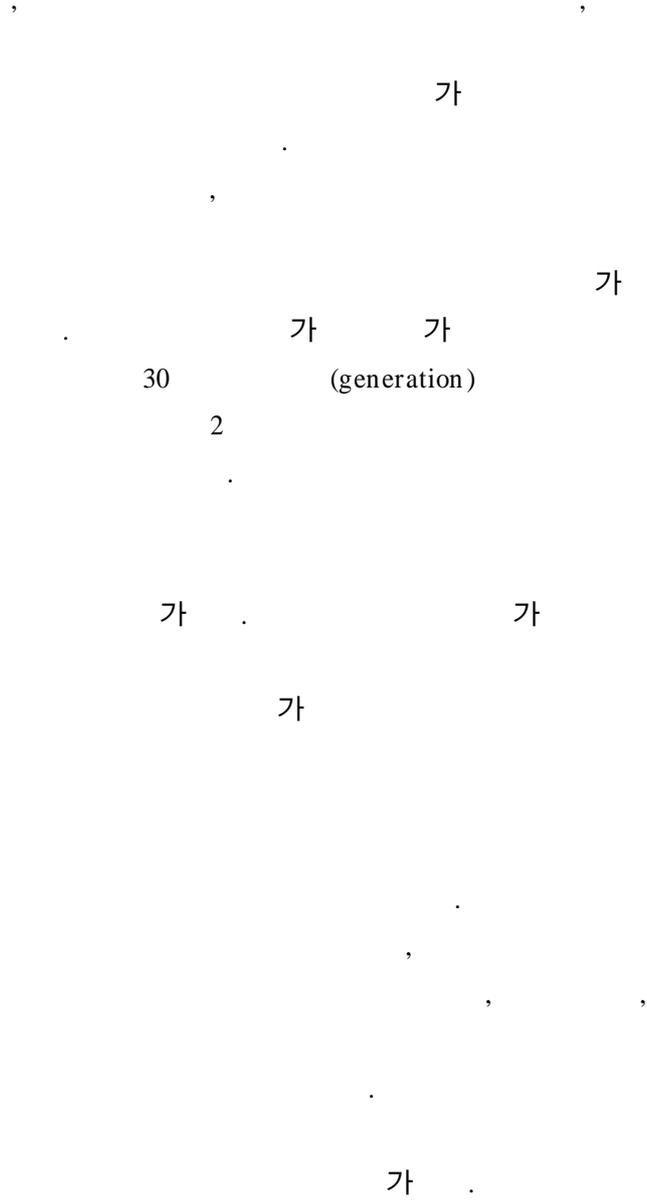
. (< 4-5>).

< 4-5>



: OECD, Industry-Science Relationships, 2000

가 .



7.

21

가

가

가

가

(1)

NIS

가

가

가

(2)

가

가

가

sponsored research ,

affiliated research ,

collaboration

agreement ,

consulting

agreement

executive program off-campus

(3)

가

, 가 ,

'Bayh-Dole Act'

가

가

(4)

가

가

(best practice)

가

가

가

가

가

OECD(2000)가 (production indicators), (activity indicators), (network indicators)

가

5

1

(management of technology)

. Foster (2000) 1975 40%가

가

. Stevens (1997)

3,000

가

(routines)

가

가”가

가

, (),

(wealth

creation)

(Khalil, 1999).

가
 (Zahn, 1995a; , 1988).
 ” “
 .
 .
 70 90
 .
 ,
 “
 ” (Kaplan, 1986; Berman and Khalil,
 1992). ,
 . 80
 ,
 .
 가,
 ,
 .
 富 創出 .
 .
 가 가
 가 . IMD(2001), (2002)
 가 가
 가 가
 가 ,
 가 . 80
 (, Rubenstein, 1989; Wolfrum, 1991).

가,

“ 4 ”

(2001)

15

가,

가 가

. Forbes and Wield(2000)가

가 .

가

가

가

4

1

3

4

2.

가

80

4

5

(Zahn, 1995b; Gaynor, 1996).

. 90

Rothwell(1992)

5

1 2

(simple linear models) , 3

(coupling model) , 4

model) (parallel

5
5
5

Mitchell(1992) 70
70

, 70 90

Roussel, Saad and Erickson(1991)

3

가

Miller and Morris(1999)

4

(discontinuous innovations)

4

Reger and von Wickert-Nick(1997)

“ 3

” “3

” 가

“ 3 ”

“3

” 가 . 3 1

, 2

“ ” “

” . 50 70 , 70

80 가

3 ,

4

1

1 , 1867

BASF가

(R&D laboratory) 1876 Thomas Edison New Jersey

Menlo Park (research laboratory) 2

(scientists)

가 ,

가

가

1

(R&D)

(D)

. Roussel (1991)

(R)

1

가

Prahalad and Hamel(1990)

“

”(strategy of hope)

2

2

2

1

가

가

가

2

2

2

가

1

가

가

. 2

. , 가 (Roussel , 1991).
2

3

가 .
가 ,
가 .
가 , , ,
가
,
(Roussel , 1991).

가 가 .
, 가 . 가
投資案 가
가 . 3

가
(R&D portfolio)가 .

가

, “ ” “ ”

(technology road maps)

3

3

“ ” ”

“ 가 가 .

(explicit needs)

가 . , 가 ,

(latent needs) 가

R&D

(continuous innovations)

가 .

4

가

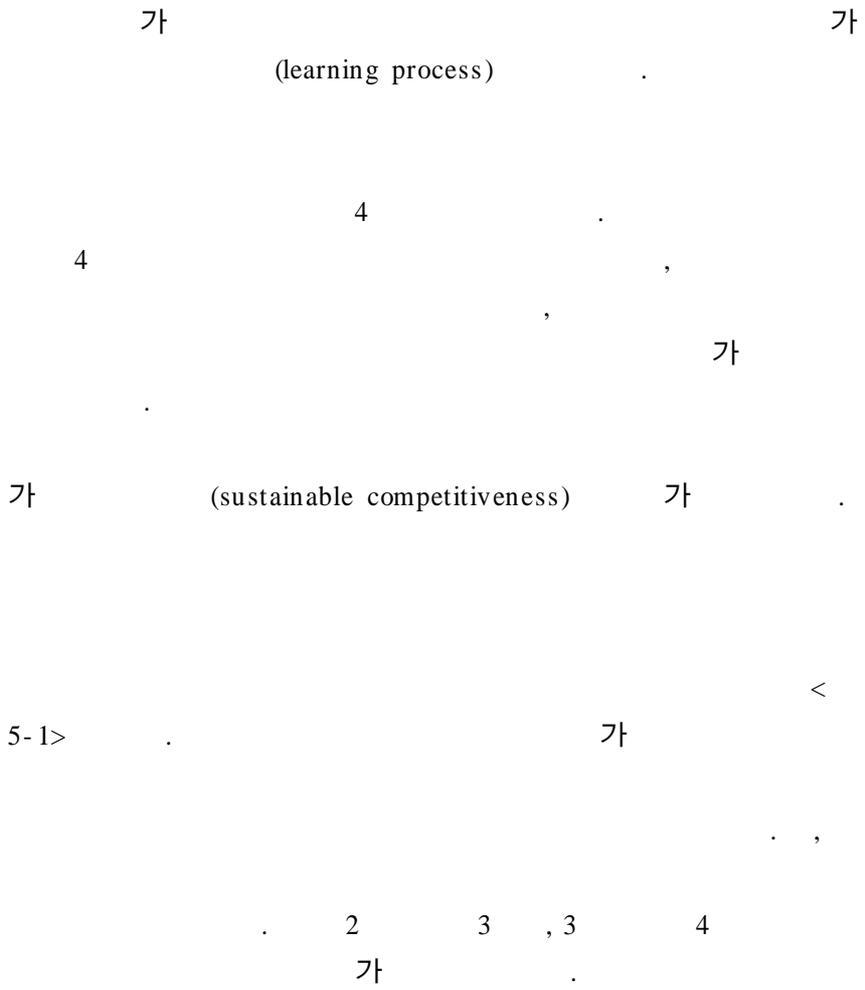
가

가

(discontinuous

innovations)

가



가

3.

가

(Kim, 1997;

Chung and Lay, 1997).

(Kim, 1997).

가가

< 5-1>

1978. 9	,	300		
1979. 2	'		()'	
1981. 7	,			
10	,	46		()
1982. 5				
1983. 7		100		
9				
1985.12				(5)
1986. 1				
3	,		.	,
1988. 4		500		
1989.12			.	
1990.11				
1991. 2	,		(3)	.
	,			.
1991. 4	,	1,000		
1993. 4	,	1,500		
1994. 5				2
			(2	
)	
	,			.
1995. 2	.	2,000		
1996. 2	,			
			.	
1997.12		3,000		
1998. 8	()			
	가			
2000. 2		5,000		
2000.12		7,110		

: (2000), < >, .

60 .

70

80

, 2000 12 가 7,110

1981 10 46 1991 4 1,000

, 1995 9 2,000 , 1997 12 3,000 , 2000 2

5,000 , 2000 12 7,110 가 (<

5-1>). 가 가

. 90 IMF

,

가

가

가

2000 88.7%

90 < 5-2>

. 1991 4 가 1000 90

가 가 2000 12

7,110 가 , 2000

2 가 5,000

가 7000 가 90

. 1997

90% 가

가 가

.

< 5-2>

	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00
	1,201	1,435	1,690	1,980	2,270	2,610	3,060	3,766	4,810	7,110
	495	532	577	630	692	748	782	806	797	803
	706	903	1,113	1,350	1,578	1,862	2,278	2,960	4,013	6,307

※2000 : (2001), < >, 4 , . 2001.

가

가

가

가

82 ()
 99 9 3,095 86 1 , 95 5 97 8 ,
 (, 2000). 1998 IMF 30 가 가
 , 1999 가가 97,000

가 가
 < 5-3> IMF
 1997 IMF 1998
 1999 15% 가
 1998
 4.8% 12.1% 가

, 1999 6.8% 가
 32.7% 가 IMF
 가

< 5-3>

(: , %)

	1997	1998	1999
	84,618	84,581(0.0)	97,288(15.0)
	60,791	57,882(△4.8)	61,848(6.8)
	23,827	26,999(12.1)	35,440(32.7)

: ()
 : , 2000.12

1991~1997 26.3% 가
 , 1998 IMF 11.3%가
 . 99
 13.4%가 가 10 1 IMF
 , 2000 30.9% 가
 13 (< 5-4>).

< 5-4>

(: 10)

	'97	'98	'99	2000()
	10,068	8,931(△ 11.3)	10,125(13.4)	13,252(30.9)
	8,853	7,536(△ 14.9)	8,261(9.6)	10,058(21.7)
	1,215	1,395(14.8)	1,894(33.6)	3,194(71.4)

: ()
 : , 2000.5

IMF 1998 가
 14.9% .
 14.8% .

IMF
 . 1999
 9.6% 가
 . 2000
 21.7% ,
 33.6% 가
 71.4%

가 가
 IMF
 1998
 1999
 가가
 IMF
 가
 가
 가

1) R&D

. < 5-5>

IMF

, IMF

IMF

< 5-5> IMF

										/
I M F		96	41 (42.7)	16 (16.7)	8 (8.3)	3 (3.1)	18 (18.8)	3 (3.1)	7 (7.3)	- (-)
		260	99 (38.1)	46 (17.7)	18 (6.9)	1 (0.4)	72 (27.7)	6 (2.3)	18 (6.9)	- (-)
		128	19 (14.8)	25 (19.5)	10 (7.8)	- (-)	55 (43.0)	10 (7.8)	8 (6.3)	1 (0.8)
		484	159 (32.9)	87 (18.0)	36 (7.4)	4 (0.8)	145 (30.0)	19 (3.9)	33 (6.8)	1 (0.2)
I M F		98	11 (11.2)	5 (5.1)	34 (34.7)	9 (9.2)	29 (29.6)	6 (6.1)	4 (4.1)	- (-)
		268	30 (11.2)	32 (11.9)	30 (11.2)	9 (3.4)	106 (39.6)	30 (21.6)	18 (6.7)	13 (4.9)
		139	6 (4.3)	20 (14.4)	8 (5.8)	5 (3.6)	43 (30.9)	30 (21.6)	14 (10.1)	13 (9.4)
		505	47 (9.3)	57 (11.3)	72 (14.3)	23 (4.6)	178 (35.2)	66 (13.1)	36 (7.1)	26 (5.1)

: (2001), <2000 R&D >, 2 , .

IMF 가 ‘
 ’(32.9%) , ‘
 ’(30%) IMF ‘
 ’ 9.3% ‘
 ’ 35.2% 가 . 가 가
 가 , IMF 가 ,
 , .
 ,
 , 가 18.8%
 29.6% 가가 .
 가 27.7% 39.6% 가
 IMF 가
 가 가 43.0% 가
 IMF 가
 IMF 가
 30.9% IMF 가
 IMF .
 가 .
 가
 가가 .
 가

2)

가

. < 5-6>

“ 3 ”

“ 2 ”

“ 1 ”

< 5-6>

(: , %)

	97	52 (53.6)	32 (33.0)	12 (12.4)	1 (1.0)
	267	130 (48.7)	97 (36.3)	38 (14.2)	2 (0.7)
	139	94 (67.6)	27 (19.4)	17 (12.2)	1 (0.7)
	503	276 (54.9)	156 (31.0)	67 (13.3)	4 (0.8)

< 5-6>

55%

3

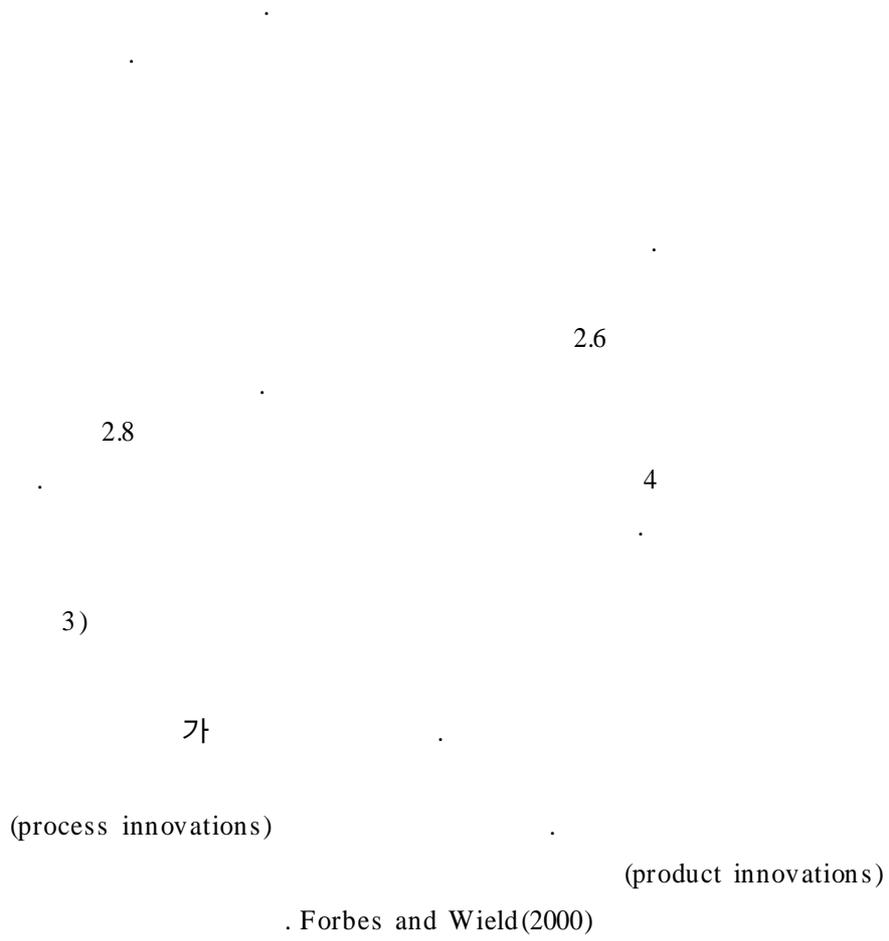
31%

2

67.6%

(48.7%)

(53.6%)



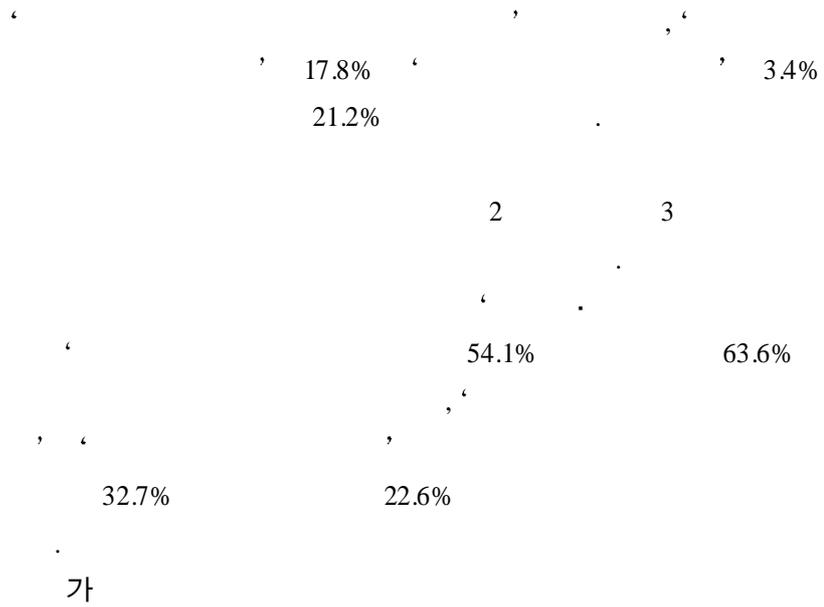
< 5-7> R&D 가

(: , %)

	98	53 (54.1)	27 (27.6)	5 (5.1)	6 (6.1)	6 (6.1)	1 (1.0)
	269	171 (63.6)	52 (19.3)	9 (3.3)	12 (4.5)	15 (5.6)	10 (3.7)
	140	113 (80.1)	11 (7.9)	3 (2.1)	5 (3.6)	1 (0.7)	7 (5.0)
	507	337 (66.5)	90 (17.8)	17 (3.4)	23 (4.5)	22 (4.3)	18 (3.6)

< 5-7>

66.5%



가

가

가 ,

2.5 3.0

4) R&D

가 . <

5-8>

가

'(54.9%)

'(27.8%)

'(26.4%)

24.1%

' 5.0%

가

3

3

가

< 5-8> R&D

				R&D						
	96	30 (31.3)	32 (33.3)	6 (6.3)	32 (33.3)	19 (19.8)	19 (19.8)	28 (29.2)	14 (14.6)	5 (5.2)
	262	146 (55.7)	22 (8.4)	13 (5.0)	64 (24.4)	68 (26.0)	34 (13.0)	68 (26.0)	70 (26.7)	13 (3.0)
	139	97 (69.8)	3 (2.2)	6 (4.3)	42 (30.2)	44 (31.7)	12 (8.6)	24 (17.3)	21 (15.1)	10 (7.2)
	497	273 (54.9)	57 (11.5)	25 (5.0)	138 (27.8)	131 (26.4)	65 (13.1)	120 (24.1)	105 (21.1)	28 (5.6)

: (2000), < R&D >, 4 , .

가 ‘ (21.1%)가
 . “ 4 ”
 . “ 4 ” 가
 가
 “ 4 ”
 . “ 3 ”
 가
 ‘ (33.3%) ‘ (33.3%)
 ‘ (31.3%)
 ‘ (29.2%)
 3
 ‘

'(14.6%)

“ 4 ”

가

'(26.0%) ‘

'(26.7%)가

3 4

가

가

4.

1

, 2

, 3

, 4

IMF

2.6

2.8

가
가

가

가

3

가

4

2

가 .
가 .

90 IMF
가 ,
.

가

Tidd (1997)

가 .

. (Tidd , 1997; ,
2001).

가

“ ”

가

21

가 . 가 가

가 ,

6

,
 . 1 가 가
 . 2 가 가
 . 3
 . 4
 , 5
 가 가
 . 6
 . 7
 가 가

1 가

, , ,
 가 가 가
 가 가 가
 .
 .

가

,

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가

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가

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가

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가

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가

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가

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,

,

,

가

,

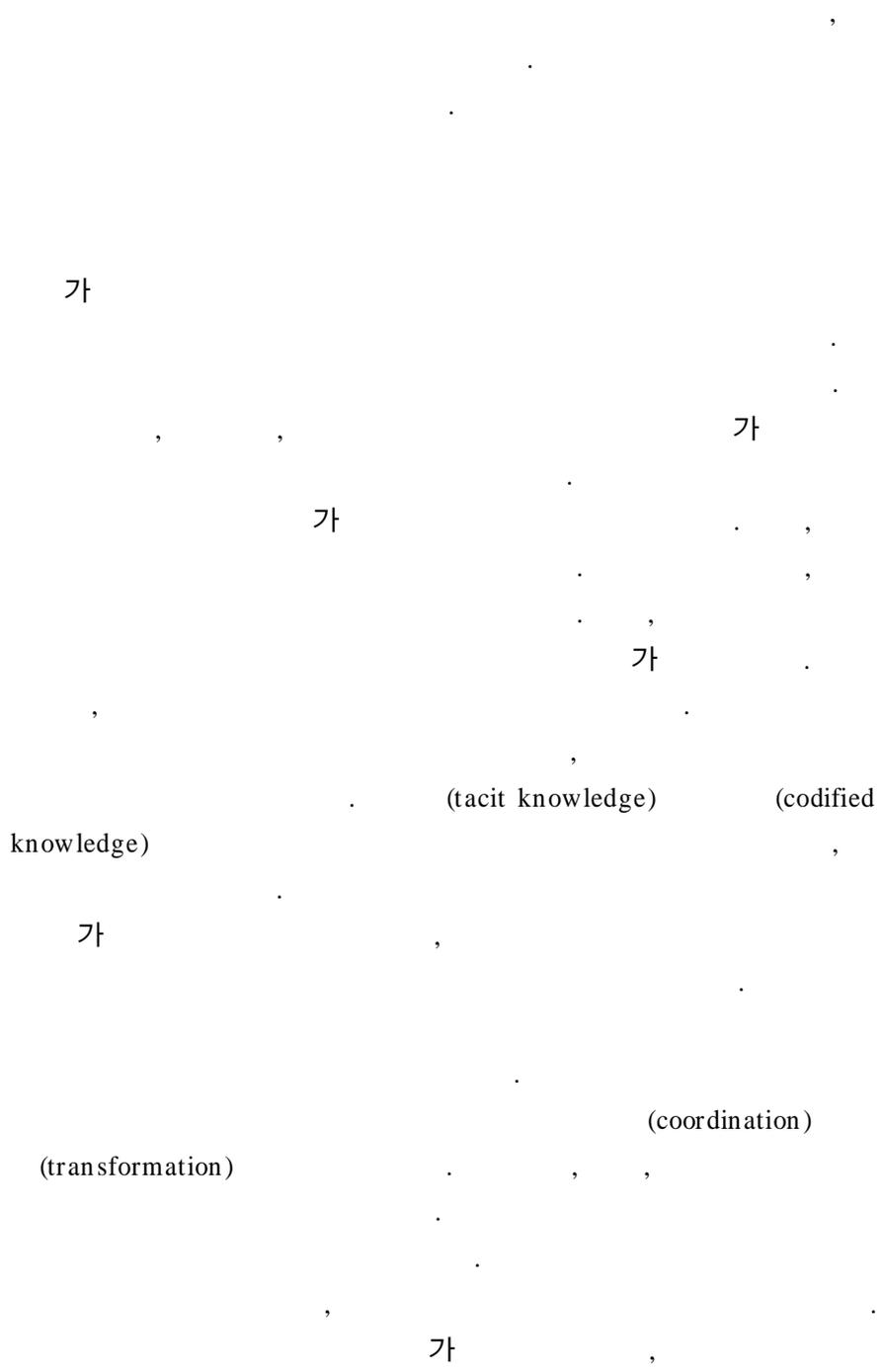
,

가

가

.

.



가 가 , 가

3)

가 가

가 가 , ,

가

200

30-40

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가

2.

가

가

3)

가 , ,
 , ,
 , 1960 3
 2000 2,200 가 .
 8675 540 .
 21 가
 1 5 , 6
 18 .
 500
 가 200 , 가 60 ,
 가 200 , CIS 가 50 .
 가 ,
 . < 6-1>
 가 .
 1990 /1991
 1995
 1912 11 1995 .
 가

< 6-1> (1990/ 1991)
1995

	: 1990 1991	: 1995 (%)
	13,878	47
	2,779	88
	1,235	79
	227	13
	1,912	11
	1,824	42
	142	59
	177	35
	240	41
	417	46
	194	30

: NSF, International Mobility of Scientists and Engineers to United States : Brain Drain, NSF 98-316, Issue Brief, 1998

가
 . 2001 4
 21,387 764 , 947 ,
 e-biz IT 401 . 2000
 11 ,
 2001 6 50 .

가
 . Toffler 3 , 가
 가

가

1990 20%

10%

가

(learning - by - doing)

Lundvall Johnson 가 . know -
 what .
 know - why ,
 . know - how 가 , .
 know - who 가 가 .
 know - what know - why (codified knowledge)
 가 , .
 know - how know - who (tacit
 knowledge) ,
 . know - how .

가

, , 가

가

3.

가 . IMD
가 .

1999 4,685 8 15- 19
 9% OECD 7% 20- 29
 18% OECD 15% . 15 가
 70 80 2 3% 가 ,
 가 2001 2005 가 0.9%
 . 55 1990 17.3% 1999 20.6%
 , 2000 가 2010 가
 4 1 .

OECD 가 25 64
 65% OECD .(< 6-2>)
 25 34 92%
 가 .

< 6-2>

	25-64	25-34	35-44	45-54	55-64
가	61	72	63	57	44
	65	92	70	45	27
	84	88	87	84	76
	80	93	91	77	57
	61	75	63	56	41
	60	63	62	58	53
	86	88	88	87	80

* , Education at a Glance, OECD, 2000

25 64

22%, 17% OECD .(< -3>)
 25 34 34%, 23% OECD 25%, 16%
 10

< 6-3>

	25-64	25-34	35-44	45-54	55-64	25-64	25-34	35-44	45-54	55-64
가	21	25	23	19	14	14	16	15	13	9
	22	34	23	12	8	17	23	19	11	8
	30	45	40	23	13	18	23	23	15	9
	23	22	26	25	19	14	14	16	15	10
	24	26	25	23	17	15	17	17	15	11
	35	36	36	37	27	27	27	26	29	22

* , Education at a Glance, OECD, 2000

< 6-4> 24

< 6-4> 24

	: A	: B	:C	24 : D	A/D	(B+ C)/ D
	325,484	54,394	148,844	23,220,000	14	0.9
	11,362	2,370	1,822	93,000	12.2	4.5
	750,000	147,036	29,000	15,545,800	4.8	1.1
	524,512	32,327	102,951	1,870,700	28.0	7.2
가	5,599	2,103	1,676	48,600	11.5	7.8
	196,566	33,345	41,309	843,500	23.3	8.9
	74,255	10,982	13,028	360,900	20.6	6.7
	108,825	23,951	22,828	821,800	13.2	5.7
	75,641 (137,329)	6,273 (25,094)	24,815 (15,040)	874,900	24.3	8.1
	1,179,815	135,943	63,114	3,671,000	32.1	5.4

: 1) , , 1997 , , 1996 , , 가 1995 , 1990

2) 가 . () 3
: NSF, Science & Engineering Indicators, 2000, appendix table 4- 16

가 2000 900
2,000 가 .<(

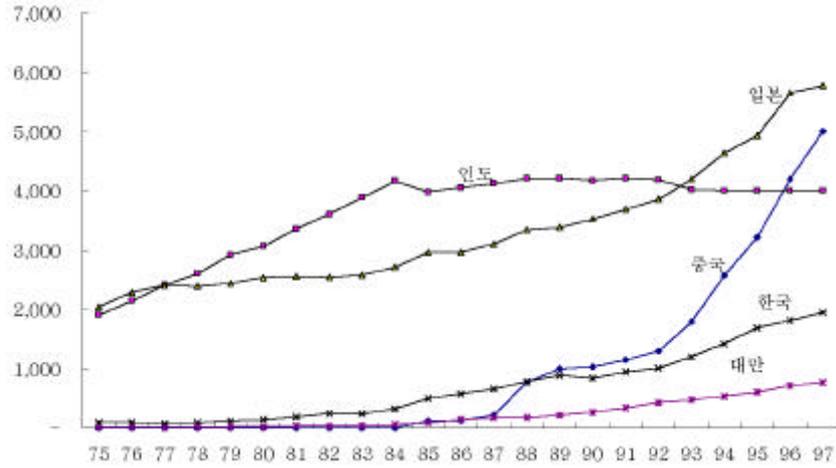
6- 1)> ,

2005 1,300 , 3,800 .

가

, 5 1993 12% 가

< 6-1> 가



: NSF, Science and Engineering Indicators, 2000, Appendix table 4-29

(25 64) 5.4% OECD 가 . (6-5)

< 6-5> (25~64) (: %)

5.4	34.0	28.0	40.0	33.0

: OECD, Education at a Glance(96), 1999.

25-64
 OECD ,
 OECD 64% 55% .

< 6-6> 25-64 (1998)

(: %)

가		78	89	93	93	87
		51	69	80	83	64
		87	91	96	93	91
		60	49	58	54	55
		87	96	98	98	95
		57	63	62	68	62
		68	88	91	93	86
		52	76	85	87	73
		75	88	92	94	88
		50	73	82	82	73

* , Education at a Glance, OECD, 2000

6.9%, 5.4% OECD 가 5.7%, 7.2%

, .
가
,

< 6-7>

(: %)

가		8.9	5.3	4.3	3.3	5.7
		10.0	7.6	4.2	4.4	7.2
		8.2	7.4	6.9	4.7	6.9
		4.0	5.4	6.2	2.7	5.4
		5.2	3.4	2.4	2.1	3.3
		3.0	3.1	3.6	3.1	3.2
		13.7	5.3	3.5	2.3	5.6
		7.3	4.5	1.7	3.0	4.4
		8.0	4.6	3.2	1.7	4.1
		9.3	4.2	3.0	1.9	3.8

* , Education at a Glance, OECD, 2000

GDP 3.6% OECD 4.9%
 . OECD 가
 GDP 가 .
 41% OECD 14% , 3
 84% OECD 25% .
 OECD 가 , GDP
 0.5% OECD 1
 OECD 70% .

< 6-8>

(%,)

						OECD
GDP	0.5	0.5	14	1.1	1.6	1.0
1	6,844	10,157	17,466	9,989	12,981	10,893

: OECD 가 (Education at a Glance), 2000

IMD 가

IMD 가 1996

. IMD 가 가

8

223 가 .

가

. 223 가 136

87 .

가

IMF

가

. 49 1996 27 , 1997

30 , 1998 35 , 1999 28 , 2000 28 가 .

2000

27 가

< 6-9> .

< 6-9> 가

<p>< >: 10</p> <ul style="list-style-type: none"> ● : 16 ● : 2 ● : 33 <p>< >: 36</p> <ul style="list-style-type: none"> ● : 32 ● : 35 * ● : 30 * <p>< >: 15</p> <ul style="list-style-type: none"> ● : 33 * ● : 4 ● Human Development Index : 27 <p>< 가 >: 21</p> <ul style="list-style-type: none"> ● , : 12 * ● : 28 * ● : 19 * ● : 44 * ● 가 : 6 * 	<p>< >: 34</p> <ul style="list-style-type: none"> ● : 38 * ● : 4 ● : 7 ● : 43 * ● 1 : 44 ● 1 : 42 ● GDP : 34 ● : 26 ● : 11 <p>< >: 14</p> <ul style="list-style-type: none"> ● : 16 ● : 28 ● 가 : 37 ● : 6 <p>< >: 9</p> <ul style="list-style-type: none"> ● : 25 ● : 7
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*

, (16),
 (4), (7), (16), (6)
 가
 (35), (38), 1
 (44), 1 (42), (43)
 가 .
 (34)
 (36) 가 .
 가 4 ,
 18 , 19 .

4.

2001

2001

. , 1)

. 2)

. 3)

4)

. 1)

. 2)

3) 「 21」

. 4) 가 ,

. (2002) 5)

. 1) 「 가

」 2 3 . 2) IT .BT,

. 3)

() . 4)

. 5)

. 6)

. 1)

. (40)

(2) (20)
 . 2) 가 (16 4)
 . 3) . 4)
 . 5)
 . 1) 6 · 25
 . 2)
 . 3)

가 가
 2001 .
 13 .
 가 가 8)
 . 1)
 . 2) , IT , BT
 . 3) ET , NT
 . 1) , ,
 , , 가 ,
 . 2) 21 .

8) 가 “ 21 가
 ” (2001.6.19) .

, . 1)

. 2)

5. 가

OECD “ ”

OECD

가

가

가

가

가

가

가

가

가

가

Toffler “ :21 ”

Toffler Associate가
, 21

가 가

가

가

1990

가

(school-to-work)

(welfare-to-work)

가

가

(NOVA)가

가

가

NOVA

50%

1992

JVSV(Joint Venture : Silicon Valley)가

JVSV

Challenge 2000

Challenge 2000

8

8

56

가

가

Challenge 2000

가

가

2000 4

2001

가

, 가

가

7. 가

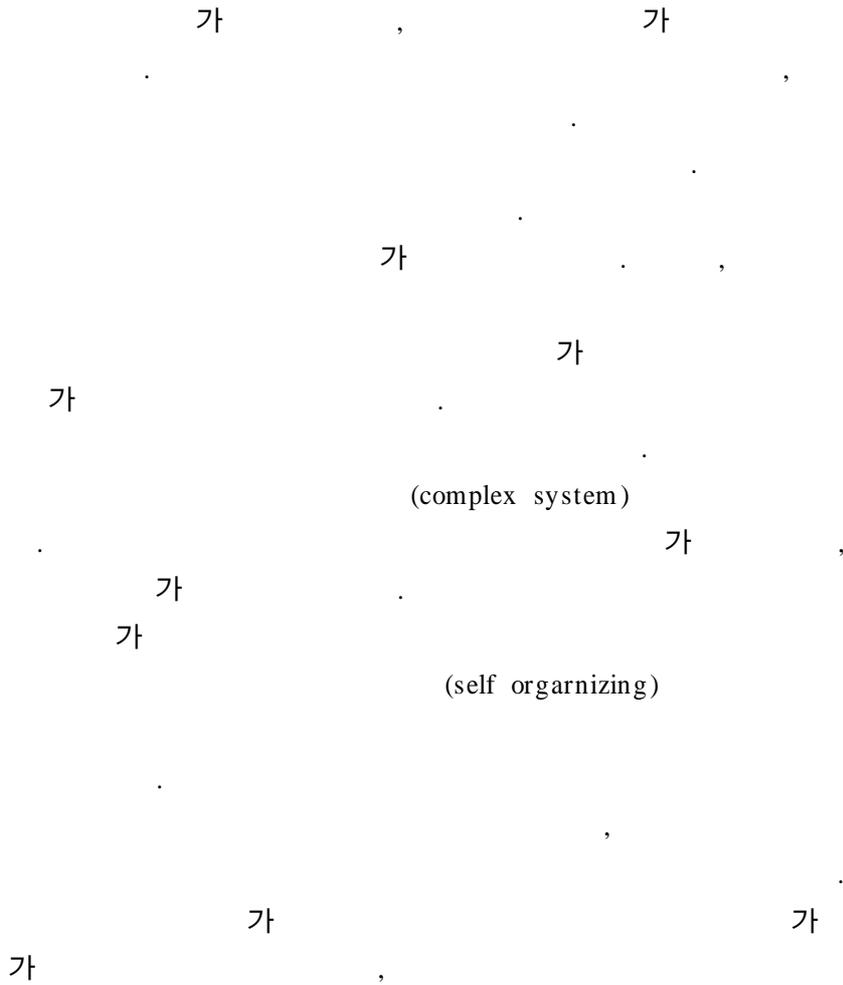
가. 가

. 20 30

5

가

가



. (, (2001))

20

가

가

가

가

가

가

가

가

IMF

7

가 .
, .
“ ”
가 .

가 . 1
가
1960 . 2
3
가 .

1.

가
가
가
가
(late commer's advantage)

가 가 가
가 가
20 , 2
가

. 19 가
가

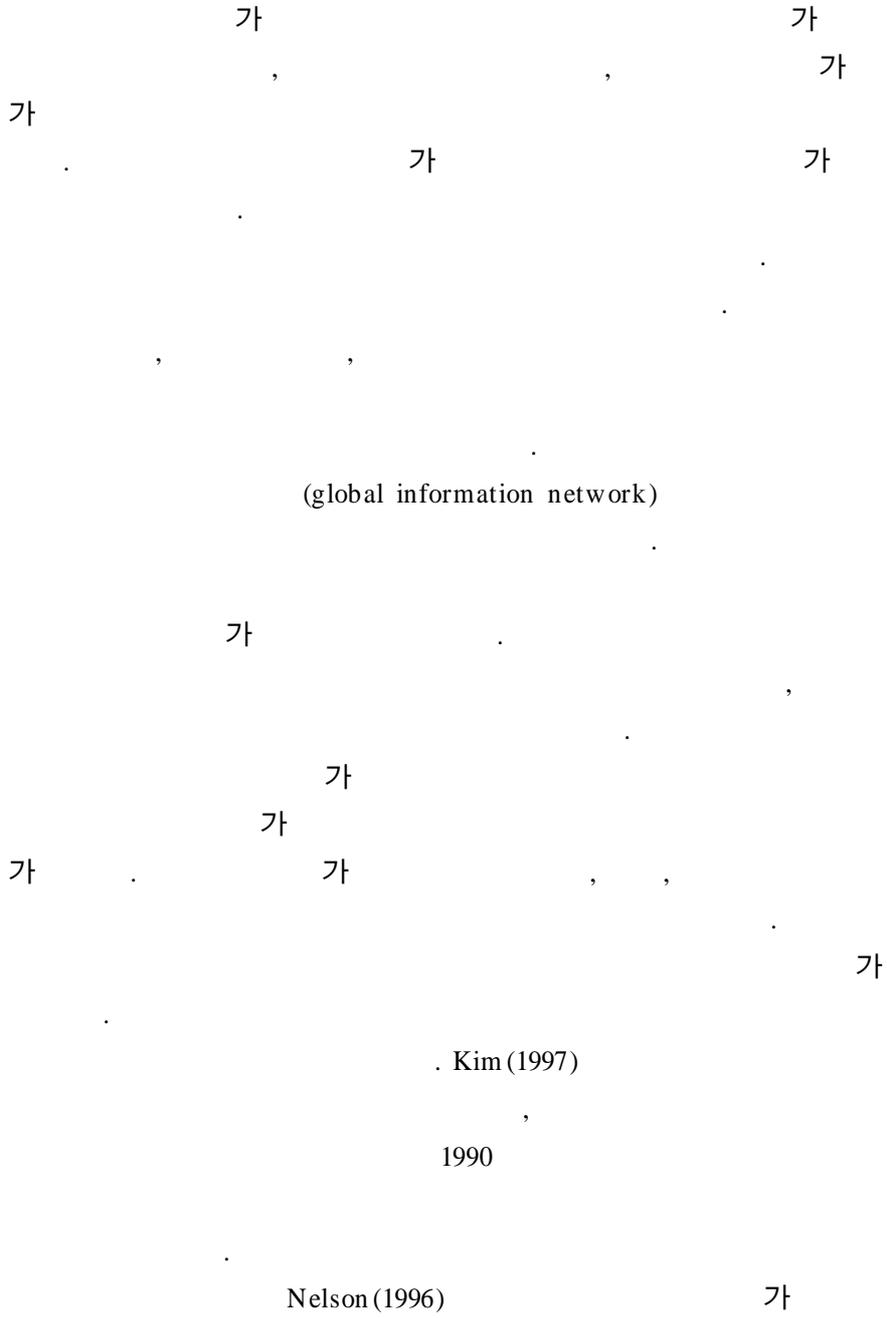
Krugman(1994)

가 가
가 ,
, 가

가 10-15% 가
1/3
1% 가
가 ,

가

가 가 , 가
가 가



가

(accumulation)
(assimilation)

가

가

가

(codified knowledge)
(tacit knowledge)

(learning)

가

2. 1960

10)

(flying-wild-geese pattern of industrial development)
(1943)가

가 가

가

10)

W.Y Lee(1998))

가 가

가

:3

,11)

가

가

(2000) 1960 1979
, 1980 1989 , 1990

1980

가

(OEM : Origiabl Equipment Manufacture)

11)

3

Jinjoo Lee 2 (1988)

가

가 (investment technology)
(innovation technology)

. 1970

가 가

가

가

가 1978

가

(Linsu Kim, 1997)

1984

가 . 1984

(2001) , 가
 가
 ,
 .

(informal mode) (formal mode)
 가
 , ,
 .

가 가 가 ,
 ,

1960 1970 가
 .

(Westphal, Lee, and
 Pursell) 1970 95%가
 , 5%
 .

1970 가
 . 1970

가 가 . 1970
가 가 .

가 .
가

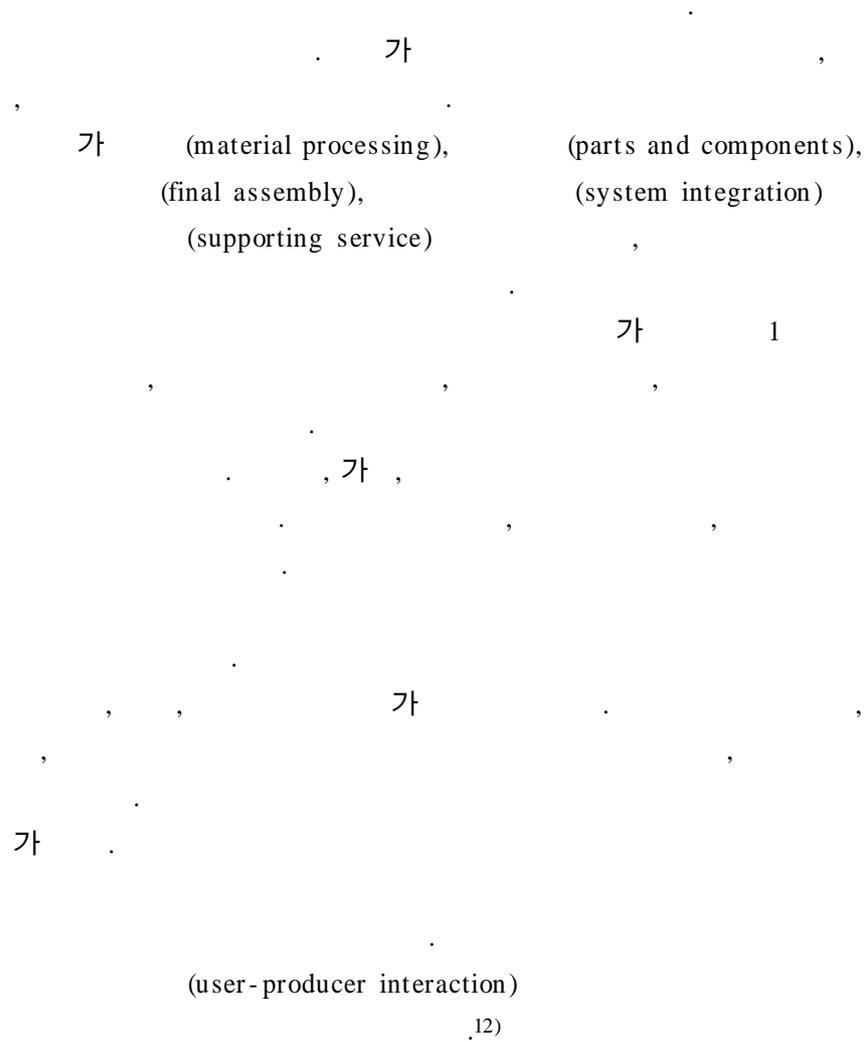
가 ,

(unpackaging strategy) .

가

가

3.



12) "User-Producer Relationships, National Systems of Innovation and Internationalisation," Bengt-Ake Lundvall, in Ludvall editon(1992)

가

가

가

가

가

가

가 가

5

4

가

3

가

가

1990

가
 가
 1960 1970
 1990
 가
 가
 1970
 가
 가
 가
 2
 가
 가

가 , 가

가
IT

IT

. MP3, DVD

TV

가

가 1000

가

IT

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 . IT , IT 가 ,
 IT 가 ,
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 가 .
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 가 .
 가 .

8

1

가 . 2 가 , 3
 7 가 가 .
 가 가 (position), (process),
 (path) 3 .
 가 .
 , .
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 가 3 .
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 ,
 가 .
 .
 가 , 가
 5.8 가 .
 .
 4 7 4 ,

가 . 가

5 , 2.6 , 1

4 , 2 , 3

IMF ,

6 가 . 가

가

가

가

가
가

4가

가가

가

가

가가

가

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가

, , , 2000.6.29

, , 가 , 1998.

, 2001 , , 2001.3.15

, 21 가 , 2001.6.19

, , , 2001. 6. 13

, , , , 1991.

, , , , 1997.

, : , , 1995.

, , , 1997.

, , 가 , 1999.

, , 2000-14, 2001. 1

, 5 , , 1999.12

, 4 R&D 가?, , 5 , , 45-47 , 2001

, , , 1/2 , 2000

, , 121-128 .

, , , 1997, 3 , pp. 32~41.

, , pp. 10-45, 1987

, , , 1998.

, , , 2000, 3 , pp. 2~3.

, , , 97-07, 1997

, , , 98-1, 1998

, , , 2000.9

, 가 가 , , 5/ 6 ,

, 2001

, :

95-06, 1994. 4.

, , , 1997.

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, 1994.

(), (),

2000-04, 2000.12.

, , , ,

, 2001.1

(1998), , *Tech Times 2* , , 27-31 .

, , , , 21

2000-17,2000.5

, 가 , , 2001

, , 7/ 8 ,

, 2001.

, : , ,

, 2001.

, : 21 , 2001.6.7

, , (), , 1999

, 99 , 9 , , 1999,

pp. 74~77.

, , ,2000.

, 2000 *R&D* ,

, 2001. 2 .

, , 2000.

, : , 1996.

, (), 1997.

, 2001, pp. 29-45.

, 2001, 2, pp.

, 1996.

, 가 (), 94-01, 1994

, 2010 (), 95-01, 1995

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Summary

The purpose of this report is to evaluate Korea's current technological competence and future potential in comparison with other countries. This report, however, does not intend to rank countries unlike the preceding studies. IMD(International Institute for Management and Development), for example, publishes annual "World Competitiveness Report" which ranks countries in various aspects of national competitiveness. A study by Hong(1994,1995) also shows country ranking in terms of S&T capabilities.

This report, instead, emphasizes more on the qualitative explanation of the differences between Korea's national innovation system with that of other countries.

A new methodology for evaluating technological competence of countries is proposed following the PPP framework by Teece(200). "Position" implies what has been achieved up until now while "process" refers to the efficacy of the system. "Path" investigates the adequacy of past legacy in preparing for the coming technological paradigm

Chapter 3 discusses "position" of Korea's technological competence. From the input side, Korea is well positioned to compete with other countries. The ratio of the total R&D investment to GDP stood at 2.6% in 1999, which is in par with most of the industrialized countries. However, the share of the government investment is smaller compared to that of most of the industrialized countries. The number of tertiary graduates of science and engineering major per 10,000 people is

among the highest in the world. From the output side, however, Korea's position is much below the average of advanced countries. A survey on the competitiveness of industrial technology shows that it will take 5.8 years on the average for Korea to catch up with the present level of technological competence of the world leaders. However, a recent trend shows that Korea is catching up rapidly. The numbers of patents granted and articles published in academic journals have increased very rapidly during the last decade. In sum, Korea scores relatively highly with respect to input, while the country scores poorly when it comes to output.

Chapter 4 covers industry-academia cooperation, which has been major weakness of Korea's innovation system. The industry-academia cooperation has not much improved even though research in university becomes more active. Korean universities are not yet considered as partners for cooperation by companies which often rely on foreign sources and in-house research competence. Government policy to encourage industry-academia cooperation has not been successful. The government R&D budget outlay is too much skewed to public research institutes, leaving very little for industries. Universities are getting increased share of governmental R&D, but research grants from industry to university is stagnating. Evidence implies government R&D supports have resulted in crowding-out effect.

Chapter 5 discusses competence of technology management at firm level. It is proposed that technology management style evolves over time. In the first generation, technology management is almost absent at the firm level. In the 2nd generation, technology management is mainly confined to R&D organization with little feedback into top management. In the 3rd generation, technology management is integrated with the rest of the management. In the 4th generation,

innovation and technology management become the core of the top management who seeks technological break-through. It is concluded that Korean firms' technology management at present is at about 2.6 generation on the average. The findings also show that top-managements of Korean companies are getting more interested in technology management after Korea's financial crisis in 1997.

Chapter 6 evaluates Korea's manpower development system. Korea's education system has lost its competitiveness because of the policies guided by "the equality principle". Korea abolished entrance exams for middle and high schools in 1970's. Instead, students are automatically allocated to schools in their neighborhood. Management of universities are tightly regulated by the government, which discourages the specialization and differentiation. Korean education system is grossly inadequate to supply creative and diverse manpower needed in the global information age. Therefore, Korea needs to overhaul its educational system. Emphasis should be given to enhance the quality and diversity of formal education. In addition, more policy efforts are needed in the area of retraining and on-the-job training.

Chapter 7 discusses issues related to "path". In Korea, forward and backward linkages of industries are not well developed due to the country's unbalanced industrial development strategy of the past. Since they started as a final assembler of imported parts and components, many Korean industries are weak in terms of forward and backward linkage. This discourages innovation by user-producer interactions. Underdeveloped system integration industry also hampers product innovation. Korea, however, is well positioned to confront the next phase of information revolution in terms of product specialization in the world market.

Chapter 8 summarizes the findings and policy implications of the

previous chapters. It also discusses future research topics. Issues that have not been covered in this study include efficacy and effectiveness of public sectors related to science and technology, and science base. These can be considered possible future research topics. It is also proposed that a study is needed to develop a composite index which renders ranking of countries by technological competitiveness.



					가
•	.			376	7,000
•				222	5,000
•				212	4,000
•				71	3,000
•				350	7,000
•		가		177	4,000
•				255	5,000
•				186	4,000
•				200	4,000
•				212	5,000
•				79	3,000
•				109	3,000
•	가			130	4,000
•	S/W			111	3,000
•	.			200	4,000
•		가 R&D		94	3,000
•				84	3,000
•	가			470	7,000
•	.			270	5,000
•				300	7,000
•				270	7,000
•				143	4,000
•	2010	-	.	287	7,000
•	2010	-	.	188	7,000

			가
• 2010	- . .		594 7,000
-			
• 2010	- -		331 7,000
• 2010	- . .		331 7,000
-			
• 2010	- -		427 7,000
• 2010	- -		333 7,000
• 2010	- .		284 7,000
-			
• 2010	- -		125 7,000
• 2010	- -		151 7,000
• 2010	- -		80 7,000
• 2010	- -		111 7,000
• 2010	- -		270 7,000
• . .		/	315 15,000
• .		/	300 5,000
• Review of Science & Technology Policy			200 7,000
•			129 4,000
•			167 4,000
•			180 4,000
• 가			89 4,000
•			190 4,000
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•			130 4,000
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•			424 7,000
•			161 15,000
• 1 (1995-2015) :			800 60,000
•			605 30,000
•			234 7,000
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• Complex			220 5,000
•			120 4,000
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•			84 3,000
•			215 5,000
• R&D		,	200 5,000

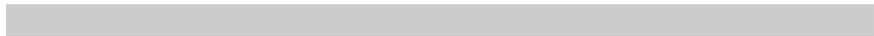
			가
•			250 7,000
•			70 3,000
•			130 4,000
•		,	250 7,000
•	:		152 4,000
•			250 7,000
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•	R&D	R&D	174 4,000
•			194 5,000
•			239 7,000
•			104 4,000
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•			172 4,000
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•			312 7,000
•			260 7,000
•			154 4,000
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			가
•			242 7,000
•	가		148 4,000
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•			327 7,000
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• APEC			134 4,000
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•	가	,	79 3,000
•			161 4,000
•			139 4,000
•	가		83 3,000
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•			369 7,000
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• Global Sourcing . . .			325 7,000
• - -			
• (ODA)		,	159 4,000
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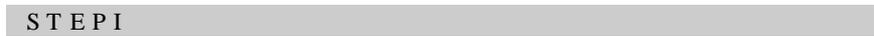
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• []		441	7,000
• . . 3	,	128	4,000
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•		213	5,000
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•		205	5,000
•	,	162	4,000
•		199	5,000
• OECD		285	7,000
•	,	129	4,000
•		115	4,000
• 5 - -		152	4,000
• 가		103	4,000
• - -		304	7,000
•		189	5,000
• R&D 가	,	267	7,000
• 가	,	208	5,000
• 가 .		291	7,000
•		77	3,000
• 가 - . -		176	4,000
• 가		648	15,000
• - -		99	4,000
•	,	115	4,000
• 가		488	7,000
•	,	297	5,000
•		144	4,000
•		117	4,000
•	,	389	10,000
•	,	269	8,000
•		274	8,000
•		95	4,000
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			가
•	:		238 7,000
•			172 6,000
•			192 6,000
•			157 6,000
•			254 8,000
•			119 5,000
• SCI DB		가	123 5,000
•	R&D		178 6,000
•			181 6,000
•			145 5,000
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