



AGING POPULATION AND ITS ECONOMIC IMPACT
+ IMMIGRATION

Macroeconomic Impacts and Policies in Aging Societies

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Abstract

Will population aging lead to economic crisis with tepid economic growth, generational inequality, unsustainable public finances, and overly-burdened families? Answering these questions definitively requires data and analysis that has not been available in many countries. The evidence that is available, however, indicates that countries with moderate population aging can pursue policies that will capitalize on the benefits and minimize the costs of population aging. Countries with very low fertility and severe aging will likely face serious economic problems.



Challenge¹

Population changes around the world are having a profound effect on macroeconomic prospects. Other things equal, an increase in population at the most productive ages leads to an increase in per capita income, while an increase in population at the least productive ages leads to a decline in per capita income (Bloom and Williamson 1998). In roughly half of the countries of the world, mostly lower-income countries, the highly productive population share has been increasing, accelerating economic growth—a phenomenon known as the first demographic dividend. The remaining countries, mostly higher-income countries, have moved to a new demographic phase which features a declining share in the working ages, a negative first demographic dividend, and population aging.

Effective policy can lead to a second demographic dividend, however, that sustains economic growth in countries that are experiencing moderate population aging. The second dividend occurs as demographic change leads to greater physical and human capital and, as a result, to higher productivity (Mason and Lee 2007).

The purpose of this policy brief is to propose concrete steps that will improve understanding of the links between population change and economic growth and promote growth and reduced inequality in an aging world. First, countries should improve the availability and use of data that explain the generational economy. Current policy is excessively reliant on overly simplified data that ignore how economic outcomes and behavior vary across generations. Second, policies should be designed and implemented that capitalize on demographic dividends, both in countries that are enjoying the first demographic dividend and countries that are dominated by population aging. Third, policies must address generational and gender differences that undermine efforts to improve growth and reduce inequality.

¹ The many useful suggestions provided by Ron Lee, Gretchen Donehower, Sidney Westley, and participants in the task force are appreciated.



Proposal

Policies: Improve data and analysis on population and economic linkages

Policy 1: Extend national statistical systems to include comprehensive economic data by age, gender, and income class.

Policy 2: Enhance national capacity to access, utilize, and analyze economic data by age, gender, and income group.

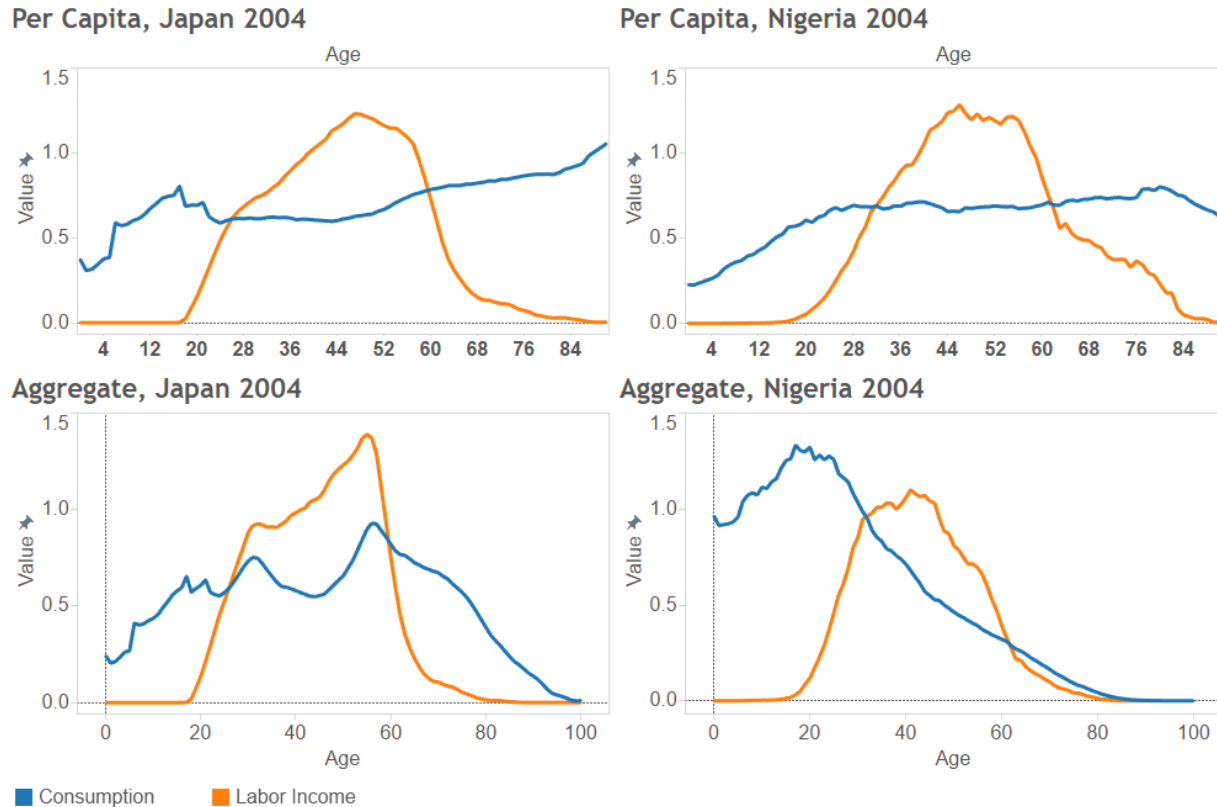
Members of different generations face very different economic challenges and policy priorities. Traditional economic analysis, however, ignores generational differences or treats them in a highly stylized fashion. For example, many economic models assume that people fall into three discrete groups: children, typically those under age 15; working-age adults, those 15–64; and seniors, usually those 65 or older. Although child dependents are defined as children, intergenerational transfers to support young people in their late teens and twenties are substantial in many countries. And although seniors are said to be dependents, many continue to work and contribute to national wealth and capital accumulation.

Understanding the generational economy and how economic resources are allocated and used across generations is critical for effective policy responses to changing population age structure. Intergenerational flows to children and young adults are dominated by public and private transfers, but the mix of the two varies considerably. Intergenerational flows to the elderly are dominated by public transfers in many countries. In others, however, public transfers play almost no role because the elderly rely primarily on their own assets to meet their material needs.

New tools have been developed that shed light on the generational economy. Quantifying the economic lifecycle is one important building block, illustrated by estimates for Japan and Nigeria (Figure 1). In the upper panels, per capita labor income and consumption of one-year age groups are plotted relative to the average values of those 30–49. This measure emphasizes differences in the age patterns of labor income and consumption, while controlling for differences in levels of economic development.



Figure 1. Consumption and labor income by age, Japan and Nigeria 2004. Source: [Lee and Mason \(2011\)](#); www.ntaccounts.org accessed January 18, 2019.



Note: Per capita and aggregate values, respectively, are expressed relative to the simple average of per capita and aggregate labor income in the 30-49 age range.

Japan and Nigeria are similar in important ways, but their differences are quite instructive. In Japan, and in high-income countries in general, children and the elderly have large per capita lifecycle deficits. High deficits for children reflect strong commitments to education leading to high consumption and low labor income at early ages. High deficits for the elderly reflect extended periods of retirement and high spending on health care. In Nigeria, and in most other lower-income countries, the per capita life cycle deficit for children and the elderly is relatively low. Spending on education and health are relatively low, and formal retirement is unavailable in many of these countries.

Aggregate flows, shown in the lower panels of Figure 1, incorporate the effects of population age structure on the lifecycle. Japan has a very old population and, hence, a large old-age deficit. Nigeria has one of the youngest populations in the



world with a very large deficit at young ages and a very small old-age deficit.

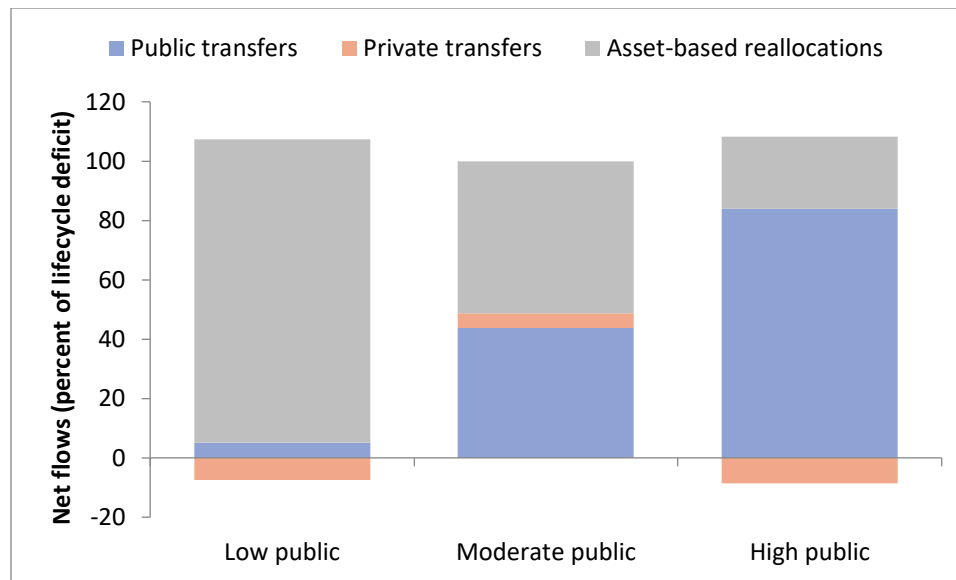
Lifecycle deficits are funded through a variety of mechanisms. Public intergenerational transfers support children and the elderly by relying on taxpayers, while private intergenerational transfers rely primarily on families. Young adults and the elderly may rely heavily on capital (including debt) to generate resources needed early and late in life. The macroeconomic effects of population aging depend heavily on the balance among these funding mechanisms in specific countries. Funding mechanisms influence public finances, saving and capital accumulation, generational equity, and the private cost of fertility and childrearing.

At older ages, the approach to funding the lifecycle deficit varies considerably judging from estimates available for twenty-eight countries (Figure 2). The countries fall into three distinctive clusters depending on their public support for the elderly. Seven countries have low public support for the elderly—Cambodia, El Salvador, India, Indonesia, Philippines, South Africa, and Thailand. In these countries, net public transfers are typically near zero and never exceed 20 percent of the old-age deficit. In eight countries—China, Japan, South Korea, Taiwan, Australia, Mexico, United Kingdom, and the United States—public support for the elderly is moderate, with net public transfers to the elderly ranging from 36 percent to 57 percent of the old-age deficit. In thirteen countries—Austria, Brazil, Costa Rica, Ecuador, Finland, France, Germany, Hungary, Italy, Peru, Slovenia, Sweden, and Uruguay—net public transfers are higher, ranging from 63 percent to 114 percent of the old-age deficit (Mason and Lee 2018).

The elderly who live in countries with limited public programs can turn to their families for support or they can rely on assets accumulated when younger. Family support is still important in some East Asian countries, but it is declining over time. Outside East Asia, the elderly are providing as much economic support to family members as they receive. Thus, in countries where public support for the elderly is low, reliance on assets to fund old age needs is high. In India, for example, asset-based reallocations fund 95 percent of the old-age deficit, while in Germany and France, where public support is high, asset-based reallocations fund only about 35 percent of the old-age deficit. The importance of assets to old-age support in India and other lower income countries is a

surprise to many people who may overlook the importance of a small farm or business or the flow of services from an owner-occupied residence.

Figure 2. Public transfers, private transfers, and asset-based reallocations as a percentage of the lifecycle deficit for persons 65 and older in 28 countries.



Notes: Values are simple averages of values for countries in each group. Source: Mason and Lee (2018).

Data for measuring key features of the generational economy are critical to understanding the economic effects of population aging. A deeper understanding of the generational economy requires better data and analysis of how gender and class inequality interact with public pension systems, labor markets, and family policies. Disaggregating data on the generational economy by these groups will reveal important dynamics. It is essential that national statistical agencies take responsibility for compiling and disseminating these data.

Policies: Maximize Demographic Dividends

Policy 3: Extend and enhance the first dividend phase through policies that influence behavior over the lifecycle.

Policy 4: Realize larger second demographic dividends through policies that encourage capital accumulation and investment in education.



Policy 5: In countries with very low fertility, pursue population policies that support family building.

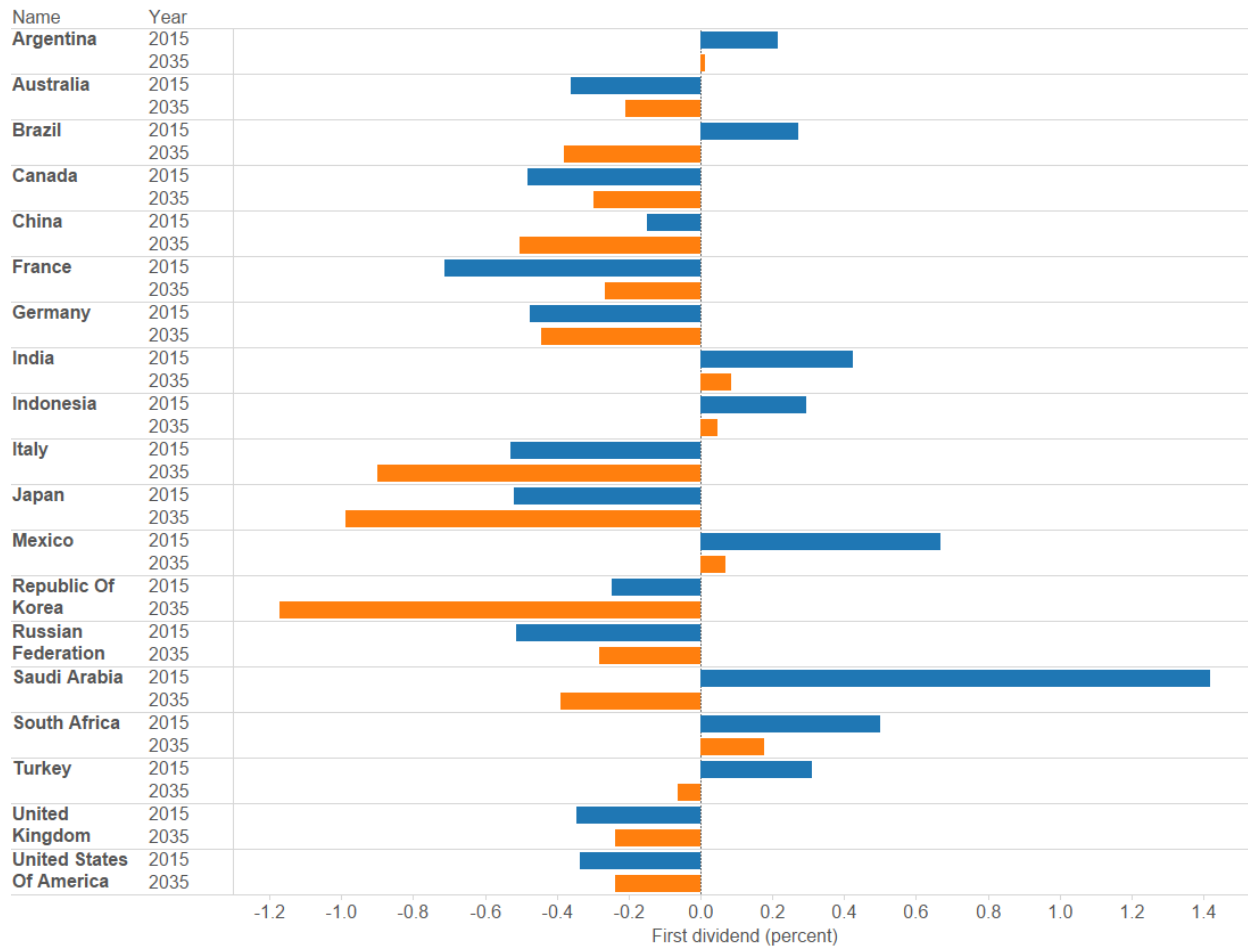
The first dividend status of G20 countries was highly variable in 2015 (Figure 3). In eight countries, the first dividend was contributing to economic growth. The number of effective workers (labor force adjusted for age variation in unemployment, hours worked, and productivity) was growing more rapidly than the number of effective consumers (population adjusted for age variation in public and private consumption). The first dividend was most favorable in Saudi Arabia and Mexico, where the first dividend was contributing at least one-half a percentage point to per capita economic growth. In 11 G20 countries, however, the first dividend had already turned negative, depressing growth by one-half a percentage point or more in France, Italy, Japan, and Russia.

By 2035, only South Africa among G20 countries is projected to still be enjoying a first dividend that adds economic growth of more than 0.1 percent per year. In other countries, the first dividend will be negligible or negative. The anti-growth effects arising from the decline in the share of the working age population are projected to be particularly strong in Italy, Japan, and the Republic of Korea where very low fertility is leading to rapid population aging.

The first dividend values shown in Figure 3 are computed holding constant the lifecycle patterns of labor income and consumption. The first dividend values will be larger, facilitating higher economic growth, if policies are implemented that increase labor force participation, hours worked, and productivity or reduce unemployment at older ages. Promising policies are those that raise retirement ages, reduce age or gender discrimination in employment practices, promote lifelong learning, increase labor flexibility, and help parents combine market labor and childrearing. Likewise, any policies that reduce excessive spending at older ages, e.g., wasteful spending on health care, will enhance the first demographic dividend.



Figure 3. First demographic dividend in 2015 and 2035 for G20 countries.
Source: Mason and Lee (2018).



Note: Values are based on projections of the support ratio computed as the ratio of the number of workers (adjusted for age variation in unemployment, hours worked, and wages) to the number of consumers (adjusted for age variation in public and private consumption). The first dividend is equal to the rate of growth of the support ratio. See Lee and Mason 2011 for details.

Naturally, many older people would enjoy extended period of leisure and high levels of consumption, But the institutions and policies governing retirement, pensions, health care and long-term care were implemented before the costs of aging became clear. The ways health care and long-term care are priced in the US and in some other rich countries is a major barrier to controlling the costs of aging.

The political power of older generations often blocks efforts to improve



generational equity and fiscal sustainability.

The second dividend operates by raising worker productivity through the connections between population and physical and human capital accumulation. Assets are accumulated during the working years and, to a surprising degree, remain at relatively high levels after retirement. Seniors rely on income from assets, but do not necessarily reduce their assets as they age. The observed age patterns of total or per capita assets are heavily influenced by higher income seniors who hold a disproportionate share of national wealth. Aging leads to fewer workers but to more capital and higher productivity. Heavy reliance on public transfers by the elderly may undermine capital accumulation by reducing incentives to accumulate private capital on the part of future retirees. And if larger public transfer programs are funded through the accumulation of public debt, private capital may be crowded out.

Countries with very low fertility will experience severe population aging. Liberal immigration policies can be helpful, but reversing super-low fertility is essential to avoiding a top-heavy age structure. Many policies to address super-low fertility are particularly attractive if they provide multiple benefits. Public spending on education reduces the costs of childrearing and enhances the second demographic dividend. Child subsidies encourage couples to have more children and reduce inequality. Support for young mothers may lead women to have children and reduce barriers faced by women. Policies designed to strengthen the second dividend will help to offset the sharp decline in the share of the population at working ages. But even with well-designed policies, public transfer programs will face severe strains and standards of living are likely to grow much more slowly or decline (Lee, Mason and Members of the NTA Network 2014).

Policies: Generational and Gender Equity

Policy 6: Pursue policies that seek a balance between spending on children, the elderly, and prime-age adults, with an emphasis on investment in children's education.

Policy 7: Improve understanding and policies that incorporate women's full contribution to national economies, including the contribution through unpaid



family work.

For the world as a whole, average consumption by seniors is essentially equal to average consumption by prime-age adults. Average consumption varies greatly across generations for individual countries, however. In the United States and Japan, seniors consume, on average, 35 percent more than prime-age adults. At the other extreme, seniors in Mozambique consume 33 percent less than prime age-adults. As a general rule, the elderly in high-income countries have high consumption relative to that of prime-age adults. A notable exception to this generalization is the Republic of Korea, where seniors consume only 90 percent of consumption by prime-age adults (Figure 4).

Health-care and long-term care spending are the primary drivers behind high consumption by the elderly reflecting both the prices and quantities of goods and services provided. The public sector plays a central role in the health sector in many countries, providing public financing, extensive regulation, and direct provision of health-care services. Thus, high spending on the elderly in general and on health care in particular is heavily influenced by public policy.

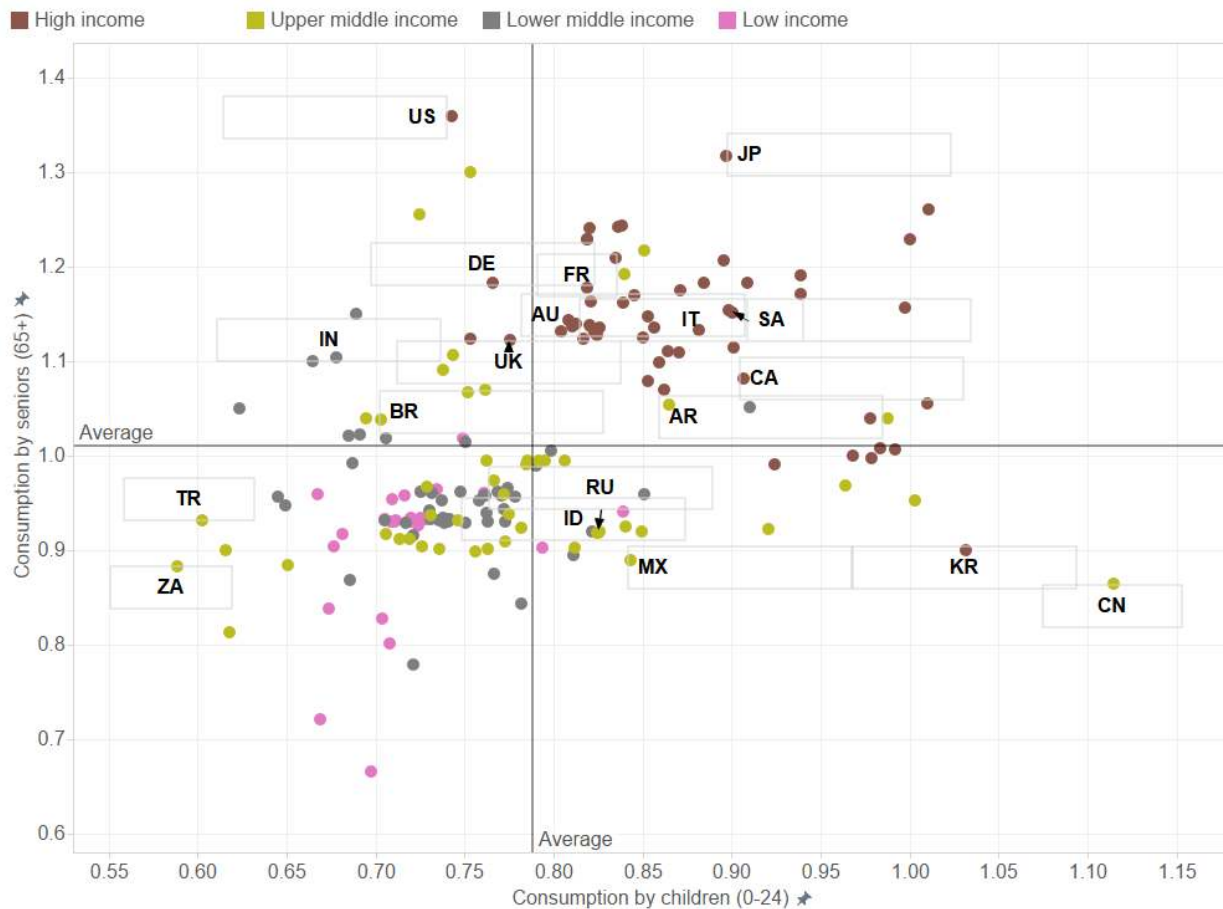
Consumption by children is also a very important generational feature of aging societies. An important concern is that high consumption by the elderly will crowd out consumption by children—public resources devoted to pensions and health care for the elderly may compete with resources available to children, spending on education in particular. This problem, if it exists, is not evident at high levels of aggregation, however. Rich countries with aging populations also have high spending on children. Note that all but a few high-income countries fall in the northeast quadrant of Figure 4, indicating that consumption is relatively high for both children and the elderly. Lower-income countries with young populations fall in the southwest quadrant of Figure 4. Their spending on children and the elderly are both low relative to their spending on prime-age adults.

High spending on children in high-income countries, which tend to have low fertility, can be traced to the quantity-quality tradeoff, i.e., families with few children spend more on each child. Although often discussed as a private-sector phenomenon, the quantity-quality tradeoff is as strong for the public sector. In low-fertility societies, public spending on education is often high. This is a



notable feature of East Asia where education spending is very high and fertility is very low.

Figure 4. Consumption by children (0–24) and seniors (65+) relative to consumption by adults age 25–64, estimate as of 2015, 180 countries classified by income group.



Note: Consumption by children and seniors are per capita values expressed relative to consumption by persons 25–64. Both public and private consumption are included. G20 countries have been labelled. Source: Mason et al. (2017).

The policy implications are complex. If the quantity-quality tradeoff persists, aging societies will have working-age cohorts that are smaller in number but increasingly productive due to enhanced investment in human and physical capital. Because of the investment in education, low fertility leads to a more productive workforce and enhanced economic growth. In this way, human capital and physical capital can both add to the second demographic dividend



(Mason, Lee and Jiang 2016).

Second demographic dividend effects from increased human capital may be even greater if we include a component of production and consumption that standard measures of economic activity often leave out—the unpaid care and household services most often provided by women. Unpaid services—such as cooking, cleaning, and caring for children and the elderly—add considerable value both to family welfare and to national economic output.

Measures of economic activity that overlook unpaid care seriously underestimate women's role in national economies, misestimate consumption and production in the generational economy, and hinder good policy design. Policies designed to encourage female labor force participation will have greater success if they address women's existing unpaid care work, as mothers and grandmothers. Welfare policy in aging societies should anticipate future increases in demand for family-provided eldercare. Policies to encourage fertility through child subsidies must recognize that in many countries, the value of unpaid care time consumed by young children is far greater than the conventionally measured value of market goods and services (Varga and Donehower 2019 (forthcoming)). A full accounting of women's economic contribution that includes unpaid care work will lead to policies that promote gender equality and enhance macroeconomic growth.

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