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## Consumption, labor income, and lifecycle deficit by urban-rural residence and by income group: Philippines NTA 1991, 1999, and 2011

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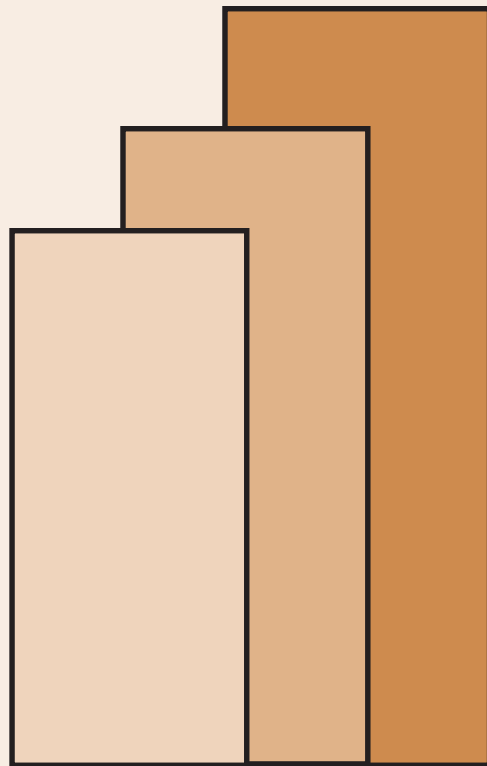


Consumption, Labor Income, and Lifecycle  
Deficit by Urban-Rural Residence  
and by Income Group: Philippines NTA  
1991, 1999, and 2011  
*Rachel H. Racelis et al.*  
DISCUSSION PAPER SERIES NO. 2016-31

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# **Consumption, Labor Income and Lifecycle Deficit by Urban-Rural Residence and by Income Group: Philippines National Transfer Accounts (NTA), 1991, 1999 and 2011<sup>1</sup>**

Rachel H. Racelis, Michael Ralph M. Abrigo, J.M. Ian S. Salas and Alejandro N. Herrin<sup>2</sup>

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## **Abstract**

Selected components of the NTA flow accounts were estimated for the Philippines for the years 1991, 1999 and 2011 by urban-rural residence and by income group. Three income groups are defined, referred to as income terciles, and thus estimates were produced for a total of six groups – three income groups for the urban areas and three income groups for the rural areas. This paper compares age profiles of consumption, labor income and lifecycle deficit across the six groups for each of the reference years. The age profiles were generally found to have the expected shapes but they also showed interesting variations between groups. Some findings that had generally been consistent in the three reference years include among others the following: (1) progressively lower per capita consumption and labor income at each age as one moves from the top, middle and to the bottom tercile in both urban and rural areas; (2) within terciles, urban area per capita labor income and consumption are higher at all ages than those in the rural areas; (3) in the rural bottom tercile the young incur lifecycle deficit longest and the elderly incur lifecycle deficit earliest; (4) the spans of the surplus ages are shorter for the bottom and middle terciles compared to that for the top tercile in both urban and rural areas; (5) the elderly deficit age group accounts for increasing shares of aggregate lifecycle deficit moving from the bottom, middle and to the top income tercile in both urban and rural areas; and (6) the ratio of the aggregate surplus generated by the working age group to the aggregate lifecycle deficits of the young and elderly dependent populations is higher in urban compared to rural areas and lowest for the bottom terciles in both the urban and rural areas.

**Keywords:** National Transfer Accounts, Philippines, consumption age profile, labor income age profile, lifecycle deficit, consumption by income group/urban-rural, lifecycle deficit by income group/urban-rural

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<sup>1</sup>. This paper is an output of continuing NTA work at the Philippine Institute for Development Studies (PIDS). The NTA work in the Philippines 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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# **Consumption, Labor Income and Lifecycle Deficit by Urban-Rural Residence and by Income Group: Philippines National Transfer Accounts (NTA), 1991, 1999 and 2011**

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

## 1. Introduction

Philippine NTA estimates are available for a number of years and these are mostly estimates at the national level. NTA is a comprehensive system of accounts that measures the economic lifecycle and the associated economic support systems. (General references on NTA include Lee, Lee and Mason 2005, Mason et. al. 2005, Mason, et. al. 2009 and United Nations 2013). The NTA flow accounts for the Philippines for the year 2007, however, included estimates not only at the national level but also estimates by income group. Three income groups were used, referred to as income terciles: bottom tercile (lowest income group), middle tercile and top tercile (highest income group). The national level results of the 2007 NTA are discussed in Abrigo, Racelis and Salas (2012). The 2007 NTA results by income group are reported in two papers – one comparing age profiles of consumption and labor income across income groups (Racelis, Abrigo and Salas 2012a) and the other comparing finance of consumption for the deficit age groups across income groups (Racelis, Abrigo and Salas 2012b). In 2015, national level consumption and labor income age profiles for the years 1991, 1999 and 2011 were estimated (with 1999 revised) using a consistent methodology (Racelis, Abrigo, Salas and Herrin 2015). The continuing NTA work for the Philippines builds on these previous papers; more specifically, NTA estimates have also been produced for the years 1991, 1999 and 2011 by income tercile and with urban-rural residence as an added dimension. This paper presents and discusses these most recent set of NTA estimates for the Philippines.

Findings from two of the abovementioned studies are presented in this introduction to be used as background information for the succeeding discussions. Section 2 describes the methods and data used to estimate the 1991, 1999 and 2011 consumption and income age profiles for the six groups. Section 3 provides an overview of the most important graph in NTA, the per capita consumption and labor income age profiles, estimated for the six groups as well as for urban and rural areas. Section 4 examines and compares the population age structure and the aggregate consumption, labor income and lifecycle deficit age profiles across the groups. Section 5 examines the per capita age profiles of specific components of consumption and labor income across the groups. Section 6 summarizes and concludes this paper.

### *Findings from the 2007 NTA by income group*

One main finding of the study by Racelis, Abrigo and Salas (2012a) is that the age profiles showed the progressively lower per capita consumption and labor income at each age as one moves from the top, middle and to the bottom tercile. Other findings related to labor income and consumption include: (1) the share of the labor income accounted for by self-employment income is much higher for the bottom tercile compared to the top tercile; (2) the percentage of aggregate consumption accounted for by the young deficit age group decreases moving from the bottom,

middle and to the top tercile; (3) the elderly deficit age groups account for increasing shares of aggregate consumption going from the bottom, middle and to the top income tercile; (4) public education consumption accounts for about four-fifths of bottom tercile education consumption compared to about one-sixth for the top tercile; and (5) public health consumption account for about two-thirds of bottom tercile health consumption compared to one-tenth for the top tercile.

Some findings related to the lifecycle deficit include: (1) the young incur lifecycle deficit longer in the bottom tercile compared to the middle and top terciles; (2) the elderly incur lifecycle deficit earlier in the bottom tercile compared to the middle and top terciles; (3) the spans of the surplus ages are shorter for the bottom and middle terciles compared to that for the top tercile; and (4) the ratio of the aggregate surplus generated by the working age group to the aggregate lifecycle deficits of the dependent populations increases going from the bottom, middle and to the top income tercile.

The paper also found the age distributions of the population of each tercile to be different up to about age 20 years and generally similar at the older ages. For the young population in the bottom tercile, the most numerous were in ages 0-16 years old. In contrast, for the top tercile the most numerous among the young were in the ages 17-20 years old. For the middle tercile there were near equal numbers at each age 0 to 20 years.

#### *Findings from the 1991, 1999 and 2011 NTA at the national level*

The paper by Racelis, Abrigo, Salas and Herrin (2015) presented national level estimates of per capita age profiles for consumption, labor income and their components. To provide the context for the patterns of change observed in the age profiles, the paper first described the general economic condition in the Philippines during the period 1991- 2011 as follows: varying economic performance in 1991-1999 and 1999-2011. More specifically, there was generally low and even negative real growth rates in per capita Gross Domestic Product or GDP experienced in the first half of the period (PSA 1997, 2003, 2013). The annual real growth rates were negative throughout 1989–1993, going as low as -3.1 percent in 1990–1991, and then again in 1997–1998 at -2.1 percent. Note that the reference year 1999 was right after the Asian financial crisis and El Nino which explains the economic contraction brought about by these two events. In the years following 1998, the annual real growth rates of per capita GDP were consistently positive, generally exceeding 3.0 percent. The lowest growth experienced was in 2008-2009 at 1.1 percent and the highest since 1998 exceeding 6 percent were experienced in 2003-2004 at 6.7 percent, 2006-2007 at 6.6 percent, 2009-2010 at 7.6 percent and 2011-2012 at 6.8 percent.

The average annual change in per capita consumption and per capita labor income in the periods 1991-1999 and 1999-2011, as shown in Table 1, reflect the general economic conditions during those times. Real per capita consumption and per capita labor income levels seem to have stayed the same from 1991 to 1999, with near zero average annual growth rates. Then these two components showed spectacular annual growth rates in the next period, 1999-2011.

Table 1. Per capita consumption and labor income by NTA component:  
Philippines, selected years, constant 2010 prices (PhP)

NTA Component	Per capita (in PhP)			Average annual change (percent)	
	1991	1999	2011	1991 - 1999	1999 - 2011
Consumption	<b>50,050</b>	<b>50,484</b>	<b>78,819</b>	<b>0.1</b>	<b>4.7</b>
Public	6,636	8,551	9,908	3.6	1.3
Education	1,538	1,982	2,167	3.6	0.8
Health	293	378	351	3.6	-0.6
Others	4,805	6,192	7,390	3.6	1.6
Private	43,415	41,933	68,911	-0.4	5.4
Education	1,492	1,680	2,975	1.6	6.4
Health	892	1,041	1,825	2.1	6.3
Others	41,031	39,213	64,111	-0.6	5.3
Labor Income	<b>37,782</b>	<b>36,906</b>	<b>71,374</b>	<b>-0.3</b>	<b>7.8</b>
Earnings - Domestic	17,019	17,901	35,990	0.6	8.4
Earnings - Abroad	3,098	4,894	22,398	7.2	29.8
Self-Employment	17,665	14,111	12,986	-2.5	-0.7

The patterns of change for the individual components of consumption and labor income, however, are mixed. The annual growth in per capita public consumption, including those for education and health, contrary to the pattern of growth in the general economy was higher in the first period compared to the second period. It is private consumption and its components that showed very low or even negative annual growth in real per capita spending during the first period but recovering, as the general economy did, in the second period.

Labor earnings from domestic paid employment generally followed the pattern of growth of the general economy. Per capita income from self-employment, however, had consistently declined showing negative annual growth in both the two periods. Per capita net earnings from abroad or OFW remittances is the only component that had high annual growth rates in both periods making up for the steady decline in self-employment income.

## 2. Methods and data

The main sources of data for the estimation of the consumption and labor income age profiles of Philippines NTA for the three years include the following: National Income Accounts data for the specific years, specifically the Income and Outlays breakdown, obtained from the Philippine Statistics Authority (PSA); estimates of the National Health Accounts and National Education Expenditures Accounts available for the specific years (from PSA); Family Income and Expenditure Survey (FIES) and Annual Poverty Indicator Survey (APIS) closest to or exactly for the specific years (1991, 2000, 2012 FIES and 1999, 2011 APIS from PSA); price index data from PSA; government finance and budget documents containing data for the specific years obtained from the Department of Budget and Management (DBM) and the Commission on Audit (COA); and the 2010 Revision of the World Population Prospects (United Nations 2011) for population data for the Philippines in single ages for the years 1991, 1999 and 2011.

The methods for producing the 1991, 1999 and 2011 estimates generally followed those described in Racelis and Salas (2007) and those recommended in the NTA Manual (United Nations 2013). The additional steps used to produce group-specific NTA estimates in the Philippines are described in Racelis, Abrigo and Salas (2012a).

The grouping of population, consumption and labor income by income tercile and by urban-rural residence was done based on data from the FIES and APIS. The household is the primary basis for the grouping: income groups are determined based on household income; and it is the location of households that is the basis for designating urban or rural residence. The populations of groups consist of the members of households that have been assigned to each of the six groups. To produce group-specific private consumption and labor income per capita age profiles, households and household member data in the surveys were first assigned to the six groups and the NTA estimation procedures then applied to the data for each group.

Per capita age profiles for public consumption by group, on the other hand, were estimated using national per capita means of public expenditures together with data on the number of users of public services by age for each of the six groups. The group-specific service utilization rates by age are scaled up using the national per capita mean expenditure to generate the aggregate public consumption age profile of each group. The per capita age profiles are then derived using the estimated aggregate consumption age profiles and population data by age.

Caution is needed in comparing the findings about a specific group over time. The composition of the groups could change at different time periods due to movement of households across income terciles and across geographic areas. The six groups as defined do not track the same households in the different years. Taking this issue into consideration, as much as possible the comparison among groups is done within each reference year. The idea is to see how the groups fared under different economic environment surrounding the reference years and it is the patterns observed across groups that are compared over time. In the discussions, consumption and labor income are valued at constant 2010 prices.

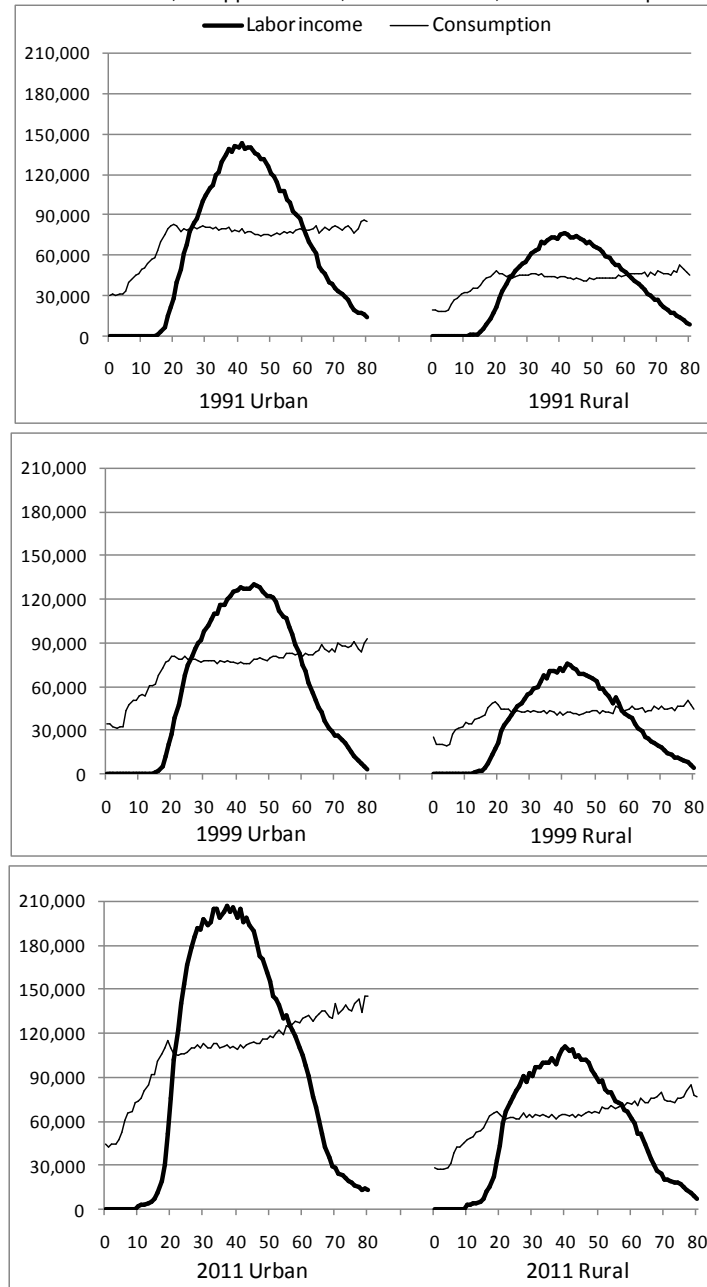
### 3. Per capita labor income and consumption by age and by group

An examination of the NTA's "most important graph" is done first for urban and rural areas in the Philippines before adding on income terciles as another dimension to the graphs. Figure 1 shows the profiles of per capita consumption and per capita labor income by age and by urban-rural residence in three panels – one panel for each reference year and each panel showing two graphs, one for urban and one for rural, with age on the x-axis. (Succeeding graphs are structured in the same manner. A word of caution: some panels do not use the same scale on the y-axis to keep the detail of profiles; in such cases, the 1991 and 1999 scales were kept the same.)

The profiles in Figure 1 all show the expected patterns by age based on previous NTA estimates for the Philippines – bell-shaped profile for per capita labor income and increasing-then-relatively-flat profile for per capita consumption. In all the years, the peak reached by the labor income age profile in rural areas had generally been about half of the peak reached in urban areas. Per capita consumption in rural areas was similarly lower by about half compared to that in urban

areas at all ages. The overall shapes of per capita consumption and labor income age profiles in urban areas and rural areas were generally similar in 1991 and 1999. For example, peak ages for labor income, i.e. between 40 and 50 years old, were similar in urban and rural areas in 1991 and 1999. In 2011, the age profiles, more particularly for the urban areas, had clear differences compared to those in the earlier years. There was a shift in the per capita labor income profile towards the younger ages in urban and rural areas, but more noticeable in the urban age profile, with peak ages at 30 to 45 years old in 2011. Per capita consumption showed rising pattern with age particularly past age 50 years, but more steeply for the urban age profile.

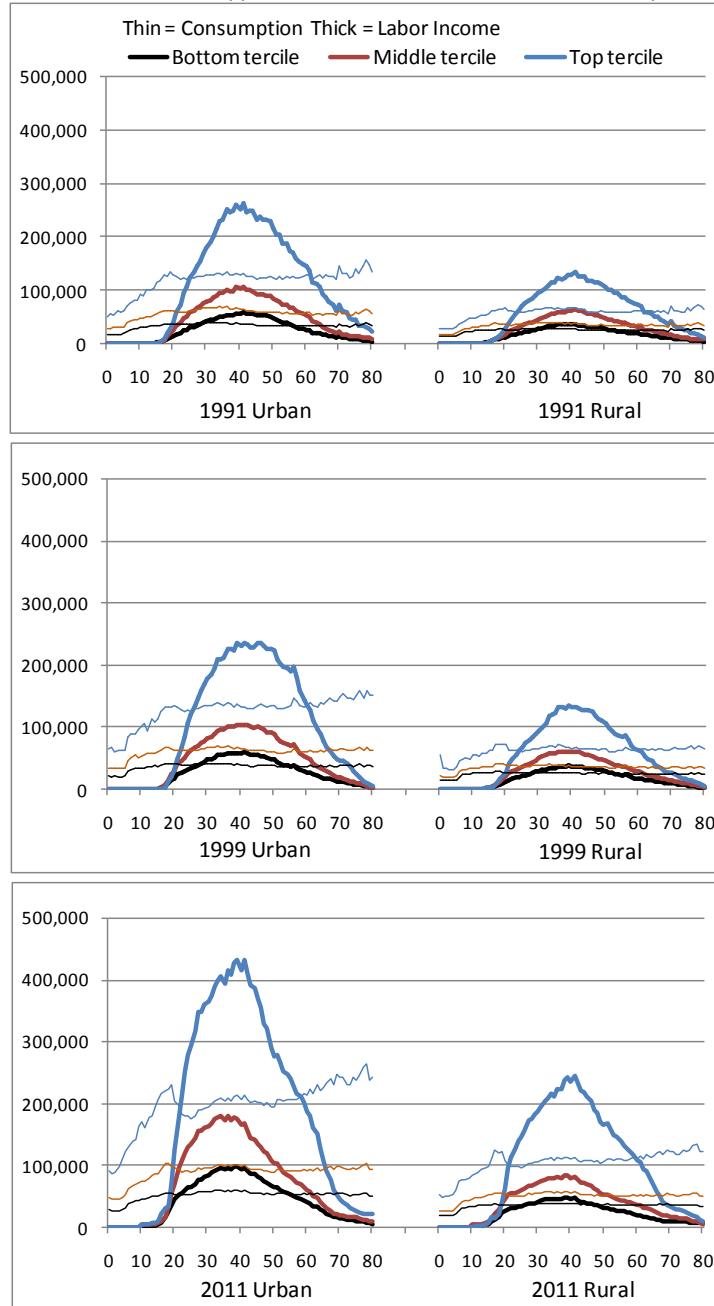
Figure 1. Age profile of per capita consumption and labor income, by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (in PhP)





The similarity of the age profiles in 1991 and 1999, and the differences of the age profiles in 2011 compared to those in the earlier years manifested in the resulting deficit ages. The deficit age cut-offs are identified in Figure 1 by the points where the per capita consumption and per capita labor income age profiles crossover. In both urban and rural areas in the years 1991 and 1999 the deficit age cut-offs were identical: lifecycle deficit for the young was incurred up to around age 25 or 26 years old and lifecycle deficit was incurred among the elderly starting at around age 59 or 60 years old. In 2011, the corresponding deficit age cut-offs were 22 years for the young and 56 years for the elderly, both ages occurring earlier than in the previous years.

Figure 2. Age profile of per capita consumption and labor income, by income tercile, by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (in PhP)



Moving next to the “most important graphs” for the six groups shown in Figure 2, i.e. groups according to urban-rural residence and, additionally, by income tercile, findings are consistent with the 2007 NTA estimates by income tercile: there was progressively lower per capita consumption and labor income at each age as one moves from the top tercile and on to the middle and bottom terciles in both urban and rural areas and in all the years. And within terciles, urban area per capita labor income and consumption were higher at all ages than those in the rural areas, reflecting the pattern observed earlier about the age profiles of urban and rural areas shown in Figure 1.

Some differences may be noted in the shapes of the age profiles of consumption and labor income across groups. There was distinct leaning of the urban and rural top terciles’ per capita labor income profiles towards the young ages in 2011 – hence, the difference observed in Figure 1 in the shapes of the urban and rural income age profiles in 2011 (but not observed in the other years) was apparently driven by the shapes of the profiles of the urban and rural top terciles. The shape of the income age profile was also more pointed (others are relatively flat at the top) showing narrower ranges of ages at which per capita mean was high for the urban and rural top terciles in 2011 compared to other groups, while this distinction was not observed in the earlier years. The consumption age profiles have a more pronounced hump in the college-going ages (16-22 years) for the urban and rural top terciles particularly in 2011. There was also slightly increasing per capita consumption as age increases, particularly at ages past 50 years, for the urban top tercile ever since 1991 and for the rural top tercile starting in 2011.

In 1991 and 1999, the young of the rural bottom tercile incurred lifecycle deficit longest and the elderly started to incur lifecycle deficit earliest; while the young of the urban top tercile incurred lifecycle deficit the shortest and the elderly started to incur lifecycle deficit the latest. In general, the young deficit age cut-offs of the different groups are similar (e.g. except for the rural bottom tercile, the young deficit age cut-off was around 27 years old in 2011) but the elderly deficit age cut-offs showed an increasing pattern as one goes from the bottom tercile to the top tercile in both urban and rural areas (e.g., age 47 years for the rural bottom tercile and 60 years for the rural top tercile in 2011). Thus, the spans of the surplus ages are longest for the top tercile compared to that for the middle and bottom terciles in both urban and rural areas.

#### 4. Aggregate labor income, consumption and lifecycle deficit by age and by group

Multiplying per capita consumption and labor income by population size at each age for a specific group and for a specific year produces the aggregate age profiles for the group for the indicated year. The aggregate lifecycle deficit by age is computed as the difference between the aggregate consumption and aggregate labor income at each age. The population distributions by age are first examined across groups and across years as these partly explain the variations in the aggregate age profiles.

##### *Age distribution of population by group*

The grouping of the population by income tercile, as discussed in Section 2, was done using households as the reference. Average household size is generally smaller in the top tercile

compared to the middle and bottom tercile households so that there are less people in the top tercile compared to the other terciles in both urban and rural areas in all the years (Table 2).

Table 2. Summary measures describing populations by income tercile and by urban/rural residence, Philippines, 1991, 1999 and 2011

Population characteristic	Urban			Rural			National level
	Bottom	Middle	Top	Bottom	Middle	Top	
<i>1991</i>							
Size (thousand)	10,896	10,454	10,001	10,805	10,699	10,621	63,476
Percent age 0-14	48.5	38.8	28.6	53.2	42.4	32.1	40.8
Percent age 15-64	49.2	58.3	67.6	44.8	54.7	63.0	56.1
Percent age 65+	2.3	2.9	3.8	2.0	3.0	4.9	3.1
Median age (years)	14.6	19.3	22.7	12.8	17.2	21.9	18.3
Mean age (years)	20.2	22.9	26.0	19.2	22.4	26.2	22.8
<i>1999</i>							
Size (thousand)	13,997	11,855	9,703	16,029	13,309	11,125	76,018
Percent age 0-14	45.8	32.8	25.5	51.8	39.1	29.0	38.8
Percent age 15-64	51.9	64.2	70.2	46.2	57.4	66.2	58.0
Percent age 65+	2.3	3.0	4.3	2.0	3.6	4.8	3.2
Median age (years)	15.9	21.4	24.5	13.4	18.8	23.0	19.3
Mean age (years)	21.2	24.8	28.0	20.0	23.9	27.5	23.8
<i>2011</i>							
Size (thousand)	19,311	15,374	11,827	20,208	15,749	12,583	95,053
Percent age 0-14	41.7	29.4	21.9	46.3	34.1	25.5	34.8
Percent age 15-64	55.7	67.1	72.7	51.1	61.8	68.4	61.4
Percent age 65+	2.6	3.6	5.3	2.6	4.1	6.1	3.8
Median age (years)	17.9	24.0	27.5	15.5	21.1	25.6	24.5
Mean age (years)	22.8	27.3	31.0	21.5	25.9	30.0	25.7

Looking at population age distributions of groups, for the rural bottom tercile the proportion young had decreased from 53.2 percent to 51.1 percent, while the proportion working-age increased from 44.8 percent to 51.1 percent from 1991 to 2011 (Table 2). For the population of the urban top tercile, on the other hand, the proportion young had decreased from 28.6 percent to 21.9 percent, while the proportion of working age increased from 67.6 percent to 72.7 percent from 1991 to 2011. The ordering of the groups from highest to lowest proportion young goes as follows (proportions in 2011 in parenthesis): rural-bottom (46.3), urban-bottom (41.7), rural-middle (34.1), urban-middle (29.4), rural-top (25.5) and urban-top (21.9). The ordering of the groups is the same for lowest to highest proportion in the working ages.

Consistent with the ordering of groups based on proportions of young population, the same ordering can be observed in terms of the mean and median age of population groups. In 2011, the lowest median was in the rural bottom tercile at 15.5 years and highest in the urban top tercile at 27.5 years. Similarly, in 2011 the lowest mean was in the rural bottom tercile at 21.5 years and highest in the urban top tercile at 31.0 years. Both mean and median ages of population had gone up in all groups from 1991 to 2011, indicating that all groups are similarly getting older. The pace of change in the age structure of populations, however, was not the same across groups. The change is occurring faster in groups in urban compared to rural areas and occurring slowest in the bottom terciles compared to the other groups.

Figure 3. Population distribution by age, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011 (in percent)

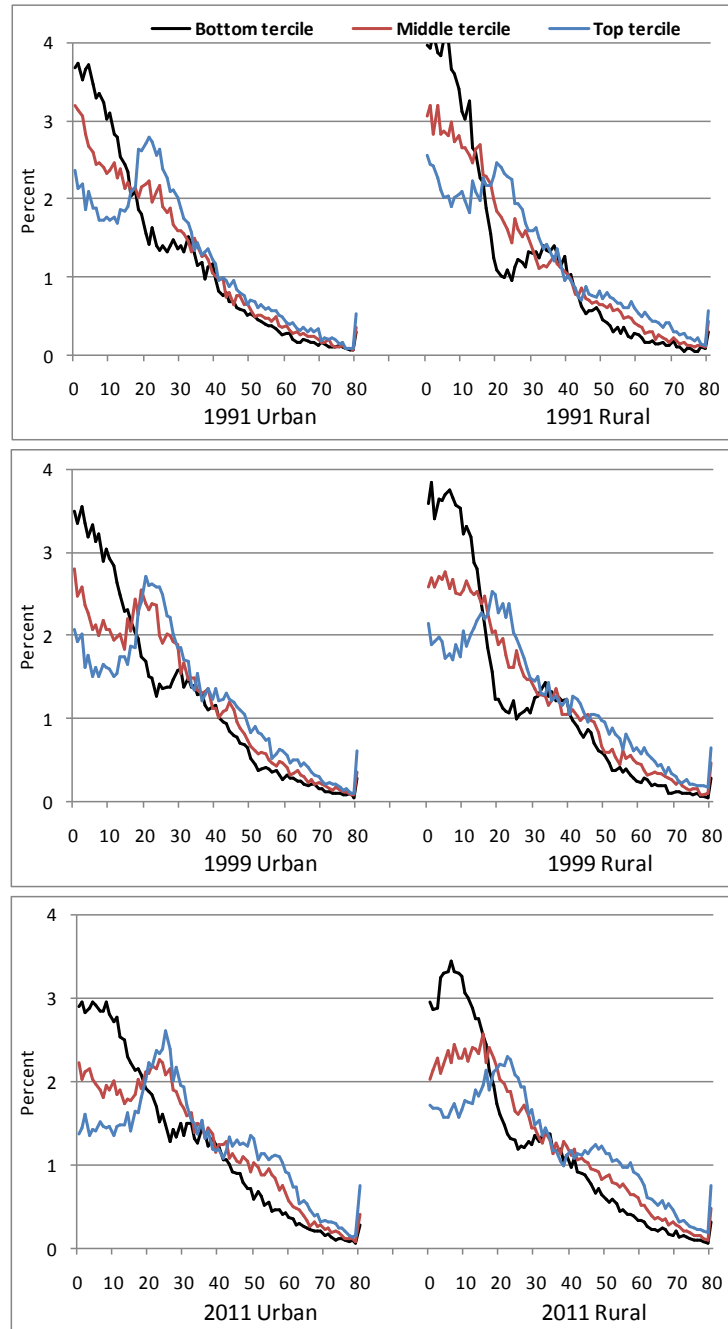


Figure 3 graphically presents the percentage distributions of populations by age in single years and by group. A number of the findings from Table 2 are also readily observed from the detailed age distributions. Within each tercile, for example, the rural population was generally younger compared to the urban population. The bottom tercile population was younger than the top tercile population in both the urban and rural areas. The clearest change in the distributions over time was in the young ages – those portions of the profiles at the young ages (up to about age 20 years) had shifted downwards for all groups. For example, the percentage of population age 0

for the rural bottom tercile exceeded 4% in 1991, falling to about 3.7% in 1999 and about 3% in 2011. Similarly, the percentage of population age 0 for the urban top tercile exceeded 2.4% in 1991, falling to about 2% in 1999 and about 1.5% in 2011.

In summary, age structure change had occurred in the populations of all groups from 1991 to 2011, but they differed in terms of the age distribution from which the change had started in 1991. In terms of proportions in the young ages, these were consistently highest in the bottom terciles and lowest in the top terciles in both urban and rural areas in all the years. Conversely, in terms of proportions in the working ages, these were consistently lowest in the bottom terciles and highest in the top terciles in both urban and rural areas through the years. The proportion of older population continued to be low in all the groups in the three years but had continued to be highest in the top terciles of both urban and rural areas. The urban and rural middle terciles populations had age profiles that were roughly in between those of the other two terciles.

### *Summary of aggregate consumption, labor income and lifecycle deficit by group*

Aggregate consumption, labor income and lifecycle deficit are summarized in terms of group totals in Table 3. Table 4 provides more detailed accounting of aggregate lifecycle deficit for each of the six groups. Patterns in the totals across groups observed in Tables 3 and 4 are discussed first to provide the context for the succeeding examination of the detailed aggregate age profiles by group.

Table 3. Summary of aggregate consumption, labor income and lifecycle deficit, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP Billion)

NTA Component	Urban					Rural			
	National	All Urban	Bottom	Middle	Top	All Rural	Bottom	Middle	Top
<i>Level (in billion PhP)</i>									
1991									
Lifecycle Deficit	779	463	152	176	136	316	126	122	68
Consumption	3,177	2,004	335	556	1,114	1,173	245	342	586
Labor Income	2,398	1,541	183	380	978	857	119	219	519
1999									
Lifecycle Deficit	1,032	584	209	190	184	448	198	156	94
Consumption	3,838	2,334	481	686	1,167	1,504	380	453	670
Labor Income	2,806	1,750	271	496	983	1,055	182	297	576
2011									
Lifecycle Deficit	679	154	241	94	<b>-180</b>	525	324	216	<b>-15</b>
Consumption	7,192	4,491	938	1,315	2,238	2,701	669	774	1,258
Labor Income	6,513	4,337	698	1,221	2,418	2,176	345	558	1,273
<i>Percent to national total</i>									
1991									
Lifecycle Deficit	100	59	19	23	17	41	16	16	9
Consumption	100	63	11	17	35	37	8	11	18
Labor Income	100	64	8	16	41	36	5	9	22
1999									
Lifecycle Deficit	100	57	20	18	18	43	19	15	9
Consumption	100	61	13	18	30	39	10	12	17
Labor Income	100	62	10	18	35	38	6	11	21
2011									
Lifecycle Deficit	100	23	35	14	<b>-27</b>	77	48	32	<b>-2</b>
Consumption	100	62	13	18	31	38	9	11	17
Labor Income	100	67	11	19	37	33	5	9	20

Urban areas consistently accounted for over 60% of aggregate consumption and labor income in the Philippines during the three years (Table 3). The top tercile accounted for roughly 50% of total aggregate consumption and labor income in urban areas, and roughly the same percentage in rural areas. Similar to the patterns described for consumption and labor income, about 60% of lifecycle deficit was incurred in urban areas in 1991 and 1999; but in 2011 the pattern reversed and rural areas accounted for about 73% of the aggregate deficit. In 1991 and 1999 a small proportion of aggregate lifecycle deficit was attributable to the top tercile in both urban and rural areas; but in 2011 the urban and rural top terciles as groups generated lifecycle surpluses rather than deficits.

The share of consumption that could not be covered by labor income, measured by the ratio of aggregate lifecycle deficit relative to aggregate consumption, was only slightly lower in urban areas compared to rural areas in 1991 and 1999 (about 4 to 5 percentage points difference), but the difference increased in 2011 (about 16 percentage points). The latter could be explained by the fact that the deficit to consumption ratios had improved (i.e. declined) much more for the urban groups compared rural groups from 1999 to 2011. It seems the groups in the urban areas had benefited more from the favorable economic condition from 1999 to 2011.

Looking at groups, the deficit to consumption ratio decreases going from the bottom tercile to the top tercile in both urban and rural areas, e.g. in 1999 the ratios in the urban area were 0.44, 0.28 and 0.16 for the bottom, middle and top tercile, respectively, and in the rural area 0.52, 0.34 and 0.14, respectively. The same pattern is observed in all the years. This pattern across terciles is consistent with the previous finding that the range of ages at which there is negative lifecycle deficit (or ages at which there is surplus) in fact increases moving from the bottom, to middle and to the top tercile.

Table 4. Summary of aggregate lifecycle deficit for the young, working and elderly age groups, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP billion)

NTA Component	Urban					Rural			
	National	All Urban	Bottom	Middle	Top	All Rural	Bottom	Middle	Top
1991									
Lifecycle Deficit	779	463	152	176	136	316	126	122	68
Young (deficit)	1,326	822	175	239	407	504	134	157	213
Working-age (surplus)	-625	-408	-31	-77	-300	-217	-13	-42	-161
Elderly (deficit)	78	50	8	13	29	29	5	8	16
1999									
Lifecycle Deficit	1,032	584	209	190	184	448	198	156	94
Young (deficit)	1,591	922	245	273	404	669	216	204	249
Working-age (surplus)	-690	-421	-48	-104	-270	-269	-27	-62	-181
Elderly (deficit)	131	83	12	21	49	49	9	14	26
2011									
Lifecycle Deficit	679	154	241	94	<b>-180</b>	525	324	216	<b>-15</b>
Young (deficit)	2,284	1,335	381	392	562	949	316	265	368
Working-age (surplus)	-1984	-1420	-169	-367	-885	-565	-21	-87	-457
Elderly (deficit)	380	239	28	69	142	141	29	38	74

The patterns observed in the distribution of the aggregate lifecycle deficit by age group in Table 4 generally reflect the population age distributions of the six groups. The elderly deficit age group, for example, accounted for increasing shares of aggregate lifecycle deficit moving from the

bottom, to middle and to the top income tercile in both urban and rural areas. Recall that the urban and rural top terciles had the highest proportions of elderly in their populations. Elderly share of the lifecycle deficit had also increased over the years in all groups (since all groups continued to age), but the increase in the elderly share was fastest in the top terciles in both urban and rural areas. The latter may be explained by the faster pace of population change in the top terciles and, additionally, by the change in these groups' spending patterns – it was shown earlier that per capita consumption at age past 50 started to rise steeply with age in 2011 (while the pattern was relatively flat in previous years) for the top terciles.

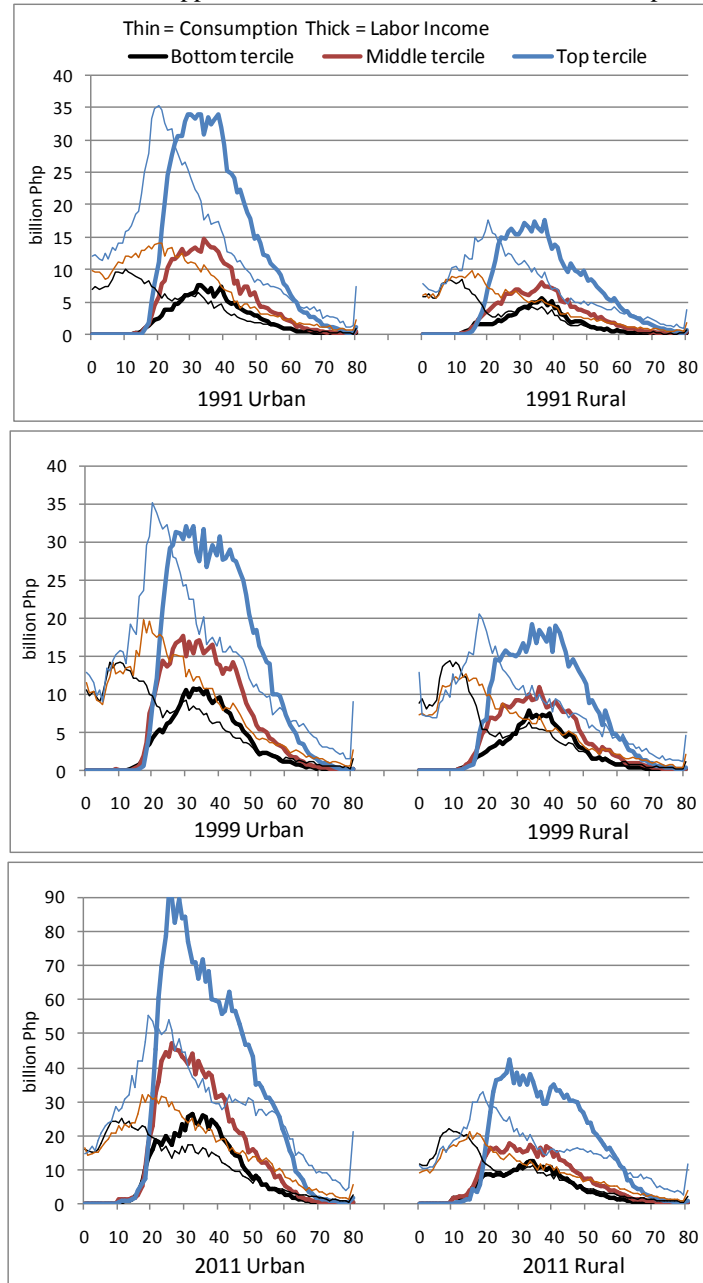
The ratio of the aggregate surplus generated by the working age group relative to the aggregate lifecycle deficits of the young and elderly dependent populations was higher in urban areas compared to rural areas in all the years (Table 4). The ratio was lowest for the bottom terciles and highest for the top terciles in both the urban and rural areas – the bottom terciles had the lowest proportions of their population in the working ages and the shortest age span when surpluses are incurred. The surplus-to-total deficit ratios of each group stayed generally the same in 1991 and 1999; but in 2011 the ratios for the three urban terciles and for the rural top tercile had improved (i.e., higher) compared to the ratios in 1999 –which seems to indicate that the four groups seem to have benefited more from the favorable economic condition in 1999 to 2011.

#### *Age profile of aggregate labor income, consumption and lifecycle deficit by group*

As described previously, multiplying per capita consumption and labor income by population size at each age for a specific group and for a specific year produces the two aggregate age profiles for the group for the indicated year (Figure 4). Thus, the aggregate age profile of each group reflects both the nature of their population age structure and the per capita labor income and consumption age profiles. The aggregate lifecycle deficit by age is computed as the difference between the aggregate consumption and aggregate labor income at each age (Figure 5).

A number of the findings from Table 3 can also be observed visually from the full aggregate age profiles in Figure 4 for the six groups. The sizes of the areas under the plots or curves for aggregate consumption and aggregate labor income represent the totals for these two components – totals that are reported in Table 3. The sizes of areas can be compared. Based on the relative sizes of the areas under the aggregate age profiles of groups, for example, urban tercile groups together accounted for the larger share of total aggregate consumption and aggregate labor income in all the years. And the urban top tercile and the rural top tercile accounted for most of the total consumption and labor income in urban and rural areas, respectively. The plots for aggregate consumption and labor income of the rural top tercile and urban middle tercile are almost comparable in all the years, indicating that the sizes or the totals for these aggregates are nearly the same for the two groups.

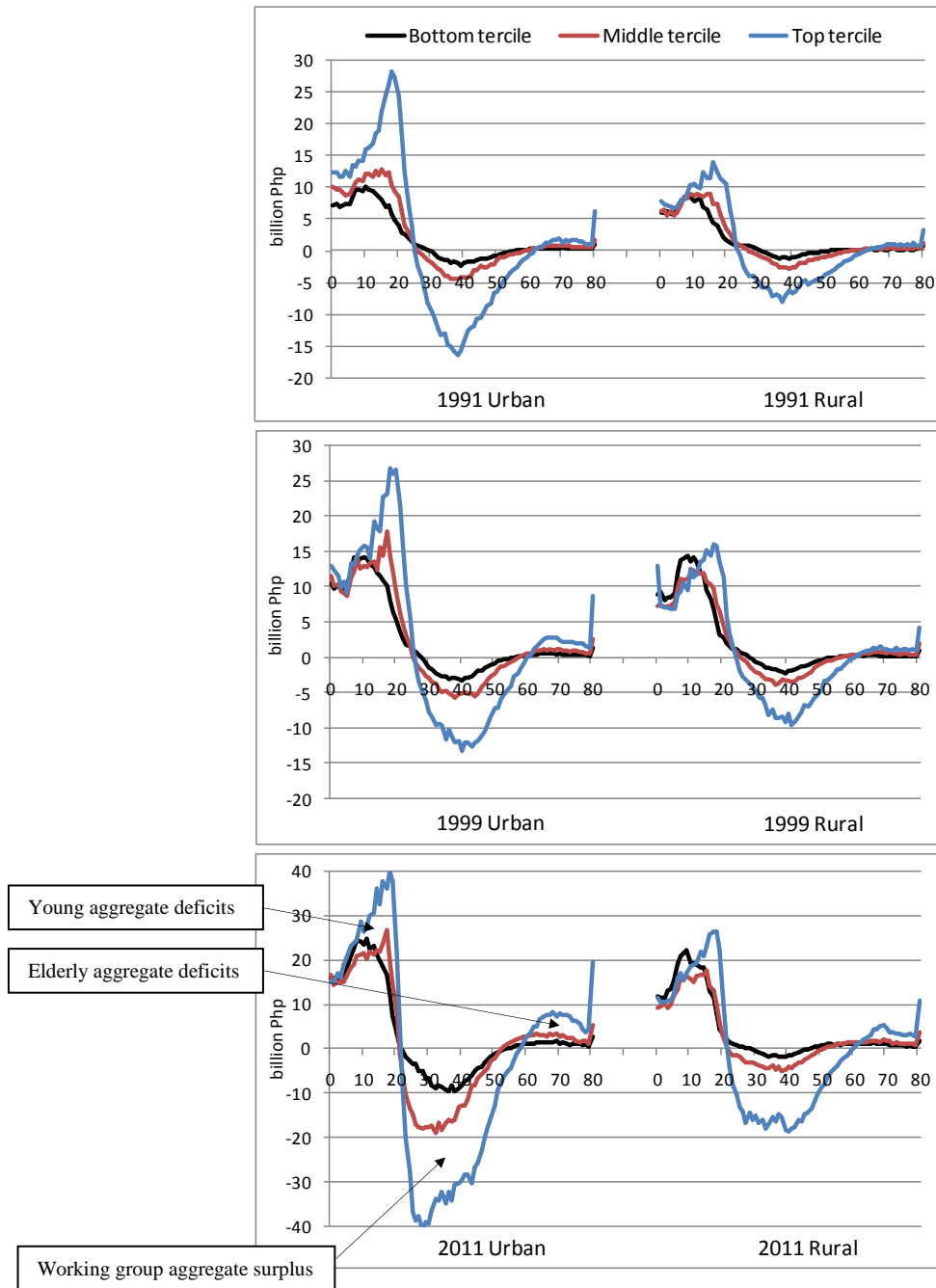
Figure 4. Age profile of aggregate consumption and labor Income, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP Billion)



The sizes of the areas between the age profile for aggregate lifecycle deficit (plots shown in Figure 5) and the x-axis represent the aggregate lifecycle deficit totals reported in Tables 4. The areas above the x-axis represent the deficits of the young and elderly dependent population, while the areas below the x-axis represent the surpluses of the working population (see notes in the third panel in Figure 5). The young and elderly deficit age cut-offs can also readily be established from the graphs: these are the ages at which the age profiles cross the x-axis.



Figure 5. Age profile of aggregate lifecycle deficit, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP billion)



The size of the lifecycle deficit of the young was larger in urban areas than in rural areas in all the years (Figure 5). The lifecycle deficits for the young peaks at the college-going ages for the top and middle terciles both in urban and rural areas; while the peak is observed at the primary school ages for the urban and rural bottom tercile. There were increases in the size of the lifecycle deficit of the young in all groups and of the elderly, particularly for the urban top tercile. There were also corresponding increases in lifecycle surplus at working ages in all groups most especially between 1999 and 2011, except for the rural bottom tercile. The lifecycle deficit age cut-offs of groups for the young were similar in 1991 and 1999 at around age 25 years and lower in 2011,

closer to age 20 years. The deficit age cut-off for the elderly was generally higher for the urban and rural top terciles compared to other groups in all the years.

## 5. Per capita age profiles of components of labor income and consumption by group

The differences between age profiles of groups (and over time) are described in terms of two factors: the overall scale or level of consumption and income; and the overall shape or pattern of consumption and labor income by age. The comparison of “scales” across groups is done using the group-specific per capita consumption and labor income computed by component and by year; these are shown in Table 5 for the urban terciles and in Table 6 for the rural terciles. Patterns observed in the group level per capita values or the “scale factor” provides the context for the examination of the shapes of the per capita age profiles of the six groups that follow.

### *Summary of per capita means*

Table 5. Per capita consumption and labor income, by income tercile (urban only), Philippines, 1991, 1999 and 2011, constant 2010 prices (PhP)

NTA Component	1991				1999				2011			
	All Urban	Bottom	Middle	Top	All Urban	Bottom	Middle	Top	All Urban	Bottom	Middle	Top
Lifecycle Deficit	14,770	13,925	16,808	13,560	16,419	14,955	16,059	18,971	3,321	12,463	6,119	-15,242
Consumption	63,934	30,723	53,178	111,361	65,648	34,332	57,878	120,317	96,561	48,583	85,552	189,207
Private	57,378	23,906	46,566	105,150	57,237	25,515	49,411	112,558	87,280	38,692	76,304	180,880
Education	2,089	524	1,414	4,500	2,185	723	1,782	4,786	3,975	854	2,624	10,827
Health	1,161	337	808	2,429	1,326	445	1,023	2,966	2,279	556	1,552	6,037
Others	54,128	23,045	44,344	98,221	53,726	24,346	46,607	104,806	81,027	37,282	72,128	164,017
Public	6,556	6,818	6,612	6,211	8,412	8,818	8,467	7,759	9,280	9,891	9,248	8,326
Education	1,445	1,706	1,487	1,118	1,820	2,208	1,873	1,195	1,848	2,435	1,802	949
Health	306	307	320	289	400	418	402	372	338	361	351	283
Others	4,805	4,805	4,805	4,805	6,192	6,192	6,192	6,192	7,094	7,094	7,094	7,094
Labor Income	49,164	16,798	36,370	97,801	49,229	19,377	41,819	101,346	93,240	36,120	79,433	204,449
Earnings - Domestic	25,461	7,726	21,311	49,120	26,970	8,815	22,530	58,585	49,825	19,439	45,238	105,402
Earnings - Abroad	4,828	177	1,941	12,913	6,011	3,590	6,693	8,671	29,979	10,338	22,579	71,668
Self-Employment	18,876	8,895	13,119	35,768	16,248	6,972	12,596	34,090	13,435	6,343	11,617	27,378

Table 6. Per capita consumption and labor income, by income tercile (rural only), Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)

NTA Component	1991				1999				2011			
	All Rural	Bottom	Middle	Top	All Rural	Bottom	Middle	Top	All Rural	Bottom	Middle	Top
Lifecycle Deficit	9,828	11,672	11,411	6,357	11,082	12,354	11,740	8,463	10,814	16,032	13,712	-1,192
Consumption	36,501	22,665	31,923	55,188	37,159	23,693	34,067	60,262	55,644	33,103	49,164	99,955
Private	29,787	15,898	25,116	48,622	28,486	14,927	25,336	51,791	45,910	23,073	39,435	90,690
Education	909	229	532	1,979	1,236	395	950	2,790	1,784	479	1,072	4,772
Health	629	209	448	1,239	790	237	486	1,952	1,247	311	721	3,409
Others	28,249	15,459	24,136	45,403	26,460	14,295	23,900	47,049	42,879	22,284	37,643	82,509
Public	6,714	6,767	6,806	6,566	8,673	8,766	8,731	8,472	9,734	10,030	9,729	9,266
Education	1,628	1,696	1,708	1,478	2,124	2,246	2,149	1,917	2,303	2,615	2,290	1,819
Health	281	266	294	283	358	328	390	363	336	320	344	353
Others	4,805	4,805	4,805	4,805	6,192	6,192	6,192	6,192	7,094	7,094	7,094	7,094
Labor Income	26,673	10,992	20,512	48,831	26,077	11,339	22,327	51,800	44,830	17,071	35,452	101,148
Earnings - Domestic	8,780	2,440	5,848	18,182	9,931	2,664	7,103	23,786	19,913	7,065	15,357	46,249
Earnings - Abroad	1,410	19	273	3,970	3,913	1,967	3,870	6,769	13,379	3,887	9,091	33,992
Self-Employment	16,483	8,533	14,391	26,679	12,233	6,708	11,354	21,245	11,538	6,119	11,004	20,907

In all the years per capita consumption and per capita labor income had generally been lower in rural compared to urban areas, consistent with the observations in Section 3. Per capita consumption of rural areas was roughly over one-half that for urban areas, about 57% in 2011; while per capita labor income of rural areas was roughly about one-half that for urban areas, about 48% in 2011. This overall difference between urban and rural areas is reflected in the per capita means of the groups residing in these areas. The per capita levels of consumption and labor income of the rural top tercile, for example, were about one-half of that for the urban top tercile in 1999; and there were similar differences between the per capita means of the rural middle tercile versus urban middle tercile and the rural bottom tercile versus the urban bottom tercile.

Among terciles, the per capita means for consumption and labor income becomes lower going from the top, to middle and to the bottom tercile in both urban and rural areas. The pattern for total consumption generally reflected the pattern for the private consumption components in all the years because private consumption constituted over 80% of total consumption of all groups in all the years. Per capita private spending on education and health decreases moving from the top tercile to the bottom tercile. Within terciles, per capita private spending on education and health was higher for urban residents than for rural residents.

Contrary to the pattern for private spending, per capita public spending for education increases moving from the top tercile to the bottom tercile in both urban and rural areas in all the years. Within terciles, per capita public spending for education was generally higher in rural than in urban areas. Private spending on education dominates public for the urban top tercile and to a lesser extent for the rural top tercile. The mix is roughly equal for the urban middle tercile, while public dominates private for the rural middle and both bottom terciles.

For public spending for health, there was nearly the same level and no clear pattern of per capita spending across terciles in urban and rural areas. Within terciles, per capita public spending for health was generally higher in urban than in rural areas, while the opposite pattern was found for the top tercile in 2011. Private spending on health dominates public for the urban top tercile, urban middle tercile and the rural top tercile. The mix is roughly equal for the rural middle tercile, and the urban and rural bottom terciles.

For labor income, the pattern wherein the per capita mean is falling going from the top, to middle and to the bottom tercile was observed in all income components in urban and rural areas and in all the years. Within terciles, per capita labor income was generally higher in urban than in rural areas. There was a steady ratio of domestic earnings relative to total labor income for urban terciles in all the years, over 0.5; while the ratios for the rural terciles had increased since 1991, reaching over 0.4 in 2011. The ratios of per capita earnings from abroad or foreign-worker remittances relative to total income steadily increased for all groups over the years, surpassing the self-employment-to-total income ratios in 2011 for the urban tercile groups and the rural top tercile. The ratio of self-employment income relative to total income ranked highest for all groups in 1991 (compared to the ratios of other income types), except for the urban middle and top terciles. But there was steady decline in the ratios of self-employment to total income across all groups over the years; until in 2011, the ratios only ranked second for the rural bottom and middle terciles, and ranked third for the other groups.

The general economic conditions during the period 1991- 2011 provide part of the explanation for the patterns observed over time in the per capita private consumption and labor income of groups shown in Table 5. In general, the changes in per capita levels of groups over time in these components were a reflection of the changes at the national level reported in Table 1. Per capita private consumption and per capita labor income did not change much from 1991 to 1999 across all groups, but had increased remarkably from 1999 to 2011. The increases in the latter period were not experienced evenly across groups – the top terciles in both urban and rural areas gained the most from the favorable economic condition showing the highest annual growth in per capita means. The bottom and middle terciles had similar “medium” growth experience.

Per capita public spending overall had steadily grown over the years but there were some differences in the patterns of change by component and by group. Public spending on education had gone up for all groups except for the urban and rural top terciles. Public health spending seems to have changed little over time, but there was a slight decline for all groups in urban and rural areas from 1999 to 2011. Public other consumption had continuously gone up over time for all six groups.

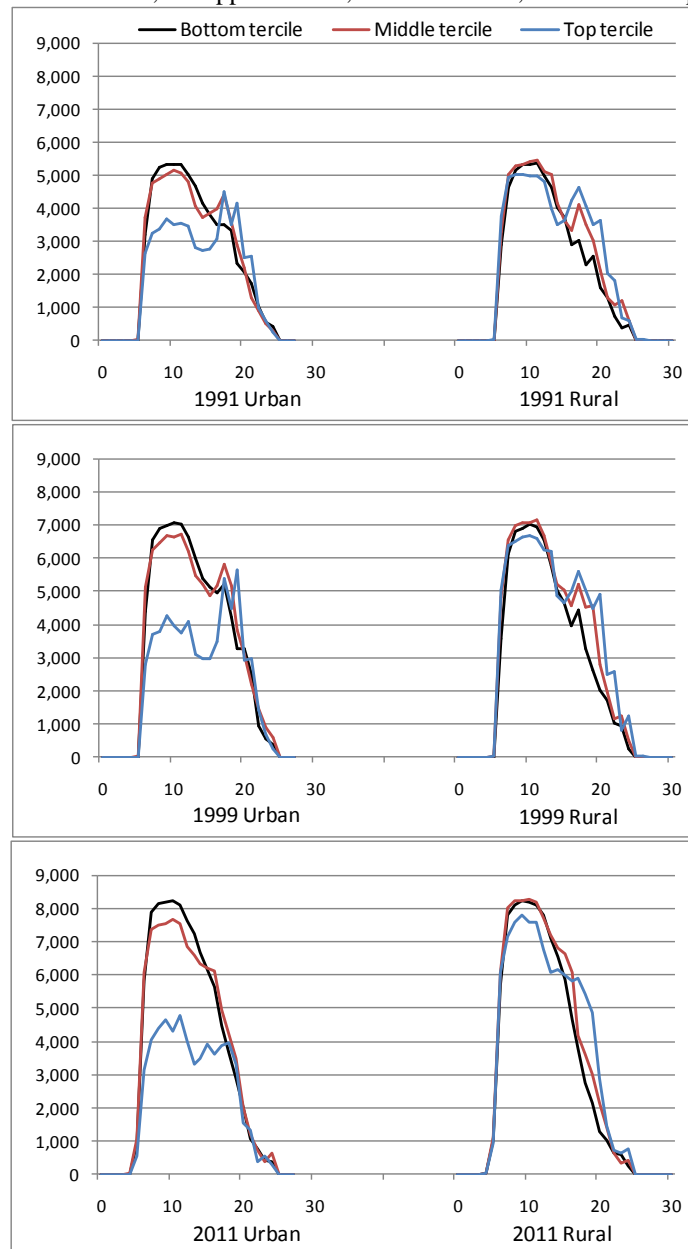
*Per capita public and private current consumption by component, by age and by group*

Current consumption covers education, health and other consumption (3 types) and both public and private consumption (2 sectors) – a total of six consumption components. The per capita age profiles of these six consumption components (education-public and private, health-public and private, other-public and private) and of total public and total private consumption for the six groups are examined over the three reference years. This section focuses on finding variations in the shapes of per capita age profiles across groups, to add on to the findings that have already been learned so far from the group-level per capita means. The group per capita means revealed differences in scale and mix (by component) of consumption and labor income.

In general, public education consumption was observed to be highest at ages attending the basic education level, i.e. ages 5-16 years before the implementation of the basic education reform (the ages now are 5-18 years with the reform which started 2016), while private education consumption was highest at ages attending the tertiary education level, i.e. ages 17-22 years, also pre-reform period (Figures 6 and 7). 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 households generally pay for education costs that are not financed by the government.

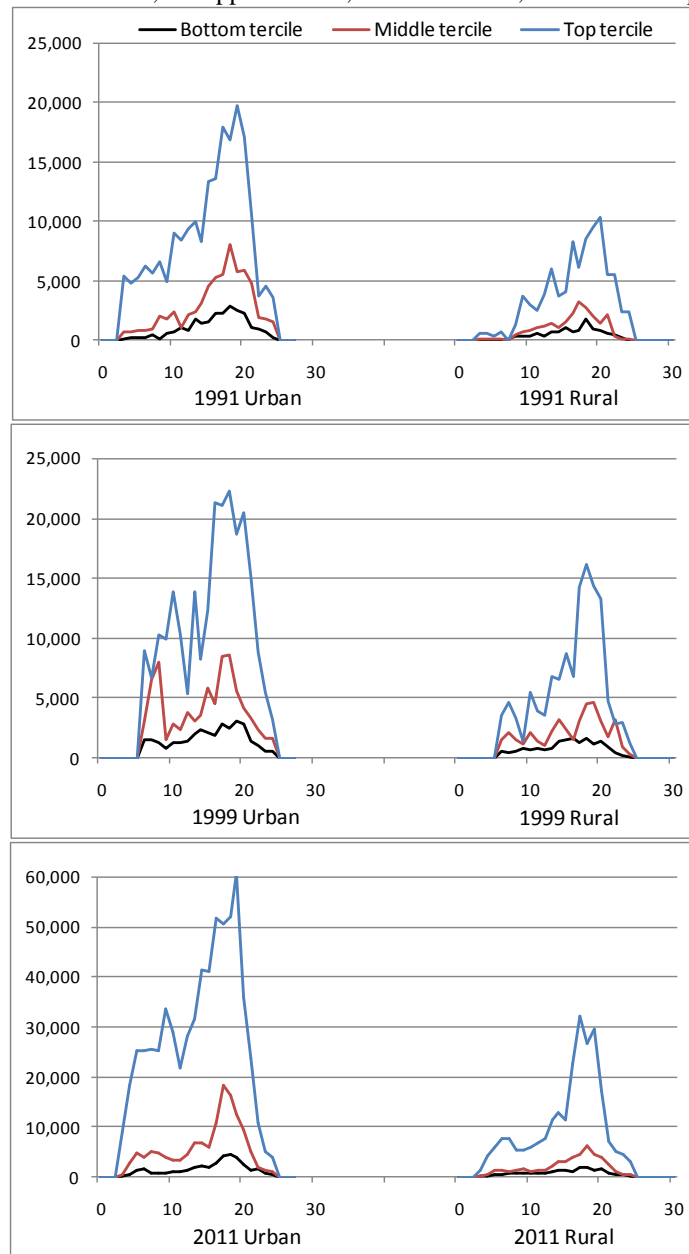
The age profiles for public education consumption (Figure 6) reveal some differences across groups. In the case of the urban top tercile, per capita spending was highest at the college-going ages in 1991 and 1999, but this pattern had disappeared in 2011 and per capita spending had leveled off across age. The urban middle, rural middle and rural top terciles also showed slight upward spiking in per capita spending at the college-going ages in 1991 and 1999. By 2011 the age profiles showed similar shapes across all groups with per capita spending highest at ages attending basic education and with the spikes gone at the college-going ages.

Figure 6. Age profile of per capita public education consumption, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



The overall shapes of the age profiles for per capita private spending for education were not very different across groups and also not very different over the years (Figure 7). The difference between the groups was mainly in the relative scale of per capita spending, an observation made earlier based on the group-level per capita means. A small change in the spending pattern of the urban top tercile may be noted: there was slightly higher per capita spending for early education in 2011 compared to the earlier years. For example, per capita spending for age 4 years was about 30% of the peak per capita mean in 2011 and the equivalent ratio was only about 24% in the earlier years.

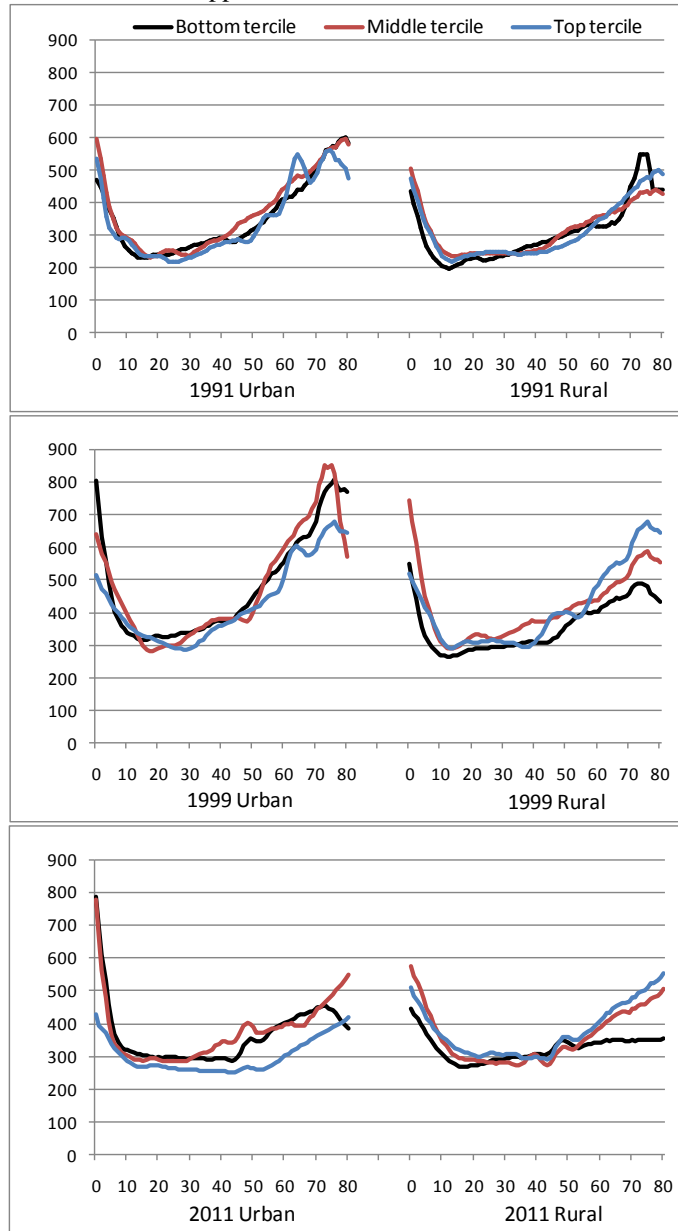
Figure 7. Age profile of per capita private education consumption, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



Per capita expenditures are highest for children and elderly health care as can be observed in both the public and private health consumption age profiles (Figures 8 and 9) and these patterns are consistent with those observed in previous NTA estimates. The overall shapes of the age profiles of per capita public spending for health were generally similar across groups in the three reference years – with near equal high per capita spending at the youngest and oldest ages, low spending in the intermediate ages or a shape simply described as “U-shaped” (Figure 8). But some slight variations particularly in 2011 are pointed out. Per capita spending for the young in urban areas was higher than for those in rural areas in all the years, but this became more pronounced in 2011. Per capita spending levels for the oldest age became lower compared to that for the youngest

age in 2011 for the urban tercile groups – the per capita means at the youngest and oldest ages were at the same level in 1991 and 1999. The urban top tercile and rural bottom tercile exhibited relatively flatter age profiles in 2011, somewhat different from those for the other groups.

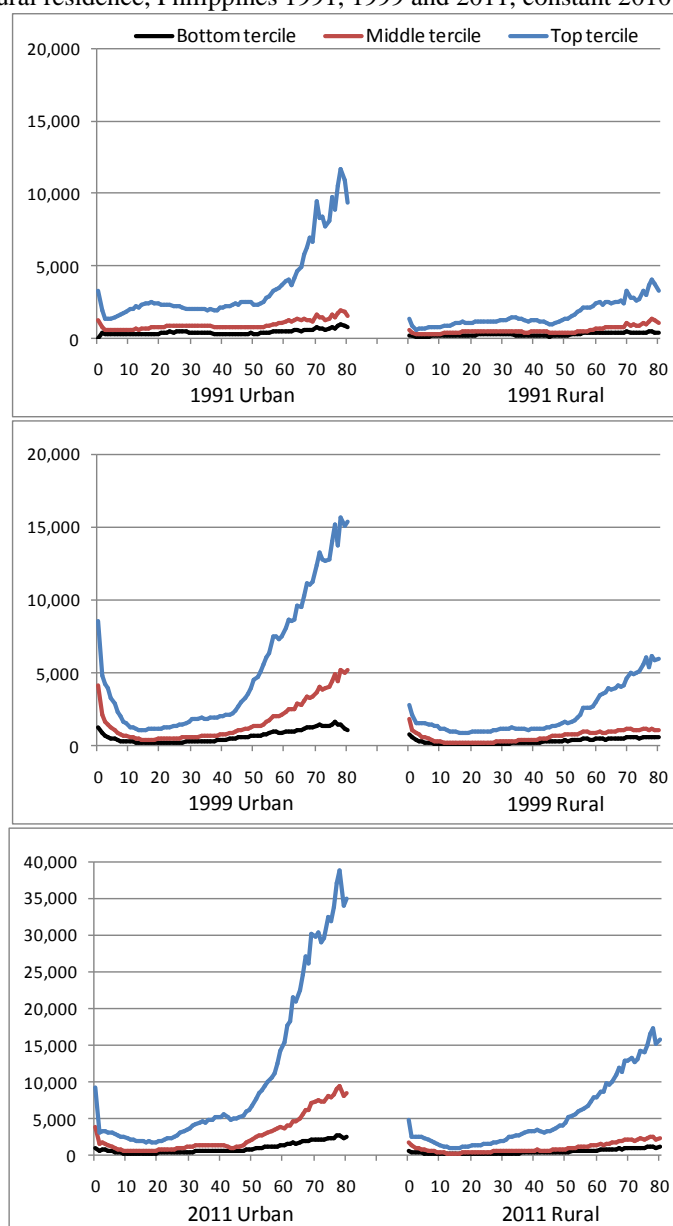
Figure 8. Age profile of per capita public health consumption, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



The age profiles of per capita private spending for health could be described as “J-shaped”, with the per capita spending high at young ages, low at the intermediate ages and even higher at older ages (Figure 9). The shapes were generally found to be similar across groups in the three reference years, although some variations are noticeable. The rise in per capita spending towards the older ages past 50 years was steepest for the urban top tercile and the steepness had increased over time. In 2011 the ratio of per capita spending at age 80 relative to age 50 was 5.2 for the urban

top tercile, higher than the ratio of 3.0 for the urban bottom tercile and 3.6 for the rural top tercile. The ratio of per capita spending of the urban top tercile at age 80 relative to age 50 was 4.0 in 1991 increasing to 5.2 in 2011. The increasing per capita spending at older ages over time had been noted in previous NTA studies and the explanation was that this was a reflection of more intensive use over the years of hospital and other health facilities, and the accompanying advanced and more costly medical technology.

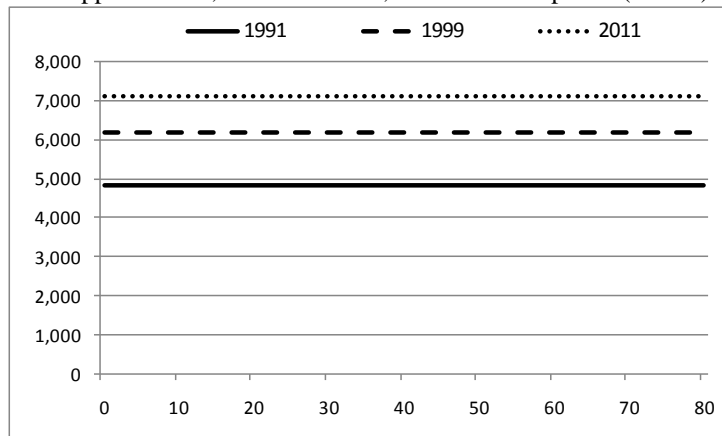
Figure 9. Age profile of per capita private health consumption, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



Public other consumption expenditures are assumed to benefit all individuals in the population equally, hence the equal per capita means across all ages (Figure 10). The age profiles in Figure 10 apply to all six groups. The difference between the age profiles is a result of the difference in the scale of public spending in the three reference years.



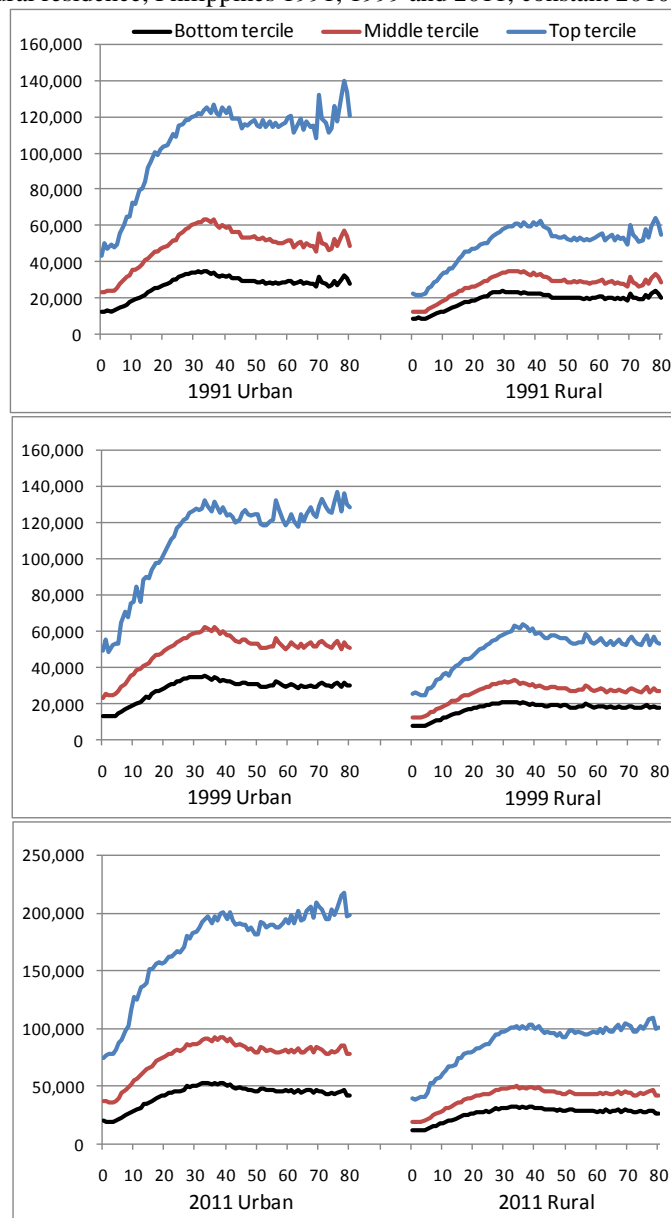
Figure 10. Per capita public other consumption by age, Philippines 1991, 1999 and 2011, constant 2010 prices (in PhP)



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.

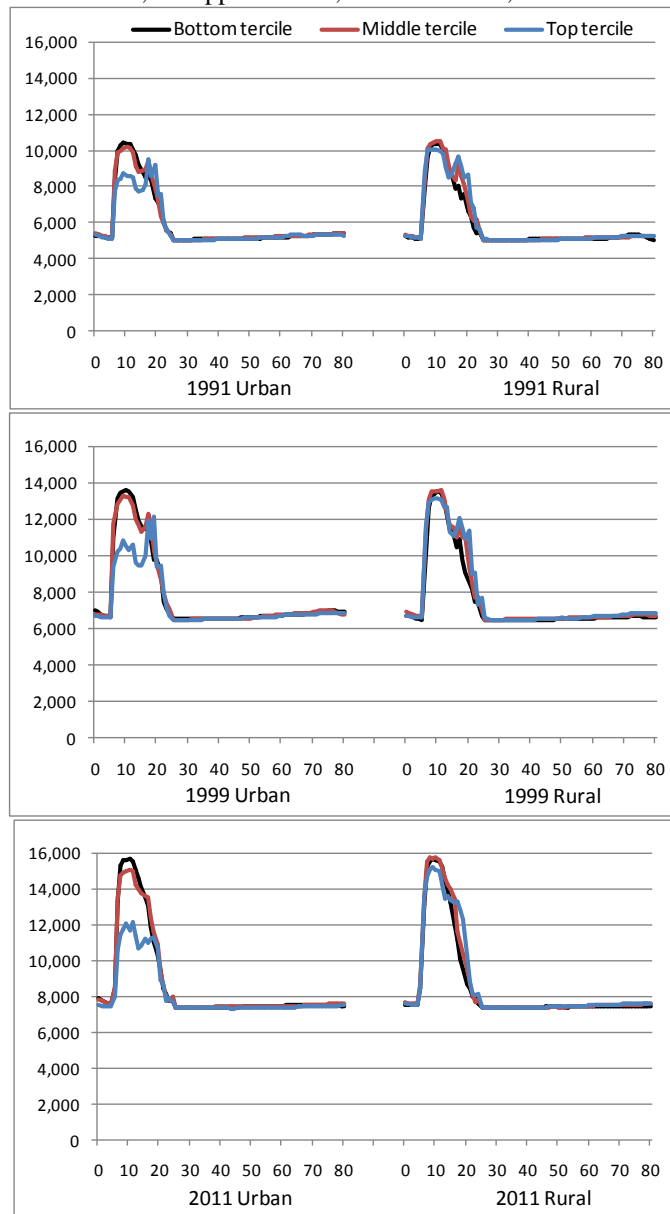
Given the method of estimation, the shapes of the age profiles for the six groups are understandably similar (Figure 11). The variation in the age profiles in a particular year is mainly a result of differences in the scale of private other consumption across groups (shown in the group-level per capita spending in Tables 5 and 6). There was a new gradually developing pattern in the per capita private other consumption of the urban top tercile over the three years: there was an increasing pattern with age in per capita spending at the older ages which had become more apparent in 2011. The age profile of all other groups showed relatively constant per capita spending from age 40 years onwards in 2011. In 1991 and 1999 all groups showed the relatively flat per capita spending after age 40 years.

Figure 11. Age profile of per capita private other consumption, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



Putting the per capita age profiles of all public consumption components together and all private consumption components together, the resulting age profiles for public and private consumption by group are shown in Figures 12 and 13, respectively. The shapes of the public consumption age profiles are driven mainly by the equal per capita age profiles of other public consumption (Figure 10) and the age profiles of public education consumption accruing to the young ages (Figure 6). Thus, the observations made about the variation in the age profiles across groups particularly for public education consumption are reflected in the groups' total public consumption age profiles.

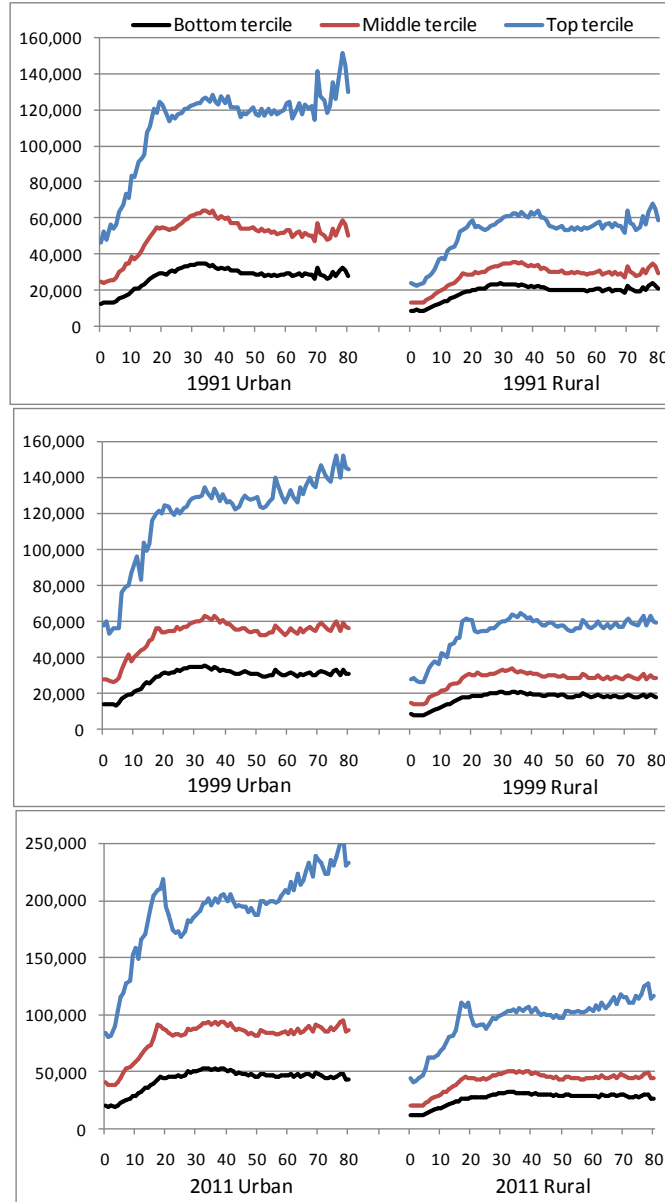
Figure 12. Age profile of per capita total public consumption, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



The shape of total private consumption age profile is driven mainly by the age profile of private other consumption (Figure 11), being the largest component of private consumption at over 93% in all the years. Thus, the observations made about the variation in the age profiles across groups for private other consumption are reflected in the groups' total private consumption age profiles. But in addition, the influences of the age profiles of private education and health consumption on the overall shape of total private consumption can also be detected. The age profiles showed pronounced humps in the college-going ages (16-22 years) for the middle and top terciles in urban areas and for the top tercile in rural areas (Figure 13) – an effect of the age pattern in private education spending of these groups. There was also slightly increasing per capita

consumption as age increases, particularly at ages past 50 years, for the urban top tercile – an effect of the age pattern in private health spending of the group.

Figure 13. Age profile of per capita total private consumption, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)

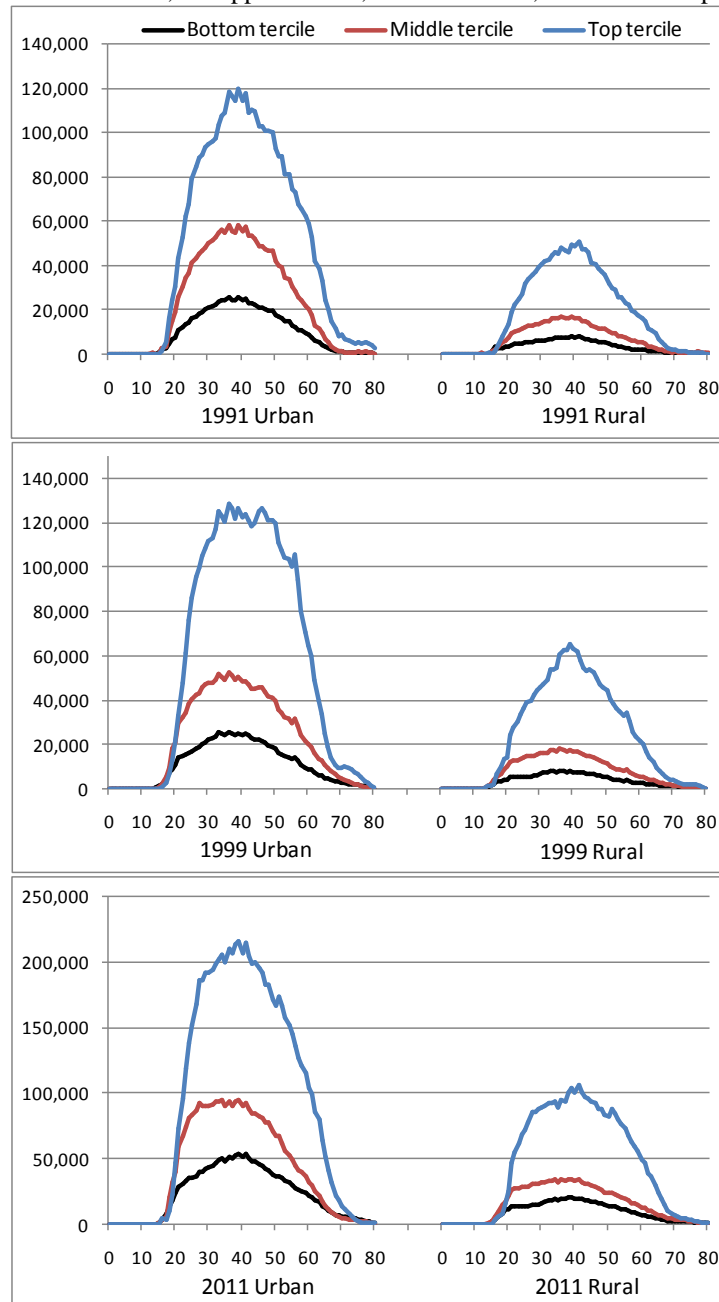


And because of the relatively large share of private consumption (over 87 percent of total consumption in all the years), the overall shapes of the per capita age profiles of total consumption of the six groups (shown earlier in Figure 2) are driven by the age profiles of per capita private consumption. Thus, the observations about the age profiles for private consumption generally apply to the age profiles for total consumption.

*Per capita labor income by component, by age and by group*

The age profiles of the different components of labor income for the six groups are presented in Figure 14 (domestic earnings), Figure 15 (earnings from abroad) and Figure 16 (self-employment income).

Figure 14. Age profile of per capita domestic earnings, by income tercile and, by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



The age profiles of paid employment earnings, domestic and from abroad, and self-employment income of all groups generally followed the bell-shape or inverted U-shape. This

overall shape of the income age profiles is consistent with that found in previous Philippine NTA estimates. However, there were variations in the overall shapes across types of income and across groups.

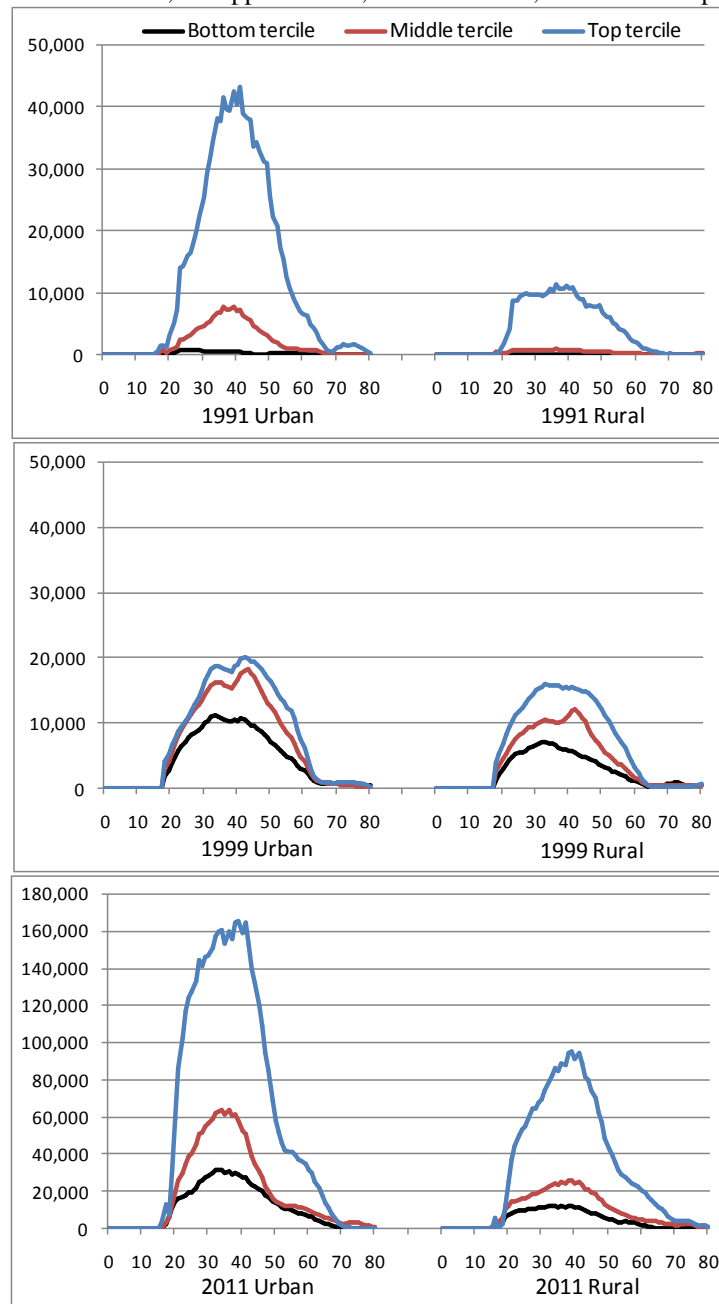
Earnings from domestic paid employment largely followed patterns expected in formal sector work, i.e. sharp increase in per capita mean income between 15 to 24 years coinciding with entrance into the labor market after completing schooling and rapid decline after age 65 years coinciding with mandatory retirement in formal sector work at 65 years old (Figure 14). This general pattern was observed in the domestic earnings age profiles for urban middle and top terciles in all the years and also in the age profiles for the rural middle and top terciles in 2011. The shapes of the domestic earnings profiles, while generally the same from 1991-1999, with earnings peaking at ages 40-45 years, had changed by 2011 for the urban middle tercile, urban top tercile and rural top tercile showing a longer span of ages at which earnings are high, i.e. ages 30-45 years, and the span starting at a younger age. For the urban top tercile this change seems to have started even earlier in 1999.

Per capita earnings by age from employment abroad followed the pattern for self-employment income more than the pattern for domestic earnings; i.e., there was more gradual increase in per capita earnings starting at around age 18 years up to its peak and then declining thereafter (Figure 15). Per capita earnings from abroad reaches its peak at about the same age as domestic earnings and earlier than self-employment income. The decline in per capita earnings starts earliest and occurs fast for earnings from abroad which can clearly be seen in the age profiles for the urban and rural top terciles in 2011. There was a shift in the age profiles of the urban middle and top terciles towards the young ages in 2011 which is noticeable when the 1991 and the 2011 age profiles for these groups are compared.

The per capita age profiles of earnings from abroad by group shown in Figure 15 were very different between 1991 and 1999, but somewhat similar between 1991 and 2011. And yet the age profiles at the national level were not very different for 1991 and 1999, but different for 2011 compared to the other two years (see Racelis, Abrigo, Salas and Herrin 2015). These findings are saying that having similar national age profiles as that observed for 1991 and 1999 does not mean that the circumstances that created these national profiles would necessarily be similar. National age profiles are after all averages of the age profiles of groups that make up the country.

The patterns observed in Figure 15 across groups and over time may be explained by the fact that in the three years, earnings from abroad or remittances had come from different groups who had different earning patterns by age. In 1991 about 66% of remittances were earned by the urban top tercile, 21% by the rural top tercile and the remaining 13% by the other four groups. In 1999 remittances was more evenly distributed among groups: 23% urban top tercile; 22% urban middle tercile; 21% rural top tercile; 14% rural middle tercile; and 21% urban and rural bottom terciles. The distribution in 2011 was somewhat similar to that in 1991: 41% urban top tercile; 21% rural top tercile; and bigger shares for the other groups compared to 1991.

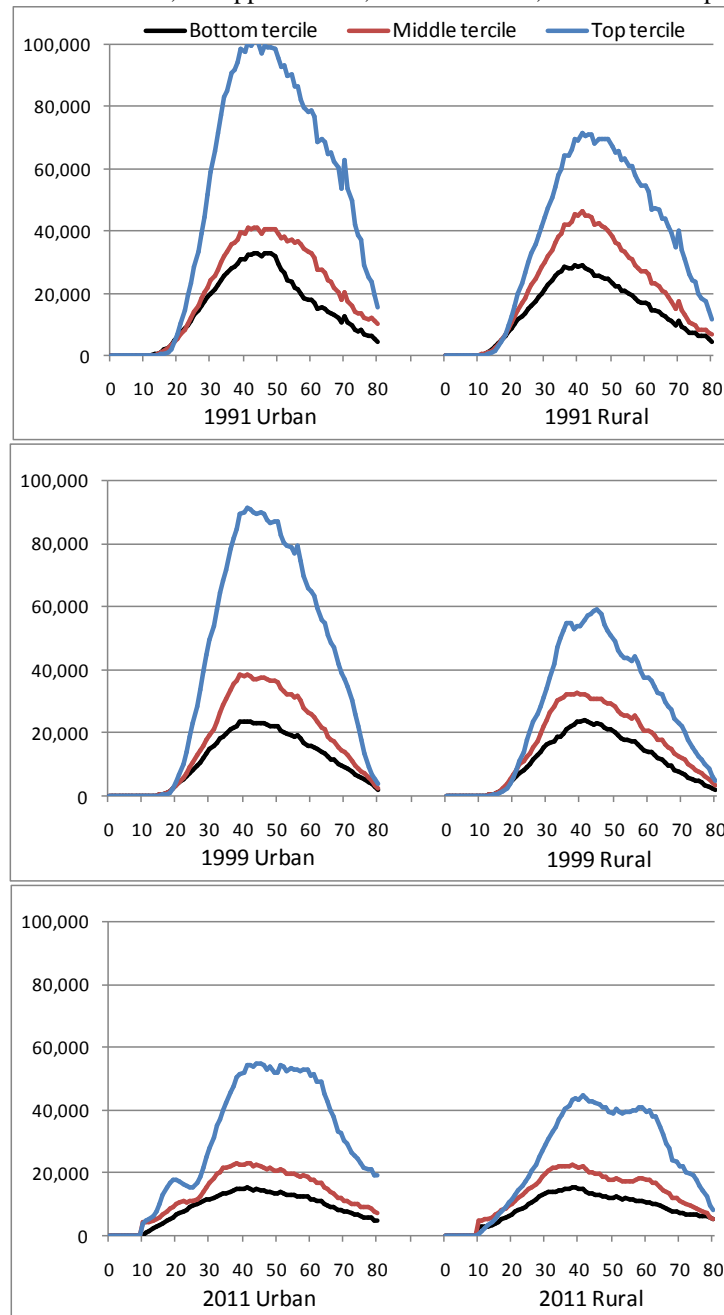
Figure 15. Age profile of per capita net earnings from abroad, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



Self-employment income shows a more gradual increase from about age 18 years up to its peak and a gradual decline thereafter – a pattern observed in the age profiles for all groups in all the years (Figure 16). Unlike formal sector work, there is no mandatory retirement governing self-employment. There were no remarkable variations in the age profiles across groups but there were distinct differences between the years. In 2011 per capita self-employment income was earned at very young ages, which was not apparent in 1991 and 1999. Per capita self-employment income had the opposite pattern of age profile change over time compared to domestic wage. In all the groups not only had per capita self-employment income declined over time at almost all ages, the

overall shape of self-employment age profile had also shifted towards the older ages in 2011: peak ages was formerly around 40-45 years old in 1991 and 1999, and this age range had extended to 40-60 years old in 2011.

Figure 16. Age profile of per capita self-employment income, by income tercile and by urban-rural residence, Philippines 1991, 1999 and 2011, constant 2010 prices (PhP)



The overall shapes of total labor income per capita age profiles of the six groups shown in Figure 2 were increasingly driven by the shape of the per capita age profile of earnings from abroad. This is to be expected as the proportion of total labor income accounted for by earnings



from abroad had increased nationally as follows: 2 percent in 1991, 13 percent in 1999, 19 percent in 2007 and 31 percent in 2011 (Racelis, Abrigo and Salas 2015). But the effects on the total income age profiles of groups would expectedly not be the same because the importance of earnings from abroad as a source of income differed across groups and over time (see Tables 5 and 6). In 1991, earnings from abroad out of total income was less than 1.5% for the urban bottom, rural bottom and rural middle terciles, about 5% for the urban middle tercile, about 8% for the rural top tercile and about 13% for the urban top tercile. In 2011, this source out of total income accounted for about 22-23% for the rural bottom and middle terciles, 28-29% for the urban bottom and middle terciles and 34-35% for the urban and rural top terciles.

## 6. Concluding remarks

The set of NTA estimates for the Philippines presented and discussed in this paper are for six population groups (income tercile groups by urban-rural residence) and for the years 1991, 1999 and 2011. Comparisons were done on the economic lifecycle across groups and across the years. Consumption and labor income were valued in constant 2010 prices to allow not only comparison between groups but also across time. The differences between age profiles of groups (and over time) are described in terms of two factors: the overall scale or level of consumption or income of groups; and the overall shape or pattern of consumption or labor income by age of groups.

Key findings about the scale of per capita consumption and labor income across groups and over the years 1991, 1999 and 2011 include the following:

- Among income terciles, the per capita means for consumption and labor income declines going from the top, to middle and to the bottom tercile; and, within terciles, per capita means are higher for urban residents compared to rural residents.
- Per capita private spending on education and health decreases moving from the top tercile to the bottom tercile in urban and rural areas. Within terciles, urban residents spent more privately on education and health than rural residents.
- Per capita public spending for education increases moving from the top tercile to the bottom tercile in both urban and rural areas in all the years. Within terciles, per capita public spending for education was generally higher in rural than in urban areas.
- Private spending on education dominates public for the urban top tercile and to a lesser extent for the rural top tercile; while the mix is roughly equal for the urban middle tercile and public dominates private for the rural middle and both bottom terciles.
- There was no clear pattern of per capita public spending for health across terciles in urban and rural areas. Private spending on health dominates public for the urban top tercile, urban middle tercile and the rural top tercile. The mix is roughly equal for the rural middle tercile, and the urban and rural bottom terciles.
- Per capita labor income for all income components decreased going from the top, to middle and to the bottom tercile in urban and rural areas and in all the years. Within terciles, per capita labor income was generally higher in urban than in urban areas.

- Domestic earnings constituted a steady source, about half, of labor income for urban terciles in all the years, while the importance of this source for the rural tercile groups had increased from 1991 coming close to the share for urban terciles in 2011.
- The importance of self-employment income as a source of labor income had steadily declined while that of earnings from abroad had increased from 1991 to 2011.
- Per capita private consumption and per capita labor income did not change much from 1991 to 1999 across all groups, but had increased remarkably from 1999 to 2011 – reflecting the general economic conditions in these two periods. The increases in the latter period were not experienced evenly across groups – the top terciles in both urban and rural areas gained the most from the favorable economic environment compared to the other four groups.
- Per capita total public spending had steadily grown over the years but there were some differences in the patterns of change by component and by group. Public spending on education had gone up for all groups except for the urban and rural top terciles. Public health spending seems to have changed little over time, but there was a slight decline for all groups from 1999 to 2011.

Key findings about the overall shapes of per capita consumption and labor income age profiles across groups and over the years 1991, 1999 and 2011 include the following:

- In general public education consumption was highest at ages attending the basic education level while private education consumption was highest at ages attending the tertiary education level. But in 1991 and 1999 there was upward spiking in per capita spending for public education at the college-going ages for the middle and top terciles in urban and rural areas, but this pattern had disappeared in 2011.
- The shapes of the age profiles for per capita private spending for education were not very different across groups and over the years, except for a slight increase in per capita spending for early education for the urban top tercile in 2011.
- The overall shapes of the age profiles of per capita public spending for health were generally similar across groups in the three reference years – with near equal high per capita spending at the youngest and oldest ages, low spending in the intermediate ages or a shape simply described as “U-shaped”.
- But some variations were observed in the age profiles of per capita public spending for health of groups. Per capita spending levels for the oldest age became lower compared to that for the youngest age in 2011 for the urban tercile groups – the per capita means at the youngest and oldest ages were at the same level in 1991 and 1999. The urban top tercile and rural bottom tercile exhibited relatively flatter age profiles in 2011 compared to other groups.
- The age profiles of per capita private spending for health was generally “J-shaped” for all the groups in the three years, with the per capita spending high at young ages, low at the intermediate ages and even higher at older ages. But the rise in per capita spending towards the older ages past 50 years was steepest for the urban top tercile and the steepness had increased over time.
- Putting the per capita age profiles of all public consumption components together, the shapes of the public consumption age profiles of groups were found to be driven mainly

by the equal per capita age profiles of other public consumption and the age profiles of public education consumption accruing to the young ages.

- Putting the per capita age profiles of all private consumption components together, the shapes of total private consumption age profiles of groups was found to be driven mainly by the age profile of private other consumption (being the largest component of private consumption), with influences coming from the age profiles of private education (the hump at the schooling ages) and health consumption (rising pattern of per capita spending at older ages).
- The age profiles of all labor income sources (i.e., paid employment earnings, domestic and from abroad, and self-employment income) of all groups in all the years generally followed the bell-shape or inverted U-shape, consistent with previous Philippine NTA estimates; but some variations were observed.
- The shapes of the domestic earnings profiles, while generally the same from 1991-1999, with earnings peaking at ages 40-45 years, had changed by 2011 for the urban middle tercile, urban top tercile and rural top tercile showing a longer span of ages at which earnings are high, i.e. ages 30-45 years, and the span starting at a younger age.
- The decline in per capita earnings starts earliest and occurs fast for earnings from abroad which can clearly be seen in the age profiles for the urban and rural top terciles in 2011. There was a shift in the age profiles of the urban middle and top terciles towards the young ages in 2011 which is noticeable when the 1991 and the 2011 age profiles for these groups are compared.
- There were no remarkable variations in the self-employment income age profiles across groups but there were distinct differences between the years. In 2011 per capita self-employment income was earned at very young ages, which was not apparent in 1991 and 1999.
- Per capita self-employment income had the opposite pattern of age profile change over time compared to domestic wage: in all the groups per capita income at all ages declined over time; and the overall shape of self-employment age profile had shifted towards the older ages in 2011 (peak ages was formerly around 40-45 years old in 1991 and 1999, and this had extended to 40-60 years old in 2011).
- The overall shapes of total labor income per capita age profiles of the six groups shown were increasingly driven by the shape of the per capita age profile of earnings from abroad as the importance of this source of income increased over the years. But the effects on the total income age profiles of groups was expectedly not the same because the importance of earnings from abroad as a source of income had differed across groups and over time

Putting each group's total consumption and total labor income age profiles together, some of the key findings about the lifecycle deficit of groups include the following:

- In the rural bottom tercile the young incur lifecycle deficit longest and the elderly incur lifecycle deficit earliest.
- The spans of the surplus ages are shorter for the bottom and middle terciles compared to that for the top tercile in both urban and rural areas.
- The elderly deficit age group accounts for increasing shares of aggregate lifecycle deficit moving from the bottom, middle and to the top income tercile in both urban and rural areas.

- The ratio of the aggregate surplus generated by the working age group to the aggregate lifecycle deficits of the young and elderly dependent populations is higher in urban compared to rural areas and lowest for the bottom terciles in both the urban and rural areas.

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