Working Paper 2015-05

# Population Ageing and Changes in the Role of Public and Private Transfers

## – Analysis using Korea's National Transfer Accounts

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# Population Ageing and Changes in the Role of Public and Private Transfers:
## Analysis using Korea's National Transfer Accounts

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ISBN: 978-89-6827-295-0 93330

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# Abstract

This study utilizes aggregate data from Korea's National Transfer Accounts to analyze the role of and relationship between public and private transfers in old-aged income. We find that the recent expansion in government spending on welfare improvements for the aged, such as the Basic Old-age Pension and Long-term Care Insurance systems enacted in 2008, has not led to a decrease in private transfers. Specifically, we find no evidence of a crowding-out effect of public transfers on private transfers. This finding suggests that expanding welfare programs for the aged does more than merely shift the burden of support from the family to the state; rather, it contributes to bettering the aged persons' quality of life by boosting old-age income. Meanwhile, policymakers should take care that the continued expansion of welfare for the aged does not spark a controversy over the intergenerational reallocation of resources. This will necessitate exercising a balanced view in policy design and implementation. There needs to be a social discussion on the vulnerabilities associated with old age during the lifecycle and the appropriateness of public intervention as well as intergenerational agreement as to how to finance welfare programs for the aged.

# 1 Introduction

# 1 Introduction

While support for the elderly in Korea has traditionally been seen as the responsibility of the family, the recent rapid progression of ageing and subsequent surge in demand for welfare has highlighted the state's responsibility through public transfers. According to the 2014 Survey of Living Conditions and Welfare Needs of Korean Older Persons, only 14.8% of respondents said that "oneself and one's children" or "children" should provide for old-age living expenses compared with 52.9% who responded "the state" or "oneself and the state" (Chung et al., 2014). This finding reveals the growing emphasis on the role of the state in Korea. Indeed, this emphasis has intensified considering that only 30.6% replied "the state" to a similar (although not directly comparable) question administered in 2011 (Chung et al., 2012).

The act of transfer, where economic resources trade hands without any benefit in return, can be classified as either public or private transfers depending on the actor's institutional sector. Private transfers take place between individuals including children and parents to cover living expenses, while public transfers are made by the government through social security programs such as Basic Livelihood Assistance and public

pensions. Poverty and income distribution emerged as social issues in the aftermath of the 1997 Asian financial crisis, leading to a significant expansion of state-provided welfare, including the Basic Livelihood Assistance program in 2000 and the Basic Old-age Pension system in 2008[1].

While policy effects are usually assessed based on public transfers, it is necessary to consider the overall effect because public transfers may influence private transfers. Indeed, the intended policy effect may fail to be realized if public transfers lead to a decrease in private transfers. While such a "crowding-out" effect has long been a social issue in developed countries with mature public pension systems, the lack of a methodology for measuring public and private transfers at the macro level has prevented a conclusion from being drawn through social agreement. However, the recent development of the National Transfer Accounts (NTA) has made it possible to understand the intergenerational economy and the allocation of resources between age groups.

Therefore, this study uses estimated data from Korea's NTA to analyze the role and relationship of private and public transfers in old-age income. In particular, we use time trend analysis to determine whether the recent expansions in welfare for the

1) The Basic Old-age Pension system was discontinued in July 2014 and replaced by the Basic Pension scheme. The new system aims to alleviate poverty and eliminate exclusions in old-age income, by providing a maximum of 200,000 KRW monthly to 70% of persons aged 65 or older.

aged have led to a decrease in private transfers. We expect that the relationship estimated in this study will serve as evidentiary material for designing mid- to long-term responses to ageing in the future.

The remainder of this paper is organized as follows. In Section 2, we briefly discuss population ageing and the intergenerational economy. We then examine the estimated results based on the NTA data in Section 3. To understand the NTA better, we first provide an overview of the overall estimated results before analyzing the changes in public and private transfers for aged persons. Section 4 concludes, including a discussion of the study's implications.

# 2 Population Ageing and the Intergenerational Economy

A. The intergenerational economy and NTA

B. The changing role of public and private transfers in the support system for aged persons

# 2 Population Ageing and the Intergenerational Economy

## A. The intergenerational economy and NTA[2)]

Population ageing gives rise to the so-called "lifecycle deficit" problem where more is consumed than is produced. Neither children (those aged 19 years and under)[3)]nor the aged (65 years and over) typically partake in production, and thereby they contribute a negligible share of total production when they do. However, because children and the aged consume almost the same amount as the youth and middle-aged population (20~64 years), an increase in the aged population leads to an increase in the dependency to be borne by the youth and middle-aged population.

Methods of providing for the lifecycle deficit include asset-based reallocation, public transfers, and private transfers. Asset-based reallocation takes place under one's own responsibility using asset income and savings and is therefore unavailable to children, who have not yet had the opportunity to accumulate assets. Therefore, children mainly rely on public

2) For a detailed treatment of the methodology used for the NTA analysis, please refer to Hwang et al. (2014).

3) While in demographics studies the under-15 population is defined as children, here we account for Korea's high rate of enrolment in higher education by defining the 19-and-under population as children.

and private transfers to meet their consumption needs, while the aged use all three methods to provide for the lifecycle deficit.

Lee and Mason (2011) developed the NTA, an economic model for estimating the age profiles of the lifecycle deficit and age reallocation. The NTA measures the lifecycle deficit and age reallocation at the macro level, making it a useful analytic tool for understanding the intergenerational economy (Lee and Mason, 2011). Because the NTA maintains consistency with the system of National Accounts in measuring intergenerational transfers, it is possible to predict risk factors such as the state or household sector's financial strain beforehand. By using the age profiles of consumption, labor, assets, and taxation to run customized simulations, it can be used to produce evidentiary material for policies related to the issue of ageing. Once NTA data have been accumulated over multiple years, it becomes possible to study the evolution of intergenerational transfers, which can then be used to analyze the determinants that crucially influence the complementary or substitutive relationship between public and private transfers. This is the approach taken in this study, where we use the NTA to examine the role and relationship of public and private transfers in the support system for aged persons.

Furthermore, because many nations are participating in joint research programs to develop and enhance the NTA, com-

parative international studies of ageing and the structure of public and private transfers are possible. As of July 2015, demographic researchers, economists, and policymakers from 46 countries including Korea, the United States, and Japan were participating in a global NTA project for the advancement of methodologies, local implementation initiatives, and comparative international research on this subject.

The fundamental equation of the NTA is an accounting identity that states that, during a given time period, inflows offset outflows (Eq. 1). This identity holds for any individual, household, age group, or economy. The inflows on the left-hand side include labor income ($Y^l(a)$), asset reallocation ($Y^a(a)$), and transfer inflows ($\tau^+(a)$), while the right-hand side is made up of outflows such as consumption ($C(a)$), savings ($S(a)$), and transfer outflows($\tau^-(a)$).

$$Y^l(a) + Y^a(a) + \tau^+(a) = C(a) + S(a) + \tau^-(a) \quad \text{Eq. 1}$$

In Eq. 1, the left-hand side is the lifecycle deficit (the difference between consumption and labor income) and the right-hand side expresses the sum of asset reallocation (the difference between asset incomes and savings) and net transfers (the difference between the inflow and outflow of transfers). The sum of the two right-hand side terms is age reallocation, which always equals the lifecycle deficit on the left-hand side

(see Eq. 2).

$$C(a) - Y^{l}(a) = [Y^{w}(a) - S(a)] + [\tau^{+}(a) - \tau^{-}(a)] \quad \text{Eq. 2}$$

The transfers analyzed in this study can flow either downward from older to younger (parent and taxpayer to child) or upward from younger to older (adult-age child and taxpayer to old-age parent).

Public transfers affect reallocation through laws and regulations, and in the process resources are reallocated between the central and local governments. Public education, public pensions, and public healthcare programs are prime examples of public transfers. Private transfers affect reallocation through voluntary contracts and social customs, which take place in households, families, charities, and other private actors. Private transfers can be further subdivided into intra-household and inter-household transfers, with the former playing an important part in providing for the children's generation (children) and the old-age parents' generation (old-age). Inter-household transfers take place between independent households, while intra-household transfers take place within households. Both can be measured using the NTA.

## B. The changing role of public and private transfers in the support system for aged persons

Amid an underdeveloped public pension system, changing family structures, a weakening emphasis on family responsibility, and the subsequent decrease in private transfers, old-age poverty has become a major social issue in Korea. The program that took up the largest proportion of Korea's public transfer budget in 2013 was public assistance (i.e., the Basic Livelihood Assistance program), which stood at 30% (8.553 trillion KRW) of the total social welfare budget. However, this is insufficient to function as a minimal old-age income.

Another pillar of public transfers, the National Pension, has only been operational for a short period. As of 2012, only 31.2% of people aged 65 and over were recipients (Statistics Korea, 2013), with average monthly payments ranging from 840,000 KRW (full old-age pension) to 410,000~470,000 KRW (reduced and early old-age pensions) (National Pension Service homepage, http://nps.or.kr). However, because only a small percentage of aged persons are entitled to full old-age pensions, the program is unable to sufficiently provide for overall old-age income. In order to strengthen the provision of old-age income, the government has discontinued the Basic Old-age Pension program (established in 2008) and replaced it with a broader Basic Pension scheme in 2014. This program provides

aged persons with a maximum of 200,000 KRW per month.

In addition to these public transfers, private transfers play an important role as a source of old-age income. As of 2004, 62.4% of Korean old-age parents received private transfers from their children compared with just 17.3% in the United States in 2000 (Kim, 2008). The proportion of old-age households receiving private transfers in Korea decreased to 58.7% in 2009, with average monthly sums standing at 304,000 KRW (Jeon and Park, 2011).

Recent studies in Korea find that public transfers crowded out private transfers until the 1990s, while the crowding-out effect has diminished or vanished since the 2000s (Jeon and Park, 2011). These results suggest that new trends may develop as ageing progresses further and public pension schemes mature, leading to the greater expansion of social security spending. However, the relationship between public and private transfers in Korea has yet to be clearly determined.

Meanwhile, a discussion of the relationship between public and private transfers begins by identifying the motive behind private transfers. The two most often cited motives of private transfers are altruism and exchange. The former theory states that the provider engages in transfer because s/he derives satisfaction from selflessness, while the latter theory states that the provider expects something in return in the future for transfers provided now (Becker and Tomes,1976; Barro,1974;

Bernheim et al., 1985; Cox,1987).

Beyond its academic significance, the analysis of the motives of private transfers has important policy implications: if the dominant motive is exchange, the recipient's increase in income does not detract from the future expected benefits in return for private transfers. Therefore, in this case, expanding public transfers will not crowd out private transfers. However, if the altruistic motive is dominant, the crowding-out effect will take hold, leading to a smaller-than-expected improvement in income distribution. Therefore, examining the changes in private transfers is crucial to accurately assessing the policy effects of public transfer programs (Sung, 2006).

Domestic studies that have empirically analyzed the relationship between public and private transfers have mostly found evidence of a substitution effect because of the altruistic motive, reporting the presence of a crowding-out effect (Kang and Jeon, 2005; Sung, 2006; Kim, 2008; Sung and Park, 2010; Jeon and Park, 2011; Kang and Choi, 2011).

This study distinguishes itself from previous research in the following ways. First, we apply a broader interpretation of private income transfer to include intra-household in addition to inter-household transfers. Because of data limitations, most previous works rely on microdata, using only inter-household transfers as the component of private transfers to analyze the relationship with public transfers. Second, we take a macro ap-

proach to analyzing the relationship between public and private transfers. The NTA is the only economic model that allows for the measurement of public and private transfers at the macro level.

# 3 Analysis of the Changes in Public and Private Transfers using the NTA

A. Data and time periods covered

B. Estimation results for the NTA

C. Trends of the changes in public and private transfers in aged populations

# 3 Analysis of the Changes in Public and Private Transfers using the NTA

## A. Data and time periods covered

Constructing the NTA calls for various data, including the National Accounts, administrative data from government sources, and microdata. The National Accounts System is the basic source that provides aggregate values of consumption, income, assets, and transfers for the overall population.

To examine the intergenerational economy, aggregate data must first be disaggregated by age. The public sector disaggregation is carried out using administrative data, while the private sector disaggregation is conducted using microdata such as the Household Income and Expenditure Survey (HIES) and the Korean Labor and Income Panel Study (KLIPS). Administrative data from government sources include OECD education indices, the National Pension Statistical Yearbooks, statistics on medical payments, the National Health Insurance Statistical Yearbooks, and the Long-term Care Statistical Yearbooks. The HIES provides key data for estimating the age profiles of the private sector's consumption, assets, and transfers, while the KLIPS provides data for estimating the age profiles of the private sector's labor income.

The HIES is a monthly survey conducted through self-com-

pletion on the part of the respondent, administered to 8,700 non-rural households with questions on income, expenditure, and household status. It is used to measure and analyze changes in the income and consumption of Korean citizens. The KLIPS is a longitudinal survey administered once every year to 5,000 households residing in non-agricultural regions. The content of the survey includes economic activity, labor market movements, income-earning activities, and consumption (http://www.kli.re.kr).

In this study, we use the estimated NTA data from 2000, 2006, 2009, and 2011 to elicit the role and relationship of public and private transfers in old-age income. The actual estimation was carried out for 2006, 2009, and 2011, while data for 2000 were taken from the official homepage of the NTA[4].

In this study, we chose to compile the data for the above years for the following reasons. First, as this study examines how the expansion of welfare programs for the aged has influenced the role and relationship of public and private transfers, we set 2008 (the year in which welfare programs for the aged were significantly expanded) as the base year of the data period covered. While the Basic Old-age Pension was introduced in January 2008 and the Long-term Care Insurance program was introduced in July of the same year, government policies generally take some time before they take effect. We therefore

4) See http://www.ntaccounts.org.

consider changes before and after expanding these welfare policies for the aged based on 2009.

In examining the changes in the annual budget executed by the Ministry of Health and Welfare, we see a clear upward trend [5]. Total spending by the ministry is divided into the social welfare and health categories, with old-age budgets falling under the former. As shown in Table 1, social welfare spending for 2006 was 6,530.1 billion KRW, 2.8 times that of health spending (3,603.8 billion KRW). The gap has grown even further since 2006, reaching 4.6 times that of health spending by 2011 (social welfare 26,299.3 billion KRW, health 7,270.1 billion KRW). In 2006, old-age spending accounted for only 4.0% (406.5 billion KRW) of total ministry spending (10,133.9 billion KRW). In 2008, it grew more than twofold to 8.9% (total spending 24,886.3 billion KRW, old-age 2,205.8 billion KRW). This trend continued, reaching 11.1% (total spending 33,569.4 billion KRW, old-age 3,730.6 billion KRW) in 2011[6].

5) The Ministry of Strategy and Finance, Ministry of Agriculture, Food, and Rural Affairs, Ministry of Land, Infrastructure, and Transport, and Ministry of Culture, Sports, and Tourism all have programs targeting aged persons, including energy subsidies, home renovation subsidies, and cultural welfare. However, since the Ministry of Health and Welfare is the main administrative body in charge of welfare for the aged, in this study we only consider the changes in the executed budgets pertaining to this ministry.

6) There are inter-year discrepancies in how the "old-age" category is defined. Vulnerable groups, including the disabled and youth, were included in the "old-age" category or the "support for vulnerable groups" category depending on the year, leading to large fluctuations. This point must be taken into account when reading the table.

〈Table 1〉 Executed Budget, by Item, Ministry of Health and Welfare

(Unit: 100 million KRW)

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|
| **Total Spending** | **84,917** | **101,339** | **116,594** | **248,863** | **269,367** | **310,195** | **335,694** | **366,928** |
| Social Welfare | 51,676 | 65,301 | 81,544 | 191,501 | 228,560 | 239,322 | 262,993 | 290,973 |
| Basic Livelihood Assistance | 46,410 | 53,418 | 65,759 | 72,644 | 79,731 | 72,865 | 75,168 | 79,028 |
| Support for Vulnerable Groups | 1,774 | 5,353 | 7,202 | 8,430 | - | 8,933*** | 10,512*** | 11,880 |
| Public Pensions | - | 673 | 5 | 68,694 | 81,732 | 95,811 | 109,106 | 124,415 |
| Health, Family, and Women | - | 269 | 351 | 15,978 | 18,565 | 22,022 | 25,600 | 30,999 |
| **Old-age** | **3,395** | **4,065** | **5,690*** | **22,058*** | **42,145**** | **35,166** | **37,306** | **39,040** |
| General Social Welfare (other) | 97 | 1,522 | 2,537 | 3,697 | 6,387 | 4,535 | 5,301 | 5,611 |
| Health | 33,241 | 36,038 | 35,050 | 57,362 | 67,807 | 70,863 | 72,701 | 75,955 |
| Health and Medical Care | 2,119 | 3,788 | 3,940 | 11,823 | 15,767 | 17,037 | 15,599 | 15,842 |
| Health Insurance | 31,122 | 32,250 | 31,110 | 45,539 | 52,040 | 53,826 | 57,102 | 60,113 |

Note: 1) * sum of old-age and youth, ** sum of old-age and support for disabled, etc., *** sum of support for children and disabled, etc.
2) There was a large expansion in the aged welfare budget after the introduction of the Basic Old-age Pension (January 2008) and Long-term Care Insurance program (July 2008).
3) "Public pensions" refer to rural pension payments until 2007. In 2008, payments of full old-age pensions began, which is believed to have led to a larger budget.

Source: White Paper on Health and Welfare 2006~2012, Ministry of Health and Welfare (White Paper on Health, Welfare, and Family in 2007 and 2008)

Second, considering the consistency and availability of the data, 2006 and 2011 were selected. The HIES has recently undergone a major change in the surveyed population as shown in Table 2, with consistency only assured for 2006 and thereafter. Meanwhile, the latest available wave of the KLIPS is

the 15th (2012). Because the questionnaire asks about household income and expenditure during the "past one year," the latest available data pertain to 2011.

〈Table 2〉 Key Changes in the HIES

| Item | Before 1989 | 1989~2002 | 2003~2005 | 2006~2013 |
|---|---|---|---|---|
| Agricultural and fishery regions | × | × | ○ | ○ |
| Agricultural and forestry households | × | × | × | × |
| One-person households | × | × | × | ○ |
| Non-wage household income | × | × | ○ | ○ |
| Non-wage household expenditure | ○ | ○ | ○ | ○ |
| Weights | × | ○ | ○ | ○ |
| New classification of items | × | ○('90~) | ○ | ○ |
| Name of survey | Urban Household Survey | | Household Survey | HIES('08 and later) |

For a detailed treatment of the estimation methodology of the NTA, please refer to Hwang et al. (2014) and the official NTA homepage (http://www.ntaccounts.org).

## B. Estimation results for the NTA

### 1. Gross scale of the intergenerational economy

The lifecycle deficit is the difference between consumption

and labor income (production). Here, labor income refers not only to wages earned by wage workers, but also to the business earnings of non-wage earners[7].

Table 3 summarizes the aggregate lifecycle deficit values. By focusing on the changes before and after 2009 (the year in which the old-age welfare programs were significantly expanded), it is evident that the lifecycle deficit increased overall. In particular, it rose from 55 trillion KRW in 2006 to 90 trillion KRW in 2009, a yearly average rate of change of 21.4%. In 2011, the figure was 102 trillion KRW, with a yearly average rate of change of 6.6% since 2009.

〈Table 3〉 Annual NTA Aggregates: Lifecycle Deficits

(Unit: billion KRW, nominal values, annual)

| Item | 2006 | 2009 | 2011 |
|---|---|---|---|
| **Lifecycle Deficit** | **54,882.3** | **90,121.5** | **101,944.7** |
| Consumption | 626,818.4 | 746,294.6 | 844,938.3 |
| Public | 131,900.7 | 170,324.7 | 189,551.6 |
| Private | 494,917.7 | 575,969.9 | 655,386.7 |
| (Diff.) Labor Income | 464,144.1 | 533,266.5 | 602,461.4 |

Source: Author's calculations, based on Bank of Korea, National Accounts 2006, 2009, 2011

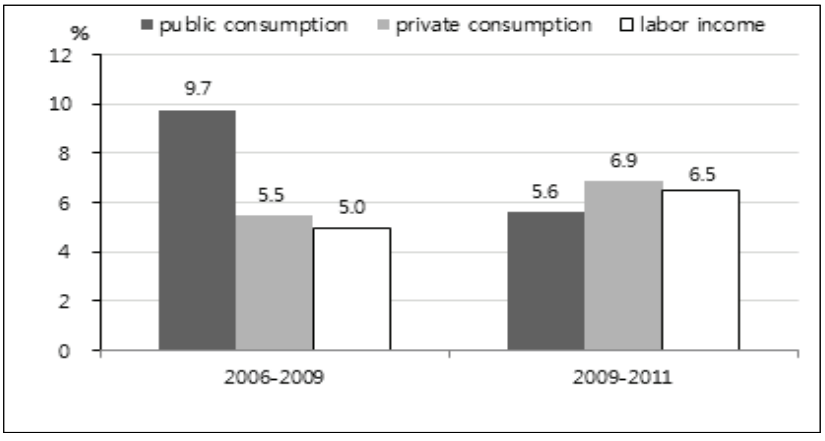
Of the deficit's components, consumption grew from 627 trillion KRW in 2006 to 845 trillion KRW in 2011, while private consumption (655 trillion KRW) was roughly four times the size

7) This includes the self-employed and unpaid family workers.

of public consumption (190 trillion KRW) in 2011. Labor income grew from 464 trillion KRW in 2006 to 602 trillion KRW in 2011.

The average annual rates of change of each component of the lifecycle deficit (see Figure 1) show that during 2006~2009 public consumption grew the fastest at 9.7%. Over the same period, private consumption grew at 5.5%, while labor income grew at 5.0%. While these rates of change were not as high as those during 2009~2011, private consumption grew the fastest at 6.9%, while public consumption and labor income grew at 5.6% and 6.5%, respectively. However, the overall increases in the aggregate values may not have taken place similarly across all age groups. Therefore, the intergenerational economy can be examined based on the age profiles of the NTA.

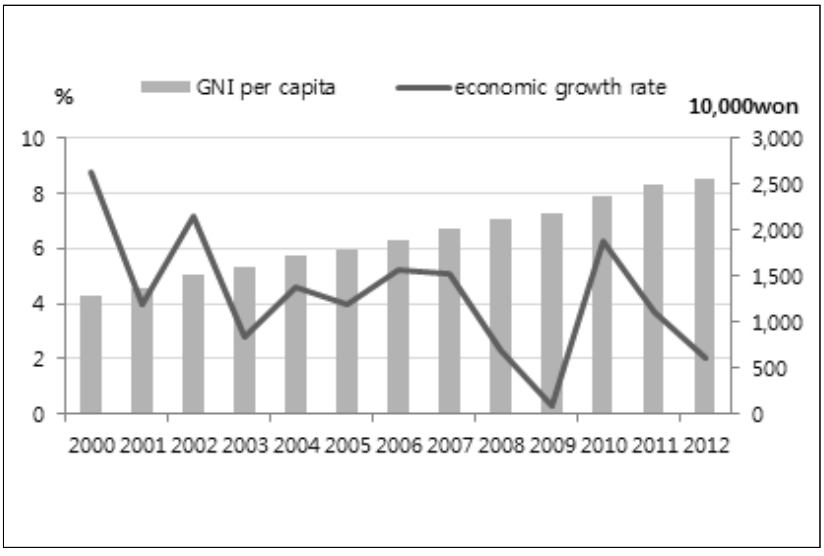
[Figure 1] Components of the Lifecycle Deficit (rates of change)




Source: Author's calculations, based on Bank of Korea, National Accounts 2006, 2009, 2011

The rapid increase in public consumption over 2006~2009 is most likely due to the expanded role of the government in the face of the 2008 global financial crisis. The per-capita GNI for 2009—the lowest observed—reflects the extent of the global crisis's impact. Per-capita GNI was 18,820 thousand KRW in 2006, 21,750 thousand KRW in 2009, and 24,880 thousand KRW in 2011 (see Figure 2). The economy grew at 5.2% in 2006, dropping to 0.7% in 2009 before recovering to 3.7% in 2011. Hence, in the face of economic downturns, the government can expand fiscal spending to influence consumption. However, the benefits of such measures will not accrue to every age group equally.

[Figure 2] Per-capita GNI and the Economic Growth Rate




Source: Bank of Korea, ECOS (as of October 24, 2014)

Age reallocations to provide for the lifecycle deficit consist of asset-based reallocation, public transfers, and private transfers. Over 2006~2009, asset-based reallocations grew rapidly from 59 trillion KRW to 90 trillion KRW (18.2% average annual growth). During the same period, the size of private transfers changed from -3.8 trillion KRW to -0.6 trillion KRW. The negative sign indicates that the outflow of private transfers exceeded the inflow.

Asset-based reallocation for 2011 was 102 trillion KRW, growing on average at 7.8% during 2009~2011, while private transfers fell further to -2.9 trillion KRW.

While public transfers have a figure of 0 throughout the time period analyzed, this does not indicate the absence of public transfers. Because the inflow of public transfers must flow out again, the net value must be 0. The inflow (outflow) of public transfers grew at an average rate of 5.8% over 2006~2009 and 8.8% over 2009~2011 (see Table 4).

〈Table 4〉 Annual NTA Aggregates: Age Reallocation

(Unit: billion KRW, nominal values, annual)

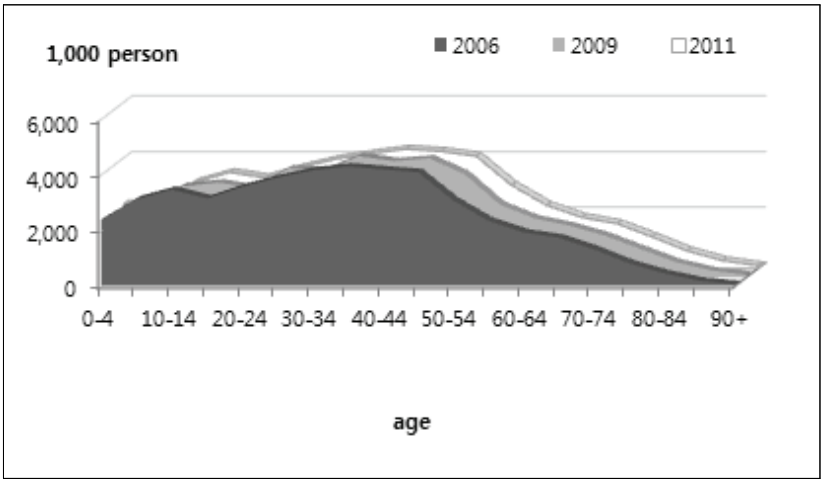
| Item | 2006 | 2009 | 2011 |
|---|---|---|---|
| **Age reallocation** | **54,882.3** | **90,121.5** | **101,944.7** |
| Asset-based reallocation | 58,737.8 | 90,747.8 | 104,817.2 |
| Public Transfers | 0.0 | 0.0 | 0.0 |
| Private Transfers | -3,855.5 | -626.3 | -2,872.5 |

Source: Author's calculations, based on Bank of Korea, National Accounts 2006, 2009, 2011

## 2. Lifecycle deficit

The NTA allows us to use the age profiles of the components of the lifecycle deficit to visualize the characteristics of each age group. The per-capita figures indicate the average value for the total population. The number of aged persons grew from 4,594 thousand in 2006 to 5,656 thousand in 2011 (see Figure 3). The share of old-age persons out of the total population grew from 9.5% in 2006 to 11.4% in 2011. On the contrary, the number of under-15 year olds decreased from 8,988 thousand in 2006 (a proportion of 18.6%) to 7,771 thousand in 2011 (15.6%).

[Figure 3] Changes in Population




Source: KOSIS, Population Projections (as of October 23, 2014)

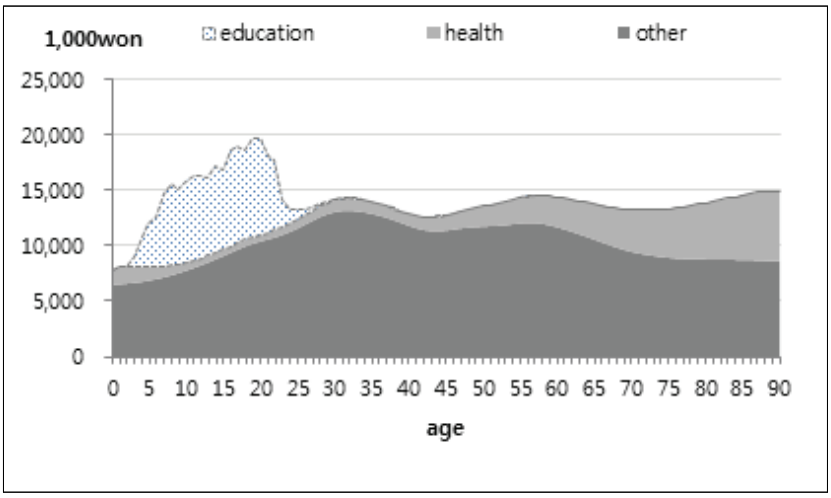
Calculating the per-capita consumption by age group reveals that consumption rose for all age groups throughout the time period analyzed, with a marked increase in the dependent age groups (see Figure 4). For example, consumption rose rapidly for the infant/primary school, college, and old-old (mid-70s and older) age groups.

Further, in terms of the age profiles of per-capita consumption, the scale of consumption was largest in the secondary school group. Indeed, the components of consumption from 2011 in Figure 6 show that unlike other age groups, the share of education spending was more than 40% for the school-age group. Meanwhile, old-age groups had a relatively high proportion of health-related spending.

[Figure 4] Per-Capita Consumption, by Age

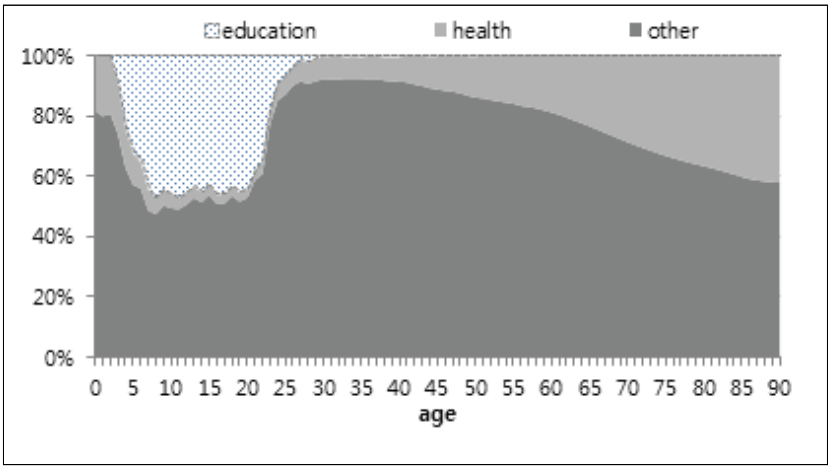

Source: Author's calculations, based on the NTA

[Figure 5] Components of Per-Capita Consumption, by Age (amount)




Note: As of 2011
Source: Author's calculations, based on the NTA

[Figure 6] Components of Per-Capita Consumption, by Age (share)

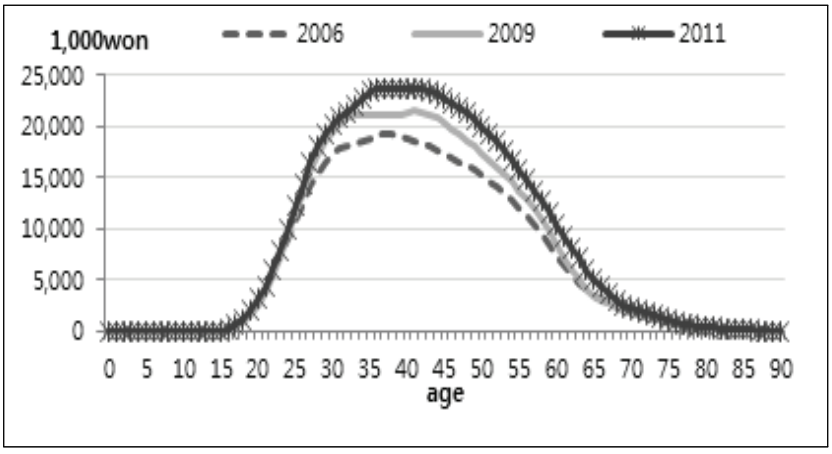



Note: As of 2011
Source: Author's calculations, based on the NTA

Figure 7, which depicts the per-capita labor incomes by age, shows that income greatly expands in the core productive ages (30s and 40s). Note that the per-capita values in the NTA are not the average of economically active individuals; non-active individuals are also included in the calculation. Therefore, an increase in the per-capita labor income in these core productive ages indicates either a higher rate of participation in economic activity or an increase in wages.

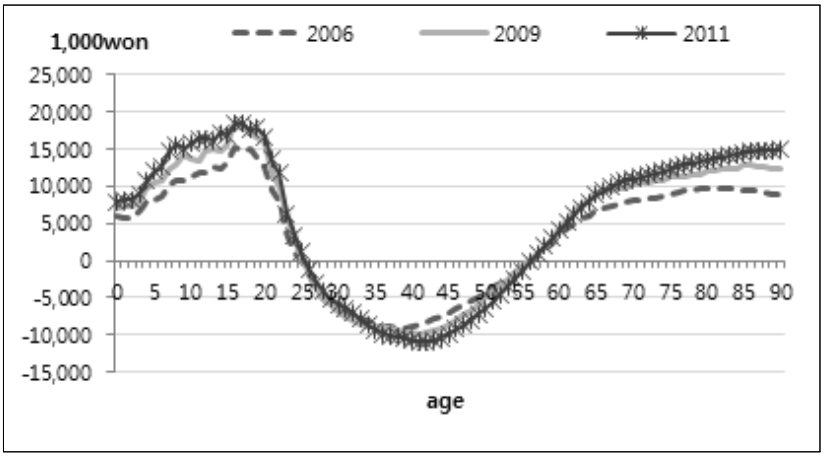
Per-capita labor income also rises continuously in the 50s and 60s age groups, which has important implications in an ageing society. If longer life and better health contribute to persons being able to work longer into their later years, or if their productivity can be enhanced, the social burden of supporting them may reduce.

[Figure 7] Per-Capita Labor Income




Source: Author's calculations, based on the NTA

[Figure 8] Per-Capita Lifecycle Deficit




Source: Author's calculations, based on the NTA

Meanwhile, the age profiles of the lifecycle deficit have different signs by age. Since dependent groups consume more than they produce, the deficit is positive, while the opposite is the case for productive groups who produce more than they consume. This is evident in Figure 8, where the children and old-age groups are in the positive range, while the productive ages (25~56) are in the negative range. We can also see that in recent years the deficit in the middle school or younger and old-old groups has grown.

The per-capita lifecycle deficits of each age group for the years analyzed in this study are summarized in Table 5. Three age groups are constructed: 0-19 years old (children), 20-64 years old (youth and middle-aged), and 65 years and older (old-age). While the under-15 and 65-and-over classifications

are used in demographic studies of ageing, we take account of Korea's high rate of enrollment in secondary education by including under-20-year-olds in the "children" group.

As discussed earlier, while the age profile figures have the advantage of visualizing the patterns observed through the lifespan, they can only compare the changes that occur between age groups in a quantitative manner. We therefore construct the age groups as above to calculate the per-capita figures by age group to provide a simple and clear summary of the characteristics of each age group in order to explain how they have changed during the period analyzed.

The lifecycle deficits of the children and old-age groups are seen to be continuously expanding, with larger deficits in the former. The per-capita lifecycle deficit was 10,952 thousand KRW for the children group and 8,239 thousand KRW for the old-age group in 2006. These grew to 14,770 and 11,723 thousand KRW, respectively, in 2011. The negative lifecycle deficit (i.e., a surplus) of the youth and middle-aged group is also continuously expanding. In per-capita terms, this was -3,666 thousand KRW in 2006, -3,794 thousand KRW in 2009, and -3,965 thousand KRW in 2011.

〈Table 5〉 Per-Capita Lifecycle Deficit, by Year and Age Group

(Unit: 1,000 KRW, nominal values, annual)

| Category | 0~19 (Children) | 20~64 (Youth and Middle-aged) | 65+ (Old-age) |
|---|---|---|---|
| **2006** | | | |
| **Lifecycle deficit** | **10,952.3** | **-3,666.4** | **8,239.2** |
| Consumption | 11,124.4 | 10,706.7 | 9,846.0 |
| Public | 3,759.1 | 2,279.3 | 3,078.9 |
| Private | 7,365.3 | 8,427.4 | 6,767.1 |
| (Dif.) Labor Income | 172.1 | 14,373.1 | 1,606.8 |
| **2009** | | | |
| **Lifecycle deficit** | **13,452.9** | **-3,793.7** | **10,638.7** |
| Consumption | 13,600.6 | 12,431.6 | 12,119.9 |
| Public | 4,812.3 | 2,829.3 | 4,366.5 |
| Private | 8,788.3 | 9,602.3 | 7,753.4 |
| (Dif.) Labor Income | 147.7 | 16,225.4 | 1,481.2 |
| **2011** | | | |
| **Lifecycle deficit** | **14,770.4** | **-3,964.6** | **11,723.0** |
| Consumption | 15,000.4 | 13,953.2 | 13,609.0 |
| Public | 5,268.5 | 3,113.3 | 4,943.1 |
| Private | 9,731.9 | 10,839.9 | 8,665.9 |
| (Dif.) Labor Income | 229.9 | 17,917.8 | 1,886.0 |

Source: Author's calculations, based on the NTA

Regardless of the year observed, consumption was the highest in the children group and this decreased as age rose. Consumption for 2011 was 15,000 thousand KRW in the children group, 13,953 thousand KRW in the youth and middle-aged group, and 13,609 thousand KRW in the old-age

group. In the public sector, consumption was the highest in the children group followed by the old-age group. By contrast, consumption was the highest in the youth and middle-aged group, followed by the children and old-age groups in the case of the private sector. As of 2011, public consumption for the children, youth and middle-aged, and old-age groups was 5,269, 3,113, and 4,943 thousand KRW, respectively. In the case of private consumption, the figures were 9,732, 10,840, and 8,666 thousand KRW, respectively. Therefore, because private consumption dwarfs public consumption, total consumption was the largest in the children group. We can see that as a share of aggregate consumption, private consumption accounted for two-thirds in the children and old-age groups and three-quarters in the youth and middle-aged group (as of 2011).

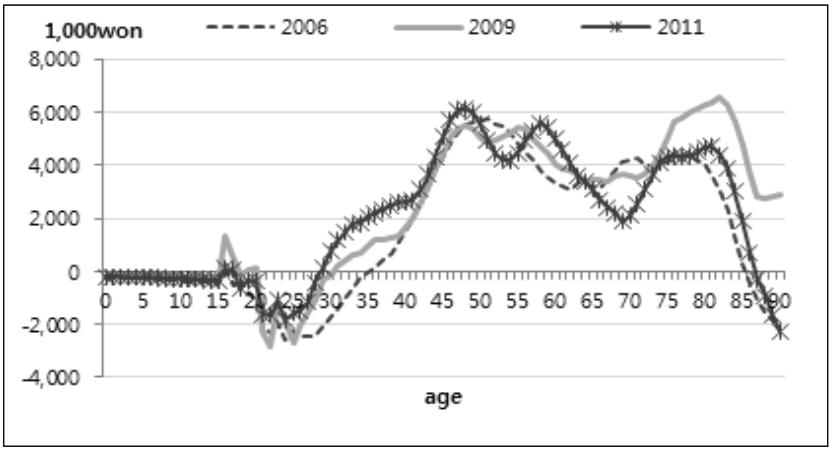
The core productive age group (youth and middle-aged) dominates the labor income figures. Different patterns are seen across age groups, however. In the case of the youth and middle-aged group, labor income rose continuously from 14,373 thousand KRW in 2006 to 17,918 thousand KRW in 2011. On the contrary, labor income in the children and old-age groups fell during 2006~2009 and rose again in 2011. This finding suggests that in 2009, the negative impacts of the global financial crisis disproportionately affected the vulnerable age groups in the labor market. The labor income of the children group was

172 thousand KRW in 2006, 148 thousand KRW in 2009, and 230 thousand KRW in 2011. In the case of the old-age group, the figures were 1,607 thousand KRW, 1,481 thousand KRW, and 1,886 thousand KRW, respectively.

## 3. Age reallocation

Looking at the age profile of per-capita asset-based reallocation, we see that large-scale asset-based reallocation takes place during the 40s and 50s as well as the 70s and 80s (Figure 9). The age at which asset-based reallocation transitions from negative to positive has progressively curtailed recently, from 36 years in 2006 to 29 in 2011. There is also a large temporary increase in the asset-based reallocation of the old-old ages in 2009. The age profile of asset-based reallocation for 2011 shows greater variation than that observed in the earlier years, with great decreases in the late 60s that again increase until the early 80s.

[Figure 9] Per-Capita Asset-Based Reallocation, by Age

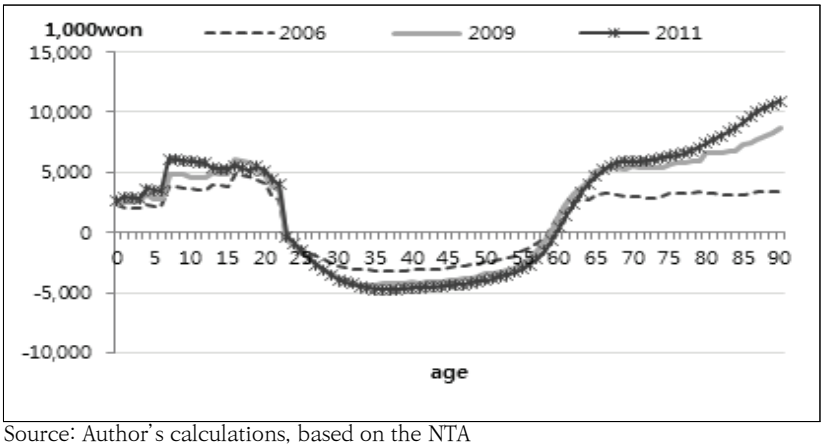



Source: Author's calculations, based on the NTA

The age profile of public transfers depicted in Figures 10s hows the most dramatic changes in the old-age group. In particular, public transfers in 2009 (the year in which the old-age welfare programs were expanded) were much larger compared with 2006, and they continued to expand in 2011. We also see that within the old-age group, public transfers grew most in the old-old group relative to the young-old (65-74 years) group.

The rapid increase in public transfers to old-age groups has led to their level of per-capita public transfers overtaking that of the children group since 2009. Thus, it is evident that population ageing has increased the government's burden in supporting the aged.

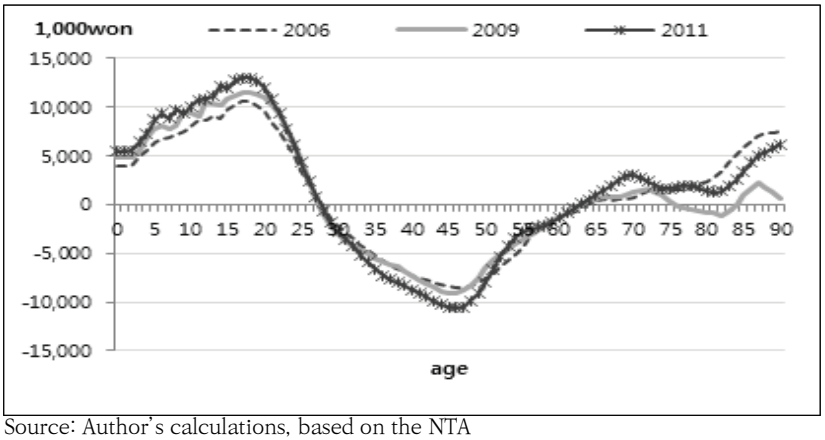
[Figure 10] Per-Capita Public Transfers, by Age




Source: Author's calculations, based on the NTA

The age group that benefits most from private transfers is the children group, with the youth and middle-aged group bearing most of the associated burden. While the old-age group is also identified as beneficiaries of private transfers (more inflows than outflows), the within-group dynamics of the old-age group were somewhat different during the time period analyzed. In the case of the young-old group, private transfers grew slightly during 2009 and increased substantially in 2011 (Figure 11). Meanwhile, the size of private transfers for the old-old group dropped rapidly in 2009 compared with 2006, before increasing again in 2011. While it can be conjectured that the rapid decrease in the private transfers to the old-old group in 2009 may have been influenced by the economic crisis of 2008, this cannot be confirmed until the NTA time series gains more observations in the future.

[Figure 11] Per-Capita Private Transfers, by Age



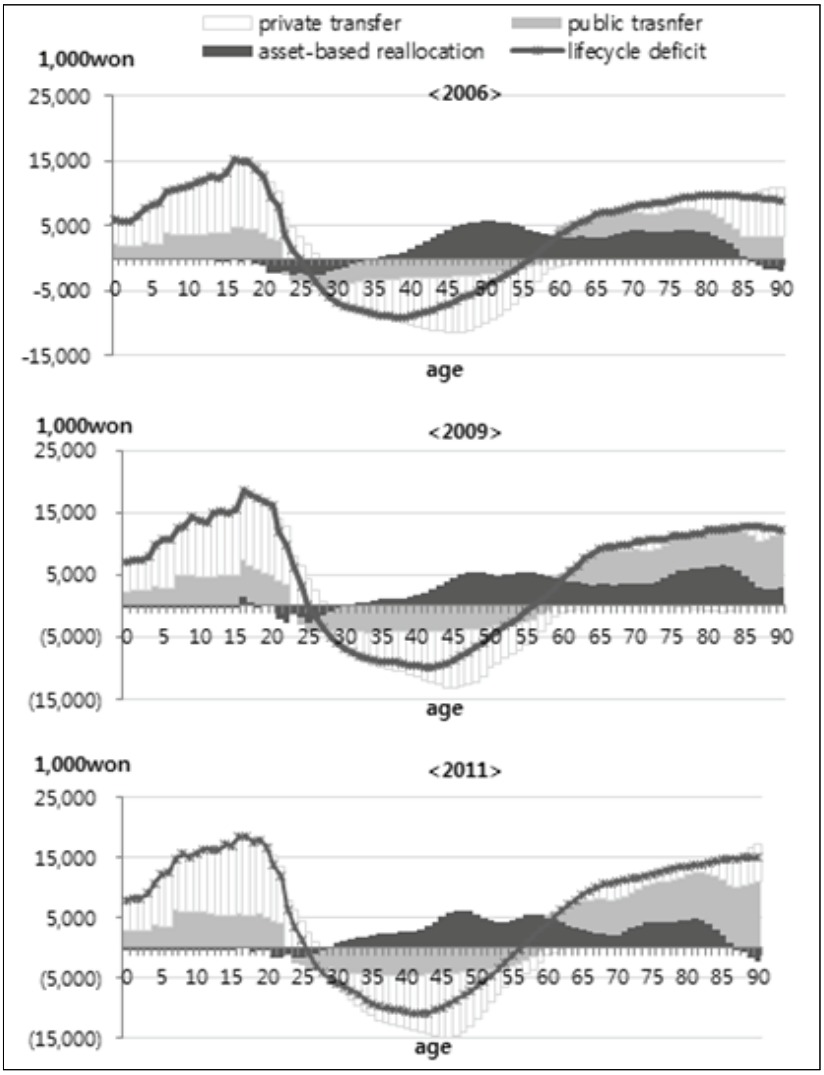

Source: Author's calculations, based on the NTA

Therefore, it is difficult to confidently state whether private transfers in the old-age group have grown or shrunk. However, it is worth noting that while private transfers to the children group grew steadily throughout 2006~2011, those for the old-age group showed a decrease in 2011 compared with 2006. This finding may provide a clue as to the possible existence of a crowding-out effect between public and private transfers in some parts of the old-age group.

Figure 12 displays the relative shares of the three components of age reallocations. There are clear differences in the composition of public/private transfers and asset-based reallocation across ages. In the case of the children group, public and private transfers dominated age reallocation. The youth and middle-aged group acted as providers of the public and private transfers, with significant asset accumulation observed after the

40s. There was a substantial increase in age reallocations in the old-age group, with public transfers playing a key role.

[Figure 12] Per-Capita Age Reallocations, by Age




Source: Author's calculations, based on the NTA

Table 6 summarizes the per-capita age reallocations of each age group. The children group mostly relies on public and private transfers to provide for their lifecycle deficit. This is because it is difficult for children to accumulate assets or procure loans (negative savings). The other dependent group, namely the old-age group, relies mostly on public transfers to provide for their lifecycle deficit. This is followed by asset-based reallocation and private transfers, in that order. Further, we have recently seen substantial increases in the size of public transfers in the age reallocations of the old-age group.

By examining the components of age reallocation in detail, we see that asset-based reallocation is positive in the youth and middle-aged and old-age groups and negative in the children group. In addition, asset-based reallocation was larger for the old-age group than for the youth and middle-aged group. A positive value of asset-based reallocation implies asset incomes in excess of savings, while a negative value implies savings in excess of asset incomes. During the time period analyzed, asset-based reallocation by the youth and middle-aged group grew steadily, while in the old-age group it grew from 2006 to 2009, only to fall again in 2011. Therefore, the gap in asset-based reallocation between the youth and middle-aged group and old-age group has mostly closed. As of 2011, asset-based reallocation was -249 thousand KRW for the children

group, 3,753 thousand KRW for the youth and middle-aged group, and 3,023 thousand KRW for the old-age group.

〈Table 6〉 Per-Capita Age Reallocations, by Year and Age Group

(Unit: 1,000 KRW, nominal values, annual)

| Category | 0~19 (Children Group) | 20~64 (Youth and Middle-aged Group) | 65+ (Old-age Group) |
|---|---|---|---|
| **2006** | | | |
| **Age Reallocation** | **10,952.3** | **-3,666.4** | **8,239.2** |
| Asset-based | -339.4 | 1,474.8 | 3,529.1 |
| Public Transfers | 3,464.5 | -1,718.8 | 3,131.6 |
| Private Transfers | 7,827.3 | -3,356.4 | 1,578.5 |
| **2009** | | | |
| **Age Reallocation** | **13,452.9** | **-3,793.7** | **10,638.7** |
| Asset-based | -38.4 | 2,125.2 | 4,298.4 |
| Public Transfers | 4,424.0 | -2,417.3 | 5,722.3 |
| Private Transfers | 9,067.3 | -3,391.2 | 618.0 |
| **2011** | | | |
| **Age Reallocation** | **14,770.4** | **-3,964.6** | **11,723.0** |
| Asset-based | -249.0 | 2,752.6 | 3,023.1 |
| Public Transfers | 4,893.8 | -2,740.1 | 6,463.0 |
| Private Transfers | 10,125.7 | -3,932.9 | 2,236.9 |

Source: Author's calculations, based on the NTA

A look at public transfers reveals that the children and old-age groups had inflows in excess of outflows (positive value), while the opposite was true for the youth and middle-aged

group (negative value). While more public transfers were made to the children group than to the old-age group in 2006 and 2009, this reversed in 2011, partly because of the recent expansion in welfare for the aged. As of 2011, public transfers were 4,894 thousand KRW for the children group, -2,740 thousand KRW for the youth and middle-aged group, and 6,463 thousand KRW for the old-age group.

The largest positive values of private transfers were observed in the children group, with the old-age group also in the positive range. As of 2011, private transfers to the children group stood at 10,126 thousand KRW, more than 4.5 times that of the old-age group (2,237 thousand KRW). On the contrary, negative private transfers (outflows in excess of inflows) were observed in the youth and middle-aged group, standing at -3,933 thousand KRW in 2011. Hence, for the time period analyzed, private transfers to the children group steadily grew, while those to the old-age group shrunk over 2006~2009 and grew again in 2011. Meanwhile, the private trasnfer deficit in the youth and middle-aged group steadily expanded.

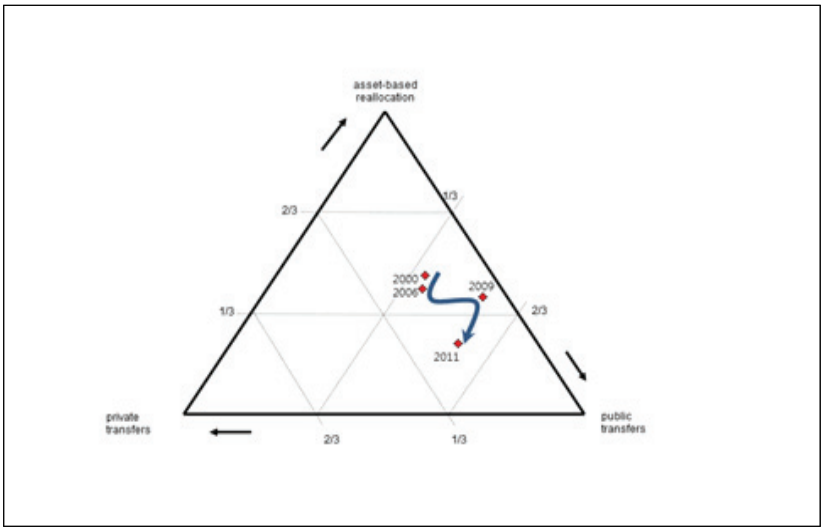
## C. Trends of the changes in public and private transfers in aged populations

By using the NTA estimates, we next examine the relative importance of asset-based reallocation, public transfers, and pri-

vate transfers and assess whether these have been influenced by the government's recent expansion of welfare for the aged. The welfare expansion in 2008 has led to dramatic changes in the aged support system, with the growth in public transfers playing a key role in this change. The three vertices of the triangle depicted in Figure 13 represent, in the clockwise direction, the three components of the aged support system: asset-based reallocation, public transfers, and private transfers. The arrows indicate the direction of the increasing shares of each component. The shares of asset-based reallocation, public transfers, and private transfers must add up to 100%.

We see a steady decrease in the share of asset-based reallocation, a steady increase in the share of public transfers, and a fluctuating pattern in the share of private transfers. While asset-based reallocation accounted for more than 40% of old-age income during 2000 to 2009, this dropped substantially to 26% in 2011. The share of public transfers was 37~38% during 2000 to 2009, rising steeply to 54~55% in 2009 and 2011. The steep rise after 2009 was most likely caused by the government's expansion of spending on welfare programs for the aged. The share of private transfers rose slightly from 16% in 2000 to 19% in 2006, before dropping steeply to 6% in 2009 and recovering to 19% in 2011. This pattern suggests that the effects of the global financial crisis may have had a temporary negative impact on the household sector's capacity to support dependents.

[Figure 13] Changes in the Support System for the Aged: 2000, 2006, 2009, and 2011




Note: The upper-left side, upper-right side, and lower side represent the composition shares of asset-based reallocation, public transfers, and private transfers, respectively.
Source: 1) 2000: downloaded from the NTA official homepage
2) 2006, 2009, and 2011: Author's calculations based on the NTA

In the context of the relationship between public and private transfers, these results suggest no crowding-out effect between the two. With regard to the transfer motive, the dominant motive in Korea is that of exchange. The motives of private transfers are generally classified into exchange and altruism. Proponents of the former claim that people provide private transfers with the expectation of something in return, while those of the latter claim that people derive altruistic satisfaction from providing private transfers.

Interpreting our results in comparison with those of foreign studies, which typically report that the exchange motive dominates, it is likely that the traditional Korean mores of filial duty (i.e., altruistic motive) may have given way to arise in the exchange motive. While earlier domestic studies using microdata found evidence of the altruistic motive (Son, 1999; Kang and Jeon, 2005; Kim, 2008), more recent studies have found that the altruistic motive has diminished or even disappeared (Jeon and Park, 2011).

# 4 Conclusion and Implications

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The recent expansion of welfare spending for the aged by the government has not led to a decrease in income transfers by the private sector. That is, we find no evidence of a crowding-out effect between public and private transfers. This means that the expansion of welfare for the aged does not simply constitute a shift of the support burden from the family to the state; rather, the boosting of old-age income is found to lead to an overall improvement in the quality of life. Meanwhile, policymakers must take care that the continued expansion of welfare spending for the aged does not spark a controversy over intergenerational allocation of resources. This will necessitate maintaining a balanced view in designing and implementing policies. There needs to be a social discussion on the vulnerabilities associated with old age during the lifecycle and the appropriateness of public intervention as well as intergenerational agreement as to how to finance welfare programs for the aged. Meanwhile, the relationship between public and private transfers as analyzed in this paper is far from conclusive. With the availability of longer time series data in the future, this relationship should be analyzed in more precision and depth.

The year 2009, designated in this study as the year in which

welfare for the aged expanded, coincides with the timing of the global financial crisis. The sharp drop in private transfers to the aged in 2009 may be interpreted as a temporary reduction in the role of private transfers due to the economic crisis. If the roles played by asset-based reallocation or private transfers become constrained in the face of economic crises or chronically weak growth, the role of public transfers is likely to expand. Therefore, both the expansion of welfare for the aged and the impact of the global financial crisis have influenced the support system for the aged. Future research on this matter would benefit from examining how changes in the economic situation influence the reallocation of economic assets within dependent groups as well as identifying which groups are the most affected by economic downturns.

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