BACKGROUND PAPER

Funding Developing Asia's Old-Age Needs: Challenges and Opportunities

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ABSTRACT

The population of developing Asia, in particular East Asia, is aging. Funding the needs of its growing elderly population is the biggest socioeconomic challenge that aging presents for the region. The central objective of our paper is to analyze empirically how individuals fund their old-age needs in different countries. While developing Asian economies are the focus of our analysis, we also present results for high-income economies and non-Asian developing economies for comparative purposes. Our analysis relies heavily on wealth measures because these facilitate comparisons of flows over the life cycle, which vary strongly with age. Our analysis indicates that developing Asia's old-age funding needs will rise substantially because of population aging between 2025 and 2065. We find that labor income will play a smaller role in funding the region's old-age needs, while public and private transfers will play a larger role. While expanding public transfers will contribute toward old-age economic security, the region must carefully plan such expansion and avoid unsustainable generosity to safeguard the macroeconomic stability that underpinned its rapid economic growth and development.

Keywords: aging, elderly, Asia, old-age economic security, public transfers
JEL codes: J11, J14

I. INTRODUCTION

The population of developing Asia, in particular East Asia, is aging. Funding the needs of its growing elderly population is the biggest socioeconomic challenge that aging presents for the region. The central objective of our paper is to analyze empirically how individuals fund their old-age needs in different countries. Our analysis is centered on developing Asian economies as the focus of our analysis, but we also analyze high-income economies and non-Asian developing economies to provide the broader context. Our analysis is based on wealth measures, which facilitate comparisons of flows over the life cycle. To compare economies of different income levels, we use normalized values that represent economic variables as a percentage of core labor income, i.e., average annual labor income of persons aged 30–49 years old.

We find that developing Asia's old-age funding needs will rise substantially because of population aging between 2025 and 2065. We find that labor income will play a smaller role in funding the old-age consumption needs of the region's economies. The relative importance of labor income will decrease by 2%–4%. On the other hand, both public and private transfers will play a larger role. While expanding public transfers will contribute toward old-age economic security, the region must carefully plan such expansion and avoid unsustainable generosity to safeguard the macroeconomic stability that underpinned its rapid economic growth and development.

In all contemporary economies, people consume more at young and old ages than they produce through their labor. Consequently, they face the challenge of reallocating resources across generations or age groups in ways that are both equitable and efficient. Failure to do so can lead to underinvestment in human capital, slower economic growth, and high rates of child poverty, or, conversely, childrearing costs that are high enough to sharply reduce the birth rate. Standards of living for seniors may fall behind that of younger generations or, conversely, high spending on the needs of the elderly may require undue sacrifices on the part of working age adults and children.

These issues will become increasingly salient as demographic change leads to considerable pressure on the systems that are currently employed to reallocate resources. As the effects of the coronavirus disease (COVID-19) recede, life expectancy is expected to rise everywhere. In some low-income economies, declines in infant and child mortality are expected to lead to an increase in the number of children. In most economies, however, the gains in mortality will be concentrated at older ages. As people live longer, they will face the prospect of outliving their resources. They will have no choice but to adjust their resource reallocation strategies.

Although people are living longer, population growth is declining, and populations are aging because of low fertility. This demographic change will affect the reallocation systems by influencing the terms of trade across generations. The effect is important in the case of

intergenerational transfers, which are governed by an "iron rule". The cost of providing intergenerational transfers varies in direct proportion to the number receiving support relative to the number providing support. In the face of aging, the cost to providers will rise as the number of seniors rise relative to the number of providers. This principle applies equally to public and private transfer systems.

Reallocations are also realized through life cycle saving. Working-age people accumulate assets to fund their old-age needs. The impact of demographic change on interest rates—the terms of trade that govern asset-based reallocation across generations—is the subject of considerable discussion. Slower population growth can lower interest rates, with significant implications for old-age reallocations.

The emphasis of this paper is on reallocations to seniors. Three important questions are considered. The first section discusses old-age needs and the old-age support systems for meeting them. Second, how will continued gains in longevity strain those support systems? And, third, how will demographic change and decisions about support systems affect sustainable standards of living? An innovative feature of the analysis is that it allows for different support systems for children and seniors.

II. SOME BASIC PRINCIPLES

The analysis employed here relies heavily on wealth measures because these facilitate comparisons of flows over the life cycle, which vary strongly with age. This approach makes it possible to compare the values of net inflows that occur relatively early in life with those that occur much later in life. Wealth measures also allow assessment of the economic impact of changes in survival that occur at various ages.

Wealth also depends on interest rates about which there is an extensive literature, if golden-rule growth holds a decline in the rate of population growth yields an equal decline in interest rates (Phelps 1961). Other studies (Hansen 1939, Eggertsson and Mehrotra 2014, Summers 2014, Carvalho et al. 2016) have concluded that slower population growth will lead to lower interest rates. Many studies do not agree with this conclusion (Piketty 2014). We allow for these diverse findings by relying on two scenarios. In one case, the interest rate is held constant while, in the alternative scenario, a one percentage point difference in the population growth rate is assumed to yield a one percentage point difference in the interest rate.

As is well known, the rate of return to intergenerational transfers is equal to the rate of population growth plus productivity growth, the rate of gross domestic product (GDP) growth in steady-state. The reasoning here is simple. By participating in a transfer system, one earns interest if the number of providers is growing and/or the resources per provider are growing. The resources that are available for transfers increase at the rate of GDP growth (Samuelson 1958). If golden rule growth holds that rate of interest and GDP growth will be equal, more typically the rate of return to capital (or the interest rate) exceeds GDP growth. If the rate of return to

capital or interest rates exceeds the rate of GDP growth, asset-based reallocations yield a higher rate of return than transfer systems if the reallocations are in an upward direction. This is the case for old-age reallocations. For downward reallocations, during the childrearing phase, transfer systems offer an advantage because the cost of transfer debt is lower than cost of capital. Other considerations aside, sustainable consumption is highest when downward reallocations are funded via transfers and upward reallocations relying on asset-based reallocations.

To compare economies at very different levels of development, we rely on normalized values that represent economic variables as a percentage of core labor income. By core labor income, we mean the average annual labor income of persons aged 30–49 years old. This age group has been selected to exclude the effects of important endogenous features of the life cycle, such as the ages at which an individual leaves school, enters the labor force, and retires.

The main objective of this study is to analyze member economies of the Asian Development Bank, but results are presented also for other developing and developed economies in order to provide context.

III. OLD-AGE NEEDS: CURRENT SITUATION

With few exceptions, individuals face an undeniable reality as they grow older—their current consumption will exceed and continue to exceed their labor income for the remainder of their lives. Sustaining their standard of living will require resources other than labor income. The age at which labor income becomes insufficient varies from individual to individual and systematically across economies, but in most economies, current labor income drops below current consumption at around age 60.

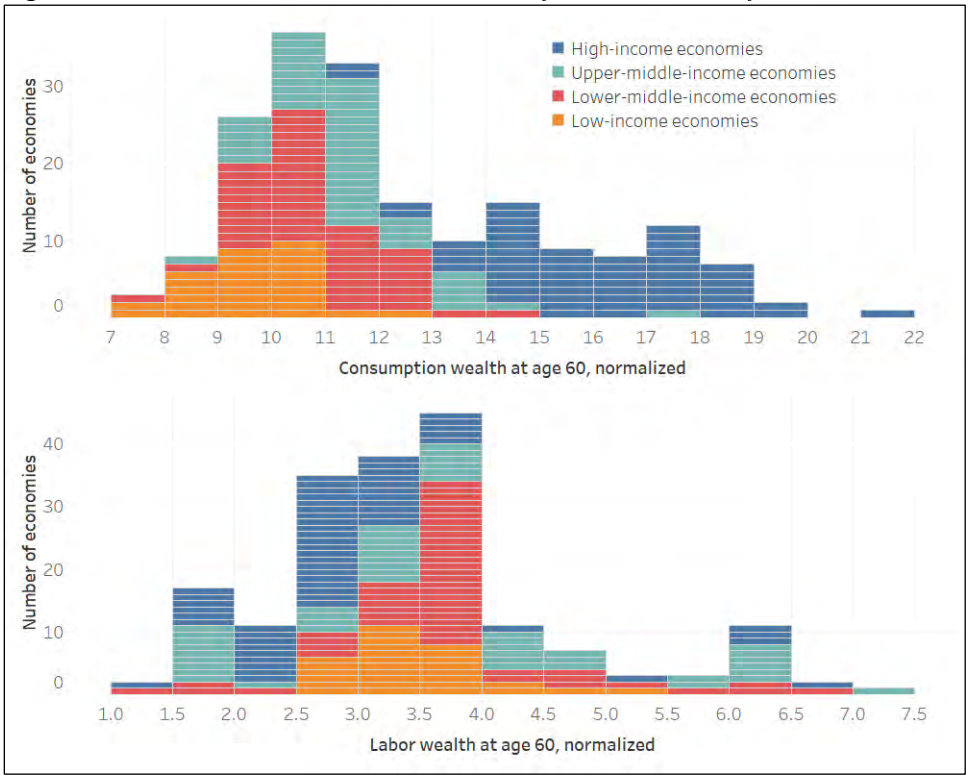
The wealth required to fund old-age needs, called life cycle wealth (LCD), depends broadly on three factors: (i) the anticipated consumption and labor income at each age, (ii) the number of years before death, and (iii) the discount rate. The analysis presented in the first part of the paper is based on strong assumptions about each of the following factors: (i) the current per capita age profiles of consumption and labor income shift upward at a constant rate of productivity growth assumed to be 1.5% per year, (ii) individuals accumulate wealth based on current survival rates (Yaari 1965), and (iii) future flows are subject to a 6% discount rate.

The estimates given these assumptions yield a naïve assessment of the impact of aging that is based on the belief that age-specific support will not decline as a consequence of aging.

LCD at age 60 employs these assumption and age profiles of consumption and labor income for 69 economies for a recent year drawn from National Transfer Accounts (Lee and Mason 2011, United Nations Department of Economic and Social Affairs: Population Division 2013). An additional 117 economies for which age profiles have been estimated (Mason, Lee, et al. 2017) bring the total to 186 economies. The survival rates for each economy are based on 2021 estimates drawn from World Population Prospects (United Nations Population Division 2022).

To facilitate comparison across varying levels of income, all values expressed relative to the average core labor income, labor income of persons aged 30–49 years old.
Consumption wealth is the wealth required, relative to annual core labor income, by those of age 60 in 2021. Labor wealth is the synthetic cohort value of labor income of those 60, again measured relative to core labor income.

Figure 1: Consumption Wealth and Labor Income Wealth of Persons Aged 60 as a Percentage of Core Labor Income, Classified by Income Group of the Economy, 2021



Note. Tableau file: wealth
Source: Authors' calculations based on data from the National Transfer Accounts.

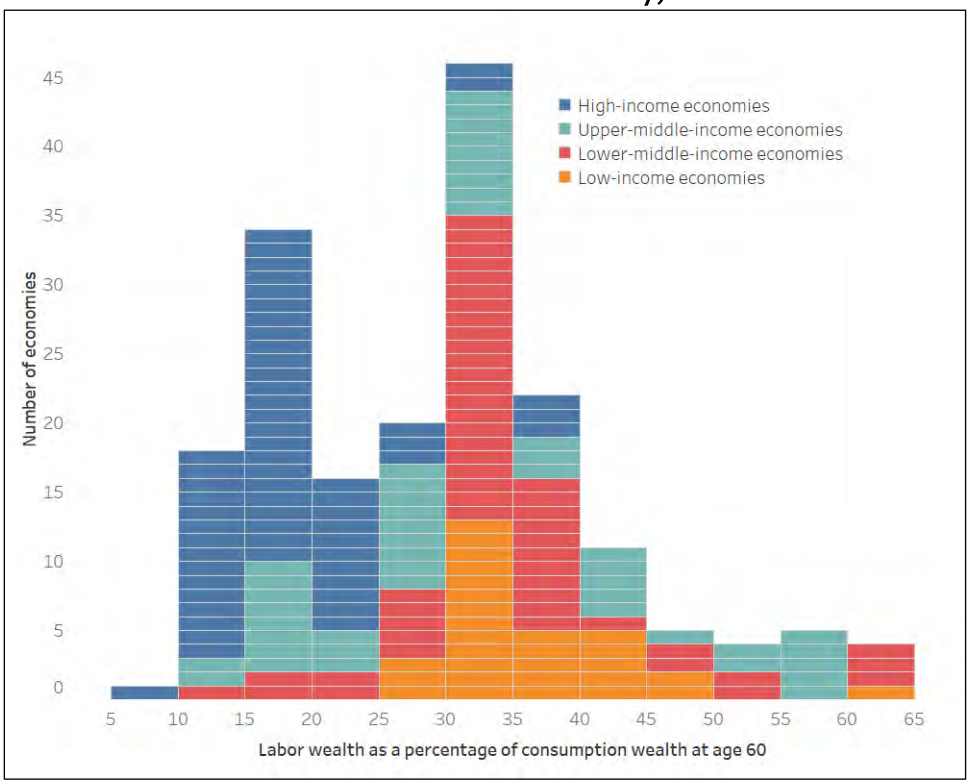
Consumption wealth varies from a low of 7 times annual core labor income to a high of 21 times annual core labor income (Figure 1). Consumption wealth is highest in high-income economies because people survive to an older age and because their per capita consumption is high and, in some cases, rising with age. Consumption wealth is highest in Japan, which exceeds 21 times core labor income. Consumption wealth is lowest in low-income economies, which rarely exceeds 11 times core labor income. Middle-income economies fall between the two extremes, with consumption wealth concentrated at 9–12 times core labor income.

Old-age labor wealth varies from one-time core labor income to a high of seven times core labor income. The great majority of economies fall in the 1.5–4.0 range. High-income economies tend to have lower labor wealth, relative to their core labor income, than other economies because labor income drops sharply at relatively young ages in many high-income economies. The age pattern of labor income is more important than the positive impact on labor wealth of high

longevity in high-income economies. The United States stands out as an exception to this pattern for major high-income economies. Its labor income wealth exceeds 6 times core labor income compared with 2.8 times for the average European economy. Labor wealth is higher in most low- and middle-income economies compared with high-income economies. In a high percentage of these economies, labor income wealth ranges from three to four times core labor income.

Because consumption wealth tends to be high and labor income wealth low in high-income economies, it is unsurprising that labor is funding a relatively small share of old-age consumption (Figure 2). In most high-income economies, labor is funding less than 25% of consumption. In low-income and middle-income economies, labor income usually funds more than 25% and, often, the share exceeds 30% of consumption. In the great majority of economies, irrespective of the level of their income, labor funds less than half of the consumption of seniors.

Figure 2: Labor Wealth as a Percentage of Consumption Wealth at Age 60, Classified by Income Status of the Economy, 2021

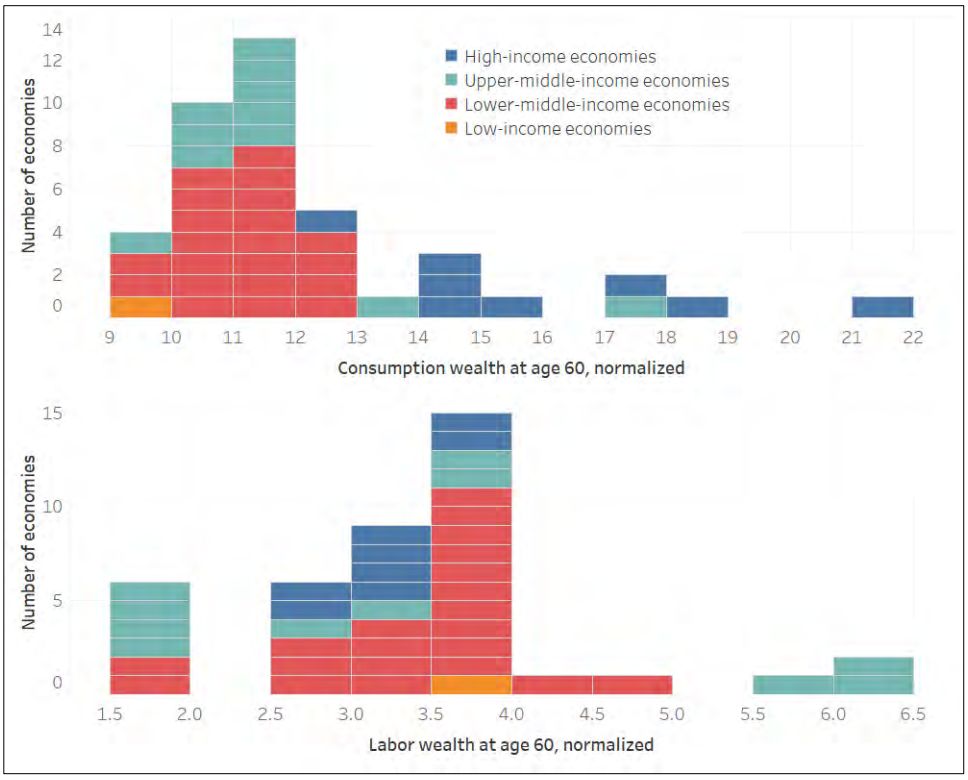


Note: Tableau file: Wealth.
Source: Authors' calculations based on data from the National Transfer Accounts.

The distributions of consumption and labor wealth at age 60 are similar for Asia and Pacific economies and for the world as a whole (Figure 3). Consumption wealth skews higher for high-income economies, while the patterns for lower- and upper middle-income economies are similar to one another. Consumption wealth is low relative to core labor income in the only low-income economy (Afghanistan) for which estimates are available.

A distinctive feature of labor wealth in Asia is a cluster of upper middle-income economies (Kazakhstan, Tonga, and Turkmenistan) with high labor wealth.

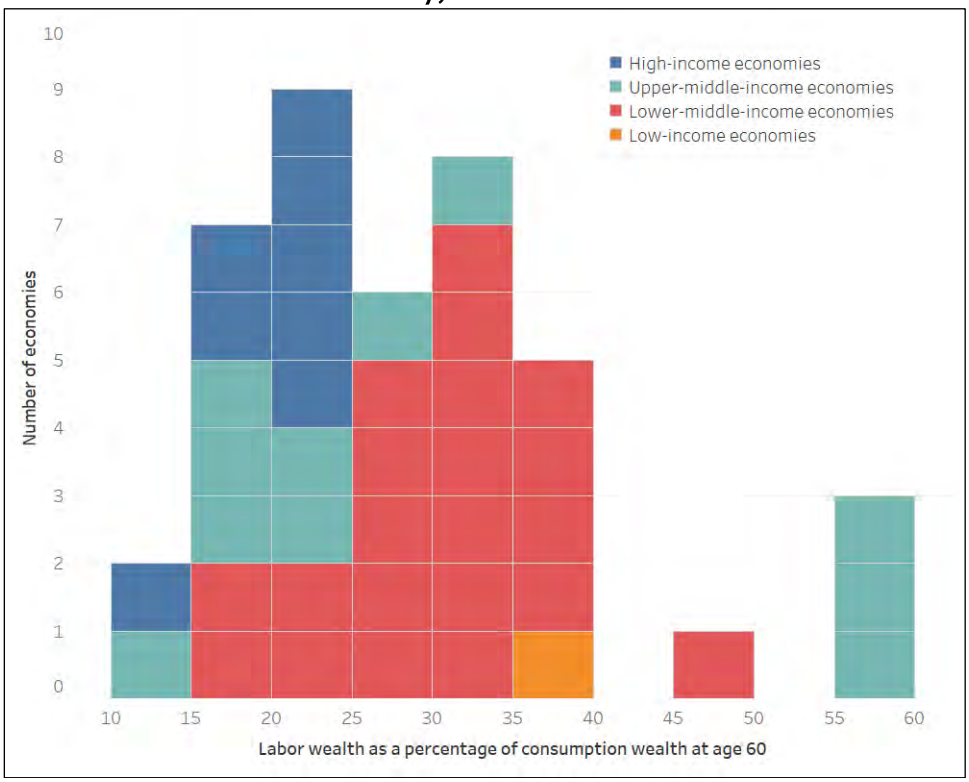
Figure 3: Consumption Wealth and Labor Income Wealth of Persons Aged 60 as a Percentage of Core Labor Income, Classified by Income Status of the Economy, Asia and the Pacific Economies, 2021



Notes: Tableau file: Wealth. The data on each economy is in Appendix Table A1.
Source: Authors' calculations based on data from the National Transfer Accounts.

The distribution of labor wealth as a percentage of consumption wealth in Asia and the Pacific is also similar to the world as a whole (Figure 4). The share of labor wealth is low in high-income economies and higher in low- and lower middle-income economies. Again, the cluster consisting of Kazakhstan, Tonga, and Turkmenistan stands out with a high share of labor wealth compared with other upper middle-income economies.

Figure 4: Labor Wealth as a Percentage of Consumption Wealth at Age 60, Classified by Income Status of the Economy, Asia and the Pacific Economies 2021



Notes: Tableau file: Wealth. The data on each economy is in Appendix Table A2.
Source: Authors' calculations based on data from the National Transfer Accounts.

Normalized consumption and labor wealth can also be interpreted as the effective years of life of consumers and workers. Average expected values of discounted years lived and normalized consumption and labor income by income groups are reported in Table 1. For all economies combined, discounted life expectancy at age 60 is 12.2 years, 14.3 years in high-income economies, and 10.4 years in low-income economies. Average normalized consumption is slightly higher than expected years lived for all economies combined, significantly higher in high-income economies and lower than years lived in low-income economies.

Table 1: Expected Discounted Years of Life at Age 60 (L60); Consumption Wealth (C60), and Labor Wealth (Yl60) at Age 60, 2021

	L60	C60	Yl60
All economies	12.2	12.6	3.6
High-income economies	14.3	16.5	3.0
Upper middle-income economies	12.1	12.0	3.7
Lower middle-income economies	11.2	10.9	3.9
Low-income economies	10.4	9.1	3.8

Source: Authors' calculations based on data from the National Transfer Accounts.

Labor wealth is equal to 3.6 times core labor income for all economies combined. Labor wealth in high-income economies is lower by about 15% compared with all economies even though years lived is greater by 17%. Longer life is not being translated into greater labor wealth for seniors. Labor wealth for other income groups varies little, ranging from 3.7 to 3.9 years. Note, however, that as a percentage of expected years lived, labor wealth is lower in middle-income economies than in lower-income economies.

The developing economies of Asia are similar, but also distinctive compared to those of other economies in the world. Expected discounted years lived after age 60 are highest in East Asia at 14.0 years and lowest in Central Asia and the Pacific at 11.4 years (Table 2). Consumption wealth at age 60 ranges from 13.3 times core labor income in East Asia to 10.5 times in Central Asia. The highest values, found in East Asia, are substantially below the values found in high-income economies even though life expectancy is similar. This difference is explained in part because consumption does not increase sharply with age except in Japan. If Japan is included, the value rises to 14.6.

Table 2: Expected Discounted Years of Life at Age 60 (L60); Consumption Wealth (C60), and Labor Wealth (Yl60) at Age 60 as a Percentage of Core Labor Income, Asia Developing Economies, 2021

	L60	C60	Yl60
Central Asia	11.4	10.5	3.8
South Asia	11.9	12.1	3.4
Southeast Asia	12.3	11.9	3.3
East Asia	14.0	13.3	2.7
The Pacific	11.4	11.0	3.6

Note: Developing member economies only. Values are simple averages of values for member economies.
Source: Authors' calculations based on data from the National Transfer Accounts.

Expected labor wealth is relatively low in Asia. In South Asia and Southeast Asia, labor wealth falls short of 3.5 times core labor income. In East Asia, labor wealth is only 2.7, 10% below the value found for high-income economies. Labor wealth at older ages is particularly low in the People's Republic of China (PRC) at 1.5 times core labor income. In only two non-Asian economies, Kenya and Slovenia, is labor wealth so low at older ages.

IV. PROJECTED CONSUMPTION, LABOR, AND LIFE CYCLE WEALTH

Consumption and labor wealth at age 60 depend on the anticipated age profiles of consumption and labor income, age-specific survival rates for those over age 60, and the rate of interest. Toward the end of this paper, we consider changes in all of these factors, but here we consider a simpler question: Given the interest rate and normalized age profiles of consumption and labor income, how will longer life affect consumption wealth, labor wealth, and the difference between the two LCD.

Projected values for 2022, 2025, and 2060 are reported in Table 3, but the values in 2022 are not emphasized because they are influenced by the short-term effects of the COVID-19 epidemic. The size of the projected changes varies from country to country and for groups of those economies, depending on how much life expectancy increases, the ages at which those increases are concentrated, and the age profiles of consumption and labor income. The influence of these factors is evident in Table 3, which shows projected consumption and labor wealth by income group. The increase for consumption wealth is high in high-income economies because gains in survival are concentrated at older ages where per capita consumption tends to be relatively high. Very similar rates of growth are projected for middle-income economies as well. The growth rates for low-income economies lag at 0.15% per annum because per capita consumption at older ages tends to be relatively low in these economies.

Table 3: Projected Consumption and Labor Wealth at Age 60, Income Groups, 2022, 2025, and 2060

	Consumption Wealth				Labor Wealth			
	2022	2025	2060	Growth Rate (%)	2022	2025	2060	Growth Rate (%)
High-income	16.1	16.4	18.0	0.26	4.7	4.7	4.8	0.06
Upper middle-income	11.9	12.6	13.8	0.27	5.0	5.1	5.3	0.12
Lower middle-income	11.1	11.7	12.7	0.25	5.1	5.2	5.4	0.11
Low-income	9.9	10.4	11.0	0.15	4.9	5.0	5.1	0.07

Note: Income groups from World Bank (2021). Values are simple averages of values for 186 economies. Growth rates are for 2025–2060.
Source: Authors' calculations based on data from the National Transfer Accounts.

Gains in longevity have much smaller effects on labor wealth than on consumption. This is particularly true of high-income economies where the annual growth rate of labor wealth is only 0.06% per year. The increase between 2025 and 2060 barely registers at 0.1 times core labor income. This outcome follows from the concentration of improved survival falling at ages where labor income is very low.

Labor wealth for upper middle-income economies and lower middle-income economies is projected to be about twice as fast as projected for high-income economies. However, the projected growth rates for these economies are still much slower for labor wealth than consumption wealth. A somewhat interesting finding is that projected labor wealth is growing so slowly in low-income economies.

Table 4: Projected Consumption and Labor Wealth at Age 60, Subregions of Asia, 2022, 2025, 2060

	Consumption Wealth				Labor Wealth			
	2022	2025	2060	Growth Rate (%)	2022	2025	2060	Growth Rate (%)
Central Asia	10.9	11.4	15.5	0.27	5.0	5.1	5.4	0.12
South Asia	12.4	12.8	14.3	0.31	4.9	4.9	5.2	0.12
Southeast Asia	12.4	12.7	13.9	0.25	4.5	4.5	4.7	0.11
East Asia	13.5	13.8	15.1	0.27	3.9	3.9	4.0	0.09
The Pacific	11.3	11.4	12.5	0.27	4.8	4.8	5.0	0.12

Notes: Asian Development Bank developing member economies only. Values are simple averages of values for member economies. Growth ratee are for 2025–2060.
Source: Authors' calculations based on data from the National Transfer Accounts.

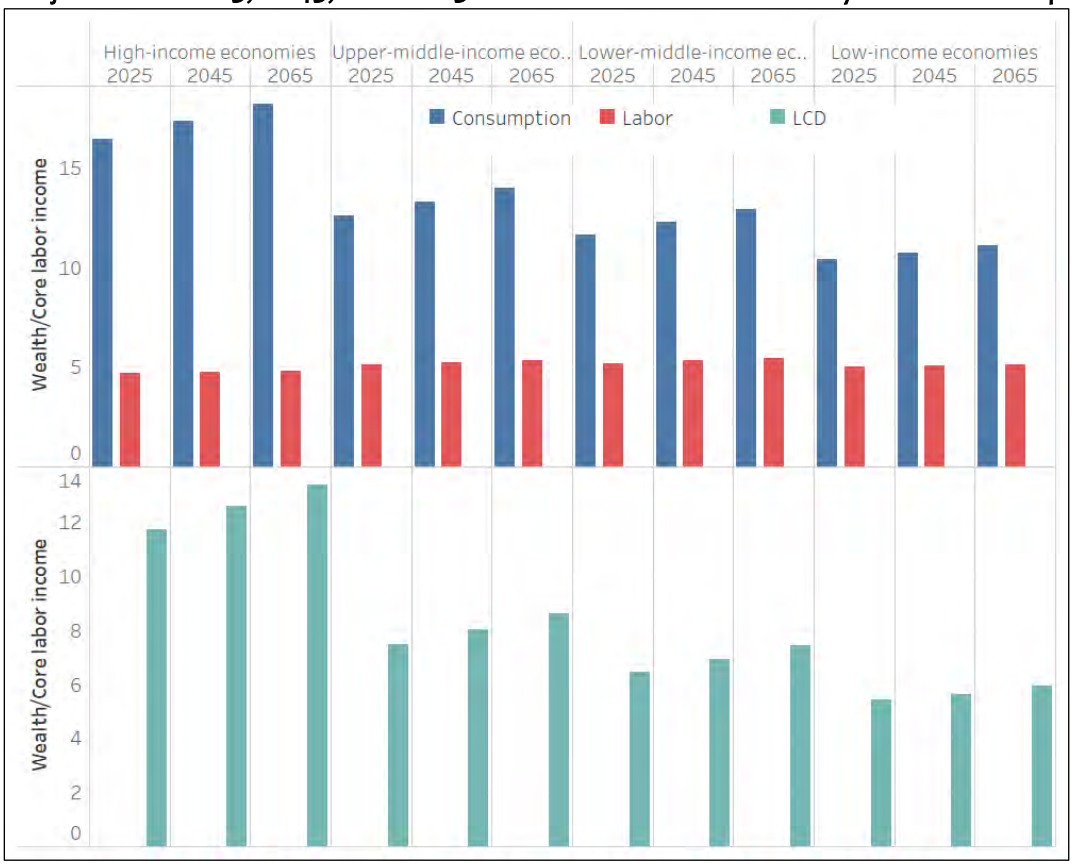
The projected values of consumption and labor income for the Asian developing economies exhibit patterns that are similar to the values for upper middle-income and lower middle-income economies for the world (Table 4). The growth rates of projected consumption wealth are about one-quarter of a percent per year, a little faster for South Asia. The growth rates of labor wealth are 0.11% or 0.12% per year, except in East Asia. The bottom line is that labor wealth is growing because people are living longer, but consumption wealth is growing about twice as fast or, in the case of East Asia, three times as fast when compared with labor wealth.

In the absence of changes in age patterns of consumption and labor income, the coming gains in life expectancy will lead to an increase in old-age labor wealth that will be small and substantially less than the projected increase in consumption wealth. As a result, the old-age LCD, calculated as the difference between consumption wealth and labor wealth, will increase significantly everywhere (Figure 5).

LCD at age 60 is greatest for high-income economies at 11.7 times core labor income in 2025 and it will increase substantially, rising to 13.4 times core labor income in 2065. The increase over the projection period of 1.7 times core labor income is greater than the increases elsewhere. Over the 40-year period, the increase for upper middle-income economies is projected to be 1.1 times core labor income and, for lower middle-income economies, the increase is projected to be 1.0 times core labor income, whereas, in low-income economies, the increase is only 0.5 years.

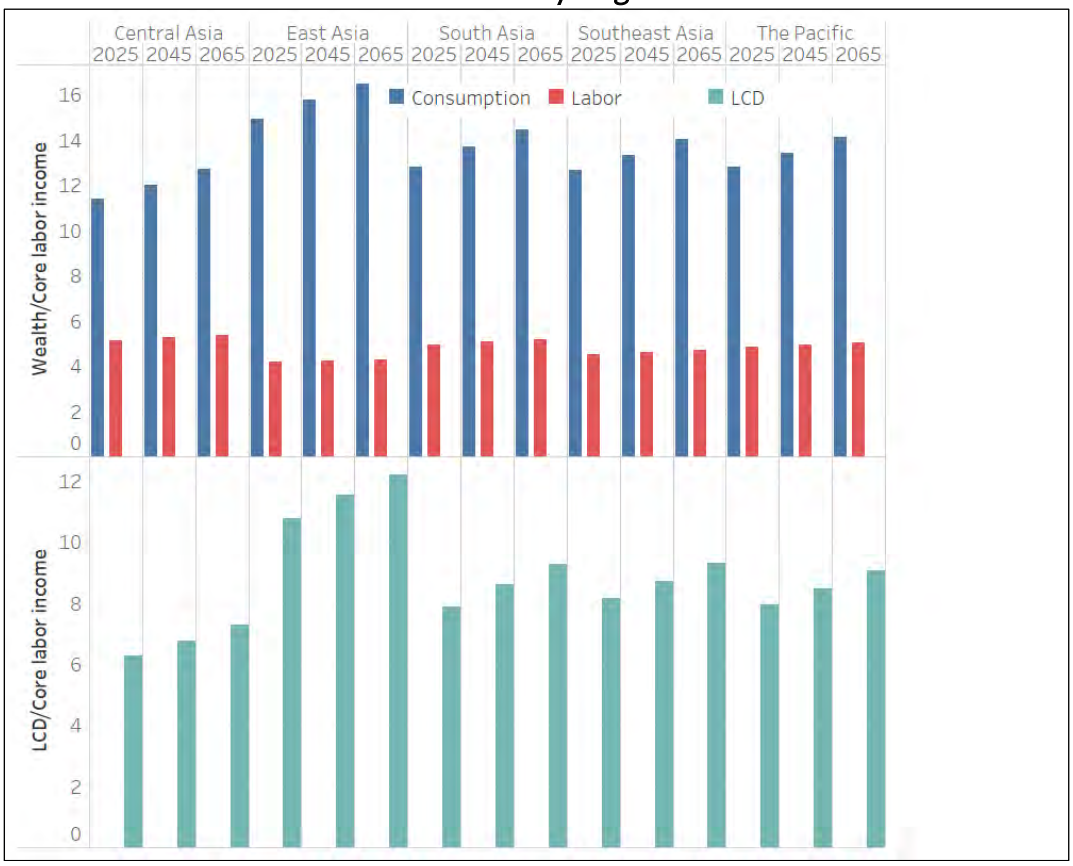
The demand for LCD is projected to rise in all subregions of Asia and in the Pacific. In East Asia, LCD is projected to increase from 10.8 times core labor income to 12.2 times core labor income between 2025 and 2065 (Figure 6). The 40 years increase of 1.4 times core labor income is greater than in other subregions of Asia or the Pacific. The increases for other subregions of Asia and the Pacific are similar to one another ranging between 1.0 times and 1.3 times core labor income.

Figure 5: Consumption Wealth, Labor Wealth, and Life Cycle Wealth (LCD) at Age 60 Projected to 2025, 2045, and 2065 for Economies Classified by Income Group



Notes: Values are simple averages of economies. File: Projected Wealth.v2.
Source: Authors' calculations based on data from the National Transfer Accounts.

Figure 6: Consumption Wealth, Labor Wealth, and Life Cycle Wealth (LCD) at Age 60 Projected to 2025, 2045, and 2065 for Asia and Pacific Developing Member Economies Classified by Region



Notes: Values are simple averages for member economies. File: Projected Wealth.v2.
Source: Authors' calculations based on data from the National Transfer Accounts.

V. REALLOCATIONS

The gap between consumption and labor income, the life cycle deficit, at any age is funded in one of two ways: by relying on transfers or by relying on assets. This principle is embodied in the age-specific flow constraint:

$$c(x.t) - yl(x,t) = \tau(x,t) + ya(x,t) - s(x,t) \qquad (0.1)$$

where $c(x.t)$ is consumption at age x in year t, $yl(x,t)$ is labor income at age x in year t, $\tau(x,t)$ is net transfers at age x in year t, $ya(x,t)$ is asset income at age x in year t, and $s(x,t)$ is saving at age x in year t. The identity holds for individuals or groups using per capita or aggregate values. Net transfers are transfer inflows less transfer outflows, and are comprised of public and private transfers. The most important public transfers for seniors are publicly funded pensions and health care programs, but public transfer inflows to seniors include cash and in-kind transfers of all kinds. Public transfer outflows from seniors consist primarily of taxes paid by seniors,

irrespective of the purpose for which those taxes are used. Private transfers include both between and within household private transfers. Within household transfers are the most important private transfer and include the value of goods and services, including the value of housing, that accrue to seniors who live with their adult offspring (Lee and Mason 2011).

Asset-based reallocations refer to the flows that arise as described in the classic life cycle saving model (Ando and Modigliani 1963). Young and middle-age adults save during their working years, accumulating wealth on which they can rely in old-age. Asset-based reallocations for seniors consists of income from accumulated assets less saving (or plus dissaving). Asset-based reallocations can be used to fund life cycle needs at younger ages. For example, young adults may rely on student loans, but these kinds of reallocations are small compared with asset-based reallocations that are used to support old-age needs.

The nature of reallocation systems around the world have been reported fairly extensively in previous research (Lee and Mason 2011, Mason and Lee 2018), which shows a great deal of diversity across economies. Public transfers to seniors typically exceed two-thirds of their life cycle deficits in European and Latin America economies. In some cases, net public transfers to seniors exceed 100% of their life cycle deficit. Public transfers in East Asian and Anglo-American economies tend to be more modest, often varying between one-third and two-thirds of the old-age life cycle deficit. In other Asian economies public pension and health care programs are relatively underdeveloped and, hence, net public transfers to seniors are quite modest.

How are old-age needs around the world funded if not through public transfer programs? Private transfers and asset-based reallocations are the possible candidates. Of these, asset-based reallocations usually play the most important role. Even in low-income economies, people have farms, small-scale businesses, and homes that they can rely on in old-age. Note that the per capita and aggregate values reported in this research are heavily influenced by higher-income individuals, who often are much wealthier than the typical individual.

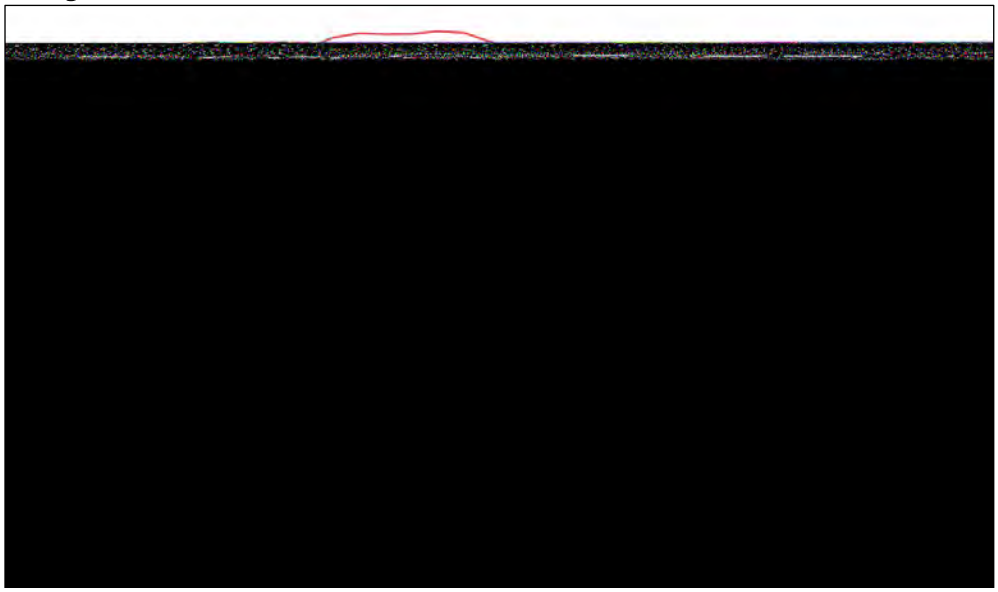
Seniors depend less on net transfers from their adult children than might be expected, but seniors depend more on family in some Asian economies than is the case elsewhere. Private transfers in East Asia have been important in the past, but are less so than they once were. The PRC; Taipei,China; the Republic of Korea (ROK); and Singapore are economies where familial transfers (private transfers) are still important.

Reallocations for seniors are often heavily influenced by the age of those seniors. Both net family transfers and net public transfers increase in age in many economies, while asset-based reallocations often decrease at older ages. Seniors who are younger may have relatively high assets and asset income because wages were generally high during their working years. Moreover, as seniors proceed through their lives, their asset-income may decline as they dis-accumulate assets to support their material needs.

The age profiles of reallocations, normalized on core labor income and averaged across 10 Asian economies, are shown in Figure 7. The upper age-group varies across economies, leading to changes at age 80 and age 85 that reflect changes in the composition of the sample. (Age profiles by single years of age for each country are in Figures 8–10.) Public and private transfers have similar age patterns that rise steadily with age. Net public transfers to seniors are positive beginning at age 62, and reach a peak of about one-quarter of core labor income at age 90. Net private transfers turn positive at an older age, 70. Before then, family transfers from seniors that support children are more important than family transfers received by seniors. Consistently, private transfers are less important than public transfers, and reach 15% of core labor income at age 90.

Asset-based reallocations rise during the 60s and reach a flat plateau at about 35% of core labor income. Asset-based reallocations decline at older ages, and by age 90 are about 15% of core labor income.

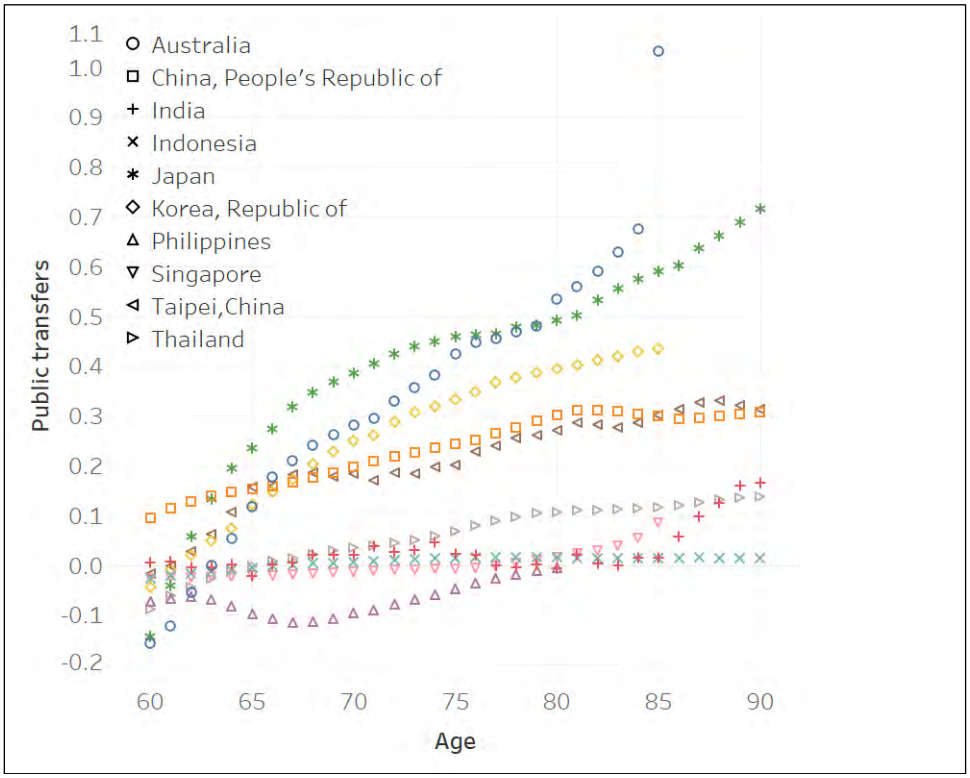
Figure 7: Age Reallocations Relative to Core Labor Income for Ten Asian Economies



Notes: Values are simple averages for the economies. Profiles are available for all 10 economies for ages 80 and less.
Source: Authors' calculations based on data from the National Transfer Accounts.

The diversity of the reallocation systems in Asia are apparent in Figures 8, 9, and 10, which show the per capita age profiles of public transfers, private transfers, and asset-based reallocations for each of the 10 Asian economies for which estimates are available. Net per capita public transfers are generally greatest in the economies with high income and old populations. This includes Australia; Japan; the ROK; and Taipei,China. Net public transfers are relatively high also in the PRC, even though the standard of living is lower and aging less advanced than in the other four economies. Net public transfers are much lower in the other five economies, including high-income Singapore.

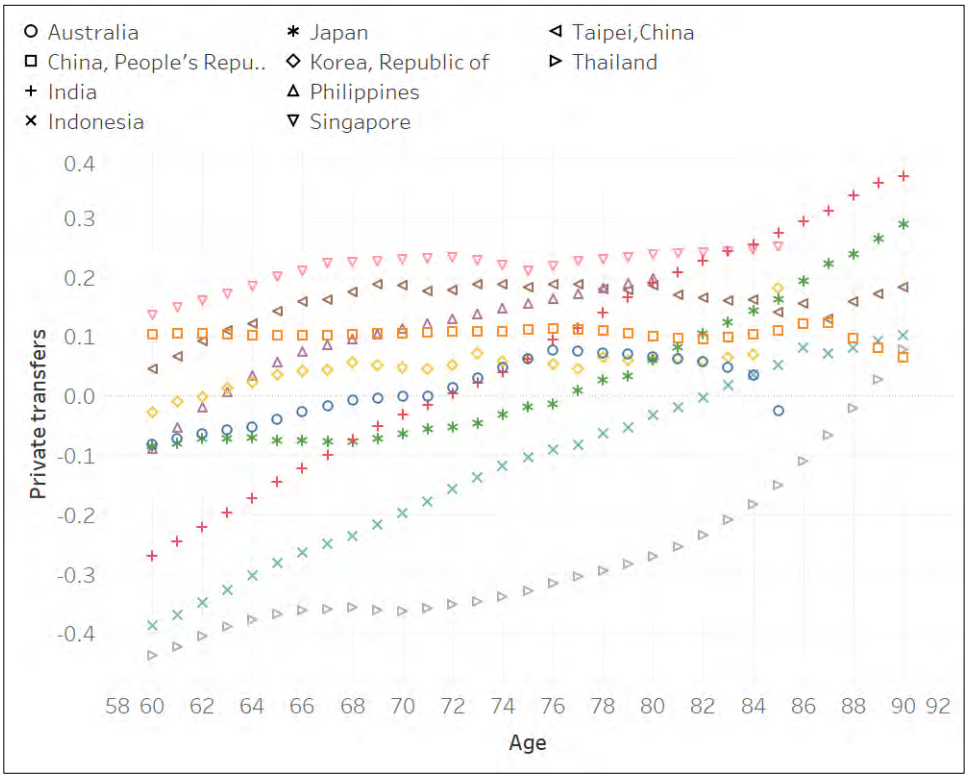
Figure 8: Per Capita Public Transfers Relative to Core Labor Income by Single Year of Age, 60 and Older, Ten Asian Economies



Source: Authors' calculations based on data from the National Transfer Accounts.

Private transfers are generally lower than public transfers, and there is no evident connection between private transfers and standards of living. Nor is there any clear tradeoff between public and private transfers. For those in their 70s, private transfers are highest for some of the economies which eschew public transfers: Singapore and the Philippines. But private transfers are also relatively high in Taipei,China and the PRC even though public transfers were relatively high in these economies. Thailand and Indonesia have very low private transfers, even though they had low public transfers also.

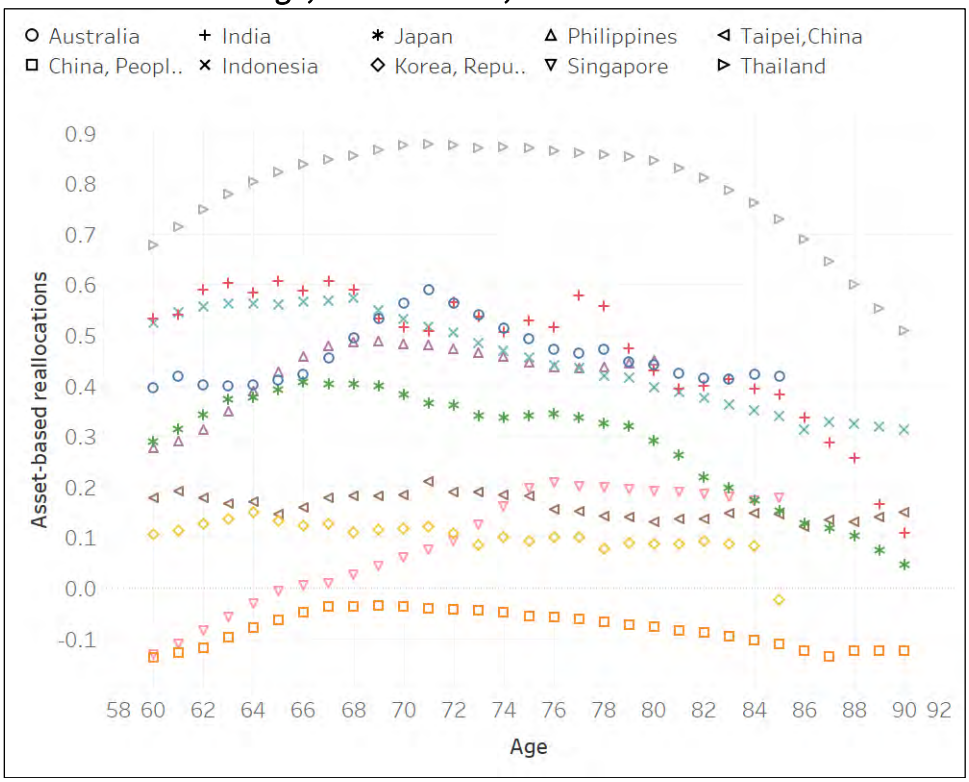
Figure 9: Per Capita Private Transfers Relative to Core Labor Income by Single Year of Age, 60 and Older, Ten Asian Economies



Source: Authors' calculations based on data from the National Transfer Accounts.

Asset-based reallocations are very high in Thailand, and also high in Indonesia and India. They are relatively low in the PRC; Singapore; Taipei,China; and the ROK, economies where saving rates are high. In several Asian economies, asset-based reallocations decline substantially at the oldest old ages. Examples include Thailand, India, Indonesia, and Japan. The decline at older ages noted in Figure 7 for Asia as a whole is far from universal, however. In Singapore; the ROK; and Taipei,China, asset-based reallocations are relatively flat at older ages.

Figure 10: Per Capita Asset-Based Reallocations Relative to Core Labor Income by Single Year of Age, 60 and Older, Ten Asian Economies



Source: Authors' calculations based on data from the National Transfer Accounts.

VI. THE IMPACT OF AGING: PROJECTED REALLOCATIONS

The age profiles shown in Figures 8–10 are per capita flows for survivors—those who are alive at each age. The importance of reallocations depends also on the extent to which people survive to any particular age. As with consumption wealth and labor income wealth, projected reallocation wealth incorporates the effects of survival. As above, projected reallocation wealth at age 60 is used to quantify the importance of each reallocation and the changes that will occur over time as survival rates improve.

The projections of reallocation wealth for 10 Asian economies for 2022, 2025, 2045, and 2065 are reported in Appendix Table A3, which reports consumption wealth at age 60 relative to core labor income and wealth components (labor, public transfers, private transfers, and asset-based reallocations) as a share of consumption wealth. By definition, the shares must sum to 1. The results reported in Appendix Table A3 and Table 5 are useful for exploring the short-term effects of COVID-19 by examining the recovery period of 2022–2025. Information about the impact of COVID-19 on mortality is not entirely reliable at this point, but judging from the currently available data on mortality, changes were particularly important in only 2 of the 10 Asian economies being analyzed here. In India and Indonesia, recovery from elevated mortality is expected to have a significant impact on consumption wealth between 2022 and 2025 (Table

5). Consumption wealth is projected to increase from 8.4 times core labor income to 9.5 times core labor income in India and from 7.1 to 7.7 in Indonesia. The increases in other Asian economies were 0.1 or less. Taipei,China appears to be an exception to this generalization, but this is because of rounding. The values for 2022 and 2025 were 10.247–10.352.)

The implications for funding old-age needs for economies that did experience COVID-19 shocks are interesting. In India, the projected share of consumption wealth funded by asset-based reallocations and public transfers were unaffected by the changes in age structure that can be traced to the COVID-19 shock. The projected share funded by labor income declined substantially between 2022 and 2025 because survival increased at ages with low labor income. Nearly offsetting the increased share in labor income is a rise (to a smaller negative value) in private transfers. Again, this occurs because net private transfers from seniors to their offspring are lower at advanced ages.

The magnitudes for Indonesia are somewhat smaller, but the qualitative changes are similar to those found for India. The share of labor income is projected to decline, while the share of private transfers is projected to increase.

Setting the changes in India and Indonesia aside, projected changes in survival associated with recovery from COVID-19 are expected to be very small.

The longer-term impact of aging on projected reallocations are assessed by fitting regression for each country of the form:

$$\begin{aligned} \frac{TGW60(t)}{CW60(t)} &= a_1 + b_1 CW60(t) \\ \frac{TFW60(t)}{CW60(t)} &= a_2 + b_2 CW60(t) \\ \frac{RAW60(t)}{CW60(t)} &= a_3 + b_3 CW60(t) \end{aligned} \qquad (0.2)$$

The variables on the left-hand-side are the projected shares of consumption wealth funded through public transfer wealth (TGW), private transfer wealth (TFW), and asset-based reallocation wealth (RAW); CW60 is consumption wealth at age 60. All values are expressed relative to average core labor income. CW60 is a measure of aging—the expected discounted years of consumption at age 60. The full set of United Nations projections for 2022–2100 are used to fit the regression lines. The actual (projected) values and the predicted values are virtually indistinguishable. The partial effects, b1, b2, and b3, are reported in percentage terms in Table 5.

Table 5: The Projected Impact of an Increase in Consumption Wealth at Age 60 on Age Reallocations

	Consumption Wealth at Age 60			Partial Effect (%) of an Increase in Consumption Wealth		
Economy	2022	2025	2065	Public Transfer	Private Transfers	Asset-Based Reallocations
Australia	12.0	12.1	13.3	2.80	0.28	-0.34
China, People's Republic of	4.6	4.7	5.2	6.47	0.24	0.14
India	8.4	9.5	10.9	0.33	2.60	0.19
Indonesia	7.1	7.7	8.6	0.33	2.89	-0.63
Japan	12.7	12.8	14.0	2.32	1.18	-0.97
Korea, Republic of	8.9	8.9	9.7	3.68	1.35	-0.81
Philippines	8.2	8.2	9.1	0.50	2.00	1.10
Singapore	7.3	7.4	8.0	1.14	1.08	3.28
Taipei,China	10.2	10.4	11.3	1.76	0.62	-0.27
Thailand	10.1	10.2	11.1	1.05	1.94	-0.29
Average	8.95	9.19	10.12	2.04	1.42	0.14

Note; The impact is assessed by regressing projected values of each reallocation, as a share of consumption wealth, on the projected value of consumption wealth at age 60.
Source: Authors' calculations based on data from the National Transfer Accounts.

The importance of labor income to funding old-age needs will decline in all Asian economies as is clear from comparing the projected growth rates in Table 4. This occurs because the gains in survival are more heavily concentrated at the working ages compared with the consuming ages. Among the developing economies, the changes vary from 2% to 4% of consumption wealth. The projected decline in the labor income share is somewhat typical in the Philippines, dropping from 55.3% to 51.7% between 2025 and 2065, a decline of almost four percentage points. Projected declines are greater for the PRC, India, and Singapore, while they are smaller in the other economies. The smallest projected decline is Taipei,China (2.3 percentage points), while the largest is for India (4.3 percentage points).

How do reallocations compensate for the decline in labor income as they must? In all cases, aging leads to an increase in both public and private transfer shares. The partial effect for public transfers is highest in Japan, Australia, the ROK, and particularly the PRC. The partial effects in India, Indonesia, and the Philippines are positive, but very small. The partial effects for private transfers are highest in Indonesia, India, the Philippines, and Thailand, but they are less than 3% in all cases. The effects in Australia; the PRC; and Taipei,China are very small.

The effect of increased survival on asset-based reallocations is of little or no importance in most economies in Table 5. Singapore is something of an exception, with a positive effect of 3.3%. In the Philippines, the partial effect is 1.1%, and in Japan aging is leading to a decline in the share funded by asset-based reallocation of almost 1%. Otherwise, increases in survival will not play an important role.

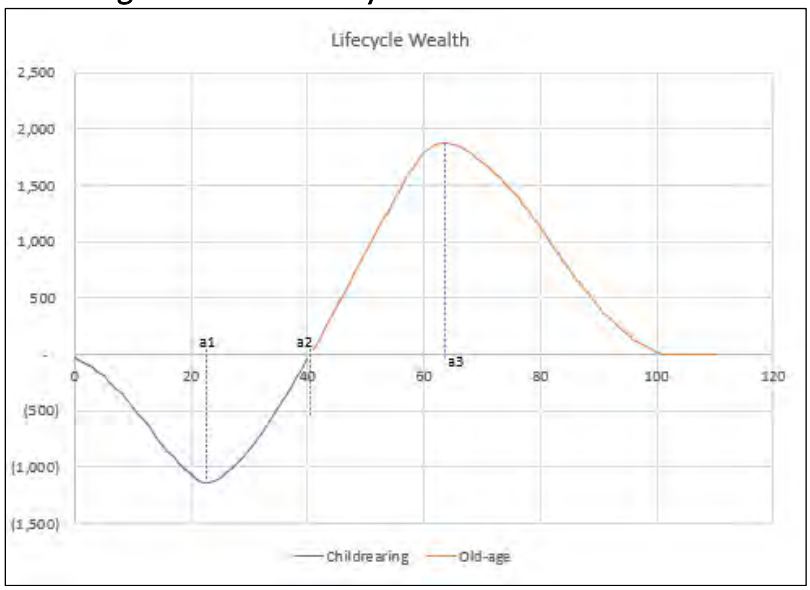
The projections shown here are based on the assumption that current age profiles of age reallocations persist into the indefinite future. Possibly, this approach approximates how seniors perceive the support that they are likely to receive in the future. If seniors follow these paths, it will be at considerable expense to younger generations who will be fewer in number and not in a position to fund public programs for seniors. In the following sections, we explore reforms that can be sustainable as population aging occurs.

VII. WEALTH AND SUSTAINABLE CONSUMPTION OVER THE LIFE CYCLE

Wealth is broadly conceived as the value of net claims on future resources used to satisfy life cycle needs. Wealth comes in two forms: assets and transfer wealth. Assets consist of capital, credit, and other assets that are typically accumulated during the working ages and employed to fund retirement in old-age. Transfer wealth arises as a consequence of social contracts. Children receive support when young and provide support during their childrearing years. Seniors receive support when they are old as "compensation" for support they provided to seniors when they were prime-age adults.

The life cycle experience is comprised of four phases of wealth (Figure 11). Children have no wealth at birth and accumulate debt, negative wealth, during the childhood phase of life. At the end of the childhood phase comes the childrearing phase, during which adults contribute financially to childrearing by paying taxes or providing transfers that support children. Over that childrearing phase, adults are paying off the debt incurred during their childhood until life cycle debt is paid off and wealth reaches zero.

Figure 11: The Life Cycle of Wealth Illustrated



Note: Age a1 marks end of childhood; age a2 transition from funding childrearing to funding old-age needs; age a3 is transition from preretirement to retirement.
Source: Authors' illustration.

Childrearing reallocations consist primarily of public or private transfers. One could imagine a case in which children borrow to fund their needs and repay accumulated debt themselves. Indeed, older children may support themselves by acquiring student loans or relying on credit card debt, but this is relatively unimportant. The importance of transfer wealth can be traced in large part to legal systems that prevent children from incurring debt.

During the third phase, wealth is accumulated in anticipation of old-age needs, and, in the fourth phase, wealth declines as it is used to fund the life cycle deficits faced at old-ages. At the end of life, wealth is zero achieved by relying on annuities to respond to uncertainty about the end of life (Yaari 1965).

In reality, the phases of wealth are overlapping. Younger adults often accumulate wealth devoted to their retirement and older adults, including seniors, provide support for childrearing. We rely on distinct phases to achieve analytic tractability.

The analysis presented is confined to sustainable paths of consumption and wealth. By sustainable, we mean that successive generations or cohorts begin and end life without depending on the wealth of other generations. Under these conditions, wealth at the beginning and wealth at the end of life are zero.

We consider only steady-state analysis. The population by age grows at rate n, which is exogenously determined, and age-specific survival rates, which do not change over time and are based on values for each country, projected values for 2022 drawn from the United Nations. The populations are closed to immigration.

The shapes of the age profile of consumption and labor income are fixed based on country-specific values drawn from the National Transfer Accounts. The level of the consumption profiles is endogenously determined to achieve sustainability.

A. Child Debt

Child debt is the path of debt for a cohort of age x over the age span of 0 to a_2. To simplify, we drop the year from the notation. Let W(x) be childhood debt, r_1 be the discount rate, and $\beta C(x)$ and Yl(x) be consumption and labor income at age x where β is the endogenously determined level of consumption.

$$W(x) = \int_0^x e^{r_1 z} \left[\beta C(z) - Yl(z) \right] dz \tag{0.3}$$

Rearranging terms, we have:

$$= \beta \int_0^x e^{r_1 z} C(z) dz - \int_0^x e^{r_1 z} Yl(z) dz \tag{0.4}$$

The age at which childrearing debt is paid off, a2, is reached when:

$$\beta \int_0^{a2} e^{r_1 z} C(z)dz = \int_0^{a2} e^{r_1 z} Yl(z)dz. \quad (0.5)$$

The age at which childrearing debt is paid off increases with the level of consumption β.

B. Retirement Wealth

Retirement wealth is equal to zero at the end of life (D) having been dis-accumulated during the retirement phase and accumulated during preretirement.

$$W(x) = \int_x^D e^{-r_2 z} \left[\beta C(z) - Yl(z)\right]dz \quad (0.6)$$

Following similar procedures as above, the age at which preretirement begins is:

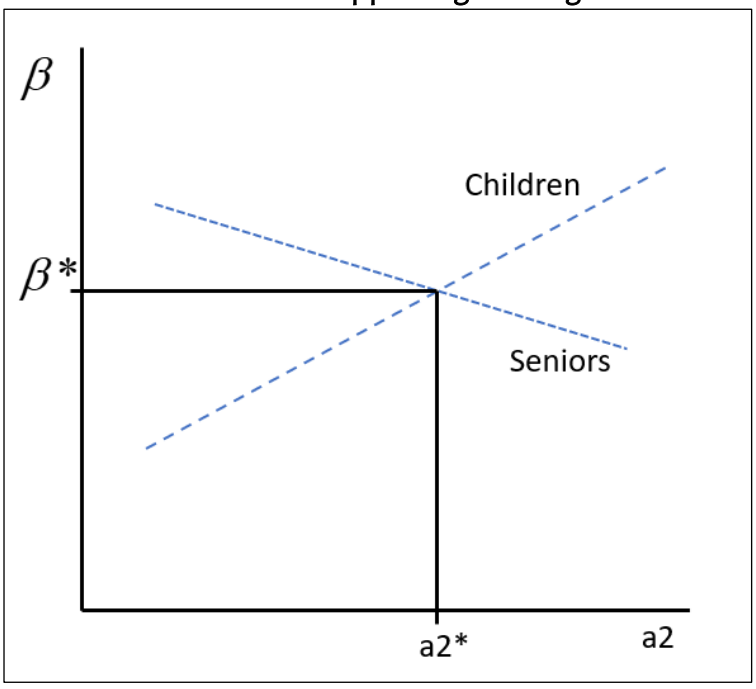
$$\beta \int_{a2'}^D e^{-r_2 z} C(z)dz = \int_{a2'}^D e^{-r2_1 z} Yl(z)dz \quad (0.7)$$

When the level of consumption is higher, preretirement must begin at an earlier age in order to fund retirement needs.

C. Reconciliation

A high level of consumption for children could be realized by allowing for an extended period of childrearing (a greater a2), but this would lead to a delay in preparing for retirement and, hence, a lower level of consumption for seniors (Figure 12).

Figure 12: Sustainable Level of Consumption Given Age at Transition from Supporting Children to Supporting Old-Age



Source: Authors' illustration.

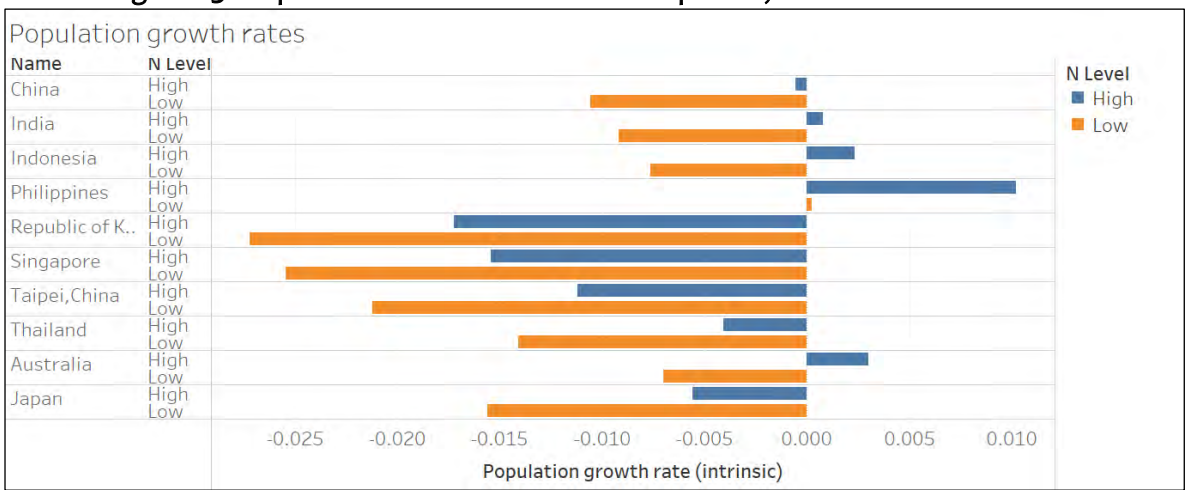
Likewise, a high level of consumption for seniors could be realized by allowing for an extended period of preretirement (a lower a2), but this would lead to a lower level of consumption for children. An equilibrium is attained when the level of consumption and the age at which transition from childrearing to preretirement are achieved at the same age.

D. Scenarios

For each of the 10 economies, 8 scenarios are constructed to capture the effects of population growth (or aging), policy regarding old-age reallocations, and the connection between interest rates and population growth. The outcomes for individual economies also depend on country-specific variables: the per capita age profiles of consumption and labor income and age-specific survival rates.

For each country, we consider the impact of a 1 percentage point change in the rate of population growth. For every country, one of the population growth rate scenarios is based on the intrinsic rate of population growth corresponding to the total fertility rate in 2019 as reported by the United Nations. The intrinsic rate is the rate of population growth that would prevail if the 2019 total fertility rate persists. For economies with a negative intrinsic rate of population growth, the alternative scenario assumes that the intrinsic rate of population growth will increase by one percentage point. For example, the low scenario for the ROK is based on an intrinsic population growth rate of -2.7% per year, and the high scenario is based on a population growth rates of -1.7% per year. Seven of the 10 economies currently have below replacement fertility and, hence, the scenarios for these economies assume that, under the high-population growth scenario, population growth will be higher than the current values. Currently, three economies—India, Indonesia, and the Philippines—have positive intrinsic population growth rates, designated as high population growth rates. Their low rates anticipated a one-percentage point decline from current values (Figure 13).

Figure 13: Population Growth Rate Assumptions, Ten Asian Economies



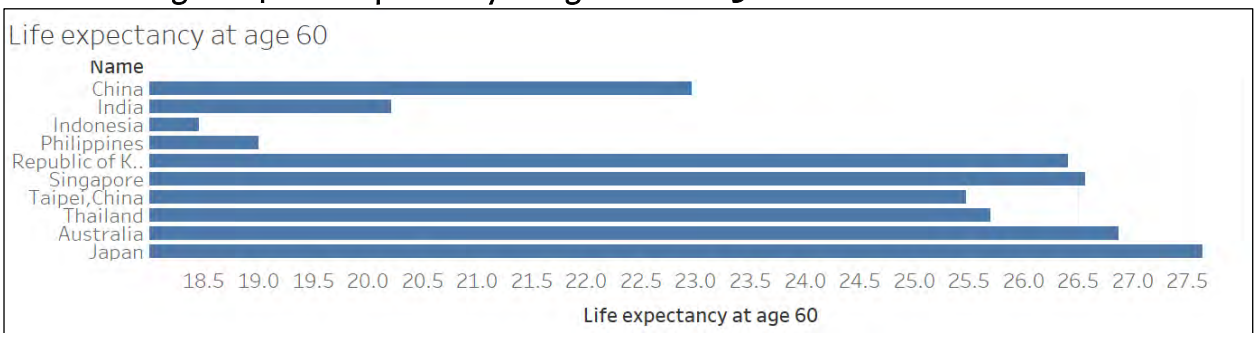
Source: United Nations Population Division (2022). World Population Prospects 2022.

In one set of scenarios, the discount rate is assumed to be fixed at 6% per annum for all economies. In the alternative scenarios, the discount rate is endogenous and equal to 6% plus the change in the population growth rate, either plus or minus 1 percentage point as explained below.

Policy towards old-age reallocations is measured as the share of the old-age deficit funded by transfers, either two-thirds or one-third funded by transfers. The remainder is funded by asset-based reallocations. The old-age transfer shares are not based on current age-specific values for each country.

The impact of aging for these economies depends on changes in survival, old-age survival in particular, as discussed in detail above. The scenario holds age-specific survival rates constant at the 2025 values for each country based on the United Nations estimates. The 2025 values are employed to eliminate the short-term effects of COVID-19 mortality. The life expectancy at age 60 for each country is reported in Figure 14.

Figure 14: Life Expectancy at Age 60 in 2025 for Ten Asian Economies



Source: United Nations Population Division (2022). World Population Prospects 2022.

The age profiles are quite distinctive across economies in Asia and the Pacific. The PRC has very low consumption relative to its labor income. Seniors have relatively low consumption relative to young adults in the ROK, while in Japan consumption of seniors is very high relative to younger adults. There are other important differences that will influence the results from the analysis.

E. Consumption Level

Of particular interest in this analysis is the impact of the old-age support system on sustainable consumption. We compare systems in which either two-thirds or one-third of the old-age deficit is funded by transfers with the remaining share funded by asset-based reallocations. The values reported in Table 6 are the simple averages for the 10 economies for which simulations have been carried out. The average values are instructive, but note that the values for individual economies, presented below, vary considerably from one another.

The first panel of Table 6 reports simulations for which the discount rate is fixed at 6% for all economies, whereas the lower panel is based on simulations for which the discount rate varies

with the population growth rate. The population growth rate is one percentage point lower for low scenarios compared with high scenarios. The observed age profiles of consumption and labor income are sustainable on average, 1.0 or greater, for one set of simulations: a high rate of population growth and low reliance on transfers. This is true whether the discount rate is fixed or endogenous.

The partial effect reported in the final column is the increase in the sustainable consumption level, if economies rely heavily on asset-based reallocations rather than on transfers. The partial effect varies between 6.9 percentage points and 7.7 percentage points. The partial effects are somewhat lower, if the population growth rate is low rather than high.

Table 6: Simulated Values of Sustainable Consumption, Average Values for Ten Economies

Old-Age Transfer Share	Population Growth Rate	Consumption Level	Partial Effect
Fixed discount rate			
Two-thirds	Low	0.880	0.077
One-third	Low	0.957	
Two-thirds	High	0.940	0.069
One-third	High	1.009	
Endogenous discount rate			
Two-thirds	Low	0.888	0.074
One-third	Low	0.962	
Two-thirds	High	0.951	0.069
One-third	High	1.020	

Source: Authors' calculations based on data from the National Transfer Accounts.

The simulated values for individual economies are reported in Table 7. The largest impact on consumption of increased reliance on asset-based reallocations is found in the PRC (12%–13%) followed by Singapore (9%–11%) among developing economies. Similar simulated effects are found for Japan (8%–12%).

Table 7: Simulated Values of Sustainable Consumption, Ten Economies

Economy	Old-Age Transfer Share	Population Growth Rate	Consumption Level	Partial Effect	Consumption Level	Partial Effect
			Fixed Discount Rate		Endogenous Discount Rate	
PRC	Two-thirds	Low	1.30	0.13	1.32	0.13
PRC	One-third	Low	1.43		1.45	
PRC	Two-thirds	High	1.40	0.12	1.42	0.13
PRC	One-third	High	1.52		1.55	
India	Two-thirds	Low	0.93	0.05	0.91	0.05
India	One-third	Low	0.98		0.96	
India	Two-thirds	High	0.96	0.06	0.96	0.04

India	One-third	High	1.02		1.00	
Indonesia	Two-thirds	Low	0.92	0.03	0.92	0.02
Indonesia	One-third	Low	0.95		0.94	
Indonesia	Two-thirds	High	0.96	0.02	0.96	0.02
Indonesia	One-third	High	0.98		0.98	
Philippines	Two-thirds	Low	1.03	0.07	1.01	0.05
Philippines	One-third	Low	1.10		1.06	
Philippines	Two-thirds	High	1.07	0.05	1.07	0.03
Philippines	One-third	High	1.12		1.10	
ROK	Two-thirds	Low	0.70	0.07	0.72	0.05
ROK	One-third	Low	0.77		0.77	
ROK	Two-thirds	High	0.77	0.08	0.79	0.06
ROK	One-third	High	0.85		0.85	
Singapore	Two-thirds	Low	0.92	0.09	0.94	0.11
Singapore	One-third	Low	1.01		1.05	
Singapore	Two-thirds	High	1.01	0.09	1.03	0.09
Singapore	One-third	High	1.10		1.12	
Taipei,China	Two-thirds	Low	0.68	0.06	0.70	0.06
Taipei,China	One-third	Low	0.74		0.76	
Taipei,China	Two-thirds	High	0.74	0.06	0.75	0.07
Taipei,China	One-third	High	0.80		0.82	
Thailand	Two-thirds	Low	0.76	0.06	0.76	0.08
Thailand	One-third	Low	0.82		0.84	
Thailand	Two-thirds	High	0.80	0.08	0.82	0.08
Thailand	One-third	High	0.88		0.90	
Australia	Two-thirds	Low	0.80	0.09	0.82	0.09
Australia	One-third	Low	0.89		0.91	
Australia	Two-thirds	High	0.87	0.05	0.87	0.07
Australia	One-third	High	0.92		0.94	
Japan	Two-thirds	Low	0.76	0.12	0.78	0.10
Japan	One-third	Low	0.88		0.88	
Japan	Two-thirds	High	0.82	0.08	0.84	0.10
Japan	One-third	High	0.90		0.94	

PRC = People's Republic of China, ROK = Republic of Korea.
Source: Authors' calculations based on data from the National Transfer Accounts.

Although not the main purpose of these simulations, it will still be of interest that slower population growth consistently leads to a reduction in consumption. It should be kept in mind, however, that the simulated consumption level is conditional on per capita labor income, which will vary from simulation to simulation because of capital-deepening changes in human capital investment and other possible effects.

Allowing for the possibility that population growth will affect interest rates has a relatively modest effect.

VIII. CONCLUDING OBSERVATIONS

One of the biggest structural challenges facing the world is population aging. Although aging is at the most advanced stage in high-income economies, many developing Asian economies are also aging. This is especially true in East Asia. Adequate, affordable, and sustainable economic security for the growing elderly population is perhaps the single biggest socioeconomic challenge facing aging societies. The challenge is all the more daunting for developing economies that are far poorer than high-income economies. Lack of preparedness for old-age economic security is perhaps the biggest factor underlying widespread concerns about developing economies growing old before they grow rich. Finally, there are substantial differences in the demographic landscape of developing Asian subregions and countries.

The main objective of our paper is to analyze empirically how individuals fund their old-age needs in different countries. Further, we project how population aging will affect the funding of old-age needs in the future. Besides working, the elderly can fund their needs through asset-based reallocations, private transfers or transfers from children, and public transfers or transfers from the government. While developing Asian countries are the focus of our analysis, for comparative purposes we also present results for high-income economies and non-Asian developing economies. Our analysis relies heavily on wealth measures because these facilitate comparisons of flows over the life cycle which vary strongly with age. To compare economies at very different levels of development we rely on normalized values that represent economic variables as a percentage of core labor income. By core labor income, we mean the average annual labor income of persons aged 30–49 years old.

The key variable in estimating old-age funding needs of the elderly is LCD, or the gap between consumption wealth and labor wealth. Consumption wealth is the wealth required, relative to annual core labor income, by the old. Labor wealth is the synthetic cohort value of labor income of those aged 60, again measured relative to core labor income. Intuitively, LCD measures the amount of additional resources that the elderly need for their consumption, given their labor income. The demand for LCD is projected to rise in all subregions of developing Asia. In East Asia, LCD is projected to increase from 10.8 times core labor income to 12.2 times core labor income between 2025 and 2065. The increase of 1.4 times core labor income is greater than in other subregions. The increases for other subregions are similar to one another, ranging from 1.0 to 1.3 times core labor income.

Another key question related to population aging is: how will the elderly find the resources that they need for consumption as the population grows older in the future? Our projections indicate that the relative importance of labor income in funding old-age needs will decline in all Asian economies by 2%–4% of consumption wealth. The projected decline in the labor income share is somewhat typical in the Philippines, dropping from 55.3% to 51.7% between 2025 and 2065. How do reallocations compensate for the decline in labor income? In all countries, aging leads to an increase in the share of consumption funded by both public and private transfers.

Public transfers are projected to increase the most in Japan, Australia, the ROK, and particularly the PRC. For private transfers, the projected increase is the largest for Indonesia, India, the Philippines, and Thailand. The change in asset-based reallocations is trivial in most economies. Perhaps the biggest implication of our analysis is that public transfers, which have played a relatively limited role so far, are set to play a bigger role in funding developing Asia's old-age needs. This prospect is especially significant for East Asia, where population aging is more advanced than in other subregions. East Asia does have a major advantage over many European countries, which are experiencing rapid population aging also. East Asian and other Asian developing economies are not burdened with generous, well-entrenched public transfer systems which are unsustainable in the face of rapid demographic change. The costs of public transfer systems are consequential. In Singapore; the ROK; and Taipei,China, for example, generous old-age transfer systems would lead to substantially lower standards of living than modest old-age transfer systems. This suggests that the region would do well to carefully plan expanding public transfer programs to promote old-age economic security without compromising the fiscal sustainability and macroeconomic stability that underpinned rapid economic growth and development in the past.

APPENDIX

Table A.1: Consumption Wealth and Labor Income Wealth of Persons Aged 60 as a Percentage of Core Labor Income, Classified by Income Status of the Economy, Asia and the Pacific Economies, 2021

Economy	Labor Wealth at Age 60 (%)	Consumption Wealth at Age 60 (%)
High-income economies		
Australia	3.75	17.39
Brunei Darussalam	3.02	12.71
Hong Kong, China	2.93	15.48
Taipei,China	3.26	14.42
Japan	3.44	21.14
New Zealand	2.63	18.06
Korea, Republic of	3.22	14.50
Singapore	3.59	14.36
Upper middle-income economies		
Armenia	1.76	10.12
Azerbaijan	1.73	10.28
China, People's Republic of	1.54	11.87
Fiji	1.72	9.34
Georgia	3.72	11.04
Kazakhstan	5.86	10.29
Malaysia	3.33	11.71
Maldives	3.61	17.80
Thailand	2.94	13.07
Tonga	6.19	11.15
Turkmenistan	6.14	11.11
Lower middle-income economies		
Bangladesh	3.86	12.07
Bhutan	3.84	12.04
Cambodia	3.01	11.96
India	3.08	12.08
Indonesia	3.63	10.03
Kyrgyz Republic	3.70	10.10
Lao People's Democratic Republic	4.47	9.41
Mongolia	2.57	10.37
Myanmar	3.64	11.85
Nepal	1.78	10.32
Pakistan	3.67	10.54
Papua New Guinea	2.90	10.46
Philippines	3.15	12.19
Samoa	4.68	11.89

Economy	Labor Wealth at Age 60 (%)	Consumption Wealth at Age 60 (%)
Solomon Islands	3.64	11.24
Sri Lanka	3.92	11.90
Tajikistan	3.79	9.97
Timor-Leste	2.70	11.95
Uzbekistan	3.68	11.21
Vanuatu	3.18	10.91
Viet Nam	1.87	11.68
Low-income economy		
Afghanistan	3.82	9.93

Source: Authors' calculations based on data from the National Transfer Accounts.

Table A.2: Labor Wealth as a Percentage of Consumption Wealth at Age 60, Classified by Income Status of the Economy, Asia and the Pacific Economies, 2021

Economy	%
High-income economies	
Australia	21.55
Brunei Darussalam	23.76
Hong Kong, China	18.91
Taipei,China	22.59
Japan	16.27
New Zealand	14.56
Korea, Republic of	22.19
Singapore	25.00
Upper middle-income economies	
Armenia	17.35
Azerbaijan	16.84
China, People's Republic of	12.98
Fiji	18.40
Georgia	33.74
Kazakhstan	56.94
Malaysia	28.40
Maldives	20.28
Thailand	22.48
Tonga	55.51
Turkmenistan	55.23
Lower middle-income economies	
Bangladesh	31.97
Bhutan	31.87
Cambodia	25.14
India	25.52
Indonesia	36.17

Kyrgyz Republic	36.62
Lao People's Democratic Republic	47.51
Mongolia	24.74
Myanmar	30.70
Nepal	17.24
Pakistan	34.84
Papua New Guinea	27.71
Philippines	25.88
Samoa	39.37
Solomon Islands	32.34
Sri Lanka	32.96
Tajikistan	38.03
Timor-Leste	22.57
Uzbekistan	32.87
Vanuatu	29.16
Viet Nam	16.01
Low-income economy	
Afghanistan	38.44

Source: Authors' calculations based on data from the National Transfer Accounts.

Table A.3: Projected Consumption Wealth and Labor Income Wealth, Public Transfer Wealth, Private Transfer Wealth, and Asset-Based Reallocation Wealth as a Share of Consumption Wealth, Projected Values for 2022, 2025, 2045, and 2065; 10 Asia and the Pacific Economies

Economy	Consumption	Labor Income	Public Transfers	Private Transfers	Asset-Based Reallocations
China, People's Republic of					
2022	4.61	0.51	0.47	0.31	-0.28
2025	4.66	0.50	0.47	0.31	-0.28
2045	4.99	0.48	0.49	0.31	-0.28
2065	5.23	0.46	0.51	0.31	-0.28
India					
2022	8.42	0.63	0.00	-0.21	0.58
2025	9.54	0.59	0.00	-0.18	0.58
2045	10.21	0.57	0.01	-0.16	0.59
2065	10.87	0.54	0.01	-0.14	0.59
Indonesia					
2022	7.06	0.68	-0.02	-0.47	0.80
2025	7.72	0.66	-0.02	-0.45	0.80
2045	8.10	0.65	-0.02	-0.44	0.80
2065	8.56	0.64	-0.01	-0.42	0.80
Korea, Republic of					
2022	8.87	0.55	0.24	0.04	0.17
2025	8.93	0.55	0.24	0.04	0.17
2045	9.33	0.53	0.26	0.04	0.17
2065	9.69	0.52	0.27	0.05	0.17
Philippines					
2022	8.18	0.55	-0.12	0.01	0.55
2025	8.22	0.55	-0.12	0.01	0.55
2045	8.61	0.54	-0.12	0.02	0.56
2065	9.09	0.52	-0.11	0.03	0.56
Singapore					
2022	7.31	0.64	-0.03	0.37	0.02
2025	7.37	0.63	-0.03	0.38	0.02
2045	7.72	0.61	-0.02	0.38	0.03
2065	8.04	0.59	-0.02	0.38	0.04
Taipei,China					
2022	10.25	0.43	0.15	0.17	0.25
2025	10.35	0.43	0.15	0.17	0.25
2045	10.91	0.41	0.16	0.17	0.25
2065	11.34	0.40	0.17	0.17	0.25
Thailand					
2022	10.09	0.44	-0.01	-0.52	1.09

Economy	Consumption	Labor Income	Public Transfers	Private Transfers	Asset-Based Reallocations
2025	10.18	0.44	-0.01	-0.52	1.09
2045	10.71	0.42	0.00	-0.51	1.09
2065	11.11	0.41	0.00	-0.50	1.09
Australia					
2022	12.03	0.45	0.15	-0.03	0.43
2025	12.13	0.45	0.15	-0.03	0.43
2045	12.72	0.43	0.17	-0.03	0.42
2065	13.26	0.42	0.18	-0.03	0.42
Japan					
2022	12.73	0.44	0.23	-0.05	0.37
2025	12.82	0.44	0.23	-0.05	0.37
2045	13.41	0.43	0.25	-0.04	0.37
2065	13.97	0.41	0.26	-0.04	0.36

Source: Authors' calculations based on data from the National Transfer Accounts.

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