dummy or the 'receiving mutual-aid pension' dummy (col. 1), nor for the 'not enrolled in public pension' dummy (cols. 1, 3, 5), nor for the 'under 65 and receiving pension' dummy or the intersect 'under 65 and receiving pension' dummy x 'receiving national pension' dummy (see also Wald Test 1). The coefficient for the 'receiving national pension' dummy was statistically significant at the 1% level and negative, registering -0.72 (col. 2) or -1.04 (col. 4). The dummy for 'receiving public pension' was statistically significant at the 5% level and positive, registering 0.34 (col. 4). The coefficient for the intersection '65+ and receiving pension' dummy was statistically significant at the 10% level and positive (0.37m col.6), the coefficient for the intersection '65+ receiving national pension' dummy was significant at the 1% level and negative (-1.26, col.6).

In the 1996 data the coefficient for the non-enrollment dummy was not statistically significant while the 'receiving national pension' dummy was significant and negative. At this juncture the net financial assets of those not enrolled in public pension programs were no less than those of households that were enrolled but had yet to start receiving payments; indeed, we get a picture of the low level of accumulation by households receiving national pensions. That said, the coefficients for the 'receiving employee pension' dummy and the 'receiving mutual-aid pension' dummy were not significant, so that the overall picture of how public pensions influence net financial assets remains unclear.

Family type

Where family type was factored into calculations, coefficients for the five categories (single-person household, married couple, married couple with children, three generation, other) all proved not to be statistically significant at the 10% level (see cols 1, 3 and 5). The Wald test based on the null hypothesis that all these coefficients were zero came up with figures of 8.02 (p value 0.16), 5.59 (0.35) and 5.59 (0.35), so that the null hypothesis was not rejected (see Wald test 2, cols. 1, 3, 5). We therefore cannot observe any influence from family type on net financial assets at the 1996 stage.

Effect of age etc.

If a simple life-cycle hypothesis applies, then we would expect coefficients for the primary values relating to age to be significant and positive, the square value coefficients to be significant and negative, and the cube value coefficients not to be

statistically significant. However, if assets are declining at the stage of marriage, childbirth and child-rearing, we would expect coefficients for the primary values relating to age to be significant and negative, the square value coefficients to be significant and positive, and the cube value coefficients to be significant and negative. Looking at the results, we find that at the 1% level of statistical significance, for all cases coefficients for the primary values were significant and negative, the square value coefficients were significant and positive, and the cube value coefficients were significant and negative. Looking at the age range for the turning points in net financial asset accumulation , we find the bottom end at ages 30 to 33 and the top end at ages 78 to 81. This pattern, of net financial assets declining at the age of 30 to 33, supports the supposition that the economic burden of marriage and childbirth is a major factor.

<Table 3 about here>

Table 3: Estimation results for 1996

4.4 Estimation results for 2002

Results for 2002 are as shown in table 4. Once again, columns 1, 3 and 5 display results where all explanatory variables are included; columns 2, 4 and 6 show results after applying a Wald test to exclude pension-receipt and household-type variables not found to be statistically significant. As with the 1996 data, we should chose the results in columns 2, 4 and 6. Orthogonality conditions for over-identification were satisfied for all cases at the 10% level.

Effect of inheritance

The coefficients for experience or prospect of inheritance were significant at the 1% or 5% level and positive. Using the data in columns 2, 4 and 6, which we should choose, we find that the limit effect of inheritance experience on net financial assets was about ¥8.2 to 10.2 million. Since the corresponding figure for 1996 was ¥4 to 5 million, the influence exerted by this factor on differentials appears to have doubled. If we look at the results in table 1 for the group receiving pensions, which we may assume to have relatively many older people in it, mean net financial assets for the sub-group with inherited wealth was ¥16.05 million (median 10 million), while for the sub-group without inherited wealth mean net financial assets were ¥11.24 million (median (¥5.5 million). This leads us to think that for those households that do not inherit, the ¥8.2 to

10.2 million inheritance effect constitutes a differential that will be almost impossible for them to catch up during a single life-time.

Pension Receipt Effect

In 2002 the pension effect was very different from in 1996. In 2002 the coefficients for receiving employee and mutual-aid pensions were significant at the 1% level and positive, and the coefficient for non-enrollment was significant at the 5% level and negative. However, no significant result could be obtained regarding the national pension (see col. 2). Interestingly, the coefficient for mutual-aid and *onkyū* pensions was 0.93 and that for employee pensions was 0.52, with the result that the null hypothesis that these two coefficients would be the same was rejected at the 5% level (χ^2 stat value = 6.162, p value = 0.013). These results indicate that net financial asset differentials have arisen, such that recipients of mutual-aid and *onkyū* pensions are at the top, followed by recipients of employee pensions, recipients of national pensions, those who are enrolled in public pensions but not yet receiving them, and finally those who are not enrolled.

The coefficient for public pension receipt as a whole was also significant at the 1% level and positive (col. 4). The dummy for people aged over 65 and receiving a pension showed a coefficient significant at the 5% level and that for people aged under 65 and receiving a pension was significant at the 1% level (col. 6). However, the null hypothesis that the coefficients for pension recipients under 65 and over 65 would be equivalent was not rejected in the Wald test (χ^2 stat value = 1.02, p value = 0.313).

The estimations presented above indicate that while no clear differential could be ascribed to the pension system in 1996, by 2002 the pension system *was* exerting an influence on asset differentials. Using the coefficient for the non-enrolled group, we find that these households show net financial assets some 2 to 2.2 million below those of households enrolled in public pensions but not yet receiving them. Considering that the effect of public pensions overall was around ¥5.5 million, it would appear that we cannot afford to ignore that differential. To put it another way, the results suggest that there is a status group that does not enroll in public pension programs due to weak accumulation of assets.

Family type

The effect of family type differed between 1996 and 2002. The coefficients for single-person household, married couple (no children) and 'other family types' did not appear statistically significant (cols. 1, 3, 5). The null hypothesis that all these coefficients would be 0 also scored 5.12 (p value 0.12), 2.75 (0.43) and 3.06 (0.38) on the Wald test (cols. 1, 3, 5). In contrast, coefficients for the 'married couple with children' dummy and the 'three-generation household' dummy were significant at the 1% level and negative (see cols. 2, 4, 6). The economic burden on households with children is evident. Compared to households without children, the dummy coefficient for married couples with children showed a deficit of ¥3 to 4 million, and that for three-generation families, ¥6.2 to 7.2 million.

The effect of age

In the 2002 estimation, too, all cases showed statistical significance at the 1% level, with primary values negative, square values positive, and cube values negative. The lowest accumulation age was 33 and the highest accumulation age was 73-74. We draw from this that net financial assets decline around the time in life when families are being formed through marriage and childbirth, and that net financial assets once again go into decline as the householder approaches the onset of late old age.

<Table 4 about here>

Table 4: Estimation results for 2002

5. Differentials Between Budgets of Ordinary Households

In the samples used in this chapter, there are no cases with net financial assets in excess of ¥500 million. The billionaire types who get into *Forbes* magazine are not represented. In that sense you could say that this chapter is about fairly regular households – the kind you might find in almost any neighborhood. I have looked at differentials in net financial assets among these households with special reference to inheritance, pensions, and child-rearing.

Inheritance was a cause of differentials in both years; not only was the scale of the impact large, but it increased from ¥4-5 million in 1996 to ¥8.2-10.2 million in 2002. By 2002 the gap had widened to the point where families without inheritance would find it exceedingly difficult to catch up. On top of that, the public pension system and

family child-rearing patterns, which were not clearly identifiable causes of differentials in 1996, had acquired that status by 2002. The pension system had created a deficit of ¥2-2.2 million for households not enrolled, while child-rearing was generating deficits of ¥3-4 million for married couples and ¥6.2-7.2 million for three-generation families: differentials too big to be overlooked.

From 1996 to 2002 the Japanese economy went through a severe recession which included the Asian financial crisis of 1997. We may easily imagine that the impact was more severe on families with limited reserves. In these hard times, a situation has arisen where individuals are faced with differentials so wide that they cannot realistically hope to catch up in their own lifetime, caused by a phenomenon – inheritance – over which they have no control. In a recession-bound economy, inequality of outcome in the parental generation has come to translate into inequality of opportunity in the children's generation, and the gaps are so unbridgeable that the situation cannot possibly be considered fair. Clearly we need some new thinking about the use of taxation policy as a tool for wealth redistribution.

I believe that by 2002 the pension system and child-rearing patterns had clearly become a cause of differentials, on a scale so large that they presented a challenge to Japanese society that was even tougher than that of tax reform. The era when each generation could expect to do better than the one before is already over (see figure 1). The declining birthrate, coupled with a pension system that functions as a form of taxation, has created severe doubts as to whether the pension system itself is sustainable. In times like these, the fact that bearing and raising children has become a major factor pulling households towards the lower end of an increasingly unequal system of economic differentials is a problem that simply has to be addressed. The decision to have children and raise a family is a private choice, made by parents, and should bring them happiness. At the same time children are a human resource that will support society in the future. Yet social support for the project of bearing and raising the generation that will support the future remains inadequate.

The employment market for public officials should be the most open labor market of all, yet even there we find that most women seeking to rejoin the workforce after childbirth are not even allowed to take the civil service exam because of age discrimination. This is just one symbolic illustration of the hard fact that for most women, giving birth to a child marks the end of their career (Oi and Matsuura 2003, Matsuura and Shigeno 2005). We cannot believe that all those women are happy about abandoning their careers.

One aspect of Japanese society has been a tendency to force people into a

trade-off where wider differentials between households and the abandonment of women's careers have been the price paid for the happiness of having children. As the inexorable processes of declining birthrate and dwindling population grind on, this society foists most of the burden of childbirth and child-rearing on to the parents, while skimming off the proceeds via the pension system to transfer income to older, wealthier generations. That is the state of affairs, and it is not one that is sustainable. We cannot hope for younger cohorts to carry on subsidizing older cohorts indefinitely. Unless and until we construct social systems that stop making marriage and family-building such a huge economic demerit, I do not believe we will ever solve the problems of the declining birthrate and aging society.

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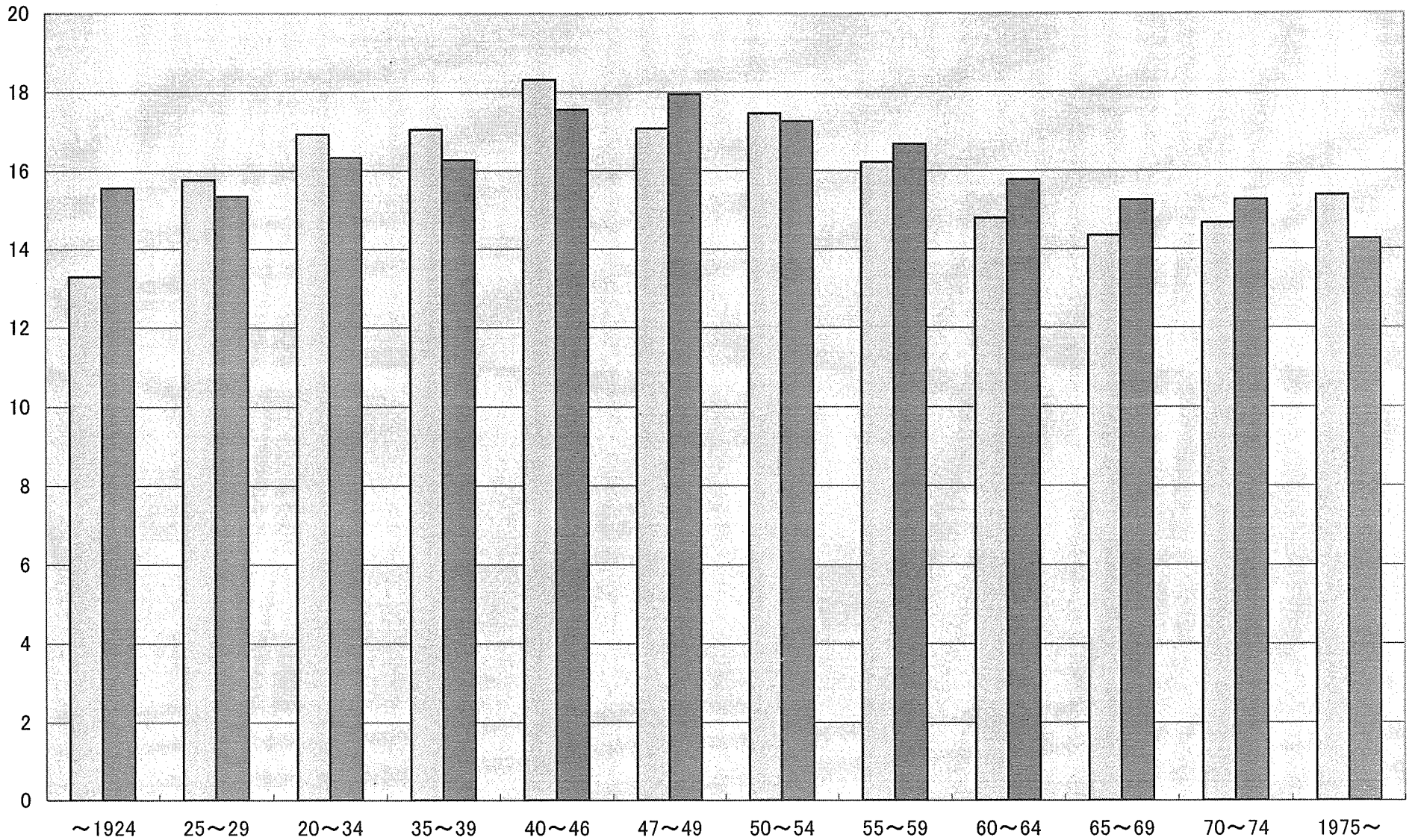
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Table 1 Net financial assets seen in terms of inheritance and pensions

		1996 survey					2002 survey				
		Mean	Median	Maximum	Minimum	Std dev'n	Mean	Median	Maximum	Minimum	Std dev'n
Inheritance Yes	Annual income	690	592	5839	46	576	675	494	9100	36	684
Pension Yes	Financial assets	2616	1415	40000	0	4473	1934	1115	20100	0	2514
	Debt	258	0	5000	0	765	328	0	12000	0	1090
	Net Financial assets	2358	1230	35000	-3240	4274	1605	1000	18100	-12000	2788
	Home ownership	96.6%	1	1	0	0.181	94.8%	1	1	0	0.221
Inheritance Yes	Annual income	905	800	4800	6	589	717	600	15070	0	665
Pension No	Financial assets	1767	1112.5	14500	0	2045	1015	490	23184	0	1672
	Debt	600	0	22000	0	1649	577	10	15000	0	1177
	Net Financial assets	1167	805	14500	-14500	2408	437	200	23184	-13400	2055
	Home ownership	88.1%	1	1	0	0.325	59.9%	1	1	0	0.490
Inheritance No	Annual income	552	480	4080	8	397	429	340	3800	30	363
Pension Yes	Financial assets	1679	1046.5	14950	0	1938	1264	645	14650	0	1755
	Debt	168	0	4000	0	500	139	0	7956	0	517
	Net Financial assets	1511	912	14950	-3644	2003	1124	550	14650	-7356	1854
	Home ownership	81.7%	1	1	0	0.387	75.3%	1	1	0	0.431
Inheritance No	Annual income	713	650	5900	10	424	536	480	3500	0	357
Pension No	Financial assets	986	570	25700	0	1539	578	200	19400	0	1119
	Debt	412	0	6000	0	840	470	0	20000	0	1087
	Net Financial assets	574	320	25700	-4990	1697	107	50	19400	-20000	1546
	Home ownership	53.5%	1	1	0	0.499	40.3%	0	1	0	49.1%

N: Inheritance Yes/Pension Yes 208、Inheritance Yes/Pension No 310
Inheritance No/Pension Yes 356、Inheritance No/Pension No 1407 (Total: 2281)

N: Inheritance Yes/Pension Yes 620、Inheritance Yes/Pension No 1157
Inheritance No/Pension Yes 1022、Inheritance No/Pension Yes 1735
(Total: 4534)

Inheritance yes/no: Has / has not experienced receiving an inheritance. Pension yes/no: Is / is not receiving a [public?] pension.
Unit: ¥10,000.

Table 2-A: Descriptive statistics for 1996

	Mean	Max	Min	Std dev'n
Net financial assets/1000	0.9633	35	-14.5	2.273
Age	48.96	95	20	13.600
Age squared/100	23.97	90.25	4	13.591
Age cubed/10000	117.36	857.38	8	109.71
Pre-tax income/1000	0.7122	5.9	0.006	0.471
Pre-tax income squared/1000000	0.5072	34.81	0.000	1.609
Home ownership dummy	0.6655	1	0	0.472
Inheritance / prospect of inheritance	0.2271	1	0	0.419
Receiving employee pension dummy	0.1324	1	0	0.339
Receiving mutual aid pension dummy	0.0561	1	0	0.230
Receiving national pension dummy	0.0587	1	0	0.235
Receiving public pension dummy	0.2473	1	0	0.432
Aged 65+ & receiving public pension dummy	0.1464	1	0	0.354
Above value x receiving national pension dummy	0.0447	1	0	0.207
Aged under 65 and receiving public pension dummy	0.1008	1	0	0.301
Above value x receiving national pension dummy	0.0140	1	0	0.118
'Not enrolled in public pension' dummy.	0.0513	1	0	0.221
Single-person household dummy	0.0859	1	0	0.280
Married couple (no children) household dumm	0.1776	1	0	0.382
Married couple + children household dummy	0.5081	1	0	0.500
Three-generation household dummy	0.1175	1	0	0.322
Other family type dummy	0.0210	1	0	0.144
n=2281				

Table 2-B: Descriptive statistics for 2002

	Mean	Max	Min	Std dev'n
Net financial assets/1000	0.6256	23.184	-20	2.031
Age	51.64	90	18	15.662
Age squared/100	26.67	81	3.24	15.881
Age cubed/10000	137.71	729	5.832	130.706
Pre-tax income/1000	0.5771	15.07	0	0.517
Pre-tax income squared/1000000	3.3330	2271	0	38.675
Home ownership dummy	0.6065	1	0	0.489
Inheritance / prospect of inheritance	0.3919	1	0	0.488
Public pension dummy x Employee pension enrollment dummy	0.3622	1	0	0.481
Above value x mutual aid & 'onkyu' pension enroll	0.2239	1	0	0.417
Above value x national pension enrollment dummy	0.0468	1	0	0.211
Receiving public pension dummy	0.0873	1	0	0.282
Aged 65+ & receiving public pension dummy	0.2464	1	0	0.431
Aged under 65 and receiving public pension dumm	0.1158	1	0	0.320
Respondent not enrolled dummy	0.0532	1	0	0.224
Single-person household dummy	0.2349	1	0	0.424
Married couple (no children) household dummy	0.2201	1	0	0.414
Married couple + children household dummy	0.4091	1	0	0.492
Three-generation household dummy	0.1030	1	0	0.304
Other family type dummy	0.0124	1	0	0.110
N=4534				

Table 3: Estimation results for 1996

	①		②		③		④		⑤		⑥	
Net financial assets/1000	Coefficient	Std error	Coefficient	Std error	Coefficient	Std error	Coefficient	Std error	Coefficient	Std error	Coefficient	Std error
Constant	4.3786	1.214 ***	4.4981	1.035 ***	3.7917	1.069 ***	2.9869	0.893 ***	3.3159	1.155 ***	3.0257	0.906 ***
Age	−0.4241	0.097 ***	−0.4079	0.085 ***	−0.3278	0.079 ***	−0.2733	0.070 ***	−0.2915	0.084 ***	−0.2779	0.072 ***
Age squared/100	0.9131	0.200 ***	0.8913	0.177 ***	0.7216	0.167 ***	0.6184	0.149 ***	0.6454	0.183 ***	0.6293	0.152 ***
Age cubed/10000	−0.0547	0.013 ***	−0.0534	0.012 ***	−0.0431	0.011 ***	−0.0371	0.010 ***	−0.0383	0.012 ***	−0.0378	0.010 ***
Pre-tax income/1000	4.7614	1.872 **	3.6175	1.148 ***	2.5851	1.064 **	2.1214	0.755 **	2.4633	1.048 **	2.2195	0.801 ***
Pre-tax income squared/1000000	−1.5390	0.806 *	−1.4718	0.545 ***	−0.7232	0.432 *	−0.5642	0.349	−0.6786	0.423	−0.6882	0.369 *
Home ownership dummy	−1.1473	0.279 ***	−0.7685	0.234 ***	−0.9309	0.235 ***	−0.8283	0.209 ***	−0.8853	0.234 ***	−0.7682	0.197 ***
Inheritance / prospect of inheritance	0.3821	0.157 **	0.5094	0.154 ***	0.3411	0.136 **	0.3841	0.132 ***	0.3495	0.132 ***	0.4010	0.135 ***
Receiving employee pension dummy	0.3060	0.187										
Receiving mutual aid pension dummy	0.5609	0.325										
Receiving national pension dummy	−0.4758	0.346	−0.7159	0.277 ***	−1.1293	0.268 ***	−1.0447	0.262 ***				
Receiving public pension dummy					0.3430	0.170 **	0.3354	0.158 **				
Aged 65+ & receiving public pension dummy									0.7296	0.501	0.3712	0.215 *
Above value x receiving national pension dummy									−2.0744	1.228	−1.2586	0.346 ***
Aged under 65 and receiving public pension dummy									−0.0066	0.416		
Above value x receiving national pension dummy									1.4176	3.154		
'Not enrolled in public pension' dummy.	0.2117	0.225			0.1423	0.195			0.0470	0.205		
Single-person household dummy	0.1263	0.254			−0.1637	0.194			−0.1296	0.198		
Married couple (no children) household dummy	−0.2084	0.175			−0.1910	0.159			−0.2635	0.182		
Married couple + children household dummy	−0.1406	0.167			−0.1287	0.149			−0.1381	0.154		
Three-generation household dummy	0.2434	0.258			0.1931	0.231			0.2006	0.232		
Other family type dummy	0.6549	0.503			0.3857	0.476			0.2288	0.490		
n=2281												

***, **, * denote statistical significance at the 1%, 5% and 10% levels.

SER	2.4985		2.5925		2.2134		2.1830		2.2274		2.2348	
	χ square	p value	χ square stat	p value	χ square stat	p value	χ square stat	p value	χ square stat	p value	χ square stat	p value
Limiting conditions for orthogonality	18.548	0.183	20.899	0.231	28.180	0.105	30.933	0.156	27.990	0.110	31.779	0.133
Wald Test 1	8.024	0.155			5.583	0.349			5.588	0.348		
Wald Test 2	4.991	0.172										

Wald Test 1 employed the null hypothesis that coefficients were zero for 'single-person household' dummy, 'married couple (no children)' dummy, 'married couple and children' dummy, 'three-generation household' dum other household type' dummy.

Wald Test 2 employed the null hypothesis that coefficients for the following dummies were zero: 'receiving employee pension,' 'receiving mutual-aid pension' , 'not enrolled in public pension.' (column 1); and 'under 65 and receiving public pension,' 'under 65 and receiving public pension' x 'receiving national pension,' 'not enrolled in public pension' (column 5).

Minimum turning-point age	33.0	32.2	31.7	30.5	31.3	30.4
Maximum turning-point age	78.3	79.0	79.9	80.5	81.1	80.5

Common instrumental variabl: Constant, age squared/100, age cubed /1,000, age quadrupled / 10,000, 'receiving public pension' dummy x age, 'respondent receiving employee pension' dummy, 'respondent not receivin public pension' dummy, 'receiving mutual-aid pension' dummy, 'respondent receiving national pension' dummy, 'spouse age' dummy, 'spouse receiving employee pension' dummy,' spouse receiving mutual-aid pension' d spouse receiving national pension' dummy, 'spouse not receiving public pension' dummy, inheritance/prospect of inheritance, acquisition of inheritance through land dummy, acquisition of home through own efforts, no [aged 65+, no. of children, 'spouse employee pension enrollment' dummy, 'spouse mutual-aid pension enrollment' dummy, 'spouse national pension enrollment' dummy, 'sending financial support to children' dummy, 'receiving financial support from children' dummy.

Common instrumental variables for estimations 1, 3, 5: 'single-person household' dummy, 'married couple (no children)' dummy, 'married couple and children' dummy, 'three-generation household' dummy, 'other househ dummy.

Common instrumental variables for estimations 3, 4, 5, 6: 'Respondent enrolled in employee pension' dummy, 'respondent enrolled in mutual-aid pension' dummy, 'respondent enrolled in national pension' dummy.

Common instrumental variables for estimations 3 and 4: 'Respondent receiving public pension' dummy, 'respondent receiving public pension' dummy x 'receiving national pension' dummy.

Common instrumental variables for estimations 5 and 6: 'Aged 65+ and receiving public pension' dummy, 'aged 65+ and receiving [public pension]' dummy x 'receiving national pension' dummy, 'sending financial support to children' dummy, 'receiving financial support from children' dummy.

Table 4: Estimation results for 2002

	①			②			③			④			⑤			⑥		
Net financial assets/1000	Coefficient	Std error		Coefficient	Std error		Coefficient	Std error		Coefficient	Std error		Coefficient	Std error		Coefficient	Std error	
Constant	6.4547	0.941	***	6.1904	0.843	***	7.3079	1.130	***	6.4882	0.791	***	7.1934	1.211	***	6.5853	0.805	***
Age	-0.5650	0.068	***	-0.5490	0.072	***	-0.6053	0.073	***	-0.5887	0.067	***	-0.6010	0.073	***	-0.5966	0.068	***
Age squared/100	1.2670	0.151	***	1.2096	0.157	***	1.3367	0.162	***	1.2810	0.148	***	1.3259	0.161	***	1.2950	0.150	***
Age cubed/10000	-0.0804	0.010	***	-0.0762	0.010	***	-0.0842	0.010	***	-0.0801	0.010	***	-0.0831	0.011	***	-0.0803	0.010	***
Pre-tax income/1000	3.8882	0.859	***	3.8473	0.810	***	4.8032	0.933	***	4.7928	0.832	***	4.8230	0.940	***	4.9607	0.856	***
Pre-tax income squared/1000000	-0.0993	0.036	***	-0.0926	0.037	**	-0.1579	0.044	***	-0.1424	0.038	***	-0.1568	0.044	***	-0.1502	0.039	***
Home ownership dummy	-2.4161	0.615	***	-1.7895	0.511	***	-2.2653	0.705	***	-1.7847	0.605	***	-2.3429	0.715	***	-1.8924	0.622	***
Inheritance / prospect of inheritance	1.0242	0.433	**	0.8220	0.333	**	1.4521	0.558	***	1.0799	0.345	***	1.4317	0.615	**	1.0169	0.354	***
Public pension dummy x Employee pension enrollment dummy	0.5317	0.152	***	0.5162	0.143	***												
Above value x mutual aid & 'onkyu' pension enrollment dummy	0.9822	0.211	***	0.9317	0.206	***												
Above value x national pension enrollment dummy	0.2427	0.170		0.2141	0.161													
Receiving public pension dummy							0.5826	0.165	***	0.5523	0.148	***						
Aged 65+ & receiving public pension dummy													0.5120	0.272	*	0.4156	0.205	**
Aged under 65 and receiving public pension dummy													0.6243	0.163	***	0.5969	0.155	***
Respondent not enrolled dummy	-0.2958	0.110	***	-0.2259	0.096	**	-0.2429	0.116	**	-0.1913	0.101	*	-0.2595	0.123	**	-0.2161	0.106	**
Single-person household dummy	-0.2567	0.595					-0.8112	0.799					-0.7541	0.925				
Married couple (no children) household dummy	-0.0062	0.564					-0.6243	0.761					-0.5557	0.901				
Married couple + children household dummy	-0.3346	0.568		-0.2967	0.090	***	-1.0339	0.777		-0.3877	0.098	***	-0.9570	0.933		-0.3624	0.102	***
Three-generation household dummy	-0.5426	0.575		-0.6173	0.181	***	-1.1975	0.758		-0.7180	0.202	***	-1.1374	0.899		-0.6751	0.209	***
Other family type dummy	0.2378	0.648					-0.4617	0.853					-0.37681	0.996				
N=4534																		
***, **, * denote statistical significance at the 1%, 5% and 10% levels.																		
SER	3.4321			3.2010			5.1246			4.5730			5.0876			4.8001		
	J stat valu	p value		J stat valu	p value		J stat valu	p value		J stat valu	p value		J stat valu	p value		J stat valu	p value	
Limiting conditions for orthogonality	1.815	0.969		7.645	0.469		9.223	0.237		15.057	0.130		9.375	0.227		13.711	0.133	
	χ square stat	p value					χ square stat	p value					χ square stat	p value				
Wald Test	5.116	0.164					2.751	0.432					3.064	0.382				

Wald Test used the null hypothesis that coefficients for 'single-person household' dummy, 'married couple (no children)' dummy, and 'other household type' dummy, were all zero.

Minimum turning-point age	32.09555	32.94838	32.8219	33.50654	32.74642	33.44613
Maximum turning-point age	73.01656	72.88726	73.0232	73.14084	73.6127	74.021

Common instrumental variables	Constant, age, age squared/100, age cubed /1,000, age quadrupled / 10,000, 'respondent not enrolled in publicpension' dummy, 'receiving public pension' dummy x age, spouse age, 'with children' dummy, parents' altruistic motivation, 'spouse receiving employee pension' dummy, 'spouse receiving mutual-aid pension' dummy, 'spouse receiving national pension' dummy, 'single-person household' dummy, 'married couple (no children)' dummy, 'married couple and children' dummy, 'three-generation household' dummy, 'other household type' dummy.
Calculations 1 and 2	Receiving public pension' dummy, 'respondent enrolled in employee pension' dummy, 'respondent enrolled in mutual-aid or *onkyu* pension' dummy.
Calculations 3 and 4	Aged 65+ x 'receiving public pension' dummy, 'respondent enrolled in employee pension' dummy, 'respondent enrolled in mutual aid or *onkyu* pension' dummy, 'under 65 x receiving public pension' dummy.

Calculations 5 and 6	Receiving pension' dummy x 'respondent enrolled in employee pension' dummy, 'receiving pension dummy x respondent enrolled in mutual-aid or onkyu pension' dummy, 'receiving pension' dummy x 'respondent enrolled in national pension' dummy, 'respondent enrolled in employee pension' dummy, 'respondent enrolled in mutual-aid or onkyu pension' dummy.

Chapter 7
The Consequences of Applying Individual Accounting to Social Security: Public Pensions as a Form of Risk-Sharing

Naomi Miyazato

1. Individual Accounting for Social Security: The Background and New Problems

The twin trends of the falling birthrate and aging population are all too well known in Japan today. These trends are expected to bring various socio-economic impacts, but they will impose a particularly heavy burden on the social security system. As it currently works, Japan's social security system works on the premise that payments to the retired generation are financed by contributions from contributions paid by the generation in employment: in other words, it is a tax-and-spend system (*fuka-hōshiki*). This structure is especially apparent in the pension system. It has repeatedly been observed that this approach to social security tends to widen inequalities between generations, and Hatta and Oguchi (1999) have produced a highly detailed quantitative analysis showing just how Japan's pension system produces that effect. Asō and Yoshida (1996) have applied a similarly refined quantitative analysis to intergenerational differentials created by the social security system as a whole, not just the pension system.

Here in Japan the birthrate is falling faster, and the population is aging faster, than in other industrialized countries. Consequently the intergenerational differentials caused by the pension and social security systems are particularly acute in Japan. That in turn has prompted calls for reforms of the entire social security system, including pensions and medical insurance etc., on the principle of 'individual accounting' (*kojin kanjō*). We therefore should ask how much effect 'changing to individual accounting' (*kojin kanjōka*) would actually have on today's younger generation and on future generations. Answering that question is no easy matter.

People face various risks in their daily lives. They may fall ill – or not. They may die young – or live longer than expected. They may be fortunate enough to acquire a lot of assets – or not. A social security system is supposed to share out the various risks of life – relating to illness, unemployment, lifespan, changes in income and assets etc. – among its contributing members. Switching social security to individual accounting means that each individual accepts responsibility for dealing with those everyday risks on their own account. If people are not overly worried about those risks,

then switching to individual accounting to erase intergenerational differentials is an extremely attractive proposition. But if many people are hoping to avoid those risks as far as possible, then it becomes necessary to take a long, hard look at whether individual accounting really will bring happiness to the present working generation and to future generations.

Incidentally, individual social security accounting is already starting to be applied to public pension systems in quite a few industrialized countries. The traditional approach to public pensions in industrialized countries has been to define the amount of money to be paid out to pensioners after they retire. This is called a 'Defined Benefit' (DB) pension. In Sweden, however, great changes have been made to the pension system. In the new Swedish system, the amount that people pay in to the system is defined, but they amount they will receive after retirement may vary according to economic circumstances etc. This is called a 'defined contribution' (DC) pension. DC pensions have been around for a long time in many countries, in the private pension market. To put it bluntly, it is a kind of pension that holds the individual fully responsible for controlling the rise or fall of his or her pension assets. In the Swedish case, the defined contribution approach has now been applied to public pensions in an attempt to make it clear that a one-on-one relationship exists between an individual's contribution payments and his subsequent pension receipts. The shift to individual accounting is proceeding apace in Sweden. In the United States too, there is a very lively debate in progress on the possibility of switching part of the public pension system from the DB to the DC model.[1] There is growing interest in applying the DC approach to public pensions in industrialized countries around the world, and moves in that direction are visibly accelerating.[2] The reason why the DC approach is attracting so much attention is that DC pensions are thought to be neutral in their effect on population structure, and people therefore see them as a possible trump card in the battle to separate public pensions from the issue of intergenerational wealth disparities caused by the falling birthrate, aging population etc. However, DC pensions do entail individual members of society taking on their own shoulders the risk of changes in the profitability of pension fund management and that they may outlive their pension assets, among others. In this chapter I will take a close look at the concept of individual accounting in social security, concentrating my analysis on a comparison between traditional DB

[1] Feldstein and Ranguelova (2001) argue that the introduction of Individual Retirement Accounts (IRAs) would be relatively unlikely to lead to lower pension payments compared with the traditional public pension system.

[2] Takayama (2004) offers a detailed comparison between the Japanese public pension reform of 2004 and pension reforms in various other countries.

pensions systems and some of those with DC elements to them that have already been introduced in various industrialized countries. My objective is to get some idea of to what degree it is necessary to retain the traditional DB-type pension system with its risk-sharing function, and to what extent we need to accept the need for DC-type pensions to get rid of economic differentials between generations.

2. Japan's Pension Reform

Before commencing my analysis I should give a brief overview of the Japanese pension system as it currently stands. On 5 June 2004, a new Public Pension Law was passed by the Japanese Diet.[3] The name given to the new system is the 'fixed contribution formula' '(*hokenryō kotei hōshiki*). The old system entailed making a grand accounting of the public pension fund every five years, on the basis of which the rate of increase of contributions payable would be calculated to make sure that contribution income would duly reflect the state of the public pension fund. Many other countries have taken a similar approach, adjusting contributions at intervals in light of the financial situation of the public pension fund. In 1999, however, Sweden adopted the DC system for its public pension fund, and this pioneering move prompted various other countries to move towards fixing the contributions payable to their public pension systems. Japan was following this international trend when she introduced fixed contributions in the 2004 reform.

The contribution was fixed at 18.30% , but unlike the Swedish model, Japan did not fix the contribution rate *immediately*. In 2003 the employee pension (*kōsei nenkin*) contribution was set at 13.58% of overall income. From October 2004, the rate was set to rise by 0.345 percentage points a year, to reach 18.30% by 2017. Another notable feature was that the government also made a public pledge that the income replacement rate (one's pension payments expressed as a percentage of wages earned during employment career) would not fall below 50%. Since Japan's public pension system, like those of most countries, is based on the tax-and-spend model, guaranteeing a minimum level of pay-out while fixing the level of contributions means that the possibility remains that disbursements may exceed income, which is the very problem that had been plaguing Japan under the old system. Or to put it another way, if the government really will not change the rate of the contributions under any socio-economic conditions whatsoever, the possibility remains that it will reduce

[3] See Takayama (2004) for a detailed account of the Japanese public pension reform of 2004 and international comparative analysis.

pension payments below the 50% level.

Another important feature of Japan's new public pension system[4] is the introduction of a payment adjustment system called the 'macro-economy slide' (*makuro-suraido*). Japan's public pension system includes a component that reflects the level of wages received in the past. The way this component is calculated is called 'wage reappraisal' (*chingin saihyōka*), and hitherto the index used to make the calculation has been the wage growth rate. Under the new system, however, wage reappraisal will be calculated thus:

Wage reappraisal rate = wage growth rate – change attributable to demographic factors

Whereas the old system simply used the wage growth rate to calculate the wage reappraisal rate, the new system subtracts changes attributable to demographic factors from that figure. These 'changes attributable to demographic factors' include the number of people enrolled in the pension program and their average remaining life expectancy, calculated as follows:

Change attributable to demographic factors = percentage decline in enrollment + rate of increase in average remaining life expectancy

These factors were not reflected in the old pension system, and they *are* reflected in the new one. The term used to describe the new approach, 'macro-economic slide,' is similar to the 'self-balancing function,' the term used to describe the system of adjusting pension payments in the Swedish system. Both in Sweden and Japan, the new system adjusts pension payments in accordance with life expectancy, among other factors, which means that as the probability of people living long lives increases, the amount paid out in pensions decreases. In that sense one of the functions of a public pension system – to reduce the risks attendant on living a long life – is now maintained at a lower level than before.

We have seen that there are a number of similarities between the new Japanese pension system and its Swedish counterpart, but there is one major difference. In Sweden, public pensions are calculated on the basis of Notional Defined Contribution (NDC), meaning that the contributions each individual makes to the system really are

[4] I am talking here about employee pensions (*kōsei nenkin*). See Matsuura in chapter 6 of the present volume for a discussion of this and the other two public pension systems, national pensions (*kokumin nenkin*) and mutual-aid pensions (*kyōzai nenkin*).