



Philippines 2007 NTA: Consumption,  
Income, and Intergenerational  
Reallocation of Resources

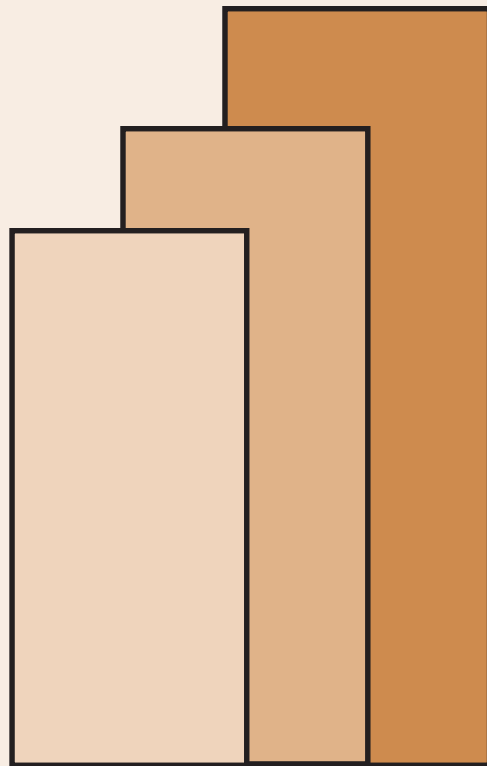
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**Philippines 2007 National Transfer Accounts (NTA):  
Consumption, Income and Intergenerational Reallocation of Resources<sup>1</sup>**

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March 2012

Abstract

The 2007 NTA for the Philippines provides more recent information about which population age groups incur lifecycle deficit, the sizes of the aggregate deficits and how consumption is financed for the different age groups. It also provides age profiles for consumption and labor income (and components) estimated using 2007 data. The 2007 Philippines NTA serves two main purposes: it provides the update on the economic lifecycle information for the Philippines that was first generated by the 1999 NTA; and it provides updated age profiles for consumption and labor income that can be used to examine the economic implications of change in the size and age structure of Philippine population that is projected for the future.

Keywords: National Transfer Accounts, economic lifecycle, labor income age profile, consumption age profile, lifecycle deficit, age reallocation

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<sup>1</sup>. This paper is an output of the “Intergenerational Transfers, Population Aging and Social Protection in Asia” Project. The Philippine Institute for Development Studies (PIDS) and Nihon University Population Research Institute (NUPRI) are implementing the Philippines component of said Project with support from the Thailand Development Research Institute (TDRI) and the International Development Research Center (IDRC). The Project is part of an international collaboration to develop and apply the National Transfer Accounts (see [www.ntaccounts.org](http://www.ntaccounts.org).)

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# **Philippines 2007 National Transfer Accounts (NTA): Consumption, Income and Intergenerational Reallocation of Resources**

Michael Ralph M. Abrigo, Rachel H. Racelis, and J.M. Ian S. Salas

## 1. Introduction

The first set of NTA flow accounts for the Philippines was estimated for the year 1999, and methods and results are discussed in Racelis and Salas (2007) and Salas and Racelis (2008). Selected NTA components (age profiles of consumption and labor income) were also estimated for the years 1994 and 2002 (Racelis and Salas 2008a and Racelis and Salas 2011). This paper presents and discusses the most recent NTA flow accounts for the Philippines which were estimated for the year 2007.

An overview of NTA and its application in the Philippines is provided in Section. 2. Results of the 2007 NTA flow accounts for the Philippines are discussed in three parts. Section 3 discusses the overall consumption, labor income and lifecycle deficit age profiles. Section 4 presents estimates of age profiles of each component of consumption and labor income. Financing of consumption is presented in Sections 5 The last section, Section 6, concludes this paper.

## 2. NTA and its application in the Philippines

### *NTA work in the Philippines*

NTA was first applied in the Philippines in 2007 in the Asia's Dependency Transition Project implemented by PIDS and NUPRI with funding from the United Nations Fund for Population (UNFPA). NTA flow accounts estimates for 1999 and estimates of selected NTA components for 1994 and 2002 were produced. The methods used and analysis of results are discussed in the following papers (see [www.pids.gov.ph](http://www.pids.gov.ph)) and chapter of a book: Racelis and Salas (2007); Racelis and Salas (2008); Racelis and Salas (2008a); Racelis and Salas (2011); and Salas and Racelis (2008).

Continuing work on the Philippines NTA (until 2012) is being carried out under the Intergenerational Transfers, Population Aging and Social Protection in Asia Project also implemented by PIDS and NUPRI with support from the Thailand Development Research Institute (TDRI) and the International Development Research Center (IDRC). In this Project the 2007 Philippine NTA flow accounts were estimated nationally and by socio-economic group. While there have been some modifications in the methods used in the 2007 NTA estimation, the overall approach described in Racelis and Salas (2007) was followed.

## Overview of NTA framework and methodology

NTA is a comprehensive system of accounts that measures the economic lifecycle and the associated economic support systems. Consumption and labor income age profiles, and economic flows from members of specific age groups to other age groups, referred to in NTA as age reallocation or intergenerational transfers, are measured at the aggregate level and for a prescribed period of time. In general those age groups in a population who produce more than they consume (surplus ages) support those age groups who consume more than they produce (deficit ages, mainly children and elderly): that is, reallocations of economic resources are made from surplus to deficit ages. The NTA additionally reports age reallocations by type of channel or system through which these are mediated. Economic lifecycle behavior of individuals and the choice of systems for intergenerational support in a country can have important implications on the welfare of the deficit age groups and on the country's economic development.

Thus, NTA results may be used to examine interaction among population age structure, economic lifecycle behavior and systems for intergenerational support, and, furthermore, their implications on wealth accumulation, economic growth and generational equity. General references on NTA include Lee, Lee and Mason (2005), Mason et. al. (2005), Mason (2005) and Mason, et. al. (2009).

In NTA, the individual is the fundamental analytic unit. All transactions are treated as flowing to (INFLOWS) and from individuals (OUTFLOWS) and are classified on the basis of the age of those individuals. Public and private institutions mediate these transactions. Public reallocations are social mandates embodied in law and regulations and implemented by local, regional, and national governments. Private reallocations are voluntary or contractual transactions between individuals, households, firms, and charitable organizations. The household plays a prominent role in private age reallocations. In virtually every society, reallocations to children are dominated by intra-household transfers, and in many countries the elderly live with and are supported by their adult children.

The governing equation for the Flow Account which must be satisfied for any individual, household, age group, or (closed) economy, is (EQUATION 1)

$$\underbrace{C - y^l}_{\text{Lifecycle deficit}} = \underbrace{rA - S}_{\text{Asset reallocations}} + \underbrace{\tau_g^+ - \tau_g^-}_{\text{Net public transfers}} + \underbrace{\tau_f^+ - \tau_f^-}_{\text{Net private transfers}} .$$

Age reallocations

Consumption expenditures (C) and labor income ( $y^l$ ) are defined in NTA as follows, using components of the Philippines National Income Accounts as reference:

$$\begin{aligned}
C &= \text{personal consumption expenditures} \\
&+ \text{government consumption expenditures} \\
&- \text{indirect taxes} \\
y^l &= \text{compensation of employees from resident producers} \\
&+ 2/3 \text{ household operating surplus}
\end{aligned}$$

The *lifecycle deficit* (LCD) is the difference between consumption (C), and production or labor income ( $y^l$ ). A negative LCD indicates a surplus. The deficit or surplus must be matched by *age reallocations* consisting of *asset reallocations* and *transfers*. Asset reallocations consist of the difference between asset income ( $rA$ ) and saving (S). Transfers consist of *net public transfers* or transfers mediated by government (public services received,  $y_g^+$ , less taxes and other fees paid to government,  $y_g^-$ ) and *net private transfers* or transfers mediated by households and other private entities (inflows to,  $y_f^+$ , less outflows from,  $y_f^-$ , each age group).

Assets are not allocated among members of the household, but rather are assumed held by a single individual, the household head. In general, individuals accumulate assets during lifecycle surplus years and rely in their retirement years on asset income and dis-accumulation of capital to cover the lifecycle deficit. The function of assets as a reallocation tool for a single individual is to smoothen his or her consumption over time or to reallocate resources across time for some other purpose. Thus, for any year's cross-section of age groups, the asset income and dis-accumulation of capital observed for older ages is not tied to the accumulation at younger ages.

Transfers, on the other hand, are transactions that transfer goods, services or cash from individuals belonging to one age group to individuals belonging to another age group with no expectation of *quid pro quo* in any form. Public transfers are mediated by governments which collects taxes from some age groups and then makes transfers to all or specific age groups. Private transfers are mediated by the family and by non-profit institutions serving households. Intra-household familial transfers are transfers made from household members with lifecycle surpluses to household members with lifecycle deficits. Inter-household transfers are transfers made from one household head to other household heads.

#### *Philippine NTA flow accounts estimation*

The main sources of data for the estimation of components of the 2007 Philippines NTA Flow Account include: the 2007 National Income Accounts, specifically the Income and Outlays breakdown, obtained from the National Statistical Coordination Board (NSCB); the most recent estimates available of the National Health Accounts and the National Education Expenditure Accounts (also from NSCB); the 2006 Family Income and Expenditure Survey (FIES) and the 2007 Annual Poverty Indicator Survey (APIS) by the National Statistics Office (NSO); and government finance and budget documents containing 2007 data obtained from the Department of Budget and Management (DBM) and the Commission on Audit (COA)..

The estimation of the Flow Account for the Philippines proceeds in the following order:

First, using Equation 1 as reference, age profiles for components on the left-hand side of the equation were estimated, i.e. the age profiles of consumption and labor income were constructed (more detailed description below). Consumption consists of both public and private components. Labor income consists of salaries/wages and self-employment income.

Second, the lifecycle deficit and surplus age groups are identified by comparing consumption with labor income earned at each specific age.

Third, net public and net private transfers by age (right-hand side components in Equation 1) are estimated next. Except for the age profile of taxes, estimates of NTA components from Step 1 are used further in the computation of net public and private transfers, where net transfers equals inflows minus outflows.

Fourth, (total net) asset reallocation is derived as a residual by rearranging the terms in Equation 1 and using the results from Steps 1 and 2. That is,

$$\text{Asset reallocation} = \text{Lifecycle deficit} - \text{Net private transfers} - \text{Net public transfers}$$

The general steps for the estimation of age profiles or per capita means of consumption and labor income by age are as follows:

1. Obtain the value of the National Income Accounts (NIA) “equivalent” of the NTA component and use the NIA value as the aggregate control total. Aggregate control values used in the estimation of selected 2007 NTA Flow Accounts components are shown in Table 1.

**Table 1. NTA aggregate controls: Philippines, 2007**  
(value in billion PhP)

<i>NTA Component</i>	<i>Control Total Description</i>	<i>Value</i>
<b>CONSUMPTION</b>		<b>4,770</b>
Public – Total	Government consumption expenditures (GCE)	653
Education	GCE * (education budget share)	151
Health	GCE * (health budget share)	44
Other	GCE less public education and health expenditures	459
Private – Total	Personal consumption expenditures (PCE) less net indirect taxes paid by households (=netPCE)	4,116
Education	netPCE * (education household expenditure share)	226
Health	netPCE * (health household expenditure share)	150

Other	netPCE less household education and health expenditures	3,740
<b>LABOR INCOME</b>		<b>3,305</b>
Earnings	Compensation of domestic workers plus net compensation from rest-of-the-world (ROW)	1,987
Self-employment	2/3 * operating surplus of households	1,319

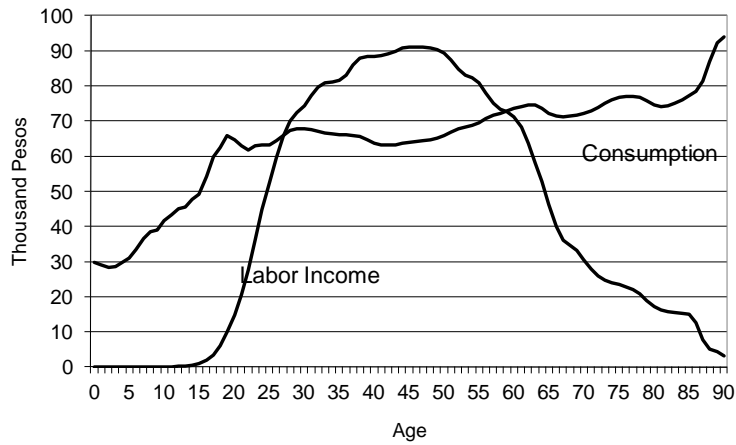
2. Calculate per capita means of the NTA component (e.g., private household education expenditure, private household health expenditure, salaries and wages, etc.) by age in single years either directly from household survey data or using some other data and method;
3. Multiply per capita means obtained from Step 2 by the population size of each age to obtain aggregate values by age and then compute for the grand total by taking the sum of aggregate values across all ages;
4. Compare the grand total from Step 3 with the control total from Step 1 and, if necessary, adjust the per capita means at each age estimated in Step 2 upwards or downwards to gain consistency with the control total.

In some cases, specifically for public consumption, the reverse process is done wherein estimation starts with the control total. First, the (control) total value is distributed to identified consumers or users of services (e.g., public school students) at each age, where users are identified using survey data. This step provides the total or aggregate value for each age group, e.g. total public education expenditures allocated to each age group. Next, per capita values (not per user or per consumer) are computed by dividing the aggregate total expenditure at each age by the population size of the age group.

### 3. Lifecycle deficit by age

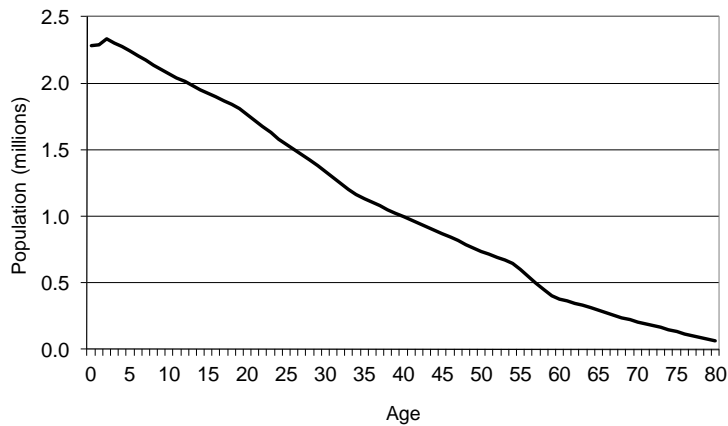
The per capita age profiles in Figure 1 show the labor earnings and consumption patterns over the lifecycle of the average Filipino individual. The profile for labor income has the expected bell-shape, rising sharply between ages 15 to 25, peaking at age 42 and declining thereafter. Per capita current consumption show steep increase up to around age 19, staying relatively unchanged up to age 45 and gradually increasing again towards old age. The sharp increases in per capita consumption at younger ages are due to education expenditures while the gradual increase in the older ages is due to health care consumption that increases with age.

**Figure 1. Age profile of per capita consumption and labor income, Philippines, 2007, current prices (in PhP thousands)**



There is lifecycle deficit or consumption exceeds labor income for the young up to age 25 and for the elderly from age 58 onwards. The age groups 0-25 years and 58 years and over are referred to as the dependent age groups or the deficit age groups. There is lifecycle surplus or labor income exceeds consumption from ages 26 to 57 years, a span of 32 years.

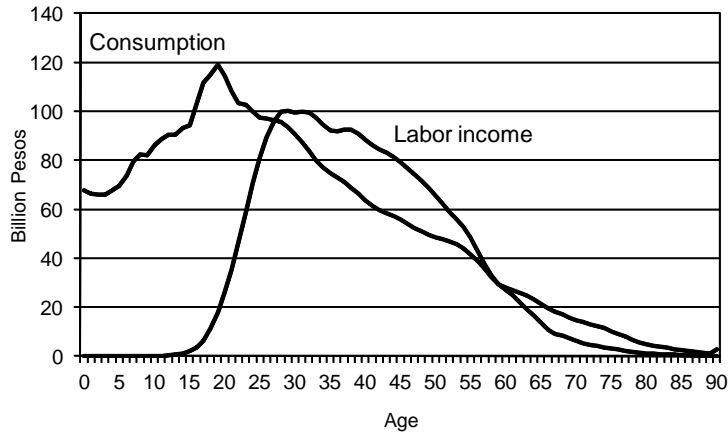
**Figure 2. Age profile of population, Philippines, 2007 (in millions)**



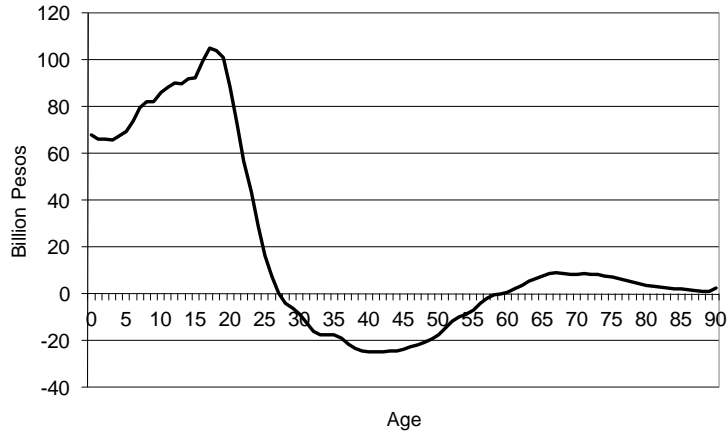
In 2007 the distribution of the Philippine population by age was typical of an expansive or growing population (Figure 2), with the young accounting for the highest percentage of the population. Multiplying the 2007 per capita age profiles for consumption and labor income (Figure 1) with the population size at each age for the same year (Figure 2) produces the aggregate age profiles shown in Figure 3. The aggregate lifecycle deficit by age computed as the difference between the aggregate consumption and aggregate labor income at each age is presented in Figure 4.



**Figure 3. Age profile of aggregate consumption and labor income, Philippines, 2007, current prices (in PhP billions)**



**Figure 4. Age profile of aggregate lifecycle deficit, Philippines, 2007, current prices (in PhP billions)**



As observed previously in the per capita age profiles in Figure 1 and this time in in the aggregate age profiles in Figures 3 and 4, there is lifecycle deficit, i.e. consumption exceeds labor income, for the young up to age 25 and for the elderly from age 58 onwards. The age groups 0-25 years and 58 years or older are referred to as the dependent age groups – defined based on lifecycle deficit rather than arbitrarily just based on age. These age groups are also referred to as the deficit age groups. There is surplus or negative lifecycle surplus, i.e. consumption is less than labor income, from ages 26 to 57 years. The aggregate age profiles indicate the magnitude of the lifecycle deficit of the young and the elderly relative to the surplus generated by the working age group. Two important observations from Figures 3 and 4 are (1) in 2007 the young accounted for the greater share of total deficits and (2) the aggregate surplus by the age-group 26-57 is not enough to cover the total deficits of the two dependent populations.

Aggregate values of consumption, labor income and lifecycle deficit are summarized by broad age groups in Table 2. Also presented in Table 2 are the components of labor income and consumption. The grand totals in this table may not

exactly tally with the control totals shown in Table 1 because of rounding in the age-specific computations.

Consumption consists of public and private components with public consumption accounting for around 14 percent of total consumption in 2007. Both public and private consumption are comprised of consumption on education, health and others. There is interest to analyze education and health consumption separately because these constitute human capital investment and because these are age-sensitive. Education and health consumption in 2007 accounted for 23 and 7 percent of public consumption, respectively, and 6 and 4 percent of private consumption, respectively. The young under age 25 account for all education consumption in 2007, both public and private. The elderly account for disproportionate shares of about 11 and 28 percent of public and private health consumption respectively.

Labor income consists of earnings, including fringe benefits, from domestic paid employment and income from self-employment. Labor income in 2007 is roughly 60 percent earnings from paid employment and 40 percent income from self-employment. The elderly 58 or older account for about 7, 5 and 12 percent of total, labor income, earnings and self-employment income, respectively. Earnings of Overseas Filipino Workers (OFWs) are accounted for in the 2007 Philippine NTA as inter-household transfers and treated separately from labor income.<sup>3</sup>

**Table 2. Aggregate consumption, labor income and lifecycle deficit by age group, Philippines, 2007, current prices (PhP Billion)**

	All	0-14	15-25	26-57	58+
LIFECYCLE DEFICIT (SURPLUS)	<b>1,464</b>	<b>1,165</b>	<b>612</b>	<b>-516</b>	<b>204</b>
CONSUMPTION	<b>4,769</b>	<b>1,165</b>	<b>1,176</b>	<b>1,982</b>	<b>446</b>
Public	654	299	138	178	38
Education	151	118	33	0	0
Health	44	18	6	14	5
Others	459	163	99	164	33
Private	4,115	866	1,038	1,804	408
Education	226	86	139	0	0
Health	151	41	15	52	43
Others	3,739	738	883	1,752	365
LABOR INCOME	<b>3,305</b>	<b>0</b>	<b>564</b>	<b>2,498</b>	<b>243</b>
Earnings	1,987	0	405	1,491	91
Self-Employment	1,319	0	159	1,008	152

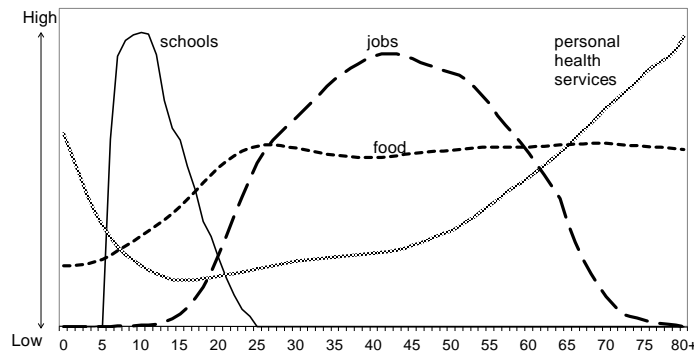
The aggregate lifecycle deficit in 2007 amounted to about PhP1,980 billion with the young accounting for around 90 percent and the elderly the remaining 10 percent.

<sup>3</sup> This is a change in assumption adopted in the 2007 NTA. The original NTA estimates for 1999 reported earnings of OFWs as labor income.

Aggregate surplus generated by the 26-57 age group amounted to PhP516 billion and the surplus-to-deficit ratio was about 0.26.

Shown in Figure 5 are age profiles of service requirement cited in NEDA (1993) (taken from Corsa and Oakley, 1971). The profiles in Figure 5 suggest that a person exerts pressure on specific services differently at different points in his lifecycle.

**Figure 5. Relationship Between Service Requirement Per Person and Age (Source:L.Corsa & D.Oakley 1971 cited in Herrin 1983)**



While the profiles in Figure 5 are for amounts of services to be consumed and jobs needed at each age, and the profiles presented in this paper are for consumption in monetary terms, the profiles in Figure 5 are still useful as reference for what general shapes to expect for the various consumption items (education, health, and food for overall consumption profile) and income (jobs). In general, the 2007 age profiles presented in the succeeding sections for the Philippines have similar shapes as those represented in Figure 5.

#### 4. Age profiles of consumption and labor income components

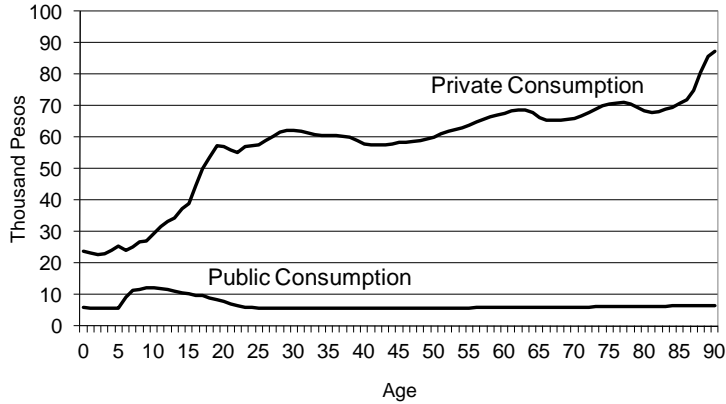
##### *Current Consumption*

Per capita public consumption is relatively flat except for the bump in the schooling ages 5-24 years (Figure 6). Per capita private consumption, on the other hand, show steep increase up to age 19 years and then a gradual rise up to the older ages.

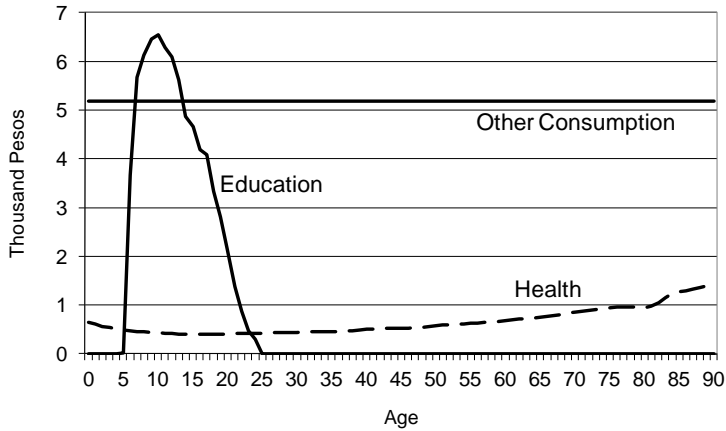
By consumption item, public education consumption is observed to be targeted to ages attending the basic education level, i.e. ages 5-16 years, while private education consumption is highest in ages attending the tertiary education level, i.e. ages 17-24 years (Figures 7 and 8). The patterns in these education consumption age profiles reflect the fact that basic education in the Philippines is provided by the government for free and that private household expenditures are paying for education costs that are not financed by the government. Expenditures are highest for child and elderly health care as observed in both the per capita public and private health consumption age profiles (Figures 7 and 8). The shape of the age profile of private other consumption is driven primarily by the ad

hoc equivalence scale used to distribute household other consumption expenditures to its members. The allocation method assigned weights to household members on the basis of age as follows: 0.4 for children age 0 to 4; linearly increasing from 0.4 to 1.0 from age 5 to 19; and 1.0 for ages 20 and older. Public other consumption expenditures are assumed to benefit all individuals in the population equally, hence the equal per capita means across all ages.

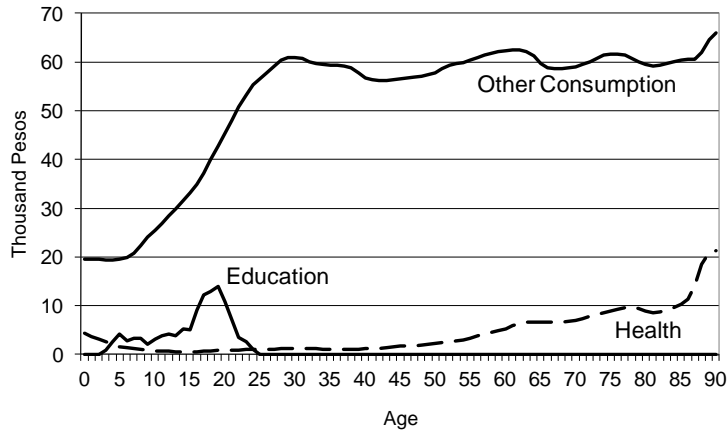
**Figure 6. Age profile of per capita public and private consumption, Philippines, 2007, current prices (in PhP thousands)**



**Figure 7. Age profile of per capita public consumption, Philippines, 2007, current prices (in PhP thousands)**



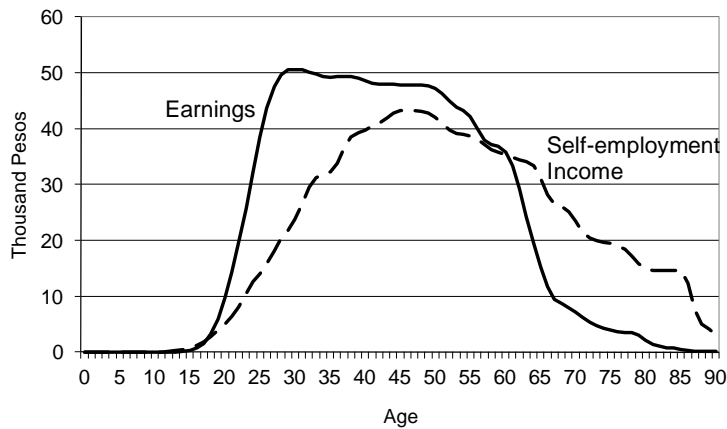
**Figure 8. Age profile of per capita private consumption, Philippines, 2007, current prices (in PhP thousands)**



### *Labor Income*

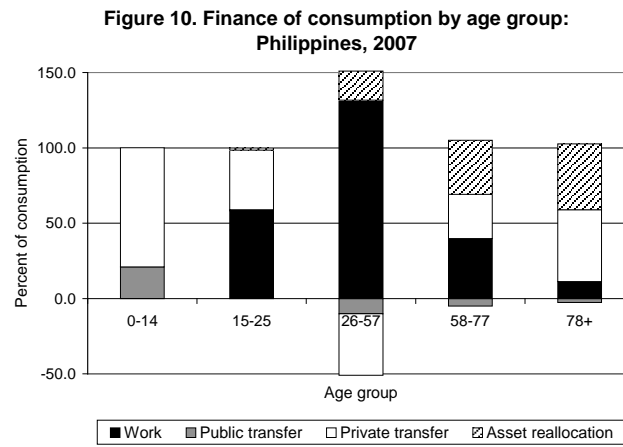
The age profile of paid employment earnings and self-employment income for 2007 resemble the inverted U-shape seen in Figure 5 for jobs, with per capita means peaking at ages 29 and 45 years, respectively. The two per capita age profiles, however, differ in overall shapes. Earnings from paid employment largely follows patterns expected in the formal labor market, i.e. sharp increase in per capita means between 15 to 24 years coinciding with entrance into the labor market, rapid decrease after 65 years coinciding with retirement in formal sector work. Self-employment income, on the other hand, shows a more gradual increase from age 15 years up to its peak at age 45 years and gradually declining thereafter. Per capita means for earnings are generally higher than the means for self-employment income up to age 60 years, but the pattern reverses beyond this age. As noted by Salas and Racelis (2008), the differences in the level and shape of the two age profiles reflect the difference in the educational attainment of salaried versus self-employed workers.

**Figure 9. Age profile of per capita labor income components, Philippines, 2007, current prices (in PhP thousands)**



## 5. Finance of consumption and resource reallocation by age

As indicated by Figure 10 there are various means to finance consumption in the Philippines and these vary across age groups. The means of financing include own labor income and the resources reallocated across age groups: public transfers, private transfers (both intra-household and inter-household transfers) and asset reallocation. The age reallocations match the deficit or surplus incurred by individuals at different ages (as expressed in Section 2 in the basic governing equation for NTA flow accounts). The deficit age groups in Figure 10 have been split into smaller groups to bring out variations in the pattern of financing.



The financing of consumption of children up to age 14 years is primarily by transfers, with private transfers at 79 percent, and public transfers at 21 percent. For the age group 15-25 years, private transfers still heavily support this group's consumption at 40 percent, but financing from own earnings is already large at 58 percent. Both young age groups are net recipients (inflows exceed outflows) of both public and private transfers.

Labor income of the age group 26-57 years is more than enough to cover their consumption. The surplus plus additional funds from asset reallocation make it possible for the group to transfer resources to the dependent population through private and public mechanisms (shown in Figure 10 as negative percentages.)

Consumption of the elderly 58 years and older is financed from own earnings, private transfers and asset reallocation. As expected, the shares of elderly consumption financed by own earnings decline while the shares of private transfers increase with age. The elderly dependent group is a net recipient of private transfers but the group continues to transfer funds by public means to other age groups (negative percentages). This latter result is because of the estimation method used wherein all asset-based taxes are assigned to the household head. And headship rates among the elderly remains high at 60 percent at age 60 years, 63 percent at age 70 years and 62 percent at age 80 years.

## 6. Concluding remarks

The 2007 Philippines NTA estimates serve two main purposes: it provides an update on the economic lifecycle information for the Philippines that was first generated by the 1999 NTA; and it provides updated age profiles for consumption and labor income that can be used to examine the economic implications of change in the size and age structure of Philippine population that is projected for the future.

The 2007 NTA for the Philippines provides updated information on which population age groups incur lifecycle deficit, the size of the aggregate deficit and aggregate surplus, and how consumption and lifecycle deficits are financed. It also provides new estimates of consumption, income and age reallocation by age. The 2007 age profiles for consumption and labor income (and components) were generally found to have similar shapes as those estimated in the 1999 NTA; but a more thorough comparison needs to be carried out to discern any trends or changes over the eight-year period.

The population of the Philippines is projected to continue growing and to undergo change in its age structure in the coming decades. There will be an increasing proportion of elderly population. There will be an increasing proportion among the school-age population who will be in the age group attending the tertiary school level. There will also be an increasing proportion of the population who will be in the working or surplus ages for at least the next three decades. The age profiles from the 2007 NTA can be used to examine the economic implications of these future population changes.

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