**Amonthep Chawla (11/28/06)**

Estimation of the National Transfer Flow Account for Thailand in 1996

1. An Overview of the National Transfer Flow Account[1]

The NT Flow Account is an accounting system for measuring reallocations of economic resources across age and time at the aggregate level. Reallocations of economic resources occur because the human lifecycle begins and ends with stages of dependency when consumption exceeds labor income. The shortage of labor income makes the young and the elderly depend on resources reallocated from the working or lifecycle surplus ages. The economic lifecycle, as shown by the age profiles of aggregate consumption and labor income, for Thailand in 1996 is presented in Figure 1.

Figure 1: Aggregate Consumption and Labor Income for Thailand in 1996
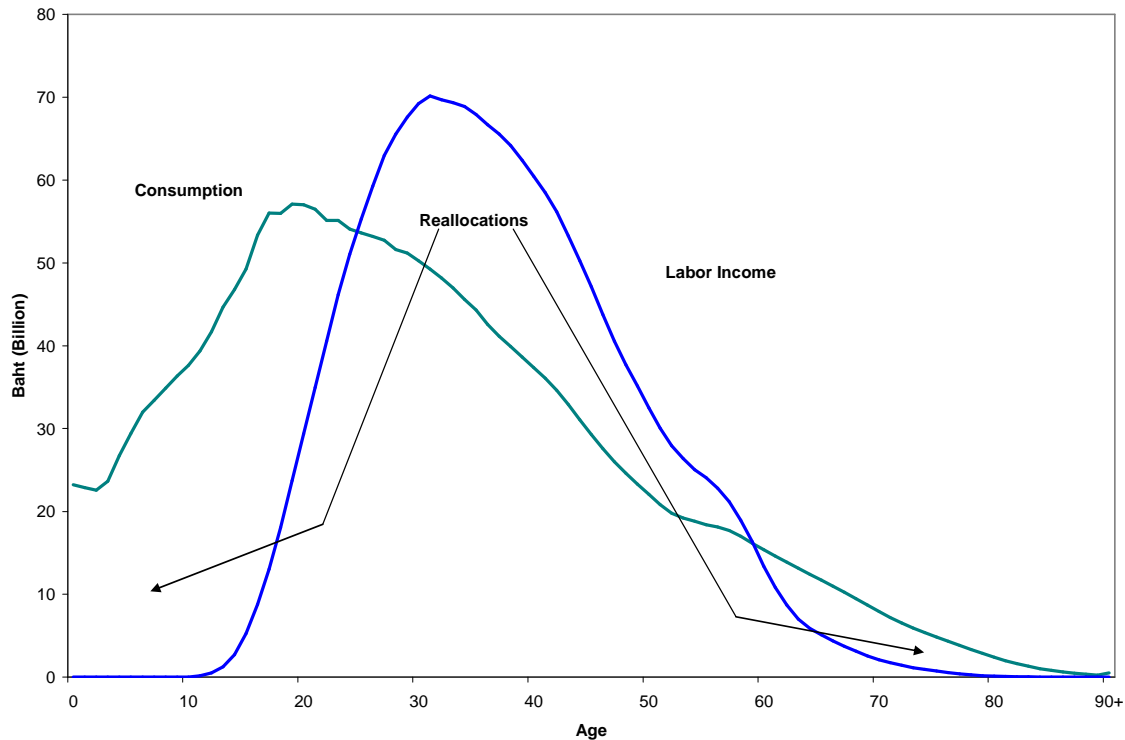
Reallocation systems vary along two important dimensions: the governing or mediating institution and the economic form of the reallocation (Mason et al. forthcoming). Both the public and the private sectors are mediating institutions that facilitate the reallocation of resources among individuals. The public sector reallocates resources relying on social

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[1] Details of the National Transfer Flow Account can be viewed from Mason et al. (forthcoming) and the website www.ntaccounts.org.

mandates embodied in law and regulation, while the private sector reallocates resources relying on voluntary contracts and social conventions. The public sector of the NT Flow Account of Thailand includes the central government, local governments, and social security funds, while public enterprises are excluded from the public sector and considered to be part of the private sector. The private sector consists of households, unincorporated enterprises, private corporations, public enterprises, non-government organizations (NGOs) and other private institutions.

The NT Flow Account distinguishes two economic forms of reallocations: transfer and asset-based reallocations, combining capital, property and credit reallocations as shown in Table 1. The reallocations through the public sector are, for example, public school construction, student loans and public health care provision. The reallocations through the private sector are, for example, factory construction, consumer loans and familial support of children and the elderly parents. These reallocations can be either cross-sectional (transfers from parents to children) or longitudinal (accumulation of wealth during working ages and dis-accumulation during retirement).

Table 1: A Classification of the National Transfer Flow Account Reallocations

| | Asset-based Reallocations | | Transfers |
	Capital and Property	Credit	
Public	Public infrastructure	Public debt Student loan programs Money	Public education Public health care Unfunded pension plans
Private	Housing Consumer durables Factories Farms Land Inventories	Consumer credit	Familial support of children and parents Bequests Charitable contributions

Source: Mason et al. (forthcoming)

Assets-based reallocations include the reallocations through capital, property and credit. Assets can be accumulated and dis-accumulated. They provide income to individuals. They are used primarily to reallocate resources from the present to the future. Even though people perceive reallocations through capital as close substitutes for reallocations through property and credit, from the perspective of the macroeconomy, there are important differences between capital, property, and credit.

Capital-based reallocations are transactions that increase future consumption by foregoing current consumption. Individuals can reduce current consumption when they are young so as to increase the stock of reproducible capital in the present and the future, which subsequently increases the aggregate productive potential of the economy. Capital can be used to reallocate resources from younger to older ages only.

Reallocations through property and credit are similar to capital-based reallocations because they involve an exchange of economic resources in the current period in return for compensation in one or more future periods. However, property and credit reallocations do not yield a higher aggregate wealth in the future because an increase in the wealth of one group is always balanced by the decline in wealth of another age group. Therefore, the net payments must cancel when summed over the whole population. Property and credit transactions are distinct. First, credit transactions allow one group of individuals to reduce current consumption and another group of individuals to increase current consumption. The use of credit cards to finance consumption by individuals and the use of public debt, including the printing of money, to finance government programs are examples. Credit transactions can be used to reallocate resources in either direction. Second, the exchange of land and other non-reproducible assets allows one group of individuals to increase or reduce consumption by acquiring or disposing of a non-reproducible asset. Individuals can acquire non-reproducible assets when young and dispose of them when old. Thus, the exchange of land and other non-reproducible assets can be used to reallocate resources from younger to older ages only.

Transfers are the reallocations from one group to another which involve no explicit *quid pro quo*[2]. Transfers can flow in either direction; for example, transfers from older to younger in terms of childrearing and educational transfers or from younger to older by providing old age support and health care for the elderly.

2. An Accounting Identity of the National Transfer Flow Account

The NT Flow Account is governed by an accounting identity, which states that inflows to each age group must equal outflows from each age group. The accounting identity holds for the economy and for individuals. The flow identity is

$$\underbrace{Y^l(a) + Y^a(a) + \tau^+(a)}_{\text{Inflows}} = \underbrace{C(a) + S(a) + \tau^-(a)}_{\text{Outflows}} \quad . \qquad\qquad 1$$

Inflows consist of labor income $Y^l(a)$, asset income $Y^a(a)$ and transfer inflows $\tau^+(a)$. Outflows consist of consumption $C(a)$, saving $S(a)$ and transfer outflows $\tau^-(a)$. Asset income is the combination of the return to capital, land and credit. Saving includes investment in capital, land and credit. Transfer inflows and outflows include both private transfers and public transfers.

Rearranging Equation 1, the difference between consumption and labor income, termed the lifecycle deficit, is matched by age reallocations, consisting of asset-based reallocations and transfers. Asset-based reallocations are asset income less saving. Net transfers are the difference between transfer inflows and transfer outflows. The accounting identity of the NT Flow Account in each age group is shown as:

$$\underbrace{C(a) - Y^l(a)}_{\text{Lifecycle Deficit}} = \underbrace{\underbrace{Y^a(a) - S(a)}_{\text{Asset-based Reallocations}} + \underbrace{\tau^+(a) - \tau^-(a)}_{\text{Net Transfers}}}_{\text{Age Reallocations}} \quad . \qquad\qquad \mathbf{2}$$

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[2] There are important models of private transfers, which emphasize that people make transfers in order to exchange goods and services (Cox 1987; Bernheim et al. 1985; Kotlikoff and Spivak 1981). These types of transfers can be made in different forms. For example, parents may give money to their children to purchase services (e.g. personal care) from their children. Parents may finance human capital investment in their children in order to receive old age support from their children (Lillard and Willis 1997). These are not transfers but rather some sort of non-market transaction or intertemporal exchange that involves a *quid pro quo*. Practically, it is difficult to distinguish familial transfers from familial exchange.

3. Aggregate Control of the National Transfer Flow Account

Age profiles of variables shown in Equation 2 are compiled to construct the National Transfer Flow Account. The aggregates are estimated using three pieces of information: the population by age, a per capita age profile for the variable being estimated and an aggregate control drawn from National Income and Product Account (NIPA) or other government statistical sources.

There is the relationship among the population by age, per capita age profile and the aggregate control. Per capita profiles $x(a)$ of the NT Flow Account are estimated using a variety of techniques, which is described in the following section. When per capita profiles $x(a)$ are multiplied by population by age $N(a)$, they yield the aggregate value for each age group $x(a)N(a)$. After summing up the aggregate values from all age groups $\sum_a x(a)N(a)$, they yield the aggregates for the economy. However, these estimated aggregates are invariably different from the aggregate controls X as reported in the NIPA for a variety of reasons. Thus, these estimated aggregates need to be adjusted as:

$$X = \theta \sum_a x(a)N(a)$$
$$X(a) = \theta x(a)N(a)$$, **3**

where θ is a proportional adjustment factor calculated from the first equation and then used to adjust the per capita profile proportionally to insure consistency with the aggregate control of the NIPA. $X(a)$ is the total value of X for all persons aged a. The relationship between NIPA and the NT Flow Account is shown theoretically below, following by how to practically draw NIPA to be aggregate control of the NT Flow Account for the case of Thailand.

3.1 NIPA and the NT Flow Account

There is relationship between NIPA and the NT Flow Account. NIPA is the macroeconomic depiction of the national income cycle. NIPA measures the flows of five

main institutional units that are resident in the economy: non-financial corporations, financial corporations, government units (including social security funds), non-profit institutions serving households and household. In contrast, the NT Flow Account measures the inflows and outflows only to the individuals. The total inflows (outflows) of all individuals in the economy measured in the NT Flow Account are equal to the total inflows (outflows) of all five main institutional units measured by NIPA. The NT Flow Account classifies two main sectors: private and public. However, individual is the fundamental analytic unit in the NT Flow Account. All transactions are treated as flowing to and from individuals. Government and families only mediate these transactions.

The accounting identity of NIPA is matched with the accounting identity of the NT Flow Account. Starting from the accounting identity of national income, the total values of national income (using an income approach) are equal to total values of national expenditure (using an expenditure approach). An income approach is the measurement of factor income of the economy, which is compensation of employees W and post-tax operating surplus O^x, which is income from unincorporated enterprises, income from private corporations and property, and income from government corporations and property. An expenditure approach refers to spending on post-tax public and private consumption C^x, saving S, subsidies T_g^s less indirect taxes T_g^x and less net public and private current transfers from the rest of the world τ_{ROW} .

$$\underbrace{W + O^x}_{National\,Income} = \underbrace{C^x + S - T_g^x + T_g^s - \tau_{ROW}}_{National\,Expenditure} \qquad\qquad \mathbf{4}$$

There are two steps to adjust NIPA to match with the NT Flow Account in order to measure economic flows at the individual level. First, indirect taxes and subsidies of NIPA need to be allocated to individuals. Indirect taxes are taxes that are not assessed on and collected from those who are intended to bear it. There are variety of indirect taxes, such as sales taxes, business taxes and import taxes. Unlike direct taxes, indirect taxes cannot take individual circumstances into account. Although levied on producers, the burden of indirect taxes may be shifted to consumers. Thus, indirect taxes are classified

into indirect taxes on producers T_g^{xk} and indirect taxes on consumers T_g^{xc}. Indirect taxes on producers lower producers' profits or dividends, while indirect taxes on consumers raise their consumption. Subsidies are treated as negative indirect taxes on producers. After adjusting for indirect taxes, pre-tax income of producers, or pre-tax operating surplus O, is increased by the amount of indirect taxes on producers less subsidies, while pre-tax consumption C is decreased by the amount of indirect taxes on consumers:

$$
\begin{aligned}
T_g^x &= T_g^{xc} + T_g^{xk} \\
T_g^s &= T_g^{xk} \\
O &= O^x + T_g^{xk} - T_g^s \\
C &= C^x - T_g^{xc}
\end{aligned}
\qquad . \qquad 5
$$

Second, compensation of employees and operating surplus are allocated to individuals, classified into returns to labor (labor income) and returns to non-labor, i.e. capital, property and credit (asset income). Household operating surplus, or income from unincorporated enterprises O_h, includes returns to both labor O_h^l and non-labor O_h^{nl}. Labor income of household operating surplus is combined with compensation of employees to measure labor income. The rest of income from operating surplus, including indirect taxes borne by producers less subsidies, measures asset income:

$$
\begin{aligned}
O_h &= O_h^l + O_h^{nl} \\
W + O_h^l &= Y^l \\
O - O_h^l &= Y^a
\end{aligned}
\qquad . \qquad 6
$$

Further, net transfers from the rest of the world are the difference between transfer inflows from the rest of the world and transfer outflows from the rest of the world. In the domestic economy transfer inflows are equal to transfer outflows, leaving net transfer in the domestic economy equal zero. Thus, net transfers from the rest of the world are the difference between aggregate transfer inflows and aggregate transfer outflows:

$$
\tau_{ROW} = \tau^+ - \tau^- \qquad . \qquad 7
$$

7

After rearranging Equations 4-7 the accounting identity of national income can be shown as the accounting identity of the NT Flow Account, which shows that aggregate inflows from all age groups are equal to aggregate outflows. In addition, the aggregate lifecycle deficit and age reallocations are equal.

$$\left(W+O_h^l\right)+\left(O^x-O_h^l-T_g^{xk}+T_g^{sk}\right)+\tau^+=\left(C^x-T_g^{xc}\right)+S+\tau^-$$

$$Y^l+Y^a+\tau^+=C+S+\tau^-$$

$$\underbrace{\sum_a\left[Y^l(a)+Y^a(a)+\tau^+(a)\right]}_{Aggregate\ Inflows}=\underbrace{\sum_a\left[C(a)+S(a)+\tau^-(a)\right]}_{Aggregate\ Outflows} \qquad \mathbf{8}$$

$$\underbrace{\sum_a\left[C(a)-Y^l(a)\right]}_{Aggregate\ Lifecycle\ Deficit}=\underbrace{\underbrace{\sum_a\left[Y^a(a)-S(a)\right]}_{Aggregate\ Asset\text{-}based\ Reallocations}+\underbrace{\sum_a\left[\tau^+(a)-\tau^-(a)\right]}_{Net\ Transfers\ to\ ROW}}_{Aggregate\ Age\ Reallocations}$$

3.2 Constructing Aggregate Control of the NT Flow Account of Thailand

Example of national income of Thailand, compiled by the National Accounts Division of the Office of the National Economic and Social Development Board (NESDB), is shown in Table 2. The left-hand side of the account shows the income variables: compensation of employees and operating surplus. The right-hand side of the account shows the expenditure variables: public consumption, private consumption, net saving, indirect taxes, subsidies and net transfers from the rest of the world.

Table 2: National Income Account of Thailand in 1996 (Billions of Baht)

Income Approach		Expenditure Approach	
Compensation of Employees	**1,353**	**Public Consumption Expenditure**	**470**
Operating Surplus	**2,041**	Education	144
Income from Unincorporated Enterprises	1,065	Health	44
Income from Private Corporations and Property	846	Other	281
Property Income	476	**Private Consumption Expenditure**	**2,480**
Less: Interest Payment on Consumer Debt	62	Education	22
Less: Interest Payment on Public Debt	9	Health	164
Saving of Private Corporations	252	Housing	147
Corporate Income Tax	176	Other	2,147
Corporate Transfer Payment	13	**Net Saving**	**1,026**
Income from Public Enterprises and Property	130	Households	278
Government Income from Property and Entrepreneurship	66	Corporations	252
		General Government	431
Saving of Government Enterprises	65	Government Enterprises	65
		Less: Indirect Taxes	**573**
		Subsidies	**12**
		Less: Net Public Current Transfers from ROW	**2**
		Less: Net Private Current Transfers from ROW	**18**
National Income	**3,394**	**National Expenditure**	**3,394**

Source: National Income of Thailand (NESDB 2001, pages 3-5)

Aggregate control of public consumption, saving, public transfers and private transfers, shown in Equation 8, can be drawn directly from national income of Thailand in order to construct the NT Flow Account. However, private consumption, labor income and asset income need to be adjusted from national income account. As mentioned in the previous section, there are two steps that need to adjust from national income account: indirect taxes and operating surplus.

First, indirect taxes can be allocated to producers and consumers depending on types of indirect taxes. Table 3 shows that mainly indirect taxes of Thailand are borne by consumers, which is 520.4 billion Baht. Examples of indirect taxes on consumption are business tax, value-added tax, excise tax and import duties. Indirect taxes on consumption are mainly levied on private consumption of other goods and services, apart from education, health and housing. Indirect taxes borne by producers are relatively small, which is about 53 billion Baht. Examples of indirect taxes on production are specific business tax, stamp duty, natural resource tax, fees and permits. Subsidies are treated as negative indirect taxes on production.

Table 3: Allocation of Indirect Taxes of Thailand in 1996 (Billions of Baht)

	Billion Baht		Notes
Indirect Taxes Borne by Consumers			
Business Tax	0.5		Sales tax levied on goods and services of small entreprises
Value Added Tax (VAT)	175.3		Sales tax levied to any consumption goods, including imported goods
Consumption Goods Tax (Excise Tax)	195.2	520.4	Taxes levied on the sale of a group of commodities collected from the domestic producers and importers. The commodities that are subjected to taxes are spirits, beer, non-alcoholic beverage, tobacco, petroleum and petroleum products, vehicles, appliance, etc.
Import Duties	149.6		Taxes levied on imported goods
Indirect Taxes Borne by Producers			
Specific Business Tax	38.6		Specific business tax is levied on the gross receipts of certain businesses, such as the interest and foreign exchange gains of banks and other financial institutions, life insurance premiums, and dealing in real estate
Stamp Duty	6.0	53.0	Stamp duty is taxed on instruments defined as any chargeable document, such as transfer of land, stock transfers, debentures, mortgages, and life insurance policies
Natural Resource Tax	5.4		Taxes levied on producers used natural resources, such as petroleum royalty
Fees and Permits	2.9		Fees and permits for some business such as alien registration fees and gambling fees
Total Indirect Taxes	**573.4**		

Second, operating surplus can be separated into returns to labor and returns to non-labor. Following Mason et al. (forthcoming), two-thirds of income from unincorporated enterprises are returns to labor, while one-third is returns to non-labor. Compensation of employees plus returns to labor income from unincorporated enterprises measure labor income. Returns to non-labor income from unincorporated enterprises plus income from enterprises and property plus indirect taxes borne by produces less subsidies measure asset income. Consequently, labor income and asset income can be shown in Table 4.

Table 4: Labor Income and Asset Income of Thailand in 1996 (Billions of Baht)

Compensation of Employees	1,353	All data, except for
Plus: 2/3 of Income from Unincorporated Enterprises	710	indirect taxes borne
Labor Income	**2,063**	by producers (shown
1/3 of Income from Unincorporated Enterprises	355	in Table 3), are
Plus: Income from Enterprises and Property	976	drawn directly from
Plus: Indirect Taxes Borne by Producers	53	national income
Less: Subsidies	12	account of Thailand
Asset Income	**1,372**	(shown in Table 2)

After adjusting the above two steps, national income account can be rearranged following Equation 8 and the results of Table 3 and 4. Further, net transfers from the rest of the world are net transfers from abroad because transfer inflows are equal to transfer outflows in the domestic economy. Table 5 shows the accounting identity of the NT Flow Account: lifecycle deficit is equal to age reallocations. Finally, Table 5 is used as the aggregate control to estimate the per capita age profiles of the NT Flow Account in the following section.

Table 5: The National Transfer Flow Account for Thailand in 1996 (Billions of Baht)

Lifecycle Deficit	**366**
Consumption	**2,429**
Public Consumption Expenditure	**470**
Education	144
Health	44
Other	281
Private Consumption Expenditure	**1,959**
Education	22
Health	164
Housing	147
Other	2,147
Less: Indirect Taxes Borne by Consumers	520
Less: Labor Income	**2,063**
Age Reallocations	**366**
Asset-based Reallocations	**346**
Asset Income	1,372
Less: Saving	1,026
Transfers	**20**
Public Transfers	2
Private Transfers	18

Drawn directly from NIPA (Table 2)

Table 3

Table 4

Drawn directly from NIPA (Table 2)

4. Age Profiles of the National Transfer Flow Account

In this section, the aggregate control of the NT Flow Account shown in Table 5 is allocated to individuals across age groups to measure age profiles of the NT Flow Account. These age profiles are estimated, relying on information from the household socio-economic survey (SES) and the population by single-year of age. The SES is conducted every two years under the direction of the National Statistical Office Field Division. The survey provides information at the household level, such as household expenditures and income, and at the individual level, such as education level and age of household members. The population data of Thailand are from population estimates by the United Nations (UN 2003). Details of the estimation of age profiles of the NT Flow Account are described below.

4.1 Lifecycle Deficit

4.1.1 Public Consumption

Public consumption is the value of consumption of goods and services individuals receive through the public sector. Public consumption is allocated to individuals distinguishing for public education, public health care and public other consumption.

4.1.1.1 Public Education Consumption

Public education consumption consists of two parts: formal and informal education consumption. Formal education consumption is government spending on primary, secondary and higher education levels. The informal education consumption refers to expenditure on culture, religious studies and other types of education. Table 6 shows public education consumption, the number of students and unit cost per student for each level of education. Primary education receives the largest share of public education consumption whereas per student costs are greatest for higher education.

Table 6: Public Education Consumption of Thailand in 1996

	Formal Education			Informal Education
	Primary	Secondary	Higher	
Education Consumption[1] (Million Baht)	71,832	41,798	27,172	3,583
Number of Students[2] (Thousands)	7,935	3,927	1,333	58,465[3]
Unit Cost (Baht)	9,052	10,644	20,388	61

Sources: [1] Percentages of education consumption in different levels reported in the Statistical Yearbook Thailand (NSO 2003, Table 3.8) are used to allocate the aggregate control of public education consumption reported in the National Income Account (NESDB 2001, Table 6) to different education levels.

[2] The number of students in different education level is from the Statistical Yearbook Thailand (NSO 1999, Table 6.1).

[3] Informal education is allocated equally to everyone using population estimates from UN (2003).

Public formal education consumption by age $E_g^f(a)$ is estimated by summing unit cost per student per level c_l weighted by the number of students by age in each level $e_l(a)$, i.e. $E_g^f(a) = \sum_l e_l(a)c_l$, where l is a school level. Unit cost per student at each level of education c_l is estimated by dividing education consumption of that level by its number of students. Unit cost of education within each level is assumed not to vary by age. The number of students by age in each level $e_l(a)$ is tabulated from the SES. Public informal education consumption by age $E_g^{nf}(a)$ is estimated by dividing total public informal

education consumption by total population by age. Public informal education consumption is non-age-targeted consumption, so it is allocated equally to everyone. Public education consumption by age is computed by adding public formal education consumption by age and public informal education consumption by age, i.e.

$$E_g(a) = E_g^f(a) + E_g^{nf}(a). \qquad\qquad 9$$

There is a problem when public education consumption is summed by age $\sum_a E_g(a)$, the estimated aggregate public education consumption is not equal to the aggregate control of public education consumption of the NT Flow Account. The problem arises because the total number of students by level tabulated from the SES is not equal to reported data from the Statistical Yearbook Thailand (1999). The difference between data of the SES and other government documents is primarily due to the difference in their estimation methods, which is not discussed here. Thus, the aggregate public education consumption by level estimated from the SES need to be adjusted proportionally to match with the aggregate control of public education consumption of the NT Flow Account. Specifically, the unit cost of education by level is adjusted to allow the aggregate estimated from the survey to match with the aggregate control of the NT Flow Account, *CGE*.

$$\sum_a CGE(a) = \sum_a \sum_l e_l(a)(\theta c_l) + E_g^{nf}$$
$$= \theta(\sum_a \sum_l e_l(a)c_l) + E_g^{nf} , \qquad\qquad 10$$
$$CGE = \theta(E_g^f) + E_g^{nf}$$

where θ and is a proportional adjustment factors, explained earlier in Equation 3.

Figure 2 compares aggregate public education consumption between estimated results from the SES and results after adjusting for aggregate control of the NT Flow Account. Estimated results from the SES overestimate aggregate control due to the problem described above. The adjustment method to make estimated aggregate data consistent with the aggregate control of NT Flow Account is used through out this paper.

Figure 2: Aggregate Public Education Consumption: Estimated Results and Aggregate Control
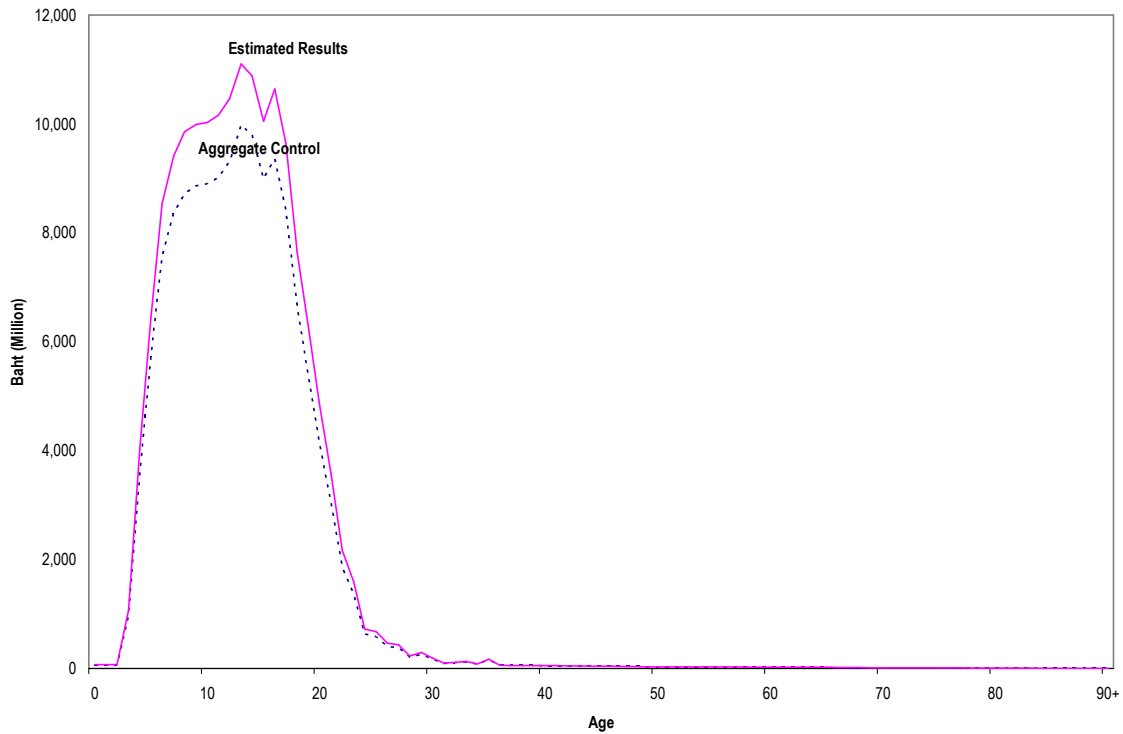
4.1.1.2 Public Health Care Consumption

The aggregate control of the NT Flow Account does not provide detail on public health care consumption for different uses. The National Health Accounts (NHA) of Thailand (Pongpanitch et al. 2005, Table 3.1) is instead used to allocate aggregate control of public health care consumption to different uses. Using shares of public health care for different uses reported in the NHA, aggregate public health care consumption of 44 billion baht is allocated to inpatient care 15 billion baht, outpatient care 9 billion baht and other public health care consumption 20 billion baht. Other public health care consumption is mainly public health programs, such as vaccination and other preventive health consumption.

Age profiles of inpatient and outpatient health consumption of the public sector are estimated separately. There is no information on the age profiles of inpatients and

outpatients of public hospitals. The out-of-pocket health consumption expenditures reported in the SES are used as proxies for the public inpatient and outpatient health consumption expenditures. People usually share partial cost of public hospital. Thus, the age profiles of public inpatient and outpatient health consumption expenditure are assumed to be the same as the age profiles of out-of-pocket inpatient and outpatient health consumption expenditure. However, there is no information on the per capita out-of-pocket health consumption expenditures for the SES 1996. Per capita out-of-pocket health expenditures of inpatients and outpatients are tabulated from the special module on private individual health expenditure survey included in the SES 2002, assuming that age profiles of these health consumption expenditures in 2002 are the same as in 1996.

Other public health care consumption is allocated equally to everyone because most public health programs are for preventive, which allows everyone to receive benefits from the public health care consumption.

4.1.1.3 Public Other Consumption

Public other consumption is non-age-targeted consumption of goods and services, such as defense, justice and police. Since it does not target specific age group, it is allocated equally to everyone.

4.1.2 Private Consumption

The SES does not report individual's consumption. The SES reports consumption only at the household level. There are extensive studies on consumption allocation from the household level to the individual level, such as Deaton (1997). The method used to allocate household consumption here follows Mason et al. (forthcoming). Private consumption is distinguished for age-targeted consumption (education and health) and non-age-targeted consumption (housing and other).

4.1.2.1 Private Education Consumption

Private education consumption includes consumption expenditures on tuition fees, uniforms, books and other education expenses paid by households. Individual education

consumption is estimated using a regression model to allocate education consumption from the household level into the individual level.

Household education consumption CFE_j is regressed on the number of household members who are enrolled in school in each age group, starting from at age3 to age group 17 and older $E_j(a)$. The SES reports whether any household members are enrolled in school. There are a number of children between ages 3 and 5 enrolled in kindergartens and between age 6-7 starting to enter primary schools. The education equation is estimated in homogeneous form, which guarantees that the household private education consumption is entirely allocated to enrolled persons. There is no distinction between boys and girls in this regression.

$$CFE_j = \sum_a \gamma(a)E_j(a) \qquad\qquad 11$$

The coefficient $\gamma(a)$ from the regression equation is an estimate of the average education consumption of enrolled members at age group a, and it is assigned to individuals based on age and enrollment status. Those who are not represented in the equation are assigned a value of zero. Then, the total for coefficients in the household is calculated, and each household member is assigned a share of household expenditures. This share is then multiplied by reported household education consumption in the SES to measure the individual education expenditure.

The individual education consumption of each member i in household j at age group a is estimated by

$$CFE_{ij} = CFE_j \frac{\gamma(a)M_{ij}(a)}{\sum_i \gamma(a)M_{ij}(a)}, \qquad 12$$

where $M_{ij}(a)$ is a dummy variable equal to 1 if member i in household j in age group (a) is enrolled, zero if not enrolled.

4.1.2.2 Private Health Consumption

Household health consumption in 1996 is estimated as the sum of the products of per capita health consumption and the number of household members. Health consumption for household j is given by

$$H_j = \sum_i \sum_k h_{ik}(a)N_j(a) \qquad\qquad \textbf{13}$$

where a is individual age, $h_{ik}(a)$ is health consumption of product k (medical supplies and medical services) for individual i at age a in 1996, $N_j(a)$ is the number of members at age a in household j in 1996.

There is a problem that the SES in 1996 does not report any information regarding to individual's health condition or expenses, which makes it difficult to allocate household health consumption into the individual level. The method used to allocate household health consumption to individual members relies on information of per capita health consumption age profile reported in the special module of individual's health consumption of the SES in 2002. Per capita health consumption in 2002 is tabulated by age distinguishing for private health consumption of medical supplies and medical services.

Per capita private health consumption of product k in 1996 is modeled such that there is the cubic relationship between age in 1996 and health consumption of product k by age in 2002[3]. In addition, a dummy for individuals at age 0 is added to the health consumption equation in order to capture the uniqueness of health consumption by newborns. Thus, individual health consumption in 1996 can be shown as:

$$h_{ik}(a) = (\beta_0^k + \beta_1^k a + \beta_2^k a^2 + \beta_3^k a^3 + \beta_4^k x_0)m_{ik}(a) \qquad\qquad \textbf{14}$$

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[3] The alternative method is to use per capital health consumption in 2002 directly as shares to allocate household health consumption, see Appendix A.

where $m_{ik}(a)$ is health consumption of product k (medical supplies and medical services) for average individual at age a in 2002 and x_0 is a dummy equal to 1 if individual's age is 0, equal to 0 if age greater than 0. Substituting individual health consumption in 2002 into the household health consumption equation, household health consumption can be shown as:

$$H_j = \sum_k \sum_i (\beta_0^k + \beta_1^k a + \beta_2^k a^2 + \beta_3^k a^3 + \beta_4^k x_0) m_{ik}(a) N_j(a)$$

$$= \sum_k \left(\begin{array}{l} \beta_0^k \sum_i m_{ik}(a) N_j(a) + \beta_1^k \sum_i a m_{ik}(a) N_j(a) + \\ \beta_2^k \sum_i a^2 m_{ik}(a) N_j(a) + \beta_3^k \sum_i a^3 m_{ik}(a) N_j(a) + \beta_4^k \sum_i x_0 m_{ik}(a) N_j(a) \end{array} \right)$$

15

Household health consumption is regressed on all variables shown in the above equation. Then, coefficients are used to estimate individual health consumption of medical supplies and medical services. Combining individual health consumption of both types, predicted value of total individual health consumption in 1996 can be shown as:

$$h_i^*(a) = \beta_0^1 m_{i1}(a) + \beta_1^1 a m_{i1}(a) + \beta_2^1 a^2 m_{i1}(a) + \beta_3^1 a^3 m_{i1}(a) + \beta_4^1 x_0 m_{i1}(a)$$
$$+ \beta_0^2 m_{i2}(a) + \beta_1^2 a m_{i2}(a) + \beta_2^2 a^2 m_{i2}(a) + \beta_3^2 a^3 m_{i2}(a) + \beta_4^2 x_0 m_{i2}(a)$$

16

Similar to education consumption, this predicted individual health consumption is used to estimate the share of household health consumption on each individual, which is allocated to each member by:

$$h_{ij}(a) = H_j \frac{h_i^*(a) N_{ij}(a)}{\sum_i h_i^*(a) N_{ij}(a)},$$

17

where $N_{ij}(a)$ is a dummy variable equal to 1 if member i in household j age a.

4.1.2.3 Private Consumption Other

Private consumption of other goods is defined as total consumption less education, health and housing. Household consumption of these goods is allocated to each member using

ad hoc allocation rule based on an extensive review of the literature and other estimation methods[4]. The allocation rule is based on the assumption that individual consumption is proportional to an equivalence scale that varies by age; children consume less than adults, and consumption by children increases with age.

4.1.2.4 Indirect Taxes on Consumption

Indirect taxes on consumption, as shown in Table 3, are mainly taxes on private consumption of other goods. These indirect taxes on consumption are mainly levied on three types of goods: tobacco, alcohol and others. These types of indirect taxes are allocated to individuals proportional to individual consumption on these different types of goods, assuming the tax rates of these indirect taxes on consumption do not vary by age.

There is distinction between consumption of tobacco and alcohol and consumption of others. Tobacco and alcohol are mainly consumed by adults or the elderly. In contrast, other goods are consumed by all household members. Thus, the estimation of individual consumption of these goods relies on two different methods.

First, individual consumption of tobacco and alcohol is estimated using a regression method. The household consumption on tobacco and alcohol are regressed on the number of household members, by five-year age groups. Only adult members are included in the regression. Adults include those in the age group 15 and older (with an upper open age of 75 and older) for tobacco and age group 15-74 for alcohol[5]. Coefficients from the regressions are assigned to individuals based on age. Following the method used in the allocation of private education and health consumption, these coefficients are treated as shares of individual consumption of total household consumption. Consumption by tobacco and alcohol is thus estimated as the product of estimated shares and household consumption of tobacco and alcohol.

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[4] Examples are Deaton (1997), Lai (2006) and Maliki (2005). For more details please refer to http://www.schemearts.com/proj/nta/web/nta/show/Documents/Flow%20Account%20Methods#H-84r1w3
[5] When the oldest age group (75 and older) is included in the alcohol regression, its coefficient turns negative.

Second, individual consumption of other goods, such as vehicles and petroleum, is estimated using an equivalence scale method, similar to the allocation of private consumption of others. An equivalence scale corresponding to individual at each age is a share of individual consumption of these goods. When this share is multiplied by household consumption of vehicles, petroleum and others, individual consumption of these respective goods is estimated.

4.1.2.5 Private Housing Consumption

Housing consumption is the imputed value of owner-occupied housing. Housing consumption is allocated to each member using the equivalence scale and the method used to allocate private other consumption.

4.1.3 Labor Income

Labor income consists of two sources of incomes: compensation of employees (earnings) and the labor's share of income from unincorporated enterprises. Aggregate control of these two sources of labor income is reported in Table 3. Following Mason et al. (forthcoming), the labor's share of income from unincorporated enterprises is two-thirds, while the other one-third is the capital's share. In Thailand, both earnings and income from unincorporated enterprises are reported in the SES at the individual level. Thus, earnings and two-thirds of income from unincorporated enterprises can be estimated directly from the SES.

4.2 Age Reallocations: Public Transfers

4.2.1 Overview of Public Transfers

Public transfers are transfers of economic resources from one age group to another through the public sector, combining the local and central governments. There are two counterparts of public transfers: public transfer inflows and public transfer outflows. From the point of view of individuals, inflows are benefits that people receive through the public sector, while outflows are taxes that people pay to finance the public expenditure. Total public outflows and inflows within the economy must sum to zero.

Public transfer inflows consist of in-kind transfers and cash transfers. In-kind transfer inflows consist of all goods and services produced by the government and consumed by individuals. Examples of public in-kind transfer inflows, shown in Table 7, include public education, public sector health care, defense, and other goods and services provided by the public sector. The total value of in-kind public transfer inflows is equal to public consumption. Cash transfer inflows consist of social security benefits and other cash transfers, which are monetary transfers directly to households or individuals, such as grants and social welfare. In addition to public transfers, public saving shown in Table 7 is part of asset-based reallocations, which is described in the following chapter.

Table 7: Government Expenditures of Thailand in 1996

	Billion Baht
Public Transfers	**501**
In-kind Transfers	470
Education	144
Health	44
General Administration	100
Defence	110
Justice and Police	44
Special Welfare Services	4
Transport and Communication Facilitie	9
Other Services	14
Cash Transfers	31
Social Security Benefits	10
Other Cash Transfers	21
Public Saving	**431**
Disposal of Current Revenue	**932**

Public transfer outflows measure the transfers from individuals or households to the government that finance both in-kind and cash transfer inflows. For a government with a balanced budget or a budget surplus, outflows consist entirely of revenues. For a government with a budget deficit, outflows consist of revenues plus implicit taxes. Implicit taxes are the amount of money that the government, on behalf of taxpayers,

borrows from investors, for example by issuing bonds, in order to pay the taxes necessary to finance public expenditures.

For the government of Thailand in 1996, total revenues (932 billion Baht), as shown in Table 8, are greater than expenditures of public transfers (501 billion Baht). Total revenues consist of tax revenue and non-tax revenue. Examples of tax revenue are personal income tax, corporate income tax, indirect taxes less subsidies and social security contributions. Examples of non-tax revenue are income from government enterprises less interest payment on public debt and net transfers from the private sector. Net transfer from abroad is public transfers received from abroad minus public transfers given to abroad. Tax incidence is discussed below.

Table 8: Government Revenues of Thailand 1996

	Billion Baht
Tax Revenue	**863**
Personal Income Tax	112
Corporate Income Tax	176
Indirect Taxes	573
Less: Subsidies	12
Social Security Contributions	13
Non-tax Revenue	**69**
Income from Government Enterprises	66
Less: Interest Payment on Debt	9
Cash Transfers from the Private Sector	11
Net Transfers from Abroad	2
Current Revenue	**932**

Source: National Income of Thailand (NESDB 2001, Account 5)

According to the Revenue Department of Thailand, different types of taxes are levied on different sources of income. Personal income tax is levied on a person's chargeable income, which includes both cash income and in-kind income. Corporate income tax is levied on the company's net profit. Indirect taxes include various types of taxes, which are levied on production and consumption such as excise tax, value-added tax and specific business tax. Subsidies are contributions from the government to lower the

production cost. Social security contributions are imposed on the wages of employees. Non-tax revenue does not have age-specific tax incidence. Income from property and enterprises of the general government is the revenue contributed from the state enterprises and the government monopolies. Current transfers from the private sector are, for example, fee, fines and penalties.

4.2.2 Age Profiles of Public Transfers

Public transfer inflows consist of public in-kind transfer inflows and public cash transfer inflows. Public in-kind transfer inflows are equal to government consumption expenditure. Estimation method of the age profile of government consumption is described in the lifecycle deficit section above. Public cash transfer inflows are social security benefits and other public cash transfers. The social security system in Thailand primarily provides health insurance for workers, with little or no benefits targeted to children and the elderly. Per capita social security benefit is estimated using the per capita private health consumption profile of workers. Other public cash transfer inflow is non-age targeted, thus it is allocated equally to everyone. In addition to public transfers within the economy, there are flows provided by the foreign sector, such as foreign grants. Net public current transfers from the rest of the world are assumed to benefit everyone equally.

Public transfer outflows are tax payments and other government income. Following the approaches used to construct the NT Flow Account of Taiwan by Mason et al. (forthcoming) and Generational Accounts (Auerbach et al. 1999), the age profiles of tax payments are estimated based on the assumption that the incidence of the tax falls on the entity that pays the tax. The age profile of personal income tax is estimated using household tax expenditures reported in the SES. Assuming the tax rate does not vary by age and income, taxes at the household level are allocated to individuals proportionally to individuals' income from wage, income from unincorporated enterprises and property income. Examples of indirect taxes are shown in Table3, distinguishing indirect taxes borne by consumers and indirect taxes borne by produces. Age profiles of indirect taxes levied on different consumption goods are discussed in the private consumption section

above. Indirect taxes borne by producers follow age profile of income from enterprises and property. Social security contributions are taxes on the wages of employees. Non-tax revenue does not have specific tax incidence, but it is likely that those who have high asset income pay more of this non-tax.

There is a complicating issue in estimating corporate income tax. The age profile of corporate income tax can be estimated based on different source of income: wage income or property income. The generational account of Thailand uses wage income, claiming that the capital tax is borne by labor in a small open economy (Kakwani and Krongkaew 1999). However, the more common method, used by other countries to estimate both the generational accounts and NT Flow Accounts, is to use property income to estimate corporate income tax, claiming that capital tax is borne by asset owners. The age profiles of net public transfers based on two different corporate income tax profiles are shown in Figure 3. The method using property income profile to estimate corporate income tax is used in this paper because it is more commonly used by other countries, and the assumption of free capital movement used in the generational account of Thailand may not be strong enough to explain that the tax incidence is fallen on workers.

Finally, all these age profiles are estimated assuming that tax rate for each type of tax is independent of age. Thus, taxes paid (public transfer outflows) are proportional to the income or other economic resource being taxed.

Figure 3: Per Capita Net Public Transfers for Thailand in 1996
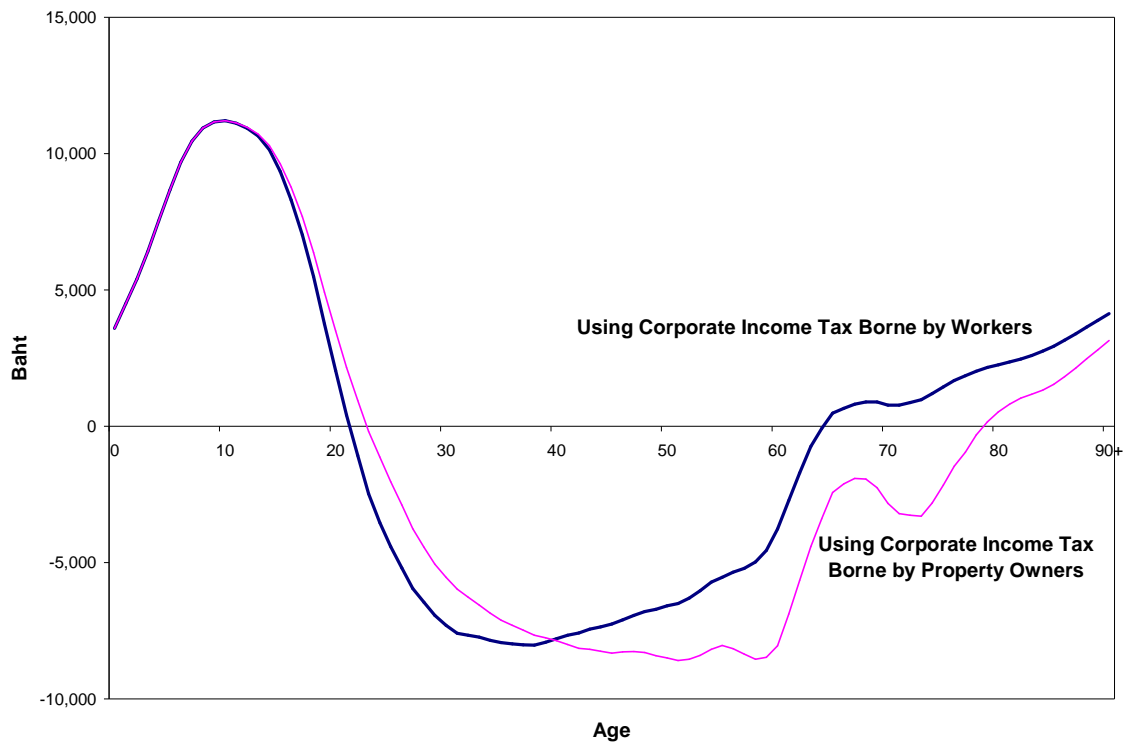
4.3 Age Reallocations: Private Transfers

Private transfers are categorized into two forms: inter-household transfers (transfers between two households) and intra-household transfers (transfers between individuals who belong to the same household). In all cases net transfers are computed as the difference between two profiles, which are transfers received (transfer inflows) and transfers given (transfer outflows). Bequests are not estimated in this paper.

4.3.1 Inter-household Transfers

The survey reports transfers received from and given to other households. Examples of transfers given to other households are weddings, charity, funerals and other gifts to individuals outside a household. There is no detail of transfers received by people outside a household. Further, there is no distinction between domestic transfers and foreign transfers. The SES reports transfers given at the household levels and transfers received at both the household and the individual levels. Transfers received and transfers given are assumed to flow between household heads.

Age profiles of inter-household transfers received and transfers given are estimated directly from the SES. However, these transfers require some adjustment since there is no information on the aggregate control of domestic transfers. National income account of Thailand reports only aggregate control of private transfers received from and private transfers given to abroad. Theoretically within the economy, inter-household transfers received have to equal inter-household transfers given. Thus, the difference between aggregate inter-household transfers received and inter-household transfers given have to equal aggregate net private transfers received from abroad.

The problem arises when the aggregate net private transfers received estimated from the SES are lower than the aggregate net transfers received from abroad reported in national income account. The aggregate net transfers received from the SES are inflated to match with the net transfers from abroad reported in national income account. Consequently, aggregate inter-household transfers received and inter-household transfers given are inflated using the same adjustment factor as aggregate net transfers received.

4.3.2 Intra-household Transfers

Intra-household transfers measure transfers within a household unit. Aggregate net intra-household transfers are zero because transfers received by one household member are given by another member. However, net intra-household transfers in each age group are not zero. Some age groups have positive net intra-household transfers, while some have negative net intra-household transfers. There is no report on the intra-household transfers in the survey data. These values are imputed based on the method described below.

Household members who consume more than their "disposable income" receive intra-household transfers from those who consume less than their "disposable income". Disposable income is defined as labor income plus net public cash transfers (cash inflows less taxes) plus net inter-household transfers. If a household has total disposable income of all members combined more than total consumption of all members combined, the surplus is transferred to the household head and saved. On the other hand, if a household has total disposable income less than total consumption, the household head makes

additional intra-household transfers to finance this deficit by using asset income, dis-saving or by acquiring debt.

Intra-household transfers to support current consumption (non-durable goods) are financed by imposing a household specific flat-rate tax on each member's surplus income. Within the household, each member is taxed at the same rate. The tax rate does not vary by age. In contrast, consumption of durables, or services from owner-occupied housing, by any non-head household member is financed by intra-household transfers from the head to the member. The amount of transfers is equal to the value of member's durable consumption. Consumption of durables are different from current consumption because, by assumption, the household head owns all household assets and all income generated by those assets flows to the head[6].

There is an empirical problem for measuring the aggregate intra-household transfers. Net intra-household transfers measured within a household are invariably zero. However, when age profile of per capita intra-household transfers is multiplied by population by age, the aggregate intra-household transfers does not sum up to zero. This is due to the difference between the age structure of population reported in the survey and the age structure of population estimates by the UN.

In Thailand, the aggregate intra-household transfer inflows are greater than the outflows. This problem is solved by inflating the aggregate intra-household transfer outflows proportionally to match with the aggregate intra-household transfer inflows.

4.4 Age Reallocations: Asset-based Reallocations

Asset income equals one-thirds of income from unincorporated enterprises and income from enterprises and property (aggregate control shown in Table 4). Age profiles of income from farm and non-farms enterprises are used to allocate the asset income of unincorporated enterprises across age groups. The property income profile, which

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[6] For more details, please refer to the website
http://www.schemearts.com/proj/nta/web/nta/show/Documents/Private%20Transfers

consists of income from rent, interest, and dividends, is used to allocate income from enterprises and property. Following Mason et al. (forthcoming), only the household head[7] receives asset income.

Saving by age is estimated as a residual. Based on equation 2, saving is computed from income from asset $Y^a(a)$ plus transfer received $\tau^+(a)$ less transfer payments $\tau^-(a)$ plus labor income $Y^l(a)$ less consumption $C(a)$. Similar to private asset income, only the household head saves. Further, saving includes investment in capital and investment in credit. Details of how to estimate the components of saving are described in the following chapter.

5. Results

The National Transfer Flow Account for Thailand in 1996 estimated in this paper is shown in Table 9. The age-specific values are presented in broad age groups to facilitate discussion, but the underlying values are estimated by single-year of age. The results are agreed with the accounting identity shown in Equation 2 that the lifecycle deficit is equal to age reallocations in total and every age group. Different age groups have different lifecycle deficit and they use different mechanisms to support their consumption. The components of the NT Flow Account estimated in the described methods are divided by population by age to present per capita values. All age profiles presented here are smoothed using "the super smooth method" or the *supsmu* command in "The R Project for Statistical Computing" (http://www.r-project.org; Friedman 1984).

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[7] Household head can be defined using two definitions: economic head and self-reported head. The economic head is the principal earner in the household or the person who owns the most income combined from wage, entrepreneurial income and property income. The administrative or self-reported head is the person reported in the survey that he or she is the head of the household. This paper uses the concept of economic head to define headship in order to match with the method used by other countries, such as Taiwan, in estimating the NT Flow Account. The results using self-reported head are presented in the Appendix B.

Table 9: The National Transfer Flow Account for Thailand in 1996, Aggregate, Billion Baht

	Total	Domestic by age				
		0-19	20-29	30-49	50-64	65+
Lifecycle Deficit	**366**	**710**	**34**	**-446**	**-24**	**91**
Consumption	**2,429**	**774**	**539**	**739**	**260**	**118**
Public	470	252	76	90	34	18
Private	1,959	522	463	649	226	101
Less: Labor income	**2,063**	**63**	**505**	**1,184**	**283**	**28**
Age Reallocations	**366**	**710**	**34**	**-446**	**-24**	**91**
Asset-based Reallocations	**345**	**12**	**54**	**133**	**94**	**53**
Income on Assets	1,372	5	161	736	365	106
Less: Saving	1,026	-8	107	603	271	53
Transfers	**21**	**698**	**-20**	**-578**	**-118**	**38**
Public	2	197	-22	-122	-46	-5
Private	18	501	2	-456	-72	44
Inter-household Transfers	18	2	4	-3	8	7
Intra-household Transfers	0	499	-2	-454	-80	37

5.1 Lifecycle Deficit

The lifecycle deficit (or the economic lifecycle) of Thailand is defined by the production (labor income) and consumption age profiles shown in Figure 4. Children and the elderly of both countries consume more than they produce, resulting in large lifecycle deficits. The working age groups produce more than they consume, generating a lifecycle surplus. The labor income age profile of Thailand has an inverse U-shape. The labor income profile of young workers increases with age, and it reaches a peak at around the ages of late thirties to early forties. Then, the labor income profile of old workers declines. , Despite concentrating among working ages like the labor income profile, the consumption profile is relatively flat across age groups. The consumption profile is low among children, then it increases steeply with age and reach a peak at around age 20. After reaching a peak, consumption profile is rather stable before declining slightly at the ages of late seventies.

Figure 4: Per Capita Labor Income and Consumption for Thailand in 1996
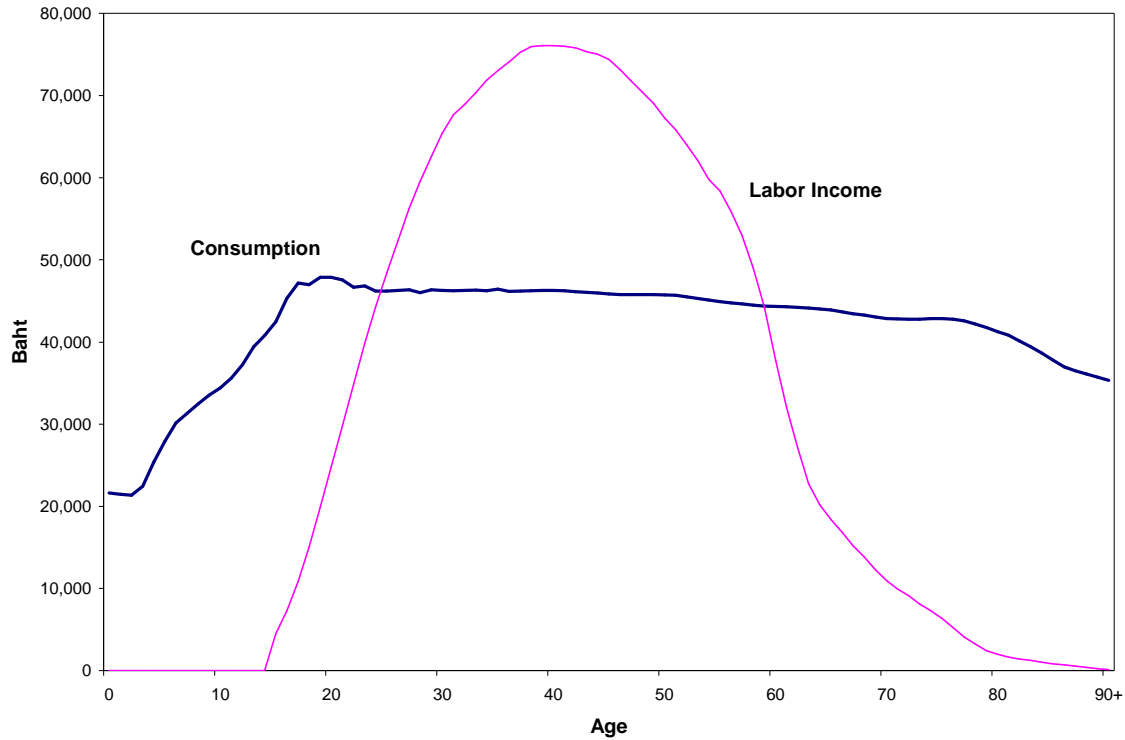
Note: The average exchange rate of Thailand in 1996 was about 25 Baht per 1 USD

Per capita lifecycle deficit profile is shown in Figure 5. The lifecycle deficits of young children increase with age and reach a peak at around age 15. The lifecycle deficits start to decline when young adults begin to earn labor income and partially support their consumption. The lifecycle surplus is primarily generated by older workers. The lifecycle surplus ages reach a peak at around ages of mid-forties. After reaching a peak, a lifecycle surplus continually declines. Then, the lifecycle deficits of the elderly continually increase before slightly declining after the age 80. The age at which individuals produce more than they consume or become net producers is at age 25. The age at which individuals are no longer net producers is at age 59. Thus, the span of years during which there is a lifecycle surplus is about 34 years.

Figure 5: Per Capita Lifecycle Deficit for Thailand in 1996
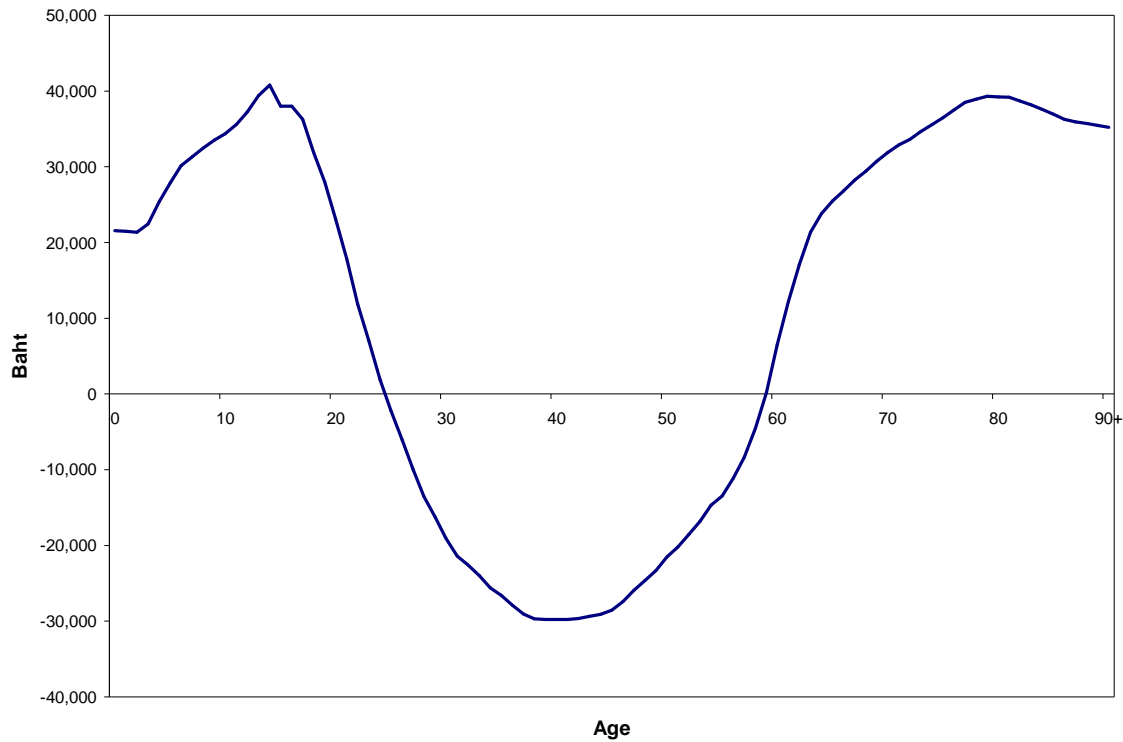
5.2 Age Reallocations

There are three economic forms used to reallocate resources, which are asset-based reallocations (asset income minus saving), public transfers and private transfers. These age profiles are shown in Figure 6. For children familial transfers dominate their reallocations. For the elderly asset-based reallocations dominate, but they continually decline. Private transfers turn to be the major source of support for the elderly after the age of 74. Public transfers to the elderly are small and turn positive at an old age (79).

Figure 6: Per Capita Age Reallocations Profiles for Thailand in 1996
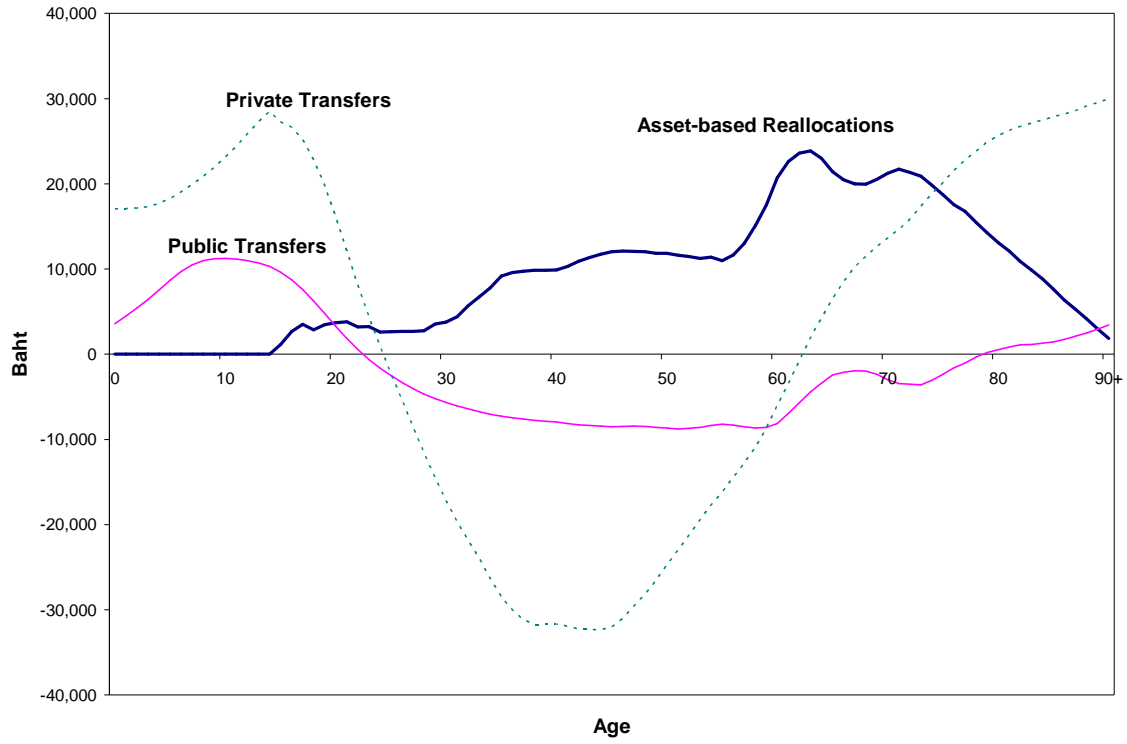
Appendices

Appendix A: Notes on the Estimation of Private Health Consumption

The method used in this paper is based on the assumption that there is a cubic relationship between age in 1996 and the average health consumption by age in 2002. This alternative method is based on the assumption that there is no difference in the age profile of private health consumption in 1996 and 2002. Health consumption by age in 2002 is used directly as an individual's share of household health consumption in 1996. Then, household health consumption in 1996 is allocated to each member using this share.

Age profiles of per capita private health consumption shown in Figure 1A, separating age profiles using polynomial method and direct substitute method. Further, age profiles of upper limit and lower limit confidence intervals (95%) of mean values respective to polynomial and direct substitute methods are also shown here. The profiles of confidence intervals are shown to evaluate the difference between these two methods.

The most important difference between these two age profiles is mainly the estimation of health consumption by children. Health consumption by children estimated using the direct substitution method appears higher than the polynomial method. However, the upper confidence intervals of health consumption by children estimated using the polynomial method lie between mean and lower confidence intervals estimated using the direct substitution method. Thus, it is concluded that there is no statistical difference in mean values of per capita private health consumption in all age groups estimated using the polynomial method and the direct substitute method. Polynomial method is preferred since it allows per capita profile of private health consumption for the year 2002 to change with age composition in the year 1996.

Figure 1A: Confidence Intervals of Per Capita Private Health Consumption Profiles Estimated Using the Polynomial and Direct Substitution Methods, Thailand, 1996 (Baht)
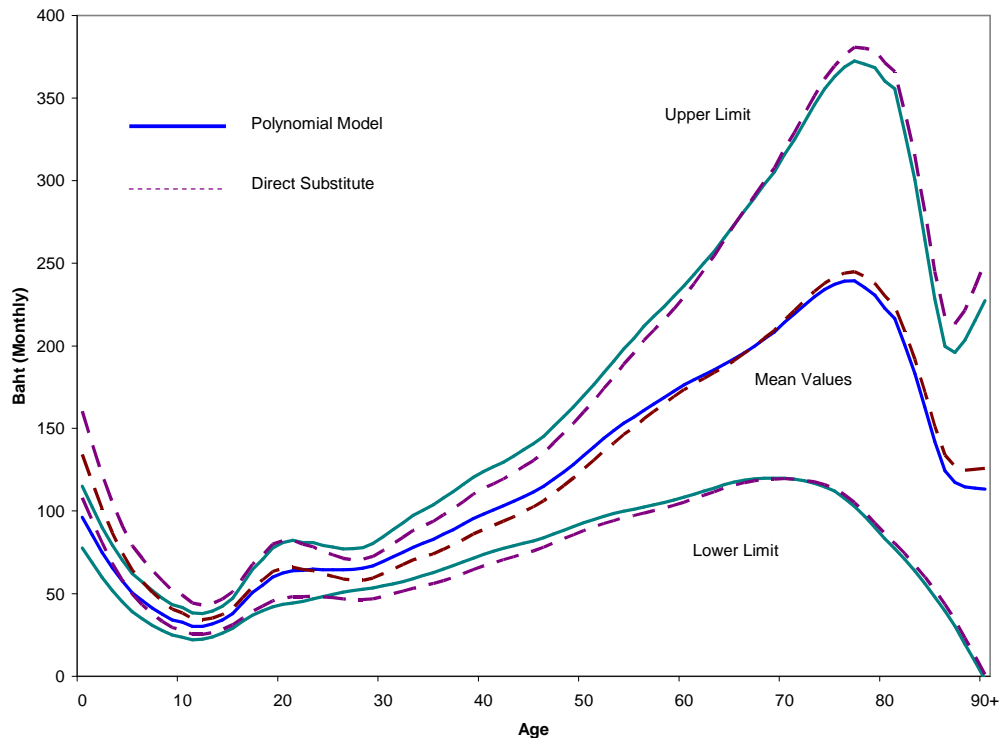
## Appendix B: Age Reallocations using Self-reported Head

A household head can be defined using the definition of economic head or self-reported head. An economic head is a principal earner, or a person who earns the highest income in the household combined from wage, income from unincorporated enterprises and property income. The economic head is computed and assigned by the household survey. By contrast, a self-reported head is based on an administrative record indicating who is a household head. This information is reported as an individual characteristic in the household survey. The age profiles of headship rate, or the number of household heads divided by the number of population in each age group, are shown in Figure 2B distinguishing for economic head and self-reported head. The population-weighted mean age of self-reported head (47.8 years) is higher than economic head (42.1 years).

**Figure 2B: Headship Rate for Thailand in 1996**
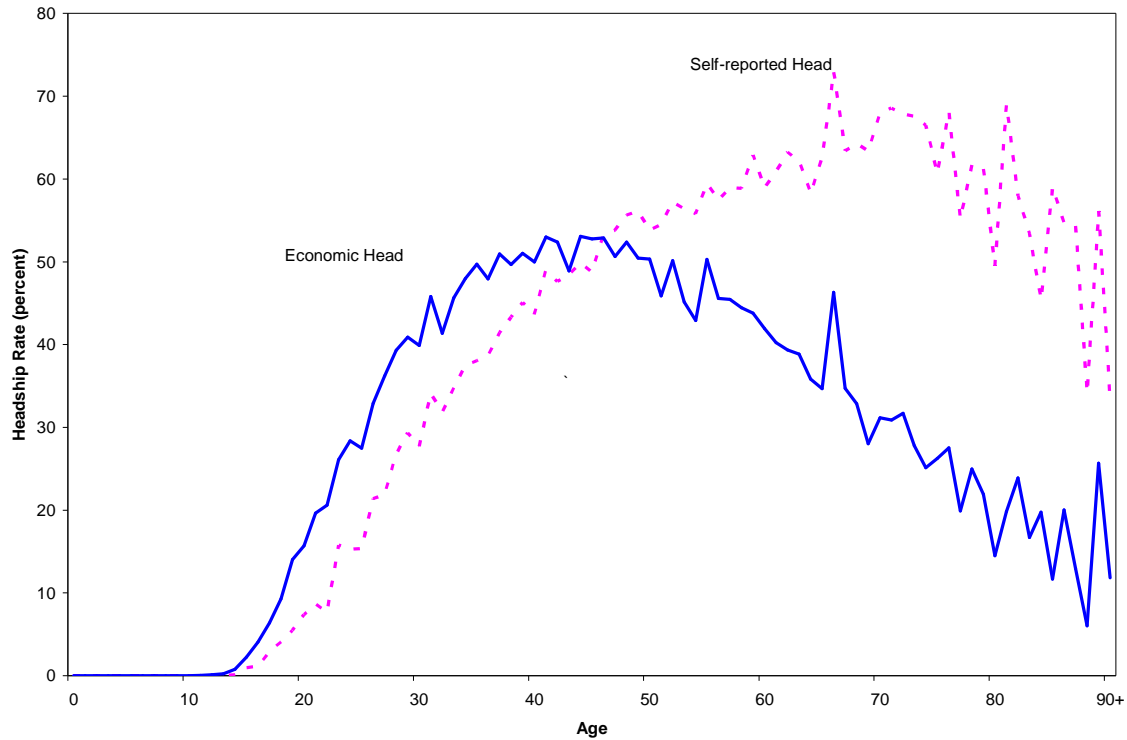
The difference in household head leads to the difference in age reallocations. Compared to age profiles of age reallocations using economic head definition in Figure 6, age reallocations using self-reported head definition shown in Figure 3B are somewhat different. Private and public transfers to the elderly using self-reported head are slightly lower than using economic head. By contrast, asset-based reallocations for the elderly using self-reported head are much higher than using economic head.

Figure 3B: Per Capita Age Reallocations Profiles Using Self-reported Head Definition for Thailand in 1996
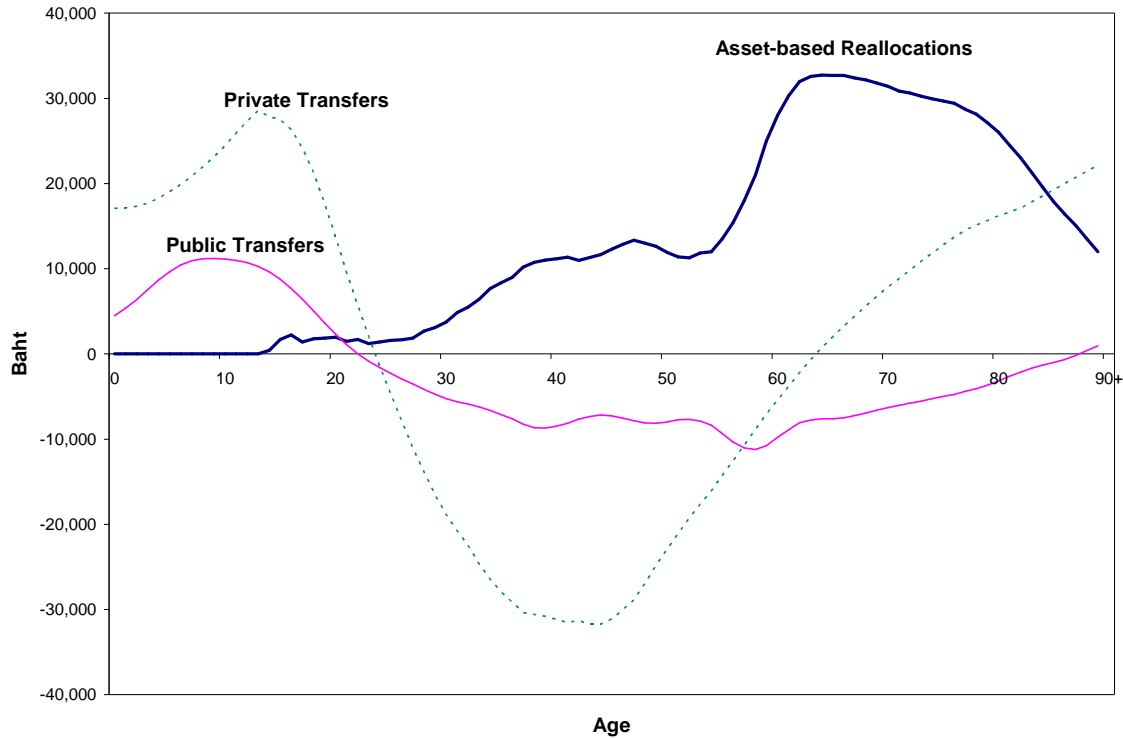
Age profile of asset-based reallocation using self-reported head is different from that using economic head because both approaches have different age profiles of asset income and saving as shown in Figure 4B. Age profiles of asset income and saving estimated using economic head is larger (in an absolute term) than those using self-reported head for those who are younger than age 55. For people at age 55 and older, asset income and saving estimated using economic head is smaller (in an absolute term) than those using self-reported head. The population-weighted mean ages of asset income and saving using self-reported head are 60.5 and 58.5 years, which are higher than using economic head at 54.2 and 52.0 years.

Figure 4B: Per Capita Age Profiles of Asset-income and Saving for Thailand in 1996
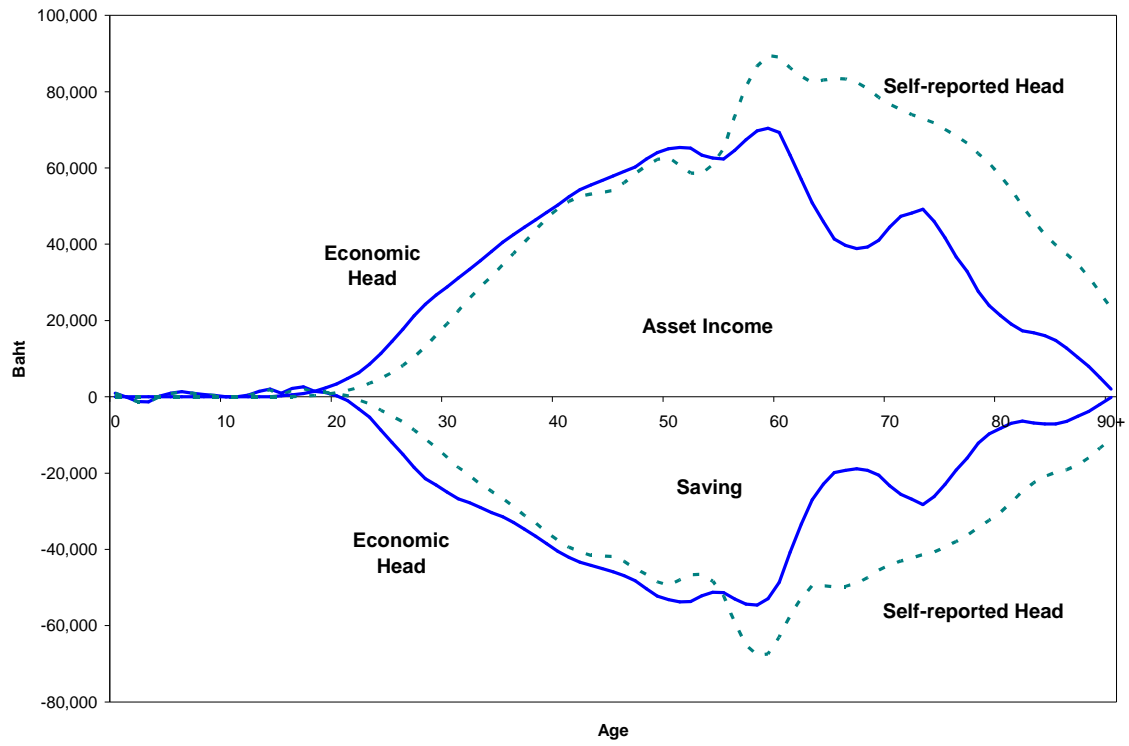
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