

Table 2. Average equivalized disposable income :Total households

(In 10,000 yen per year)

	1987		1990		1993	
	F	(E-F)/E (%)	F	(E-F)/E (%)	F	(E-F)/E (%)
Total	202.3	16.7	239.8	15.2	277.8	16.1
By Age group of household head						
25-34	194.7	15.5	222.8	14.4	258.8	15.2
35-44	199.5	16.6	229.2	14.8	264.7	16.4
45-54	213.8	18.3	262.9	16.2	304.7	17.6
55-64	225.2	17.9	271.0	16.4	316.0	17.4
65-74	183.6	14.3	213.2	12.8	254.2	12.2
75+	152.0	11.9	195.8	13.6	218.1	14.4
By quintile of disposable income						
1	77.8	13.8	81.3	13.9	97.0	11.9
2	134.7	12.7	152.1	12.8	179.0	12.5
3	179.7	14.3	207.1	13.2	242.3	13.9
4	235.7	16.1	276.6	14.6	322.1	15.5
5	383.8	20.0	482.2	17.2	548.5	19.1
	1996		1999		2002	
	F	(E-F)/E (%)	F	(E-F)/E (%)	F	(E-F)/E (%)
Total	293.6	15.5	294.6	15.2	280.4	14.6
By Age group of household head						
25-34	268.8	14.6	283.9	15.1	268.9	14.7
35-44	282.7	16.2	292.6	15.6	286.4	16.0
45-54	319.8	17.0	324.0	17.1	314.7	16.2
55-64	343.9	16.4	344.4	16.8	323.3	16.4
65-74	259.7	12.3	258.5	11.7	253.0	11.7
75+	222.8	11.6	234.4	10.9	221.2	10.4
By quintile of disposable income						
1	100.2	15.5	94.8	13.8	89.5	12.2
2	187.4	12.8	184.2	11.9	170.7	11.4
3	255.6	13.5	254.8	13.1	239.9	12.9
4	340.5	14.7	342.5	14.8	324.9	14.7
5	584.7	17.6	596.9	17.3	577.2	16.6

Source: Author's calculations based on IRSs

Notes: Disposable income (F) equals post-tax post-transfer income

Table 3. Equivalized disposable income by age group of household head and household structure: Total households

1987

(1) Average disposable income		(In 10,000 yen per year)					
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	202.3	194.7	199.5	213.8	225.2	183.6	152.0
Living Alone	173.0	236.2	274.3	179.0	160.1	121.5	110.4
Couple Only	226.7	251.8	267.4	270.2	240.6	196.3	139.4
Couple with Children	209.9	169.4	200.5	222.2	260.3	231.6	167.9
Lone Parent	166.6	...	154.3	164.1	182.3	167.4	...
Three Generation	189.9	...	178.8	184.7	205.2	162.9	198.6

(2) Gini coefficient							
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	0.295	0.250	0.257	0.287	0.315	0.336	0.365
Living Alone	0.362	0.245	0.308	0.358	0.372	0.334	0.399
Couple Only	0.337	0.222	0.250	0.318	0.333	0.361	0.371
Couple with Children	0.256	0.212	0.235	0.255	0.279	0.301	0.284
Lone Parent	0.307	...	0.299	0.317	0.265	0.311	...
Three Generation	0.263	...	0.238	0.270	0.274	0.248	0.288

1990

(1) Average disposable income		(In 10,000 yen per year)					
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	239.8	222.8	229.2	262.9	271.0	213.2	195.8
Living Alone	192.6	251.1	289.1	242.1	188.8	144.0	116.2
Couple Only	276.8	302.0	337.5	340.6	300.7	231.9	179.1
Couple with Children	249.8	190.5	225.7	268.6	314.5	257.1	290.3
Lone Parent	210.3	...	194.6	208.6	239.4	205.0	...
Three Generation	225.6	...	197.4	230.5	240.9	221.5	251.5

(2) Gini coefficient							
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	0.326	0.249	0.272	0.299	0.352	0.376	0.435
Living Alone	0.385	0.231	0.261	0.364	0.403	0.387	0.435
Couple Only	0.368	0.214	0.262	0.357	0.366	0.389	0.444
Couple with Children	0.283	0.206	0.247	0.268	0.313	0.308	0.437
Lone Parent	0.350	...	0.326	0.304	0.369	0.402	...
Three Generation	0.289	...	0.253	0.277	0.302	0.292	0.318

1993

(1) Average disposable income		(In 10,000 yen per year)					
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	277.8	258.8	264.7	3047.0	316.0	254.2	218.1
Living Alone	229.5	294.7	334.2	270.7	209.9	192.9	156.5
Couple Only	317.5	339.5	409.6	390.9	354.2	268.6	202.8
Couple with Children	289.6	223.2	261.1	313.0	343.6	309.0	237.2
Lone Parent	234.9	...	199.8	239.7	285.1	271.6	...
Three Generation	261.7	...	223.2	273.2	272.8	253.6	303.9

(2) Gini coefficient							
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	0.316	0.253	0.270	0.293	0.325	0.361	0.397
Living Alone	0.381	0.228	0.294	0.389	0.431	0.418	0.406
Couple Only	0.356	0.197	0.288	0.322	0.361	0.352	0.390
Couple with Children	0.263	0.219	0.230	0.259	0.263	0.323	0.341
Lone Parent	0.336	...	0.312	0.293	0.296	0.420	...
Three Generation	0.280	...	0.251	0.283	0.256	0.278	0.330

Table 3. continue
1996

(1) Average disposable income		(In 10,000 yen per year)					
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	293.6	268.8	282.7	319.8	343.9	259.7	222.8
Living Alone	251.3	313.7	347.3	351.5	271.1	185.2	153.9
Couple Only	321.5	340.3	400.5	373.9	358.9	287.2	224.5
Couple with Children	305.2	231.3	275.0	329.5	372.6	291.0	294.2
Lone Parent	250.2	...	197.0	245.3	317.8	272.1	...
Three Generation	280.9	...	249.7	285.9	313.1	255.2	303.6

(2) Gini coefficient							
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	0.318	0.239	0.274	0.292	0.337	0.348	0.384
Living Alone	0.368	0.217	0.278	0.385	0.385	0.344	0.368
Couple Only	0.334	0.204	0.215	0.295	0.333	0.351	0.368
Couple with Children	0.281	0.203	0.250	0.268	0.303	0.323	0.320
Lone Parent	0.351	...	0.327	0.300	0.357	0.373	...
Three Generation	0.290	...	0.256	0.259	0.320	0.286	0.310

1999

(1) Average disposable income		(In 10,000 yen per year)					
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	294.6	283.9	292.6	324.0	344.4	258.5	234.4
Living Alone	247.3	325.1	396.0	346.2	237.9	194.0	181.7
Couple Only	328.7	343.9	428.2	414.1	381.9	274.5	251.8
Couple with Children	304.8	243.6	274.9	329.4	368.9	280.0	257.0
Lone Parent	241.8	...	204.6	223.6	290.1	274.0	...
Three Generation	292.4	...	255.2	295.9	318.4	275.7	316.0

(2) Gini coefficient							
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	0.330	0.272	0.274	0.305	0.343	0.343	0.386
Living Alone	0.385	0.246	0.276	0.374	0.416	0.365	0.364
Couple Only	0.341	0.210	0.242	0.287	0.341	0.334	0.373
Couple with Children	0.286	0.243	0.235	0.277	0.303	0.326	0.353
Lone Parent	0.354	...	0.320	0.315	0.332	0.293	...
Three Generation	0.310	...	0.257	0.296	0.330	0.301	0.342

2002

(1) Average disposable income		(In 10,000 yen per year)					
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	280.4	268.9	286.4	314.7	323.3	253.0	221.2
Living Alone	237.5	314.8	380.0	306.7	236.0	204.9	164.3
Couple Only	302.4	324.0	397.4	403.7	358.9	255.7	234.8
Couple with Children	302.5	235.8	273.5	327.3	367.9	283.1	281.8
Lone Parent	217.6	...	199.6	231.7	218.8	253.7	...
Three Generation	277.9	...	257.0	290.7	298.0	261.7	256.8

(2) Gini coefficient							
Household Structure	Total	25-34	35-44	45-54	55-64	65-74	75+
Total	0.335	0.277	0.306	0.306	0.350	0.345	0.356
Living Alone	0.379	0.251	0.307	0.351	0.412	0.365	0.368
Couple Only	0.338	0.224	0.262	0.308	0.348	0.318	0.299
Couple with Children	0.300	0.258	0.265	0.286	0.317	0.326	0.316
Lone Parent	0.352	...	0.410	0.315	0.297	0.383	...
Three Generation	0.285	...	0.267	0.279	0.302	0.264	0.314

(3) 税、現物給付による再分配効果（2002年調査の例）

- ・ 税・保険料によってジニ係数は 0.352→0.335 に低下した。
- ・ 税によってジニ係数は 0.353→0.335 に低下した。
- ・ 保険料によってジニ係数は 0.335→0.335 に上昇した。
- ・ 現物給付によってジニ係数は 0.335→0.331 に低下した。

Table 4. Effects of taxes and benefits in kind on Gini coefficients: Total households

	1987	1990	1993	1996	1999	2002
C = C	0.295	0.326	0.316	0.318	0.330	0.335
C = 0	0.316	0.340	0.337	0.332	0.346	0.352
C = C1	0.292	0.320	0.313	0.313	0.328	0.335
C = C2 + C3 + C4	0.320	0.346	0.341	0.337	0.349	0.353
Benefits in kind	0.295	0.320	0.313	0.312	0.325	0.331

(4) 相対貧困率（全世帯の再分配所得の中央値の 50%以下の世帯）

- ・ 18歳未満は 13%、65歳以上は 18%（2002年調査）
- ・ 反対に、全世帯の再分配所得の中央値の 180%以上の世帯にいる 18歳未満は 9%、65歳以上は 11%（2002年調査）

Table 5. Proportion of individuals living in certain income level compared to the median income of the total households: equivalized disposable income

	1987	1990	1993	1996	1999	2002
Less than 50%						
age total	10.5	11.9	11.4	12.3	13.6	13.1
0-17	10.1	11.0	11.3	12.4	13.8	13.3
65+	18.4	20.2	19.8	19.0	18.8	18.1
More than 180%						
age total	10.7	11.8	11.8	11.9	13.3	14.3
0-17	6.2	6.3	6.3	6.1	6.1	8.8
65+	9.3	10.1	9.7	9.6	10.2	10.6

(5) 世帯 VS 個人 (2002 年調査で 7,401 世帯、16,918 人)

・ 20 歳以上人口について個人単位でジニ係数を計算した場合の変化

7,401 人 16,918 人

課税前所得 : 0.352 → 0.337

再分配所得 : 0.335 → 0.322 (Table 6)

Table 6. Gini coefficients of equivalized disposable income for adult individuals aged 20+

	1987	1990	1993	1996	1999	2002
Total	0.287	0.317	0.302	0.308	0.322	0.322
By age group						
20-24	0.277	0.296	0.281	0.291	0.315	0.306
25-34	0.261	0.282	0.270	0.275	0.302	0.293
35-44	0.257	0.288	0.270	0.278	0.28	0.302
45-54	0.289	0.302	0.292	0.291	0.303	0.303
55-64	0.312	0.349	0.323	0.334	0.348	0.347
65-74	0.319	0.349	0.342	0.327	0.331	0.330
75+	0.328	0.374	0.349	0.364	0.363	0.350
By household structure						
Living Alone	0.362	0.385	0.381	0.368	0.385	0.379
Couple Only	0.337	0.368	0.356	0.334	0.341	0.338
Couple with Children	0.261	0.289	0.267	0.283	0.292	0.301
Lone Parent	0.301	0.338	0.324	0.338	0.354	0.346
Three Generation	0.263	0.288	0.277	0.286	0.309	0.282

3. 現役世帯

(1) 格差のトレンド：全世帯と同じ（ジニ係数ほぼ 0.02 小さい；2002 年は 0.013 小さい）

Table 1

(2) 世帯主の年齢階級・世帯構造別等価再分配所得 Table 7 (1)

・再分配所得の最大（夫婦のみ・45-54：404.6 万円）と最小（片親と子・35-44：183.7 万円）の格差は 2.2 倍（2002 年調査）。

(3) 10 分位階級別負担 Table 7 (2)

・負担率に大きな差はない：13.6~21.3%。子のいる世帯といない世帯とで負担率に余り差がない（ヨーロッパ諸国では子育て世帯に各種支援）。

Table 7. Equivalized disposable income for working-age households

(1) By age group of household head and household structure (10,000 yen per year)

	1987				1990				1993			
	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64
Total	195.7	201.6	218.9	228.4	223.7	233.9	269.2	278.1	258.6	272.2	311.4	319.5
La	236.2	247.3	179.0	160.1	251.1	289.1	242.1	188.8	294.7	334.2	270.7	209.9
Co	251.8	267.4	270.2	241.9	302	337.5	340.6	301.6	339.5	409.6	390.9	353.9
CC	169.8	200.5	222.2	261.0	190.4	225.7	268.5	315.7	223.2	262.1	312.9	345.9
LP	...	129.8	159.2	182.8	...	189.2	205.5	247.5	...	180.2	233.8	292.2
3G	...	...	...	201.2	...	...	...	224.4	...	...	...	260.3
	1996				1999				2002			
	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64
Total	269.8	284.9	328.0	345.4	285.2	296.1	329.8	349.5	268.7	290.9	323.9	324.2
La	313.7	347.3	351.5	271.1	325.1	396	346.2	237.9	314.8	380.0	306.7	236.0
Co	340.3	400.5	375.2	364.4	344.8	428.2	415.4	389.5	324.0	397.4	404.6	362.5
CC	231.6	275.0	329.6	375.1	243.6	275.3	329.2	369.7	235.8	273.9	328.8	368.5
LP	...	169.5	241.4	320.9	...	173.3	205.1	294.9	...	183.7	229.2	217.1
3G	...	...	...	269.5	...	...	...	280.1	...	...	...	251.3

Note: La = Living Alone, Co = Couple Only, CC = Couple with Children, LP = Lone Parent, 3G = Three Generation

(2) By disposable income decile

Decile	1987		1990		1993		1996		1999		2002	
	A	C/E (%)	A	C/E (%)	A	C/E (%)	A	C/E (%)	A	C/E (%)	A	C/E (%)
Total	189.5	17.5	222.1	15.9	261.9	17.1	276.9	16.4	283.9	16.5	265.7	16.2
1	0.4	16.3	0.3	17.8	0.3	14.9	0.3	20.2	0.3	18.7	0.3	17.1
2	0.6	14.0	0.5	14.3	0.6	13.8	0.5	15.5	0.5	14.8	0.5	13.6
3	0.7	13.6	0.7	14.5	0.7	13.9	0.7	14.5	0.7	14.4	0.7	14.1
4	0.8	14.4	0.8	13.9	0.8	14.5	0.8	14.8	0.8	13.8	0.8	14.5
5	0.9	15.1	0.9	14.0	0.9	15.3	0.9	14.7	0.9	14.9	0.9	15.0
6	1.1	15.9	1.1	14.1	1.1	15.3	1.1	14.9	1.1	14.7	1.1	15.4
7	1.2	16.6	1.2	15.1	1.2	16.5	1.2	15.3	1.2	16.3	1.2	16.5
8	1.4	17.7	1.4	15.8	1.4	17.0	1.4	16.3	1.4	16.4	1.4	16.4
9	1.6	18.9	1.7	16.9	1.7	18.1	1.7	17.2	1.7	18.2	1.7	16.9
10	2.5	21.3	2.8	17.9	2.6	20.7	2.7	18.4	2.7	18.3	2.9	17.7

a = median income

A = F/(median income), C/E = Tax and contribution as percent of gross income (E)

4. 高齢者

(1) 非同居高齢者

・ 公的年金給付の課税前所得 (E) に占めるシェアは引退群で 86%、非引退群で 39%であった (計 69% : 2002 年調査)。 Table 8

・ 引退群のジニ係数 0.292、非引退群は 0.357 (2002 年調査) Table 9

(2) 同居高齢者

・ 等価再分配所得は同居によって 203 万円から 281 万円に上昇した。203 万円は非同居高齢者の 224 万円より少し低い (2002 年調査)。

・ 同居によってジニ係数は 0.431 から 0.325 に低下した (2002 年調査)。

Table 9. Equivalized disposable income and Gini coefficient for the elderly

	1987	1990	1993	1996	1999	2002
Elderly households (single or couple aged 65+)	157.8 0.380	184.8 0.423	222.6 0.402	230.7 0.374	238.0 0.371	224.2 0.344
Fully retired	111.4 0.291	129.2 0.340	158.2 0.318	180.8 0.306	184.2 0.298	182.3 0.292
With earnings	230.8 0.379	285.4 0.418	349.6 0.396	339.1 0.390	362.3 0.389	325.6 0.357
Co-resident elderly						
Total household income	194.0 0.289	230.7 0.314	269.8 0.306	288.9 0.315	286.5 0.321	281.0 0.325
Elderly income only	107.0 0.457	152.0 0.511	173.5 0.494	184.9 0.472	198.7 0.449	202.8 0.431
Total	182.9 0.322	214.5 0.358	251.7 0.347	263.5 0.346	264.9 0.348	253.2 0.341

Note 1) upper: equivalized disposable income in 10,000 yen
lower: Gini coefficient

Table 8. Shares of different income sources of equalized disposable income for the elderly households (single or couple aged 65+)

(In 10,000 yen, percent of gross income)

1987	Total	By age group					By disposable income quintile				
		65-69	70-74	75-79	80-84	85+	1	2	3	4	5
Disposable income	141.8	143.9	158.3	127.3	133.4	96.5	41.7	81.9	115.1	155.2	316.4
Share (%)											
Earnings	31.7	33.9	34.1	26.5	35.3	2.3	5.4	8.4	11.1	11.1	56.1
Public pension	63.0	58.7	61.9	70.4	59.7	74.0	86.3	76.2	82.5	84.3	41.5
Private pension a)	0.8	1.0	1.2	0.2	0.0	0.0	0.0	0.1	0.8	0.2	1.3
Asset income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tax & Contribution (%)	10.7	12.2	10.8	7.6	14.2	6.0	10.4	5.2	4.9	5.0	16.3
1990	Total	By age group					By disposable income quintile				
		65-69	70-74	75-79	80-84	85+	1	2	3	4	5
Disposable income	162.4	192.1	154.4	142.7	149.9	179.2	39.4	88.2	127.6	171.6	386.0
Share (%)											
Earnings	26.9	38.4	18.5	16.1	31.6	33.7	4.1	10.1	9.1	14.5	42.3
Public pension	57.2	47.6	64.7	66.3	51.7	51.3	91.2	78.6	80.0	79.3	34.5
Private pension a)	0.7	0.5	1.4	0.6	0.0	0.1	0.0	0.1	0.2	0.5	1.1
Asset income	11.1	8.7	12.2	14.3	9.8	11.4	1.4	2.0	4.0	4.9	18.4
Tax & Contribution (%)	10.7	12.7	9.9	7.1	14.4	8.5	6.8	4.6	3.8	5.0	16.6
1993	Total	By age group					By disposable income quintile				
		65-69	70-74	75-79	80-84	85+	1	2	3	4	5
Disposable income	205.5	233.5	213.7	189.0	155.3	206.7	57.5	113.0	156.1	221.9	479.7
Share (%)											
Earnings	30.1	33.6	30.7	23.8	18.5	51.2	4.2	5.9	10.7	17.5	48.6
Public pension	56.1	51.3	56.3	61.8	71.1	35.1	86.9	79.0	79.5	76.8	33.0
Private pension a)	0.4	0.4	0.8	0.1	0.0	0.0	0.5	0.0	0.4	0.6	0.3
Asset income	9.1	10.1	8.7	9.3	7.0	8.9	1.0	1.4	4.4	2.9	15.5
Tax & Contribution (%)	11.0	9.0	10.9	11.2	6.9	27.5	5.5	3.1	4.7	5.6	17.3
1996	Total	By age group					By disposable income quintile				
		65-69	70-74	75-79	80-84	85+	1	2	3	4	5
Disposable income	217.3	240.6	234.5	185.7	206.7	152.1	59.1	124.6	179.8	236.2	487.4
Share (%)											
Earnings	21.6	26.5	26.0	15.3	13.3	1.7	10.3	7.0	6.4	8.6	37.3
Public pension	63.8	62.4	59.5	73.6	62.4	72.8	83.4	80.5	88.5	85.1	39.6
Private pension a)	1.4	1.8	2.2	0.2	0.1	0.6	0.0	0.0	0.0	0.8	2.5
Asset income	7.7	4.9	6.0	6.8	18.5	10.9	0.5	1.7	1.8	3.2	14.0
Tax & Contribution (%)	9.9	9.7	10.5	9.1	10.7	8.3	11.3	5.6	6.0	6.7	13.6
1999	Total	By age group					By disposable income quintile				
		65-69	70-74	75-79	80-84	85+	1	2	3	4	5
Disposable income	229.8	242.2	234.5	218.6	238.6	193.5	68.6	131.9	188.4	240.0	521.6
Share (%)											
Earnings	21.3	26.4	26.1	12.0	12.8	22.4	5.3	6.7	8.5	7.0	37.0
Public pension	63.7	57.2	63.6	69.2	66.9	64.9	85.5	83.5	86.8	86.6	38.7
Private pension a)	0.6	1.1	0.3	0.3	0.3	1.4	0.0	0.1	0.7	0.3	0.8
Asset income	7.7	5.5	4.9	12.0	12.5	8.0	1.9	1.1	1.8	3.9	13.6
Tax & Contribution (%)	9.4	9.2	9.6	8.2	8.2	13.8	7.0	5.3	5.8	6.9	12.9
2002	Total	By age group					By disposable income quintile				
		65-69	70-74	75-79	80-84	85+	1	2	3	4	5
Disposable income	215.6	224.2	232.4	230.4	163.5	165.7	68.2	129.8	182.2	241.7	455.9
Share (%)											
Earnings	17.6	30.3	17.9	14.3	2.6	4.9	5.4	6.2	7.0	7.9	31.3
Public pension	69.3	59.8	69.5	69.0	85.5	78.5	86.5	80.4	88.5	88.4	46.9
Private pension a)	1.6	0.8	0.7	4.4	0.4	0.3	0.1	0.1	0.5	0.5	3.2
Asset income	4.9	3.8	5.6	4.2	5.4	8.2	1.3	1.1	1.0	1.6	9.6
Tax & Contribution (%)	8.2	9.0	8.7	8.0	5.4	7.7	7.0	4.2	6.3	6.5	11.0

5. 2002年所得再分配調査を用いた実験

(1) 使用する等価尺度の影響

- ・スウェーデンの等価尺度を使っても日本のジニ係数はあまり変化しない。

(2) 個人単位か否か

- ・7,401世帯には20歳以上の人が16,918人いた。20歳以上の個人単位で集計しても日本のジニ係数はあまり変化しない。

0.335→0.322 (スウェーデン0.243)

(3) 現物給付の影響

- ・医療費を給付に加えると全世帯のジニ係数は少し低下する。

(4) 負担を変化させる

- ・全世帯の税・社会保険料負担を一律に2倍にすると、ジニ係数は0.335→0.324に低下した。
- ・負担を以下のように累進的に変化させると、ジニ係数は0.262に低下した。

10分位階級	第1	第2	第3	第4	第5	第6	第7	第8	第9	第10
倍率	0.2	0.4	0.6	0.8	1.0	1.3	1.6	1.9	2.2	2.5

- ・さらに給付を次のように変化させると、ジニ係数はスウェーデンと同程度の0.238に低下した：第1・10分位=1.6倍、第2・10分位=1.4倍、第3=1.2倍、第4=1.1倍。

Table 10. 日本のジニ係数の変化(2002年調査:等価再分配所得)

	全世帯	現役世帯	高齢非同居世帯
標準	0.335	0.322	0.343
データ処理の影響			
一時金	0.347		
世帯人員調整法の影響			
データC無し、人員調整無し+現物給付	0.395		
データC無し、調整Z+現物給付	0.355		
調整S	0.338	0.329	0.341
調整UK	0.333	0.322	0.339
個人単位			
データC無し、調整Z、現物給付、0歳以	0.335		
0歳以上	0.318		
20歳以上	0.322		
65歳以上	0.338		
現物給付の影響			
医療費	0.331	0.314	0.360
負担を変化させた場合			
1) 全世帯の負担を2倍に	0.324	0.315	0.333
2) 負担を累進的に変化	0.262	0.241	0.298
3) 2)&第1~第4・10分位の給付増	0.238	0.234	0.234

(5) 生活保護受給世帯

- ・全世帯に占める生活保護受給世帯の割合は1.4%であった。この割合が特に高いのは55歳以上の単独世帯(7.5%)、25~44歳の「片親と子」世帯(5.3%)、等である。これらの世帯では等価再分配所得のそれぞれ約8割、約5割が生活保護受給による。
- ・生活保護受給世帯は全世帯の等価再分配所得の50%未満の世帯に集中しているわけではない(Table 11)。

Table 11. Proportion of households receiving public assistance according to equivalized disposable income level and population size

	(単位: %)				
	市郡計	大都市	15万以上の市	15万未満の市	郡部
全世帯の中央値の					
50%未満	3.8	4.6	2.8	4.2	4.0
50%以上80%未満	3.5	8.7	2.8	2.0	1.8
市郡別中央値の					
50%未満	-	7.5	2.9	4.3	3.4
50%以上80%未満	-	5.7	2.6	2.1	2.8

(注) 全世帯に占める生活保護受給世帯の割合は1.4%

Social Security and Well-Being of the Elderly in Japan

Takashi Oshio

Graduate School of Economics, Kobe University

oshio@econ.kobe-u.ac.jp

Satoshi Shimizutani

Institute of Economic Research, Hitotsubashi University

sshimizu@ier.hit-u.ac.jp

* This paper was prepared for the NBER International Social Security Project Conference. The data used in the paper were made available to Takashi Oshio by the Ministry of Health, Labour and Welfare of Japan, the notice number No.0822005 dated 22th August, 2005. Data processing and analysis were done exclusively by Takashi Oshio.

I. Introduction

Population aging puts substantial pressures on social security programs in Japan. The latest projections released by the National Institute of Population and Social Security Research in 2002 report that the share of those aged 60 years and above is expected to rise from 17.4 percent in 2000 to 28.0 percent in 2025 and 33.1 percent in 2050. At the same time, the total fertility rate is projected to recover only to 1.39 by 2050 from 1.29 in 2003. These projections have raised uncertainty about the financial sustainability of the current social security programs, which depend heavily on contributions by future generations.

The projected demographic changes will surely motivate Japan to carry out fundamental reforms of the social security system. Indeed, the Japanese government launched the 2004 Pension Reform, which aimed to establish an upper ceiling on the payroll contribution rate of 18.3 percent, a 5-percentage point increase from the pre-reform level, and hold down total pension benefits within total contributions and government subsidies in the long-run. Unlike previous ones, the latest reform introduced macroeconomic indexation to automatically adjust benefits in response to demographic and macroeconomic changes.

While it is desirable to raise the financial sustainability of social security schemes, the impact of policy changes on the well-being of the elderly should be of serious concern. In fact, according to the Basic Survey of the National Life, public pension benefits accounted for nearly 70 percent of the total income of the elderly in 2002. Social security plays a positive role in maintaining the standard of living of the elderly, and the benefits of this positive role must be considered against the costs of inducing retirement.

In this paper, we aim to empirically investigate the relationship between social security benefits and well-being outcome—in particular, income, poverty, and health status—of the elderly in Japan, based on cross-sectional data from Surveys on Income Redistribution, which are compiled by the Ministry of Health, Labour and Welfare.

The data cover the period from 1980 to 2001, during which there were some major pension reforms—most notably the 1986 Pension Reform, which basically established the current scheme—as well as substantial changes in macroeconomic performance (the *bubble* expansion in the late 1980s and the subsequent long recession throughout the 1990s). We focus on

variations across birth cohorts as well as within the same cohort in social security entitlements over the past two decades. More specifically, we examine income, relative and absolute poverty, and health status of the elderly, along with the evolution of social security generosity, and assess how social security programs have affected these measures.

The remainder of the paper is constructed as follows. First, Section II presents the institutional background of the social security programs for the elderly in Japan and reviews major preceding studies. Section III describes our data source. Section IV presents a descriptive analysis of the trends of well-being variables of the elderly. Section V lays out the simulation methodology. Section VI summarizes regression results on the relationship between social security benefits and well-being outcome of the elderly. Finally, Section VII concludes with the policy implications of our empirical findings.

II. Background: Institutional features and past research

1. Institutional features

We concentrate on the Japanese public pension scheme, which consists of three components. The first is the National Pension Insurance (NPI: *Kokumin Nenkin*) for self-employed workers, farmers, and other non-employed workers. The second is the Employees' Pension Insurance (EPI: *Kosei Nenkin*) for employed workers in the private sector. And, the third is the Mutual Aid Insurance (MAI: *Kyosai Nenkin*) for employed workers in the public sector. The NPI has only a flat benefit, while the EPI and MAI have both flat and earnings-related benefits. Since the 1986 Pension Reform, all beneficiaries in these three programs have received a common, flat-rate benefit, which is called the Basic Pension benefit. Accordingly, the flat components of EPI and MAI, as well as the NPI benefits, are all the same under the current scheme.

For the NPI, the eligibility age for the full benefits is 65. More than one-fourth of the insured, however, start to receive actuarially reduced benefits between the ages of 60 and 64 years, probably because the average household income of self-employed workers is relatively low in general. An actuarial addition to the benefits is also available for those who are aged between 65 and 70 years, but few apply for it. Under the current program, eligibility to receive NPI benefits requires a minimum of 25 years of contributions, and eligibility to receive full

benefits (currently 794,500 yen per year) requires 40 years of contributions. The benefits are price-indexed to reflect changes in the CPI in the previous calendar year.

The EPI is the main body of the Japanese public pension programs. The benefits consist of a flat component (Basic Pension benefits) as the first tier and an earnings-related component as the second tier. In principle, the eligibility age for the flat component was 65, but there had been a special legal provision allowing employees to receive full benefits from age 60. Since 2001, however, its eligibility age has been raised by one year for every three years, and it will eventually be raised to 65 in 2013.

The earning-related component of the EPI benefits is calculated by multiplying the career average monthly income (CAMI) by a certain accrual rate, which depends on the birth year. The CAMI is calculated over a worker's entire period of coverage, adjusted by increases in average wage rate. The eligibility age for earnings-related benefits is currently 60. Both flat and earnings-related benefits are CPI-indexed. Upon reaching age 60, an individual who has not fully retired is entitled to receive reduced pension benefits with an earnings test under the *Zaishoku* pension program. In addition, non-working dependent wives of EPI beneficiaries are eligible to receive Basic Pension benefits without any contributions. Therefore, an elderly couple whose husband is an EPI beneficiary can receive earning-related benefits (of the husband) and two flat components (of both the husband and his wife).

The EPI contributions, which are paid equally by employee and employer, had been based on monthly earnings. Contributions began to be deducted from semi-annual bonuses in 1995, and the contribution base was shifted completely from monthly earnings to annual earnings including bonuses in 2003.

We focus on the NPI and EPI programs in our empirical analysis, and treat MAI pensioners as if they were EPI members, because the benefits structure is almost the same under these programs, and because our survey data do not distinguish between two types of pension for retired employees. In addition to these public pension programs, there are medical and long-term care programs for the elderly. Medical care schemes for the elderly, excluding an individual's own payments, which cover 10 percent of the total cost, are financed 30 percent by subsidies from the central and local governments and 70 percent by transfers from medical care

insurance programs for the workers.

Our strategy is to use the impacts of institutional changes to the NPI and EPI programs over time on the income, poverty, and health of the elderly. The government has conducted a major pension reform about every five years over the past couple of decades, and the underlying policy direction until recent reforms has been to raise benefits levels in line with the underlying growth of per-capita labor income. In the case of the EPI, the government has explicitly or implicitly aimed to keep the replacement rate, which is the ratio of average benefits to average wage income of current workers, at around 60 percent. The government also has kept raising flat NPI benefits in line with the nationwide trend of average consumption expenditure. In turn, increasing benefits have required a steady rise in contributions: the EPI contribution rate rose from 10.6 percent in 1980 to 17.35 percent in 1996 on a monthly earnings (excluding bonuses) basis, and the NPI flat-rate contribution per month rose from 3,770 yen in 1980 to 13,300 yen in 1998². Also, the 1986 Pension Reform called for an increase in the eligibility age of the EPI earnings-related benefits for female employees from the previous 55 to 60 by 2000.

2. Past research

Many studies have implied that social security benefits may affect well-being of the elderly in Japan. For example, a series of empirical analyses of Yashiro and Oshio (1999) and Oshio and Oishi (2004), which have been initiated by the NBER's international project on social security, find that the elderly tend to substantially adjust their labor supply to changes in public pension programs. The results of their analysis suggest that social security benefits tend to reduce incentives to work and partly offset other income of the elderly.

However, social security benefits are also affected by the elderly's choice to work or retire. The simultaneity between public pension benefits and labor supply of the elderly has been one of the central issues addressed in the preceding empirical studies, including Abe (1998), Ogawa (1998) and Iwamoto (2000). They try to estimate the level of benefit which the elderly in labor force would receive if they retired with the limited information available from the

² The EPI contribution rate is 13.93 percent on an annual income (including bonuses) and the NPI contribution is 13,860 yen per month in 2006.

cross-sectional data. In this paper, as discussed in Section IV, we construct *simulated* benefits that are exogenous to the outcomes and estimate the unbiased impact of benefits on income and poverty of the elderly, which has not been fully explored yet in Japan.

Regarding another aspect of well-being of the elderly—that is, income inequality—there have been warning signals recently of its widening, as stressed by Yamada and Casey (2002). To be sure, income transfers from the young to the elderly, via public pension and other social security schemes, contribute to a reduction in income inequalities among the elderly by raising their mean income. The earnings-related component of public pension benefits, however, is likely to keep the income inequality basically intact from young to old age groups. Seike and Yamada (1997) show that the amount of public pension benefits as well as the probability of receiving them depends much on the workers' job experiences: particularly, employees who have been working as full-time workers in large companies tend to receive more pension benefits than others.

There are other factors that make income inequality among the elderly wide. For example, substantial differences in pension benefits between employed and self-employed workers lead to a gap in the household income of the elderly. In addition, lower progressivity of income taxes for the elderly, due to various tax and income deductions, appears to fail to sufficiently redistribute income among the elderly. Oshio (forthcoming) shows that redistribution policies have been even regressive within the elderly in recent years, if the effect due to income transfer from the young through the pay-as-you-go social security programs is excluded.

III. Data

1. Surveys on Income Redistribution

Our analysis is based mostly on cross-sectional data from the Survey on Income Redistribution (SIR), compiled by the MHLW every three years. Unlike other household surveys, this survey primarily aims at measuring income distribution and the effects of redistribution policies. We use micro-data from eight SIRs released every three years over the period of 1981 and 2002, whose income data come from the previous year. The sample sizes range between 7,165 (in 1984) and 8,856 (in 1990). This survey provides rich variables of household income and social

security measures including public pensions, medical care, and family allowances.

Moreover, we adjust the original data as follows. First, we use 2001 euros everywhere in the analysis. We first express all yen-denominated data in real 2001 yen using a series of the overall Consumer Price Index (released by the Statistics Bureau), and then convert them into 2001 euros based on the yen-euro exchange rate in December, 2001 (1 euro=117.32 yen; reported by the Bank of Japan). Second, we scale all income and social security measures by an equivalence scale to account for household size: counting the first adult as one, each subsequent adult as 0.7, and each child younger than 15 years as 0.5³. Third, we choose age 60 as the threshold age, because an individual can claim at least partial NPI or EPI benefits, and also because many employees retire from their primary jobs even if they enter the secondary job market.

Another issue in the empirical analysis is the relevant unit: whether a household (which means all individuals sharing the same living quarters) or a family (which means an elderly person, his/her spouse, and any dependent children). We use the household as the unit in this paper, mainly because the household is the primary unit reported in the SIR, and focus on the age of the household head. However, the possibility cannot be ruled out that the estimation results are sensitive to the choice of household or family unit. In fact, Ohtake (1991) and Iwamoto and Fukui (2002) report that the higher the parents' income is, the more they are likely to live separately with their parents. If that is the case, a reduction in social security benefits could reduce the proportion of the elderly who live independently, with the negative impacts on their standard of living underestimated.

2. Income, poverty, and health

We construct two types of household size-adjusted income data: after-tax total household income and social security benefits. Total household income is defined as the sum of salaries, self-employed income, farm income, dividends, interests, rents, and private transfer receipts plus in-cash benefits such as public pension, unemployment benefits, and family allowances minus family taxes paid. In-kind benefits such as medical care are excluded, and taxes are the sum of income/property taxes and social security contributions (not including consumption tax

³ The old SIRs (1981 and 1984 surveys), however, do not report the ages of family members other than the household head, so we count any other family members as 0.7 in the 1981 and 1983 surveys.

and other indirect taxes). Social security benefits include all public pension benefits—NPI, EPI, and MAI benefits—and are expressed in pre-tax terms. Social security benefits other than public pension benefits—such as unemployment benefits and family allowances—are excluded from social security benefits in this paper (but they are included in total household income)⁴.

We also construct measures of relative and absolute income poverty. We set a poverty line at 40 percent of the median non-elderly household income for each year, and define *relative* income poverty as the share of the elderly with income below this poverty line for each age group⁵. We also set a poverty line at 40 percent of median non-elderly household income in a base year (1980) upwardly adjusted for CPI inflation between the base and current years. And, we define *absolute* income poverty as the share of the elderly with income below this poverty line for each age group. Relative and absolute poverty rates can help us to examine how social security improves the living standards of households with relatively low incomes, and reduces income inequality among the elderly.

The impact of social security on the elderly's health is also of interest. The SIR does not contain self-reported health status, but instead reports medical care benefits that are imputed from reported answers about health care receipts and hospitalization. We tentatively interpret higher medical care benefits as an indicator of poorer health status of the respondent. However, we have to bear in mind that medical care benefits reflect the generosity of medical care policy as well as medical care costs, which are affected by technological progress, and that demand for health care depends heavily on household income.

Table 1 summarizes the measures of well-being used in this paper. We do not use the 2001 data for health care benefits in empirical analysis, because there is remarkable discontinuity between the 1998 and 2001 data for them.

III. Background: well-being of the elderly over time

Figures 1-5 show the time series evolution of the well-being measures we assess in this

⁴ The correlation coefficient between public pension benefits and public pension plus other benefits is 0.974 in our whole dataset, suggesting that other benefits have no significant impact on the overall estimation results.

⁵ The OECD and European Union use an official poverty line equal to 50 percent and 60 percent of the median income. In this paper, we set the poverty line for the elderly equal to 40 percent of the median non-elderly household income, considering that the median income is somewhat lower among the elderly than younger people.

paper; that is, total household income, poverty rates, and health care spending. In each figure, we compare the data for the young and the elderly to distinguish economy-wide trends and impacts of social security benefits. Also, we index the data, setting the starting value as 100 to assess the relative performance of income, poverty, and health of the elderly.

Figure 1 shows the evolution of after-tax, household size-adjusted household income during 1980 and 2001. Average income of the elderly rose until the mid-1990s but since then it has been dropping reflecting the stagnant economy, which also reduced the income of the young. More importantly, the income of the elderly did not increase as much as that of the young during the 1990s. A long-term downtrend of labor force participation among the elderly seems to have more than offset the impact of an increase in social security benefits⁷, at least partly leading to the underperformance of the elderly's income growth. Moreover, growth of social security benefits has been decelerating over the past two decades as discussed later.

Figures 2 and 3 show time series movements of poverty rates based on household size-adjusted, after-tax household income. Figure 2 measures relative poverty, which is defined as the share of the elderly and young living below the 40 percent of the median income of the young in each survey year. Relative poverty shows a long-term uptrend for both the elderly and young (except for a temporary drop in 1986).⁸ The parallel movements suggest that widening inequality is attributable to some economy-wide factors, and that social security benefits fail to redistribute income among the elderly sufficiently to reduce inequality.

Figure 3 indicates the evolution of absolute poverty, which is defined as the share of the elderly and young living below the 40 percent of the median income of the young in 1980. This figure, which reflects the combination of the results shown in Figures 2 and 3, indicates that the uptrend of household income has dominated the upward momentum of income inequality for both the elderly and young until the mid-1990s. Since then, however, absolute poverty has been rising for both the elderly and elderly, probably reflecting the sluggishness of the overall economy in recent years.

Figure 4 compares the 10th, 50th, and 90th percentiles of the household-adjusted income for

⁷ According to the Labor Force Survey, the labor force participation rate for those aged 60 and above declined to 32.9 percent in 1998 from 35.0 percent in 1980.

⁸ This is consistent with a rise in the Gini coefficient for the economy as a whole, as reported by the MHLW based on the SIRs. The Gini coefficient for (not household size-adjusted) after-tax income rose from 0.332 in 1980 to 0.381 in 1998.

the elderly, along with the median of the young's income for comparison. This figure clearly indicates the underperformance of the 10th percentile relative to the 50th and 90th percentile, although all of them experienced a decline in real income since the mid-1990s. Lower-income elderly, who are mostly self-employed and/or NPI beneficiaries, have not experienced much improvement in household income compared to higher-income elderly. This is consistent with the rise in relative income poverty for the elderly, which is illustrated in Figure 3.

Figure 5 examines the time-series evolution of average health care benefits. There is a widening gap between rising benefits for the elderly and relatively stable benefits for the young. This is not necessarily evidence of a relative deterioration in the health status of the elderly. An increasing share of the very old (aged 70 years and above) probably adds to average health care benefits among the elderly.

IV. Simulation methodology

1. Defining simulated benefits

In this section we explain the empirical strategy for gauging the extent to which social security benefits, or their statutory changes, affect income, poverty, and health of the elderly. First, we collapse all of the micro-data on income, poverty and health—except for relative and absolute poverty, which we calculate using original micro-data—and benefits into age-by-year cells, taking their mean values in each cell.

A conventional way of assessing the impact of social security on income, poverty, and health might be to regress those measures on actual benefits, which are answered by the respondents in the survey (controlling for age, year, and other factors). However, this methodology is not free from simultaneous estimation bias, in addition to reporting errors in the survey-based data, observed outcome (total household income, poverty, etc.) and observed benefits are most likely determined by the same factors. We want to focus solely on variations in benefits that arise from institutional changes and are exogenous to the outcomes.

To avoid this bias, we construct simulated benefits that are exogenous to the outcomes. Ideally, we would take the same person, put him/her in every single cohort, and then compute his/her benefits to make any benefits variations observed over time or across cohorts entirely