

1.

100 1962  
 가  
 40  
 1980 6 36 9 88 1999 46 7 554  
 110 2 953 25.7% 28.7%  
 가  
 가 14.4%  
 1980  
 1.60% 2.40% 1999 9.66% 22.80%  
 1998 OECD 3.50%  
 6  
 , GDP (insurance penetration) OECD  
 2

가

## . OECD 가

OECD 가  
 OECD 가 ,  
 , , , , , , 8

### 1. OECD

가.

1998 OECD 1 1,069  
 1990 6,477 6.9%  
 . OECD가 1994  
 OECD 9,369 , 1998  
 4.3% , 9  
 가 .  
 1994 1998 , OECD 가  
 , 가  
 OECD 가 . 1994 EU 15  
 NAFTA 3 2,717 2,956  
 1998 3,825 4,136  
 8.9% 8.8% 가 .  
 1994 1998 OECD  
 , 가 가  
 , , 42.6%  
 , 36.6%, 29.2%,

1.

[Lovell(1993)]

(decision making unit, DMU)  
Farrell(1957)

가

가

가

(technical efficiency)

(allocative efficiency)

,<sup>11)</sup>

DMU

가

Shepherd(1970)

(distance function)

< -1>

A

OA/ OB

OB/ OA가

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11) Farrell(1957)

가

# . OECD 가

## 1.

가.

가 80% 가

(debt capital), (equity capital), (physical capital)

,<sup>15)</sup> 가

,

가 .

가

가 가

16)

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15) OECD 가 가

가

가

1.

OECD 가

가

가

가

가

가

가

가

가

가

가

가

가

가

가

가

가

가





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## [ 1] OECD

1.

	GDP (10 )	( )	( )	( )	( )		/ (%)		OECD
1991	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-
1994	381	44,642	33,436	118,414	749	8.78	0.27	75.22	3.70
1995	456	45,093	43,723	126,134	970	9.58	0.28	74.76	4.37
1996	485	45,545	46,353	133,603	1,017	9.55	0.29	72.64	4.65
1997	443	45,991	44,146	159,252	960	9.98	0.35	71.54	4.33
1998	298	46,430	36,755	144,831	792	12.34	0.31	75.66	3.50
가	-5.95	0.99	2.39	5.16	1.39				

2.

	GDP (10 )	( )	( )	( )	( )		/ (%)		OECD
1991	3,402	124,043	209,969	1,788,000	1,691	6.16	1.44	73.20	31.34
1992	3,719	124,452	233,121	1,775,000	1,871	6.26	1.43	73.74	31.66
1993	4,275	124,764	273,375	1,812,033	2,188	6.39	1.45	73.32	34.48
1994	4,689	125,034	298,246	-	2,382	6.35	-	73.35	32.97
1995	5,137	125,570	327,029	-	2,601	6.36	-	72.93	32.61
1996	4,599	125,864	269,751	2,145,537	2,140	5.86	1.70	71.64	27.04
1997	4,198	126,166	250,922	2,415,277	1,986	5.97	1.91	72.93	24.57
1998	3,787	126,486	220,314	2,350,558	1,735	5.79	1.86	73.28	20.89
가	1.54	0.28	0.69	3.99	0.37				

## 3.

	GDP (10 )	( )	( )	( )	( )		/ (%)		OECD
1991	5,711	252,643	222,552	2,160,900	826	3.65	0.86	35.81	31.18
1992	6,028	255,407	240,904	2,132,200	873	3.70	0.83	36.83	30.33
1993	6,342	258,120	267,026	2,180,500	954	3.88	0.84	37.88	31.08
1994	6,723	260,682	277,744	2,237,100	1,016	3.94	0.86	37.96	29.31
1995	7,034	263,168	294,353	2,238,000	1,037	3.88	0.85	38.55	27.24
1996	7,391	265,557	315,538	-	1,107	3.98	-	39.68	29.52
1997	7,824	266,792	338,343	-	1,203	4.10	-	37.94	31.47
1998	8,231	269,092	400,688	-	1,335	4.36	-	40.27	34.21
가	5.36	0.91	8.76	0.88	7.10				

## 4.

	GDP (10 )	( )	( )	( )	( )		/ (%)		OECD
1991	587	28,120	16,610	182,000	570	2.73	0.65	47.93	2.39
1992	569	28,542	14,217	172,520	479	2.40	0.60	44.51	1.86
1993	553	28,947	10,776	-	360	1.88	-	38.44	1.32
1994	550	29,256	15,686	-	507	2.70	-	54.55	1.64
1995	573	29,617	16,799	-	533	2.76	-	55.84	1.58
1996	592	29,969	11,239	-	348	1.76	-	37.18	1.05
1997	608	30,287	10,872	204,758	330	1.64	0.68	36.34	0.98
1998	582	30,300	9,999	206,287	297	1.55	0.68	35.58	0.86
가	-0.13	1.07	-6.99	1.81	-8.88				

5.

	GDP (10 )	( )	( )	( )	( )		/ (%)		OECD
1991	1,012	57,808	71,288	353,100	1,233	7.04	0.61	61.13	10.65
1992	1,048	58,007	76,721	362,000	1,323	7.32	0.62	58.14	10.43
1993	943	58,293	74,823	368,700	1,224	7.57	0.63	53.98	9.01
1994	-	58,395	74,527	322,731	1,158	6.63	0.55	53.97	7.49
1995	1,107	58,606	75,753	337,800	1,241	6.57	0.58	53.99	7.26
1996	1,153	58,782	86,908	333,900	1,467	7.48	0.57	58.48	8.66
1997	1,283	59,009	101,279	353,000	1,704	7.71	0.60	61.02	9.86
1998	1,357	59,237	123,328	350,866	2,065	8.84	0.59	64.51	11.65
가	4.28	0.35	8.14	-0.09	7.64				

6.

	GDP (10 )	( )	( )	( )	( )		/ (%)		OECD
1991	1,201	57,055	42,117	217,200	712	3.38	0.38	50.53	6.07
1992	1,322	57,374	51,646	213,600	867	3.76	0.37	51.93	6.77
1993	1,250	57,654	59,246	211,100	996	4.59	0.37	55.21	7.25
1994	1,331	57,900	71,505	197,200	1,202	5.23	0.34	59.96	7.70
1995	1,535	58,143	86,344	197,200	1,445	5.47	0.34	60.75	8.39
1996	1,539	58,380	93,229	210,300	1,569	5.95	0.36	62.45	9.19
1997	1,394	58,608	90,346	207,800	1,517	6.38	0.35	64.84	8.72
1998	1,434	58,845	74,104	203,230	1,235	5.07	0.35	60.43	6.92
가	2.56	0.44	8.41	-0.95	8.19				

## 7.

	GDP (10 )	( )	( )	( )	( )		/ (%)		OECD
1991	1,720	79,984	40,936	253,905	510	2.37	0.32	40.2	6.09
1992	1,969	80,594	51,585	255,149	579	2.37	0.32	35.7	6.34
1993	1,914	81,179	53,599	254,484	597	2.53	0.31	35.5	6.12
1994	2,046	81,422	59,918	250,561	662	2.63	0.31	35.6	5.96
1995	2,412	81,661	71,564	234,653	788	2.67	0.29	35.7	6.43
1996	2,342	81,895	72,231	223,199	792	2.77	0.27	36.7	6.51
1997	2,090	82,061	66,137	215,273	719	2.82	0.26	37.2	5.78
1998	2,136	82,024	68,201	215,827	739	2.84	0.26	38.4	5.77
가	3.14	0.36	7.56	-2.29	5.46				

## 8.

	GDP (10 )	( )	( )	( )	( )		/ (%)		OECD
1991	1,151	56,760	10,391	132,350	150	0.74	0.23	27.86	1.28
1992	1,219	56,859	12,436	138,253	179	0.83	0.24	28.64	1.38
1993	985	57,050	11,336	138,112	169	0.98	0.24	30.56	1.22
1994	1,016	57,204	12,995	137,032	202	1.14	0.24	33.37	1.28
1995	1,088	57,283	15,699	136,716	247	1.30	0.24	36.81	1.41
1996	1,214	57,473	18,639	135,450	291	1.38	0.24	38.63	1.68
1997	1,145	57,563	23,526	-	374	1.88	-	45.24	2.11
1998	1,172	56,979	31,656	133,215	521	2.53	0.23	51.10	2.83
가	0.27	0.06	17.25	0.09	19.41				

## [ 2] OECD

1.

					,		
1991	27	65.9	5	12.2	14	34.1	41
1992	27	67.5	3	7.5	13	32.5	40
1993	27	67.5	3	7.5	13	32.5	40
1994	27	69.2	3	7.7	12	30.8	39
1995	29	70.7	5	12.2	12	29.3	41
1996	41	75.9	6	11.1	13	24.1	54
1997	41	75.9	5	9.3	13	24.1	54
1998	42	93.3	6	13.3	3	6.7	45
가	6.52		2.64		-19.75		1.34

2.

					,		
1991	27	65.9	5	12.2	14	34.1	41
1992	27	67.5	3	7.5	13	32.5	40
1993	27	67.5	3	7.5	13	32.5	40
1994	27	69.2	3	7.7	12	30.8	39
1995	29	70.7	5	12.2	12	29.3	41
1996	41	75.9	6	11.1	13	24.1	54
1997	41	75.9	5	9.3	13	24.1	54
1998	42	93.3	6	13.3	3	6.7	45
가	6.52		2.64		-19.75		1.34

3.

					,		
1991	1,703	99.5	89	5.2	9	0.5	1,712
1992	1,667	99.3	109	6.5	11	0.7	1,678
1993	1,608	99.3	113	7.0	11	0.7	1,619
1994	1,556	99.4	105	6.7	10	0.6	1,566
1995	1,515	99.4	93	6.1	9	0.6	1,524
1996	1,488	99.5	87	5.8	8	0.5	1,496
1997	1,442	99.6	76	5.2	6	0.4	1,448
1998	1,390	99.6	95	6.8	6	0.4	1,396
가	-2.86		0.94		-5.63		-2.87

4.

					,		
1991	65	44.5	26	17.8	81	55.5	146
1992	63	44.4	27	19.0	79	55.6	142
1993	60	44.8	26	19.4	74	55.2	134
1994	63	46.0	22	16.1	74	54.0	137
1995	70	44.0	27	17.0	89	56.0	159
1996	59	47.6	23	18.5	65	52.4	124
1997	52	47.3	-	-	58	52.7	110
1998	51	46.4	-	-	59	53.6	110
가	-3.41		-2.42		-4.43		-3.96

5.

					,		
1991	190	94.1	-	-	12	5.9	202
1992	182	92.9	-	-	14	7.1	196
1993	180	92.8	3	1.5	11	5.7	194
1994	173	90.6	4	2.1	14	7.3	191
1995	160	92.0	3	1.7	11	6.3	174
1996	163	92.1	-	-	14	7.9	177
1997	162	91.5	-	-	15	8.5	177
1998	270	96.4	-	-	10	3.6	280
가	5.15		0.00		-2.57		4.78

6.

					,		
1991	134	90.5	-	-	14	9.5	148
1992	136	92.5	-	-	11	7.5	147
1993	133	93.0	-	-	10	7.0	143
1994	132	95.7	-	-	6	4.3	138
1995	132	96.4	-	-	5	3.6	137
1996	123	96.1	-	-	5	3.9	128
1997	111	95.7	-	-	5	4.3	116
1998	94	95.9	-	-	4	4.1	98
가	-4.94		-		-16.39		-5.72

7.

					,		
1991	336	98.2	20	5.8	6	1.8	342
1992	321	98.5	20	6.1	5	1.5	326
1993	321	98.2	19	5.8	6	1.8	327
1994	315	98.7	16	5.0	4	1.3	319
1995	319	98.8	16	5.0	4	1.2	323
1996	316	98.8	16	5.0	4	1.3	320
1997	315	98.7	16	5.0	4	1.3	319
1998	314	98.7	19	6.0	4	1.3	318
가	-0.96		-0.73		-5.63		-1.03

8.

					,		
1991	56	90.3	-	-	6	9.7	62
1992	65	91.5	-	-	6	8.5	71
1993	67	90.5	-	-	7	9.5	74
1994	70	92.1	-	-	6	7.9	76
1995	71	92.2	-	-	6	7.8	77
1996	74	89.2	-	-	9	10.8	83
1997	77	88.5	29	33.3	10	11.5	87
1998	76	87.4	-	-	11	12.6	87
가	4.46		-		9.05		4.96

## [ 3] OECD

1.

( : KRW, %)

1991	-	-	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-	-	-
1994	4,229	7.6	181	0.3	7,157	12.8	7,912	14.2	27,370	49.0	9,061	16.2	55,910
1995	-	-	-	-	-	-	-	-	-	-	-	-	-
1996	5,788	7.7	196	0.3	9,721	12.9	10,045	13.3	36,395	48.2	13,432	17.8	75,577
1997	6,984	7.6	208	0.2	10,279	11.1	12,748	13.8	43,285	46.9	18,883	20.4	92,387
1998	8,370	9.1	109	0.1	8,480	9.2	26,237	28.4	34,963	37.9	14,140	15.3	92,298
가	18.61		-11.86		4.33		34.94		6.31		11.77		13.35

2.

( : JPY, %)

1991	-	-	-	-	-	-	-	-	-	-	-	-	-
1992	8,399	5.4	4,688	3.0	35,567	22.8	29,716	19.0	56,460	36.2	21,182	13.6	156,011
1993	8,993	5.3	7,377	4.4	37,029	21.9	33,682	19.9	56,790	33.6	25,251	14.9	169,122
1994	9,475	5.3	7,251	4.1	47,330	26.6	32,071	18.0	59,734	33.6	22,105	12.4	177,965
1995	9,765	5.2	7,253	3.9	47,688	25.4	41,953	22.4	60,082	32.0	20,751	11.1	187,492
1996	9,727	5.2	-	-	35,646	18.9	56,046	29.7	65,295	34.6	21,944	11.6	188,660
1997	9,860	5.2	-	-	33,841	17.8	57,570	30.3	63,517	33.4	25,324	13.3	190,111
1998	9,719	5.1	-	-	33,011	17.2	62,939	32.8	59,126	30.8	26,973	14.1	191,768
가	2.46		15.66		-1.23		13.32		0.77		4.11		3.50

## 3.

( : USD, %)

1991	-	-	-	-	-	-	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-	-	-	-	-	-	-
1993	45	2.9	235	15.3	84	5.5	1,020	66.5	79	5.1	72	4.7	1,534
1994	44	2.7	223	13.8	84	5.2	1,094	67.9	89	5.6	76	4.7	1,611
1995	42	2.5	220	12.9	94	5.5	1,180	69.1	98	5.8	72	4.2	1,707
1996	39	2.2	216	12.2	103	5.8	1,244	70.2	102	5.7	69	3.9	1,772
1997	34	1.8	213	11.4	120	6.4	1,306	69.9	105	5.6	91	4.9	1,869
1998	28	1.5	219	11.3	128	6.6	1,356	70.0	105	5.4	99	5.1	1,935
가	-8.81		-1.39		8.83		5.86		5.93		6.79		4.76

## 4.

( : CAD, %)

1991	8	5.96	54	38.4	13	9.0	59	41.5	6	4.2	1	0.8	141
1992	-	-	-	-	-	-	-	-	-	-	-	-	-
1993	-	-	-	-	-	-	-	-	-	-	-	-	-
1994	11	6.43	51	30.8	13	7.7	76	45.7	6	3.8	9	5.6	166
1995	-	-	-	-	-	-	-	-	-	-	-	-	-
1996	-	-	-	-	-	-	-	-	-	-	-	-	-
1997	8	4.72	46	27.7	11	6.7	89	53.8	5	3.1	7	4.0	165
1998	7	4.27	44	25.9	12	7.1	93	55.1	5	3.1	8	4.6	169
가	-2.18		-2.98		-0.88		6.84		-1.77		31.05		2.62

5.

( : GBP, %)

1991	35	14.4	3	1.4	136	55.4	59	24.1	6	2.2	6	2.4	245
1992	32	11.3	3	1.2	157	54.8	80	27.7	6	2.1	9	3.0	288
1993	34	8.2	2	0.5	250	60.5	109	26.3	7	1.6	12	2.9	414
1994	36	9.4	1	0.4	234	60.8	97	25.1	5	1.4	12	3.1	385
1995	36	7.6	1	0.3	294	62.9	120	25.5	6	1.3	11	2.3	468
1996	36	7.1	1	0.2	326	63.4	130	25.3	6	1.1	15	2.9	513
1997	42	6.7	1	0.2	402	63.7	162	25.7	7	1.2	16	2.6	631
1998	66	8.1	14	1.7	427	52.1	301	36.8	7	0.8	5	0.6	820
7†	9.44		22.07		17.78		26.20		2.86		-3.01		18.83

6.

( : FRF, %)

1991	134	11.3	-	-	241	20.2	726	60.9	33	2.8	58	4.9	1,193
1992	142	10.1	-	-	271	19.5	872	62.5	45	3.2	65	4.7	1,395
1993	155	9.1	-	-	315	18.6	1,085	64.0	59	3.5	81	4.8	1,695
1994	154	7.7	-	-	372	18.6	1,334	66.6	57	2.8	85	4.2	2,002
1995	143	6.4	4	0.19	300	13.5	1,681	75.6	44	2.0	52	2.4	2,225
1996	142	5.2	4	0.15	355	13.0	2,108	77.4	57	2.1	56	2.1	2,723
1997	129	4.0	2	0.06	487	15.2	2,469	77.0	67	2.1	55	1.7	3,208
1998	138	3.8	2	0.05	650	18.1	2,679	74.7	61	1.7	57	1.6	3,586
7†	0.35		-26.51		15.21		20.51		9.02		-0.34		17.03

## 7.

( : DEM, %)

1991	34	5.8	87	14.8	23	4.0	85	14.6	277	47.4	79	13.5	584
1992	35	5.7	93	15.1	27	4.4	95	15.3	282	45.6	87	14.0	620
1993	38	5.5	990	14.6	30	4.4	106	15.6	309	45.4	99	14.6	680
1994	39	5.3	108	14.6	34	4.6	106	14.3	346	46.8	106	14.4	740
1995	39	4.8	113	14.1	37	4.6	112	14.0	399	49.8	102	12.8	802
1996	37	4.3	116	13.3	43	5.0	113	12.9	441	50.4	124	14.2	875
1997	38	4.0	120	12.7	55	5.8	114	12.0	465	49.0	157	16.6	949
1998	38	3.7	120	11.7	68	6.6	114	11.1	214	20.9	472	45.9	1,027
가	1.86		4.80		16.59		4.28		-3.58		29.18		8.40

## 8.

( : ITL, %)

1991	9,182	15.1	3,365	5.5	5,853	9.6	40,663	67.0	-	-	1,647	2.7	60,710
1992	9,407	12.9	2,815	3.9	6,476	8.9	51,923	71.4	-	-	2,050	2.8	72,671
1993	12,819	13.9	1,953	2.1	10,550	11.5	64,758	70.4	-	-	1,869	2.0	91,948
1994	12,376	11.5	1,743	1.6	12,739	11.8	78,521	72.8	-	-	2,422	2.2	107,800
1995	12,217	9.5	2,042	1.6	14,911	11.6	96,616	75.2	-	-	2,734	2.1	128,520
1996	10,319	6.8	2,350	1.5	17,123	11.3	120,198	79.1	-	-	2,012	1.3	152,002
1997	10,177	5.5	-	-	24,247	13.0	146,692	78.8	2,169	1.2	2,847	1.5	186,131
1998	-	-	-	-	-	-	-	-	-	-	-	-	-
가	1.73		-6.92		26.73		23.84		-		9.55		20.53

[ 4] OECD

( )	( )				
NIA	<ul style="list-style-type: none"> <li>· 25% ( , )</li> <li>· 5-25% ( , )</li> <li>· 10% ( )</li> <li>· 5% ( )</li> </ul>	NIA			<ul style="list-style-type: none"> <li>· ,</li> <li>· 가</li> <li>( )</li> </ul>
EU	<ul style="list-style-type: none"> <li>· 50% ( )</li> <li>· 10% ( )</li> <li>· 40% ( )</li> <li>· 40% ( )</li> <li>· 50% ( )</li> <li>· 50% ( )</li> <li>· 3% ( )</li> </ul>				<ul style="list-style-type: none"> <li>· 25% (OECD 가 )</li> </ul>
	<ul style="list-style-type: none"> <li>· 30% ( )</li> <li>· 10% ( )</li> <li>· 25% ( )</li> <li>· 50% ( )</li> <li>· 30% ( )</li> <li>· 50% ( )</li> </ul>	EU	80%		<ul style="list-style-type: none"> <li>· 5% ( )</li> <li>· 20% ( )</li> <li>· 6% ( )</li> <li>· 5% ( 가 )</li> </ul>
EU	<ul style="list-style-type: none"> <li>· 20% ( )</li> <li>· 20% ( )</li> <li>· (35%: , )</li> <li>· 50%: ( )</li> <li>· (20%: , 50%: )</li> <li>·</li> </ul>	EU	80%		<ul style="list-style-type: none"> <li>· (10%: , 20%: )</li> <li>· 가</li> <li>(30%: , 50%: )</li> </ul>

	( )	( )				
	· 10% ( ) · 3% ( )	· 30% ( , ) · 20% ( ) · 10% ( : ) · 10% ( ) · 30% ( )				30%
	EU	· (5% : , ) · 8% ( ) · 10% ( ) · 3% ( )	EU		80%	
	· 5% ( ) · 5% ( , , )	· 25% ( , ) · 25% ( ) · 50% ( ) · 3% ( )	EU		80%	20% ( 25% )
		· 3% ( )	NIA		80%	
	· 3-5% ( )	· 가 · , 15% ( , : ), (5% : , ) 10% : ), (40% : , ) 60% : )	NIA			가

: OECD

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2001-2

OECD 가

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2001 1

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2268-0676

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ISBN 89-88001-63-X 93320

定價 10,000

가

가

가

가

가

가

< IV-6>

< -11>

가

가

가

OECD 가



가 100 가

OECD 가

가

, < -1> 가

72가 7.2 720 가 가

< -1> 가 (1996)

	1)	가 2)
	584.50	72
	1173.01	140
	775.87	92
	594.72	118
	663.76	118
	778.27	111
	547.35	90
	310.97	73
가	124.25	44
	459.20	92
	546.83	80
	91.98	46
	489.58	93
	515.79	79
	0.88	-

: 1. ILO( )  
 2. OECD, 「 」

가 가



가  
(intermediator)

OECD 가  
(collection-based model),  
(delivery-based model)

Allen(1974), Suret(1991) (1999)

가

가

OECD 가

A.M.

BEST 「Best's Insurance Reports」

A.M. BEST

가

1996 1997

power parity)

가

가(purchasing

---

Houston & Simon(1970), Colenutt(1977), Grace & Timme(1992), Hardwick(1994, 1997), Donni & Fecher(1997), Doherty(1981), Skogh(1982), Cummins, Weiss & Zi (1999), Ryan & Schellhorn(2000)가 Allen(1974), Suret(1991), (1999)

가 가 .

(translog cost function)

(elasticity of substitution)

2

(quadratic cost function)

가 .

2

,19)

가

$$\ln C = \alpha_0 + \sum_{i=1}^2 \alpha_i \ln Y_i + \sum_{i=1}^2 \beta_i \ln P_i + \frac{1}{2} \sum_{i=1}^2 \sum_{j=1}^2 \delta_{ij} \ln Y_i \ln Y_j + \frac{1}{2} \sum_{i=1}^2 \sum_{j=1}^2 \gamma_{ij} \ln P_i \ln P_j + \sum_{i=1}^2 \sum_{j=1}^2 \eta_{ij} \ln Y_i \ln P_j + \mu \epsilon \quad (1)$$

$Y_1 =$

$Y_2 =$

$P_1 =$

$P_2 =$

$u_c =$

( 가 )

가

가

$$( \quad ij = \quad ji, \quad ij = \quad ji ) \quad (2)$$

가 1 .

---

19) 2

2

가

가

가 1

(symmetry

constraints and linear homogeneity in input prices)

m

n

가

2

(m+n+1)

.[Caves,

Christensen and Tretheway(1980)]

$$\sum_{i=1}^2 \beta_i = 1, \sum_{i=1}^2 \gamma_{ij} = \sum_{i=1}^2 \eta_{ij} = 0 \quad (2)$$

가 17 10

가 . (1)

(cost share equation)

最尤度

(maximum likelihood method)

LSQ

.20) LSQ

가

. LSQ

(contemporaneous correlation)

가

. LSQ , G (3)

$$G = e(b)'(S^{-1} \otimes I)e(b) \quad (3)$$

e(b), S

, b

, I

1

가 . (1) lnP<sub>i</sub>

1

가 .

20)

배 가 多重共線性  
Timme(1986)]

. [Hunter and

[Berndt(1991)]

가  
 가 가 가  
 가 < 가  
 -2> , 가  
 가 가 가  
 가 가  
 가 가  
 가  
 1990  
 ,21)  
 가  
 . OECD 가 , , , , ,  
 , , , , 가  
 가 가 가  
 가  
 < -2> 가

( : )

	20.2	15.5	3.9	1.9	6.9	35.5	4.0	6.4	33.5
	37,057.9	373,212.9	193,987.4	29,262.2	92,704.3	44,344.3	81,292.0	554.5	52,359.3
	3,152.7	38,311.3	5,499.6	3,037.2	15,437.6	9,203.0	9,324.8	207.8	3,875.2
	66	86	822	100	76	56	42	20	67

21) 1996 1 , 1995 13 , 1994 1993  
 1 .

2.

가.

가 < -3>  
 60% 가 5%  
 가 가  
 가  
 Chow

$$F = \frac{S_r - \sum S_u / (p-1)k}{\sum S_u / (n-pk)} \quad (4)$$

- S<sub>r</sub> = 가
- S<sub>u</sub> = 가
- p = 가
- k =
- n =

Chow 6.749 5%  
 1.286 가 가  
 가 가  
 가  
 가  
 Fecher(1997) Rai(1996) Donni &  
 가 가  
 가 가

가 16.511 5%

1.090

가

가 1990

16 가

가

가

가

가 Chow 1.368 5%

가 1.452

가

가 0.900 5%

가 1.841

< -3a >

	0.298** (0.139)	-3.595*** (0.835)	-0.841*** (0.167)	-1.899*** (0.34)
i	0.242* (0.138)	-0.275 (0.199)	1.143*** (0.041)	0.963*** (0.203)
p	0.744*** (0.145)	2.033*** (0.203)	-0.039 (0.037)	0.282 (0.199)
u	0.013*** (0.01)	0.584 (0.372)	-0.006 (0.112)	0.411** (0.18)
d	0.987*** (0.01)	0.416 (0.372)	1.006*** (0.112)	0.589*** (0.18)
ii	0.563*** (0.102)	0.498*** (0.115)	0.019 (0.014)	0.306*** (0.107)
pp	0.504*** (0.103)	0.218 (0.143)	-0.029** (0.012)	0.29*** (0.11)
ip	-0.531*** (0.101)	-0.4*** (0.125)	-0.003 (0.012)	-0.312*** (0.107)
$\gamma_{uu}$	0.018*** (0.004)	-0.029 (0.086)	0.047 (0.042)	-0.089 (0.07)
$\gamma_{dd}$	0.018*** (0.004)	-0.029 (0.086)	0.047 (0.042)	-0.089 (0.07)
$\gamma_{ud}$	-0.018*** (0.004)	0.029 (0.086)	-0.047 (0.042)	0.089 (0.07)
iu	-0.011** (0.005)	-0.005 (0.02)	-0.038*** (0.002)	-0.074*** (0.013)
pu	0.006 (0.006)	-0.046** (0.023)	0.032*** (0.002)	0.068*** (0.014)
id	0.011** (0.005)	0.005 (0.02)	0.038*** (0.002)	0.074*** (0.013)
pd	-0.006 (0.006)	0.046** (0.023)	-0.032*** (0.002)	-0.068*** (0.014)
	255.101	100.387	1268.49	84.7486
( )	9.163	8.652	8.083	7.280
( )	0.197	0.204	0.272	0.403
R <sup>2</sup> ( )	0.98	0.99	0.98	0.97
	4	10	3	6
	66	86	822	100

\*\*\*, \*\*, \* 1%, 5%, 10%

: 1) 'u', 'd', 'i', 'p'

2) ( )

가

가

< -3b>

	0.111 (0.252)	0.256 (0.387)	-0.133 (0.165)	2.27** (1.076)	-0.783* (0.438)
i	0.729*** (0.124)	0.721** (0.31)	-0.135 (0.105)	-0.509 (1.061)	0.869*** (0.216)
p	0.26** (0.113)	0.276 (0.278)	1.186*** (0.122)	0.934 (0.84)	0.316 (0.212)
u	0.05** (0.023)	-0.002 (0.012)	0.208*** (0.019)	0.012*** (0.003)	0.081** (0.034)
d	0.95*** (0.023)	1.002*** (0.012)	0.792*** (0.019)	0.988*** (0.003)	0.919*** (0.034)
ii	0.034 (0.048)	0.129 (0.133)	0.476*** (0.052)	0.31 (0.536)	-0.03 (0.079)
pp	-0.091** (0.045)	0.102 (0.122)	0.282*** (0.062)	-0.115 (0.394)	-0.14** (0.071)
ip	0.021 (0.046)	-0.116 (0.125)	-0.386*** (0.054)	-0.075 (0.448)	0.067 (0.073)
$\gamma_{uu}$	0.003 (0.009)	0.006 (0.004)	0.005 (0.009)	-0.002** (0.001)	-0.004 (0.011)
$\gamma_{dd}$	0.003 (0.009)	0.006 (0.004)	0.005 (0.009)	-0.002** (0.001)	-0.004 (0.011)
$\gamma_{ud}$	-0.003 (0.009)	-0.006 (0.004)	-0.005 (0.009)	0.002** (0.001)	0.004 (0.011)
iu	-0.013*** (0.002)	-0.004*** (0.001)	-0.051*** (0.005)	-0.001* (0.001)	-0.032*** (0.01)
pu	0.009*** (0.003)	0.004*** (0.001)	0.038*** (0.006)	0.001 (0.001)	0.033*** (0.012)
id	0.013*** (0.002)	0.004*** (0.001)	0.051*** (0.005)	0.001* (0.001)	0.032*** (0.01)
pd	-0.009*** (0.003)	-0.004*** (0.001)	-0.038*** (0.006)	-0.001 (0.001)	-0.033*** (0.012)
	233.438	275.306	151.125	112.47	80.4982
( )	9.949	9.775	8.447	6.593	8.148
( )	0.270	0.118	0.182	0.224	0.544
R <sup>2</sup> ( )	0.98	0.99	0.99	0.97	0.93
	4	3	49	3	6
	76	56	42	20	67

\*\*\*, \*\*, \* 1%, 5%, 10%

: 1) 'i', 'p'

'u', 'd'

가

가

2) ( )

가 , < -4> 가 , 가 , 가 , 가 ( 1.244) 1996 1997 6 가 가 가 < -4> 가 ( )

	1.424	1.035	1.264	1.282	1.243	1.231	1.025	1.432	1.233
	0.117	0.076	0.091	0.133	0.080	0.078	0.037	0.143	0.101
	1.244	0.603	1.102	1.161	1.133	0.944	0.917	1.286	0.883
	1.776	1.108	1.887	2.131	1.454	1.451	1.158	1.812	1.470

가 (ANOVA) F 125.698 0% 가 가 (Duncan test) < -5> 가 가



가

가

(6)

$$= \frac{\hat{c}_j - \hat{c}_i}{\hat{c}_j}$$

(6)

$\hat{c}_j$

가 j

가 i

OECD

< -6>

.23) < -6>

가

가

가

,

,

,

가

가

가

가

가

가

가

가 1996

1997

가

가

가

가

1.282) / 1.282''

23)

가  
 1996  
 1997 가

< -6> OECD 가  
 ( )

	37.6%	12.7%	11.1%	14.6%	15.7%	38.9%	15.5%
	29.2%	5.0%	2.9%	11.9%	15.4%	36.3%	10.6%
	8.4%	7.7%	8.2%	2.7%	0.3%	2.7%	4.8%

M&A가 가  
 가 가

.24)  
 < -7> 가  
 가 가

24) 가

가

[Fecher, Perelman & Pestieau(1991), Cummins & Weiss(1993), Hardwick(1997), Cummins(1999)]

가

가

가

가

0.984 1.062 0%

25)

< -7> ( )

	1.508	1.339	0.105	0.045	1.377	1.244	1.776	1.406
	1.010	1.061	0.100	0.018	0.603	1.031	1.109	1.101
	1.325	1.204	0.092	0.029	1.102	1.137	1.887	1.294
	1.346	1.218	0.163	0.032	1.214	1.161	2.131	1.306
	1.295	1.190	0.082	0.023	1.133	1.149	1.454	1.239
	1.279	1.183	0.071	0.052	1.182	0.944	1.451	1.233
	1.021	1.030	0.051	0.011	0.917	1.009	1.158	1.046
	1.532	1.331	0.139	0.036	1.369	1.286	1.812	1.386
	1.282	1.183	0.114	0.047	0.883	1.094	1.470	1.273

: 5% 가

25) 0.1%

3.

가.

가  
 . 가  
 . 가 < -8>  
 60%가 5%  
 가 6.814 5%  
 . 가  
 가 가  
 . 가 가 가  
 1.368 가 가  
 . , 가  
 가 가  
 . 가  
 가  
 가 , 가  
 . 가  
 가 가  
 . , 가  
 가

26)  
 Chow . , 가  
 . 가  
 가 .27)  
 가  
 가

.28)  
 가  
 가  
 가  
 가

. Allen (1974)

, Suret(1991)

가  
 . (1999)  
 , ,  
 가 .

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26) 가 가 .  
 27) 57%, 12% 98%, 39%,  
 , , 가 100% 가  
 6.485 5% 가 1.908  
 가  
 28) 1.504 5%  
 가 1.933 .  
 가 .

< -8a >

	0.051 (0.177)	-0.533 (0.399)	-0.898*** (0.183)	-2.119*** (0.504)	
i	0.427*** (0.109)	1.324*** (0.253)	1.268*** (0.046)	1.45*** (0.379)	
c	0.672*** (0.107)	-0.201 (0.231)	-0.181*** (0.039)	-0.216 (0.371)	
u	0.009 (0.013)	-0.077 (0.059)	-0.026 (0.12)	0.446** (0.21)	
d	0.991*** (0.013)	1.077*** (0.059)	1.026*** (0.12)	0.554*** (0.21)	
ii	0.403*** (0.067)	-0.091 (0.085)	-0.051*** (0.016)	-0.1 (0.178)	
cc	0.387*** (0.052)	-0.045 (0.061)	-0.09*** (0.014)	-0.103 (0.17)	
ic	-0.401*** (0.06)	0.064 (0.073)	0.064*** (0.014)	0.092 (0.173)	
$\gamma_{uu}$	0.017** (0.007)	0.033*** (0.013)	0.06 (0.045)	-0.1 (0.082)	
$\gamma_{dd}$	0.017** (0.007)	0.033*** (0.013)	0.06 (0.045)	-0.1 (0.082)	
$\gamma_{ud}$	-0.017** (0.007)	-0.033*** (0.013)	-0.06 (0.045)	0.1 (0.082)	
iu	0.008** (0.003)	0.010*** (0.004)	-0.036*** (0.002)	-0.053*** (0.019)	
cu	-0.013*** (0.003)	-0.018*** (0.004)	0.028*** (0.002)	0.039** (0.019)	
id	-0.008** (0.003)	-0.010*** (0.004)	0.036*** (0.002)	0.053*** (0.019)	
cd	0.013*** (0.003)	0.018*** (0.004)	-0.028*** (0.002)	-0.039** (0.019)	
	243.369	261.178	1244.9	74.856	
( )	9.163	10.401	8.083	7.280	
( )	0.154	0.054	0.261	0.382	
R <sup>2</sup> ( )	0.99	0.99	0.98	0.98	
	10	3	4	3	
	66	57	822	100	

\*\*\*, \*\*, \* 1%, 5%, 10%

: 1) , 'i', 'c'

'u', 'd'

가

가

2) ( )

< -8b>

	-1.67*** (0.302)	-0.423 (0.533)	-0.912*** (0.12)	3.196*** (0.726)	-0.78* (0.457)
i	1.746*** (0.171)	1.294*** (0.32)	1.314*** (0.139)	-1.018** (0.448)	0.845*** (0.234)
c	-0.446*** (0.16)	-0.228 (0.273)	-0.199 (0.153)	2.316*** (0.397)	0.437** (0.213)
u	0.045 (0.033)	0.003 (0.012)	0.215*** (0.032)	0.008** (0.004)	0.076** (0.034)
d	0.955*** (0.033)	0.997*** (0.012)	0.785*** (0.032)	0.992*** (0.004)	0.924*** (0.034)
ii	-0.201*** (0.058)	-0.099 (0.11)	-0.066 (0.052)	0.547*** (0.125)	0.026 (0.067)
cc	-0.101** (0.054)	-0.059 (0.102)	0.011 (0.049)	0.418*** (0.143)	-0.048 (0.047)
ic	0.138** (0.054)	0.078 (0.103)	0.028 (0.05)	-0.559*** (0.108)	-0.015 (0.056)
$\gamma_{uu}$	-0.003 (0.014)	0.004 (0.044)	0.019 (0.022)	-0.002 (0.001)	0.008 (0.01)
$\gamma_{dd}$	-0.003 (0.014)	0.004 (0.004)	0.019 (0.022)	-0.002 (0.001)	0.008 (0.01)
$\gamma_{ud}$	0.003 (0.014)	-0.004 (0.004)	-0.019 (0.022)	0.002 (0.001)	-0.008 (0.01)
iu	-0.001 (0.003)	-0.003*** (0.001)	-0.046*** (0.005)	-0.00009 (0.0003)	-0.028*** (0.01)
cu	-0.004 (0.003)	0.002** (0.001)	0.03*** (0.005)	-0.0001 (0.0004)	0.025** (0.01)
id	0.001 (0.003)	0.003*** (0.001)	0.046*** (0.005)	0.00009 (0.0003)	0.028*** (0.01)
cd	0.004 (0.003)	-0.002** (0.001)	-0.03*** (0.005)	0.0001 (0.0004)	-0.025** (0.01)
	202.827	275.426	147.503	113.13	90.4961
( )	9.949	9.775	8.447	6.593	8.148
( )	0.272	0.114	0.079	0.187	0.549
R <sup>2</sup> ( )	0.98	0.99	0.99	0.98	0.93
	3	3	27	2	7
	76	56	42	20	67

\*\*\*, \*\*, \* 1%, 5%, 10%

: 1) , 'i', 'c'

'u', 'd'

가

가

2) ( )





30)가

가 가

가

가

< -11> OECD 가  
( )

	24.9%	11.1%	10.1%	12.6%	13.4%	28.1%	13.3%
	22.5%	3.2%	1.6%	10.3%	11.4%	25.7%	10.1%
	2.4%	7.9%	8.4%	2.3%	2.0%	2.3%	3.2%

< -12> 가

가

가 가

가 가

[Fecher, Perelman & Pestieau(1991), Cummins & Weiss(1993), Hardwick(1997), Cummins(1999)]

31)

30) 0.984

1.062 0%

31) 가

가

가

< -12> ( )

	1.506	1.339	0.102	0.051	1.359	1.230	1.757	1.416
	1.080	1.056	0.023	0.015	1.045	1.034	1.130	1.077
	1.325	1.204	0.096	0.028	1.010	1.130	1.900	1.297
	1.341	1.218	0.140	0.030	1.227	1.155	2.005	1.280
	1.298	1.188	0.085	0.024	1.137	1.147	1.543	1.240
	1.280	1.182	0.069	0.053	1.198	0.940	1.446	1.236
	1.021	1.025	0.042	0.012	0.850	1.009	1.056	1.056
	1.516	1.344	0.143	0.056	1.334	1.261	1.780	1.428
	1.282	1.184	0.120	0.052	0.850	1.084	1.434	1.281

: 5% 가

4.

5

가

,

가

가 (1)

가

LSQ

1995

가

< -13>

< -14>

FY'97

가 IMF

가

FY'98 FY'99

가 가

가

< -13>

( )

	FY95	FY96	FY97	FY98	FY99	
	1.371	1.397	1.473	1.364	1.372	1.397
	0.357	0.382	0.377	0.278	0.262	0.119
	1.228	1.244	1.276	1.210	1.228	1.210
	1.753	1.806	1.832	1.621	1.616	1.832
	33	33	33	29	27	

< -14>

( )

	FY95	FY96	FY97	FY98	FY99	
	1.351	1.384	1.482	1.379	1.379	1.396
	0.323	0.342	0.355	0.235	0.197	0.118
	1.214	1.230	1.264	1.203	1.220	1.203
	1.693	1.736	1.794	1.657	1.673	1.794
	33	33	33	29	27	

< -15> < -16>

가

가 . 5  
가 (F  
89.142, 55.850 0%

)

< -15>

( )

	FY95	FY96	FY97	FY98	FY99	
	1.270	1.289	1.335	1.278	1.280	1.274
	0.030	0.033	0.052	0.071	0.050	0.048
	1.228	1.244	1.276	1.210	1.228	1.210
	1.292	1.312	1.372	1.329	1.316	1.372
	1.365	1.376	1.441	1.363	1.372	1.388
	0.059	0.038	0.046	0.053	0.060	0.044
	1.318	1.331	1.387	1.287	1.244	1.244
	1.475	1.526	1.682	1.615	1.560	1.682
	1.649	1.718	1.769	1.553	1.537	1.566
	0.146	0.124	0.090	0.096	0.111	0.049
	1.409	1.460	1.580	1.417	1.416	1.409
	1.753	1.806	1.832	1.621	1.616	1.832

가

가

가

가

가

15%

50%

&lt; -16 &gt;

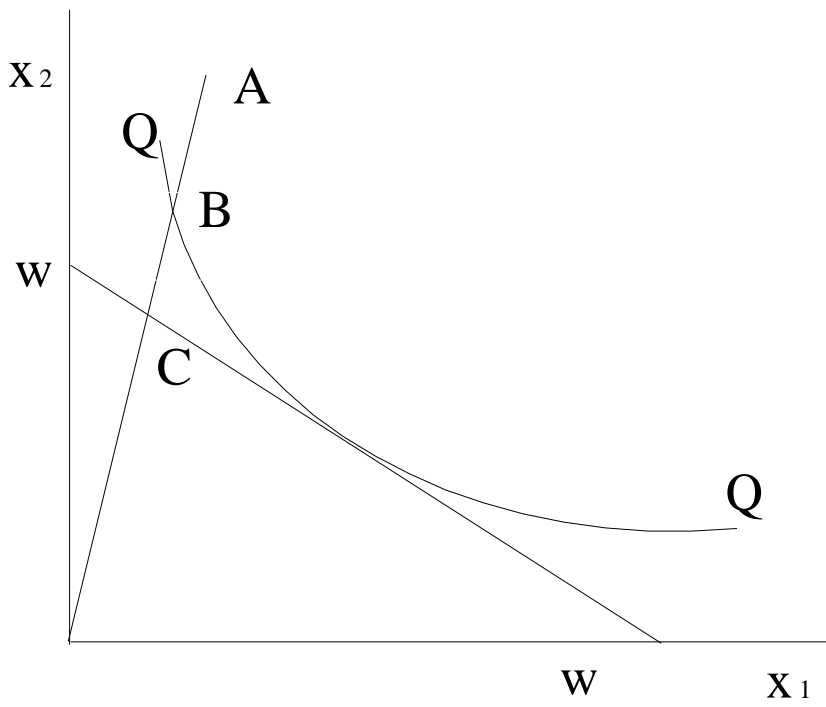
( )

	FY95	FY96	FY97	FY98	FY99	
	1.262	1.283	1.344	1.287	1.292	1.273
	0.036	0.044	0.076	0.082	0.061	0.070
	1.214	1.230	1.264	1.203	1.220	1.203
	1.288	1.314	1.397	1.345	1.335	1.397
	1.332	1.357	1.440	1.375	1.389	1.396
	0.018	0.017	0.057	0.020	0.073	0.054
	1.295	1.315	1.392	1.292	1.301	1.288
	1.477	1.536	1.794	1.657	1.673	1.794
	1.597	1.632	1.693	1.485	1.463	1.531
	0.136	0.146	0.140	0.109	0.090	0.019
	1.405	1.469	1.592	1.368	1.348	1.348
	1.693	1.736	1.792	1.562	1.611	1.792

가 . < -1>  
 $ww'$   $OC/OB$

< -1>  
 $= (OB/OA) \times (OC/OB) = OC/OA$

< -1>



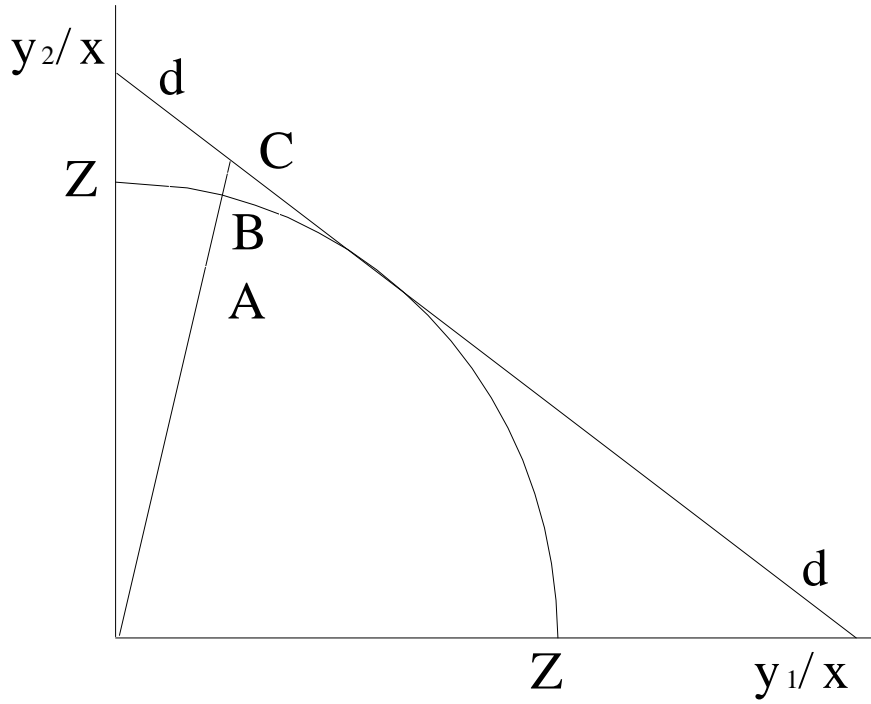
< -2> A

B

dd'

$$(OA/OC) = (OA/OB) \times (OB/OC)$$

< -2 >



2.

DMU (1) 가

가

$$(Y, X) = 0 \tag{1}$$

Y : k × n

X : m × n

(non-parametric approach)

(parametric approach)

[Chan et al., (1989)]

가.

가

DEA(data envelopment analysis)

DEA

(Charnes, Cooper and Rhodes : 1978)

DMU<sub>0</sub>                      h<sub>0</sub>

$$\max h_0 = \frac{\mathbf{u}'\mathbf{y}_{i_0}}{\mathbf{v}'\mathbf{x}_{i_0}} \tag{2}$$

$$\frac{\mathbf{u}'\mathbf{y}_{j}}{\mathbf{v}'\mathbf{x}_{j}} \leq 1 \quad j=1,2, \dots, n.$$

$$\mathbf{u} \text{ (} m \times 1 \text{)}, \quad \mathbf{v} \text{ (} k \times 1 \text{)} \geq 0$$

$$(\mathbf{u}^*, \mathbf{v}^*) \quad (\mathbf{u}^*, \mathbf{v}^*)$$

$$\mathbf{v}'\mathbf{x}_{i_0} = 1' \tag{2}$$

$$\begin{aligned}
 & \max \quad u \cdot y_0 \\
 & v \cdot x_{j0} = 1, \quad j = 1, 2, \dots, n. \\
 & u \cdot y_{ij} - v \cdot x_{ij} = 0 \\
 & = tv, \\
 & u = t u, \quad t
 \end{aligned} \tag{3}$$

(3) (dual theory)

$$\begin{aligned}
 & \min \quad \theta \\
 & - y_{j0} + Y \cdot \theta = 0 \\
 & \theta \cdot x_{j0} - X \cdot \theta = 0 \\
 & (n \times 1) \cdot \theta = 0
 \end{aligned} \tag{4}$$

$\theta$  DMU<sub>0</sub> 가 1 가 (k+m) 가 , (3) n+1 (4)가  
 .12)

DMU<sub>0</sub> Malmquist . (4)  
 t DMU<sub>0</sub> t (4)

$$\begin{aligned}
 TE^t(y_0^t, x_0^t) &= \min \theta \\
 - y_{j0}^t + Y^t \cdot \theta &= 0
 \end{aligned}$$

---

12) (3) Multiplier , (4) Envelopment .

$$\begin{aligned} & {}_0x_{i0}^t - X^t && 0 \\ & 0 && \end{aligned} \quad (5)$$

$$\begin{aligned} & \text{t+1} && \text{DMU}_0 \quad \text{t+1} \\ & (6) && . \end{aligned}$$

$$\begin{aligned} TE^{t+1}(y_0^{t+1}, x_0^{t+1}) = \min & {}_0 \\ & - y_{i0}^{t+1} + Y^{t+1} && 0 \\ & {}_0x_{i0}^{t+1} - X^{t+1} && 0 \\ & 0 && \end{aligned} \quad (6)$$

$$\begin{aligned} & \text{t} && \text{DMU}_0 \quad \text{t+1} \\ & (7) && . \end{aligned}$$

$$\begin{aligned} TE^t(y_0^{t+1}, x_0^{t+1}) = \min & {}_0 \\ & - y_{i0}^{t+1} + Y^t && 0 \\ & {}_0x_{i0}^{t+1} - X^t && 0 \\ & 0 && \end{aligned} \quad (7)$$

$$\begin{aligned} & \text{가} \quad \text{t+1} && \text{DMU}_0 \quad \text{t} \\ & (8) && . \end{aligned}$$

$$\begin{aligned} TE^{t+1}(y_0^t, x_0^t) = \min & {}_0 \\ & - y_{i0}^t + Y^{t+1} && 0 \\ & {}_0x_{i0}^t - X^{t+1} && 0 \\ & 0 && \end{aligned} \quad (8)$$

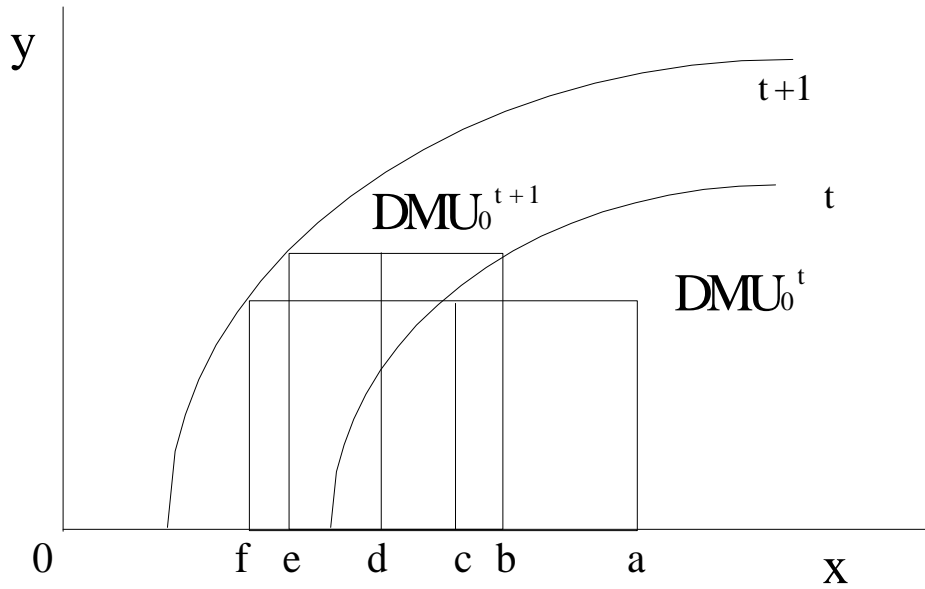
Malmquist  $M^{t+1} = \frac{TE^t(y_0^{t+1}, x_0^{t+1})}{TE^t(y_0^t, x_0^t)} \cdot \frac{TE^{t+1}(y_0^{t+1}, x_0^{t+1})}{TE^{t+1}(y_0^t, x_0^t)}$  (9)

$$\begin{aligned}
 M^{t+1}(y_0^{t+1}, x_0^{t+1}, y_0^t, x_0^t) &= \left[ \frac{TE^t(y_0^{t+1}, x_0^{t+1})}{TE^t(y_0^t, x_0^t)} \cdot \frac{TE^{t+1}(y_0^{t+1}, x_0^{t+1})}{TE^{t+1}(y_0^t, x_0^t)} \right]^{1/2} \\
 &= \left[ \frac{TE^{t+1}(y_0^{t+1}, x_0^{t+1})}{TE^t(y_0^t, x_0^t)} \right] \cdot \left[ \frac{TE^t(y_0^t, x_0^t)}{TE^{t+1}(y_0^t, x_0^t)} \cdot \frac{TE^t(y_0^{t+1}, x_0^{t+1})}{TE^{t+1}(y_0^{t+1}, x_0^{t+1})} \right]^{1/2} \quad (9)
 \end{aligned}$$

(9) DMU<sub>0</sub>가 t+1  
 t  
 가 . , 가 1 t+1  
 DMU<sub>0</sub> t  
 가 .  
 DMU<sub>0</sub> (catching up effect) .  
 t+1 가 t  
 (innovation)가 가 .  
 가 1 t+1 가 ,  
 가 1 t+1 가

Malmquist 가 1 DMU<sub>0</sub>  
 .  $M^{t+1}(y_0^{t+1}, x_0^{t+1}, y_0^t, x_0^t)$   
 가 < -3>

< -3> Malmquist



(9)  $[\frac{oe}{od} / \frac{oc}{oa}]$ ,  $[\frac{oc}{of} \cdot \frac{ob}{oe}]^{1/2}$  Malmquist 가  $[\frac{oe}{od} / \frac{oc}{oa}] \times$

(stochastic frontier), (thick frontier), (deterministic frontier), (distribution-free model),

, (nonstochastic)  
 가 . DMU  
 . DMU<sub>0</sub>  $\hat{u}_0$

$$\hat{u}_0 = \max( ) - 0 \tag{10}$$

:

$$\hat{u}_0 = 0 - \min( ) \tag{11}$$

$\hat{u}_0$ 가

가 .  
 .13)

Aigner, Lovell

& Schmidt(1977)

$$y_i = f(x_i, \beta) + \epsilon_i$$

$$\epsilon_i = v_i - u_i \quad (\epsilon_i = v_i + u_i) \tag{12}$$

$v_i$  0  $\sigma^2$  ,  $u_i$   
 ( )

DMU

---

13) Greene(1993)

[Jondrow, Lovell,

Materov & Schmidt(1982)]

DMU

'0' (half normal distribution) 가

(13) .

$$E(U | ) = * \left[ \frac{f(\frac{| |}{ | })}{1 - F(\frac{| |}{ | })} - ( \frac{ | }{ | } ) \right] \quad (13)$$

$$* : \frac{u - v}{ | }$$

$$: \frac{u - v}{ | }$$

$$: \sqrt{\frac{u^2}{ | } + \frac{v^2}{ | } }$$

f :

F :

(14) .

$$M(u | ) = - \left( \frac{u^2}{ | } \right) \quad \text{if } 0$$

$$= 0 \quad \text{if } 0 \quad (14)$$

가

가 . DMU  
가 가 .

가

가

가

가

Berger(1993)

가

(distribution-free model)

DMU<sub>0</sub> v<sub>0</sub>가  
 (∑v<sub>0t</sub> = 0, t ) u<sub>0</sub>가  
 가  
 [Berger & Humphrey(1991)]

i ( c<sub>i</sub> ) j ( c<sub>j</sub> )  
 (15)  

$$= \frac{\hat{c}_j - \hat{c}_i}{\hat{c}_i} \quad (15)$$

DMU가 DMU (exogenous differences),  
 (16)

$$= \frac{\hat{c}_j - \hat{c}_j^*}{\hat{c}_j} \quad (16)$$

$\hat{c}_j^*$  j i

가

가 가 , 1 2

가

3.

가

가

가

[Cummins &

[Cummins(1999)]

Weiss (1993)],

[Ryan & Schellhorn(2000)]가

Cummins & Weiss (1993)

38

, 134

, 89

1980

1988

가

95%

(

96%)

, 80%(

83%),

88%(

92%)

가

Cummins(1999)가 DEA

1988

1995

750

(pure technical efficiency),

(scale efficiency)<sup>14)</sup>

14)

가

(variable returns to scale)

가 가

가

가

가

1992 RBC

Ryan Schellhorn(2000) 312

Berger(1993) RBC

, RBC 1990-1992 가

RBC 1993-1995

( 3

'0' 가 ) RBC

RBC

[Hardwick(1997)]

[Cummins & Weiss (1993), Cummins(1999)] 가

. 1989-1993 54

---

가 가 , 가 가

(constant returns to scale) 가 가

가 .

가 가 가

25%

. Cummins & Weiss (1993) Hardwick(1997)

가 가

가

EU

가 가

. Fecher, Perelman & Pestieau (1991)

84

243

가

Rai(1996)

Donni & Fecher(1997)

가 . Rai(1996) 1988-1992

9

가 415

가

가

Cummins(1999)

가

가

Donni & Fecher(1997) DEA  
1983-1991

15 OECD 가

, Rai(1996) 가  
 가 가  
 , ,  
 가  
 가 가 가  
 가 가 가  
 ,  
 ,  
 가  
 가

27.7%, 24.9%, 가 24.5%  
 23.1% 20%

< -1 >

( : )

가	1990	1991	1992	1993	1994	1995	1996	1997	1998	94-98 (가)
	14,754	14,061	13,202	16,063	16,727	15,328	16,087	21,651	22,457	7.6
	2,569	2,528	2,879	3,480	3,592	4,655	6,315	4,217	4,595	6.3
	3,132	3,344	3,809	3,965	4,838	6,250	6,920	7,113	9,304	17.8
	15,189	16,610	14,217	10,776	15,686	16,799	11,239	10,872	9,999	-10.6
	-	-	-	203	259	352	403	393	467	15.9
	2,438	2,733	3,199	3,640	4,629	5,785	6,744	6,620	7,660	13.4
	6,068	5,910	4,539	490	742	1,643	2,587	2,196	2,579	36.6
	38,385	42,117	51,646	59,246	71,505	86,344	93,229	90,346	74,104	0.9
	37,363	40,936	51,585	53,599	59,918	71,564	72,231	66,137	68,201	3.3
	446	543	689	706	786	921	1,032	1,050	1,144	9.8
가		208	133	172	229	282	321	351	429	17.0
	6	7	7	7	8	9	8	9	10	6.1
	2,389	2,349	2,599	2,651	2,666	2,977	3,850	4,976	7,083	27.7
	8,881	10,391	12,436	11,336	12,995	15,699	18,639	23,526	31,656	24.9
	188,684	209,969	233,121	273,375	298,246	327,029	269,751	250,922	220,314	-7.3
	-	-	-	-	33,436	43,723	46,353	44,146	36,755	2.4
	141	173	181	169	1,150	3,649	3,083	4,348	4,751	42.6
	-	-	1,695	1,965	2,137	1,269	1,419	1,854	2,880	7.7
	11,772	12,645	14,393	13,754	15,213	19,445	20,040	19,239	21,930	9.6
	646	659	628	639	735	659	869	932	698	-1.3
	1,908	2,336	2,557	2,236	2,729	2,981	3,065	3,565	3,522	6.6
	-	-	-	489	565	634	869	1,040	1,297	23.1
	487	652	930	1,032	1,251	2,092	2,604	2,317	3,006	24.5
	5,423	7,422	7,976	6,950	10,809	11,080	12,968	13,121	13,718	6.1
	7,081	7,797	7,713	5,758	7,047	7,899	8,963	8,502	9,478	7.7
	11,364	12,213	13,328	14,098	16,641	21,981	22,826	21,671	24,520	10.2
	173	203	229	226	130	178	232	297	362	29.2
	60,709	71,288	76,721	74,823	74,527	75,753	86,908	101,279	123,328	13.4
	227,668	222,552	240,904	267,026	277,744	294,353	315,538	338,343	400,688	9.6
NAFTA	242,857	239,162	256,816	279,767	295,567	312,420	328,197	351,069	413,567	8.8
EU	187,283	210,828	241,293	241,598	271,667	315,757	346,112	354,986	382,538	8.9
OECD	647,675	689,645	761,315	828,873	936,938	1,041,333	1,035,093	1,051,031	1,106,937	4.3

: 1994 1998 가 .  
 : OECD 「Insurance Statistics Yearbook」, 1999, 2000.

1994  
 2,777 가 745 1998 4 1,233 OECD  
 9.6% 13.4%  
 4.3% .  
 , ,  
 1994 715 , 599 334 1998  
 741 , 682 368 0.9%, 3.3%, 2.3%  
 , ,  
 2,982 2,203 7.3%  
 1 가 1996  
 2 (< -1> ).

1998 OECD 4  
 1 , 2,203 2 , 1,233 3  
 , , . 1998  
 OECD  
 34.21%, 20.89%, 11.65% , ,  
 6.92%, 5.77%, 3.5% .

1998 EU NAFTA  
 가 OECD 70.56% OECD  
 , 1994 1998 OECD 가  
 가 가  
 0.13%  
 0.45%, 0.08% 0.24%, 0.29% 0.67%,  
 가 0.01% 0.03% 가 1.28% 2.83% .

&lt; -2&gt;

( : %)

가	1990	1991	1992	1993	1994	1995	1996	1997	1998
	2.36	2.10	2.47	2.02	1.85	1.53	1.61	2.10	2.11
	0.4	0.37	0.39	0.44	0.39	0.46	0.63	0.41	0.43
	0.49	0.49	0.51	0.50	0.53	0.62	0.69	0.69	0.88
	2.35	2.39	1.86	1.32	1.64	1.58	1.05	0.98	0.86
	-	-	-	0.03	0.03	0.04	0.04	0.04	0.04
	0.39	0.41	0.43	0.46	0.51	0.58	0.68	0.65	0.73
	0.97	0.88	0.62	0.06	0.08	0.16	0.26	0.21	0.24
	5.89	6.07	6.77	7.25	7.70	8.39	9.19	8.72	6.92
	5.94	6.09	6.34	6.12	5.96	6.43	6.51	5.78	5.77
	0.07	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.11
가	-	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.04
	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.38	0.35	0.30	0.30	0.29	0.30	0.38	0.48	0.67
	1.16	1.28	1.38	1.22	1.28	1.41	1.68	2.11	2.83
	29.96	31.34	31.66	34.48	32.97	32.61	27.04	24.57	20.89
	-	-	-	-	3.70	4.37	4.65	4.33	3.50
	0.02	0.03	0.02	0.02	0.13	0.36	0.00	0.43	0.45
	-	-	0.23	0.25	0.23	0.13	0.14	0.18	0.27
	1.8	1.81	1.86	1.57	1.53	1.87	1.98	1.86	2.05
	0.1	0.10	0.09	0.08	0.08	0.07	0.09	0.09	0.07
	0.3	0.35	0.35	0.28	0.30	0.30	0.31	0.35	0.34
	-	-	-	0.06	0.06	0.06	0.09	0.10	0.12
	0.08	0.10	0.13	0.13	0.14	0.21	0.26	0.23	0.29
	0.86	1.10	1.08	0.87	1.19	1.10	1.30	1.28	1.30
	1.07	1.11	0.98	0.69	0.76	0.76	0.90	0.83	0.90
	1.63	1.65	1.64	1.62	1.71	2.04	2.21	2.09	2.30
	0.03	0.03	0.03	0.03	0.01	0.02	0.02	0.03	0.03
	9.69	10.65	10.43	9.01	7.49	7.26	8.66	9.86	11.65
	34.06	31.18	30.33	31.08	29.31	27.24	29.52	31.47	34.21
NAFTA	36.41	33.57	32.41	32.65	31.19	28.95	30.71	32.63	35.34
EU	29.21	30.82	31.34	28.73	28.07	30.00	33.21	33.64	35.22
OECD	-	-	-	-	-	-	-	-	-

: &lt; -1&gt;

OECD

, 29.31% 7.49%

34.21% 11.65% 가 .

, , , OECD 가

가 32.97%, 7.7%, 5.96%, 3.7%

20.89%, 6.92%, 5.77%, 3.5%

1994 1998 OECD EU

NAFTA 70%

. , NAFTA 31.19%

35.34% 가 , EU 28.07% 35.22%

가 (< -2> ).

. 1 ( )

1998 OECD 1 , 945

1990 5.53% 가 . 1994

1998 OECD 3.14% 가

OECD 가 .

가 11,151 1 ,

가 3,394 2 , 2,065 3 ,

, , . , ,

, , 가 , 1

100 .

1994 1998 OECD 3.14%

가 가 41.03%

, , , , ,

가 20% . ,

, , 가

.

( : )

가	1990	1991	1992	1993	1994	1995	1996	1997	1998	94-98 (가)
	864	814	755	907	938	848	879	1,154	1,179	5.90
	327	320	362	432	444	574	778	517	563	6.12
	311	330	375	389	472	607	671	690	903	17.59
	530	570	479	360	507	533	348	330	297	-12.51
		-	-	20	25	34	39	38	45	16.05
	472	528	616	700	885	1,104	1,278	1,250	1,442	12.97
	1,216	1,174	907	97	146	321	504	423	498	35.97
	651	712	867	996	1,202	1,445	1,569	1,517	1,235	0.69
	588	510	579	597	662	788	792	719	739	2.80
	44	53	67	68	75	88	98	100	109	9.63
가		20	13	16	22	28	31	34	42	17.44
	22	26	28	26	26	29	31	28	37	9.54
	681	666	622	674	743	823	1,052	1,348	1,900	26.47
	128	150	179	169	202	247	291	374	521	26.73
	1,518	1,691	1,871	2,188	2,382	2,601	2,140	1,986	1,735	-7.62
		-	-	-	749	970	1,017	960	792	1.39
	368	443	457	420	2,819	8,834	7,355	10,241	11,151	41.03
		-	20	22	24	14	15	19	30	5.70
	752	803	902	815	897	1,214	1,270	1,244	1,371	11.19
	192	193	182	184	208	180	234	248	184	-3.07
	447	548	596	519	629	686	701	812	797	6.10
		-	-	13	15	16	22	27	34	23.04
	49	66	94	104	126	211	262	232	301	24.19
	138	190	203	177	275	281	329	331	347	6.04
	781	858	830	623	776	856	1,012	958	1,068	8.31
	1,525	1,627	1,759	1,848	2,198	2,896	3,107	3,004	3,394	11.47
	3	4	4	4	2	3	4	5	6	27.06
	1,055	1,233	1,323	1,224	1,158	1,241	1,467	1,704	2,065	15.55
	854	826	873	954	1,016	1,037	1,107	1,203	1,335	7.07
NAFTA	821	800	646	692	745	757	789	851	939	5.98
EU	525	563	626	615	683	807	895	918	988	9.65
OECD	620	640	692	744	843	927	918	932	954	3.14

: 1) 1 = ÷ 가 .  
 2) 1994 1998  
 : < -1>



&lt; -4 &gt;

( : %)

가	1990	1991	1992	1993	1994	1995	1996	1997	1998
	4.83	4.72	4.51	5.61	5.12	4.34	4.07	5.44	6.28
	1.58	1.50	1.52	1.89	1.82	2.00	2.75	2.03	2.14
	1.58	1.64	1.68	1.83	2.06	2.25	2.55	2.90	3.68
	2.53	2.73	2.40	1.88	2.70	2.76	1.76	1.64	1.55
	-	-	-	0.59	0.65	0.69	0.71	0.76	0.85
	1.82	2.03	2.17	2.62	3.04	3.19	3.66	3.88	4.37
	4.45	4.86	4.30	0.58	0.76	1.30	2.07	1.81	2.06
	3.09	3.38	3.76	4.59	5.23	5.47	5.95	6.38	5.07
	2.48	2.37	2.37	2.53	2.63	2.67	2.77	2.82	2.84
	0.54	0.61	0.70	0.76	0.79	0.79	0.84	0.88	0.95
가	-	0.62	0.36	0.44	0.55	0.64	0.72	0.77	0.90
	0.09	0.10	0.10	0.11	0.11	0.11	0.11	0.10	0.12
	5.3	5.08	4.22	4.88	4.88	4.52	5.30	6.40	8.46
	0.67	0.74	0.83	0.98	1.14	1.30	1.38	1.88	2.53
	6.32	6.16	6.26	6.39	6.35	6.36	5.86	5.97	5.79
	-	-	-	-	8.78	9.58	9.55	9.98	12.34
	1.37	1.58	1.43	1.31	7.86	21.09	18.13	27.53	28.44
	-	-	0.46	0.48	0.50	0.44	0.43	0.46	0.69
	3.97	4.17	4.26	3.98	4.09	4.71	4.96	5.23	5.70
	1.49	1.58	1.57	1.46	1.43	1.10	1.33	1.44	1.31
	1.64	1.98	2.02	1.93	2.22	2.03	1.94	2.32	2.41
	-	-	-	0.57	0.61	0.53	0.65	0.77	0.86
	0.7	0.83	0.98	1.23	1.42	2.00	2.39	2.28	2.83
	1.09	1.40	1.37	1.44	2.23	1.97	2.22	2.45	2.47
	2.92	3.10	2.92	2.93	3.45	3.00	3.56	3.72	4.17
	4.48	4.75	4.97	5.41	5.90	6.63	7.42	8.32	9.11
	0.11	0.13	0.14	0.13	0.10	0.10	0.13	0.16	0.18
	6.16	7.04	7.32	7.57	6.63	6.57	7.48	7.71	8.84
	3.74	3.65	3.70	3.88	3.94	3.88	3.98	4.10	4.36
NAFTA	3.61	3.57	3.61	3.54	3.66	3.67	3.68	3.77	4.02
EU	2.77	2.95	3.02	3.28	3.44	3.56	3.88	4.24	4.43
OECD	3.68	3.66	3.72	3.99	4.26	4.32	4.28	4.46	4.58

: = ( ÷ GDP) × 100  
 : < -1 >

OECD ( ) 1990 47.74% 1994 49.85% 1998  
 54.34% 가 1995 OECD  
 가

EU 1990 46.64% 1993  
 44.91% 1994 46.63%, 1998 57.05%  
 가 OECD  
 NAFTA 1990 37.98%  
 1994 38.55% 1998 44.75% 가

OECD  
 1998 가  
 , 가 86.31% 가 ,  
 75.66%, 73.28%, 67.20% 65.97%  
 , , , , , ,  
 , OECD  
 29.06%, 27.12%, 16.88%,  
 4.52% 가  
 , , , 가 , ,

OECD

1994 1998 가  
 23.82% 49.21%, 43.81%  
 67.20%, 34.44% 50.08%, 39.18% 55.18%  
 33.88% 44.49%

&lt; -5 &gt;

( : %)

가	1990	1991	1992	1993	1994	1995	1996	1997	1998
	69.36	67.84	68.57	59.09	59.81	56.71	49.26	58.04	64.96
	30.08	28.60	27.84	31.57	29.64	32.69	39.44	32.83	35.73
	32.31	32.78	32.85	34.85	39.18	40.43	43.76	48.24	55.18
	46.82	47.93	44.51	38.44	54.55	55.84	37.18	36.34	35.58
	-	-	-	25.77	25.10	27.64	26.60	25.98	27.12
	35.53	38.77	38.46	44.89	47.44	50.86	54.69	56.58	59.10
	64.33	64.27	61.22	18.37	23.82	36.71	48.63	47.15	49.21
	48.97	50.53	51.93	55.21	59.96	60.75	62.45	64.84	60.43
	40.97	40.22	35.67	35.46	35.58	35.75	36.67	37.23	38.44
	41.8	46.21	48.19	46.30	47.46	47.85	47.05	48.99	50.37
가	-	25.99	17.83	21.18	25.59	29.80	31.87	32.91	37.14
	2.59	2.71	2.71	3.05	3.51	3.96	3.55	4.22	4.52
	58.33	55.42	54.83	56.58	53.48	52.41	56.42	60.17	65.97
	26.82	27.86	28.64	30.56	33.37	36.81	38.63	45.24	51.10
	73.05	73.20	73.74	73.32	73.35	72.93	71.64	72.93	73.28
	-	-	-	-	75.22	74.76	72.64	71.54	75.66
	31.87	34.33	32.13	31.95	72.70	87.80	84.91	90.38	86.31
	-	-	33.06	32.61	33.88	32.67	33.66	35.68	44.49
	51.83	55.84	53.73	51.62	50.86	53.27	53.99	55.52	57.76
	36.1	41.88	39.18	42.89	43.54	35.53	34.38	35.70	34.21
	32.16	38.33	38.40	37.29	42.72	43.53	43.92	49.14	48.74
	-	-	-	28.65	30.98	27.54	28.60	27.67	29.06
	23.4	26.15	28.68	31.06	34.44	43.07	46.62	45.43	50.08
	29.9	34.22	32.33	32.12	42.05	39.61	42.69	45.99	46.19
	49.87	49.11	47.02	46.70	53.94	54.90	57.21	58.08	62.73
	41.6	42.11	40.81	41.81	43.81	48.37	58.58	62.43	67.20
	19.37	20.18	18.84	14.45	11.97	12.79	14.61	15.75	16.88
	59.76	61.13	58.14	53.98	53.97	53.99	58.48	61.02	64.51
	37.51	35.81	36.83	37.88	37.96	38.55	39.68	37.94	40.27
NAFTA	37.98	36.45	37.16	37.85	38.55	39.17	39.56	37.88	44.75
EU	46.64	47.59	45.10	44.91	46.63	47.39	49.87	52.43	57.05
OECD	47.74	47.71	47.44	48.10	49.85	50.60	50.43	50.05	54.34

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1994

43.54% 30.98% 1998 34.21% 29.06%

· , , , ,

60%, 36% 38%, 75%, 38% 40%,

73% (< -5> ).

. 1 5)

OECD 1 1990

404,403 1994 511,125 1996

653,146 가 , 1996

1998 60 1,742 .

EU 1 1990 432,004 1994

505,925 , 1998 751,320 가

7.16% . NAFTA

1990 372,388 1995 448,031

가 1995 1998 257,870

4.49% .

1998 가 6) 1

가 312 4,437 가 ,

가 133 8,896 , 가 97 943 , 가

86 8,468 , 84 8,131

· , , , , , , , , ,

가가 OECD .

---

5) OECD 1  
가

6) 1998 1 , , ,  
가 가 .

( : )

가	1990	1991	1992	1993	1994	1995	1996	1997	1998	90-98 (가)
	-	-	-	-	-	-	-	-	-	-
	240,102	246,520	285,804	304,575	326,102	396,267	437,246	344,835	365,035	5.38
	304,849	328,818	395,605	407,221	462,149	571,916	597,558	554,060	640,756	9.73
	244,869	336,533	-	-	-	-	-	269,495	252,167	0.37
	-	-	-	70,966	79,111	93,348	99,436	92,315	103,902	7.92
	-	-	-	-	-	719,215	-	714,800	794,963	3.39
	748,172	761,451	575,147	203,407	322,169	454,289	534,190	468,488	530,225	-4.21
	570,920	601,377	712,996	782,934	902,495	1,078,813	1,031,945	984,698	868,468	5.38
	406,551	391,493	450,703	470,660	526,868	673,398	697,723	644,662	644,346	5.93
	-	-	142,872	172,292	166,245	196,308	-	-	-	11.17
가	-	65,034	55,185	51,316	54,277	54,997	38,509	36,192	40,300	-6.61
	440,083	505,093	529,696	449,906	452,788	476,155	470,086	418,818	423,266	-0.49
	435,311	423,669	421,816	429,049	469,078	522,847	639,228	765,918	970,943	10.55
	615,765	676,748	762,896	664,587	733,794	815,784	954,898	1,069,121	1,338,896	10.20
	463,053	417,146	475,468	560,665	631,423	703,861	618,696	620,805	559,611	2.40
	-	-	-	-	579,550	713,783	714,123	714,842	733,860	6.08
	403,244	433,639	472,082	436,684	1,233,489	3,184,741	2,275,972	2,791,343	3,124,437	29.17
	-	-	237,579	287,717	297,701	191,130	206,567	244,642	282,637	2.94
	-	-	-	-	-	736,747	-	686,241	678,955	-2.69
	-	-	-	-	-	-	-	-	-	-
	476,126	465,497	-	488,078	-	-	744,648	790,206	672,671	4.41
	-	-	-	-	-	-	117,413	143,299	151,111	13.45
	138,508	173,357	214,245	224,721	256,388	341,979	402,571	343,922	407,932	14.46
	405,234	450,107	504,531	462,058	538,337	562,955	607,679	673,923	667,804	6.44
	242,510	260,650	339,190	285,183	604,393	674,777	767,539	801,410	848,131	16.94
	511,496	516,423	559,852	577,135	686,973	867,197	-	-	792,516	5.63
	182,761	187,477	228,406	259,836	190,915	209,424	210,972	230,782	257,901	4.40
	-	-	-	-	-	-	694,089	687,257	764,581	4.96
	382,146	383,454	405,235	423,981	435,884	451,264	-	-	-	3.38
NAFTA	372,388	380,734	402,924	422,204	434,095	448,031	206,567	265,159	257,870	-4.49
EU	432,004	442,032	504,120	507,541	595,925	726,081	748,105	725,441	751,320	7.16
OECD	404,403	401,656	441,552	469,618	511,125	568,428	653,146	624,272	601,742	5.09

: 가 (93-98), (95-98), (92-98), 1990-1998 (95-98), (92-95), (96-98), 가 (91-98), (90-95)

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282,637 , 2579 , 252,167  
 , 151,111 , 103,902 , 가 40,300  
 가 1  
 . , , , , 가  
 OECD 1 .  
 1990 1998 가  
 1 가 29.17%(1990  
 1998) , (16.94%),  
 (14.46%), (13.45%), (11.17%), (10.55%)  
 (10.2%) ,  
 , , , , 가가 1990 1998  
 OECD 가 5.09% .  
 (-2.69%), 가 (-6.61%), (-4.21%)  
 1 가 . , , ,  
 , , , , OECD 1  
 가 OECD  
 3% 5% (< -6> ).

1990 96.19% 1994 96.22% 1998 95.05%  
 95% 96% .  
 EU 1990 93.69%  
 1995 95.10% 1998 95.82%  
 가 OECD .  
 NAFTA 94.31% 91.38%  
 OECD .

< -7>

( : %)

가	1990	1991	1992	1993	1994	1995	1996	1997	1998
	100.00	100.00	100.00	90.44	-	-	100.00	100.00	98.47
	89.4	89.06	88.82	90.51	89.50	91.67	92.60	91.70	92.13
	94.14	94.28	94.29	95.33	96.34	99.93	99.93	99.96	99.96
	95.42	94.72	94.95	92.56	91.63	91.29	88.88	87.78	89.36
	-	-	-	100.00	100.00	99.02	98.91	98.84	99.04
	98.59	98.72	98.75	99.41	98.40	98.56	98.60	98.70	98.78
	99.2	99.45	99.20	95.47	95.28	98.48	99.12	99.01	99.27
	96.45	96.68	96.24	96.93	97.16	96.80	97.74	97.58	97.14
	91.58	91.15	91.18	91.87	92.13	92.31	91.95	92.05	92.50
가	-	-	100.00	84.06	84.44	85.01	87.70	91.67	-
	-	-	74.34	62.98	64.25	66.02	67.13	91.40	83.07
	61.29	62.32	64.02	66.03	71.71	72.58	66.18	72.20	69.79
	95.9	96.93	82.41	86.56	96.98	95.91	95.93	97.38	97.23
	81.64	81.63	81.46	83.08	89.68	90.68	90.95	92.24	94.29
	99.83	99.86	99.86	99.85	99.84	99.83	99.81	99.50	99.14
	-	-	-	-	99.72	99.73	99.69	99.50	99.71
	-	-	-	-	95.50	98.20	88.00	94.17	97.46
	-	-	94.43	94.49	93.61	93.28	92.58	92.59	93.67
	95.57	95.69	95.21	90.64	90.67	92.90	94.44	94.37	94.27
	100	100.00	100.00	100.00	100.00	100.00	-	-	-
	99.1	99.79	99.91	100.00	100.00	100.00	98.76	98.92	96.75
	-	-	-	100.00	99.93	99.87	99.70	98.85	97.71
	95.15	95.92	97.39	97.66	97.91	97.74	98.11	98.26	98.35
	96.6	97.41	96.91	96.76	97.86	97.36	97.68	98.25	98.30
	-	98.69	99.05	96.92	98.67	97.80	98.98	98.88	98.97
	96.29	96.68	96.71	96.74	96.71	97.15	98.14	98.65	97.89
	95.66	95.70	96.21	98.58	98.39	97.48	97.52	97.76	95.43
	-	-	-	95.35	90.76	96.00	96.96	97.70	97.26
	94.24	94.16	92.88	92.31	94.78	91.27	92.55	95.56	91.42
NAFTA	94.31	94.20	93.00	92.33	94.61	91.27	92.42	95.30	91.38
EU	93.69	93.95	93.37	94.07	93.50	95.10	95.65	96.06	95.82
OECD	96.19	96.28	95.66	95.38	96.22	95.70	96.02	96.92	95.05

: = ( ÷ ) × 100  
 : < -1>

1998 가 7) ,  
 , , , 가가 99%  
 , , , , 98%  
 , 97% OECD .  
 , 가 , 89.36%, 83.07%,  
 69.79% OECD .  
 1990 1998 가  
 가 81.64% 94.29% , 가  
 (74.34% 83.07%), (61.29% 69.79%)  
 (94.14% 99.96%) 가가 가 .  
 , , , ,  
 OECD  
 (< - 7> ).

OECD 1990  
 3.7% 1995 3.88%, 1998 5.13% 가  
 3% 5% .  
 , , NAFTA  
 1990 6.11%, 1995 7.21%, 1998  
 10.27% 가 OECD .

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7) 1998 가 가

< -8 >

( : %)

가	1990	1991	1992	1993	1994	1995	1996	1997	1998
	-	-	-	0.30	-	-	0.00	1.24	1.52
	1.89	0.96	0.97	0.79	0.71	0.71	0.71	0.98	0.96
	1.07	1.37	1.02	1.11	1.24	1.35	1.33	1.28	0.98
	3.02	3.55	3.93	3.31	5.44	5.95	7.28	8.06	9.99
	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00
	0.4	0.42	0.38	0.27	0.46	0.25	0.25	0.26	0.21
	0.1	0.11	-0.73	0.04	0.10	0.08	0.14	0.97	0.54
	3.83	3.56	3.64	3.09	2.68	2.67	1.74	1.57	1.89
	0.45	0.45	9.60	9.54	10.06	10.04	10.17	10.83	11.11
	-	-	-	0.14	0.11	0.06	0.16	0.09	0.11
가	-	-	0.73	1.61	0.00	0.00	0.00	0.00	0.00
	4.11	4.59	2.34	2.11	14.77	16.91	0.36	17.51	0.41
	0.19	0.13	15.05	9.38	0.18	0.43	0.96	0.82	0.62
	18.47	17.79	18.36	15.00	11.12	9.85	10.23	8.43	6.25
	0.55	0.11	0.12	0.12	0.13	0.14	0.15	0.15	0.41
	-	-	-	-	0.00	0.01	0.12	0.00	0.00
	-	-	-	-	0.34	0.06	0.20	0.20	0.03
	-	-	1.00	1.13	1.13	1.14	1.07	1.32	0.94
	-	-	-	-	-	3.48	1.79	1.19	1.89
	-	-	-	-	-	-	-	-	-
	0.63	0.03	-	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00
	0.03	0.03	0.11	0.08	0.01	0.02	0.15	0.20	0.23
	1.08	0.57	0.61	0.68	0.44	0.65	0.44	0.68	0.27
	-	4.88	6.42	5.39	2.90	4.26	0.13	0.31	0.24
	9.94	9.43	9.25	9.07	7.30	7.24	3.75	1.77	1.65
	0.04	0.05	0.02	0.02	0.03	0.57	0.54	0.55	0.01
	-	-	-	-	-	-	0.76	0.71	0.83
	6.31	6.25	7.40	7.82	4.66	7.31	6.79	5.12	10.34
NAFTA	6.11	6.06	7.17	7.60	4.67	7.21	6.79	5.19	10.27
EU	3.21	3.21	6.76	6.11	5.37	5.11	3.52	3.34	3.31
OECD	3.7	3.38	4.60	4.37	3.04	3.88	3.46	2.96	5.13

: = ( ÷ ) × 100  
 : < -1 >

EU 1992 6.76%  
 1998 3.31% OECD  
 1998 가 8), , , ,  
 가 , 11.11%, 10.34%, 9.99%, 6.25%  
 OECD  
 , 가 , , ,  
 , 1%  
 .  
 1990 1998 가  
 , 1990 0.45% 1998 11.11%  
 가 , 3.02% 6.31%  
 9.99% 10.34% .  
 1990 18.47% 1998  
 6.25% , ,  
 9.94% 4.88 1.65% 0.24% . 가  
 OECD  
 . (< -8> )

1998 OECD  
 ( )  
 9) 가 가 88.62% 84.85%  
 , , , , ,  
 가가 30% , 15% .

---

8)  
 9) 1998 , , , , , 가

&lt; -9&gt;

( : %)

가	1990	1991	1992	1993	1994	1995	1996	1997	1998
	5.41	7.66	8.17	-	-	-	0.09	0.00	0.04
	0.28	0.33	0.37	0.52	0.07	0.12	0.00	0.00	0.00
	7.64	7.32	7.09	8.40	8.19	4.16	3.56	3.50	3.11
	19.88	17.96	19.39	8.73	20.99	21.54	18.57	16.78	12.34
	-	-	-	5.43	9.70	14.09	15.49	17.30	18.89
	2.35	2.39	2.37	1.70	0.68	0.58	0.48	0.40	0.33
	0	0.00	0.00	-	0.00	-	0.00	0.00	0.00
	2.05	2.00	1.94	1.65	1.07	1.00	1.03	0.95	1.00
	3.31	3.23	2.99	3.00	2.65	2.09	2.10	2.10	2.18
	-	-	23.04	23.50	24.16	25.25	25.97	10.20	9.73
가	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	31.17	32.63	24.75	21.95	23.69	22.43	22.59	19.45	17.19
	1.49	1.43	1.42	1.57	1.80	2.18	2.49	2.41	2.32
	1.61	1.76	1.94	2.10	2.38	2.31	2.66	2.77	3.22
	-	-	-	-	0.13	0.11	0.10	0.10	0.08
	-	-	-	-	4.05	2.26	2.28	2.82	4.47
	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7.96	6.36	5.82	6.51	5.68	5.64	5.50	5.14	4.27
	29.1	-	-	-	-	-	-	-	-
	0	0.00	0.00	0.00	-	0.00	0.02	0.01	0.20
	-	-	-	-	-	-	-	0.00	0.00
	22.65	24.90	18.73	12.91	5.89	2.22	1.93	2.33	2.23
	6.9	5.82	6.30	5.51	7.11	3.67	3.94	3.63	0.96
	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0	0.00	0.00	0.00	-	0.00	0.00	-	0.00
	0	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	2.27	2.12	2.68	3.06	2.51	4.81
	2.37	2.30	2.44	2.15	1.14	1.19	1.04	0.59	0.51
NAFTA	-	-	-	-	-	-	-	-	-
EU	-	-	-	-	-	-	-	-	-
OECD	-	-	-	-	-	-	-	-	-

: 1)

2)

: &lt; -1&gt;

					4%	10%
		1%				
1990	1998		가			
				가		가 1993
6.88%	1998	32.03%		가		
(16.35%		28.74%),	(18.86%	31.24%),		(0%
9.72%)		(9.18%	17.23%)	가가	가	
		(30.92%	15.22%),	가	(99.66%	88.62%),
		(91.70%	84.55%)		(12.54%	7.68%)
				(< -9>		).

## 2. OECD

10)

가.

1991	1998	OECD			가
		가	17.25%,	8.76%,	8.41%,
					8.14%
		7.56%			
GDP	가				
		가			
		0.74%	2.53%,	3.65%	4.36%,
					3.38%
5.07%				2.37%	3.38%
5.07%					2.84%

10) OECD

1991 1998  
 0.69% 가 6.99%  
 GDP .  
 2.37% 6.16% 1.55% 5.79% .  
 1994 334 1998  
 367 2.39% , GDP  
 5.95% . 1994 8.78% 1998  
 12.34% 8 가 .  
 , 가 1991 150  
 1998 521 가 가 19.41%  
 . , , , 8.19%,  
 7.64%, 7.10%, 5.46% 가 , 1998  
 2,065 8 가 .  
 749 1,691 792 1,735  
 1.39% 0.37% 가 .  
 1991 570 1998 297 8.88%  
 .  
 1991 1998  
 가 20% 10%  
 가 . ,  
 가 ,  
 .  
 1991 47.93% 1998 35.58%  
 10% . 1998  
 75.66% 가 , 73.28%,  
 64.51%, 60.43%, 51.10%, 40.27%, 38.4%  
 35.58% ([ 1] ).

( )

OECD 가

가

1991 202

62 1998 280 87 4.78%

4.96% 가

, , , ,

1991 1998

7

, 1991 34.1%

1998 6.7%

가 53.6% 가 , 12.6%, 6.9%,

6.7% 가 5%

1998 7.46% 가 , 2.64%,

0.96% 가

, 가

. 1998 가

가 33.3%

20% , 가 7%

( [ 2] ).

OECD ,

가 1998 가 1991 가

가 1994 1998

18.61% 가 7.6%

9.1% . 1998 9.1%

가 8.1%, 5.5% 가

5% 가 1991 1998

가 1998

25.9% 가 , , 10% , 4%

가 가 1% 0.1%

가

1991 1998 16.59%, 8.83%,

26.73% 가 가

1991 4.0%, 5.5%, 9.6% 1998 6.6%, 6.6%,  
 13.0% .  
 , , 가  
 가 가 .

1991 1998  
 .  
 1998 가  
 52.1% 가 , 가 17% 18%  
 가 10% .

1991 1998  
 가 가 가  
 .  
 , , , 가  
 20% 가 가  
 가 .

1998 , ,  
 , 가 70% , ,  
 55.1% , , 30% 11.1% 가  
 ([ 3] ).

### 3. OECD 가

가. OECD 가

, , , 가 ,  
 , 가

, , ,  
, , ,  
.

가

가

B/ S

B/ S

, ,

(< -10> ).

< -10>


1)

1998

RBA , ISC ,  
 , ASC , AFIC  
 ,  
 1997 가  
 (Wallis Inquiry) .

APRA (Australian Prudential Regulation Authority)가 .

RBA가, APRA  
 가, ASIC (Australian Securities and Investment Commission)가 (< -11> ).

< -11> 1998 ( )

	R	A	A
	B	P	S
	A	R	I
		A	C

: OECD

2)

FSA (Financial Services Authorities)

1997 SIB가 , 1998  
 FSA , 1999  
 FSA .  
 .  
 가 BOE  
 가 FSA  
 (< -12> ).  
 < -12> 1999 ( )

	B	F
	O	S
	E	A

: OECD

3)

1999 7

BFS가 .  
 . ,  
 가 DNB  
 가 .



가 .  
 approach), (prudent person rule), (quantitative approach), (hybrid approach)

(localization)

가

가

OECD

가

OECD

가

가

(  
)가

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가

10%

(

5%),

3-5%

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가

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(localization)

EU

EU

가

EU 가

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OECD

가

.

가

가

가

1996 10 OECD 29 가  
 (ENT) , , (cross-border transaction)

2000 4 가  
 , OECD 가 가  
 가

(contagion risk)

가

OECD 가

OECD

가

2.

가

( ),  
( )

가

1960

가

가

가

가

가

가.

가

가

가

가

가

가

가

가

가

, OECD

가

3.

DEA (data

envelopment analysis) 1)

가

1) Charnes, Cooper and Rhodes (1978).

(deterministic frontier),  
(distribution-free model)<sup>3)</sup>  
(thick frontier)<sup>4)</sup>

(stochastic frontier)<sup>2)</sup>,

가

가

가

가

. OECD 가

(collection-based model)

(delivery-based model)

가

가

가

1

가

가

가

가

가

가

가

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2) Aigner, Lovel & Schmidt(1977).

3) Berger(1993).

4) Berger & Humphrey(1991).



4.

5 . 1 , ,

. OECD 가

2 . OECD 가

「OECD

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3

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가

가

4 OECD 가

가

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가

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5

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