

Economic Crisis and Intergenerational Economy:
Lessons from Korea's 1997-98 Economic Crisis

Chong-Bum An, Sungkyunkwan University, Seoul, Korea
Sang-Hyop Lee, University of Hawaii at Manoa, Honolulu, USA¹
Naomi Hwang, Sungkyunkwan University, Seoul, Korea

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Abstract

This paper provides some important features of the intergenerational resource allocation in Korea, focusing on the effect of the financial crisis in 1997-98. Data sets of three periods before and after the financial crisis (1996, 2000, and 2005) were used to compare the results. This research particularly addresses two related issues: i) the generational effects of economic crisis, and ii) the capacity of age reallocation systems to spread economic risks across generations. The results show a tremendous consumption smoothing and resource reallocation by age during and after the financial crisis. Private education and private health consumption decreased for ages 0-19 between 1996 and 2000. However, the decrease in private education and private health consumption was mitigated by the increase in the public consumption. It appears that the public sector not only mitigated the adverse impact of economic crisis on consumption, it reduced the widening disparity amongst generations. Within transfers, the public transfers for the elderly increased substantially as the private transfers decrease rapidly. Finally, there was a big increase in the asset-based reallocation of the elderly. The increase in asset-based reallocation was mainly due to an increase in asset income between 1996 and 2000, but it was almost entirely due to a decrease in saving (i.e. an increase in dis-saving) between 2000 and 2005. This result suggests that Korean elderly seemed to have some degree of supporting system during the crisis, even without sufficient pension benefits. The increased reliance on asset accumulation will be critical in the long-run in Korea, as public pension funds diminishes due to population aging. The paper concludes with a few policy implications, drawn upon these findings.

Keywords: intergenerational economy, transfers, economic crisis, population aging.
JEL Classification: J18, H53, I35.

¹ Corresponding author. Leesang@hawaii.edu. 2424 Maile Way, Honolulu, HI 96822. USA. Phone) 1-808-956-8590. Fax) 1-808-956-4347.

Introduction

Korea survived the brunt of the crisis in 1997-98, but it faced with numerous socioeconomic problems that emerged during and following the crisis. The most serious problems include the rising numbers of disadvantaged people, employment instability, the widening gap between the rich and the poor, and rapid deterioration of familial support for the elderly. Even long after the affected economies have recovered, social impacts continue to be felt.

During and after the crisis, there has been a great change in the Korean economy and economic support system. There has been a substantial fluctuation in the value of assets due to a change in the price of housing and equities. A lot of middle aged workers were forced to retire and many of them were not able to re-enter the labor market even after the economic crisis. The reduction in new jobs made young workers it difficult to find a regular job after graduating schools. On the other hand, there has been a great increase in social expenditure mainly due to the changes in economic and social environment as well as some political reasons. Increasing social demands for welfare are recognized especially since the economic crisis devastated Korean economy. The expenditure is often age targeted, regardless the Korean government intended or not.

At the same time, a rapid decline in fertility during and after the crisis appeared to be a new threat to the economy that accelerates the aging process of the society. The unprecedentedly fast population aging has imposed a burden of old age support. Traditionally, the burden was borne by the income transferred from their grown-up children with living with the elderly. But as the traditional familial support system has weakened, the number of families to live with the aged parents has been declining. In particular during the crisis, lots of families suffered the economic difficulties, and as a result, the private transfers were substantially diminished. On the other hand, the Korea government has increased the welfare budget to settle the problem of unemployment and poverty since the financial crisis.

The origins of the Korean economic crisis in 1997-98 are complex. Many researchers pointed out several domestic, regional, and global elements, all of which contributed to generating it. The impact of the Korean economic crisis seems at least as complex as the origins are. In this paper, we focus on two related issues: the generational effects of economic crisis and the capacity of age reallocation systems to spread economic and financial risks across generations. The analysis makes use of the National Transfer Accounts (NTA) which provides comprehensive estimates of intergenerational economic flows. The analysis

emphasizes the effects of the crisis on consumption and key components of consumption by age. A second level of analysis focuses on the economic flows that fund consumption. Value of assets and labor income are directly affected by economic crises. Transfers and savings are indirectly influenced and may serve to mitigate the effects of economic crises.

We use three periods of data, 1996, 2000, and 2005. The year 1996 is chosen because it was soon before the financial crisis and it was also the year before entering the aging society. The year 2005 is the year after entering the aging society and it is the one showing the effect of the increased social policies. We try to compare them with the year 2000, which seems to be the year that unemployment rates began to recover and per capita income recovered to the level before the economic crisis. Thus, this study sets the year of 1996 and 2005 as comparison years to grasp the effect of population aging and the change of the intergenerational resource allocation due to the economic crisis.

It should be mentioned that we only focus on the short run impact of economic crisis. The impact may have a persistent effect and the lifetime behavior of an individual at each generation might be governed by a lifetime budget constraint. The long run impact of crisis can be analyzed by calculating lifetime wealth effect of economic crisis. The lifetime impact of economic crisis on each age/cohort group is not discussed here and left for future research. On the other hand, the Korean economic crisis have been marked by sharp declines of very short duration, which might have a less impact than long lasting economic recession.

The paper is organized as follows. Section II briefly reviews the economic crisis. Section III discusses methodology, followed by the results in Section IV. The last section concludes.

Korea's 1997-98 Economic Crisis

Korea has had an extraordinary development experience until mid 1990s. Between 1962 and 1996, real GDP per capita grew at an annual rate of 6.6 percent, and per capita income soared from only \$87 in 1962 to \$12,197 in 1996. On the process of economic development, investment and saving rate remained over 30 percent. The rate of total savings in Korea increased continuously from 10 percent of GNP in 1960s to 40.4 percent in 1988. Despite such high economic growth, inflation remained relatively low at around 4 percent throughout the mid 1990s. However, late in 1997, shortly after Korea had become a member of the OECD, the Korean economy experienced a severe economic crisis. Combined with a

substantial depreciation in the exchange rate, per capita income plunged to US \$7,355 in 1998.

The changes in key macroeconomic indicators between the first quarter of 1993 and the first quarter of 2009 are shown in Figure 1. The real per capita GDP growth ranged from 4.4 percent to 10.3 percent until the third quarter of 1997, but it decreased to 2.8 percent in the fourth quarter of 1997. The real growth rate fell to -5.3 percent in the first quarter of 1998, which was the lowest growth rate since 1980's political turmoil in Korea. The growth rate plunged to -8.1 percent in the third quarter of 1998. The GDP growth rate rebounded in 1999 and fully recovered to the pre-crisis level by the third quarter of 2000. Market interest rates, measured as the nominal interest rate for the 3-year corporate bond, soared to over 20 percent during the crisis. The interest rates sharply declined to below 10 percent in 1999 and maintained a decreasing trend until 2004. The decline in asset prices was also substantial during the crisis. The nominal value of land and housing respectively decreased by 9.5 percent and 11.4 percent in the second quarter of 1998, compared with the second quarter of 1997. For only one year in 1998, the average price of land and housing declined 14 percent and 12.4 percent respectively. Land and housing prices began to rise again in 1999. Interestingly, the housing price rose very rapidly after the crisis, much faster than the land prices. Between 2000-2003, the housing price increased over 35 percent, or 10 percent per annum. It rose again by 20 percent between 2004 and 2007. Unemployment rates increased from 2.2 percent in the third quarter of 1997 to 7.5 percent in the same quarter of 1998. Unemployment rates began to recover later; it started to recover in the second quarter of 2000, after almost three years of the crisis.

<Figure 1> Key Macroeconomic Indicators: Quarterly, 1993 ¼ to 2009 ¼

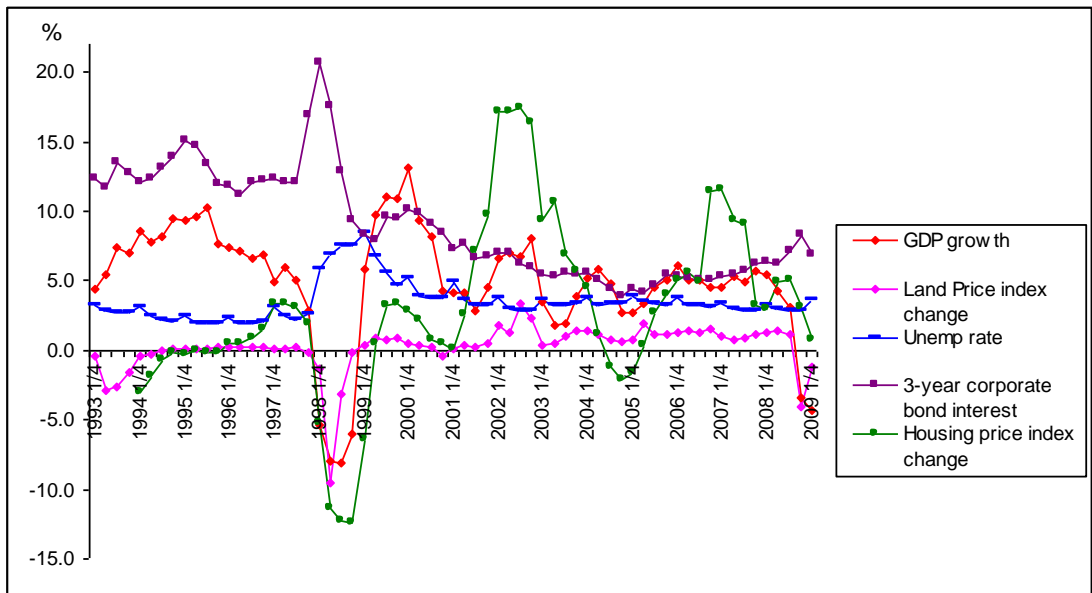
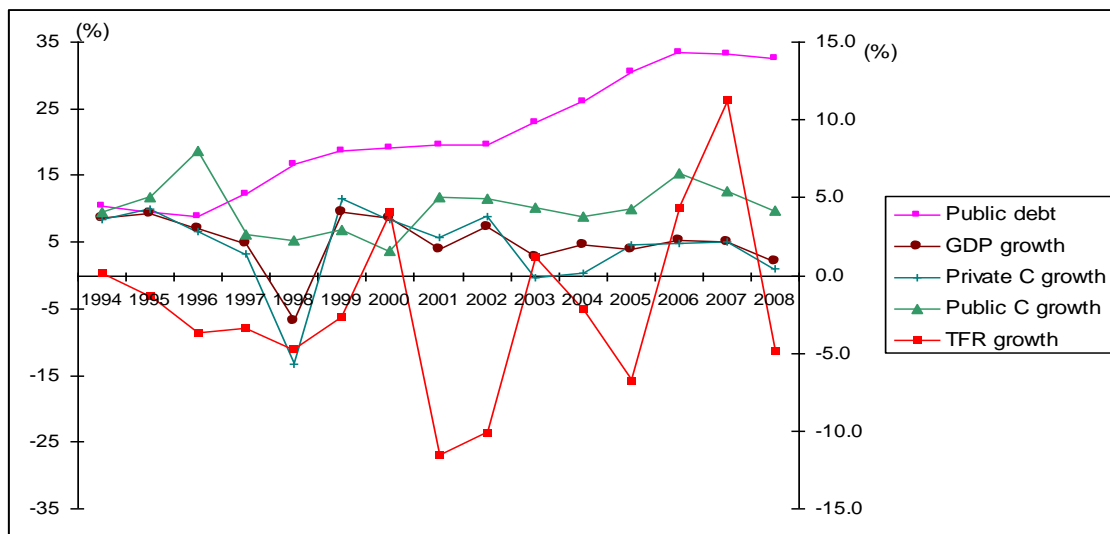


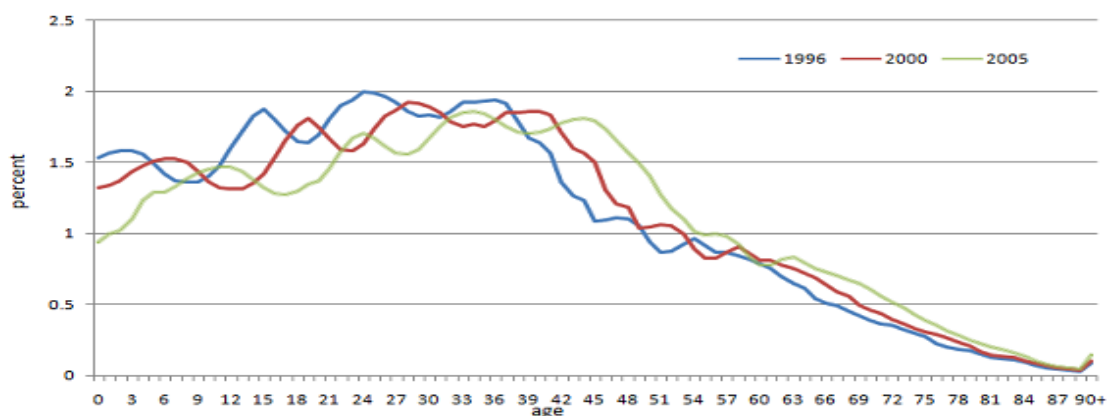
Figure 2 shows the changes in more key socio-economic indicators by year, which bears direct or indirect implications for the intergenerational economy. Most of all, the government debt increased very rapidly since 1997. The government debt as a percentage of GDP increased from 8.8 percent in 1996 to 16.6 percent in 1998. It further increased to 22.9 percent in 2003 and reached to 33.4 percent of GDP in 2006. The rise in government debt during the crisis may not be surprising because public debt increases as governments attempt to maintain public spending in the face of declining revenues and employ fiscal policy in response to the economic crisis. In Korea, the government debt kept increasing after the crisis, especially between 2002 and 2005, mainly due to the large increase in exchange stabilization fund (ESF). ESF accounted for only 15 percent of all government debts in 2002, but the share increased to 40 percent as of 2005. Interestingly, the public consumption has not declined, while the private consumption sharply declined during the crisis, making a marked contrast. Again, this might suggest that the Korean government played a role in smoothing consumption during the crisis. The total fertility ratio (TFR) slightly went down from 1.58 in 1996 to 1.47 in 2000, but it plunged again to 1.08 in 2005. The life expectancy (not shown in the figure) increased from 74.0 in 1996 to 76.0 in 2000, and it further increased to 78.6 in 2005.

<Figure 2> Other Socio-Economic Indicators, Annually, 1994-2008



There have also been substantial changes in population age structure before and after the crisis. Figure 3 shows the population distribution by age in Korea between 1996 and 2005. Youth dependency ratio decreased from 22.9 percent in 1996 to 21.1 percent in 2000, and dropped to 19.1 percent in 2005. On the other hand, old age dependency ratio increased from 6.1 percent in 1996 to 7.2 percent in 2000, and increased again to 9.1 percent in 2005, entering the aging society. As a result, the population age structure in Korea has changed substantially during such a short period of time.

<Figure 3> Population Age Structure: 1996, 2000, and 2005



Application of National Transfers (NTA) Accounts in Korea

The purpose of National Transfer Accounts (NTA) is to measure at the aggregate level, in a manner consistent with National Income and Product Accounts, the reallocations across age

of economic resources. These reallocations occur because at some ages individuals consume more than they produce, while at other ages individuals produce more than they consume. The reallocation system consists of a set of complex institutions and practices by which the young and the old, those with lifecycle deficits, draw on the surplus resources generated during the prime working ages. The methodological details are not discussed in this paper, but the detailed methodology is available at on Lee, Lee, and Mason (2008), Mason et al. (2009), and <http://www.ntaccounts.org/web/nta/show>. Readers interested in Korea's public sector generational accounting may also benefit by reading Chun (forthcoming).

A various data sets are used to estimate the NTA of Korea. Because the allocation of the aggregate controls requires a data consistent with NIPA, the data of income and expenditures, and the records of public institutions such as National Pension Statistical Yearbook, National Health Insurance Statistical Yearbook, National Tax Statistical Yearbook, Yearly Statistics of Employment Insurance, Statistical Yearbook of Health and Welfare, and Statistical Yearbook of Teachers Pension are used. To construct the age profiles, income and expenditure surveys, such as the National Survey of Household Income and Expenditure (NSHIE), Household Income and Expenditure Survey (HIES), Korean Household Panel Study (KHPS) and Korean Labor and Income Panel Study (KLIPS), are used.

NSHIE started in 1991 and has been released every five years. This survey provides information on yearly income and expenditures, durable goods, assets, and liabilities of household in detail from the nationally representative household sample. The sample size is about 27,000 households. The Household Income and Expenditure Survey (HIES) has been conducted with non-farm households excluding one person households in cities during the past sixty or so years and in 2003, it was expanded to include rural non-farm households. Beginning in 2005, one person households are also included. Hence, it should be mentioned that the changing consumption pattern between 2000 and 2005 could be due to the changing coverage of households between the two surveys. The purpose of HIES is to collect up-to-date information on household income and expenditures and to analyze variations in the levels of living and the disparities among different socio-economic groups and to obtain weights for the consumer price index.

KHPS is the first panel data in Korea. The sixth wave has been released from the first study in 1993. It grasped minutely over the income and expenditures of the whole households and the income and tax over 18 years of the age except Cheju Island. KLIPS, started in 1998,

is the longitudinal survey of households and individuals residing in urban areas on their labor market and income activities. The KLIPS sample had been selected from the household lived in the 7 metropolitan cities and urban areas in 8 provinces, again excluding Cheju Island. The sample size was originally 5000 households and 13,321 individuals and diminished since then. The primary data and method used by items of NTA are summarized in Table 1.

<Table 1> Estimation Methods and Data Sources

NTA	Estimation methods	Data Sources
Education, private	Regress on enrollment and age	NSHIE, HIES
Health, private	Regress on age	NSHIE, HIES
Imputed-rent, Others, private	Equivalence scale	NSHIE, HIES
Education, public	Age- & education level- specific enrollment rate	OECD
Health, public	Age distribution of benefits	NHISY
Others, public	Per capita basis	NIPA
Compensation of employees	Wage of wage workers	KLIPS, KHPS
Entrepreneurial income	Income of non-wage workers	KLIPS, KHPS
Asset income, private	Net property income of households	NSHIE, HIES
Savings, private	Residuals	Calculation
Asset income & financial asset Accumulation, public	Age distribution of tax burden	NIPA
Capital and land accumulation, public	Age distribution of population	NIPA
Social insurance & tax	Generational accounting	NIPA
Inter-household transfers	Private subsidy and remittance of households	NSHIE, HIES
Intra-household transfers	Net transfers=consumption - disposable income	KHPS

Results

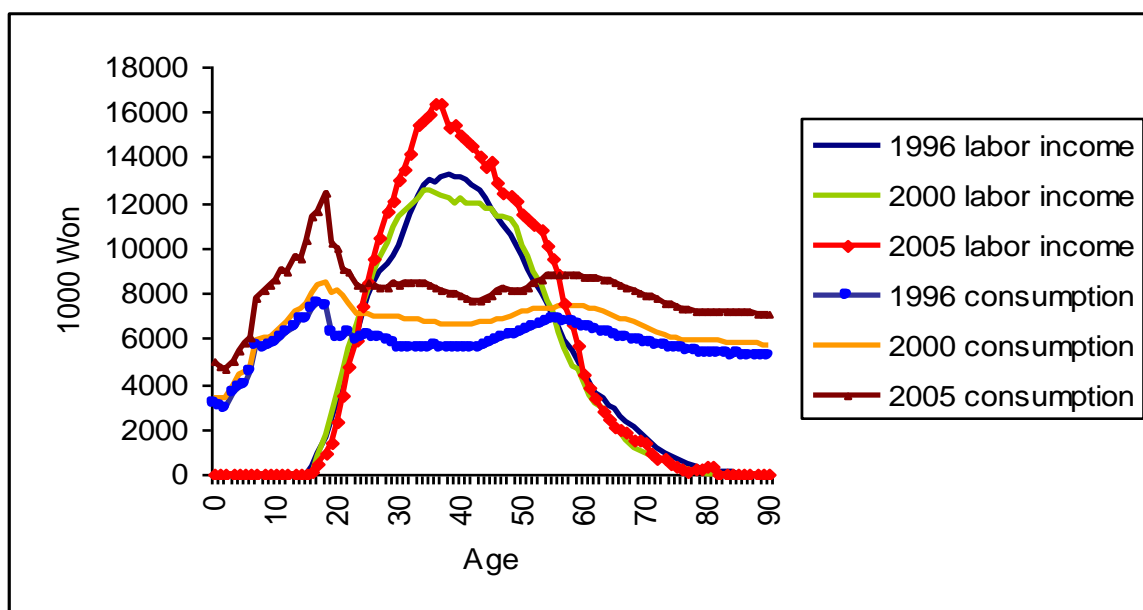
Economic Lifecycle

The age profiles of consumption and labor income – the economic lifecycle – reflect many factors (Lee, Lee, and Mason 2008). One of the most important factors is population age

structure. Reallocations to children are much more important than reallocations to the elderly in current-day Korea because there are many more children than elderly. But Korea is aging rapidly and hence, reallocations to the elderly as compared with reallocations to children will increase substantially over the coming decades. The economic lifecycle also reflects behavior and the factors that influence behavior – prices, taxes, tastes, etc. Consumption profiles, for example, are influenced by the importance of education as compared to health care – and the institutional framework that governs these important sectors. Labor income profiles vary with the wage system, the returns to education, educational attainment, the ages at which children leave school and adults retire, and the labor force decisions made by women – to mention a few obvious factors.

Figure 4 shows the lifecycle profile of per capita labor income and consumption in Korea for 1996, 2000, and 2005. The labor income peaked at age 38 in 1996, but it declined to 35 in 2000. It slightly bounced back to 37 in 2005. This is an interesting result because production peaked much earlier in Korea than in many other advanced countries and it was excelled during the economic crisis. This might reflect the fact the unique seniority-based wage system in Korea has been rapidly deteriorating during the 1990s, especially since the 1997 economic crisis. The figure also shows that the consumption peaks in the late teens and decreases until the 40s. Such a decline in consumption was also found in other countries as a result of decreasing expenditure on education. However, the decline seems to come earlier in Korea, immediately after high school graduation. This result may be related to the extremely high level of private education consumption among high school students in Korea, which is supported by the data. The peak of consumption at senior high is much more prominent in 2005.

<Figure 4> Lifecycle Profiles of Per Capita Labor Income and Consumption: 1996, 2000, and 2005.

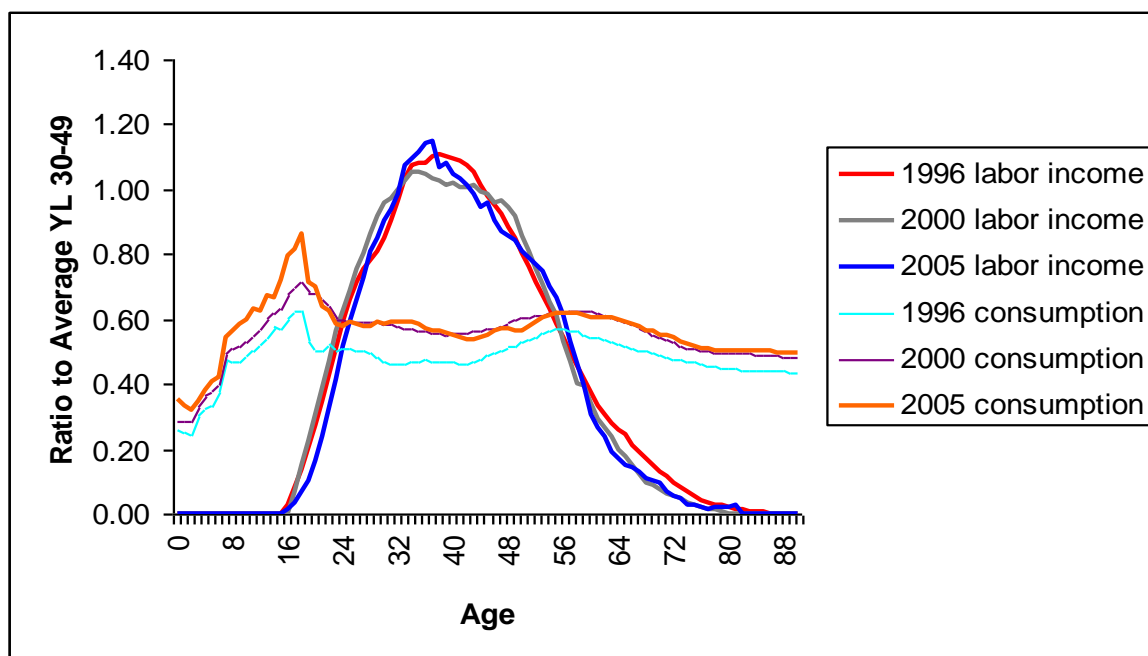


As is clear from the figure, while the labor income profile has shifted little between 1996 and 2000, it increased substantially between 2000 and 2005. However, consumption has modestly increased between 1996 and 2000 and again substantially between 2000 and 2005. Both results are interesting because this suggests that the impact of economic crises on consumption might have been mitigated. The combined effect of the change in age profiles of labor income and consumption changed the lifecycle deficit years. It indicates that the lifecycle surplus decreased from 33 years in 1996 (age 23 to 55) to 31 years in 2000 (age 24 to 54), and remained same in 2005 (age 25 to 55).

Figure 5 charts the age profile of labor income and consumption relative to average labor income for adults aged 30-49 each year. That is, Figure 5 was drawn in a way that Figure 4 was rescaled by dividing by the simple average of per capita production between ages 30-49. This normalization makes the estimated profiles more easily comparable by age and also by time period. We divided each age schedule by the unweighted average of per capita labor income of each age over the range 30 to 49. Thus, for example, a value of 0.5 at some age in consumption implies that a person at that age consumes half the annual amount of production averaged over the prime ages of her life. So it can present the changing pattern of age profiles or age targeting of government programs more clearly. The figures suggests that the labor income of elderly aged 65 and older declined substantially between 1996 and 2000, while it was stagnant between 2000 and 2005, compared to that of ages 30-49. In

addition, the labor income of prime age adults appeared to have declined between 1996 and 2000. The figure also shows that the normalized per capita consumption increased for almost all ages between 1996 and 2000, while it was stagnant between 2000 and 2005. The only notable difference between 2000 and 2005 is that the consumption of children under 20 years in that the consumption, normalized by the average labor income ages 30 to 49, has increased substantially. On the other hand, the normalized consumption increased for all ages between 1996 and 2000, suggesting a potential consumption smoothing during the period.

<Figure 5> Lifecycle Profiles of Per Capita Labor Income and Consumption: Ratio to the Average Labor Income Ages 30-49, 1996, 2000, and 2005



A further investigation of the consumption by component shows some interesting features of the impact of crisis. Table 2 presents real annual growth rate of each consumption components and labor income by broad age group. While per capita labor income increased by only 0.7 percent per annum between 1996 and 2000, per capita labor income for ages 65 and older decreased by 10.7 percent per annum during the same period. On the other hand, total consumption rose by 3.7 percent per annum, exceeding the increase in labor income. Interestingly, the private consumption for ages 0-24 and ages 65 and older increased much less than the average, by 3 percent and 1.6 percent per annum, respectively. As a result, the consumption gap between prime age adults and the older people and between prime age

adults and the younger people in Korea has been widened after the financial crisis. The results for private education and private health consumption are most striking because both of them respectively decreased by 3.8 percent and 2.9 percent per annum for ages 0-19.² However, the decrease in private education and private health consumption was mitigated by the increase in the public sector consumption. The public health consumption, in particular, grew very rapidly for all age groups, recording 10.6 percent per annum. Thus, it appears that the public sector not only mitigated the adverse impact of economic crisis on consumption, it reduced the widening disparity amongst generations due to changing pattern of private consumption.

<Table 2> Annual Growth Rate of Consumption and Labor Income: By Broad Age Groups

%	Annual growth between 1996-2000				Annual growth between 2000-2005			
	0-19	20-64	65+	per capita	0-19	20-64	65+	per capita
Total Consumption	2.6	4.2	2.7	3.7	6.4	3.6	4.0	4.4
Public Consumption	3.7	4.4	6.6	4.0	9.0	6.9	7.1	7.4
Public Education	3.4				12.2			
Public Health	9.4	9.1	14.5	10.6	8.2	10.6	8.9	10.6
Public Others	3.2	3.2	3.2	3.2	6.0	6.0	6.0	6.0
Private Consumption	2.1	4.1	1.6	3.6	5.0	2.8	3.0	3.4
Private Education	-3.8				10.6			
Private Health	-2.9	-1.2	1.4	-0.3	22.5	6.3	8.3	9.2
Housing	-1.4	1.6	5.6	1.9	4.1	1.3	-1.0	2.0
Other Consumption	5.1	4.0	0.9	4.3	2.2	2.7	2.9	2.9
Labor Income	2.7	0.3	-10.7	0.7	-13.4	3.3	3.2	3.7
Compensation	2.6	0.0	-14.1	0.4	-13.5	4.6	6.9	5.0
Self-Employed Income	46.2	2.1	-2.8	2.5	4.8	-6.0	-4.9	-5.4

Public consumption further increased between 2000 and 2005, especially for public education consumption. Public education consumption for ages 0-19 increased by 12.2 percent per annum during the period, which is in stark contrast with the substantial decrease in the labor income for the same age group. Public health consumption also kept growing during the period. Private education consumption increased most rapidly during the recovery. The private education consumption for children ages 0-19 grew 22.5 percent per annum

² Another interesting result is that, while private consumption for ages 0-19 declined, that for 0-24 increased for the same period, suggesting that the education expenditure for college students increased substantially. It might be because of the substantial increase in college tuition during the period.

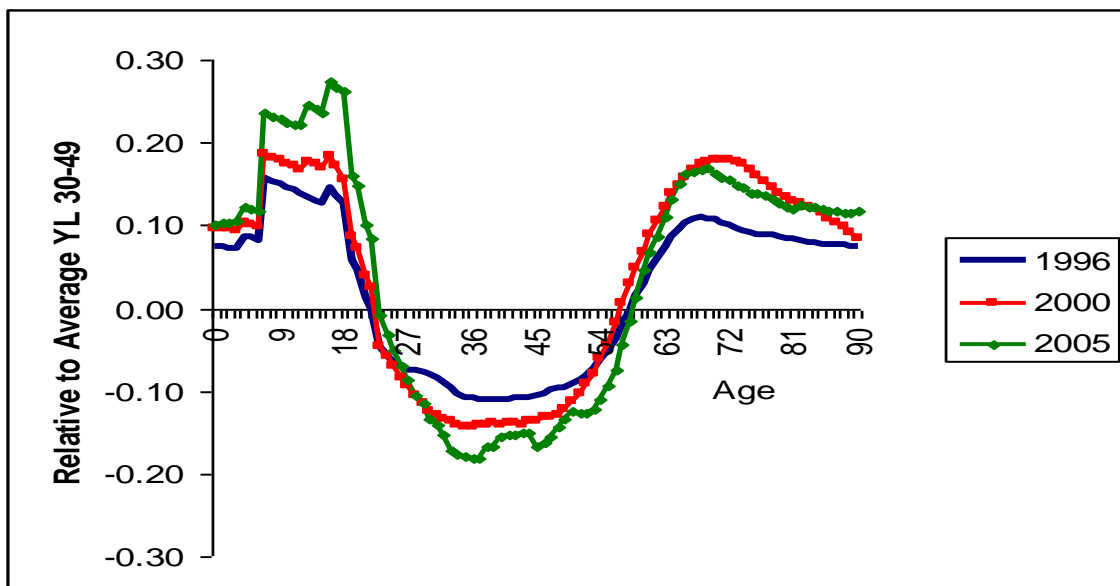
during the period. For ages 0-24, it increased by 20.2 percent per annum. It is far from clear why the education consumption responded more sensitively than any other consumption to the changing economy. It might be related with many factors in Korea, such as rising tuition for college, substitution between public education and private education, and the income elasticity of education consumption in Korea.

Reallocation System

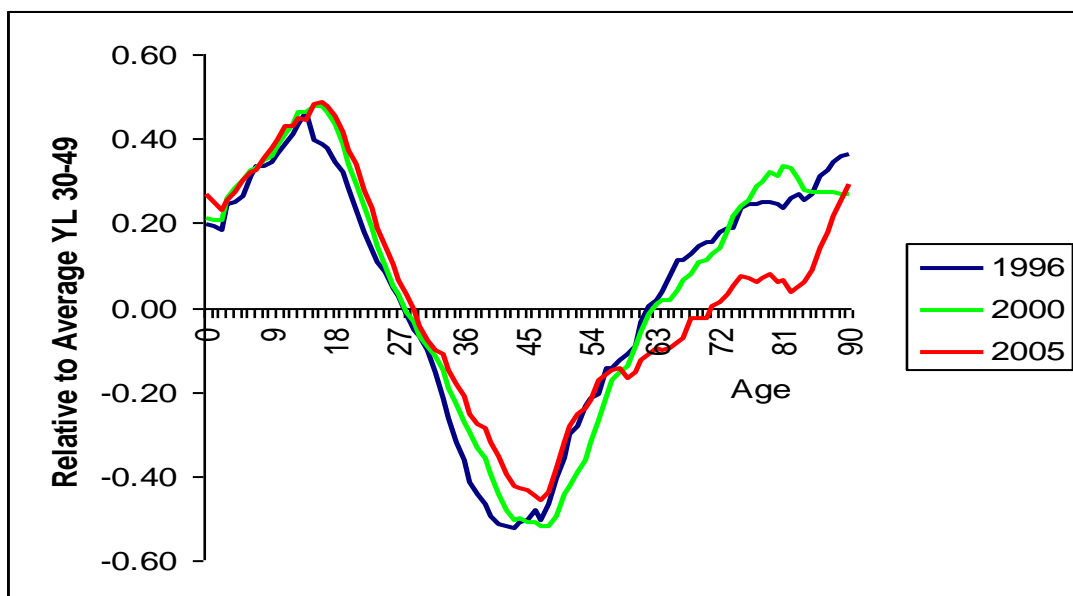
Reallocation systems, which is the way of funding to fill the gap between consumption and labor income, vary along two important dimensions: the governing or mediating institution and the economic form of the reallocation (Lee, 1994a; 1994b). The public sector reallocates resources relying on social mandates embodied in law and regulation and implemented by local, regional, and national governments. Education, public pensions, and health care programs are important examples of public reallocation programs. Private sector reallocations are governed by voluntary contracts, social conventions, etc. that are mediated by households, families, charitable organizations, and other private institutions. Important examples of private reallocations are private saving and credit transactions and familial support to children and the elderly. The results are explained in turn using the following figures.

It is not surprising that transfers dominate the reallocation of wealth to children in any economy, because asset reallocation is not the usual mechanism for supporting consumption by young children. Although Korea is no exception, familial transfers to children in Korea is particularly prominent, given the high level of private education consumption by high school students. Public transfers to children are getting more important especially since the recovery of economic crisis due to the rapid increase in public education consumption. Familial transfers for the elderly trend upward with age too, but net familial transfers for the elderly decreased for the elderly, dramatically between 2000 and 2005 (figures 6 and 7).

<Figure 6> Per Capita Net Public Transfers Profiles: 1996, 2000, and 2006



<Figure 7> Per Capita Net Private Transfers Profiles: 1996, 2000, and 2006

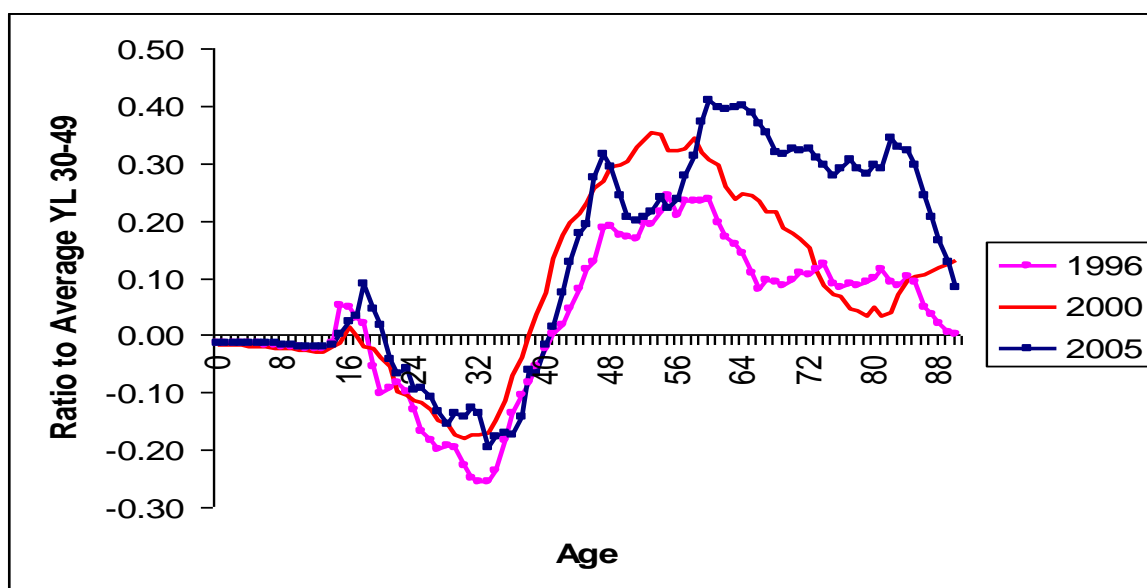


The most striking feature of change in transfers was the rapid increase in social welfare expenditure (Not shown in the figure). In addition to public health expenditure, social assistance benefits increased for all age groups, amounting 18.9 percent per annum between 1996 and 2000, and 13.3 percent per annum between 2000 and 2005 in real terms. It might be because of the expansion of the National Basic Livelihood Security System (NBLSS) benefits system in 2000 which consists of cash and in-kind benefits to households with incomes below the poverty line. Social security related expenditure also grew so rapidly, especially for the

elderly. Social security inflows grew by 7 percent per annum between 1996 and 2000, and it further increased by 16.3 percent per annum between 2000 and 2005.

Private asset-based reallocations were positive at most ages except for ages 20s and 30s in Korea over the period (Figure 8). At those ages, asset income was equal or smaller than saving. Younger people, those aged 15–20, were dissaving, but at a trivial level. Private asset income was rising steeply among people in their 40s and 50s. But their private savings were always quite low compared with their asset income. Perhaps the reason for their low savings is that people in this age group were financing much of the consumption of children and the elderly.³

<Figure 8> Per Capita Asset-based Reallocation Profiles: 1996, 2000, and 2005

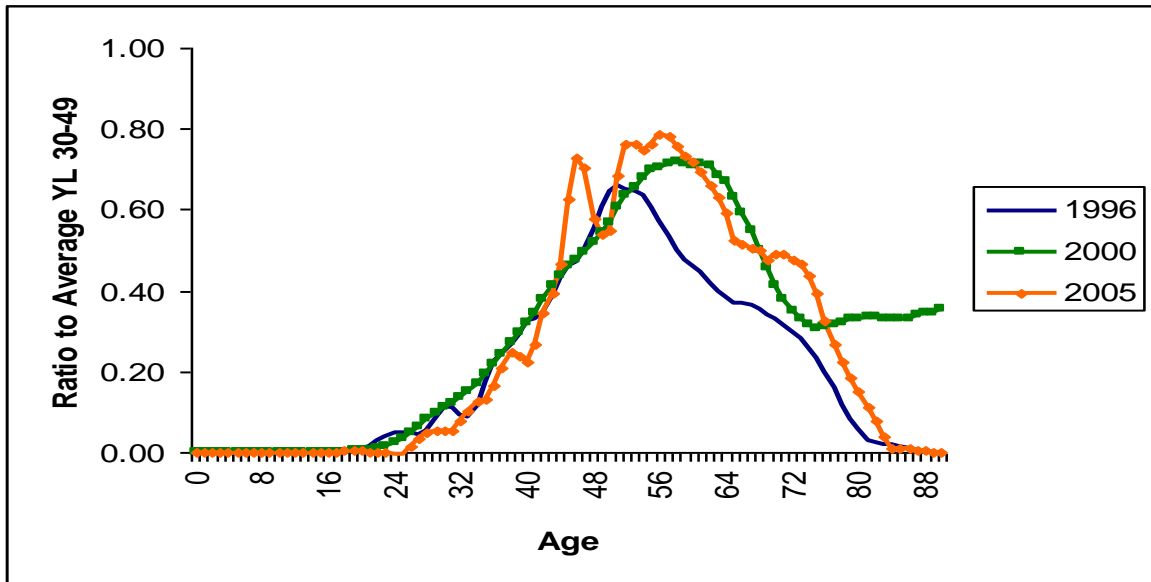


A striking result is that there was a huge increase in the asset-based reallocation (asset income minus saving) for the elderly between 1996 and 2000 and again 2000 and 2005. Quite surprisingly, the increase in asset-based reallocation is mainly due to an increase in asset income between 1996 and 2000, while it was entirely due to a decrease in saving (an increase in dis-saving) between 2000 and 2005 (figures 9 and 10). The increase in asset income among older people between 1996 and 2000 was due in part to the increase in net inflow of interest

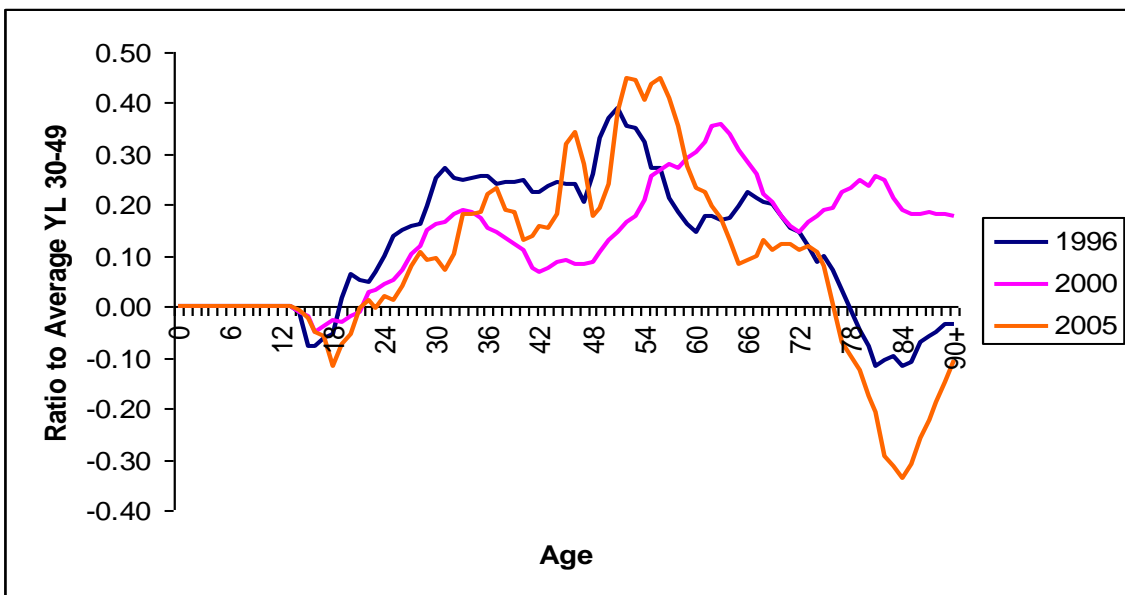
³ Or it could be simply due to the fact that our results are based on cross-sectional rather than longitudinal data. See Mason et al. (2009) regarding this issue.

income and other property income for those age groups, while capital income was still a most important source of asset income for Koreans of all age groups.

<Figure 9> Per Capita Private Asset Income Profiles: 1996, 2000, and 2005



<Figure 10> Per Capita Private Saving Profiles: 1996, 2000, and 2005



What are the major sources of the large swings in asset income and saving during the financial crisis and after the recovery? It is premature to speculate at this moment, and it is well beyond the scope of this paper. However, it is worthwhile mentioning that it could be related with the speculation in real estate which has become a serious social issue in Korea right after the financial crisis. The lowering interest rate between 2000 and 2005 may have affected the huge decline in saving behavior for the elderly during the period, which in turn might have affected the asset-based reallocation. Also the asset-based reallocation system in Korea after the crisis should be understood in conjunction with several unusual features of Korea, such as *chonse* (key-money) housing system, that may have a significant effect on the private sector through private transfers and private asset-based reallocations.

Sources of Funding Consumption

Table 1 presents the national transfer flow account for Korea in a highly summarized form, reporting aggregate lifecycle deficits and aggregate age reallocations by age in billions of won. Total age reallocations and their major components are shown in the bottom panel, with positive values representing net inflows and negative values representing net outflows. The lifecycle deficit for the older people ages 65 and older, for example, was 12 trillion won in 1996. The lifecycle deficit for this age group was substantially increased to 19 trillion won in 2000. The lifecycle deficit further increased to 30 trillion won in 2005 for this age group. Clearly, the lifecycle deficit has become large as population ages and labor income decreased for this age group.

<Table 3> National Transfer Accounts, Aggregate Values by Broad Age Groups: 1996, 2000, and 2005. Billion won.

	1996	Total	0-19	20-64	65+
Life Cycle Deficit		(12,590)	74,873	(99,717)	12,254
Total Consumption		263,878	78,979	168,848	16,050
Public Consumption		58,089	24,914	29,902	3,273
Private Consumption		205,789	54,066	138,946	12,777
Labor Income (Less)		276,467	4,106	268,565	3,796

Asset-Based Reallocations	(12,590)	74,873	(99,717)	12,254
Transfers	(161)	76,174	(85,453)	9,118
Net Public Transfers	0	19,671	(22,917)	3,246
Public Transfer Inflows	78,261	28,273	43,202	6,787
Public Transfer Outflows	(78,261)	(8,602)	(66,119)	(3,541)
Private Transfers, net	(161)	56,503	(62,537)	5,872
Asset-Based Reallocation	(12,428)	(1,301)	(14,263)	3,136
Public Asset Based Reallocation	(36,379)	(3,998)	(30,735)	(1,646)
Public asset income	4,832	531	4,082	219
Less: Public Saving	41,210	4,529	34,817	1,865
Private Asset Based Reallocation	23,951	2,697	16,472	4,782
Private asset income	96,256	54	87,572	8,631
Less: Private Saving	72,306	(2,644)	71,100	3,849
	2000	Total	0-19	20-64
			65+	
Life Cycle Deficit	21,299	79,505	(76,930)	18,725
Total Consumption	314,706	83,887	209,161	21,658
Public Consumption	70,098	27,608	37,358	5,133
Private Consumption	244,609	56,280	171,804	16,525
Labor Income (Less)	293,407	4,382	286,092	2,933
		-	-	-
Asset-Based Reallocations	21,299	79,505	(76,930)	18,725
Transfers	644	82,629	(94,698)	12,713
Net Public Transfers	-	23,326	(29,746)	6,420
Public Transfer Inflows	102,278	33,052	57,915	11,310
Public Transfer Outflows	(102,278)	(9,726)	(87,661)	(4,891)
Private Transfers, net	644	59,303	(64,952)	6,294
Asset-Based Reallocation	20,655	(3,124)	17,768	6,012
Public Asset Based Reallocation	(49,731)	(4,729)	(42,624)	(2,378)
Public asset income	9,047	860	7,754	433

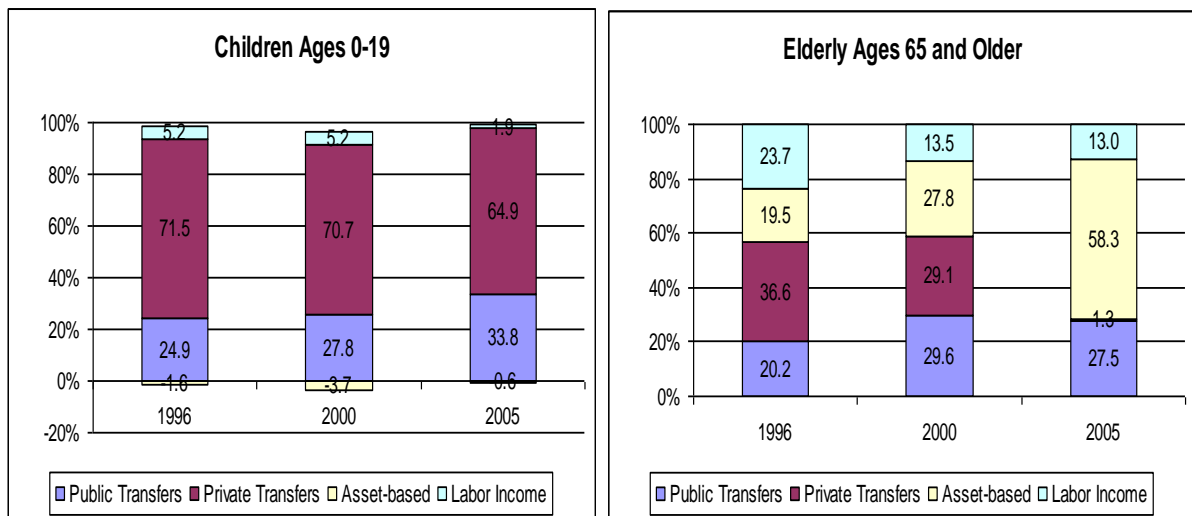
Less: Public Saving	58,777	5,589	50,378	2,810	
Private Asset Based Reallocation	70,386	1,605	60,392	8,389	
Private asset income	125,337	30	108,075	17,231	
Less: Private Saving	54,951	(1,575)	47,684	8,842	
	2005	Total	0-19	20-64	65+
Life Cycle Deficit	38,405	101,112	(92,255)	29,549	
Total Consumption	399,109	103,036	262,116	33,958	
Public Consumption	102,452	38,315	54,843	9,294	
Private Consumption	296,657	64,720	207,273	24,664	
Labor Income (Less)	360,704	1,924	354,371	4,409	
		-	-	-	
Asset-Based Reallocations	38,405	101,112	(92,255)	29,549	
Transfers	(2,267)	101,684	(113,699)	9,747	
Net Public Transfers	(0)	34,795	(44,116)	9,321	
Public Transfer Inflows	157,144	46,036	93,729	17,379	
Public Transfer Outflows	(157,144)	(11,242)	(137,845)	(8,057)	
Private Transfers, net	(2,267)	66,890	(69,583)	426	
Asset-Based Reallocation	40,672	(573)	21,444	19,801	
Public Asset Based Reallocation	(50,380)	(3,604)	(44,192)	(2,583)	
Public asset income	8,661	620	7,597	444	
Less: Public Saving	59,040	4,224	51,790	3,027	
Private Asset Based Reallocation	91,051	3,031	65,636	22,384	
Private asset income	171,600	69	147,179	24,352	
Less: Private Saving	80,549	(2,963)	81,543	1,968	

Figure 11 shows how consumption by children and the elderly was funded for the three periods. In the case of children, earnings were a negligible source for all years; virtually all their consumption was financed by transfers in all three periods. Private transfers dominated, accounting for more than 70 percents for 1996 and 2000. Private transfers

decreased to about 65 percent as a source of consumption in 2005. The remainder consisted of public transfers and its importance has been substantially increased over the periods.

For the elderly, work contributed about 24 percent of consumption in 1996, but it declined to about 13 percent in 2000 and 2005. Public transfers accounted for only 20 percent of consumption by the elderly in 1996, but it jumped to about 30 percent in 2000 and decreased slightly until 2005. Private transfers were most important source of consumption for the elderly in 1996, accounting for about 37 percent. But it decreased to 29 percent in 2000, and further decreased dramatically to 1.3 percent in 2005. The results should be interpreted with caution, however, because as we pointed out somewhere else, 2000 and 2005 data sets are not exactly comparable due to the changing coverage of households between two surveys, NSHIE and HIES. However, the results are still quite informative in terms of the direction of changes. For the elderly, only the importance of asset-based reallocation rose consistently.

<Figure 11> Sources of Financing Consumption: 1996, 2000, and 2005



Conclusion

The challenges resulting from the rapid aging and extremely low fertility level are of great concerns to Korea simply because no other society has faced so dramatic a demographic transition. This paper provides some important features of the intergenerational resource allocation in the nation, focusing on the effect of the financial crisis in 1997-98.

The summary and implications of the study are as follows. The results show a

tremendous consumption smoothing and resource reallocation by age during and after the financial crisis. Although labor income was sluggish between 1996 and 2000, consumption showed a modest increase mostly due to the increase in public consumption. Private education and private health consumption decreased for ages 0-19 between 1996 and 2000. However, the decrease in private education and private health consumption was mitigated by the increase in the public sector consumption. It appears that the public sector not only mitigated the adverse impact of economic crisis on consumption, it reduced the widening disparity amongst generations. Within transfers the public transfers for the elderly increased substantially as the private transfers decreased rapidly. Within transfers, the results suggest, the public transfers increased substantially while the private transfers substantially decreased for the elderly and during and after the crisis. It also appears that social assistance benefits increased most rapidly for all age groups.

Perhaps the most important and striking result is that, the asset-based reallocation of the elderly increased remarkably after the financial crisis. The increase in asset-based reallocation was mainly due to an increase in asset income between 1996 and 2000, but it was almost entirely due to a decrease in saving (an increase in dis-saving) between 2000 and 2005. It means that the elderly in Korea has some degree of autonomy in spite of the economic crisis, rapid population aging, and deterioration of familial support system. This is good news for Korea because a smaller public resource toward the elderly will be required and that in turn will mitigate the financial burden due to rapid population aging or during the economic downturn. However, the increased reliance on dis-saving will not be sustainable and will also lead to a decrease in saving rates, which could be an obstacle for economic growth in the future. The sharp increase in the reliance on asset-based reallocation could be diminished for a while as old-age pension of the National Pension Scheme has begun to be fully implemented, starting in 2008. However, without further reforms, public pension funds will be exhausted around 2035. So increased reliance on asset accumulation will be eventually critical in the future. Exactly how all these changes will play out remains to be seen.

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Mason, A., R. Lee, A.-C. Tung, M.-S. Lai, and T. Miller. 2009. *Population aging and intergenerational transfers: Introducing age into national accounts*. Economics of Aging Series, edited by David Wise. Chicago: National Bureau of Economic Research and University of Chicago Press.

<http://www.nso.go.kr>

<http://www.ntaccounts.org/web/nta/show>

Economic Crisis and Intergenerational Economy: Lessons from Korea's 1997-98 Economic Crisis

Presented by

Sang-Hyop Lee

Department of Economics, University of Hawaii
Research Program, East-West Center

**(Co-authored with Chong-Bum An and Naomi Hwang
at the Sungkyunkwan University)**

Presented to the International Conference on
“Financial Crisis, Recovery and Sustaining Growth.”
Hosted by Korea Development Institute

**August 7, 2009
Seoul, Korea**

Outline of Talk

- I. Motivation
- II. Application of National Transfer Accounts
(NTA)
- III. Results
- IV. Conclusion

I. Motivation

MARCH 23, 2009

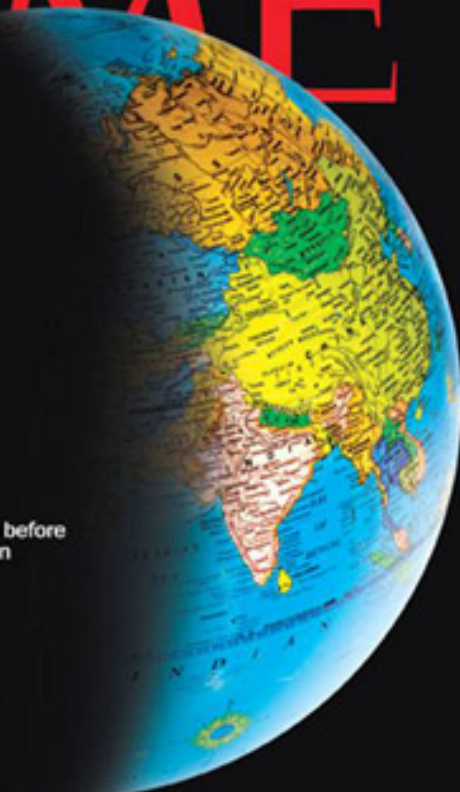
Annual Special Issue

TIME

**10
IDEAS
CHANGING
THE WORLD
RIGHT NOW**

The global economy is being remade before our eyes. Here's what's on the horizon

- WHY YOUR JOB IS YOUR MOST VALUABLE ASSET
- REPURPOSING THE SUBURBS
- SURVIVAL-STORE SHOPPING
- BIOBANKS: SAVING YOUR PARTS
- NEED LAND? RENT A COUNTRY
- THE NEW CALVINISM
- ECOLOGICAL INTELLIGENCE
- AMORTALITY: FOREVER YOUNG
- AFRICA: OPEN FOR BUSINESS
- REINVENTING THE HIGHWAY



www.time.com

#1 Your job is your most valued assets right now—meaning the changing pattern of supporting system due to economic crisis

- Remember when jobs weren't worth your small talk? Think back a year or two. Picture yourself at a cocktail party or maybe picking up the kids from soccer. How did the conversation go? You talked about your portfolio. "Land was valuable, and capital was valuable, and labor — who cared?" The attitude was, "As long as I buy a few homes and invest in a hedge fund, I'm done. I can sit in my chair and watch football games."

We now know how that ended up. Your portfolio is down 50%, your mortgage is worth more than your house, and your savings account is barely visible.....

Time's Annual Special Issue Cover, "10 Ideas Changing the World Right Now", Vol. 173 (11). March 23, 2009

Economic Crisis and Generational Economy

- The impact of economic crises depends on functioning of systems that allow us to smooth consumption.
 - Over the lifecycle, individuals rely on different support system.
 - Dis-saving or asset, familial support and social insurance mechanism,
 - Shifting resources from good times (the future) to bad (the present): credit or debt.
 - This system is not age neutral: For example some individuals (children) cannot rely on private asset or debt

- The impact of crises is not limited to the current generation.
 - Can increase consumption of current generations at the expense of future generations.
 - Resources, public debt, bequest

Literature

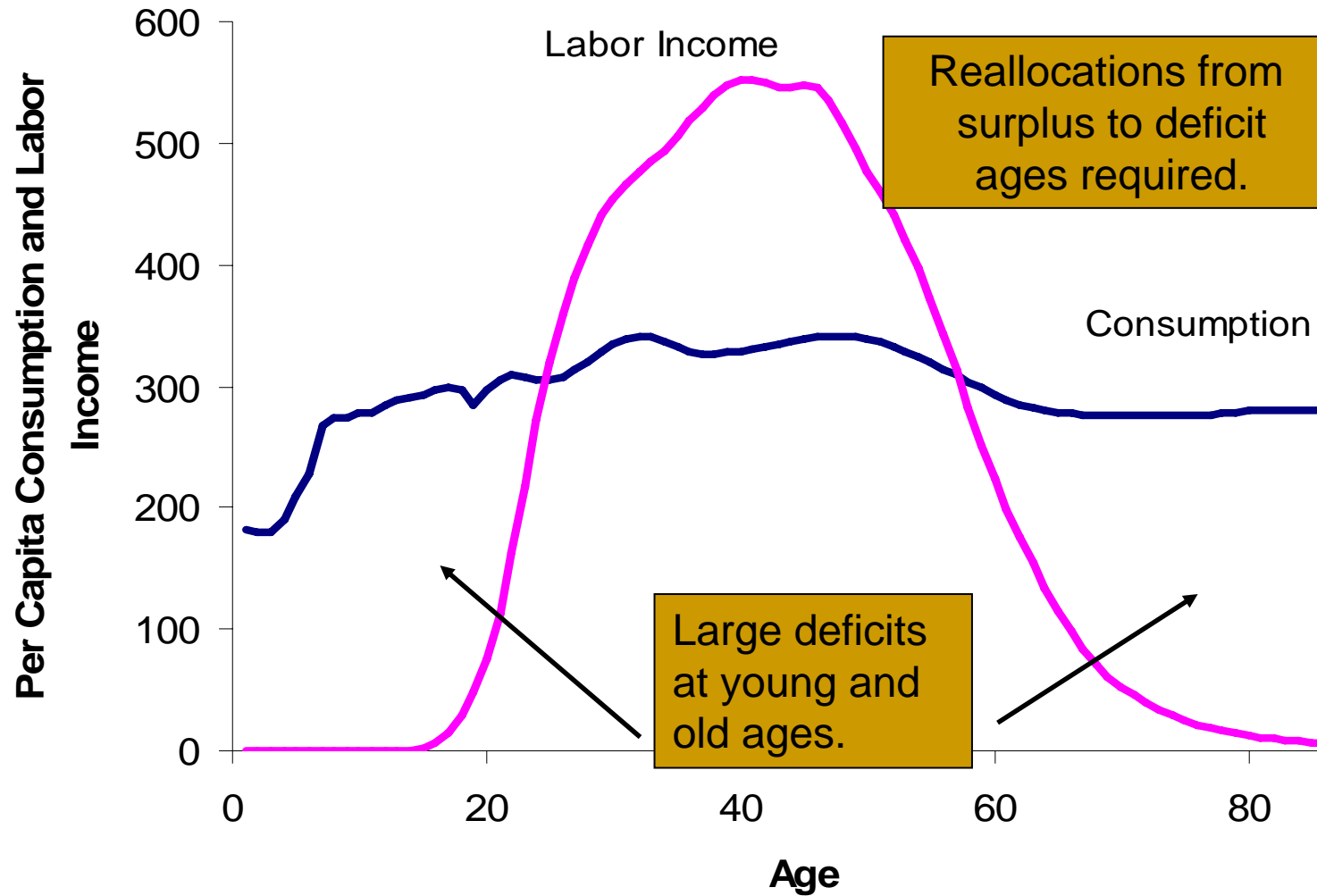
- Barro (1974): Financial crises and increases in public debt will have no generational effects (Ricardian Equivalence)
 - Effective altruists will offset or neutralize the effect of the increase in public debt.
- Elmendorf and Mankiw (1999): An increase in public spending financed by an increase in public debt will lead to an increase in total consumption
 - Some individuals are debt constrained
 - Effective altruism may not hold for many members of the population.

Major Research Questions

- The generational effects of economic crisis
- The capacity of age reallocation systems to spread economic risks across generations

II. Application of National Transfer Accounts (NTA)

An Economic Lifecycle



Sources of Financing Consumption

- Continued Employment
- Familial Transfers (Family or Friends)
- Public Transfers
 - Social Security System
- Asset-based Reallocations
 - Interest, dividends, rent from personal assets
 - Home and other consumer durables
 - Dis-saving

The NTA Project is...

- Develop a system of economic accounts that can be used to study the macroeconomic implications.
- Estimate the accounts with historical depth for economies with different cultures, levels of development, economic systems and policies.
- Analyze and explain
 - variation in the economic lifecycle and the reallocation systems,
 - macroeconomic effects of population aging,
 - economic implications of economic crisis, pension, health care, education, child subsidies, and other policy.

Important Features of the NTA

- Comprehensive approach:
 - All mechanisms for shifting resources from one age group to another are incorporated into the accounts.
 - Both public and private institutions are incorporated. The role of the family is emphasized.
- NTA is consistent with and complementary to National Income and Product Accounts (NIPA).

National Transfer Accounts Project Country Members



Economic Crisis and NTA of Korea

- There has been a great change in the Korean economy and economic support system during and after the crisis
 - Fluctuation in the value of assets
 - Middle aged workers were forced to retire
 - Reduction in new jobs made young workers it difficult to find a regular job
 - A great increase in social expenditure
 - Population aging and decline in fertility

- Estimate the NTA before and after the crisis.
 - Compare 1996, 2000, and 2005
 - The year 1996: the year soon before the financial crisis and it is the year before entering the aging society.
 - The year 2005: the year after entering the aging society and it is the one showing the effect of the increased social policies.
 - The year 2000: unemployment rates began to recover and per capita income recovered to the level before the economic crisis.

Data Sources

- National Survey of Household Income and Expenditure (NSHIE): 1991, 1996, 2000

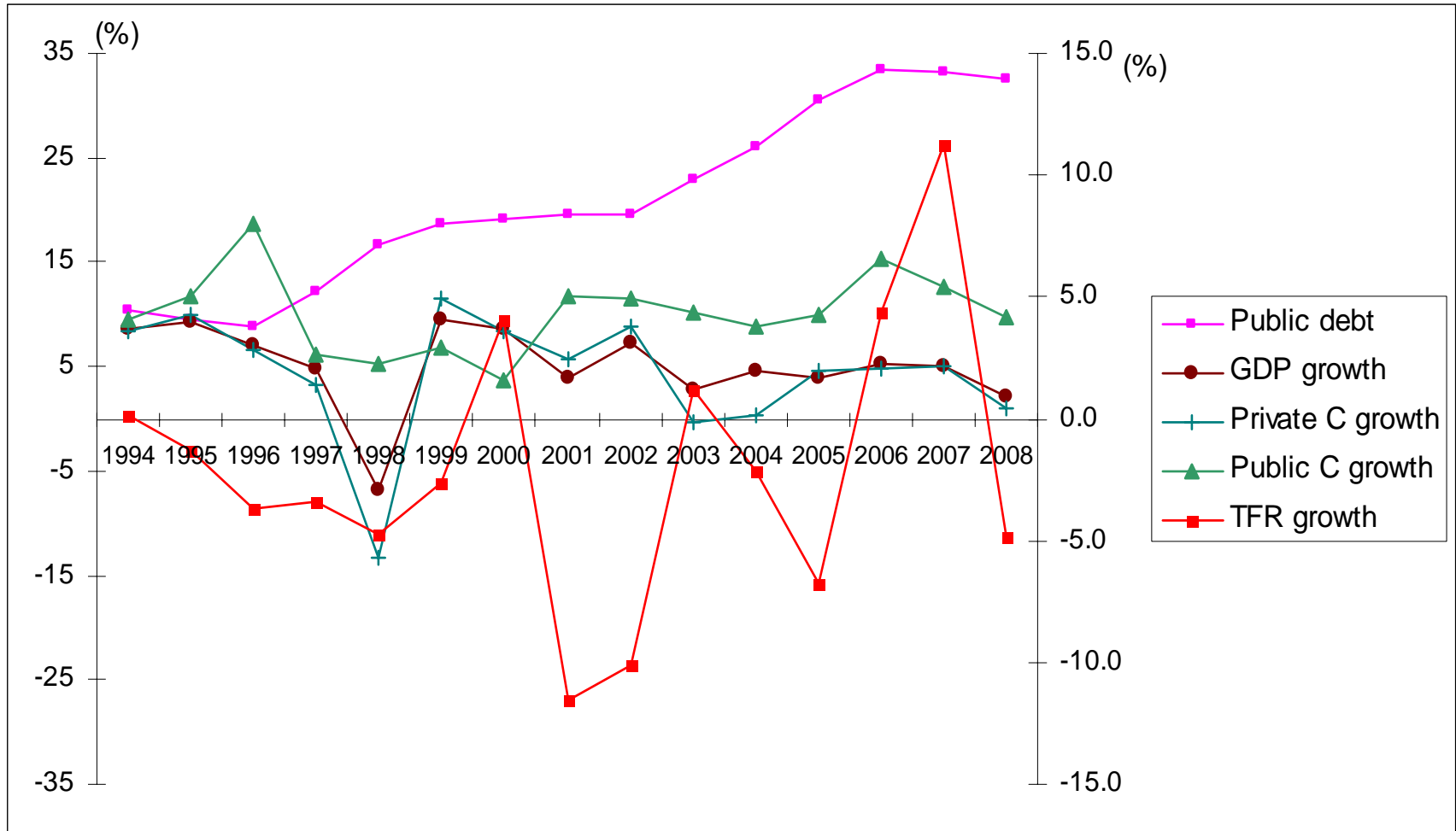
This survey investigates annual income and expenditures, durable goods, assets, and liabilities of household in detail from the national sample household.

- Household Income and Expenditure Survey (HIES): 1963~ 2007
 - 1963 ~ 2002, excludes rural farm & one person households
 - since 2003, includes rural non-farm households
 - since 2005, includes one person households
- Longitudinal Surveys
 - Korean Household Panel Study (KHPS) : 1993~1998
 - Korean Labor and Income Panel Study(KLIPS):1998~ 2007
- Many Statistical Yearbook of Public institutions: e.g. NPSY, NHISY, etc.

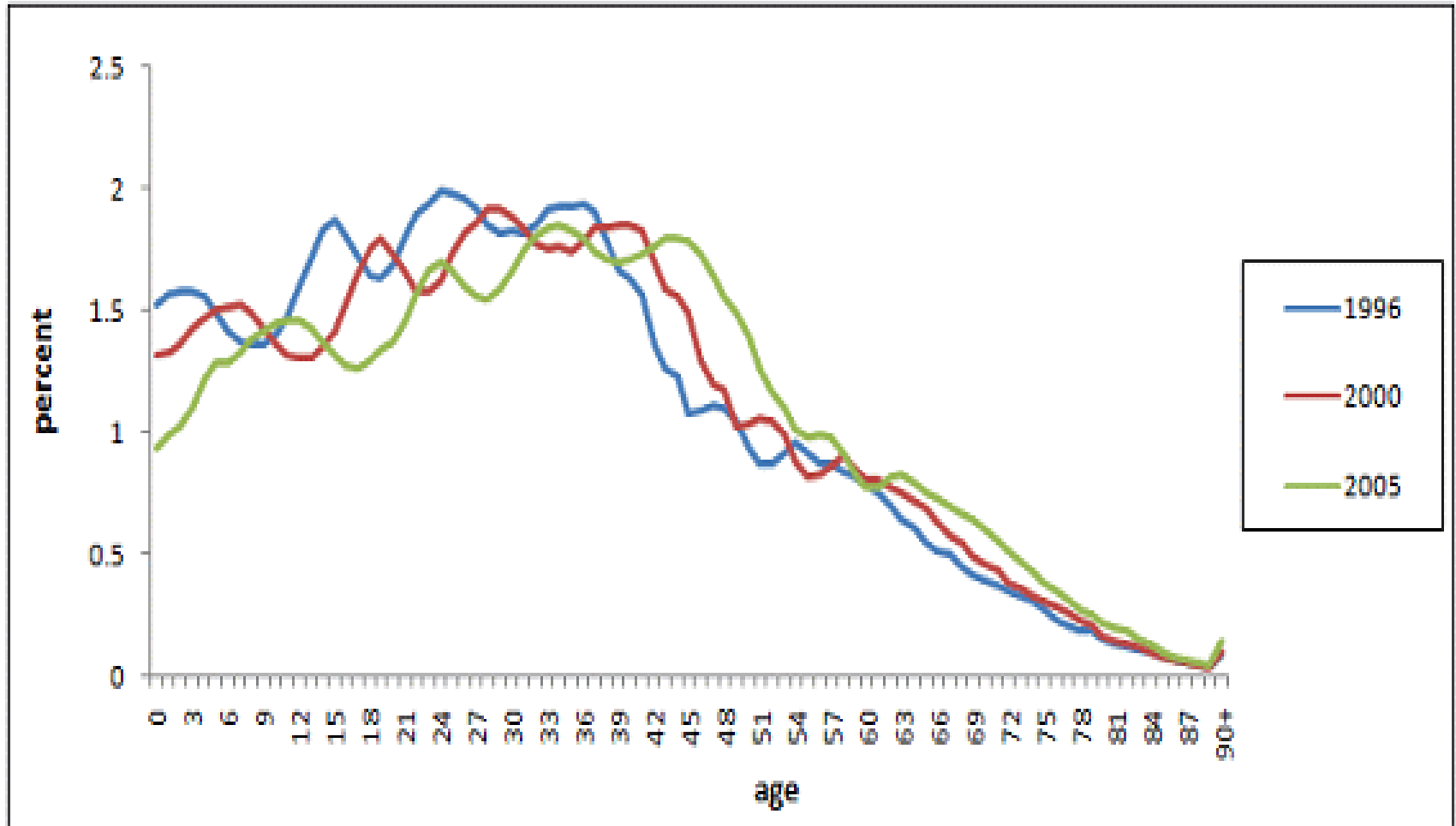
Estimation Methods and Data Sources for Some Profiles

NTA	Estimation methods	Data Sources
Education, private	Regress on enrollment and age	NSHIE, HIES
Health, private	Regress on age	NSHIE, HIES
Imputed-rent, Others, private	Equivalence scale	NSHIE, HIES
Education, public	Age- & education level- specific enrollment rate	OECD education
Health, public	Age distribution of benefits	NHISY
Others, public	Per capita basis	NA
Compensation of employees	Wage of wage workers	KLIPS, KHPS
Entrepreneurial income	Income of non-wage workers	KLIPS, KHPS
Asset income, private	Net property income of households	NSHIE, HIES
Savings, private	Residuals	
Asset income & financial asset Accumulation, public	Age distribution of tax burden	NA
Capital and land accumulation, public	Age distribution of population	NA
Social insurance & tax	Generational accounting	NIPA
Inter-household transfers	Private subsidy and remittance of households	NSHIE, HIES
Intra-household transfers	Net transfers=consumption - disposable income	KLIPS, KHPS

Socio-Economic Indicators, 1994-2008



Change in Population Age Structure



III. Results

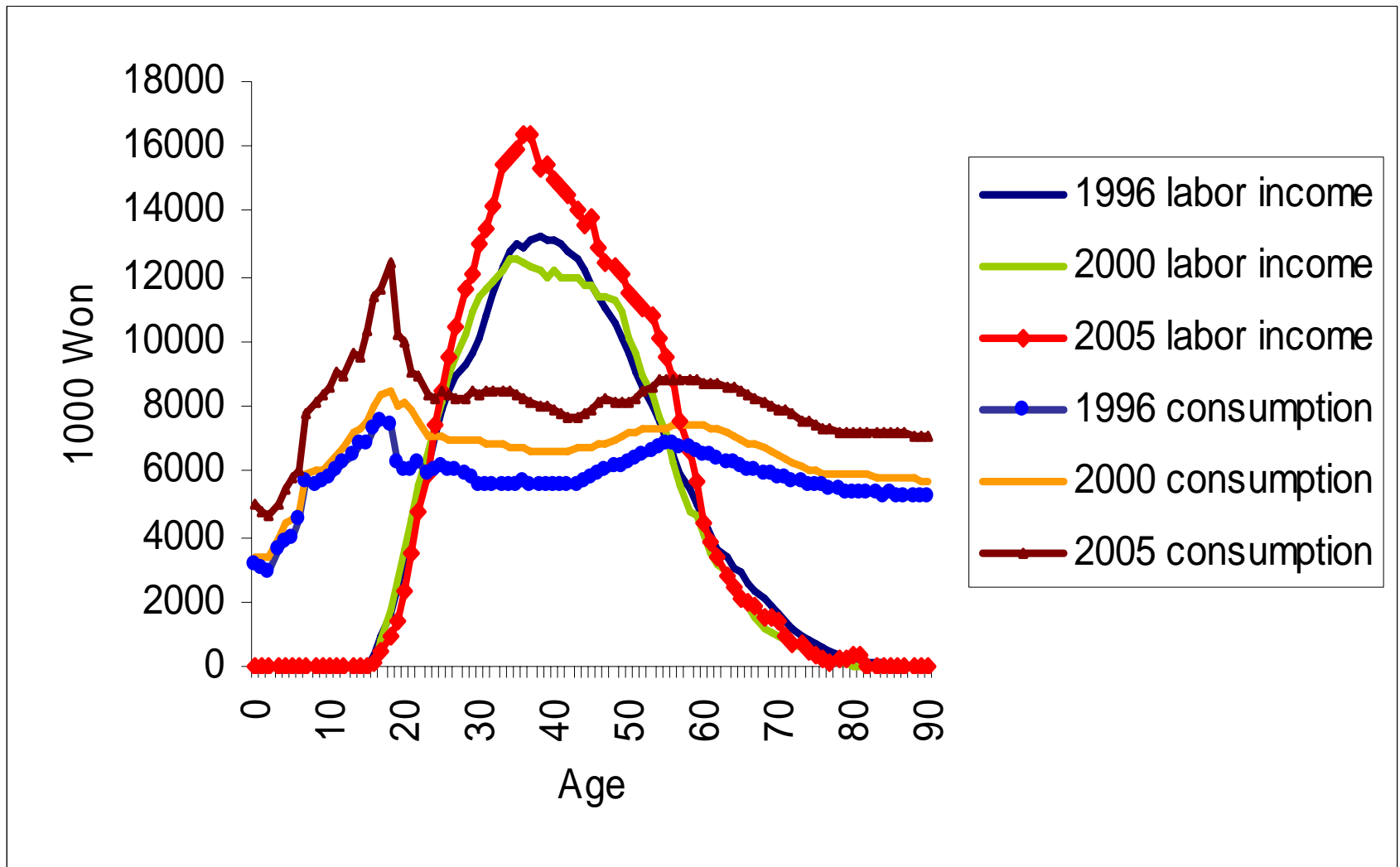
1. Lifecycle Deficit

- Labor income
- Consumption

2. Age Reallocation

- Transfers
- Asset, Saving

Per Capita Labor Income and Consumption Profiles

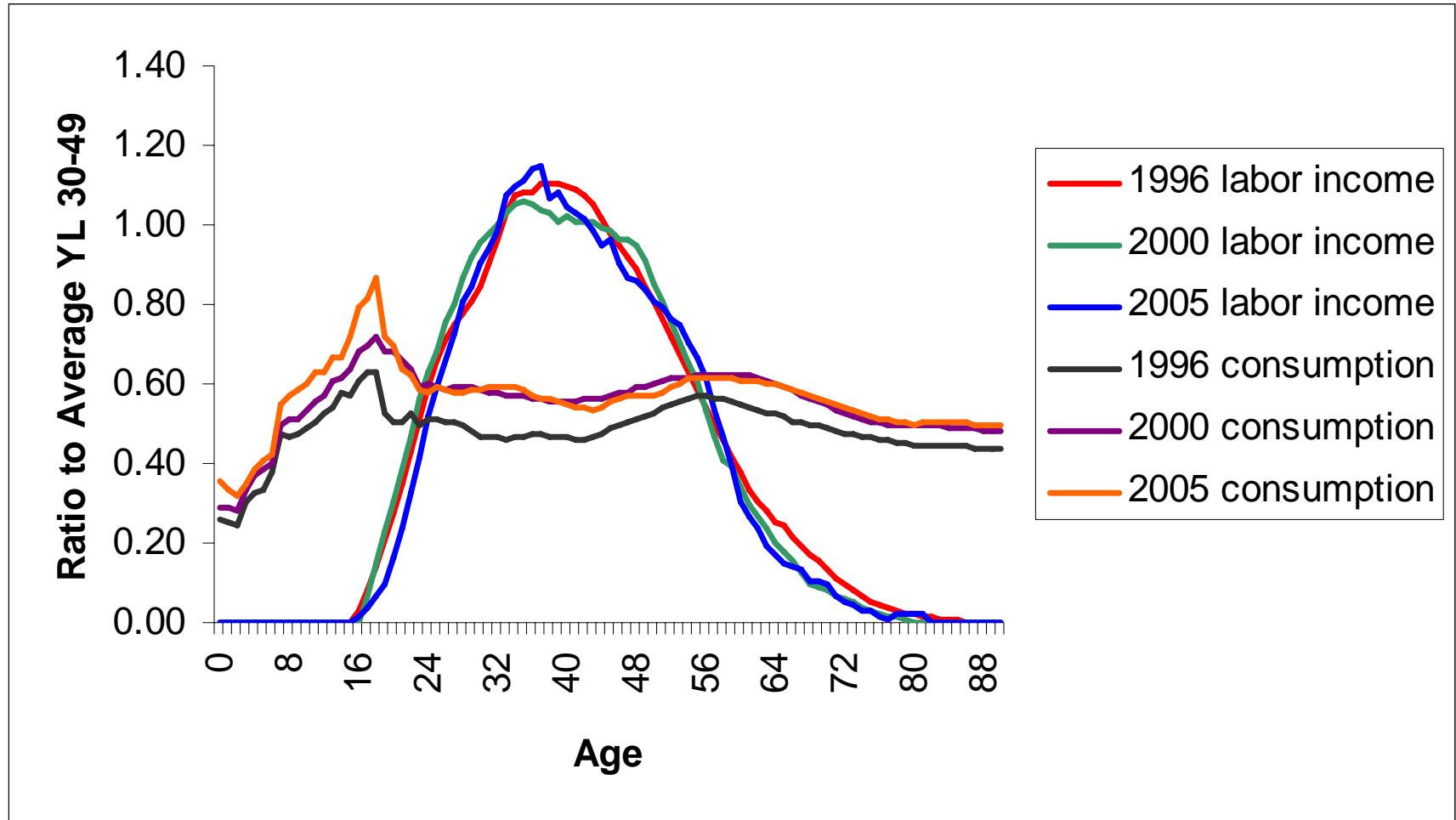


Annual Growth of Consumption and Labor Income

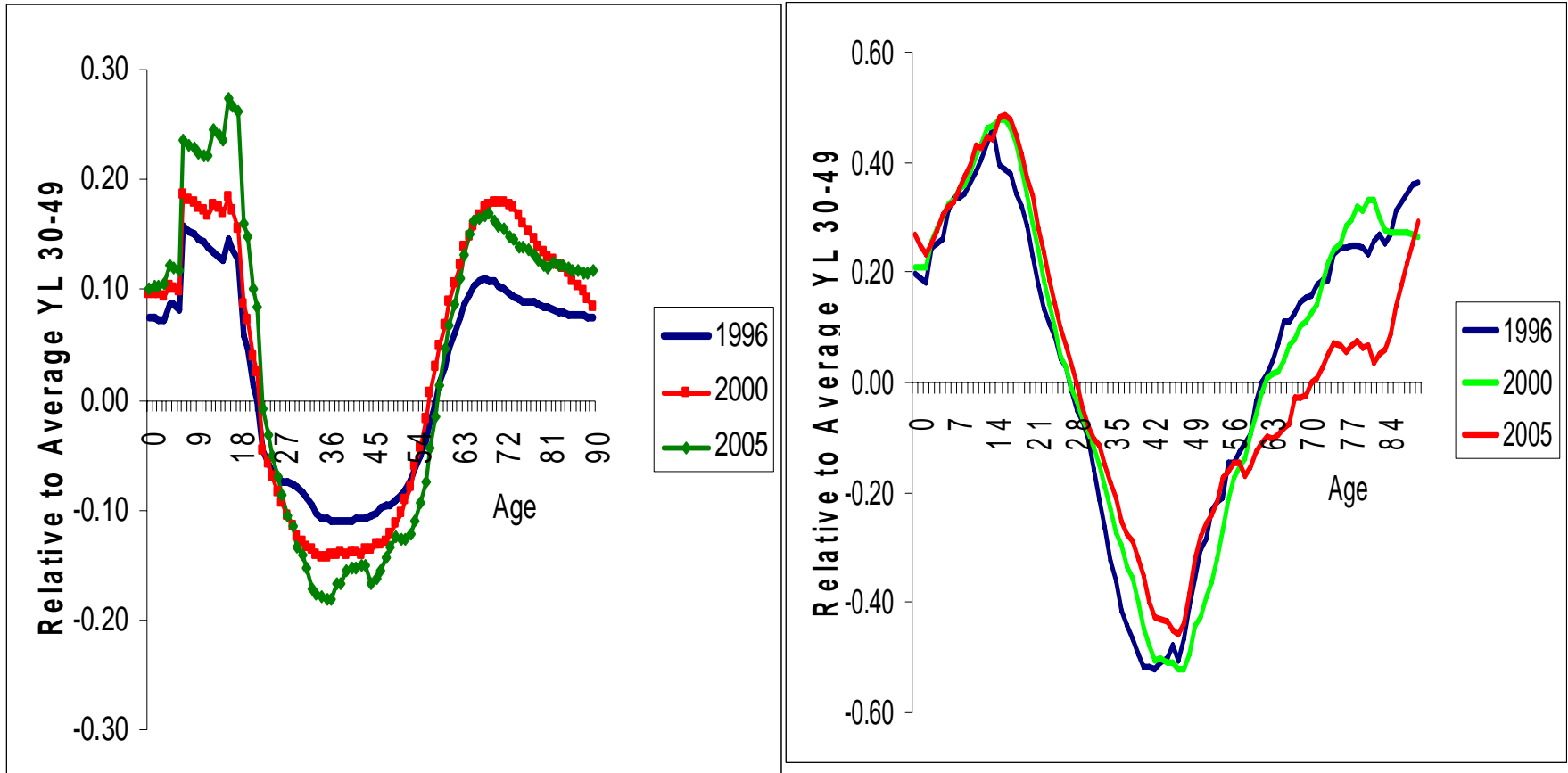
%	Annual growth between 1996-2000				Annual growth between 2000-2005			
	0-19	20-64	65+	per capita	0-19	20-64	65+	per capita
Total Consumption	2.6	4.2	2.7	3.7	6.4	3.6	4.0	4.4
Public Consumption	3.7	4.4	6.6	4.0	9.0	6.9	7.1	7.4
Public Education	3.4				12.2			
Public Health	9.4	9.1	14.5	10.6	8.2	10.6	8.9	10.6
Public Others	3.2	3.2	3.2	3.2	6.0	6.0	6.0	6.0
Private Consumption	2.1	4.1	1.6	3.6	5.0	2.8	3.0	3.4
Private Education	-3.8	10.6
Private Health	-2.9	-1.2	1.4	-0.3	22.5	6.3	8.3	9.2
Housing	-1.4	1.6	5.6	1.9	4.1	1.3	-1.0	2.0
Private Others	5.1	4.0	0.9	4.3	2.2	2.7	2.9	2.9
Labor Income	2.7	0.3	-10.7	0.7	-13.4	3.3	3.2	3.7
Compensation	2.6	0.0	-14.1	0.4	-13.5	4.6	6.9	5.0
Self-Employed	46.2	2.1	-2.8	2.5	4.8	-6.0	-4.9	-5.4

Normalization:

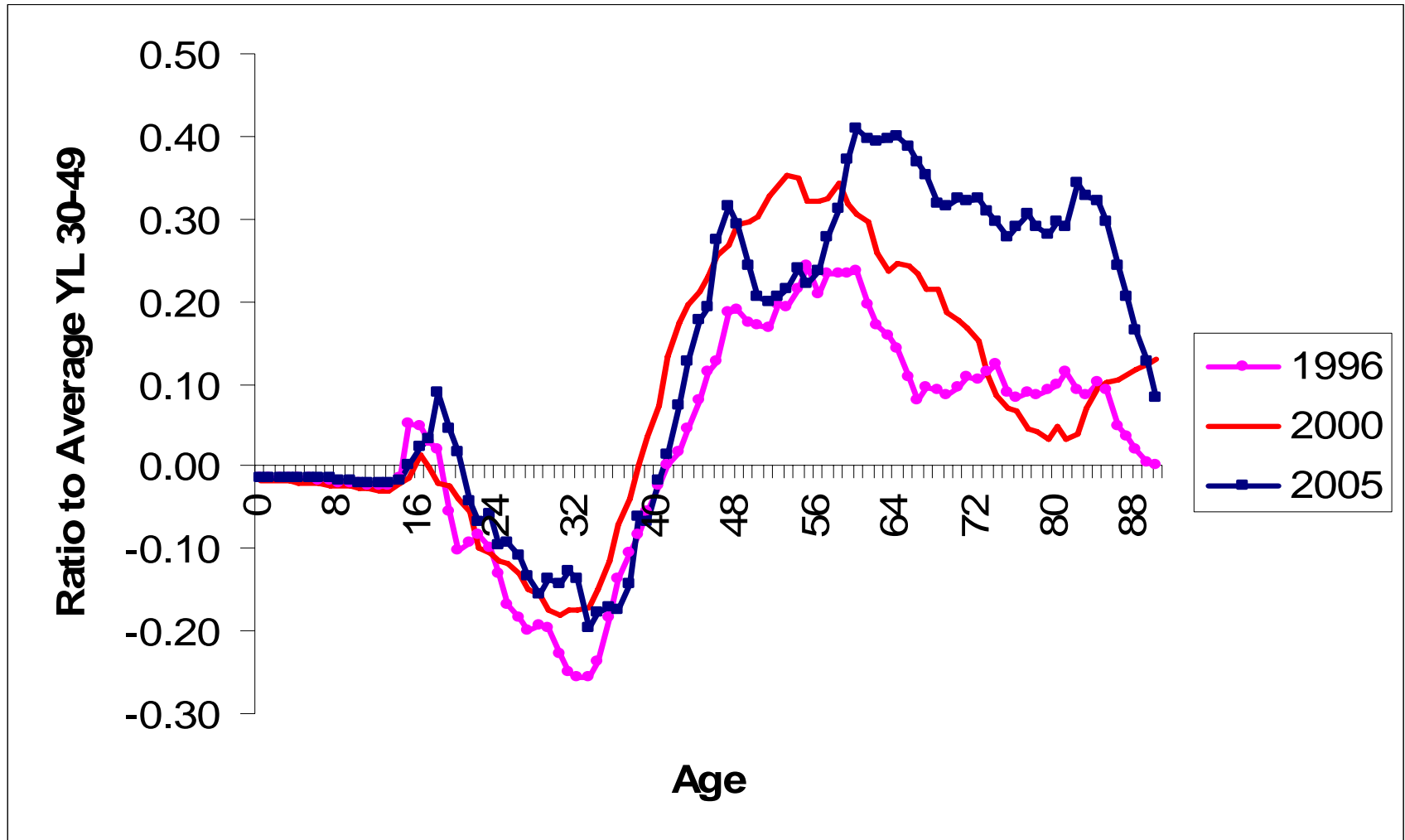
Ratio to Average Labor Income of Ages 30-49



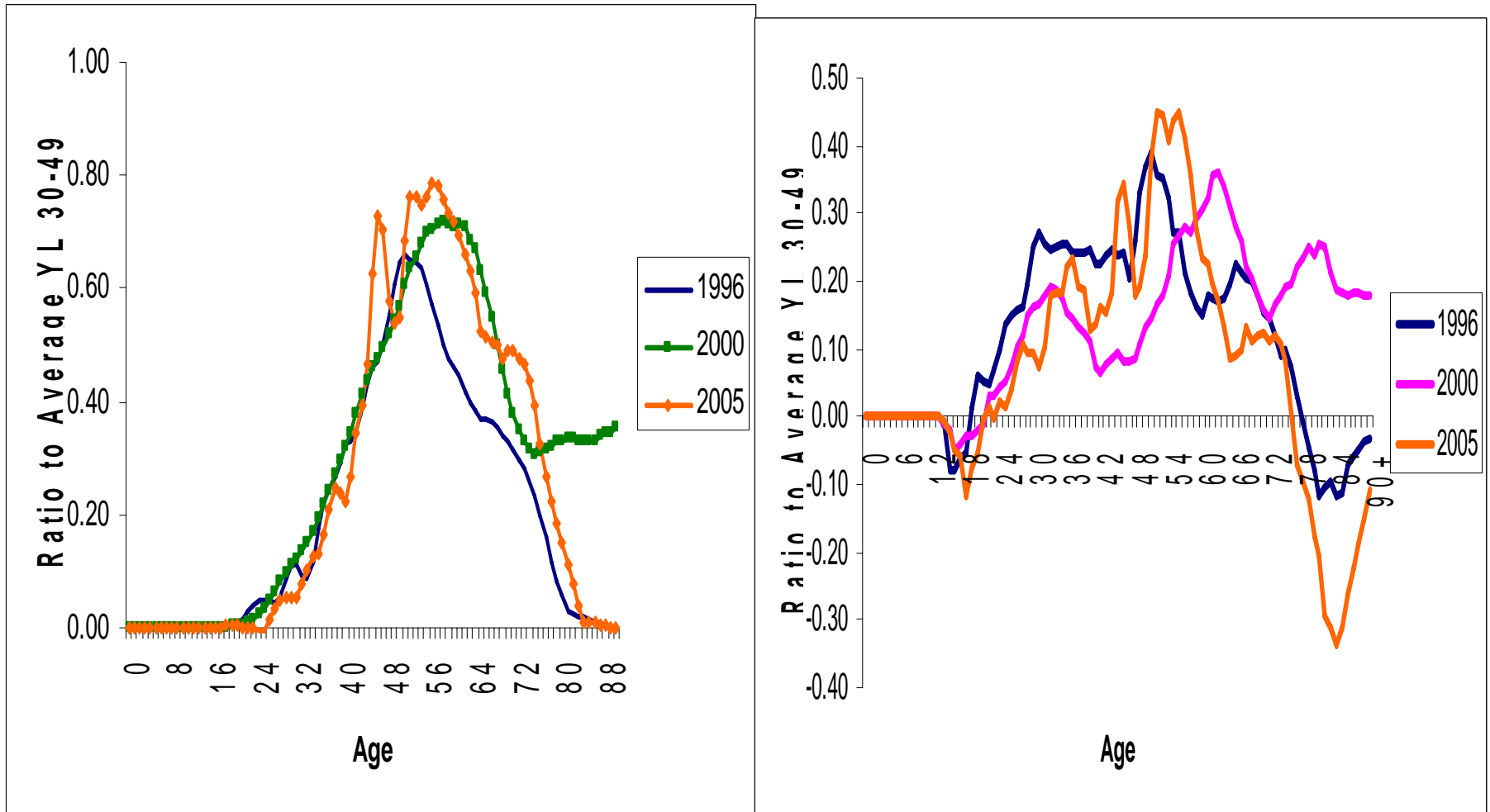
Increase in Public Transfers & Decrease in Private Transfers



Increase in Asset-Based Reallocation for the Elderly

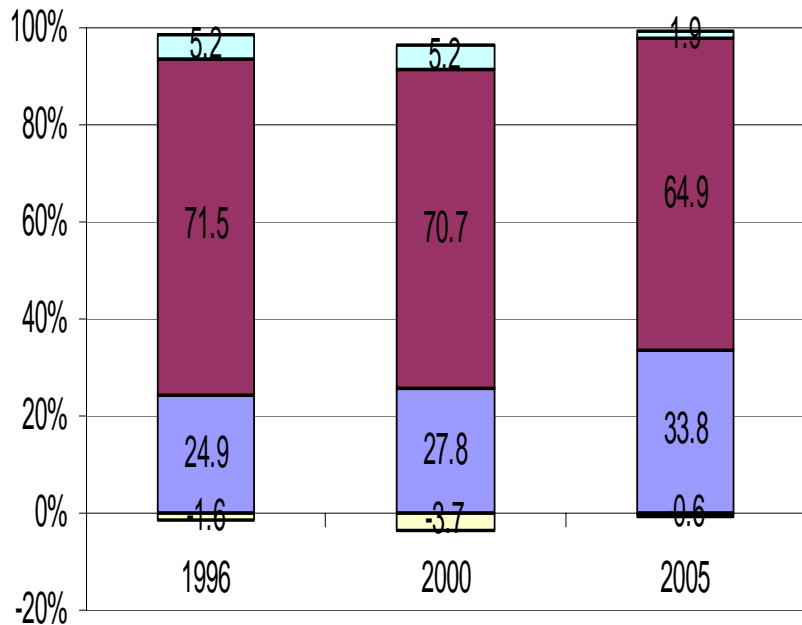


Private Asset Income vs. Private Saving



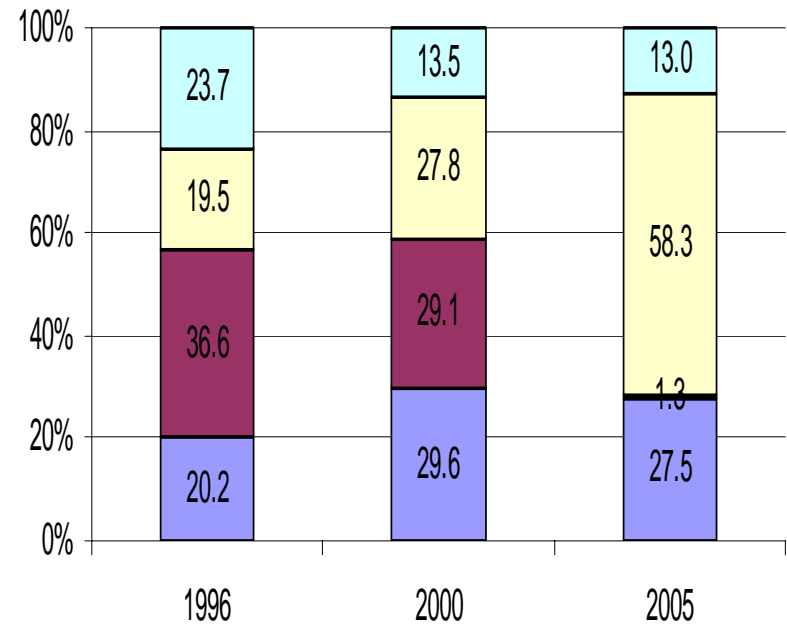
Changes in Sources of Financing Consumption

Children Ages 0-19



Public Transfers Private Transfers Asset-based Labor Income

Elderly Ages 65 and Older



Public Transfers Private Transfers Asset-based Labor Income

IV. Summary and Policy Implications

Summary

- The public sector mitigated the adverse impact of economic crisis on consumption, and it also reduced the widening disparity amongst generations during the crisis.
 - ❑ Private education and private health consumption decreased for people ages 0-19 between 1996 and 2000.
 - ❑ However, the decrease in private education and private health consumption was mitigated by the increase in the public consumption.
 - ❑ Public consumption also played a role in reducing generational disparity in consumption during the crisis.

Summary (cont'd)

- Within transfers, the public transfers for the elderly increased substantially as the private transfers decrease rapidly.
- There was a big increase in the asset-based reallocation of the elderly.
 - Between 1996 and 2000: Mainly due to an increase in asset income
 - Between 2000 and 2005: Mainly due to a decrease in saving

Policy Implication

- The results imply that Korean elderly seemed to have some degree of supporting system during the crisis.
- This is good news for Korea during the economic downturn.
- However, this may not be sustainable and will also lead to a decrease in saving rates, which could be an obstacle for economic growth in the future.

Limitations of the Study

- Methodology
- Data
- Identification of the impact due to crisis
- Persistent or structural effect
- Lack of story telling

- => Comparative study with other countries might be useful (on-going). Japan, Taiwan, etc.

The End
Thank you.
