RESEARCH PAPER SERIES NO. 2020-02

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Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

Published by
Philippine Institute for Development Studies

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Website: https://www.pids.gov.ph

ISSN 1908-3297
ISSN 2508-0830 (electronic)
RP 03-20-600

Editorial and production team:
Sheila V. Siar, Maria Judith L. Sablan, and Carla P. San Diego

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List of Acronyms

BAU	business-as-usual
NTA	National Transfer Accounts
PALI	prime-age adult's labor income
PHP	Philippine peso
PSA	Philippine Statistics Authority
SHI	social health insurance
UN	United Nations

Abstract

The Philippines is slowly ageing. In a little over a decade, the country's elderly will comprise at least 7 percent of the total population. This rising tide may pose some substantial burden on the country's resources. Nonetheless, the same economic and demographic forces that will eventually lead to population ageing may also provide potentials for economic growth. This paper documents the country's historical experience of the demographic dividend using new National Transfer Account time-series estimates for the Philippines. These estimates also reflect how the interaction between public policy and population ageing may affect household welfare and fiscal balance in the foreseeable future.

Introduction

The Philippines has seen a slow but steady decline in fertility rates in the past 25 years. In the early 1990s, an average woman may expect to have four children throughout her lifetime. This has since gone down to less than three more recently (PSA 2018). This secular decline in fertility rates has contributed to the slow demographic transition of the country. Meanwhile, the share of prime-age adults in the population has increased from 36 percent in 1990 to 44 percent in 2015 (PSA 2018). Although only slightly, the proportion of elderly aged 65 years and older has also increased from 3.1 percent in 1990 to 4.6 percent in 2015 (PSA 2018).

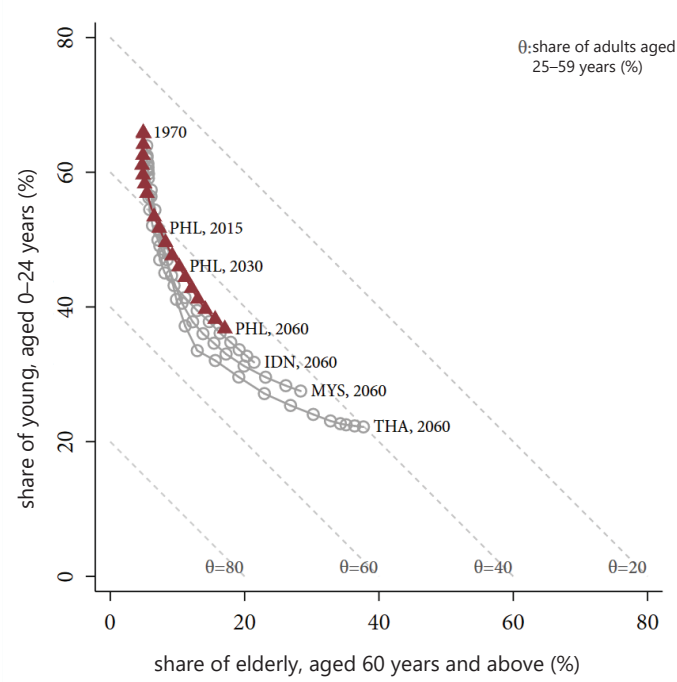
Should these demographic trends continue, the United Nations (UN) (2017) projects that the Philippines will transition to an ageing society, where the elderly aged 65 and older constitute at least 7 percent of the total population by 2032, and eventually an aged society, where the share of the elderly population is at least 14 percent by 2069 (Figure 1). In absolute terms, the elderly population is expected to increase from 4.7 million in 2015 to 9.9 million in 2032 and 23.7 million in 2069. This may place a heavy burden on the country's resources, particularly its pension system (Chomik and Piggot 2015).

Governments are particularly affected by population ageing. Taxes levied on labor, such as direct income tax, health insurance premiums, and pension contributions, as a proportion of the total population, may decline. This may acutely affect the sustainability of government services, such as exceptionally generous programs for the elderly. Reforms may therefore be necessary to balance the generosity with the sustainability of government transfer programs.

While population ageing presents a challenge, the same economic and demographic forces behind it provides opportunities for economic growth. For instance, demographic dividends may arise from the compositional effect of having more productive population relative to consumers, as well as from the behavioral changes induced by demographic change that ultimately results in greater labor productivity. The demographic dividends are growth potentials, but unlocking these potentials necessarily requires both responsive and effective policies (Mason and Lee 2007).

The goal of this paper is twofold. First, it documents the Philippine experience of the demographic dividend using the new quinquennial estimates of National Transfer Accounts (NTA) for the country from

Figure 1. Population age distribution: Selected countries, 1970–2060



PHL = Philippines; IDN = Indonesia; MYS = Malaysia; THA = Thailand
Source of basic data: United Nations (2017)

1990 to 2015. Through these figures, it investigated how consumption and income patterns across different generations have changed over the last 25 years. This investigation permitted it to assess the contribution of the demographic dividends to the country's economic growth.

Second, it explores how the interaction between different public policies and population dynamics, particularly population ageing, may affect household welfare and fiscal balance. It employed a macroeconomic-demographic simulation model to quantify how the country's projected population ageing and broad classes of government interventions may influence household consumption levels and government budget balance.

The Philippines is an interesting case study. Unlike the experiences of Indonesia, Malaysia, and Thailand, fertility rates in the Philippines have declined at a much slower pace, which contributed to its slower transition into an ageing society. While these four countries had similar population age distributions in the 1970s, their degree of

population ageing is expected to differ significantly in the foreseeable future. These differences in the rates of demographic transition may have important implications on how these countries experience the demographic dividends.

Overall, the Philippines has benefitted from the country's population age structure transition. More particularly, the demographic dividend has contributed to greater consumption per person, specifically in the fields of health and education, over the last 25 years. This deepening of human capital investments is expected to raise material measures of wellbeing in the future as a result of greater labor productivity. However, the study also documented potential substantial fiscal burden as a result of population ageing in the country.

Demographic Dividend

The demographic transition brought about by declining fertility rates and increasing longevity may contribute to improve household welfare. As fertility rates drop, the population becomes increasingly concentrated among working ages. This raises average incomes per person. At the same time, a decline in fertility means that parents have to care for fewer children, thereby allowing greater human capital investments for every child (Becker 1960; Becker and Lewis 1973). This raises children's productivity when they eventually join the workforce.

Further along the demographic transition, the population then becomes increasingly concentrated among the elderly. Depending on the support systems available in an economy, this raises aggregate saving from a growing share of elderly faced with long years in retirement (Mason 1981). This expands the available capital in an economy, raising productivity. The increase in incomes per person brought about by the demographic transition may then be used to improve material measures of wellbeing among households.

These demographic dividends may be formally illustrated using the growth accounting framework in Mason and Lee (2006) and later in Mason et al. (2017), drawing from earlier theoretical work by Cutler et al. (1990). It is trivial to show that the consumption per effective consumer, C_t/N_t, may be decomposed as the product of three factors, namely, (i) support ratio, L_t/N_t, (ii) consumption rate, C_t/Y_t, and (iii) labor productivity, Y_t/L_t:

$$\frac{C_t}{N_t} = \frac{L_t}{N_t} \cdot \frac{C_t}{Y_t} \cdot \frac{Y_t}{L_t} \tag{1}$$

where

$$C_t = \sum_a c_t(a) \cdot P_t(a),$$

$$Y_t = \sum_a y_t(a) \cdot P_t(a),$$

$$N_t = \sum_a \gamma(a) \cdot P_t(a), \text{ and}$$

$$L_t = \sum_a \zeta(a) \cdot P_t(a).$$

The age-specific consumption weights, $\gamma(a)$, convert the age-specific population, $P_t(a)$, to its equivalent number of "prime-age" adult consumers, i.e., the effective number of consumers. Similarly, the weights $\zeta(a)$ convert the population head-counts to their equivalent effective number of "prime-age" workers. These weights are assumed to be fixed through time *t*. Age-specific consumption and labor income per person, given by $c_t(a)$ and $y_t(a)$, respectively, on the other hand, may vary through time.

The above expression may be readily converted to growth rates as follows:

$$g\left(\frac{C_t}{N_t}\right) = g\left(\frac{L_t}{N_t}\right) + g\left(\frac{C_t}{Y_t}\right) + g\left(\frac{Y_t}{L_t}\right). \tag{2}$$

The growth in the support ratio captures the compositional effect of the demographic transition. This is the first demographic dividend. In the early stage of transition, the effective number of workers grows faster than the number of effective consumers. All else being the same, this raises incomes per person. However, later in the demographic transition, as the share of elderly retirees grows faster than the number of workers, the contribution of the first demographic dividend becomes negative. That is, it is no longer really a dividend.

In the literature, the contributions of the first demographic dividend to the economy are often estimated using either growth models using cross-country aggregate time-series data (Bloom and Williamson 1998; Kelley and Schmidt 2001; Mapa and Balisacan 2004), or direct growth accounting using a similar framework to the above equation (Mason 2006; Abrigo et al. 2016; Mason et al. 2017). In the Philippines, estimates by Mapa and Balisacan (2004) show that the country's population

dynamics contributed about 1.1-percentage points to the Philippines' 4.1-percent average annual growth between 1970 and 2000. Direct growth accounting by Mason et al. (2017), on the other hand, provides a much conservative estimate of 0.5-percentage points for the same period. Although the first demographic dividend is only transitory, it may extend for some considerable period. Mason et al. (2017), for instance, show that the first demographic dividend across economies may span from about 30 to more than 90 years based on estimates for more than 160 countries.

The behavioral effects of the demographic transition are captured in the growth rates of both the consumption rate and labor productivity. Assuming that labor productivity and the support ratio do not change, a decline in the consumption rate implies a decline in the welfare of the current population as proxied by the average consumption of an effective consumer. Nonetheless, this increases the available capital in an economy, raising the productivity of future workers. A growing elderly population may induce such increase in saving propensity as documented in the Philippines (Mapa and Bersales 2008) and elsewhere (Mason 1981; Kelley and Schmidt 1996; Lee et al. 2001). More generally, the demographic transition may encourage greater investments, either in the human capital of children or in other forms of capital that raise productivity. This is the second demographic dividend.

While the positive contribution of the first demographic dividend to economic growth is only transitory, the potential gains from the second demographic dividend may be sustained. In simulations by Mason et al. (2017), the second demographic dividend may extend for more than 100 years. Further, its contribution to economic growth is more substantial than that of the first demographic dividend (Lee and Mason 2010; Mason et al. 2016).

The first and second demographic dividends represent potentials for growth that rely on effective policies to materialize (Mason and Lee 2006). The first demographic dividend, for example, requires that employment is available for those who seek work. The second demographic dividend, on other hand, requires that schools and public health institutions are available to allow greater human capital investments on children, or that financial markets are working to allow the flow of investments. As documented in Abrigo et al. (2016), the gains from the demographic dividends may be amplified or negated by prevailing conditions in an economy.

Generational Economy and the NTA Framework

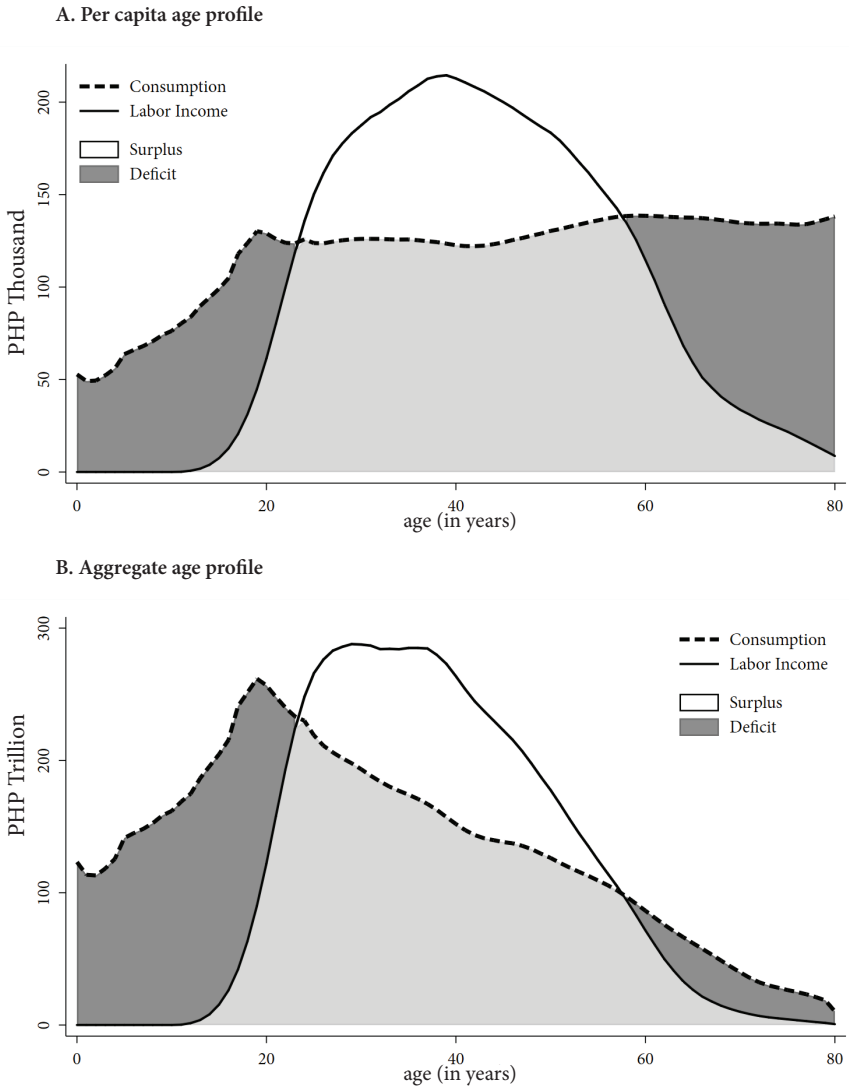
Economic behaviors change in systematic ways across a person's lifetime. Take consumption, for example. A child's consumption pattern is different from that of a prime-age adult or an elderly person. Children consume less food and use smaller clothing articles than adults. Investments on human capital are also expended largely at this stage of their lifetime. As children mature, their consumption patterns change, too. Further into the lifecycle, adults become elderly, and expenditures for health- and long-term care become more prominent in their consumption. Earnings also have a distinct lifecycle pattern, starting out zero when young. They later increase into adulthood, peaking at prime-age and eventually tapering off back to zero as persons leave the labor force.

These patterns, of course, vary from person to person, from population to population, and from generation to generation. Ultimately, these economic patterns are shaped by the existing support systems available to each generation. For instance, effective public education systems may induce higher human capital investments among school-aged children and dissuade them from working early, but may later lead to their greater productivity. Public pension systems, on the other hand, may condition the timing when people retire from working. Fertility may also impact these economic profiles to the extent that having more children may put a constraint on the use of household resources.

In all modern-age economies, however, these patterns of consumption and earnings dictate the inevitability of imbalances between what a person may require to survive and the means to satisfy them through working. This general feature among all contemporary economies is captured by the lifecycle profiles of consumption and labor income of the Philippines as presented in Figure 2. Consumption includes both public and private consumption. Labor income includes the earnings of employees working locally and abroad, and the returns to labor from self-employment. The values are all pretax.

As shown in the figure, there are extended periods at the beginning and toward the end of the economic lifecycle when consumption exceeds earnings from labor. Generally, these deficits may be filled-in through two ways, namely, sharing or saving (Mason and Lee 2011). The most straightforward may be the transfer of resources from generations with surpluses to those with deficits. This may be in the form of prime-

Figure 2. Age profiles of consumption and labor income: Philippines, 2015



PHP = Philippine peso
Source: Authors' calculations

age working adults providing for a child's needs within a household. Nonetheless, it may also be mediated by governments, such as in the case of social health insurance (SHI) and unfunded pay-as-you-go pension systems. Alternatively, individuals may also use returns from their

investments or draw out from savings or even take out loans either from other individuals or through government to fill in the deficits.

The forces that shape the age distribution, namely, fertility, mortality, and migration, among others, are intertwined with forces that shape other economic decisions, with the direction of causation possibly going both ways. This is evident in households, wherein fertility and migration affect child investment decisions, which may influence the child's future fertility and migration decisions. However, population dynamics also has important, direct, and quantifiable effects on the macroeconomy. This is demonstrated by the age profiles of total consumption and total labor income presented in Panel B of Figure 2.

While a child's usual consumption may only be a fraction of what a prime-age adult typically consumes (Figure 2, Panel A), its totality among children could be more substantial depending on an economy's population age distribution. This is true in the case of the Philippines, where more than half of the population are below 25 years old (PSA 2017). However, as an economy's population ages, much of the weight will shift toward later in life. This will reflect in more symmetric aggregate age profiles if average profiles per person by age remain the same.

These features of the generational economy are captured in the NTA (Lee and Mason 2011; UN 2013). The NTA is an accounting framework designed to measure how much different generations consume, produce, save, and share at the macroeconomic level. It combines different information from household surveys, administrative data, national macroeconomic accounts, population censuses and projections, and even household allocation models to provide estimates of different economic lifecycle age profiles. It is consistent with the UN System of National Accounts, with the NTA providing greater elaboration of the contribution and interaction of generations within an economy. By 2017, basic NTA profiles have been estimated for at least 160 economies with the support of more than 60 cooperating research teams in various countries around the world (Mason et al. 2017).

Philippine NTA in Historical Perspective

In this section, lifecycle patterns of production, consumption, and reallocations in the past 25 years are described based on NTA estimates for the Philippines for 1990 to 2015. The accounts were estimated following

the guidelines provided in the UN NTA Manual (UN 2013) and adjusted to 2015 constant prices for comparability. Previous NTA estimates for the Philippines have been used to document changes in consumption and labor income by age across years (Racelis and Salas 2011), decompose economic gains from demographic transition by socioeconomic groups (Abrigo et al. 2016), and simulate the potential effects on household income and fiscal balance of human capital investments by the public sector (Abrigo et al. 2018).

Economic lifecycle

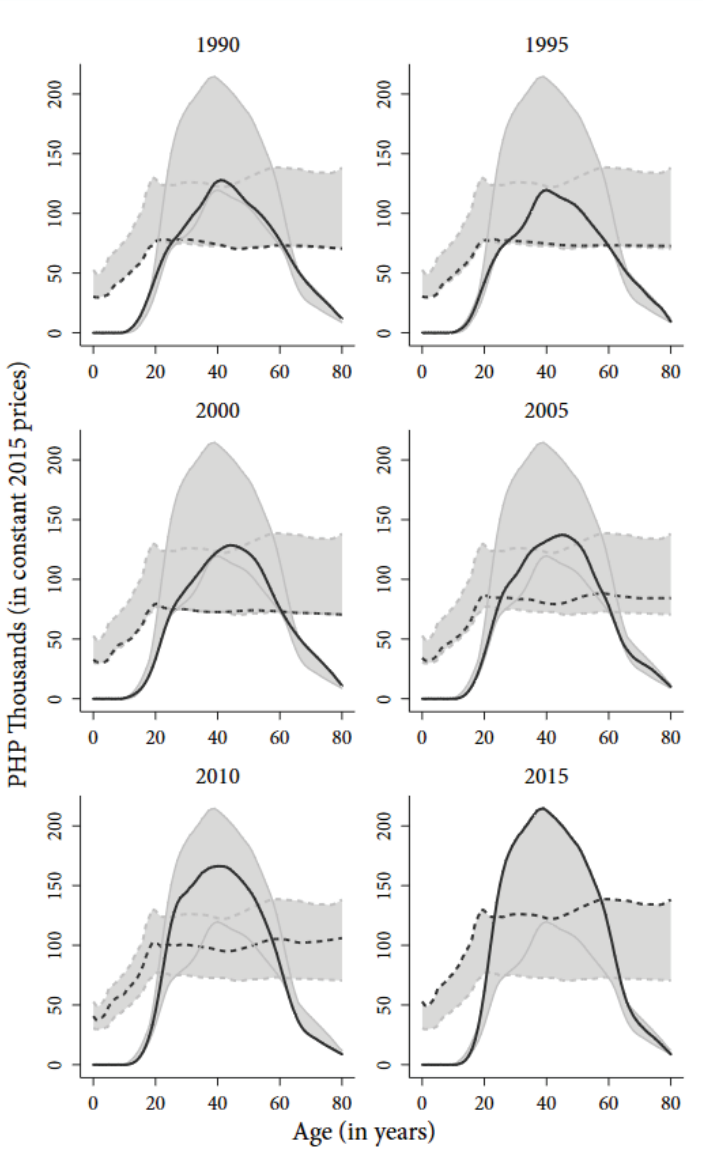
The levels of consumption and labor income have grown considerably in the past 25 years (Figure 3). Much of the growth, however, comes toward the latter part of 2000s. This is not surprising given the many challenges that the country faced during the 1990s. These challenges include the oil price hikes resulting from the Gulf War in the early 1990s, the widespread droughts in 1994 and 1997, the Asian financial crisis of 1997–1998, and the dotcom bubble in the early 2000s. Indeed, between 1990 and 2005, the peak of per capita labor income barely increased. From about PHP 128,000 per person in 1990, per capita labor income even dipped to PHP 120,000 in 1995. It returned close to its previous level at PHP 129,000 in 2000, finally growing to PHP 137,000 in 2005. Since then, labor incomes have been growing robustly, with the peak growing at around 4.5 percent annually between 2005 and 2015. By 2015, labor income at its peak averaged at PHP 215,000 per person.

When disaggregated by type of employment, the expansion in labor incomes may be attributed to the vigorous growth in earnings among employees working domestically and abroad. The labor share of self-employment income remained largely unchanged between 1990 and 2015 (Table 1).

Over the last 25 years, per capita earnings from local employment among those aged 25 to 64 have grown by 3.2 percent annually, although more rapidly in recent years. Between 1990 and 2000, per capita income of prime-age adults only increased by 0.5 percent annually. It picked up pace to 4.6 percent between 2000 and 2010, finally reaching 5.9 percent between 2010 and 2015. In 2015, the labor earnings from local employment totaled at PHP 5 trillion from only PHP 1.3 trillion in 1990.

Total earnings from employment abroad, on the other hand, were still relatively small in the 1990s. Although the government policy on

Figure 3. Per capita age profiles of labor income and consumption: Philippines, 1990–2015



PHP = Philippine peso
Note: Solid lines are per capita labor income, while dashed lines are per capita consumption. Black lines represent estimates for the year specified. Gray area shows the range of estimates between 1990 and 2015.
Source: Authors' calculations

Table 1. Lifecycle account: Philippines, 1990–2015

	1990			2000			2010			2015		
	0–24	25–64	65+	0–24	25–64	65+	0–24	25–64	65+	0–24	25–64	65+
	(age in years)											
A. Per capita (in constant 2015 PHP thousands)												
Consumption	52.9	73.9	72.0	54.0	73.5	71.4	70.0	99.9	103.6	89.2	129.1	135.5
Private Consumption	44.3	67.3	65.2	42.6	65.5	62.8	58.0	90.9	94.0	72.7	116.6	121.4
Education	2.1	0.0	0.0	3.3	0.0	0.0	5.5	0.1	0.0	7.4	0.0	0.0
Health	0.6	1.3	1.8	0.6	1.8	3.2	0.9	2.8	6.6	1.1	4.2	9.4
Others, N.E.C.	41.6	66.0	63.5	38.7	63.6	59.7	51.6	88.1	87.4	64.2	112.4	112.1
Public Consumption	8.6	6.6	6.7	11.4	8.1	8.5	12.0	8.9	9.6	16.5	12.5	14.0
Education	2.0	0.0	0.0	3.3	0.0	0.0	3.3	0.0	0.0	4.6	0.0	0.0
Health	0.3	0.3	0.4	1.5	1.4	1.9	0.4	0.7	1.3	1.3	1.8	3.3
Others, N.E.C.	6.3	6.3	6.3	6.7	6.7	6.7	8.3	8.3	8.3	10.7	10.7	10.7
Labor Income	17.9	100.0	32.3	13.6	102.9	33.1	18.7	135.1	21.4	24.7	172.8	29.3
Earnings, Domestic Producers	12.4	38.7	3.4	9.0	40.5	6.1	13.8	63.7	6.3	19.2	85.0	9.6
Earnings, Overseas Workers	0.6	6.1	0.0	1.1	13.7	0.2	3.5	48.9	0.6	3.9	59.2	1.0
Self-employment Labor Income	4.8	55.2	28.8	3.5	48.7	26.8	1.5	22.5	14.5	1.6	28.7	18.6
Lifecycle Deficit	35.0	-26.1	39.7	40.4	-29.4	38.2	51.3	-35.2	82.2	64.5	-43.7	106.2

Table 1. (continued)

	1990			2000			2010			2015		
	0–24	25–64	65+	0–24	25–64	65+	0–24	25–64	65+	0–24	25–64	65+
	(age in years)											
B. Aggregate (in constant 2015 PHP billions)												
Consumption	1,888	1,665	125	2,343	2,210	161	3,413	3,948	356	4,609	5,670	556
Private Consumption	1,565	1,518	113	1,824	1,970	141	2,809	3,594	323	3,737	5,119	499
Education	72	0	0	135	0	0	265	3	0	377	3	0
Health	21	28	3	27	49	7	44	98	21	58	169	36
Others, N.E.C.	1,472	1,491	110	1,662	1,920	135	2,500	3,492	301	3,303	4,947	463
Public Consumption	324	146	12	519	240	19	604	354	33	872	551	57
Education	73	0	0	148	1	0	168	1	0	242	1	0
Health	13	7	1	69	40	4	23	25	4	68	75	13
Others, N.E.C.	237	139	11	303	200	15	413	328	28	562	475	44
Labor Income	546	2,239	64	506	3,129	87	810	5,683	85	1,195	8,055	143
Earnings, Domestic Producers	380	906	8	333	1,301	18	600	2,703	27	930	4,005	52
Earnings, Overseas Workers	18	164	0	40	453	1	145	2,137	3	186	2,870	6
Self-employment Labor Income	148	1,169	56	133	1,374	68	64	843	55	79	1,180	86
Lifecycle Deficit	1,343	-574	61	1,837	-919	74	2,603	-1,735	271	3,414	-2,385	413

N.E.C = not elsewhere classified; PHP = Philippine peso
Source: Authors' calculations

managing international labor migration was introduced in the early 1970s, the annual flows of temporary migrant workers in 1990 were still relatively small at about half a million workers per year (Orbeta and Abrigo 2009). During the same period, total earning from employment abroad only reached PHP 0.2 trillion. It barely reached PHP 0.5 trillion by 2000. In 2010, however, total labor earnings from abroad ballooned to PHP 2.3 trillion, before settling at PHP 3 trillion in 2015. This coincided with larger flow of temporary migrant workers from the Philippines, which has breached 1 million annually since the middle of the 2000s. Between 1990 and 2015, the prominence of earnings from abroad grew from only 6.4 percent of all labor incomes in 1990 to about a third by 2015.

Levels are not the only ones that have changed in the past 25 years. Between 1990 and 2015, the per capita age profile of labor income has also narrowed, progressively concentrating among prime-age adults. Further, the shape of the labor income profile has also tilted toward younger ages. The latter observation may be a result of the greater importance of earnings from workers abroad, which has been documented to be selective in favor of younger cohorts (Orbeta and Abrigo 2009). This observation may also be a reflection of younger cohorts being more productive than earlier generations (Lee and Ogawa 2011), such as in the case of economies transitioning from predominantly agriculture-based to more industry- and services-based.

To some extent, the inward shift in per capita labor income among the elderly may be explained by the growing dominance of earnings by employees relative to self-employment labor income. More particularly, employees in the formal sector are more likely to be covered by the country's mandatory pay-as-you-go pension system than those self-employed (Orbeta 2010). Gruber and Wise (1999) have shown that the timing of pension benefits affects workers' retirement decisions. In the case of the Philippines, the steep decline in per capita labor income begins at around age of 60, when most retirees may start claiming for pension benefits. The declining role of self-employment in the population is expected to result in much steeper decline in overall labor income around this particular age.

Increasing school participation rates, on the other hand, may have contributed to the rightward shift in per capita labor income among the young. According to the Philippine Statistics Authority (PSA) (formerly

National Statistics Office) (1991), about 63 percent of those aged 15 to 19 were attending school in 1990. By 2015, the rate grew to 67 percent (PSA 2016). Over the same period, the labor force participation rate of the same age group had also dropped, from about 40 percent in 1990 to 25 percent in 2015.

The age profile of consumption has also shifted in the last 25 years. Similar to the trend in per capita labor income, consumption per person among prime-age adults barely moved between 1990 and 2000. By 2010, their consumption per capita increased to about PHP 100,000 from nearly PHP 74,000 in 1990 and 2000. In 2015, this further increased to PHP 129,000 per person (Table 1). The government share in consumption fluctuated between 10 to 20 percent over same period. When disaggregated by age group, the share of the public sector in the consumption of those aged below 25 years hovered around 20 percent, while those for adults were much closer to 10 percent.

In education, while the split between public and private consumption among population below 25 years old is almost close to parity in 1990 and 2000, the government's share has since eroded. In 2015, only 40 percent of education consumption was funded by government. Although both the public and private per capita education consumptions were about the same in 1990 and 2000, government spending per person stagnated between 2000 and 2010 at about PHP 3,300 per person, before settling at PHP 4,600 per person in 2015. Private education consumption, on the other hand, has since been growing upwards at 5 percent annually. In 2015, private education consumption per capita was at PHP 7,400. Taken together, total education spending per capita more than doubled between 1990 and 2010. By 2015, annual spending per capita on education reached PHP 12,000, about thrice that in 1990.

Health consumption has also increased considerably over the same period. In 2015, aggregate health consumption from both public and private sectors totaled at PHP 419 trillion, or 5.7 times its value in 1990. This growth may be explained partly by the slowly increasing share of elderly in the population. But more importantly, the growth in health consumption has been driven by larger spending at each life stage. Between 1990 and 2015, per capita health consumption of those aged below 25 years increased from PHP 900 to PHP 2,400. Among prime-age adults, the increase was also substantial with spending per person growing from PHP 1,600 in 1990 to PHP 5,900 in 2015. The

most significant increase, however, has been among the elderly aged 65 and older, wherein per capita spending on health increased from only PHP 2,200 in 1990 to PHP 12,700 in 2015.

The increase in health spending may be attributed to some degree to the greater health expenditures mediated by the government, particularly through the SHI system. With the reorganization of the SHI system in 1997, a number of programs have been initiated to expand its coverage. For instance, a sponsorship program was launched to provide SHI coverage to individuals from low-income households. This program was subsequently financed through tax collections from tobacco and alcoholic beverages. Starting in 2014, all elderly aged 60 years and older have also been covered in the SHI system. Despite these innovations, however, the share of the private sector in health spending has remained substantial at about 60 percent.

Indeed, the more substantial increase in health spending over the last 25 years has been borne directly by households. Between 1990 and 2015, private health consumption per capita among those aged below 25 years increased from around PHP 600 to PHP 1,100. Among prime-age adults, the increase was from PHP 1,300 to PHP 4,200. The greatest increase came from the elderly population, wherein private health spending per capita grew from PHP 1,800 per person in 1990 to PHP 9,400 in 2015.

These two types of consumption affect the shape of the consumption age profile. Because of the substantial rise in education consumption, a small bump around ages 10 to 20 has become more apparent in the total consumption age profile (Figure 3). The increase in the health consumption among the elderly, on the other hand, has contributed to the gradual flattening and eventual upward trend in the consumption pattern by age in the cross-section. These features closely resemble those of upper middle- and high-income countries (Mason et al. 2017).

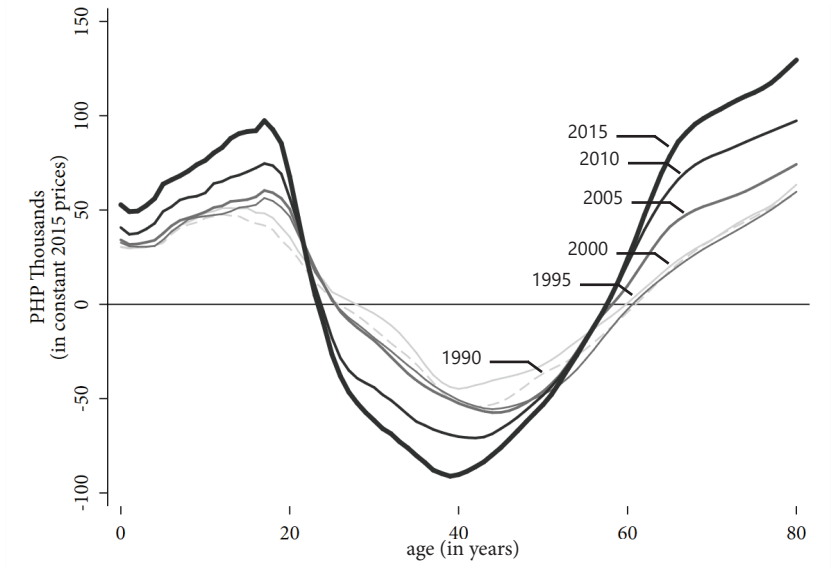
These two types of consumption are also important because they raise individual's human capital, especially among the young. Between 1990 and 2015, the combined per person spending on education and health among those aged below 25 years increased by almost three-folds. In 2015, average spending on health and education reached PHP 14,400 per person, compared with about PHP 5,000 per person in 1990 (Table 1).

The gap in per capita consumption and labor income is presented in Figure 4. It shows that the lifecycle deficit, i.e., when consumption

exceeds labor income, among the young and the elderly has been growing since the 1990s. At the same time, the lifecycle surplus, i.e., when labor income exceeds consumption, has been growing as well, with an evident left-ward shift in ages of transition across the years. This implies that the young start earning more than what they consume earlier than previous generations. It also implies that the elderly have begun to rely more on age-based reallocations earlier to finance their consumption.

Combining the per capita age profile with population age distribution, the NTA estimates show that the aggregate lifecycle deficit among the young and the elderly more than doubled between 1990 and 2015 (Table 1). Over the same period, the share of the deficit from the elderly increased from 4 percent in 1990 to 11 percent in 2015, reflecting both the changes in the profiles of consumption and labor income and the growing share of the elderly in the population. This demographic transition also contributes to the growing share of surpluses among prime-age adults that can cover the deficits in other age groups (Racelis and Salas 2011). In 1990, the total surplus by prime-age adults can cover about 40 percent of all deficits by the young and the elderly. In 2015, this ratio increased to about 60 percent.

Figure 4. Lifecycle deficit per capita age profile: Philippines, 1990–2015



PHP = Philippine peso
Source: Authors' calculations

Reallocations

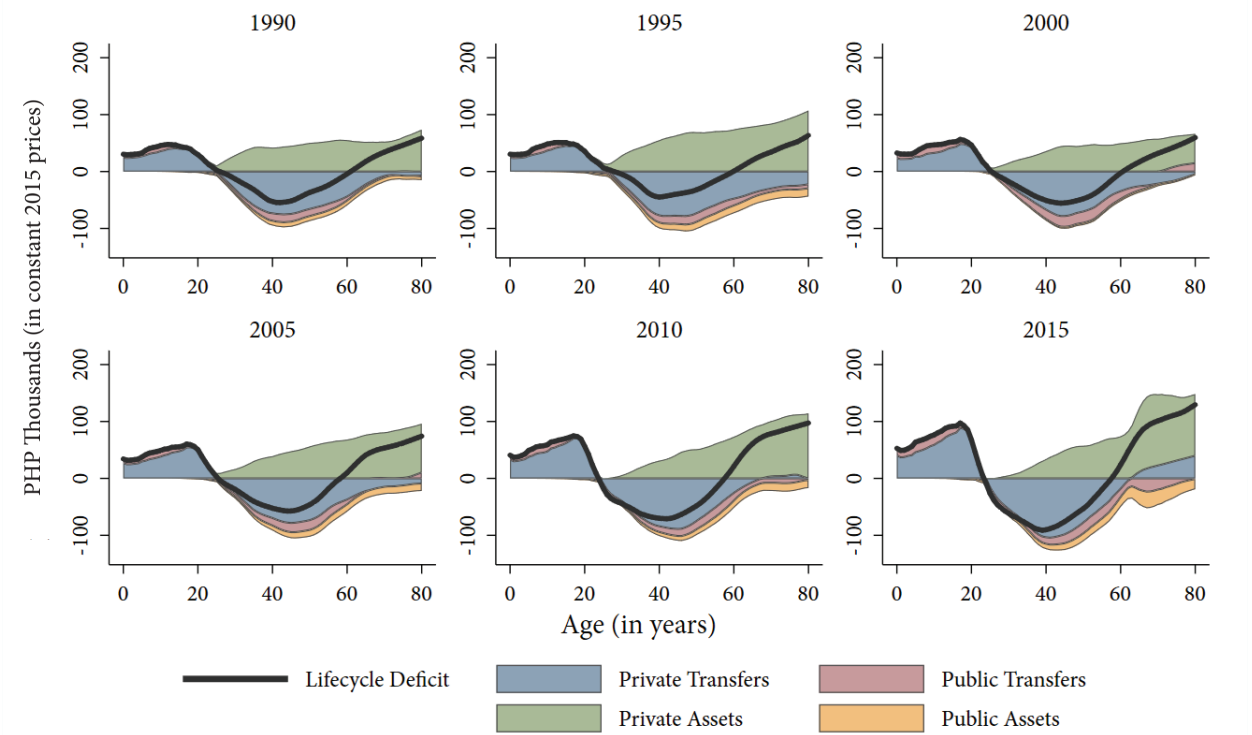
The lifecycle problem of mismatch between the level of consumption and the level of labor income at each age may be addressed by reallocating resources across generations. The solution may be either of two forms: transfers and asset-based reallocations. Transfers involve the sharing of resources among individuals, communities, or generations without any explicit quid pro quo arrangements. An example of this is the sharing of resources within households. However, more complex systems that involve larger intermediary institutions, such as unfunded pension schemes, insurance markets, and government tax systems, are also part of transfer systems. Asset-based reallocations, on the other hand, involve explicit exchange or contractual obligations and often rely on intertemporal substitution of resources. For example, a prime-age adult invests on land using surpluses from earnings. The rental income from the land and the proceeds of its eventual resale are all asset-based reallocations. More generally, asset-based reallocations include asset incomes and savings. Similar to transfers, these may be mediated by government or the private sector.

Figure 5 presents the evolution of age-based reallocations in the Philippines over the past 25 years. The values are all net to a particular age group. Lifecycle deficits are superimposed as reference values. The figure shows that the young are net recipients of intergenerational transfers, particularly of private transfers. The value of net public transfers is relatively small historically, although there appears to be some nontrivial increase in levels since 2010. Adults, on the other hand, rely on more varied forms of age-based reallocations to finance the lifecycle deficit.

Prime-age adults are net givers of transfers. This is not surprising given that their labor income often exceeds their consumption. What is remarkable is that their net transfer outflows are greater than their lifecycle surplus. In 2015, for instance, the net transfers by cohorts in their 40s range between 125 to 175 percent of their lifecycle surplus. In other years, these rates are even higher. To perform such feat, prime-age adults rely on asset-based reallocations, which have consistently been positive in the past 25 years starting among cohorts around their mid-20s. This includes a combination of proceeds from investments, sale of capital, and (dis-)saving.

The elderly population relies primarily on private asset-based reallocations to finance their lifecycle deficit. This feature has been

Figure 5. Lifecycle deficit and sources of financing: Philippines, 1990–2015



PHP = Philippine peso
Source: Authors' calculations

observed in other countries as well, particularly in economies where the public pension systems are underdeveloped (Mason and Lee 2011; Mason et al., 2011). Over the past 25 years, the elderly have been the net sources of public and private transfers. Exceptions include 2000 and 2005, when the elderly were net recipients of public transfers, and in 2010 and 2015 when they were net recipients of private transfers. Despite recent reforms in public policy concerning the welfare of the elderly, they—as a group— are still net sources of public transfers. As mentioned earlier, starting in 2014, the elderly aged 60 and above have been automatically enrolled in the SHI scheme. In 2010, the government introduced a social pension program that covers elderly people from low-income households. This public transfer inflow, however, is counter-balanced by payment of taxes, particularly on assets and asset income, often accumulated and held by the elderly.

Demographic dividends

The Philippines has made significant progress in improving household welfare over the last 25 years. As shown in the previous section, average consumption per person increased by almost 80 percent between 1990 and 2015. Human capital investments on children, particularly on health and education, also increased considerably as part of the general increase in average consumption. To what extent has the country's demographic transition contributed to this growth?

Using NTA estimates for the Philippines, the authors conducted a growth accounting exercise based on Mason and Lee (2006) and Mason et al. (2017) (Table 2). The lifecycle consumption (production) weights used to derive the effective number of consumers (workers) are calculated from the 1990 age profiles of per capita consumption (labor income). The consumption (production) weights are calculated by normalizing the age profile of per capita consumption (labor income) relative to the average of persons aged 30 to 49 years. Unlike in the original formulation, however, the aggregate labor income is replaced with total primary income in the calculation of the consumption share and labor productivity.

The results of the growth accounting exercise show that the average consumption per effective consumer increased by 2.2 percent annually on average between 1990 and 2015. Over the 25-year horizon, the compositional effect of the demographic transition, i.e., the first demographic dividend, contributed an annual average of 0.5-percentage

point additional growth similar to the estimates of Mason et al. (2017). Labor productivity, which includes the effect of greater human capital and other investments, i.e., the second demographic dividend, on the other hand, contributed an average of 2.3-percentage points of additional growth annually in consumption per effective consumer. Finally, the propensity to consume declined by 0.6 percent on average, which may have also contributed to the labor productivity growth through capital deepening.

When disaggregated further by period, the estimates show that during the low-growth years of the 1990s, labor productivity has completely stagnated. Without the contribution of the first demographic dividend, which was cancelled out by the decline in consumption propensity, the growth in the consumption per effective consumer should have been negative between 1990 and 2000. In more recent years, labor productivity has picked up, growing at 3.8 percent annually between 2000 and 2010, and much faster at 4.1 percent between 2010 and 2015. Notwithstanding the fluctuations in consumption propensity, the first demographic dividend also provided an additional source of economic growth that, together with productivity growth, helped raise consumption per effective consumer by 2.9 percent annually between 2000 and 2010, and by 5.1 percent annually between 2010 and 2015.

Table 2. Decomposition of consumption per capita and growth

	Consumption per Consumer ('000 PHP)	Support Ratio (%)	Consumption Share (%)	Output per Worker ('000 PHP)
A. Level Estimate				
1990	74.1	50.1	88.2	167.6
1995	75.2	51.5	90.8	160.9
2000	74.3	52.6	84.1	167.9
2005	82.1	53.6	81.6	187.6
2010	98.7	55.7	73.0	242.7
2015	126.7	56.7	75.3	296.6
B. Annual Growth Rate (%)				
1990–2015	2.2	0.5	-0.6	2.3
1990–2000	0.0	0.5	-0.5	0.0
2000–2010	2.9	0.6	-1.4	3.8
2010–2015	5.1	0.4	0.6	4.1

PHP = Philippine peso
Source: Authors' calculations

Public Sector and Prospects for the Future

The study also explored the potential contribution of public policy on household welfare using a simulation model developed by Mason et al. (2015). The macroeconomic-demographic simulation model combines population age structure and realistic age profiles of income, public transfers, and saving rates to assess how private consumption changes in a way internally consistent. Public policies are introduced in the simulation model through taxation and public transfer programs, as well as limits on the size of government and of public debt. These policies, together with the population age distribution, directly affect the government's fiscal balance. They also affect household decisions through the former's influence on the disposable income available to each generation, which ultimately affects the latter's consumption and the residual resources available for transfers and savings.

The goal of this simulation is not to provide specific programs of action for government but rather to quantify how population ageing and public policy may interact to promote welfare while ensuring (or endangering) fiscal sustainability. As such, the scenarios may not necessarily be realistic options for the Philippines. Nonetheless, they are representative of the broad classes of programs implemented in different countries around the world.

Reform scenarios

This study looked at three broad set of policy reform scenarios in addition to a baseline case (Figure 6). In the baseline business-as-usual (BAU) scenario, recent age patterns of per capita government spending and taxation were held fixed over the projection horizon. In the first reform scenario (Welfare Reform I Scenario), the age profiles of taxes and government spending linearly approach the average age patterns of public transfers in high-income countries with relatively low public transfers to the elderly, specifically the United States and Spain. The second reform scenario (Welfare Reform II Scenario) also transitions to public transfer age profiles but in high-income countries with relatively generous public transfers to the elderly, specifically Slovenia, Japan, Finland, Germany, Sweden, and Austria. The reforms will be implemented beginning in 2020 with the transition lasting for 25 years. In the third and final reform scenario, the age profile of labor income was extended to match

Figure 6. Alternative age profiles in projection scenarios

A. Public transfers, inflow

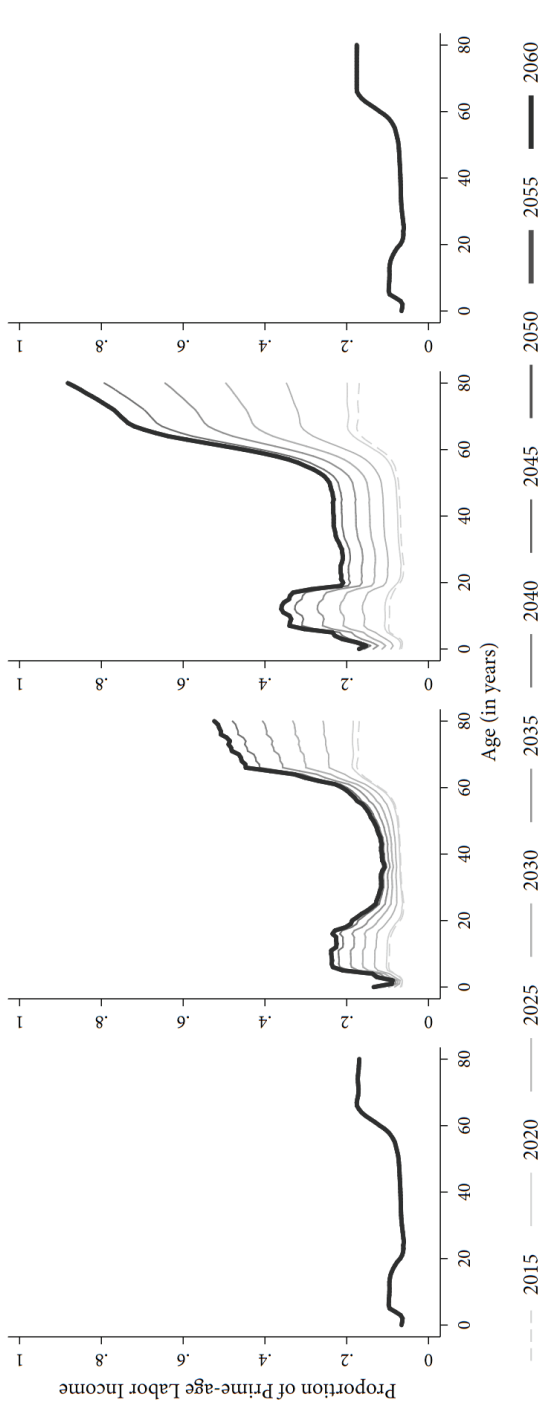


Figure 6. (continued)

B. Public transfers, outflow

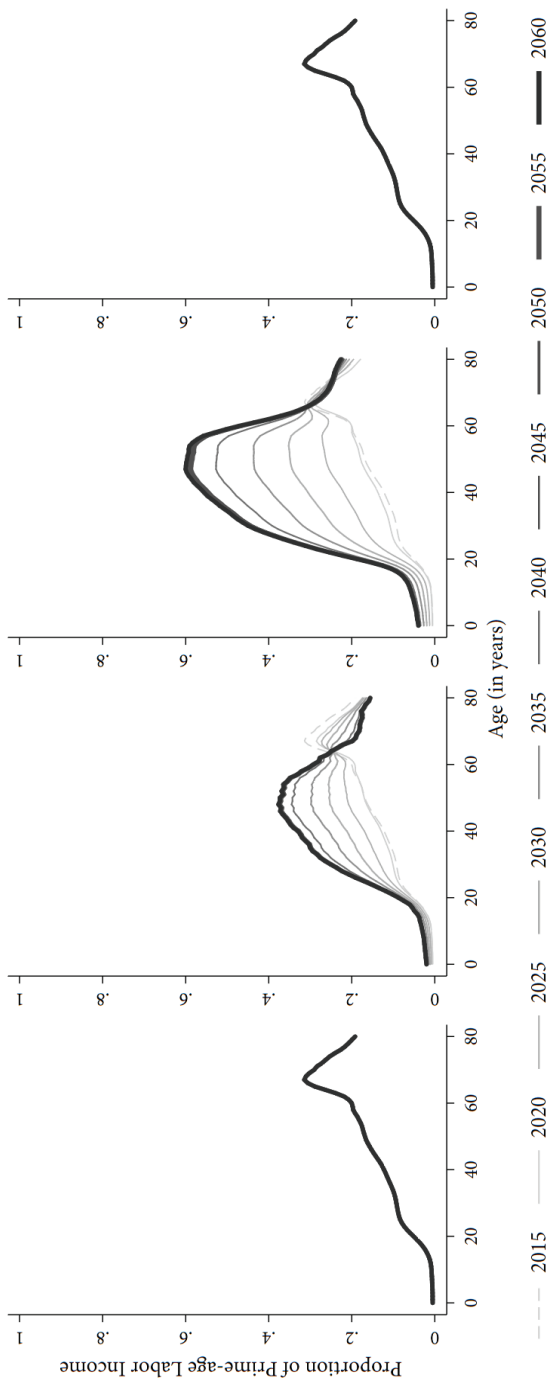
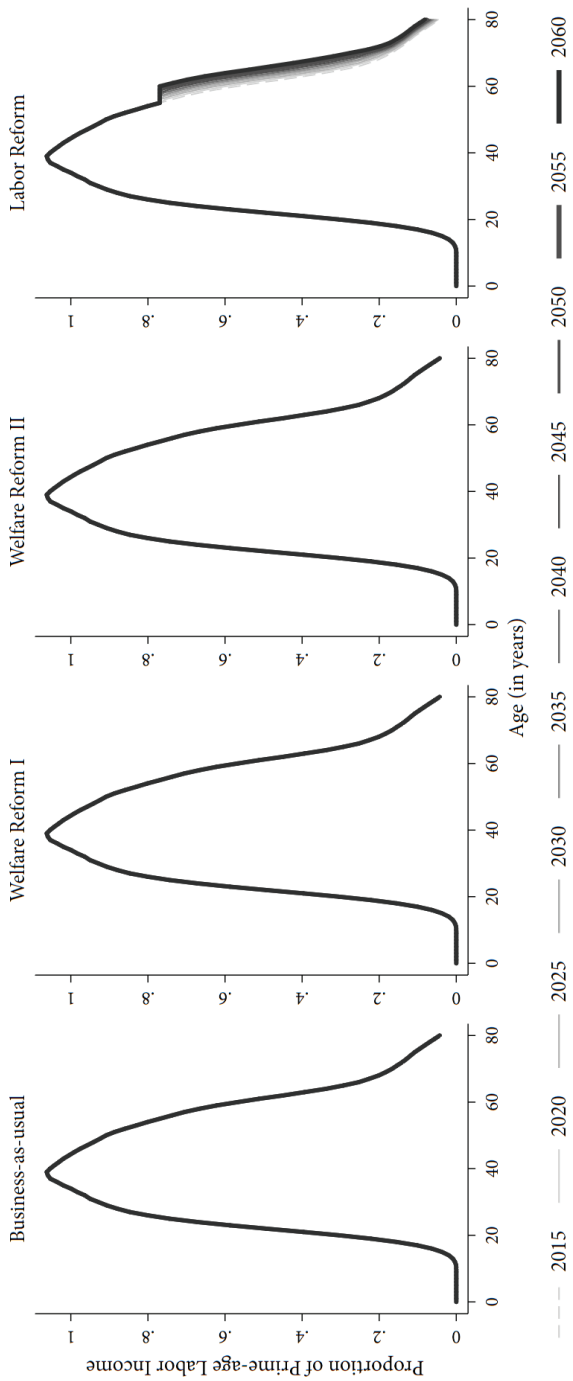


Figure 6. (continued)

C. Labor income



Note: The graph shows the assumed age profile in the projection period in each scenario.
Source: Authors' assumptions

improvements in survival rates (Labor Reform Scenario). The values of the per capita age profiles were all normalized relative to the average per capita labor income between age 30 and 49 years.

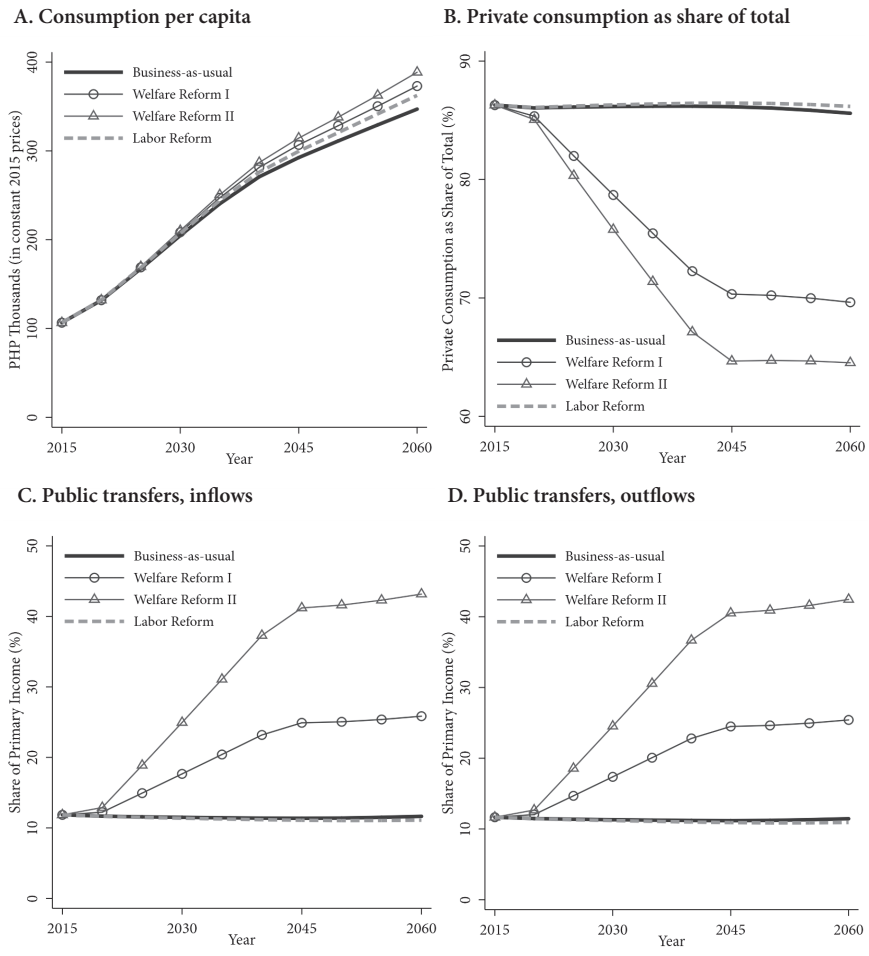
Under the Welfare Reform scenarios, public transfers to individuals (Figure 6, Panel A) are assumed to increase considerably relative to the baseline scenario. Among the elderly, for instance, annual public transfer inflows will increase to around 50 to 90 percent of a prime-age adult's labor income (PALI) depending on the age and scenario from only 20 percent of PALI in the base case. Taxes or, more generally, public transfer outflows paid by the elderly, on the other hand, are also assumed to increase under the Welfare Reform scenarios, but more so for the high-public transfer inflow variant (Figure 6, Panel B). Finally, in the Labor Reform Scenario, the labor income per capita age profiles is extended left-ward by about 10 years starting at age 55 in response to improving age-specific survival rates (Figure 6, Panel C).

In all of the scenarios, NTA estimates for 2015 were used as baseline economic lifecycle profiles. The medium-fertility population projections by the UN (2017) were employed to account for changes in the population age distribution. In the model, the potential contributions of the demographic dividends were not explicitly considered. Specifically, labor productivity growth was exogenously set, in this case linearly approaching the long-run rate of 1.5 percent by 2045 from the baseline of about 4 percent. The contribution of the first demographic dividend was implied based on the shape of the age profiles of labor income and consumption, and the trajectory of the population age distribution.

Consumption and the public sector

Figure 7 presents the results of our simulation for consumption and public transfer inflows and outflows under the baseline case and the three reform scenarios. Consumption per capita in all four scenarios is practically indistinguishable until around 2030, coinciding with when the country transitions to an ageing society, after which the projections start to diverge from the baseline case (Figure 7, Panel A). By the end of the projection scenario in 2060, the larger public transfer inflows from the Welfare Reform scenarios imply greater consumption per capita relative to BAU. However, this entails a greater role for government.

Figure 7. Projected consumption and public transfers: Philippines, 2015–2060



PHP = Philippine peso
Source: Authors' calculations

Under the Welfare Reform scenarios, the share of public consumption in total consumption grows from below 15 percent at baseline and in BAU to about 30 to 35 percent after the Welfare Reform transition period (Figure 7, Panel B). These sets of reforms are expected to increase public transfer inflows from government to as much as 40 percent of primary income from only a little above 10 percent at

baseline and in BAU (Figure 7, Panel C). But this requires raising taxes to about the same rate (Figure 7, Panel D).

The results from the Labor Reform scenario, on other hand, suggest that promoting longer working years may have limited impact on average consumption relative to the BAU case.

Overall, the simulation suggests that material measures of wellbeing, captured by consumption per capita, may grow faster with greater government transfers to households. However, following the age pattern of tax incidence in more developed countries captured in the Welfare Reform scenarios, this entails raising the effective tax rates across different age groups. Depending on the population age distribution of the incidence of government benefits and of government taxes, government revenues net of public benefits paid may either be positive or negative, i.e., net surplus or net deficit, which adds to the country's stock of government debts.

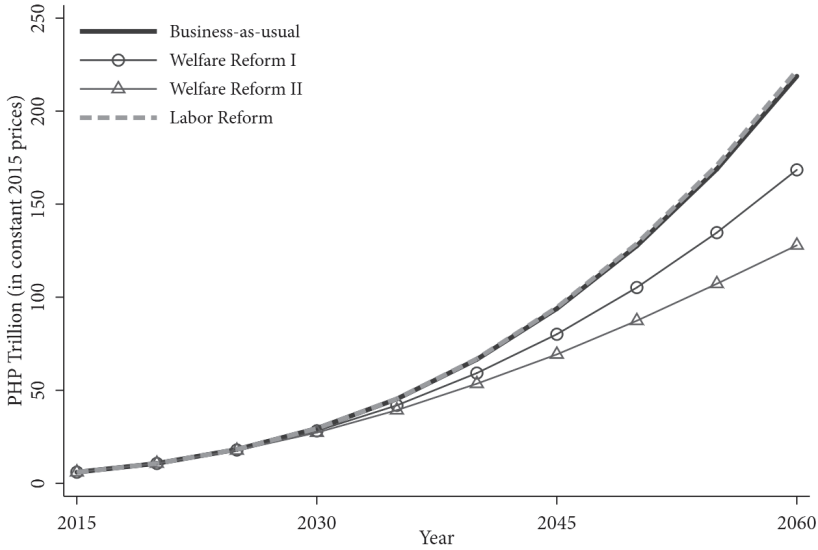
Public debt

Similar to the results for consumption per capita, the trajectories of public debt under each scenario are very similar until around 2030, beyond which the divergence in estimates become more and more apparent (Figure 8). In the BAU scenario, where the per capita age profiles is kept as a constant factor of PALI at baseline, the projected national debt is estimated to increase five-folds by 2030 at PHP 29.4 trillion from the 2015 baseline of about PHP 6.0 trillion (Figure 8, Panel A). In terms of share of projected primary income, this translates to an increase from about 40 percent of primary income to 80 percent over the same period (Figure 8, Panel B). This comes as a direct result of the country's transition to an ageing society.

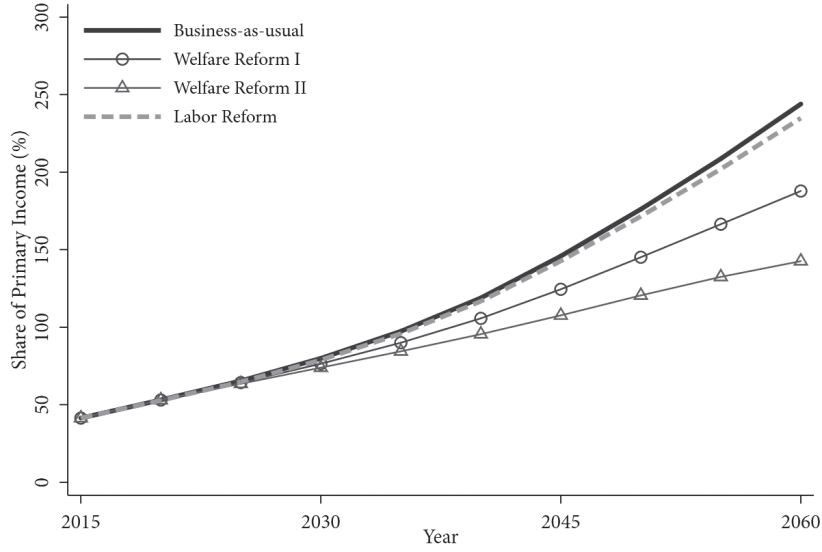
With the implementation of the Welfare Reform scenarios, the level and the share relative to primary income of the projected public debt are somewhat subdued compared to the BAU results despite the increase in government transfers to households under these reforms. Still, the resulting public debt are quite substantial, with the debt-to-primary income ratio well above 70 percent in either Welfare Reform scenario in 2030. In all of the scenarios, the projected public debt is expected to breach 100 percent of primary income by 2060.

Figure 8. Projected public debt: Philippines, 2015–2060

A. Public debt (in PHP trillion)



B. Public debt as share of primary income (%)



PHP = Philippine peso
Source: Authors' calculations

Summary and Policy Implications

The Philippines has made important progress in improving average incomes and consumption over the past 25 years. The country's favorable demography has contributed to this growth. However, as documented in earlier studies, the results suggest that the demographic dividends may be weakened or even negated by existing economic conditions (Abrigo et al. 2016). They highlight that while demographic dividends pose potentials for growth, these are not automatic, but instead rely on various enabling conditions to be fully realized (Mason and Lee 2006). Public policy is therefore important in ensuring that such enabling conditions are available.

First, it must be recognized that the demographic dividends arise from the demographic transition, which inherently requires fertility rates to decline. Supporting families to achieve their desired fertility levels is an important first step. However, even if average fertility rates drop, the rates of decline will likely vary across different populations, thereby potentially exacerbating inequality in the near term. Affirmative actions by the government, such as direct cash transfers, may be necessary to ensure that no population gets left behind.

Second, the compositional effect of the first demographic dividend results from a working population growing faster relative to those of effective consumers. The decomposition analysis of historical trends has shown that while such potentials may be present, they may be rendered irrelevant if the population cannot be productively employed. Unlocking the benefits of the first demographic dividend therefore goes hand in hand with public policies that promote economic growth in general and expand work opportunities in particular.

Third, the productivity-enhancing effect of the second demographic dividend, on the other hand, requires that options for investment potentials, regardless whether on human capital, financial markets, or physical capital, be both available and possible among households. The government has made great strides on some aspects, particularly on promoting human capital investments, including ensuring that children are able to attend school and receive necessary health care. The challenge is in making certain the continuity of these programs. Still, in other facets, like in stimulating greater household saving or investment, there may be greater room for growth.

The results from simulations highlight the role that government and public policies play in promoting household welfare and the contribution of population dynamics to fiscal balance. They suggest that even relatively stingy public transfer programs may lead to unsustainable public debt burden in the longer term when changes in the population age distribution, particularly population ageing, are taken into account. It does not mean, however, that government transfer programs cannot be expanded. Indeed, the results indicate that governments can become more generous as long as these are matched with reforms to raise greater government revenues, e.g., tax reform. Nonetheless, whether this holds under much more advanced ageing remains a question.

This research suffers from a number of limitations. For instance, the macroeconomic-demographic simulation model employed does not take into account the potential contributions of the second demographic dividend. More particularly, declining fertility and population ageing are both expected to raise labor productivity through capital deepening albeit through different channels. This may be beneficial for fiscal balance to the extent that governments may raise greater revenues from more productive populations that earn higher incomes.

Moreover, the analysis focused only on the macroeconomic contributions of demographic change. However, much of the processes involved for such change to happen operate at the household level, wherein benefits that households derive from macroeconomic growth may vary. While the study has shown that the collective household demographic experiences affect the macroeconomy, a more important concern may be in finding ways to ensure that the demographic dividends lead to more sustainable economic growth, where the benefits are shared more equitably.

References

Abrigo, M.R.M., R.H. Racelis, J.M.I. Salas, and A.N. Herrin. 2016. Decomposing economic gains from population age structure transition in the Philippines. *The Journal of the Economics of Ageing* 8:19–27.

Abrigo, M.R.M., S.H. Lee, and D. Park. 2018. Human capital spending, inequality, and growth in middle-income Asia. *Emerging Markets Finance and Trade* 54(8):1285–1303.

Becker, G. 1960. An economic analysis of fertility. In *Demographic and economic change in developed countries*, edited by G. Roberts. Cambridge, MA: National Bureau of Economic Research.

Becker, G.S. and H.G. Lewis. 1973. On the interaction between the quantity and quality of children. *Journal of Political Economy* 81(2):S279–S288.

Bloom, D.E. and J.G. Williamson. 1998. Demographic transition and economic miracles in Emerging Asia. *World Bank Economic Review* 12(3):419–455.

Chomik, R. and J. Piggott. 2015. Population ageing and social security in Asia. *Asian Economic Policy Review* 10(2):1919–222.

Cutler, D.M., J.M. Poterba, L.M. Sheiner, and L.H. Summers. 1990. An ageing society: Opportunity or challenge? *Brooking Papers on Economic Activity* 1:1–73.

Gruber, J. and D. Wise. 1999. *Social security and retirement around the world*. Chicago, IL: University of Chicago Press.

Kelley A.C. and R.M. Schmidt. 1996. Saving, dependency and development. *Journal of Population Economics* 9(4):365–386.

———. 2001. Economic and demographic change: A synthesis of models, findings, and perspectives. In *Population matters: Demographic change, economic growth, and poverty in the developing world*, edited by N. Birdsall, A.C. Kelley, and S.W. Sindings. Oxford, United Kingdom: Oxford University Press.

Lee, R., A. Mason, and T. Miller. 2001. Saving, wealth, and population. In *Population matters: Demographic change, economic growth, and poverty in the developing world*, edited by N. Birdsall, A.C. Kelley, and S.W. Sindings. Oxford, United Kingdom: Oxford University Press.

Lee, R. and A. Mason. 2010. Fertility, human capital, and economic growth over the demographic transition. *European Journal of Population* 26(2):159–182.

———. 2011. *Population aging and the generational economy: A global perspective*. Cheltenham, United Kingdom and Ottawa, Canada: Edward Elgar and International Development Research Centre.

Lee, S.H. and N. Ogawa. 2011. Labor income over the lifecycle. In *Population aging and the generational economy: A global perspective*, edited by R. Lee and A. Mason. Cheltenham, United Kingdom and Ottawa, Canada: Edward Elgar and International Development Research Centre.

Mapa, D.S. and A.M. Balisacan. 2004. Quantifying the impact of population on economic growth and poverty: The Philippines in East Asia context.

In *The ties that bind: Population and development in the Philippines (2nd edition)*, edited by L. Achacoso-Sevilla. Makati City, Philippines: Asian Institute of Management.

Mapa, D.S. and L.G.S. Bersales. 2008. Population dynamics and household saving: Evidence from the Philippines. *The Philippine Statistician* 57 (1–4):1–27.

Mason, A. 1981. An extension of the life-cycle model and its application to population growth and aggregate saving. Unpublished manuscript. East-West Population Institute Working Paper No. 4. Honolulu, Hawai`i: East-West Center.

———. 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. 2006. Reform and support systems for the elderly in developing countries: Capturing the second demographic dividend. *Genus* 62(2):11–35.

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

———. 2011. Population aging and the generational economy: Key findings. In *Population aging and the generational economy: A global perspective*, edited by R. Lee and A. Mason. Cheltenham, United Kingdom and Ottawa, Canada: Edward Elgar and International Development Research Centre.

Mason, A., N. Ogawa, A. Chawla, and R. Matsukura. 2011. Asset-based flows from a generational perspective. In *Population aging and the generational economy: A global perspective*, edited by R. Lee and A. Mason. Cheltenham, United Kingdom and Ottawa, Canada: Edward Elgar and International Development Research Centre.

Mason, A., R. Lee, and J. Xue Jiang. 2016. Demographic dividends, human capital, and saving. *Journal of Economic Ageing* 7:106-122.

Mason, A., R. Lee, D. Stojanovic, and M.R.M. Abrigo. 2015. The fiscal impact of population aging: Accounting for the role of demography. NTA Working Paper 15-03. https://ntaccounts.org/doc/repository/MLSA2015.pdf (accessed on August 25, 2018).

Mason, A., R. Lee, M. Abrigo, and S.H. Lee. 2017. Support ratios and demographic dividends: Estimates for the world. Population Division Technical Paper 2017/1. New York, NY: United Nations Population Division.

Orbeta, A.C. Jr. 2010. Social protection in the Philippines: Current state and challenges. In *Social protection in East Asia – Current state and challenges*, edited by M.G. Asher, S. Oum, and F. Parulian. ERIA Research Project Report 2009, No. 9. Jakarta, Indonesia: Economic Research Institute for ASEAN and East Asia.

Orbeta, A.C. Jr. and M.R.M. Abrigo. 2009. Philippine international labor migration in the past 30 years: Trends and prospects. PIDS Discussion Paper No. 2009-33. Makati City, Philippines: Philippine Institute for Development Studies.

Philippine Statistics Authority (formerly National Statistics Office) (PSA). 1991. Labor force survey, October 1990. Public-use file. Manila, Philippines: PSA.

———. 2016. Labor force survey, October 2016. Public-use file. Quezon City, Philippines: PSA.

———. 2017. Philippine population surpassed the 100 million mark. Quezon City, Philippines: PSA.

———. 2018. *Philippines National Demographic and Health Survey 2017*: *Key indicators report.* Quezon City, Philippines, and Maryland, USA: PSA and ICF.

Racelis, R.H. and J.M.I. Salas. 2011. Changes in patterns of Philippine lifecycle consumption and labor incomes between 1992 and 2002. In *Population aging and the generational economy: A global perspective*, edited by R. Lee and A. Mason. Cheltenham, United Kingdom and Ottawa, Canada: Edward Elgar and International Development Research Centre.

United Nations (UN). 2013. National Transfers Account Manual: Measuring and analyzing the generational economy. New York, NY: UN Population Division.

———. 2017. World population prospects: The 2017 revision. New York, NY: UN Population Division.

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The Philippines is slowly ageing. In a little over a decade, the country's elderly will comprise at least 7 percent of the total population. This rising tide may pose some substantial burden on the country's resources. Nonetheless, the same economic and demographic forces that will eventually lead to population ageing may also provide potentials for economic growth. This paper documents the country's historical experience of the demographic dividend using new National Transfer Account time-series estimates for the Philippines. These estimates also reflect how the interaction between public policy and population ageing may affect household welfare and fiscal balance in the foreseeable future.

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