Philippine Journal of Development
Volume 47 (2023) Number 1

Who Wins and Who Loses from PhilHealth? Cost and Benefit Incidence of Social Health Insurance in a Lifecycle Perspective

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ABSTRACT

This paper used incidence analysis to examine the financial costs and benefits from the National Health Insurance Program (NHIP) through the Philippine Health Insurance Corporation (PhilHealth) that accrue to different age groups and socioeconomic classes. It finds that premium contributions to and benefits payment by PhilHealth are both pro-poor. As a public transfers program, PhilHealth reallocates resources from higher-income to lower-income populations. As a pseudo-pension program, it transfers resources from workers to finance retirees' health care. As a health insurance, its premium contributions are not enough to finance the benefits it provides. Throughout an average Filipino's lifetime, the NHIP subsidizes about 40 centavos worth of health care for every peso an individual contributes directly or indirectly as premium to PhilHealth.

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INTRODUCTION

Governments play an important role in reallocating resources across different populations and through time, with exclusive authority to levy taxes and ability to provide goods and services using taxes and other income. These government actions often inadvertently or purposively result in winners and losers (e.g., Neary 1994; Dinan and Rogers 2002; Birdsall and Nellis 2003; Paqueo et al. 2017). Balancing competing claims on government-held resources is therefore fraught with contention. Government programs are often ultimately justified based on their ability to improve measures of social welfare.

Public spending has been known to increase as economies develop, potentially from expanding fiscal space. Indeed, with the turn of the millennium, many developing countries have made significant steps to introduce or reform different government entitlements, particularly for healthcare financing (Wagstaff 2010) and old-age pension (Holzmann 2013).

The Philippines is riding on a similar wave of reforms fueled by its recent strong economic performance. Over the last decade, the government has introduced new entitlements, including free tertiary education and free health insurance for the poor and elderly, while expanding existing programs, such as social health insurance (SHI) in the informal sector. Parallel reforms on taxation have been instituted to finance new and expanding entitlements. With the free tertiary education and health insurance programs alone, nearly PHP 110 billion were allocated in 2019 or roughly 3 percent of the total government budget in the said year.

These reforms come at a crucial phase in the country's demographic transition. While the country remains a young population, it is projected to transition into an ageing society in the next decade and into an aged population in about one generation after (Abrigo et al. 2020). Demographic transition (in general) and population ageing (in particular) provide opportunities for growth (e.g., Mason 2006; Mason and Lee 2007), but the existing age schedule of taxes and entitlements in the country can either negatively affect the government's ability to provide for goods and services in the longer term or introduce greater fiscal burden on future generations (Abrigo 2019; Abrigo et al. 2020).

Several studies have attempted to document the incidence of costs and benefits in existing and proposed government policies, including on health (e.g., O'Donnell et al. 2008; Manasan and Cuenca 2010), education (e.g., Manasan et al. 2008; Orbeta and Paqueo 2017), and taxation (e.g., Shah and Whalley 1991; Devarajan and Hossain 1998; Manasan 2018). By and large, these analyses suggest that government spending on public health is progressive while that for curative care is regressive. Public spending on basic education is also progressive while that for higher education is regressive. Taxation is regressive, neutral, or progressive depending on the type. These follow the patterns observed in other countries (e.g., Kakwani 1977; Shah and Whalley 1991; O'Donnell et al. 2008; Davoodi et al. 2010; Asante et al. 2016).

This paper builds on these studies to assess the incidence of costs and benefits of fiscal reforms in the Philippines, particularly focusing on the National Health Insurance Program (NHIP). Unlike the earlier analyses that measured the incidence of financial flows to and from different subpopulations based on only one dimension[2]—i.e., cross-sectionally using socioeconomic status (e.g., O'Donnell et al. 2008; Asante et al. 2016) or temporally using cohorts (e.g., Cutler and Sheiner 2000; Bommier et al. 2010)—this paper provides estimates of the lifecycle incidence of costs and benefits by using educational attainment as proxy for socioeconomic class. This approach allows a

[2] Some exceptions include McClellan and Skinner (1999) who analyzed the benefit and cost incidences of Medicare in the United States (US) based on zonal code as proxy for socioeconomic status and age groups as proxy for cohorts.

comparison of the lifetime net benefits or costs to individuals across socioeconomic groups. The study finds that premium contributions to and benefits payment by the Philippine Health Insurance Corporation (PhilHealth), which administers the country's NHIP, are both pro-poor. As a whole, the NHIP is a progressive public reallocations system that benefits lower-income households more.

However, this paper also documents imbalances in the levels of PhilHealth contribution and benefits across the lifecycle and among socioeconomic groups. On average, individuals are net contributors to the system for only about two decades (i.e., from early teens to mid-30s) and net beneficiaries for a large portion of their life starting in their late 50s. When disaggregated by socioeconomic class, individuals from lower socioeconomic class transition earlier into the net beneficiary status and receive higher net benefit levels over the course of their lifetime. Among those with no grade completed, survival-weighted benefit-cost (B/C) ratios at age 90 may reach as high as 3.4, while substantial B/C ratios may be observed for other lower socioeconomic groups, including those who reached primary (B/C ratio = 2.4) and secondary (1.8) education levels. College-educated individuals remain net contributors to PhilHealth and the NHIP throughout their lifetime.

When aggregated over the population, imbalances across age and socioeconomic groups will exert substantial financial pressure on the country's NHIP in the longer term. While higher-income individuals are projected to generate surpluses over their lifetime, these may not be enough to cover the projected deficits that the system will incur from providing benefits to the lower-income population in the future. Over the course of an average Filipino's lifetime, the NHIP is estimated to subsidize about 40 centavos worth of health care for every peso an individual contributes directly or indirectly as a premium to PhilHealth. The current PhilHealth funding mechanisms are insufficient to fully cover the assured prospective benefits provided to an average Filipino when viewed from a lifecycle perspective.

RECENT REFORMS IN THE NHIP

The country's SHI system was introduced in the late 1960s as two separate health insurance funds[3] administered by the country's pension systems for public and private sector employees and a medical care program for those not covered by these two pension systems. Together, these formed the then Medical Care Program. The country's SHI system was reorganized in 1995, with the merging of health insurance funds to form the core of what is now PhilHealth. PhilHealth was tasked to administer the country's NHIP, which aims to "provide health insurance coverage and ensure affordable, acceptable, available, and accessible healthcare services for all citizens of the Philippines".[4]

Similar to other SHI systems, PhilHealth levies taxes on workers in the form of premium contributions; receives subsidies, grants, and aids; and earns income from its investments to finance the benefits payment of covered members. As a health insurance, the NHIP pools risks among covered members and pays for covered health events. As a public reallocations system, the NHIP was envisioned "as a means for the healthy to help pay for the care of the sick and for those who can afford medical care to subsidize those who cannot".[5]

[3] Republic Act (RA) 6111, also known as the Philippine Medical Care Act of 1969, created the Philippine Medical Care Plan, which was mandated to maintain at least two programs: Program I for members of the old-age pension programs—the Social Security System and the Government Service Insurance System—and Program II for everyone else. However, only Program I was deemed to be successful.

[4] Article 3, Section 5, RA 7875 or the National Health Insurance Act of 1995

[5] Ibid.

Like the pay-as-you-go pension system, workers are eligible for continuous health insurance coverage upon retirement after reaching a minimum number of contributions to PhilHealth.

In the early years of PhilHealth, coverage was largely limited to paying members, pensioners, and their dependents. There have been several attempts to broaden the covered population through PhilHealth's sponsored program, although this remains a minor part of PhilHealth operations until more recently. Until 2008, sponsored members comprised at most a fifth of all primary members of PhilHealth. This has since been expanded considerably to cover a greater number of poor households and retirees who have not reached the minimum number of contributions to qualify for lifetime membership.

In 2010, PhilHealth adopted the means test protocol of the country's conditional cash transfer program to identify poor families eligible for its sponsored program. With the amendment of the NHIP and the PhilHealth charter in 2013, the national government pays the premium contributions of indigent members. This free health insurance coverage through the national government was extended to all senior citizens in 2014 after amending the Expanded Senior Citizens Act of 2010 (Republic Act 10645). As a result of this expansion, sponsored members represented two-fifths of all primary members in 2020. The absolute number has increased more than sixfold since 2008.

The expanded population coverage became possible with the increased share of the NHIP on national government levies on tobacco and alcoholic products. Until 2013, the NHIP received 25 percent of incremental tax revenues from tobacco products. This was since raised to 80 percent of incremental sin tax revenues from tobacco products and alcoholic beverages. Adjustments in the contribution rates are expected to further increase the funds available to PhilHealth. With the enactment of the Universal Health Care (UHC) Act of 2019, contribution rates are scheduled to be adjusted from the previous 2.5 percent to a maximum of 5.0 percent in 2024 in increments of 0.25 percentage points annually starting in 2019.

Table 1 presents a summary of PhilHealth's income and expenditures between 2009 and 2019. Over the last decade, the NHIP benefits payment increased on average by 15 percent annually in real terms. By 2015, benefits payment to subsidized members, including sponsored members, senior citizens, and lifetime members, had exceeded benefits payment to paying members from the formal and informal sectors and their dependents.

Table 1. PhilHealth income and expenditure (PHP billion in constant 2012 prices), 2009–2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total expenditures	30.7	36.0	40.4	52.5	58.7	78.3	98.3	100.4	100.6	103.2	124.7
Benefits payments	26.8	32.0	36.1	47.9	54.0	73.6	92.6	93.3	94.7	97.3	113.9
Formal economy	15.4	17.2	18.8	21.3	20.8	25.3	23.2	22.7	21.6	21.0	24.1
Informal economy	5.0	5.7	7.3	11.2	11.8	19.6	19.7	19.0	19.2	18.7	20.3
Lifetime members + senior citizens	1.9	2.1	2.4	3.7	4.0	5.3	18.6	22.9	26.5	25.4	30.1
Sponsored programs (excluding senior citizens)	4.5	7.0	7.7	11.8	17.4	23.3	31.1	28.7	27.3	32.2	39.4
Personal services	2.6	2.6	2.8	2.8	2.7	2.7	3.8	5.1	4.0	3.8	3.8
Maintenance and other operating expense	1.4	1.4	1.5	1.7	2.0	2.1	2.0	2.0	1.9	2.1	7.0
Total income	41.7	42.9	44.9	54.2	62.1	88.6	99.7	100.1	100.8	121.3	128.6
Premium contributions	34.6	36.2	38.0	47.4	55.6	82.4	93.1	94.8	95.6	115.5	121.8
Formal economy	26.3	28.2	29.6	31.1	34.6	37.1	37.8	43.8	44.1	57.6	57.3
Informal economy	2.4	2.7	3.0	3.6	4.3	7.2	6.4	4.5	7.1	6.4	6.8
National government subsidy	5.9	5.3	5.4	12.8	16.7	38.1	48.9	46.5	44.5	51.5	57.7
Indigents-NHTS	0.0	0.0	0.0	10.6	12.1	33.3	33.8	31.7	30.1	32.0	25.3
Senior citizens	0.0	0.0	0.0	0.0	0.0	2.0	12.2	11.9	11.6	16.1	28.2
Others	5.9	5.3	5.4	2.2	4.6	2.8	2.9	2.9	2.7	3.4	4.2
Interest income	6.8	6.7	6.9	6.7	6.4	6.2	6.5	5.2	5.1	5.7	6.6
Other income	0.4	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Memorandum items											
PhilHealth allocation from sin taxes	…	…	…	…	…	21.6	22.9	28.5	36.1	41.3	45.5
Consumer price index: health (2012=100)	90.4	93.8	96.8	100.0	102.7	105.1	107.2	109.5	112.4	116.1	120.2

NHTS = National Household Targeting System; PhilHealth = Philippine Health Insurance Corporation; PHP = Philippine peso

Note: Values are in constant 2012 prices

Source: PhilHealth (various years)

Premium contributions increased by 13 percent annually on average over the same period. The increase in premium contributions was fueled largely by the increase in national government subsidies, which comprised almost half of all premium contributions in 2019, up from less than 20 percent in 2009. National government subsidies over the last decade accounted for about 90 percent of the total benefit payments to sponsored members, senior citizens, and lifetime members. On the other hand, paying members and their dependents generated about PHP 25 surplus for every PHP 100 contributed to PhilHealth over the same period.

The expansion in government subsidies coincides with the large increase in de facto coverage,[6] particularly between 2008 and 2013, as captured by the National Demographic and Health Surveys (NSO and ICF Macro 2009; PSA and ICFI 2014, 2018) (Table 2). In five years, de facto PhilHealth coverage increased by 22.6 percentage points from 37.7 percent in 2008 to 60.3 percent in 2013. The largest improvement in coverage during this period may be observed among rural populations (from 32.5% to 61.9%) and those from the lowest quintile by household wealth (from 19.6% to 61.6%). There have been important improvements in PhilHealth coverage between 2013 and 2017, particularly among the elderly population (from 58.2% to 72.7%). However, the expansion is largely among those from households of higher socioeconomic status.

Table 2. PhilHealth coverage by selected characteristics (2008, 2013, and 2017)

	2008	2013	2017
All population	37.7	60.3	65.8
By sex			
Male	37.4	59.6	64.5
Female	38.1	61.1	67.3
By age group			
Below 60	37.9	59.2	64.2
60 and above	35.9	58.2	72.7
By residence			
Urban	42.9	58.6	65.7
Rural	32.5	61.9	66.0
By wealth quintile			
Lowest	19.6	61.6	59.0
Second	28.6	55.6	60.6
Middle	35.3	52.2	62.1
Fourth	48.2	59.4	68.2
Highest	57.0	72.7	79.2

PhilHealth = Philippine Health Insurance Corporation

Note: Values refer to de facto PhilHealth coverage as a percentage of population

Sources: NSO and ICF Macro (2009); PSA and ICFI (2014, 2018)

[6] Refers to the population who knows they are insured by the program, in contrast with de jure coverage, which refers to the population covered as provided by law. De jure coverage does not necessarily coincide with de facto coverage. All Filipinos are automatically covered by PhilHealth under the UHC Act.

The recent increase in PhilHealth coverage resulting from shifts in government subsidies has improved health-seeking behaviors and reduced out-of-pocket (OOP) health expenditures among children in poor households (Abrigo and Paqueo 2017), although it also increased OOP health expenditures among the elderly (Abrigo et al. 2020). Health-seeking behaviors among poor prime-age adults were not affected by PhilHealth coverage (El Omari and Karasneh 2021).

ESTIMATION OF COST AND BENEFIT INCIDENCE

The incidence of PhilHealth premium contributions and benefits utilization are calculated following the standard approaches to estimate National Transfers Accounts (NTA). The NTA is a system of accounts, which measures how different generations in an economy produce, consume, and share resources in a way consistent with the United Nations' (UN) System of National Accounts (UN DESA 2013). In the Philippines, a consistent time series of NTA has been estimated for 1990 to 2015 (Abrigo et al. 2020), which has been used to analyze resource allocation in health and financial requirements for UHC (Abrigo 2019), population change and fiscal balance (Abrigo et al. 2020), and gender and unpaid work (Abrigo and Francisco-Abrigo 2019).

For each of the subaccounts of PhilHealth premium contributions and benefit payments for a particular period t, per capita age profiles of contribution or benefits, denoted by $\hat{y}_t(a)$,[7] are calculated from a nationally representative survey following the methodology described in the UN Department of Economic and Social Affairs (2013). These profiles are then adjusted by a constant factor, θ_t, to ensure that the aggregated values across age groups when weighted by population, $N_t(a)$, matches control totals, Y_t.[8] Unlike in traditional cost and benefit incidence analyses, where the unit cost or benefit is assumed to be constant across a population, the unit cost or benefit varies based on the program (e.g., formal and informal sector, sponsored programs, senior citizens). Table 3 summarizes the indicators and data sources used to calculate the unadjusted per capita age profiles for each of the PhilHealth subaccounts in 2019.

Table 3. Aggregate values, age profile proxy indicators, and data sources

Aggregate value, Y_t, (PHP billion)	Description	Age profile, $\hat{y}_t(a,k)$	
		Proxy indicator	Data source
a. Premium contributions			
50.46	Private sector employees	Daily basic pay	2015 FIES-LFS
18.40	Government employees	Daily basic pay	2015 FIES-LFS
0.06	*Kasambahay* (househelps)	Household helpers	2015 FIES-LFS
1.02	Migrant workers	Migrant workers	2015 FIES-LFS
6.48	Self-employed	Self-employed	2015 FIES-LFS
0.62	Pregnant women	Pregnant women	2017 NDHS
b. Premium subsidies from the national government			
54.73	Sin taxes	Tobacco and alcoholic beverages consumption	2015 FIES-LFS

[7] Per capita age profiles are simply estimates of average contributions or benefits payment by age.
[8] Control totals refer to the actual aggregate values of contributions or benefit payments by type that PhilHealth reported.

Table 3. (continuation)

Aggregate value, Y_t, (PHP billion)	Description	Age profile, $\hat{y}_t(a,k)$	
		Proxy indicator	Data source
14.64	Other government taxes	Consumption except health and education; labor and asset income	2015 FIES-LFS
c. Benefits payments*			
20.37	Private sector employees	Nonpoor, non-elderly members	2017 NDHS
8.63	Government employees	Nonpoor, non-elderly members	2017 NDHS
24.38	Informal sector workers	Nonpoor, non-elderly members	2017 NDHS
36.47	NHTS indigents	Poor, non-elderly members	2017 NDHS
10.92	Other sponsored programs	Poor, non-elderly members	2017 NDHS
13.06	Lifetime members	Elderly PhilHealth members	2017 NDHS
23.14	Senior citizens	Elderly PhilHealth members	2017 NDHS

PHP = Philippine peso; FIES = Family Income and Expenditure Survey; LFS = Labor Force Survey; NHTS = National Household Targeting System; NDHS = National Demographic and Health Survey; PhilHealth = Philippine Health Insurance Corporation

*Benefits payment include those for primary members and their dependents. The related proxy indicators refer to health facility utilization among described PhilHealth members.

Source: Aggregate values are based on PhilHealth's 2019 annual audited financial report

To capture the difference in the incidence of costs and benefits across socioeconomic groups, the population was stratified by the highest educational attainment. This allowed the tracing of population groups across their respective lifecycles, since educational attainment is relatively persistent beyond a certain age. In the analyses, the author used the observed highest grade completed for individuals aged 30 years and beyond. For those aged below 30 years, the author used the highest grade completed in the household as proxy for the highest educational attainment (yet to be observed) of young household members.[9] Aggregate consistency for each subaccount in this case is achieved through the factor θ_t, which is assumed to be constant across age groups, a, and highest grade completed, k, in any period t, as shown in Equation 1.

$$Y_t = \theta_t \sum_k \sum_a \hat{y}_t(a,k) \cdot N_t(a,k) \quad (1)$$

In the above setup, the implicit assumption is that the age profile $\hat{y}_t$ captures the relative benefit or cost incidence across age (and socioeconomic) groups, while θ_t, together with the age-specific population distribution, N_t, ensures that the aggregate value estimated based on nationally representative surveys on the right-hand side of the equation matches the "true" total Y_t on the left-hand side, as provided by the PhilHealth administrative records. Depending on the nature of $\hat{y}_t$, the value of θ_t may be interpreted differently.[10] For example, for age profiles of premium contributions that use wage rates as basis, θ_t may be interpreted as the average tax rate across groups.

[9] For robustness check, the author used the highest grade completed of the household head as proxy for the potential highest educational attainment of individuals aged below 30 years. The results are qualitatively the same. Estimates are available from the author upon request.

[10] Estimated values θ_t were excluded for brevity but may be requested from the author.

On the other hand, when $\hat{y}_t$ is based on population incidence, such as that for premium contributions of household helpers, then θ_t may be seen as an average per capita premium contribution for a specific subpopulation, in this case, by household helpers.

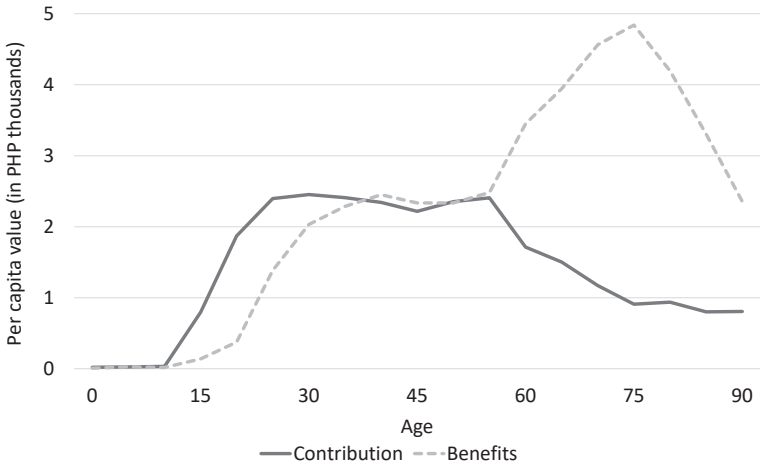
The above specification allows discussion of the distributional aspects of PhilHealth costs and benefits in the cross-section across the lifecycle and by socioeconomic status, as proxied by the highest grade completed and through time using synthetic cohorts as units of analyses. Previous cost and benefit incidence analyses have focused either on the generational (e.g., Cutler and Sheiner 2000; Bommier et al. 2010) or socioeconomic (e.g., O'Donnell et al. 2008; Asante et al. 2016) dimension of SHI costs and benefits. As such, this paper's strategy is closest to that employed by McClellan and Skinner (1999), who calculated the cost and benefit incidence of Medicare in the US by age, capturing the generational dimension, and with postal code proxying for socioeconomic status.

Unlike other generational analyses (e.g., Cutler and Sheiner 2000; Bommier et al. 2010) that allow the calculation of costs and benefits to true cohorts, this paper's longitudinal analyses use synthetic cohorts based on the highest educational attainment. While this effectively limits the ability to describe the incidence of costs and benefits across true cohorts over their experienced and projected lifecycles, this nevertheless allows analyses of the potential longitudinal gains and burden of the current SHI system.

COST AND BENEFIT INCIDENCE OF SHI

The incidence of premium contributions and benefits utilization of SHI vary across the lifecycle, as shown in Figure 1. The per capita age profile of premium contributions captures the incidence of taxes (e.g., on wages and consumption of alcoholic beverages and tobacco products) levied to support the country's SHI program and factors influencing the sources of these taxes. The per capita age profile of benefits utilization reflects age-specific PhilHealth population coverage rates, morbidity rates, health-seeking behaviors among the covered population, and factors affecting these, including supply of health facilities.

Figure 1. Per capita PhilHealth contribution and benefits by age, 2019



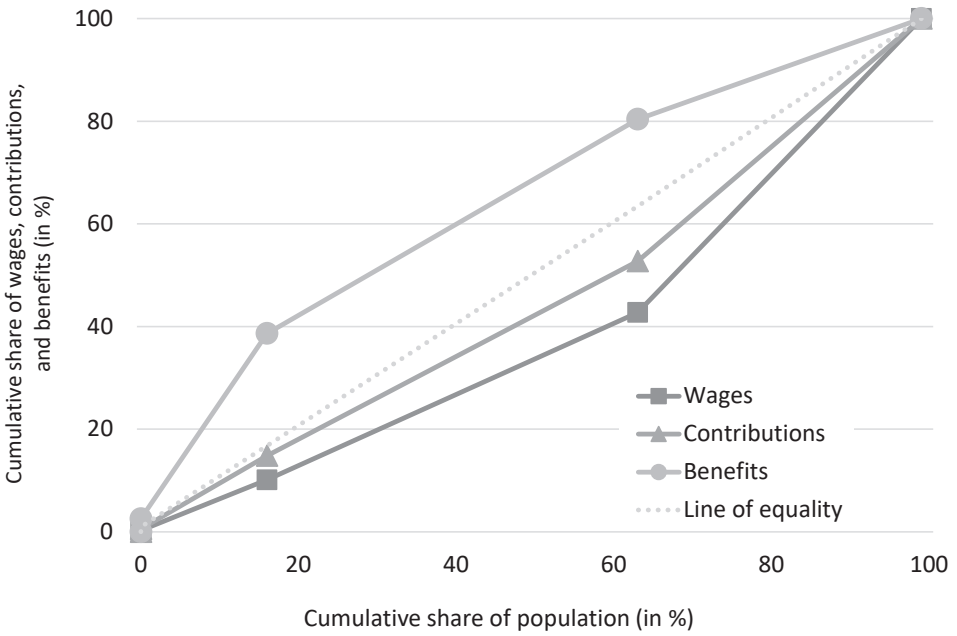
PHP = Philippine peso; PhilHealth = Philippine Health Insurance Corporation
Source: Author's calculations

The age incidence of premium contributions starts at negligible levels among newborns, increases as cohorts enter the labor force, and eventually declines as workers retire. This somehow mimics the age profile of labor income (see Abrigo et al. 2020), taxes on which represent a significant portion of PhilHealth funding (Table 1). Unlike the age profile of labor income, however, premium contributions plateau between ages 25 and 55, decline more gradually starting about age 60, and plateau again starting age 75, reflecting other sources of premium contributions (i.e., national government subsidies for PhilHealth sponsored programs financed through tobacco and alcoholic beverages taxes and general taxes). Because of the variety in sources, contributions among the young, except for those younger than 15 years old, and the elderly are quite substantial, averaging about a third of those paid by prime-age adults.

Like the incidence of PhilHealth premium contributions by age, the incidence of benefits begins at negligible levels among newborns, increases starting around adolescence, and plateaus at prime working ages although starting at a much later age. However, unlike that for premium contributions, benefit incidence increases again around retirement, peaks at about age 75, and declines thereafter. The age profile of PhilHealth benefits is interesting, as it does not follow the usual "J" shape observed for mortality and morbidity rates by age, where there are elevated mortality and morbidity risks among the very young and the very old.

Figure 2 presents concentration curves for the incidence of premium contributions and benefits across educational attainment as proxy for socioeconomic status.

Figure 2. Cumulative share of PhilHealth contributions, benefits, and wages



PhilHealth = Philippine Health Insurance Corporation

Note: Those aged 0 to 29 years are assigned the highest grade completed among members in their household. The aggregate value of lifetime PhilHealth contributions and utilization and wages by highest grade completed are based on the population age distribution and estimated age schedule of PhilHealth contributions and utilization and wages in 2019.

Source: Author's calculations

The concentration curve of pretax wages is included as a reference curve. The concentration curve presents the cumulative share of either PhilHealth costs or benefits across the population when sorted by socioeconomic status. A curve above (below) the 45-degree line of equality indicates that the incidence of costs or benefits is borne more by poorer (richer) populations.

The concentration curves suggest that poorer households receive more benefits, while richer households bear more costs to finance PhilHealth. More specifically, the concentration curve of benefits shows that the poorest 63 percent of the population, which comprise those who are at most high school educated,[11] received about 80 percent of all PhilHealth benefits while representing only 53 percent of all premium contributions in 2019. Equivalently, the richest 37 percent of the population received only 20 percent of all benefits paid while providing 47 percent of all premium contributions in the same year. As such, the incidence of PhilHealth contributions and benefits payments may be said to be pro-poor.

To assess the overall redistributive effect of PhilHealth, the author calculated the concentration indices implied by the above distributions of pretax wages and post-redistribution income to account for both incidences of PhilHealth contribution and benefits across socioeconomic groups. The concentration index ranges between –1 and +1, where a value of –1 (+1) suggests that the poorest (richest) unit in the distribution receives all benefits or bears all costs depending on the application. The author calculated the Reynolds-Smolensky (1977) index[12] that compares the pretax wage concentration index (+0.2149) and the post-redistribution income concentration index (+0.2070). The calculated Reynolds-Smolensky index is –0.0080, which suggests that PhilHealth is a marginally progressive redistribution system—that is, PhilHealth reallocates resources from richer households to poorer households on average.

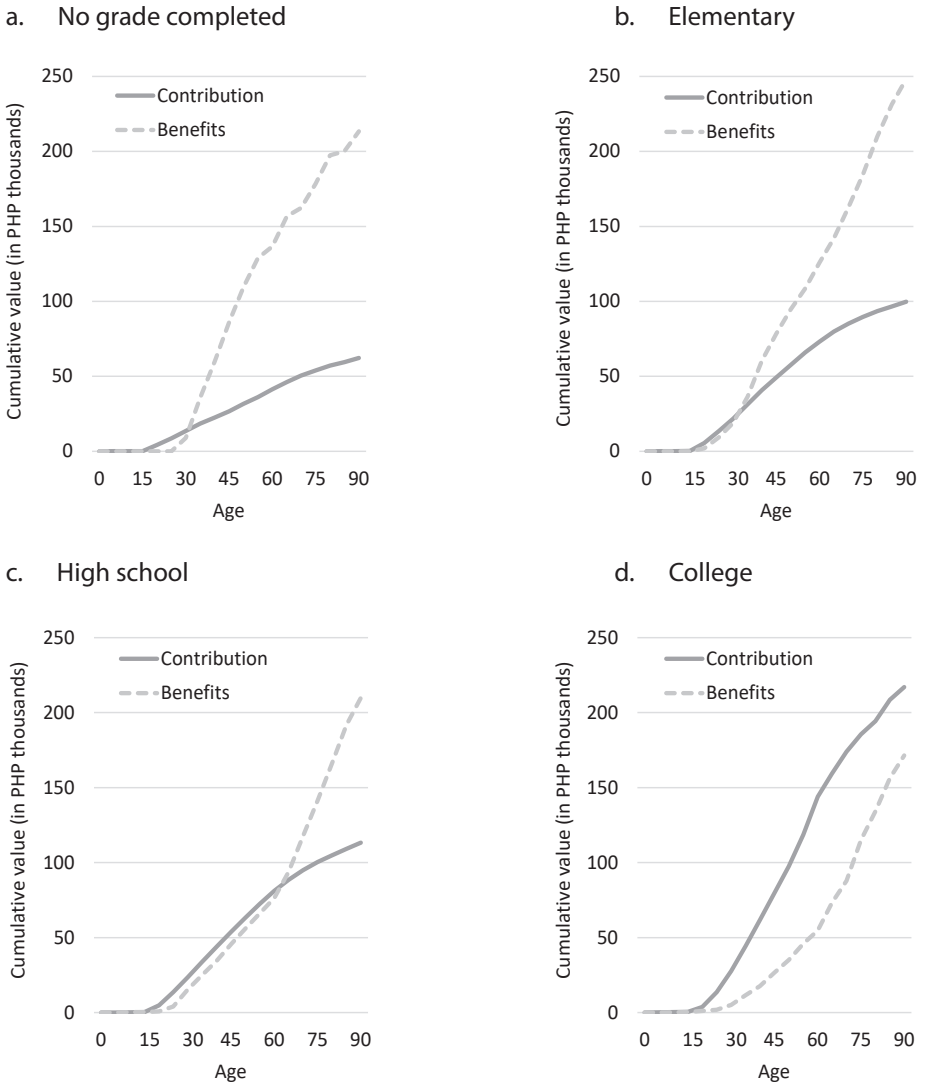
While instructive, the above analysis masks important differences in the lifecycle schedule of PhilHealth costs and benefits across socioeconomic groups. As shown in Figure 1, the per capita age schedule of premium contributions is concentrated among prime-age adults while that for benefits among the elderly. An average Filipino is a net contributor until about age 40 and only becomes a net beneficiary starting after age 55. Given the same age schedule of per capita contributions and benefits, differences in relative population sizes and age distributions of socioeconomic groups in a particular period will affect the relative progressivity of a reallocation system. In this case, about 17 percent of the population are in the two lowest socioeconomic groups by educational attainment. In these groups, 27 percent are aged 60 or older compared to only 4.8 percent of the population in higher socioeconomic groups.

Figure 3 presents the cumulative PhilHealth premium contributions and benefits per person who have survived up to the indicated age by the highest grade completed. These per capita age profiles are synthetic cohort measures of what a person from a particular socioeconomic class is expected to experience throughout his lifetime if that person experiences the schedule of costs and benefits faced by people of the same socioeconomic class in 2019. This measure allows a comparison of the lifetime flow of resources to or from persons of different socioeconomic classes.

[11] The author used the highest grade completed in the household as proxy for the highest educational attainment (yet to be observed) of household members aged 29 years and below. The observed highest educational attainment was used for those aged 30 years or older.

[12] The Reynolds-Smolensky (1977) index is calculated as C(x) – C(x′), where C(x) and C(x′) are the concentration indices of pre- and post-reallocations income, respectively. The index is used to measure the progressivity of a redistribution system with positive values suggesting regressive redistribution (i.e., resource flows from poorer to richer populations on average).

Figure 3. Cumulative per capita contribution and utilization: Survival until age(x)



PHP = Philippine peso
Note: Those aged 0 to 29 years are assigned the highest grade completed among members in their household.
Source: Author's calculations

As may be expected, lifetime per capita premium contribution increases with socioeconomic class. At age 90, a person with no grade completed is expected to have contributed PHP 62,270 on average throughout his lifetime, while those who reached primary and high school levels would have contributed PHP 99,770 and PHP 113,290, respectively. A college-educated Filipino would have contributed PHP 217,040 over the same period, given the age schedule of premium contributions in 2019.

However, the lifecycle pattern of benefits utilization across socioeconomic groups appears to be not as clear-cut. Those who have no grade completed are expected to have used PHP 213,380 worth of healthcare services through PhilHealth until age 90, while those who reached primary level would have expended PHP 248,280 on average over the same period. Those who reached high school and college levels have lower lifetime utilization of PhilHealth at PHP 209,840 and PHP 171,450, respectively.

With these lifecycle patterns of premium contributions and benefits, those from lower socioeconomic classes are expected to transition earlier to net beneficiaries from being net contributors. The poorest Filipinos who have at best primary education are expected to transition into becoming net beneficiaries of PhilHealth in their early 30s and those who reached secondary education level in their early 60s. The college-educated population is expected to continue being net contributors until age 90.

Table 4 summarizes the lifetime benefit-cost ratio and net benefit that different socioeconomic groups face at different stages of their lifecycle. Returns to PhilHealth decrease in socioeconomic class among those who live until age 90. Among those with no grade completed, every PHP 1 of premium contribution gives a return of PHP 3.40 in healthcare services paid through PhilHealth, or a net benefit of PHP 151,100 conditional on surviving until age 90. Those who reached college level are expected to lose 20 cents to a peso or a net loss of PHP 45,600 if they survive over the same period.

The values presented in Figure 3 assume that a person survives up to specified age. However, it is known that social status affects health outcomes, including survival (e.g., Wilkinson 1992; Marmot 2005). This is partially reflected in Table 5, which shows the population size by cohort in the 2000 and 2015 Philippine Census of Population (NSO 2003; PSA 2016). Among those with no grade completed aged 65 or older enumerated in 2000, only 20.0 percent were again counted in 2015. The recorded survival rate[13] for the same cohort is higher among those who reached primary (26.3%), secondary (31.1%), and tertiary (33.5%) education levels. This implies that while those from lower socioeconomic groups may be net beneficiaries earlier and earn higher net benefits from PhilHealth, they only benefit from it at much shorter periods relative to those from higher socioeconomic groups.[14]

Figure 4 presents similar plots of per capita cumulative PhilHealth premium contributions and benefits utilization as Figure 3 but weighted by survival probabilities implied by Table 5. In these calculations, it is assumed that individuals live at least until age 30. The results are qualitatively the same, although the levels of expected lifetime contributions and benefits are lower. A summary of the survival-weighted lifetime benefit-cost ratio and net benefit by socioeconomic group at different ages are presented in Table 4.

[13] It must be emphasized that the survival rate, in this case, does not necessarily mean death among the nonsurviving population. Instead, nonsurvival may include international migration and transition into institutional housing, which are not covered by the census of noninstitutional populations, in addition to death.

[14] A limitation of using the census to calculate intragroup survival is that individuals may acquire more education between census rounds, which may bias the relationship between educational attainment and survival. However, this may be of limited importance, especially among older cohorts, when looking at school attendance rates by age. Beyond age 30, the propensity for school attendance is close to zero.

Table 4. PhilHealth benefit-cost ratio and net benefit by age and highest grade completed

Age(x)	Benefit-cost ratio					Net benefit (PHP thousands)				
	Highest grade completed				All	Highest grade completed				All
	No grade completed	Elementary	High school	College		No grade completed	Elementary	High school	College	
Survival until age(x)										
30	0.7	0.9	0.7	0.2	0.4	-4.6	-2.8	-8.1	-22.6	-15.9
40	2.7	1.5	0.8	0.3	0.6	37.5	19.6	-9.4	-44.1	-18.7
50	3.5	1.6	0.9	0.4	0.8	77.8	37.0	-7.4	-62.4	-17.6
60	3.3	1.7	0.9	0.4	0.8	95.2	52.8	-4.7	-89.2	-17.3
70	3.2	1.9	1.2	0.5	1.0	111.8	77.5	22.8	-86.1	3.6
80	3.5	2.2	1.6	0.7	1.3	140.2	116.6	61.3	-60.2	40.2
90	3.4	2.5	1.9	0.8	1.5	151.1	148.5	96.5	-45.6	69.0
Survival-weighted until age(x)										
30	0.7	0.9	0.7	0.2	0.4	-4.6	-2.8	-8.1	-22.6	-15.9
40	2.6	1.5	0.8	0.3	0.6	35.6	18.9	-9.4	-43.7	-18.7
50	3.4	1.6	0.9	0.4	0.8	72.1	35.9	-7.5	-61.3	-17.6
60	3.4	1.7	0.9	0.4	0.8	93.9	49.7	-5.2	-84.6	-17.4
70	3.3	1.8	1.1	0.5	1.0	110.8	68.5	13.1	-86.1	-3.5
80	3.3	2.1	1.4	0.6	1.2	125.8	98.5	44.9	-68.2	24.0
90	3.4	2.4	1.8	0.8	1.4	141.0	135.7	83.9	-51.5	57.4

PhilHealth = Philippine Health Insurance Corporation; PHP = Philippine peso

Note: Those aged 0 to 29 years are assigned the highest grade completed among members in their household. Cumulative lifecycle contribution and utilization are weighted by survival probabilities implied by Table 3 conditional on surviving until age 30.

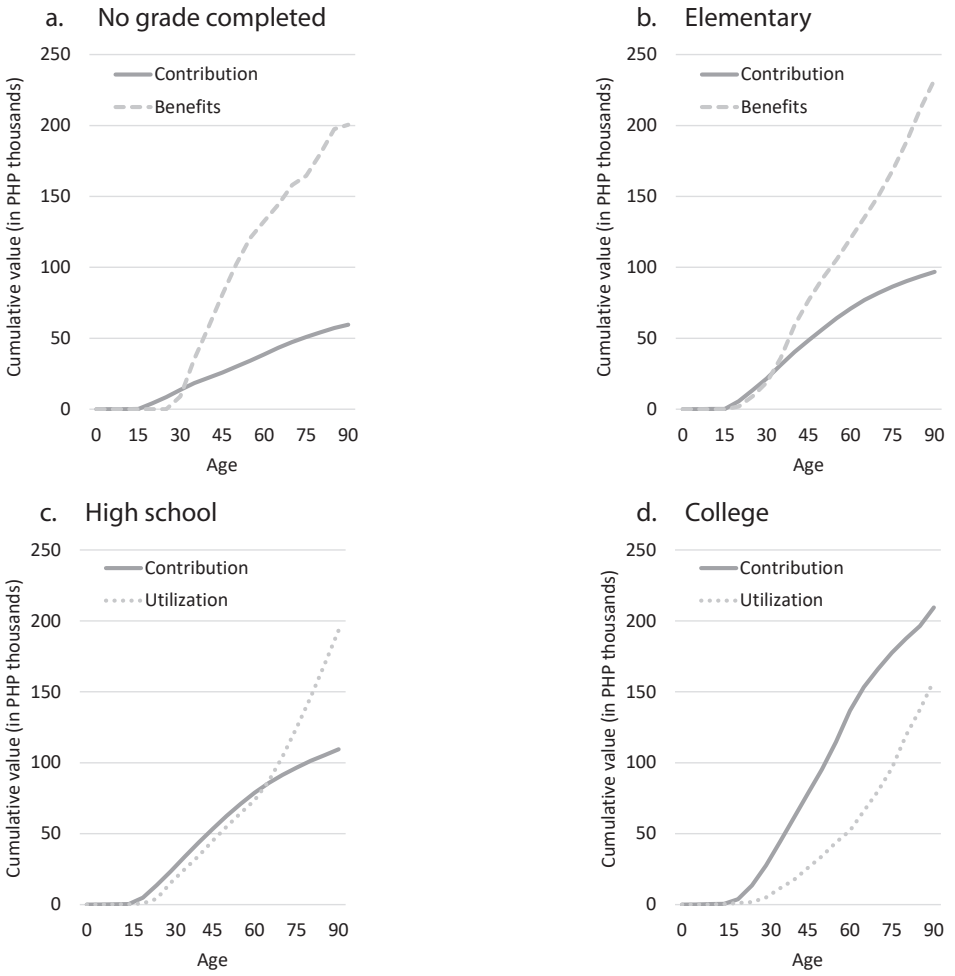
Source: Author's calculations

Table 5. Population by cohort and highest grade completed: Philippines, 2000 and 2015

Year born	Age	Highest educational attainment			
	Year 2000	No grade completed	Elementary	High school	College
a. 2000 population (thousands)					
1966–1970	30–34	115.0	1,603.3	2,232.2	1,573.4
1961–1965	35–39	132.6	1,613.1	1,771.5	1,367.9
1956–1960	40–44	118.1	1,613.6	1,372.4	1,046.3
1951–1955	45–49	112.2	1,447.2	1,003.3	758.9
1946–1950	50–54	107.9	1,305.1	651.1	552.2
1941–1945	55–59	101.8	1,088.2	397.3	312.8
1936–1940	60–64	111.6	970.0	331.1	217.7
Before 1936	65+	380.7	1,797.6	425.7	322.8
b. 2015 population (thousands)					
1966–1970	30–34	102.3	1,484.6	2,201.8	1,473.3
1961–1965	35–39	94.8	1,416.2	1,662.1	1,242.2
1956–1960	40–44	77.0	1,373.3	1,230.2	916.8
1951–1955	45–49	72.3	1,191.8	854.7	636.8
1946–1950	50–54	63.6	956.7	481.2	411.4
1941–1945	55–59	58.9	706.5	246.9	205.8
1936–1940	60–64	46.7	518.8	170.7	121.3
Before 1936	65+	76.5	473.3	132.2	108.2
c. 2000–2015 compound annual growth rate (%)					
1966–1970	30–34	-0.8	-0.5	-0.1	-0.4
1961–1965	35–39	-2.2	-0.9	-0.4	-0.6
1956–1960	40–44	-2.8	-1.1	-0.7	-0.9
1951–1955	45–49	-2.9	-1.3	-1.1	-1.2
1946–1950	50–54	-3.5	-2.0	-2.0	-1.9
1941–1945	55–59	-3.6	-2.8	-3.1	-2.8
1936–1940	60–64	-5.6	-4.1	-4.3	-3.8
Before 1936	65+	-10.1	-8.5	-7.5	-7.0

Note: Nonresponses were assumed to be missing at random; populations with missing highest grade completed are allocated proportionally using the distribution of nonmissing highest grade completed by age.
Sources of basic data: NSO (2003); PSA (2016)

Figure 4. Cumulative per capita contribution and utilization: Survival-weighted until age(x)



PHP = Philippine peso

Note: Those aged 0 to 29 years are assigned the highest grade completed among members in their household. Cumulative lifecycle contribution and utilization are weighted by survival probabilities implied by Table 5 conditional on surviving until age 30.

Source: Author's calculations

Based on Table 4 and Figure 5, the PhilHealth system is more of a public reallocation system rather than an actuarially fair insurance program. An actuarially fair insurance would have charged lifetime premiums equal to the survival-weighted lifetime claims on the insurance pool (Pauly 1974; Menue et al. 2016).[15] In the case of PhilHealth, the lifetime benefit-cost ratio would have to be close to 1.0 or the expected net benefit close to 0 around the end of the lifecycle. However, substantial

[15] This notion of actuarial fairness looks at lifetime flows of costs and benefits rather than the cross-sectional balance of flows. This paper's notion of actuarial fairness accounts for the pseudo-pension function provided by PhilHealth, wherein health insurance coverage is afforded to those beyond age 60 after paying contributions during prime age. This notion is related to Bommier and Lee's (2003) idea of "intergenerational balance", where net present values of flows are zero for a given generation. This is in contrast with their idea of the "population balance", where current net flows for all generations in a specific period equals to zero.

departure was documented from the actuarially fair case at age 90 across all socioeconomic groups. Indeed, even when averaged across the population, the PhilHealth system generates a survival-weighted lifetime benefit-cost ratio of 1.4 and a net benefit of PHP 57,400 per capita despite having net surpluses in recent years. This has important implications for the long-term sustainability of the country's SHI, which may require a substantial infusion of resources (other than premiums, e.g., returns to PhilHealth investments, additional government subsidies), if the current patterns of contributions and benefits by age persist in the future.

To assess the size and direction of expected lifetime PhilHealth reallocations among the population alive in 2019, the aggregate and per capita transfer wealth by socioeconomic class was calculated. Transfer wealth is the net present value of transfers from a reallocation system—in this case, PhilHealth—a person or group of persons is expected to receive for the remainder of their lifetime (Mason and Lee 2007). A positive (negative) PhilHealth transfer wealth indicates that a person or cohort expects to receive more (less) than what it contributes to PhilHealth for the rest of their life. For a specific cohort born at period c, the cohort-specific transfer wealth T_c is given by

$$T_c = \sum_t \left(\frac{1}{1+r}\right)^{t-c} [\tau^+(t-c) - \tau^-(t-c)] \cdot N(t-c) \quad (2)$$

where $t-c$ is the cohort's age in years, $\tau^+(t-c)$ and $\tau^-(t-c)$ are the respective transfer inflows (benefits) and outflows (contributions) at age $(t-c)$, $N(t-c)$ is the surviving population of the cohort at age $t-c$, and r is an exogenous discount rate. The economy-wide transfer wealth is the sum of all cohort-specific transfer wealth.

Table 6 presents the aggregate and per capita PhilHealth transfer wealth for the population alive in 2019. A discount rate of 0 percent was used to capture the expected financial deficit or surplus from PhilHealth operations for each socioeconomic class. The presented transfer wealth may therefore be seen as an upper bound for any nonnegative discount rate.

The calculations show that holding the age schedule of PhilHealth premium contributions and benefit payments in 2019 constant and using the implied survival rates in Table 5, the NHIP is projected to require an additional PHP 6.3 trillion over what PhilHealth may generate from the remaining lifetime premium contributions to cover the benefit claims of the population alive in 2019. While the college-educated population is projected to generate a surplus of PHP 1.3 trillion over their remaining lifetime, it cannot fully cover the projected deficits from the lower socioeconomic groups totaling PHP 7.6 trillion.

Table 6. Transfer wealth and effective lifetime tax rate by highest grade completed

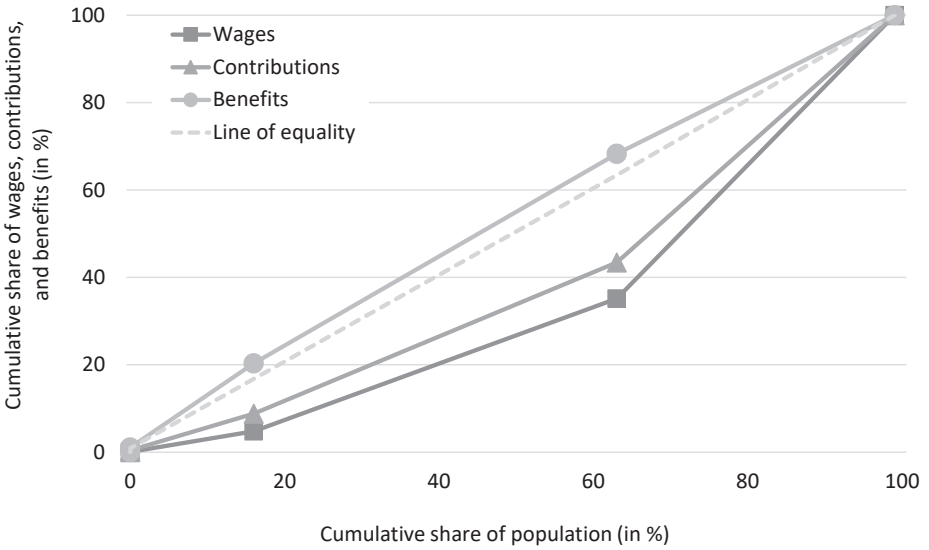
	Highest grade completed				All
	No grade completed	Elementary	High school	College	
Transfer wealth					
Aggregate (PHP trillions)	0.1	2.6	4.8	-1.3	6.3
Per capita (PHP thousands)	148.4	156.6	95.8	-33.3	58.7
Effective tax rate					
Current system	6.8	4.0	3.5	2.7	3.3
Actuarially fair rate	22.8	9.6	6.1	2.0	5.3

PHP = Philippine peso
Source: Author's calculations

Table 6 also shows the implied tax rate if premium contributions are all levied on wages rather than on many different sources.[16] The results suggest that the current contribution rates are regressive, supporting the earlier claim based on the cross-sectional distribution of premium contributions. For PhilHealth to be actuarially fair, given the calculated age schedule of benefits, tax rates on wages need to increase by 16.1 percentage points for those with no grade completed, 5.6 percentage points for those who reached elementary level, and 2.6 percentage points for those who reached high school level. On the other hand, premium contribution rates among college-educated need to be decreased by 0.7 percentage points. On average, the actuarially fair contribution rate, if wholly levied on wage income, is at 5.3 percent, given the age schedule of benefit utilization and the age distribution of each socioeconomic group in 2019. This rate is higher by 2 percentage points relative to the observed average contribution rate of 3.3 percent of wages in 2019.

Considering wealth associated with the remaining lifetime of the population alive in 2019, PhilHealth premium contributions and benefits payment remain pro-poor (Figure 5).[17] As a whole, the transfer wealth from PhilHealth is a progressive reallocation system with a Reynolds-Smolensky index of -0.0151.

Figure 5. Cumulative share of lifetime PhilHealth contributions and benefits and wages



PhilHealth = Philippine Health Insurance Corporation

Note: Those aged 0 to 29 years are assigned the highest grade completed among members in their household. The aggregate value of lifetime PhilHealth contributions and utilization and wages by highest grade completed are based on the population age distribution of cohorts living in 2019, age schedule of PhilHealth contributions and utilization and of wages in 2019, and survival probabilities implied in Table 5.

Source: Author's calculations

[16] The implied tax rates are calculated as the ratio of the cumulative survival-adjusted contributions to the cumulative survival-adjusted value of sources from which the contributions are generated. For example, if the cumulative PhilHealth contributions amounting to A were collected from cumulative income B, then the implied tax rate is A/B. In this case, A refers to the values at age 90 in Figure 4, while B is calculated for per capita labor income at age 90.

[17] The calculated concentration indices based on the present value of each account for the population alive in 2019 are as follows: premium contributions (+0.2170), benefits payment (–0.0629), pre-reallocation wages (+0.3115), and post-reallocation wages (+0.2965).

CONCLUSION

This paper estimated the incidence of PhilHealth premium contributions and benefits payment across the lifecycle by socioeconomic class. It found that PhilHealth contribution and benefits are pro-poor—that is, individuals from poorer socioeconomic backgrounds receive more benefits while contributing less to PhilHealth. As a whole, PhilHealth is a progressive transfer system reallocating resources from the higher-income to the lower-income population. These observations are true for the cross-section of the population alive in 2019 and their expected lifetime flow of resources, if the age schedule of PhilHealth benefits and costs remain the same as what people in 2019 faced.

However, large imbalances were documented in the average levels of contribution and utilization across the lifecycle. Per capita PhilHealth contribution and utilization are roughly equal only at the beginning of the lifecycle until about age 10 and between age mid-30s and mid-50s. Everywhere else, individuals are either net contributors or net beneficiaries. This may have important implications for the sustainability of the country's SHI program, especially amid imminent population ageing, if the current age profiles of premium contributions and benefit utilization persist in the future.

Despite running current surpluses, PhilHealth is projected to face large financial deficits if the current system continues. Throughout an average Filipino's lifetime, PhilHealth is estimated to lose about 40 centavos in unfunded healthcare subsidies for every peso of premium contributions to its system. While surpluses may be generated from the higher-income population, these may not be enough to cover the projected deficits from providing benefits to the lower-income population in the future.

There may be many solutions to this impending problem, but it entails clarifying the nature and role of PhilHealth in ensuring affordable, acceptable, available, and accessible healthcare services for Filipinos. As a government reallocation program providing a social safety net to ensure universal access to health care, benefits must be further increased to greatly encourage pro-social health-seeking behavior, especially among the poor. As a pseudo-pension system that transfers resources from current workers to retirees for health spending, benefits must be reassessed based on the capacity of current and future workers to carry the burden of financing these entitlements. As a health insurance program, population risks and utilization levels should be rigorously accounted for to ensure that the system remains actuarially fair. In all these potential roles, the current system of premium contributions and benefit payment is fiscally unsustainable in the longer term.

REFERENCES

Abrigo, M.R.M. 2019. Financing universal health care in an ageing Philippines. PIDS Discussion Paper Series 2019-23. Quezon City, Philippines: Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps1923.pdf (accessed on October 15, 2020).

Abrigo, M.R.M. and V.B. Paqueo. 2017. Social protection and demand for health care among children in the Philippines. *Philippine Journal of Development* 44(1):45–70.

Abrigo, M.R.M. and K.A. Francisco-Abrigo. 2019. Counting women's work in the Philippines. In *Outside looking in: Gendered perspectives in work and education,* edited by C.G. Bayudan-Dacuycuy. Quezon City, Philippines: Philippine Institute for Development Studies.

Abrigo, M.R.M., R.H. Racelis, J.M.I. Salas, D.A.P. Ortiz, and A.N. Herrin. 2020. Are we missing out on the demographic dividend? Trends and prospects. PIDS Discussion Paper Series 2018-43. Quezon City, Philippines: Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps1843.pdf (accessed on October 15, 2020).

Abrigo, M.R.M., T.J. Halliday, and T. Molina. 2022. Expanding health insurance for the elderly in the Philippines. *Journal of Applied Econometrics* 37(3):500–520.

Asante, A., J. Price, A. Hayen, S. Jan, and V. Wiseman. 2016. Equity in healthcare financing in low- and middle-income countries: A systematic review of evidence from studies using benefit and financing incidence analyses. *PLoS ONE* 11(4):e0152866.

Birdsall, N. and J. Nellis. 2003. Winners and losers: Assessing the distributional impact of privatization. *World Development* 31(10):1617–1633.

Bommier, A. and R.D. Lee. 2003. Overlapping generation models with realistic demography. *Journal of Population Economics* 16:135–160.

Bommier, A., R. Lee, T. Miller, and S. Zuber. 2010. Who wins and who loses? Public transfer accounts for US generations born 1850 to 2090. *Population and Development Review* 36(1):1–26.

Culter, D.M. and L. Sheiner. 2000. Generational aspects of Medicare. *American Economic Review* 90(2):303–307.

Davoodi, H.R., E.R. Tiongson, and S.S. Asawanuchit. 2010. Benefit incidence of public education and health spending worldwide: Evidence from a new database. *Poverty and Public Policy* 2(2):5–52.

Devarajan, S. and S.I. Hossain. 1998. The combined incidence of taxes and public expenditure in the Philippines. *World Development* 26(6):963–977.

Dinan, T.M. and D.L. Rogers. 2002. Distributional effects of carbon allowance trading: How government decisions determine losers and winners. *National Tax Journal* 55(2):199–221.

El Omari, S. and M. Karasneh. 2021. Social health insurance in the Philippines: Do the poor really benefit? *Journal of Economics and Finance* 45:171–187.

Holzmann, R. 2013. Global pension systems and their reform: Worldwide drivers, trends and challenges. *International Social Security Review* 66(2):1–29.

Kakwani, N. 1977. Measurement of tax progressivity: An international comparison. *The Economic Journal* 87(345):71–80.

Manasan, R.G. 2018. Assessment of Republic Act 10963: The 2017 Tax Reform for Acceleration and Inclusion. PIDS Discussion Paper Series 2018-27. Quezon City, Philippines: Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps1827.pdf (accessed on October 15, 2020).

Manasan, R.G. and J.S. Cuenca. 2010. Benefit incidence of public spending on health in the Philippines. PIDS Discussion Paper Series 2010-36. Makati City, Philippines: Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps1036.pdf (accessed on October 15, 2020).

Manasan, R.G., J.S. Cuenca, and E.C. Villanueva-Ruiz. 2008. Benefit incidence of public spending on education in the Philippines. PIDS Discussion Paper Series 2008-08. Makati City, Philippines: Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps0808.pdf (accessed on October 15, 2020).

Marmot, M. 2005. Social determinants of health inequities. *The Lancet* 365:1099–1144.

Mason, A. 2006. Population ageing and the demographic dividends: The time to act is now. *Asia-Pacific Population Journal* 21(3):7–16.

Mason, A. and R. Lee. 2007. Transfers, capital, and consumption over the demographic transition. In *Population aging, intergenerational transfers, and the macroeconomy*, edited by R. Clark, N. Ogawa, and A. Mason. Cheltenham, UK: Edward Elgar.

McClellan, M. and J. Skinner. 1999. Medicare reform: Who pays and who benefits? *Health Affairs* 18(1):48–62.

Meneu, R., E. Devesa, I. Dominguez, and B. Encinas. 2016. Adjustment mechanisms and intergenerational actuarial neutrality in pension reforms. *International Social Security Review* 69(1):87–107.

National Statistics Office (NSO). 2003. Census of Population and Housing 2000. Manila, Philippines: NSO.

National Statistics Office (NSO) and ICF Macro. 2009. National Demographic and Health Survey 2008. Calverton, MD: ICF Macro.

Neary, J.P. 1994. Cost asymmetries in international subsidy game: Should government help winners and losers? *Journal of International Economics* 37(3–4):197–218.

O'Donnell, O., E. van Doorslaer, R.P. Rannan-Eliya, A. Somanathan, S.R. Adhikari, B. Akkazaieva, D. Harbianto, C.C. Garg, P. Hanvoravongchaih, A.N. Herrin, M.N. Huq, S. Ibragimova, A. Karan, S. Kwon, G.M. Leung, J.R. Lu, Y. Ohkusa, B.R. Pande, R. Racelis, K. Tin, K. Tisayaticom, L. Trisnantoro, Q. Wan, B.M. Yang, and Y. Zhao. 2008. Who pays for health care in Asia? *Journal of Health Economics* 27(2):460–475.

Orbeta, A.C. Jr. and V.B. Paqueo. 2017. Who benefits and loses from untargeted tuition subsidy for students in SUCs? PIDS Policy Notes 2017-03. Quezon City, Philippines: Philippine Institute for Development Studies. https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidspn1703.pdf (accessed on October 15, 2020).

Paqueo, V.B., A.C. Orbeta Jr., and G.M. Llanto, editors. 2017. *Unintended consequences: The folly of uncritical thinking*. Quezon City, Philippines: Philippine Institute for Development Studies.

Pauly, M.V. 1974. Overinsurance and public provision of insurance: The roles of moral hazard and adverse selection. *Quarterly Journal of Economics* 88(1):44–62.

Philippine Health Insurance Corporation (PhilHealth). Various years. Annual Audit Reports, 2009–2019. Pasig City, Philippines: PhilHealth.

Philippine Statistics Authority (PSA). 2016. Census of Population 2015. Quezon City, Philippines: PSA.

Philippine Statistics Authority (PSA) and ICF International (ICFI). 2014. Philippines National Demographic and Health Survey 2013. Manila, Philippines, and Maryland, USA: PSA and ICFI.

———. 2018. Philippines National Demographic and Health Survey 2017. Quezon City, Philippines, and Rockville, Maryland, USA: PSA and ICF.

Republic Act 6111. 1969. An act establishing the Philippine Medical Care Plan and creating the Philippine Medical Care Commission, prescribing its duties, powers and functions, and appropriating funds therefor. Manila, Philippines: Congress of the Philippines.

Republic Act 7875. 2004. An act instituting a National Health Insurance Program for all Filipinos and establishing the Philippine Health Insurance Corporation for the purpose. Manila, Philippines: Congress of the Philippines.

Republic Act 10645. 2014. An act providing for the mandatory PhilHealth coverage for all senior citizens, amending for the purpose Republic Act 7432, as amended by Republic Act 9994, otherwise known as the "Expanded Senior Citizens Act of 2010." Manila, Philippines: Congress of the Philippines.

Reynolds, M. and E. Smolensky. 1977. Post-fisc distributions of income in 1950, 1961, and 1970. *Public Finance Quarterly* 5(4):419–438.

Shah, A. and J. Whalley. 1991. Tax incidence analysis of developing countries: An alternative view. *World Bank Economic Review* 5(3):535–552.

United Nations Department of Economic and Social Affairs (UN DESA). 2013. *National Transfer Accounts Manual: Measuring and analyzing the generational economy*. New York, NY: UN.

Wagstaff, A. 2010. Social health insurance reexamined. *Health Economics* 19(5):503–517.

Wilkinson, R.G. 1992. Income distribution and life expectancy. *British Medical Journal* 304(6820):165–168.