

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

Chong-Bum An

(Professor, Department of Economics, Sungkyunkwan University)

Sang-Hyop Lee

(Professor, Department of Economics, University of Hawaii at Manoa)

Namhui Hwang

(Ph.D Candidate, Department of Economics, Sungkyunkwan University)

경제위기와 세대 간 경제: 1997~98년 경제위기의 교훈

안 종 범

(성균관대학교 경제학과 교수)

이 상 협

(하와이대학교 마노이 캠퍼스 경제학과 교수)

황 남 희

(성균관대학교 경제학과 대학원생)

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** 안종범: (e-mail) cban@skku.edu, (address) 53 Myeongnyun-dong 3-ga, Jongno-gu, Seoul, 110-745, Korea

이상협: (e-mail) leesang@hawaii.edu, (address) 2500 Campus Road, Honolulu, HI 96822, U.S.A

황남희: (e-mail) nhui@naver.com, (address) 53, Myeongnyun-dong 3-ga, jongno-gu, Seoul, 110-745, Korea

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ABSTRACT

This paper provides insight into some important features of the intergenerational resource allocation in Korea, before and after 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 tremendous consumption smoothing and resource reallocation by age, during and after the financial crisis. Private education and private health consumption decreased for children between 1996 and 2000. However, the decrease in private education and private health consumption was mitigated by the increase in public consumption. It appears that the public sector did not only mitigate the adverse impact of the economic crisis on consumption, but it also reduced the widening disparity amongst generations. Within transfers, the public transfers for the elderly increased substantially as the private transfers decreased 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 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 diminish due to population aging.

본 연구에서는 1996년과 2000년, 2005년의 국민이전계정(National Transfer Accounts)을 이용하여 1997년 말 외환위기와 2000년 이후의 급속한 인구구조 고령화가 세대 간 재배분에 미친 영향에 대해 분석하였다. 국민이전계정은 국민계정과 일관되게 거시적 수준에서 세대 간 이전(intergenerational transfers)을 측정하는 회계방식이다. 국민이전계정을 통해 외환위기와 인구고령화가 세대 간 재배분에 미친 영향을 살펴본 결과는 다음과 같이 요약된다. 1) 유년층(0~19세)의 민간소비(보건, 교육)는 크게 감소한 반면, 공공소비(보건, 교육)는 증가하였다. 2) 노년층(65세 이상)의 공적이전(public transfers)은 증가한 반면, 사적이전

(private transfers)은 감소하였다. 3) 노년층의 자산재배분이 크게 증가하였다. 경제위기에도 불구하고 총소비는 크게 위축되지 않은 것으로 파악되는데, 이는 정부의 확대재정정책에 의한 공공소비의 증가가 총소비를 일정 수준으로 유지(consumption smoothing)시킬 수 있었기 때문이다. 한편, 노년층의 경우 우리나라의 국민연금제도가 아직 미성숙함에도 불구하고 자산축적을 통해 스스로 노후를 대비하고 있는 것으로 파악되었다. 자신의 노후소득을 마련하기 위해 자산축적이 지속적으로 활발하게 이루어질 경우 향후 급속한 인구고령화에 의한 공적연금의 재정부담을 경감시켜 줄 수 있을 것이다.

I . Introduction

Korea survived the brunt of the crisis in 1997-98, but it was faced with numerous socioeconomic problems that emerged during and following the crisis. The most serious problems included 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 recovered, social impacts continue to be felt.

During and after the crisis, there has been great change in the Korean economy and economic support system. There has been substantial fluctuation in the value of assets due to changes 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 when the economic crisis was over. The reduction in new jobs made it difficult for young workers to find a regular job after graduating. On the other hand, there has been a great increase in social expenditure, mainly due to changes in the economic and social environments, as well as some political factors. Increasing social demands for welfare are recognized, especially since the economic crisis devastated the Korean economy. The expenditure is often age targeted, regardless of whether the Korean government intended this 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 imposed a burden of old age support. Traditionally, the burden was borne by the income transferred from their grown-up children living with the elderly. But as the traditional familial support system has deteriorated, the number of families living with their aged parents has been declining. During the crisis, lots of families suffered from the economic difficulties, and, as a result, private transfers substantially diminished. However, the Korean government has increased the welfare budget in order to settle the problems 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: Korea's intergenerational economy before and after the 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. 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 years 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 the methodology of comparing outcomes before and after the crisis has its own limitation because it is very difficult to identify the pure effect of any time-series event on an economy. This is in large part because there is no counterfactual event, and, hence, it is difficult to net out the effect of other economic events, policies, and trends from that of the crisis. On the other hand, some of these events, policies, and trends are outcomes of the financial crisis, which might have affected the following changes in intergenerational economy. Thus, although it is difficult to identify the net effect of the economic crisis, the crisis might have played the broader role of a catalyst, which might have had an effect on intergenerational resource reallocation.

We also focus only on the short run impact of the 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 a crisis can be analyzed by calculating the lifetime wealth effect of the economic crisis, for example by constructing a synthetic cohort measure.¹ The lifetime impact of the economic crisis on each age/cohort group, however, is discussed elsewhere, in collaboration with other project country teams. On the other hand, the Korean economic crisis has been marked by sharp declines of very short duration, which might distinguish it from a long lasting economic recession.

The paper is organized as follows. Section II briefly reviews the economic crisis and methodology. Section III discusses results. The last section concludes.

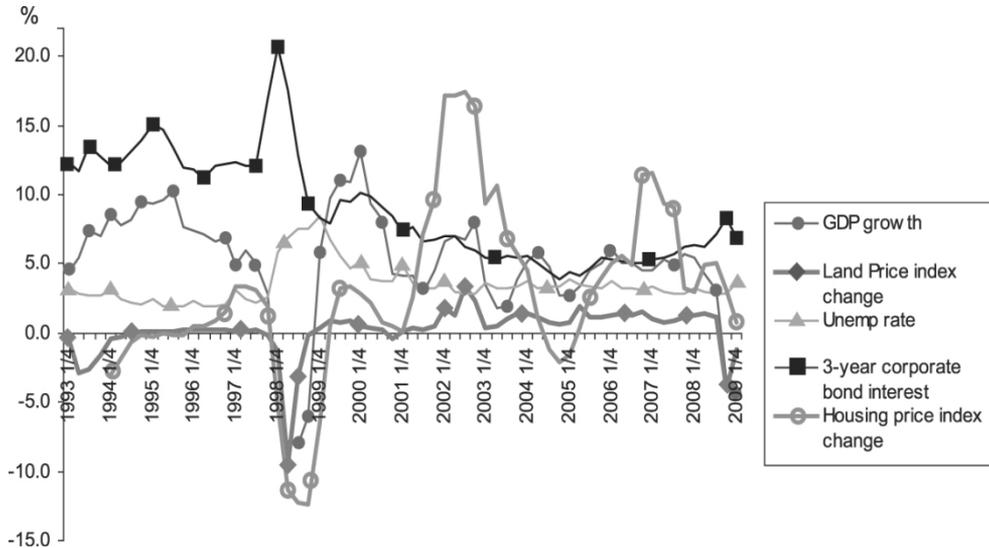
II. Background

1. Korea's 1997-98 Economic Crisis

Korea has had an extraordinary development experience until the 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. During the process of economic development, the investment and saving rate remained over 30 percent. The rate of total savings in Korea increased continuously from 10 percent of GNP in the 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

¹We would like to thank John M. Kim for his valuable comment on this.

[Figure 1] Key Macroeconomic Indicators: Quarterly, 1993 1/4 to 2009 1/4



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 rate 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 in Korea since the political turmoil of the early 1980's. 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; they started to recover in the second quarter of 2000, almost three years after the crisis.

[Figure 2] Other Socio-Economic Indicators: Annually, 1994-2008

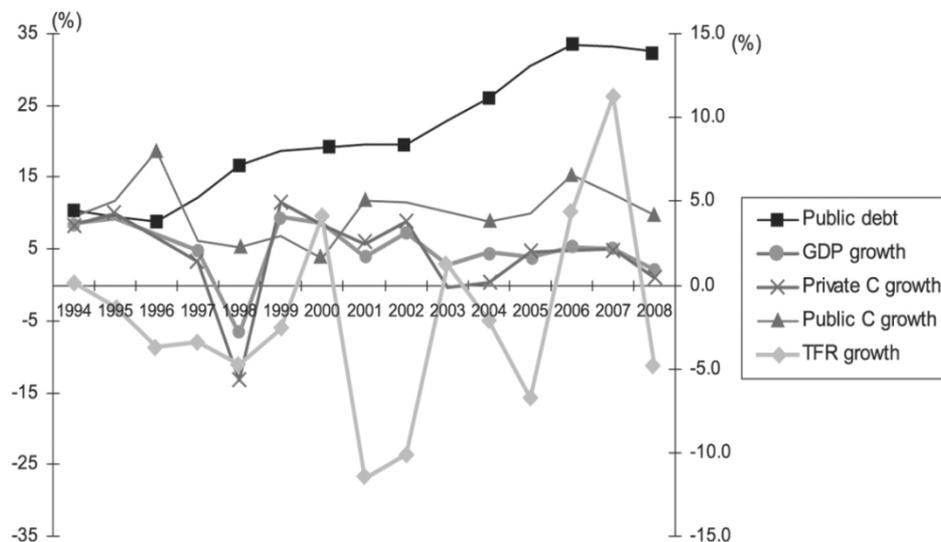
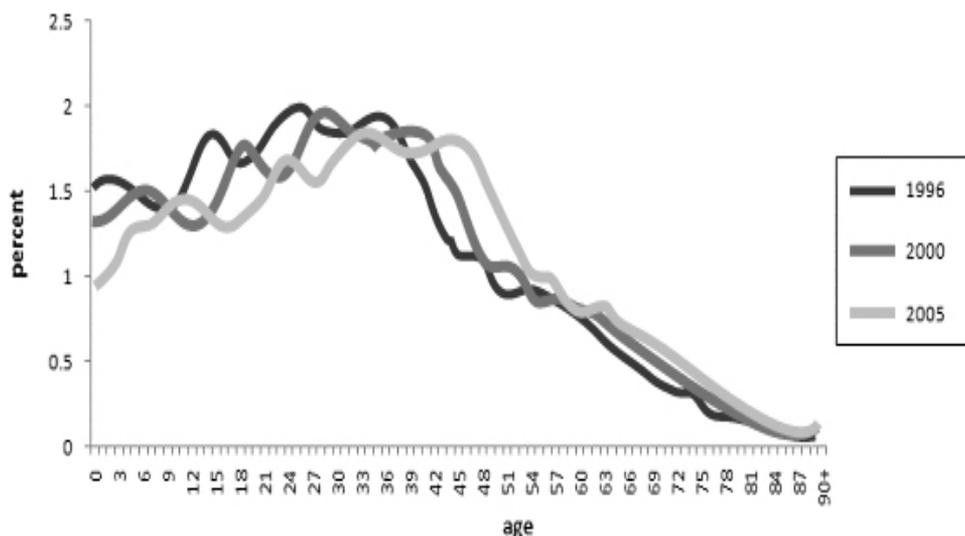


Figure 2 shows the changes in more key socio-economic indicators, by year, which bear direct or indirect implications for the intergenerational economy. Most of all, the government debt has increased very rapidly since 1997. The government debt as a percentage of GDP increased from 8.8 percent in 1996 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 to 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 the 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, public consumption has not declined, while 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) went down slightly from 1.58 in 1996 to 1.47 in 2000, but it plunged further, 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.

There were also 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. The 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, the 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

[Figure 3] Population Age Structure: 1996, 2000, and 2005

population age structure in Korea has changed substantially during a short period of time.

2. Application of National Transfers Accounts (NTA) 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 (NIPA), the reallocations across age of economic resources. The methodological details are not discussed here, but some important aspects for constructing estimates are as follows.

The young and the old have a lifecycle deficit because they produce less through their labor than they consume. Working-age adults have a lifecycle surplus because they produce far more through their labor than they consume. Age reallocations occur because of this; 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 (Lee 1994a, 1994b).

The economic mechanisms used for age reallocations fall into two broad categories: transfers and asset-based reallocations. A defining feature of transfers is that they involve no explicit quid pro quo, or exchange of money for goods or services. Resources flow from one party to another either voluntarily, in the case of private transfers, or as public transfers. Asset-based reallocations realize inter-age

flows through inter-temporal exchange. For example, an asset such as gold can be acquired in one period generating an outflow at that age, and disposed of in a subsequent period generating an inflow at an older age. More generally asset-based reallocations involve two kinds of flows - asset income and saving. When individuals accumulate pension funds or personal saving during their working years and rely on asset income and dis-saving of those assets during their non-working years, they are relying on asset-based reallocations. Or when individuals borrow to finance their education, they are relying on asset-based reallocations to shift resources to young ages, when they are in need, from older ages. Readers interested in methodological details might benefit by reading Lee, Lee, and Mason (2008), Mason et al. (2009), <http://www.ntaccounts.org/>. Readers interested in Korea's public sector generational accounting may also benefit by reading Chun (forthcoming).

A variety of micro data sets are required to construct the age profiles of NTA. To construct the age profiles for our study, 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. It is important to understand that the numbers estimated from the micro data sets are used to construct the age profiles, but the numbers are adjusted by aggregate macro controls. For this purpose, we use NIPA and the records of public institutions, including but not limited to 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.

A brief explanation for primary micro data sets is as follows. 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 households 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 covers minutely the income and expenditures of the whole household, and the income and taxes of all over 18 years of age, except for the residents of 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 households that lived in the 7 metropolitan cities as well as urban areas in 8 provinces, again excluding Cheju

<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

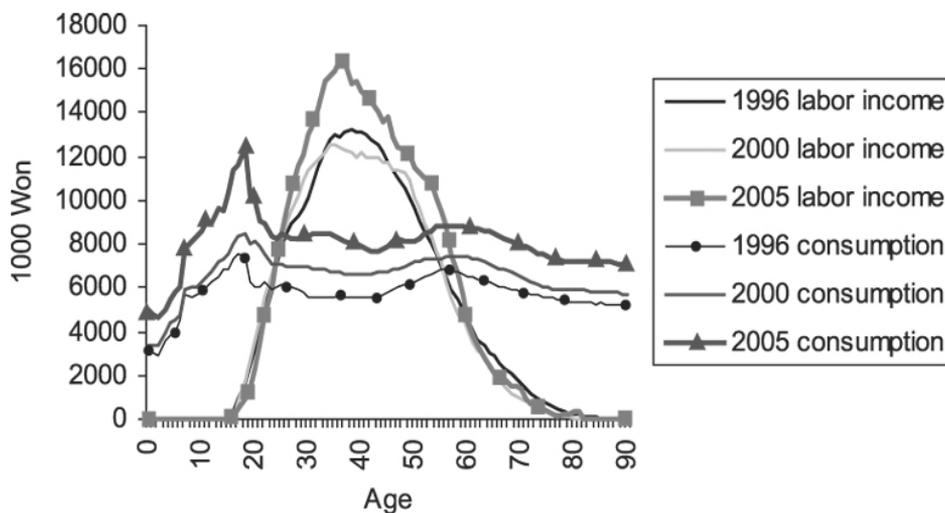
Island. The sample size was originally 5,000 households and 13,321 individuals, and has diminished since then. The primary data sets and methods used by items of NTA are summarized in Table 1.

III. Results

1. 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

[Figure 4] Lifecycle Profiles of Per Capita Labor Income and Consumption: 1996, 2000, and 2005



reallocations to the elderly in current-day Korea because there are many more children than elderly. But Korea is aging rapidly and therefore 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 bounced back slightly, to 37, in 2005.² The mean age of labor income and median age of labor income showed a similar pattern. The mean age of labor income declined from 42.2 in 1996 to 41.3 in 2000. It increased slightly, back to 42.0, in 2005. The median age of labor income declined from 40 to 39 between 1996 and 2000, but recovered to the pre-crisis level, 40, in 2005. The share of labor income for elderly ages 65 and older declined substantially from 4.1 percent in 1996 to 2.3 percent in 2000, and slightly increased to 2.7 percent in 2005. This consistent pattern means that the share of labor income for the prime age adults or elderly

²Labor income peaks much earlier in Korea than in many other advanced countries, and it was exceeded during the economic crisis. This in part reflects that the labor income peaks quite early for women in Korea. Note that the shape of the figure is dependent upon various components of labor income as well.

population must have declined compared with the share for young people. This is also consistent with the notion that the unique seniority-based wage system in Korea has been rapidly deteriorating during the 1990s, especially after the 1997 economic crisis.

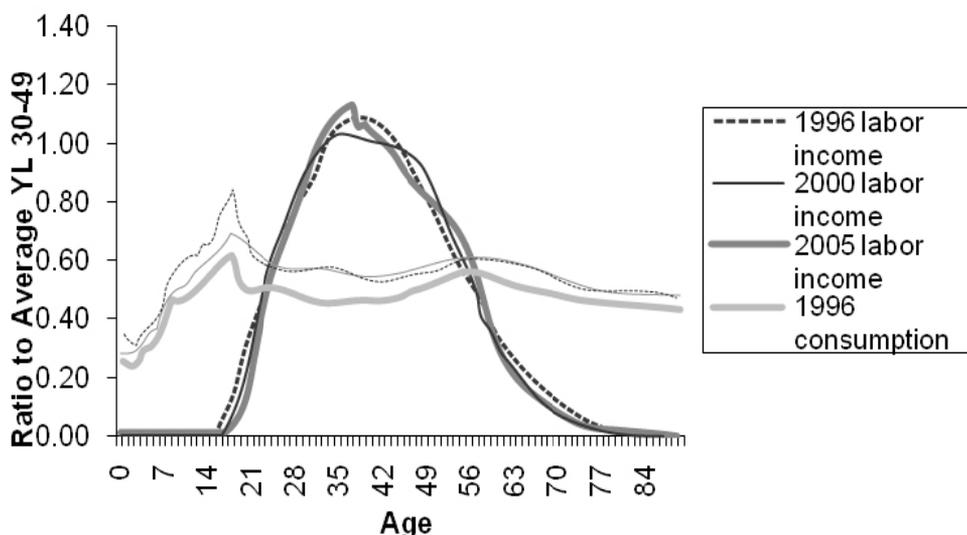
The figure also shows that consumption peaks in the late teens and decreases until the 40s. Such a decline in consumption was also found in other countries as a result of decreasing expenditure on education. However, the decline seems to come earlier in Korea, immediately after high school graduation. 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.

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 the economic crisis 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 the 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 un-weighted 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 figure 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 appears 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, 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.

A further investigation of the consumption by component shows some interesting features. Table 2 presents real annual growth rates of each consumption component 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,

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



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 0-19.3. However, the decrease in private education and private health consumption was mitigated by the increase in public 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 did not only mitigate the adverse impact of the economic crisis on consumption, but it reduced the widening disparity amongst generations due to changing patterns of private consumption.

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 and health consumption increased very rapidly during the recovery,

³Another 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.

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

(unit: %)

	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 Income	46.2	2.1	-2.8	2.5	4.8	-6.0	-4.9	-5.4

too. The private health consumption for children ages 0-19 grew 22.5 percent per annum during the period. For ages 0-24, it increased by 20.2 percent per annum.

2. 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 transfer 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 from 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 dramatically between 2000 and 2005 (figures 6 and 7). The drastic decrease in familial transfers during the period is largely due to the difference in growth rate between inflows and outflows. That is, the outflows grew much faster than inflows for elderly, which might be also related with the change in asset-based reallocation for the elderly, as described below.

The most striking feature of the 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 to 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 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.

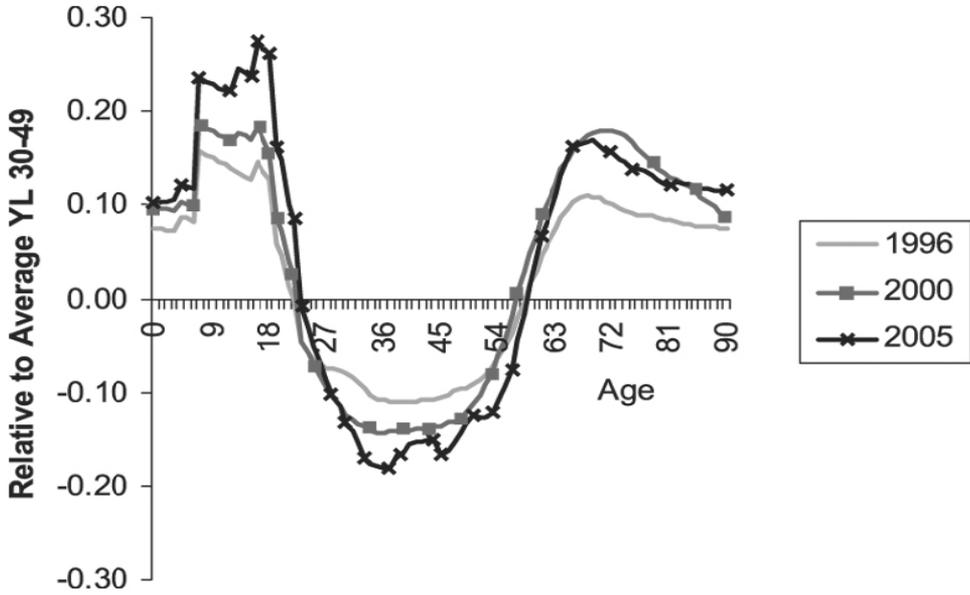
Private asset-based reallocations were positive at most ages, except for ages in the 20s and 30s in Korea over the period (Figure 8). At those ages, asset income was equal to or smaller than saving. Younger people, those aged 15–20, were dis-saving, but at a trivial level. Private asset income was rising 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.⁴

A striking result is the huge increase in asset-based reallocation (asset income minus saving) for the elderly between 1996 and 2000, and again between 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 largely due to an increase in net inflow of interest 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.

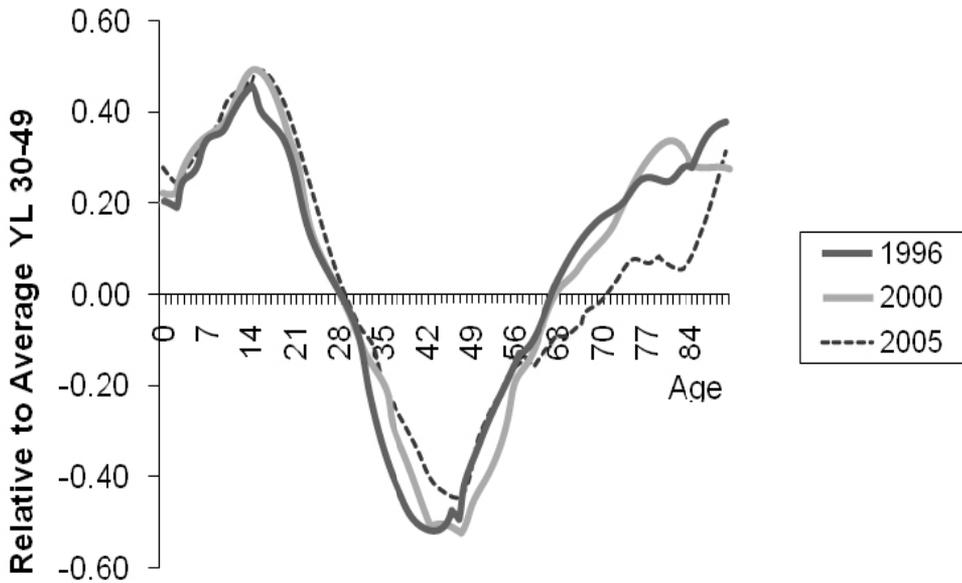
What are the major sources of the large swings in asset income and saving during the financial crisis and after the recovery? It is premature to speculate at this moment, and it is well beyond the scope of this paper. However, it is worthwhile to mention that it must be related to the speculation in real estate which became 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

⁴Or 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.

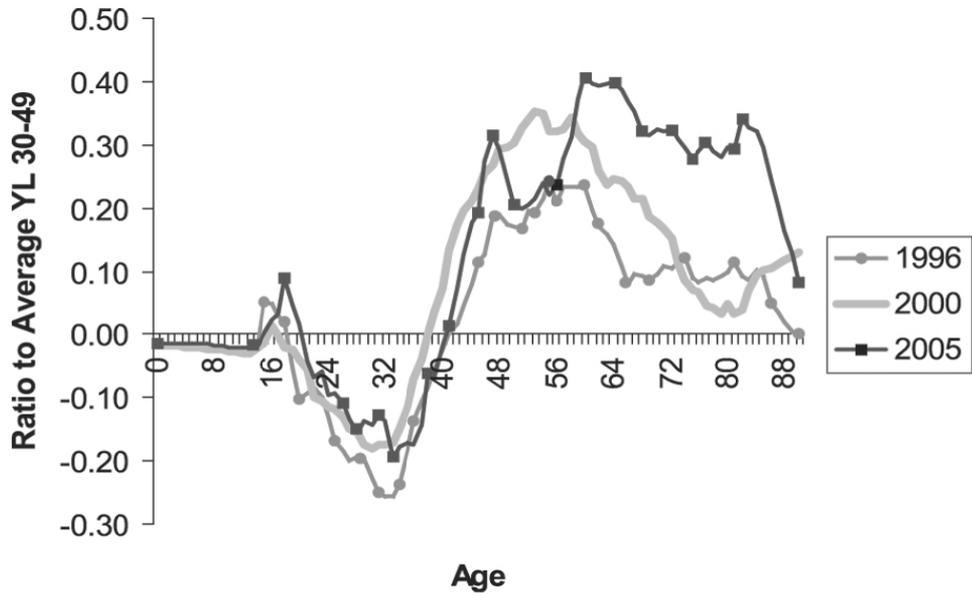
[Figure 6] Per Capita Net Public Transfers Profiles: 1996, 2000, and 2005



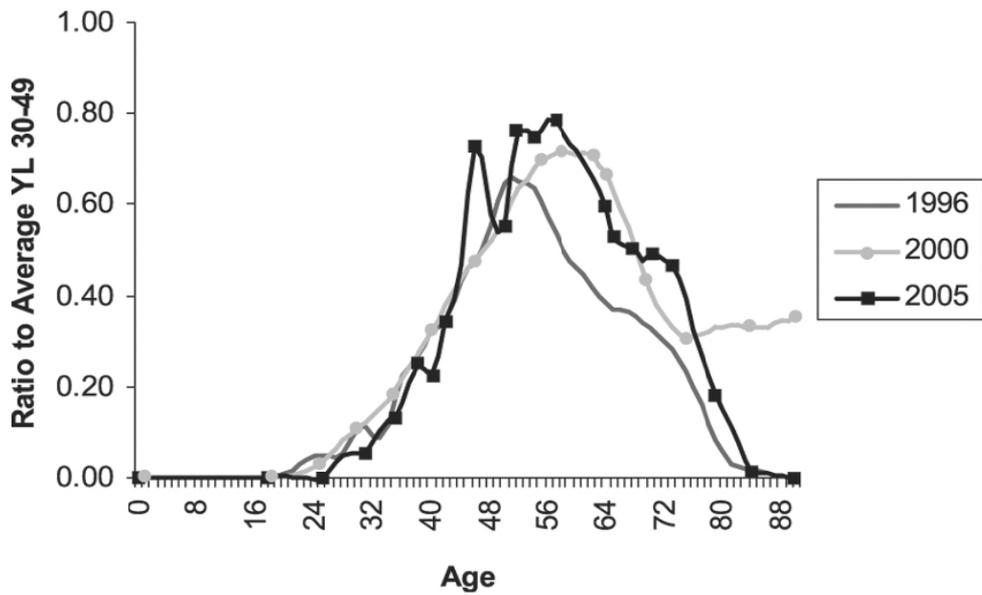
[Figure 7] Per Capita Net Private Transfers Profiles: 1996, 2000, and 2005



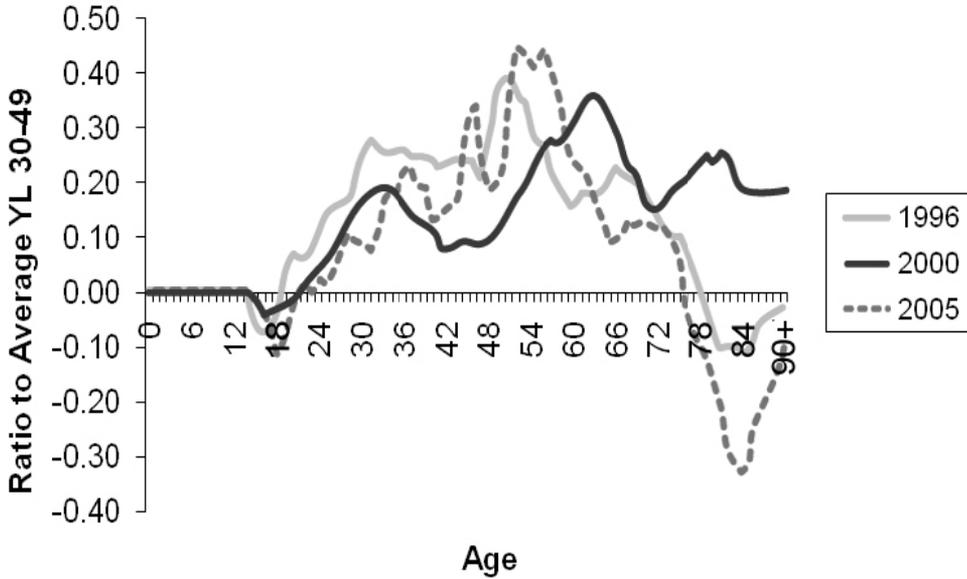
[Figure 8] Per Capita Asset-based Reallocation Profiles: 1996, 2000, and 2005



[Figure 9] Per Capita Private Asset Income Profiles: 1996, 2000, and 2005



[Figure 10] Per Capita Private Saving Profiles: 1996, 2000, and 2005



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 the *chonse* (key-money) housing system, that may have had a significant effect on the private sector through private transfers and private asset-based reallocations.

3. Sources of Financing Consumption

Table 3 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 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 the population ages and labor income decreases for this age group.

Table 3 enables us to measure the source of financing consumption for each age group. 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.

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

	(unit: Billion won)			
	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
Age 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 Reallocations	(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

<Table 3> Continue

<2000>

	(unit: Billion won)			
	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
		-	-	-
Age 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

<Table 3> Continue

<2005>

	(unit: Billion won)			
	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
		-	-	-
Age 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] Sources of Financing Consumption: 1996, 2000, and 2005



Private transfers dominated, accounting for more than 70 percent for 1996 and 2000. Private transfers decreased to about 65 percent, as a source of consumption for this group, 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 jumped to about 30 percent in 2000 and decreased slightly until 2005. Private transfers were the most important source of consumption for the elderly in 1996, accounting for about 37 percent. But these 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 above, the 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.

IV. Conclusion

The challenges resulting from the rapid aging and extremely low fertility level are of great concern to Korea, simply because no other society has faced so dramatic a demographic transition. This paper provides insight into some important features of the intergenerational resource allocation in the nation before and after 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 did not only mitigate the adverse impact of economic crisis on consumption, but it also reduced the widening disparity amongst generations. Within transfers, the results suggest the public transfers increased substantially, while the private transfers substantially decreased for the elderly during and after the crisis. It also appears that social assistance benefits increased 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 have some degree of autonomy in spite of the economic crisis, rapid population aging, and the deterioration of the familial support system. This is good news for Korea, because it means that less public resources will be required by the elderly, and that in turn will mitigate the financial burden caused by rapid population aging or economic downturn. However, the increased reliance on dis-saving will 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 the 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. Thus, increased reliance on asset accumulation will be critical in the future. Exactly how all these changes will play out remains to be seen.

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