Filipino Elderly Living Arrangements, Work Activity, and Labor Income as Old-age Support
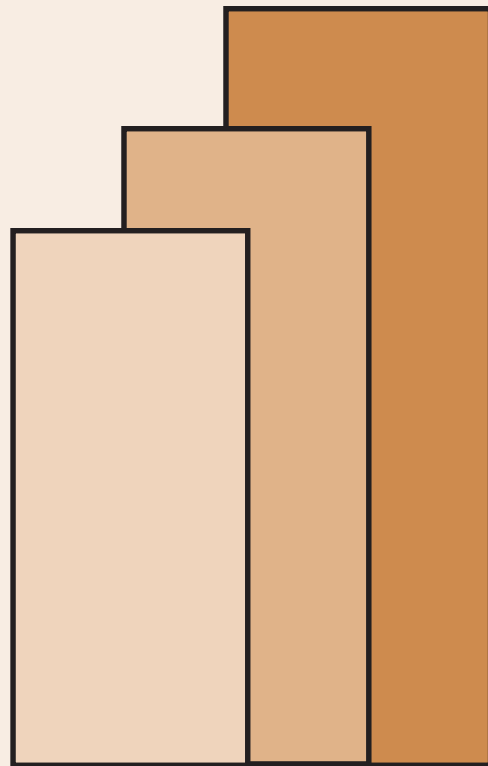
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Filipino Elderly Living Arrangements, Work Activity and Labor Income as Old-age Support[1]

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Abstract

This paper explores how elderly labor income can be expanded as a financing source for elderly consumption in the future through increase in elderly work activity. It examines elderly living arrangements and other factors that may influence elderly participation in work activities. The prospects of increasing elderly work activity in the future is assessed based on past and possible future trends in the following three factors, among many others: elderly health status, household headship by the elderly, and employment opportunities for the elderly, particularly household entrepreneurial activities. Alternative scenarios of increases in elderly labor force size (based on assumed changes in the factors) were used in simulations and results show that the higher the increase in labor force size (1) the higher the increase in aggregate labor income, (2) the higher the proportion of consumption that can be covered by own labor income, (3) the higher the elderly deficit age cut-off, and (4) the larger the decline in the aggregate lifecycle deficit of the elderly. What can government do to encourage more elderly to continue working? Government action can focus on two areas: elderly health and well-being, and elderly employment opportunities and enabling environment. The government can finance and fully implement provisions in existing laws and public programs that address the two areas such as those articulated in the Senior Citizen's Acts (1992 Republic Act 7432 and 2003 RA 9257) and the Philippine Plans of Action for Senior Citizens (1999-2004 and 2006-2010).

Keywords: National Transfer Accounts, lifecycle deficit, population aging, elderly work activity, old-age support

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**Filipino Elderly Living Arrangements, Work Activity and
Labor Income as Old-age Support**

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1. Introduction

Results from the 2007 National Transfer Accounts (NTA) for the Philippines showed that consumption of the elderly 58 years and older, the elderly (lifecycle) deficit age group, is financed only partly from own earnings. That is, labor income is not sufficient to cover the consumption requirement of this group and the balance is financed by other sources including private (household) transfers, asset income and a very small portion from public transfers including public pension. As expected, the share of elderly consumption financed by own earnings decline while the share of private transfers increase with age (see Abrigo, Racelis and Salas 2012 for more detail.)

The size of the elderly population in the Philippines is projected to increase significantly in the coming decades and the fast increase in their aggregate consumption will consequently follow. The proportion of aggregate consumption accounted for by this older population is estimated to reach 17 percent in 2040 compared to 9 percent in 2007. And the share of aggregate lifecycle "deficits" attributable to the older population is also estimated to be higher in 2040 at 24 percent compared to 10 percent in 2007 (Racelis, Abrigo and Salas 2012). The challenge would then be finding the means to finance this group's growing consumption in the future. Policies in the Philippines regarding economic support for the elderly have generally centered on pension systems, and there is a need to expand the scope and put attention to strengthening all financing sources.

This paper focuses specifically on elderly labor income, and explores how it can be expanded as a financing source for elderly consumption in the future through increase in elderly work activity. It examines elderly living arrangements and other factors that may influence elderly participation in work activities. It assesses the prospects of increasing elderly labor force participation and, in turn, increasing the share of elderly consumption that can be financed by own labor income in future years.

Section 2 reviews selected previous studies on elderly living arrangements and elderly work activity. An update on elderly living arrangements and work activity using data from the 2007 Annual Poverty Indicators Survey (APIS) is presented in Section 3. Section 4 assesses the prospects of increasing elderly work activity and, in turn, increasing their aggregate labor income and decreasing aggregate lifecycle deficit in the future. What government can do to promote elderly work activity is suggested in Section 5. Section 6 provides the summary and conclusion.

2. A brief review of previous studies: elderly living arrangements and work

Elderly household situation has been found to be an important factor in elderly work decisions. Findings of two studies about elderly living arrangements are reviewed. Then findings of some studies about the pattern of participation in the labor force and work activities of the Filipino elderly, and the explanations are reviewed next.

Living arrangements

Results from the study by Domingo and Casterline (1992) provide a general profile of households where the Filipino elderly live. The majority of elderly, about 70 percent, were found to co-reside with their children. Only about 4 percent of the elderly live alone. About 60 percent of elderly live in households with children under 15 years old (presumably the grandchildren), 50 percent in households with other elderly members present, and 85 percent in households with working adults. The average size of households where the elderly live is about 5.

Based on the study by Racelis and Cabegin (1998), in 1990 the population 60 years and older were related to the household head as follows: 77 percent were heads themselves or spouses of head, 11 percent parent of heads and 12 percent related in other ways. But this distribution was also shown to vary significantly as age increases. For the age group 60-64 years old 88 percent were heads/spouse, 5 percent parents and 7 percent other; and for the age group 80 years or older 42 percent were heads/spouse, 31 percent parents and 27 percent other. The study also reported that most elderly heads are heads of family households, and about 9 percent of these heads live in one-person households or they live alone.

Work

The studies done by Bernal, Jamon and Motas (1992) and Racelis and Cabegin (1998) indicate factors that determine elderly work activity in the Philippines. Some of these individual, household and community-level factors (and their effects on elderly work participation) include the following:
- age (negative, participation declines with age)
- has high school or higher level education (negative, due to the higher proportion among those with higher levels of education that are employed in formal sector work which has mandatory retirement at age 65 years)
- household located in urban area (negative, lower elderly participation in urban relative to rural areas because of predominance of formal sector work in urban areas)
- household has young members under 6 years old (negative, lower elderly participation especially females who are drawn into child care)
- household has non-labor income or household is engaged in entrepreneurial activities (positive, higher participation because household economic activity presents direct employment opportunity for the elderly household members)

Studies done on elderly Filipinos provide explanations for their work patterns. Domingo et. al. (1994) found participation rate was about 48 percent for those whose self-assessment of their health was Good, 37 percent for those whose self-rating was Fair and 16 percent for those whose self-rating was Poor. These findings partly explain why participation in the labor force continues to be high for the young olds who are of relatively better health. The same study found a high proportion of the elderly to be heads of households and controlling household resources including financial and physical assets. As heads the elderly were providing not only for their own needs but also for other household member's needs. The study found participation rate to be about 53 percent for those who were giving support to their children and 26 percent for those who were not supporting anyone.

Motives for working were explicitly articulated in focused group discussions of elderly Filipinos (Domingo and Asis 1992). A common theme expressed by the elderly was the chronic lack of prospects for improving their children's economic situation and the need to extend their role as provider. Even among the well-off the desire to contribute to their children's advancement was not uncommon. Many elderly further expressed that as long as their health would allow, they would like to continue working because, in addition to being income-generating, work was also viewed as the means to stay physically active and fit.

3. Updates on households with elderly and on elderly work activity

The updates presented in this section are based on tabulations from the 2007 APIS. The living arrangements of the elderly are described in terms of their relationship to the household head and characteristics of the households in which they live including type of household, household size, and presence (and number) of members of certain age groups. Additionally, the presence/types of entrepreneurial activities and sources of revenues of households with elderly members are described.

Next, elderly work activity is profiled by age group in terms of level of participation and class of worker. Levels of participation are also compared across groups of elderly, with grouping defined based on categories of individual and household characteristics or factors identified in Section 2 to influence elderly work decisions. These factors include age, educational attainment, health status, household headship and presence of household entrepreneurial activity.

Elderly refers to those in the population with age 58 years or older. These are the ages included in the older deficit age group – identified based on the 2007 Philippine NTA age profiles for consumption and labor income shown in Figure 4 in Section 4.4. Based on the 2010 revision of the United Nations World Population Prospects (United Nations 2011), the total population size of the Philippines in 2007 was about 88 million and of this about 6 million were 58 years old or older (Table 1). The elderly population is projected to grow to more than triple its size from about 6 million in 2007 to about 20 million in 2040. Growth in the number of elderly per year is projected to increase from

287 thousand per year in the period 2007-2020, to 439 thousand per year in 2020-2030 and to 544 thousand per year in 2030-2040.

Households with elderly

Close to 90 percent of the elderly are heads of households or spouse of the head (Table 1.) Headship rate declines with age but remains high at over 50 percent for the age group 80 years or older. On the other hand, the percentage that is non-heads, e.g. parents of the head or related to the head in some other ways, increase with age – accounting for about 24 percent (parents) and 15 percent (other) for the oldest age group.

Table 1. Household members by age group and by relationship to household head (APIS 2007)

| Age group | 2007 Population (thousand) | Relationship to household head | | | | |
		All	Head	Spouse	Parent	Other
0-57	81,601	100	17.1	15.6	0.1	67.2
58-64	2,863	100	60.5	30.9	3.3	5.3
65-69	1,460	100	61.3	27.4	6.0	5.3
70-74	1,021	100	60.9	23.2	8.8	7.1
75-79	587	100	60.3	18.2	14.2	7.3
80 or older	428	100	54.6	7.2	23.7	14.5
All elderly members 58+	6,359	100	60.3	26.1	7.2	6.4

Five types of households are defined based on the presence and role of the elderly in the household, and the household membership composition. Three types of elderly-headed households are distinguished as follows: one-person (type 1), all members are elderly (type 2), and with non-elderly family members (type 3.) Two types of non-elderly heads are distinguished: with elderly present (type 4) and no elderly (type 5).

About 68 percent of the elderly population is living in elderly-headed family households (type 3); and this proportion is higher for the young olds age 58-64 years, about 76 percent (Table 2). The proportions living in one-person (type 1) and all-elderly households (type 2) increase with age reaching about 11 percent and 14 percent, respectively, for the oldest age group 80 years or older. Similarly, the proportion living in non-elderly headed households (type 4) increases with age accounting for 28 percent of the oldest age group.

Of the households where all members are elderly (type 2) about 96 percent have 2 members (average size is about 2) while about 75 percent of elderly-headed family households (type 3) have 3 to 7 members or an average size of about 4.8 members (Table 3.) Non-elderly headed households tend to be larger with average size of about 5 for those without elderly members (type 5) and the largest average size of 5.8 for those with elderly members (type 4).

Table 2. Households members by age group and by household type (APIS 2007)

Age group of household member		Household type				
	All types	Elderly head / one person	Elderly head / all elderly	Elderly head / family	Non-elderly head / with elderly member	Non-elderly head / no elderly member
0-57	100	-	-	16.2	5.4	78.4
58-64	100	3.9	9.4	76.3	10.4	-
65-69	100	5.6	15.3	69.6	9.5	-
70-74	100	7.3	17.3	61.7	13.7	-
75-79	100	10.2	13.1	57.9	18.8	-
80 or older	100	11.0	13.6	47.3	28.1	-
All elderly members 58+	100	6.1	12.6	67.9	13.4	-
Households, 2007 (N=16.952M)	100	2.6	2.7	20.9	5.1	68.7

Table 3. Households by household size and by household type (APIS 2007)

Household size	Household type				
	Elderly head / one person	Elderly head / all elderly	Elderly head / family	Non-elderly head / with elderly member	Non-elderly head / no elderly member
1	100.0	-	-	-	3.4
2	-	96.0	13.6	7.2	7.0
3-4	-	4.0	40.9	25.2	34.8
5-7	-	-	34.8	47.6	44.1
8-10	-	-	8.6	16.7	12.7
11-21	-	-	2.1	3.3	1.4
All sizes	100	100	100	100	103.4

Young household members with age 0-5 years are present in higher numbers in non-elderly headed households (types 4 and 5) compared to elderly-headed family households (type 3). There are on average 4 young members for every 10 elderly-headed family households (type 3). On the other hand, there are on average 6 and 7.2 young members for every 10 non-elderly headed household with (type 4) and without (type 5) elderly members, respectively (Table 4).

Table 4. Households by number of members age 0-5 years and by household type (APIS 2007)

Number of members age 0-5 years	Household type				
	Elderly head / one person	Elderly head / all elderly	Elderly head / family	Non-elderly head / with elderly member	Non-elderly head / no elderly member
0	100.0	100.0	70.6	61.9	54.2
1	-	-	20.1	23.8	28.3
2	-	-	7.2	10.6	13.3
3-6	-	-	2.1	3.7	4.2
All sizes	100	100	100	100	100

As expected, there are more elderly members per household, an average of 2.1, in households where all members are elderly (type 2). While for elderly headed family (type 3) and non-elderly headed (type 4) households, there are on average 1.1 to 1.4 elderly members for every household (Table 5).

Table 5. Households by number of members age 58 years or older and by household type (APIS 2007)

Number of members age 58 years or older	Household type				
	Elderly head / one person	Elderly head / all elderly	Elderly head / family	Non-elderly head / with elderly member	Non-elderly head / no elderly member
0	-	-	-	-	100.0
1	100	-	60.9	88.8	-
2	-	96.0	37.6	10.8	-
3-5	-	4.0	1.5	0.4	-
All sizes	100	100	100	100	100

Taking together results from Tables 3, 4 and 5, the average age composition of each type of household may be described as follows:

Elderly-headed households
- Type 1: 1 of age 58 years or older
- Type 2: 2.1 of age 58 years or older
- Type 3: 0.4 of age 0-5 years, 3.3 of age 6-57 years and 1.1 of age 58 years or older

Non-elderly headed households
- Type 4: 0.6 of age 0-5 years, 3.8 of age 6-57 years and 1.4 of age 58 years or older
- Type 5: 0.7 of age 0-5, 4.3 of age 6-57 years and no elderly

All types of households are likely to be engaged in some entrepreneurial activity (Table 6), but much higher for household types 2 to 5. The percentage with agricultural activity are relatively even across household types, at around 20 percent. The percentage of households with retail trade activity is higher for elderly-headed family (type 3) and both non-elderly headed households (types 4 and 5).

Table 6. Percent of households with household entrepreneurial activity by household type (APIS 2007)

Household entrepreneurial activity	Household type				
	Elderly head / one person	Elderly head / all elderly	Elderly head / family	Non-elderly head / with elderly member	Non-elderly head / no elderly member
Any activity	41.6	63.2	65.3	63.1	60.7
Crop farming/ livestock raising	22.8	28.3	32.0	27.7	27.1
Retail trade	9.4	15.3	20.6	23.1	18.9
Manufacturing	3.6	3.8	4.2	3.5	3.3
Personal services	3.0	3.4	6.1	6.1	4.7

Labor income (which includes salaries/wages and part of entrepreneurial income, as expected, is a major source of revenue for households with working age members present (Table 7), i.e. elderly-headed family (type 3) and non-elderly headed households (types 4 and 5). But for households whose members are all elderly (types 1 and 2) transfers to households (both from domestic and international sources), pension and asset income together account for the majority of household revenues.

Table 7. Sources of household revenues by household type (APIS 2007)

| Sources of household revenues | Household type | | | | |
	Elderly head / one person	Elderly head / all elderly	Elderly head / family	Non-elderly head / with elderly member	Non-elderly head / no elderly member
Labor income	21.7	27.2	50.8	56.2	60.0
Transfers					
- Domestic	9.1	6.0	2.9	2.0	2.1
- International	15.8	15.9	11.4	12.6	9.3
Pension	13.2	12.5	6.5	3.0	0.9
Asset - income	35.3	32.7	21.1	18.0	19.1
Asset - other	2.7	2.7	3.9	3.2	3.5
Other	2.2	3.0	3.4	5.0	5.1
Total	100	100	100	100	100

In summary:

1. The elderly continue to be heads of households and responsible for family welfare with headship remaining as high as 50 percent even after age 80 years.
2. The elderly account for about 7 percent of the population (2007) but are spread out over 31 percent of households. They live as heads in 26 percent of households and as non-heads in another 5 percent of households.
3. Elderly-headed households tend to be smaller with average size of about 4.1 compared to the overall average size of 4.8 and the non-elderly headed households' average size of 5.0.
4. Elderly-headed family households have fewer young members age 0-5 years compared to non-elderly headed households.
5. Except for elderly one-person households, the other elderly-headed households are equally likely as non-elderly headed household to have some entrepreneurial activity present.
6. Compared to other household types, households whose members are all elderly have significantly higher shares of household revenue coming from transfers (domestic and international sources), pension and asset income.

Except for headship, elderly living arrangements have stayed relatively unchanged based on a comparison of the findings from the review of past studies (for the early 1990's) and the updates from the 2007 APIS. The percentage of elderly who were heads or spouses of heads had increased from about 77 percent in the early 1990's to about 88 percent in 2007. But the proportions had changed only slightly during the same period for (1) elderly living alone (from 4 percent to 6 percent), (2) elderly living with

working age adults (from 85 percent to 81 percent), and (3) elderly living with other elderly (from 50 percent to 54 percent).

Elderly work activity and factors

In 2007 about half of the elderly age 58 years or older reported having worked in the last six months (Table 8). The percentage working declines with age, from 65 percent for the age group 58-64 to about 16 percent for the age group 80 years or older. Of those elderly who worked more than 60 percent are self-employed or employer in own business, with the percentage increasing from 58 percent for the young olds to 71 percent for the oldest age group. In contrast, the percentage employed in the private sector and government drops significantly from about 33 percent for the age group 58-64 (pre-retirement) to about 21 percent for the age group 65-69 (post-retirement) because of the mandatory retirement for formal sector employment at age 65 years.

Table 8. Elderly reporting to have worked and class of worker by age group (APIS 2007)

| Age group | Percent that reported working in the last 6 months | Class of worker | | | | | |
		All classes	Employed in private enterprise or household	Employed in government	Self-employed	Employer in own business	Employed in family operations
58-64	65.2	100	22.5	10.7	47.2	9.2	10.4
65-69	53.5	100	16.8	4.2	55.9	10.8	12.3
70-74	42.6	100	14.2	2.8	61.0	9.8	12.2
75-79	32.9	100	9.8	2.9	63.7	13.4	10.2
80 or older	15.6	100	10.9	2.3	60.0	11.3	15.5
All elderly members 58+	51.1	100	18.9	7.4	52.5	10.1	11.1

The remaining tables in this section are used to examine the importance of some factors identified earlier in Section 2 to influence elderly work decisions. These factors include both individual and household level characteristics.

The elderly with lower levels of schooling have slightly higher percentage that continue working (Table 9). Moreover, the percentage working among elderly with college education or higher shows the sharpest drop from age 58-64 years, at 62 percent, to age 65-69 years, at 37 percent. The two observations reflect the fact that most workers with higher education are employed in formal sector work where there is mandatory retirement at age 65 years. The elderly that continued to work also reported lower incidence of illness in the previous month and the pattern is consistent in all elderly age groups (Table 10).

Table 9. Percent working among elderly members by age group and by education level attained (APIS 2007)

Age group	Educational attainment		
	Elementary or lower	High school	College or higher
58-64	68.7	52.9	61.6
65-69	55.7	50.1	37.0
70-74	46.7	36.5	29.5
75-79	32.6	33.4	20.4
80 or older	15.6	15.5	13.5
All elderly members 58+	51.9	49.8	46.1

Table 10. Percent of elderly reporting being ill in the last month by age group and work status (APIS 2007)

Age group	Working	Not working
58-64	31.6	35.7
65-69	36.8	38.9
70-74	39.3	41.8
75-79	44.3	46.8
80 or older	40.2	48.9
All elderly members 58+	34.9	41.2

Table 11 shows that the elderly who live in elderly-headed households (types 1, 2 and 3) are twice as likely to be working compared to those living in non-elderly headed households (type 4). This observation is also reflected in Table 12 where the elderly household heads and spouses are shown to have more than double percentages working compared to parents of heads and elderly related in other ways to the household head. The elderly heads however consistently show the highest percentages working at all age groups.

Table 11. Percent working among elderly members by age group and by type of household residing in (APIS 2007)

Age group	Household type				
	Elderly head / one person	Elderly head / all elderly	Elderly head / family	Non-elderly head / with elderly member	Non-elderly head / no elderly member
58-64	73.9	63.3	67.5	47.3	-
65-69	63.2	58.0	55.2	28.5	-
70-74	44.4	51.6	45.0	19.4	-
75-79	39.7	45.7	35.4	12.7	-
80 or older	26.3	22.5	16.7	6.3	-
All elderly members 58+	52.5	53.5	55.3	26.6	-

Table 12.Percent working among elderly members by age group and by relationship to household head (APIS 2007)

| Age group | Relationship to household head | | | |
	Head	Spouse	Parent	Other
58-64	73.7	55.1	38.8	44.0
65-69	62.0	44.9	27.5	28.8
70-74	51.8	33.2	22.1	19.2
75-79	40.9	26.7	12.4	12.7
80 or older	21.9	21.4	6.2	4.7
All elderly members 58+	59.6	46.9	20.0	26.1

The percentage working among the elderly is slightly lower when young members age 0-5 years are present in the household (Table 13). This pattern is consistent across all elderly age groups.

Table 13. Percent working among elderly members by age group and by presence of members age 0-5 years in the household (APIS 2007)

| Age group | Number of household members age 0-5 years | |
	0	1-5
58-64	66.6	61.6
65-69	55.2	48.5
70-74	42.9	41.3
75-79	35.2	24.8
80 or older	16.2	13.1
All elderly members 58+	51.8	49.0

The elderly living in households engaged in any entrepreneurial activity are about 2.5 times as likely to be working compared to those living in households with no activity (Table 14). A similar comparison by age group shows the following differences: nearly 2 times (75.6 versus 44.2 percent working) for the young olds 58-64 years to nearly 5 times (24.6 versus 5.2 percent working) for the oldest age group.

Table 14. Percent working among elderly members by age group and by presence of entrepreneurial activity in the household (APIS 2007)

| Age group | Presence of activity in the household | |
	With activity	Without activity
58-64	75.6	44.2
65-69	67.8	24.7
70-74	58.6	15.5
75-79	49.0	11.4
80 or older	24.6	5.2
All elderly members 58+	64.7	26.7

In summary:
1. Elderly work participation declines with age but remains relatively high.

2. Those elderly with higher education levels are less likely to continue working.
3. The elderly who are not working report higher incidence of illness in the past month.
4. Elderly household heads are 3 times as likely to be working compared to elderly non-heads.
5. The percentage working among the elderly living in household with young children compared to those in households without young children is slightly lower.
6. The elderly living in households engaged in any entrepreneurial activity (compared to those in household that do not have the activity) are much more likely to be working.

The findings from the 2007 APIS tabulations are generally consistent with those found in the review of past studies for both individual person characteristics (age, educational attainment and health status) and household characteristics (elderly headship and household membership composition).

4. Prospects of increasing elderly work activity and labor income in the future

In Section 4.1 past patterns of labor force participation including those for the elderly is discussed first and used as the basis to argue why increase in elderly work activity in the future is possible. Next, a regression model of elderly labor force participation estimated for simulation purposes is presented in Section 4.2. The prospects of change in the factors influencing elderly work participation (specifically, the explanatory variables included in the regression model) are assessed and used to define alternative scenarios of change. Then elderly labor force participation and size are estimated for the different scenarios using the regression model (Section 4.3). Finally, the implication of alternative increases in elderly labor force size on their aggregate labor income and aggregate lifecycle deficit are estimated in Section 4.4 using results from the 2007 Philippines NTA.

4.1 Past patterns of elderly labor force participation

Figure 1. Labor force participation rates: Philippines, 1991 and 2007

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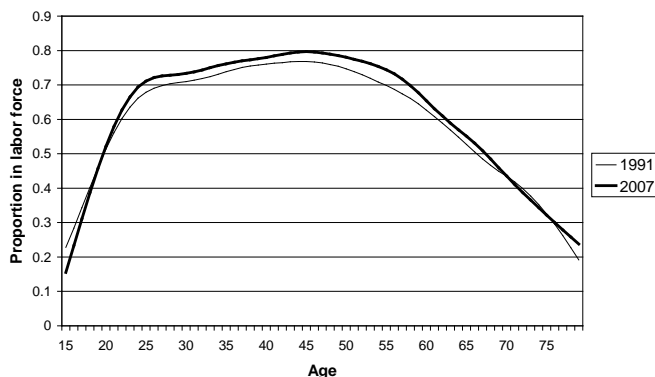
A comparison of the labor force participation rates by age for the years 1991 and 2007 (computed from the 1991 Labor Force Survey October Round and 2007 APIS, respectively) shows: first, consistency across the years in the relatively high participation rates of the elderly population past age 65 years which is the mandatory retirement age in the Philippines; and second, discernable increases in rates for ages 20 to 70 years during the 16-year period (Figure 1). The significance of the upward shift in the participation rates age profile may be quantified in terms of the implied change in the absolute number of elderly labor force – i.e., apply the participation rates for the two years to the same population data by age (e.g., 2007 population) and compare the computed labor force sizes. The computed elderly labor force size is higher by 4 percent using the 2007 participation rates compared to the computed size obtained using the 1991 participation rates.

The general upward shift observed in the participation rates from 1991 to 2007 (Figure 1) showed that increases over time including those of the elderly have been experienced in the past and this is an indication that there can potentially be further increases in the future.

4.2 A simulation model for elderly labor force participation

The review of previous studies in Section 2 and the update presented in Section 3 identified factors that could influence the participation of the elderly in work activities. A selection of these factors is used as explanatory variables in a simple regression model of labor force participation estimated for the age group 58 years or older using the 2007 APIS (Table 15). The regression model is intended to be used primarily for examining effects of explanatory factors on elderly labor force participation and for simulating how will change given various scenarios of change in the explanatory variables or factors. The explanatory variables are expected to change in the future based on observed patterns of change in the past or possible government interventions or policy changes.

The estimated regression model in Table 15 shows directions of effects of factors that are generally consistent with the findings of the review in Section 2 and the tabulations in Section 3 as follows: age, negative; indicator of illness, negative; household headship, positive; with high school or college education, negative; household with enterprise activity present, positive; and household with young children age 0-5, negative. The importance specifically of three explanatory or motivating factors included in the model is examined more closely in Table 16.

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Table 15. Logistic model of elderly (58 years or older) labor force participation, APIS 2007

Variable	Coefficient	
INTERCEPT	6.6181	*
AGE	-0.1411	*
AGESQ	0.0003	
WAS_ILL	-0.2839	*
HEAD	1.2259	*
ED_HS	-0.2418	*
ED_COLL	-0.1986	*
ENT	1.8211	*
MEM05	-0.1714	*
Log of Likelihood Function = -9363.70		
Number of Cases = 17415		
R-squared = 0.279362		

* Significance at the 1% level

Notes:
DEPENDENT VARIABLE = working or seeking work

AGE = age of the person

AGESQ = square of age
WAS_ILL = dummy for person was ill/injured (past month)

HEAD = dummy for household head

ED_HS = with high school education dummy
ED_COLL = with college or higher education dummy
ENT = dummy for household has entrepreneurial activity
MEM05 = number of household members 0-5 years old

Table 16. Estimated effects of selected factors on elderly labor force size: Philippines, 2007

Motivating factor	Hypothetical change in the motivating factor	Change in elderly labor force size (percent)
Better health status	Decrease by 10% in the proportion reporting illness or injury during part month	0.5
Rising household headship among elderly	Increase by 10% in the proportion of elderly who are household heads	5.1
More employment opportunities for elderly	Increase by 10% in the proportion of elderly households engaged in entrepreneurial activities	4.9

The need for the elderly to continue as provider (represented by headship) and availability of employment opportunity (represented by presence of entrepreneurial activities in the household) are two factors found to significantly contribute to high elderly labor force participation. Health status shows lower effect but remains an important factor that can influence elderly participation in the future.

4.3 Assessing prospects of increase in elderly participation in work activities in the future

The assessment is done in several steps. First, likely future changes are assessed for three of the explanatory variables or factors included in the elderly labor force participation (LFP) regression model and which are presented in Table 16. Three alternative scenarios of change in the three selected factors are defined.

Second, elderly LFP rates by age for the three scenarios are estimated using the regression model, i.e. by applying the projected or assumed changes in explanatory factors as defined for each scenario.

Third, the three alternative sets of simulated or estimated elderly LFP rates are then applied to the 2007 population data by age (i.e., computations are carried out for each specific age) giving estimates of the labor force size at each age. The overall effects of the changes in explanatory factors represented by each of the three scenarios are then assessed in terms of the differences in the total elderly labor force sizes for the scenarios compared to the original actual elderly labor force size for 2007.

To get a sense of realistic changes over time, data on headship and morbidity rates by age for the years 1999 and 2007 are compared and these are shown in Figures 2 and 3 (data from the 1999 APIS and 2007 APIS). The proportion of households engaged in entrepreneurial activities was similarly examined using the same survey data sets.

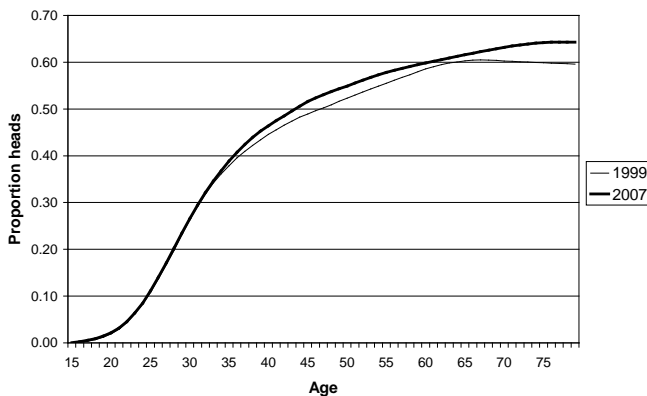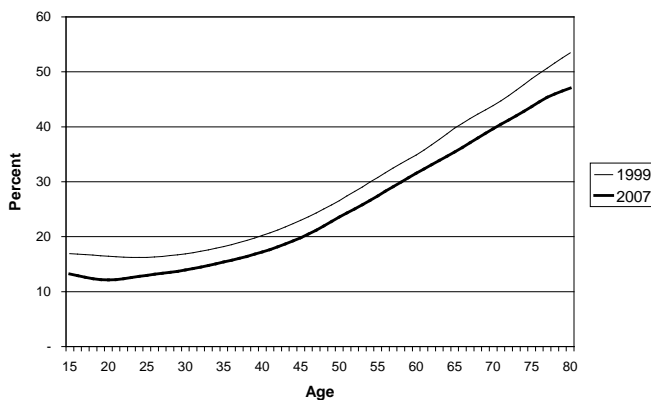Figure 2. Headship rate by age: Philippines, 1999 and 2007

Figure 3. Morbidity rate by age: Philippines, 1999 and 2007

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Headship rates of the elderly age 58 years or over had shifted upwards from 1999 to 2007 or the elderly are staying on longer as heads of households. The upward shift in the elderly headship rates translates to a higher number of elderly heads by about 4 percent using the 2007 rates versus the 1999 rates.[3]

Age-specific morbidity rates (proportion that reported being ill or injured during the past month) declined at all ages including the older ages from 1999 to 2007. The downward shift in the morbidity rates for the elderly translates to a lower number reporting illness among the elderly by about 8 percent using the 2007 rates versus the 1999 rates.[4]

While the percentage of elderly households engaged in entrepreneurial activities had not shown any significant change from 1999 to 2007, there is potential for expanding the number of such households in the future with government intervention. Expanding the implementation of measures stated in the Philippine Plan of Action for Senior Citizens 2006-2010 would benefit more elderly who are interested to engage in entrepreneurial or self-employment activities.

Using the above discussion as basis, prospects for change in the three selected factors up to the year 2040 (33 years from 2007) are represented in three alternative scenarios: Low, Medium and High. The scenarios reflect the levels of change in the factors, with the most conservative assumptions for change represented in the Low scenario (Table 17).

Table 17. Change in the size of elderly labor force age 58 years or older by scenario (in percent)

Scenario	Change in factors influencing elderly labor force participation (percent)			Change in elderly labor force size (percent)
	Reduction in elderly morbidity (reporting illness or injury during last month)	Increase in elderly household headship	Increase in households engaged in entrepreneurial activities	
Low	8	4	5	5
Medium	16	8	10	9
High	32	16	20	16

Note: The 2007 population by age was used as base for labor force size computations. The difference in the computed labor force size for each scenario relative to the size had the three factors remained unchanged is expressed in percent.

Based on past patterns, elderly headship had increased by 4 percent and elderly reporting illness had decreased by 8 percent over a period of 8 years (from 1999 to 2007). For the Low scenario, the change in the two factors will be set equal to that experienced in the 8-year period. For the Medium and High scenarios, the changes will be set to twice and four times those in the Low scenario, respectively. Government actions are still needed to effect change in elderly employment opportunities and, for purposes of the

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[3] The 1999 and 2007 headship rates are both applied to the 2007 population by age and the resulting total number of heads compared.
[4] The 1999 and 2007 morbidity rates are both applied to the 2007 population by age and resulting total number reporting illness compared.

simulation, hypothetical changes are set at 5, 10 and 20 percent increase in households engaged in entrepreneurial activities. The means for the other explanatory variables in the model are assumed to stay constant at base year (2007) values in all scenarios.

The effect of alternative changes in the three factors on elderly labor force size is to increase the total size by 5, 9 and 16 percent in the low, medium and high scenarios, respectively, relative to the original labor force size (Table 17).

4.4 Assessing potential effects of increase in work activity on elderly aggregate labor income and lifecycle deficit

Aggregate lifecycle deficit for the elderly is computed by taking the difference between elderly aggregate consumption and elderly aggregate labor income. For the analysis in this section, the per capita consumption age profile (and, thus, aggregate consumption) of the elderly is assumed to remain unchanged for the different scenarios. Aggregate labor income would vary for the different scenarios, even when per worker labor income is assumed to stay constant, because of changing elderly labor force size as indicated in Table 17. Aggregate labor income for each scenario, using 2007 population data by age, would be computed as follows:

$$Y^{j,2007} = \sum_{i=58+} P_i^{2007} l_i^j \ e_i^{2007} \ y_i^{2007}$$

where
$Y^{j,2007}$ = aggregate labor income for scenario j and using 2007 population data
P_i^{2007} = population size of age i in 2007
l_i^j = labor force participation rate of age i in scenario j
e_i^{2007} = employment rate of age i in 2007
y_i^{2007} = labor income per worker of age i in 2007
i = age of individual (58 years or older)
j = scenario (0 for no change, 1 for low, 2 for medium and 3 for high)

The effect of increasing elderly labor force participation is assessed by comparing the resulting alternative (hypothetical) values of aggregate labor income and aggregate lifecycle deficits across scenarios.

To determine the effect (if any) of change in population age structure from 2007 to 2040 on the potential to increase aggregate labor income of elderly through increase in their labor force participation, another set of aggregate labor income values are computed for each scenario as follows, i.e. using 2040 population projections by age and keeping all other variables as defined previously:

$$Y^{j,2040} = \sum_{i=58+} P_i^{2040} l_i^j \ e_i^{2007} \ y_i^{2007}$$

where
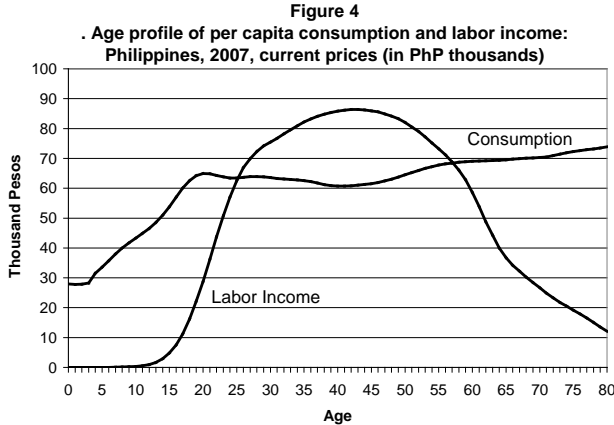$Y^{j,2040}$ = aggregate labor income for scenario j and using 2040 population projections
P_i^{2040} = population projection for age i in 2040

The effect of the change in population age structure from 2007 to 2040 is assessed by comparing results of the second set of aggregate labor income and lifecycle deficit computations (that use the 2040 population projections) with results of the first set of computations (that use 2007 population data).

Results of the 2007 Philippines NTA are used in the computation of aggregate consumption and labor income. These input data from the NTA are described briefly. (For more detail on the 2007 NTA see Abrigo, Racelis and Salas 2012.)

Using selected 2007 NTA results

The following NTA results are used: the 2007 NTA per capita labor income age profile from which the 2007 labor income per worker age profile (kept constant in all computations or simulations) is derived[5], and which in turn is used in the computation of aggregate labor income age profiles; and the 2007 per capita current consumption age profile (also kept constant in all simulations) which is used to compute for the aggregate consumption age profiles. These two per capita age profiles are shown in Figure 4 and briefly described.

Figure 4
. Age profile of per capita consumption and labor income:
Philippines, 2007, current prices (in PhP thousands)

The profile for labor income rises sharply between ages 15 to 25, peaks at age 42 and declines 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.

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[5] Per capita labor income by age is derived by dividing aggregate labor income at each age by the total population size at each age; or aggregate labor income at each age may be derived by multiplying the per capita labor income by age with the population size at each age. The per worker labor income by age is derived from per capita income by age as follows (for i[th] age): [(per capita labor income for age i)*(population size age i)] / [(population size age i)*(labor force participation age i)*(employment rate age i)]. That is, divide aggregate labor income at each age by the number of workers for the corresponding age.

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.

Multiplying the per capita age profiles for consumption and labor income shown in Figure 4 with the population size at each age for a given year produces the aggregate age profile for the two components. And totals for aggregate consumption and labor income are obtained by taking the sum of the cross-products across all ages.

Potential effects of increase in labor force size on aggregate labor income and lifecycle deficit of the elderly

Using 2007 NTA per capita age profiles for labor income, the 2007 and 2040 population by age and the above three alternative scenarios for increase in elderly labor force size[6], the values of aggregate labor income and lifecycle deficit for the elderly group for the different scenarios are computed and presented in Table 18. (As previously stated, aggregate consumption is assumed to remain unchanged in the three scenarios. The actual 2007 elderly labor force participation rates are used in the computation of labor income in the "no change" scenario.)

Table 18. Aggregate consumption, labor income and lifecycle deficit for population aged 58 years or older (billion PhP), 2007 and 2040 simulations

| NTA component	Scenarios for age 58+ labor force size increase			
	No change	Low (5 percent)	Medium (9 percent)	High (16 percent)
	Alternative participation rates applied to 2007 population			
Lifecycle deficit	203	192	182	165
Labor income	243	254	264	281
Consumption	446	446	446	446
	Alternative participation rates applied to 2040 population			
Lifecycle deficit	698	670	641	590
Labor income	706	735	764	815
Consumption	1405	1405	1405	1405

In the case where alternative participation rates are applied to the 2007 population data, the findings are that the share of elderly consumption that can be covered by labor income increases from 54 percent (no change scenario) to 57, 59 and 63 percent in scenarios where elderly labor force sizes are higher by 5, 9 and 16 percent, respectively. The size of the lifecycle deficit of the elderly is smaller by 6, 11 and 20 percent in the

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[6] The actual shifts in labor force participation from 1991 to 2007 in the older ages are observed to be in the range 58 to 70 years. To be consistent with historical patterns, the increases in participation rates in the three scenarios (5, 9 and 16 percent increases as shown in Table 18) are assumed to apply only to ages 58 to 70 years.

three scenarios relative to the deficit in the no-change scenario, with the largest decrease for the scenario where elderly labor force size is higher by 16 percent.

The parallel computations using the 2040 population show lower percentage increase in labor income in response to the same increases in elderly labor force; for example, the 16 percent hypothetical increase (high scenario) in elderly labor force size would result to a 20 percent increase in aggregate labor income when using the 2007 population but a lower 15 percent increase when using the 2040 population. Thus, in the 2040 simulation there is slower increase in the ratio of labor income relative to consumption and slower reduction in lifecycle deficit, given the same percentage increase in elderly labor force. An implication of these findings is that the change in the age distribution of the elderly population between 2007 and 2040 does matter as shown by the diminished impact of increasing elderly participation.[7] Another implication of a practical nature is that labor income as a means to financing elderly consumption must increasingly be supplemented by other sources in the future as population becomes older.

Aggregate lifecycle deficit age profiles corresponding to the results for the 2007 (population) panel in Table 18 are shown in Figure 5 for the alternative scenarios and for the no-change scenario (which is also the actual 2007 age profile). In general the age profiles are observed to shift further to the right compared to the actual 2007 age profile. The (hypothetical) increase in the size of the elderly labor force represented by the three scenarios results to increases in the deficit age cut-offs from 58 years (actual 2007) to 59, 60 and 61 years.[8] The increases in deficit age cut-offs translate to lower aggregate lifecycle deficits for the elderly as shown in Table 18.

Figure 5. Aggregate lifecycle deficit for alternative scenarios of elderly labor force size increase (5%, 9%, and 16%): 2007
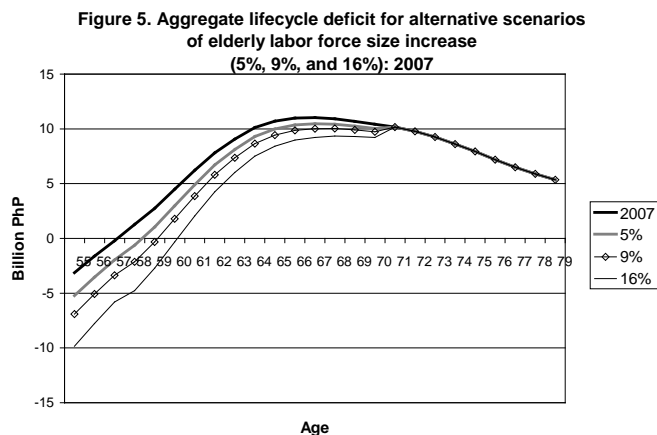
5. What government can do to encourage and support elderly work activity?

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[7] The proportion of young olds age 58 to 70, or those who are more economically active among the elderly, decreases from about 71 percent in 2007 to 64 percent in 2040.
[8] The age profiles computed based on the 2040 population are not shown as these exhibit the same deficit age cut-offs as in Figure 14 since the same per capita income and consumption age profiles from the 2007 NTA were used.

The analyses show that elderly labor income can be expanded as a financing source for elderly consumption through increase in their work activity and that elderly work activity can be influenced through a number of factors.

Government can directly influence some of these factors. More specifically, government action would be most effective in two areas: (1) advancing elderly health and well-being; and (2) expanding employment opportunities and ensuring supportive and enabling environment for elderly workers. A comprehensive set of legal instruments and programs are already in place intended to promote elderly welfare. Thus, government can readily act on provisions that already exist and that pertain to the two areas of elderly health and employment. Additionally, amendments to some provisions are suggested.

The advancement of elderly health and well-being, for example, are provided for in the Senior Citizen's Act and its amendments (1992 Republic Act 7432 and 2003 RA 9257), the 1999-2004 and 2006-2010 Philippine Plan of Action for Senior Citizens (PPASC), the Department of Health's National Health Care Program for Older Persons (under the Non-Communicable Diseases Control Service) and PhilHealth's non-paying members program. The implementations of these provisions or programs need to be expanded and financed.

The PPASC articulates measures that can expand (self) employment opportunities and social security for the elderly as follows: to provide micro-financing to senior citizens to establish alternative employment or livelihood; to develop an employment program for returning overseas workers who are senior citizens; and to increase the scope of social security program to non-formal sector workers. These existing provisions need to be implemented more widely in the country. The government can also expand elderly employment in the formal sector by amending the Labor Code and extending the mandatory retirement age beyond 65 years.

The PPASC and the Accessibility Law (1983 RA 344) also provide for establishing an older-person friendly transportation and built environment. Implementation of these provisions needs to be strengthened. If older workers are to become an increasing part of the Philippine labor force in the future, the Labor Code must be amended to include provisions to ensure their safety and welfare in the workplace specifically taking into consideration their physical capacities and special needs.

6. Summary and conclusion

1. The proportion of aggregate consumption accounted for by the older population is expected to be to be higher in 2040, estimated at 17 percent, compared to 9 percent in 2007. And the share of aggregate lifecycle "deficits" attributable to the older population is also estimated to be higher in 2040 at 24 percent compared to 10 percent in 2007. The challenge would then be finding the means to finance this group's growing consumption in the future.

2. The sources of financing for elderly consumption in 2007 were own labor income, private transfers (both inter- and intra-household transfers) and asset reallocation. The prospects of increasing elderly economic activity in the future to increase own labor income was explored based on possible future trends in three motivating factors, among many others. These factors were: elderly health status, elderly household headship, and elderly employment opportunities, particularly household entrepreneurial activities. Alternative scenarios of change in these factors or determinants were set based on past trends and some assumption about government action. The estimated increases in elderly labor force size are 5, 9 and 16 percent for the low, medium and high levels of change in the determinants, respectively.

3. When the hypothetical increase in the size of elderly labor force (low, medium and high) are alternately used in the simulations, results show that the higher the increase in labor force size (1) the higher the increase in aggregate labor income, (2) the higher the proportion of consumption that can be covered by own labor income, (3) the higher the elderly deficit age cut-off, and (4) the larger the decline in lifecycle deficit.

4. What can government do to encourage more elderly to continue working? Government action can focus on two areas: elderly health and well-being, and elderly employment opportunities and enabling environment. The government can strengthen, finance and expand the implementation of existing provisions that address the two areas such as those articulated in the Senior Citizen's Acts (1992 Republic Act 7432 and 2003 RA 9257), the Philippine Plans of Action for Senior Citizens (1999-2004 and 2006-2010), and programs of the DOH and PhilHealth. The Labor Code can be amended (1) by extending the mandatory retirement age to increase elderly participation in the formal sector, and, given (1), (2) to include specific provisions that will protect the elderly in the workplace.

5. While own labor income constitutes an important source of financing for elderly consumption and can potentially remain important in the future, simulations also showed that the change in age structure among the elderly (decreasing proportion of young olds with population aging) can diminish the impact of elderly employment promotion towards increasing elderly aggregate labor income. An implication of this finding is that government should consider strengthening not only specific, such as labor income and pension systems, but all possible sources of financing for elderly consumption.

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