The economics of healthy and active ageing series

Sustainable health financing with an ageing population

Implications of different revenue raising mechanisms and policy options

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The Economics of Healthy and Active Ageing

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About the series

Population ageing is often perceived negatively from an economic standpoint. Yet taking a more balanced view, it becomes evident that a growing older population is not necessarily very costly to care for, and that older people provide significant economic and societal benefits – particularly if they are healthy and active. This is the broad perspective of the *Economics of Healthy and Active Ageing* series: to inspire a 're-think' of the economic consequences of population ageing.

In this series we investigate key policy questions associated with population ageing, bringing together findings from research and country experiences. We review what is known about the health and long-term care costs of older people, and consider many of the economic and societal benefits of healthy ageing. We also explore policy options within the health and long-term care sectors, as well as other areas beyond the care sector, which either minimize avoidable health and long-term care costs, support older people so that they can continue to contribute meaningfully to society, or otherwise contribute to the sustainability of care systems in the context of changing demographics.

The outputs of this study series take a variety of brief formats that are accessible, policy-relevant and can be rapidly disseminated.

About this brief

This brief looks at how health and long-term care systems are financed and reports on the potential effects of changes in population age structure on the ability to generate sufficient, stable revenues from common funding sources. We introduce a new methodological approach to simulate the effects of population ageing on raising revenues from income taxes (including profits and capital gains), goods and services taxes, property taxes and social contributions. The brief then considers a number of policy options that aim to address revenue shortcomings that may occur as a result of population ageing. The policy lessons coming out of the simulations are relevant for countries that already have a large population of older adults, as well as those undergoing age-structure transition.

This brief was produced jointly with the WHO Centre for Health Development, Kobe, Japan. Special thanks to Naoki Ikegami, Soonman Kwon and Tamás Evetovits for their comments and suggestions.

Acronyms

GDP	gross domestic product
NTA	National Transfer Account
OECD	Organisation for Economic Co-operation and Development
VAT	value added tax

Boxes and figures

Key messages

- Population ageing affects a country's ability to generate revenues for health.

- We simulate the effects of population ageing on the ability to raise revenues for health from income taxes, goods and services taxes, property taxes, and social contributions. We find that:

  - For countries with a relatively younger population currently undergoing a rapid population age-structure transition, all revenue sources have the potential to grow considerably over the medium- to long-term. The challenge is to improve tax collection and the priority given to health to take advantage of this potential.

  - For countries with a large share of the population at older ages, revenues from social contributions linked primarily to the labour market are expected to decline substantially as a result of population ageing.

- Three general policy options could address declining labour market-related social contributions due to population ageing. They include:

  - expanding the revenue base by increasing the number of contributors, such as by increasing migration rates or increasing the effective retirement age;

  - increasing the contribution rate on social contributions; and

  - diversifying the mix of financing sources.

- Simulations suggest that these strategies in isolation are unlikely to fully compensate for the shortfall in revenues in countries that depend heavily on the labour market to finance health.

- Health and long-term care financing systems that are heavily reliant on labour market-related contributions may need to be redesigned if they are to continue to generate sufficient, stable revenues in the context of population ageing. This will require political commitment and a willingness to prioritize health.

- This research underscores the importance of moving away from financing health through labour-related contributions and premiums and, as a result, de-linking entitlement to care from the payment of contributions. Taxation policies can ensure health financing is both sustainable and equitable.

Executive summary

By 2050, nearly every country will experience an increase in the share of their population over age 60. While there has been considerable analysis and policy attention focused on the relationship between population ageing and health spending, limited attention has been paid to how population ageing will affect the revenues generated for and allocated to health. The objective of this brief is to assess the impact of population ageing on countries' ability to generate revenues for health.

In recognition of market failures, health financing largely comes from government or through compulsory mechanisms that are pre-paid and heavily regulated. Revenues are collected from different sources, pooled at some level, and used to purchase health care goods and services. In Organisation for Economic Co-operation and Development (OECD) countries, for example, the main sources of revenues are income taxes, goods and services taxes, property taxes, and social contributions. As populations age, countries experience changes in the ability to generate revenues from these sources.

Our simulations show marked differences in the ability to generate revenues from taxation and social contributions depending on a country's population age structure. For countries where the population is comprised of a large share of relatively younger people who are likely to be active in the labour market, such as Indonesia, population ageing could be expected to have a positive impact on revenue generation from all sources. This presents an opportunity, the challenge being to improve tax collection mechanisms to capture this benefit. In contrast, for a country with a large share of the population already at older ages and increasingly exiting the formal labour market over time, such as Japan, relying on social contributions primarily generated from the labour market to raise revenues for health results in declining revenues per person over the coming decades.

Three policy options to address declines in labour-related social contributions due to population ageing are explored through simulations. The first option is to increase the number of contributors. The second is to increase the contribution rate on social contributions. The third is to diversify the mix of financing sources.

Our simulations suggest that in countries that depend heavily on the labour market to finance health, none of these strategies on its own is likely to make up for the shortfall in revenues due to population ageing. For 'older' countries such as Japan, declining social contribution revenues could be expected even if the revenue base were broadened or contribution rates were raised equally across all age groups. Diversifying the mix of revenue sources in favour of sources that are less affected by ageing may be an appropriate solution. However, countries will likely still need to reprioritize their current public-sector budgets and allocate more resources to health, or increase tax rates on alternative revenue generation sources in order to maintain sufficient and stable revenues for health.

This analysis underscores the importance of moving away from financing health through labour-related contributions and premiums. De-linking entitlements from the payment of contributions and instead relying more on general taxation to fund health is critical both for equitable financing and access to care, as well as for sustainability.

Introduction

By 2050, nearly every country will experience an increase in the share of their population over age 60 [1]. This is driven by reductions in fertility rates, coupled with declines in both infant mortality and premature deaths that have enabled longer life expectancies. While high-income countries are seeing sizeable increases in the oldest old (people 80 years and older) low- and middle-income countries are experiencing some of the most rapid rates of population ageing because of recent successes in public health.

Changes in a population's age structure undoubtedly have consequences for health and long-term care systems. Many countries are concerned about how increasing shares of older people will influence health expenditure growth. There are also pressures to reorient health and long-term care services to meet people's care needs [2]. Yet there has been limited attention to how population ageing will affect the ability to generate the revenues needed for health.

In many countries, labour markets serve as an important funding source for health. Since population ageing typically results in changes in the number of people formally employed, health and long-term care financing systems that are heavily reliant on contributions from the labour market may need to identify alternative sources of sufficient stable revenues. Likewise, population ageing could lead to changes in household spending patterns and, as a result, affect economic growth. For countries relying on taxation to fund health, declines in economic growth could reduce general tax revenues more broadly and limit the fiscal space for health [3]. Although such changes in the ability to generate revenues due to population ageing may be foreseeable, they are not regularly quantified. As such, there is limited evidence on how ageing can affect revenue generation for health.

In this policy brief, we review approaches for raising revenues for health and consider the ways in which common funding mechanisms are affected by changes in population age structure. We then review policy options that seek to ameliorate any adverse effects of population ageing on revenue generation for health.

How do health and long-term care systems generate revenues?

In recognition of the market failures associated with health and long-term care, health financing (a term we use to refer to funding for all types of health and long-term care goods and services) largely comes from government or through compulsory mechanisms that are pre-paid and heavily regulated. Particularly in middle- and high-income countries, this usually means that resources are generated through taxes and other forms of mandatory contribution, such as social insurance contributions. Funds are collected from different sources, pooled at some level, and used to purchase goods and services. Other public sources of revenue are non-tax revenues (e.g. from state-owned companies) or external sources, but we do not discuss these

in this brief since they are not directly related to the population age structure [4].

Analysts often distinguish between tax-funded and social health insurance systems. However, even in countries that are commonly described as having social health insurance, a significant share of financing comes from general tax revenues through transfers to the entities that purchase health services [5]. There are various reasons for this diversification of financing. These include cover for specific groups who do not pay contributions themselves (such as those who are unemployed or not active in the formal labour market) or because of a preference to try and make labour costs more internationally competitive. In fact, relying on contributions that are largely derived from the labour market to finance health means that revenues will vary pro-cyclically along with employment rates and wage levels. Transfers from general tax revenues to social health insurance schemes can provide more stability for health revenues.

A useful distinction therefore is between the different sources of revenue that finance health care and fund governments in general. These include taxes on income (including profits and capital gains), taxes on goods and services, taxes on property, and social security contributions (see Box 1).

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Box 1. Classification of government revenues

In government finance statistics, taxes are defined as compulsory, unrequited amounts receivable by government units. The main relevant classifications of taxes are:

1) *Taxes on income, profits and capital gains*, which are assessed on the actual or presumed incomes of institutional units. They include: taxes on individual and household income; taxes on the income of corporations; taxes on capital gains; and taxes assessed on holdings of property, land or real estate, when these holdings are used as a basis for estimating the income of their owners.

2) *Taxes on property*, which are payable on the use, ownership or transfer of wealth. These taxes may be levied at regular intervals, one time only, or on a change of ownership. They include: recurrent taxes on immovable property; recurrent taxes on net wealth; estate, inheritance and gift taxes; and capital levies.

3) *Taxes on goods and services*, which are levied on the production, leasing, delivery, sale, purchase or other change of ownership of a wide range of goods, and the rendering of a wide range of services. They include: value added taxes (VAT); sales taxes; and excise taxes.

Social security contributions are earmarked contributions usually assessed as a proportion of wages and salaries paid, or as a fixed amount per person employed, to make provision for social insurance benefits payable. They can also be made on behalf of individuals who are not working to obtain entitlement to benefits. They are similar to, but technically distinct from, *taxes on payroll and workforce* (which are non-earmarked taxes payable by enterprises assessed either as a proportion of the wages and salaries paid or as a fixed amount per person employed). They are both estimated based on labour income in the National Transfer Accounts (NTAs) [6]; for the purposes of the analysis in this policy brief they are effectively interchangeable.

Source: [7]

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The majority of taxes are not earmarked for health or long-term care. There are exceptions, such as public health taxes (also referred to as 'sin' taxes) where a percentage of revenues generated from tobacco or alcohol sales might be dedicated to health; about 30 countries from all regions of the world earmark tobacco tax revenues for health [8]. In the United Kingdom, there is a social care precept, which is effectively a property tax that is used for long-term care. These examples are, however, the exception rather than the norm and generally comprise a small share of total revenues for health or long-term care. Decisions about how much tax revenue to allocate to health vary by country but are usually arrived at through some form of budget-setting process [9]. One cannot, therefore, distinguish among the types of tax specifically used to finance health. Rather, assessing the effects of population ageing on health financing from taxation is analogous to assessing how the public sector is financed more generally.

Social contributions are effectively a special type of tax that is mandatory and earmarked for a public programme, such as unemployment benefits, pensions or health care. They are closely linked to the labour market in most countries, typically assessed based on wages to secure entitlement to benefits, and contributed by employers on behalf of employees, by employees, and by self-employed or other people who pay on their own behalf. Despite their close link to the labour market, in many countries, especially in the case of health care, contributions are also made by or on behalf of many people who are not formally employed, such as pensioners and the unemployed. For example, in Slovenia, financing of the Health Insurance Institute is almost exclusively from social contributions linked to the labour market: the National Institute for Employment covers contributions for the unemployed; the state and/or municipalities cover individuals without income, prisoners and war veterans; and the Pension and Disability Insurance Institute pays contributions for pensioners [10].

Figure 1 approximates the average share of public revenues by source of funds across countries in the OECD to illustrate the breakdown of public funds. While this figure masks considerable heterogeneity across countries, it shows a representative mix of financing sources. The main sources of general taxation include taxes on income (including profits and capital gains), taxes on goods and services, and, to a lesser extent, taxes on payroll and workforce (which we include along with social security contributions), and taxes on property. Appendix 1 contains similar breakdowns for a range of countries.

In addition to taxes and social contributions, health and long-term care are also financed from private sources. Voluntary health insurance comprises a small share of health spending in most countries [12]. Out-of-pocket spending at the point of use is a much more substantial financing source, particularly in some countries. However, we do not consider out-of-pocket spending here because the degree to which ageing affects the ability of households to make out-of-pocket payments will vary depending on numerous factors, including the use of co-payments and exemptions, as well as pensions and household capacity to pay, which are beyond the scope of this brief.

Figure 1: Average percentage of public revenues by source, OECD average, 2015
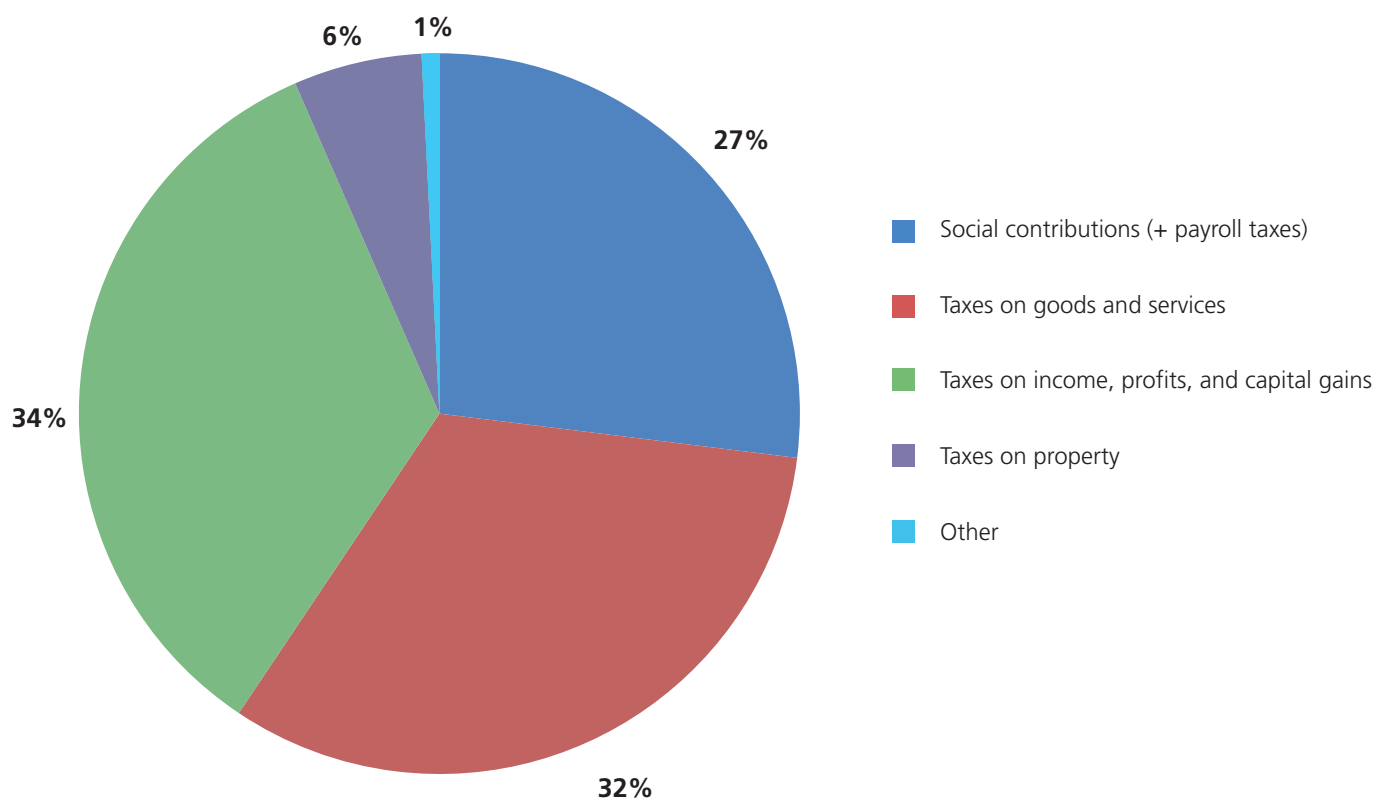
Source: [11].

Figure 2: Tax and social contribution revenues age profile, per person
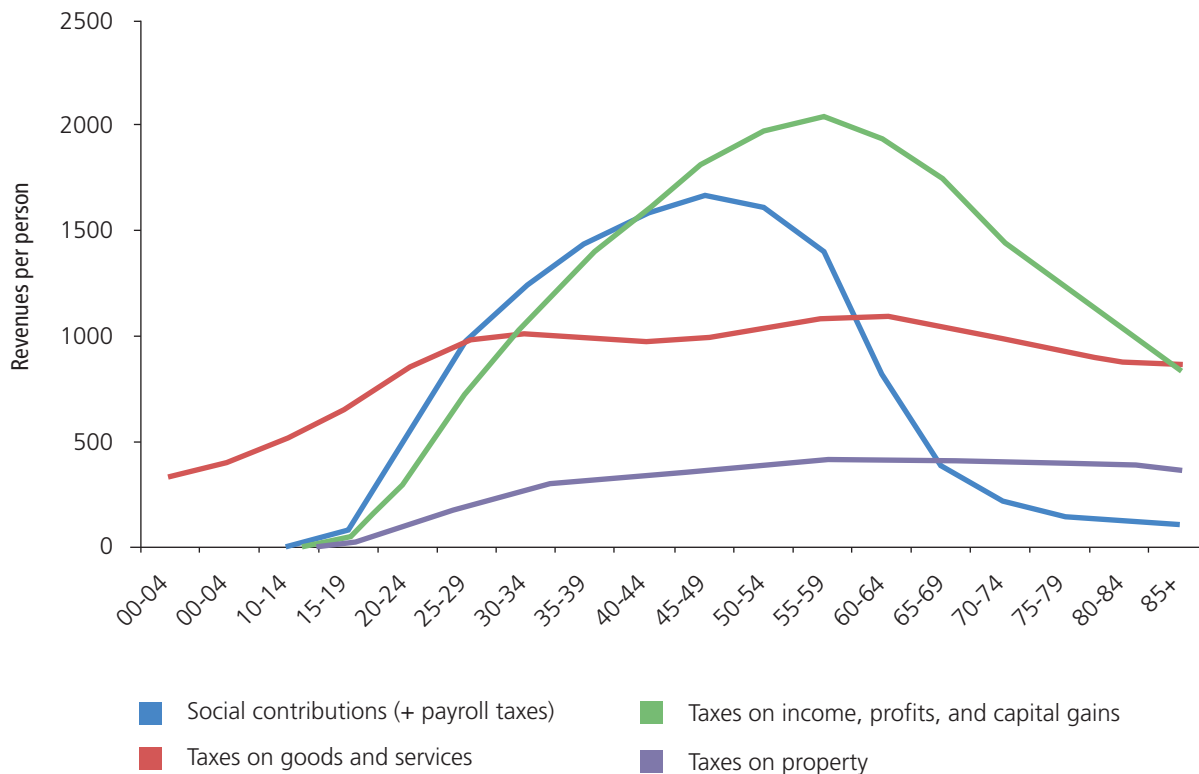
Source: [14].

How do taxes and social contributions vary over the life course?

Changes in the age-mix of populations will likely result in variations in the ability to generate revenues from the different sources described above. To better understand how population ageing affects revenue generation, we look at how specific sources of taxation and social contributions vary over the life course, using data from the NTAs [13,14].

Figure 2 shows variations in revenues per person from tax and social contributions by source and age, averaged across six countries from data available.[1] Recognizing that these countries have very different levels of public spending and gross domestic product (GDP), the values have been normalized by dividing by the level of per person taxes on goods and services among the age group 45 to 49 years for each country. In doing this, we assume that all countries have relatively stable generation of consumption taxes, especially at working ages. In averaging across countries, we aim to create a stylized or illustrative profile of how taxation varies by age, rather than reflect the reality in one country and/or period. In practice, countries rely on different sources of tax funding to varying extents.

The patterns are nevertheless convincing. Social contributions are low for young adults but increase during traditional working ages and decline as people near standard retirement or pension ages, highlighting their close link to the labour market; they do not fall to zero at older ages because some older people remain in formal paid employment and, in many cases, social contributions are still assessed on pensions (albeit often at a lower rate than for wages).[2] Taxes on income, profits and capital gains correlate very closely with social contributions for young adults. Social contributions decline as people near retirement; however, income, profits and capital gains continue to increase for several years before declining. This reflects in part the accumulation of asset wealth over the life course in some countries and the subsequent effects of dissaving in later years. Taxes on goods and services are constant over the life course, increasing in childhood but then remaining remarkably flat, because people at all ages consume – although the mix of goods and services consumed may change with age. Lastly, property taxes, while comprising a relatively smaller share of taxes overall, are steady once people age to a point at which the likelihood they own property increases.

The patterns shown above are meant to be illustrative only, or perhaps even aspirational. They will not reflect the reality in many settings. For example, in countries with less formal work arrangements, the patterns described above will differ considerably. Such increases and decreases corresponding with the ages at which people typically join and leave the

1. Italy (2008), Japan (2004), Sweden (2003), Thailand (2006), Uruguay (2006) and USA (2011).

2. Payroll taxes follow a very similar trajectory because, like social contributions, they are estimated in the NTAs as a function of labour income.

labour market, respectively, would not be evident where the ability to generate revenues from labour is minimal. However, with increased formal labour markets, the patterns shown in Figure 2 could be achieved. Additionally, in settings where social contributions are assessed on pensions at a rate equivalent to that for wages, one would likely not expect to see as steep of a decline in per person revenues generated from social contributions at older ages as that shown in Figure 2.

How are tax and social contributions affected by population ageing?

To understand how population ageing will affect revenue generation from different sources, we simulate the effects of a changing age-mix on the generation of per person tax and social contributions. To do this, we hold constant the per person age-specific tax revenue profiles shown in Figure 2 and apply a population distribution with a changing age-mix over time. We use the historical and forecasted population for Japan, a country having undergone a transformation to a large population of older adults. In contrast, we also use Indonesia, a country currently undergoing rapid population ageing (see Box 2).
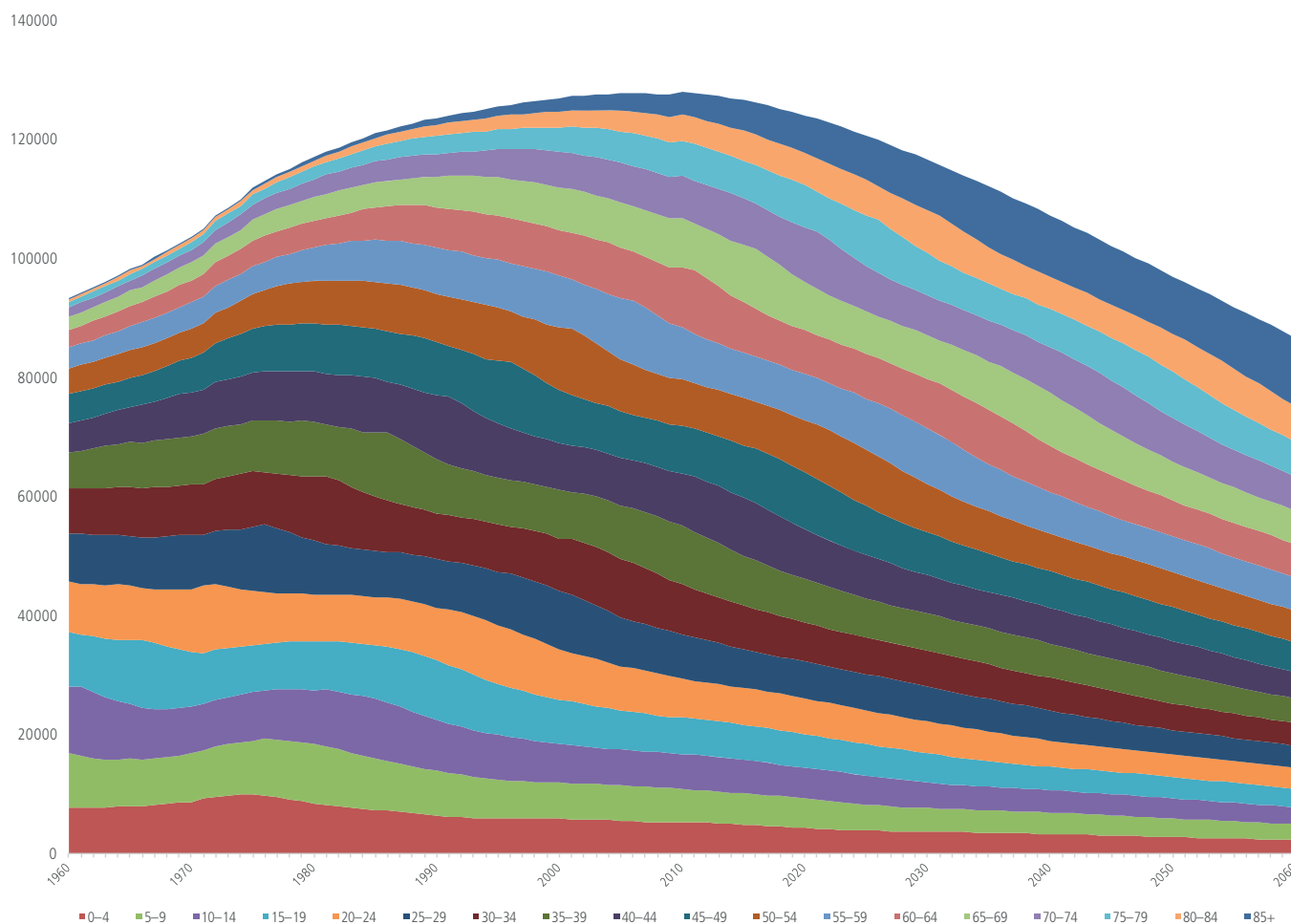
Box 2. Population age-mix in Japan and Indonesia

There are stark contrasts between the two countries in terms of how the population size and age-mix are expected to evolve (Figures 3a and b). The first observation is that the size of Japan's total population is projected to decline. By 2060, the population is expected to decline by one-third in comparison with 2010. Indonesia, on the other hand, will experience a one-third increase in its population over the same period. The Indonesian example is closer to global trends. The world's population is projected to increase by nearly 47% between 2010 and 2060, according to United Nations data [15].

The age distributions in the two countries are also expected to change. In Japan, in 2060, people 65 years and older are expected to comprise almost 40% of the total population – compared with 5.7% in 1960. The share of people 85 years and older will more than quadruple in size between 2010 and 2060, reaching 13.2% of the population. In Indonesia, shifts leading up to 2060 will occur largely among comparatively younger age groups. For example, those 45–64 years of age will increase from 16.8% of the population in 2010 to 26.5% by 2060. At the same time, the share of people 85 years and older will increase to only 1.6% by 2060.

The differences between the two countries make them ideal for assessing how different stages of population ageing have different implications for tax and social contribution revenues.

Figure 3a: Population age-mix in Japan, historical and projections, 1960–2060

Source: [14].

Figure 3b: Population age-mix in Indonesia, historical and projections, 1960–2060
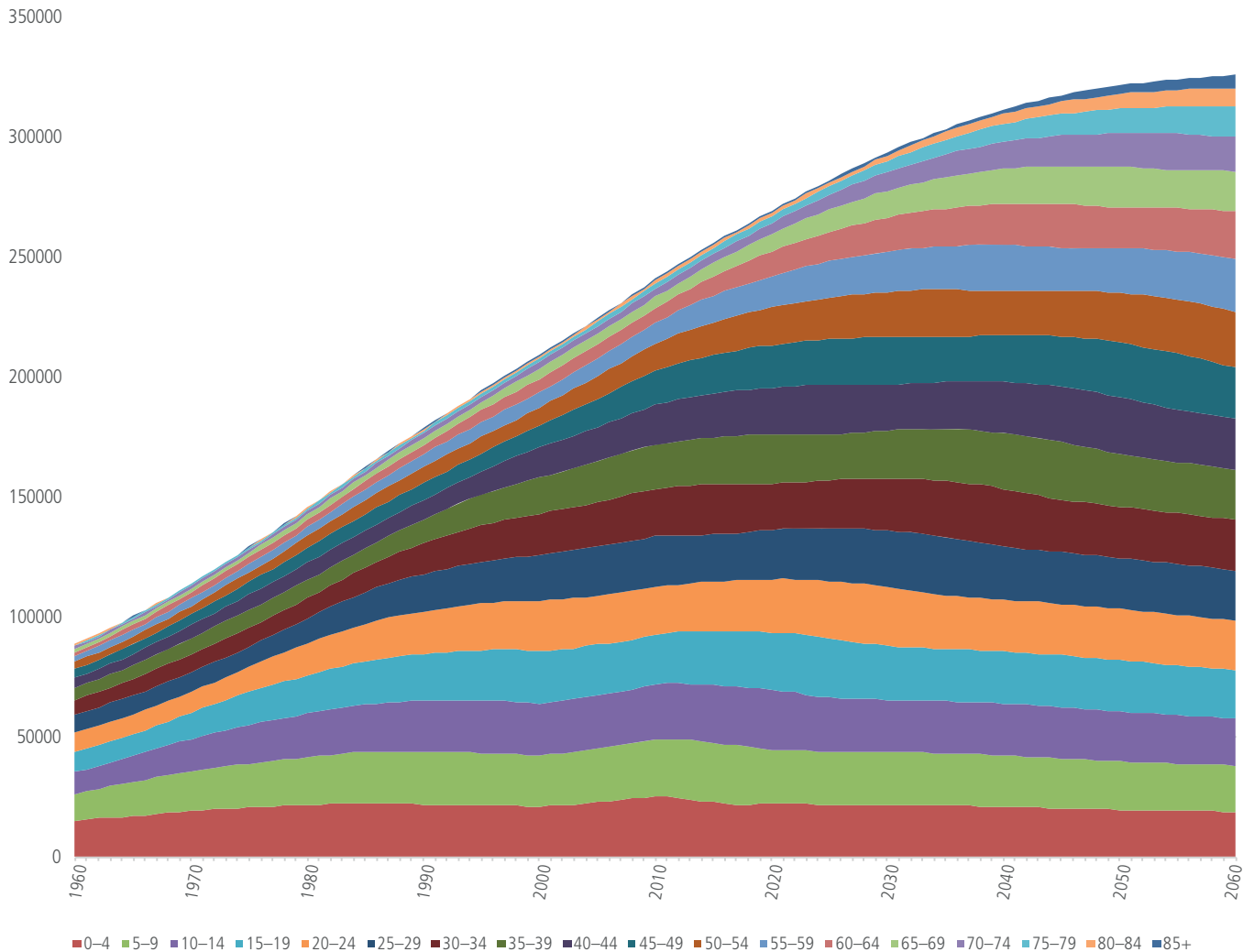
Source: [15].

Baseline scenarios: Japan and Indonesia

In the baseline scenario, we apply the historical and forecasted populations in Japan and Indonesia to the stylized tax and social contribution profiles by age. Figure 4 shows how each of the main sources of revenue per person are affected by the changing age-mix from 2015 to 2060, given Japan's population projections. Indexed to 2015 (i.e. so that the index level in 2015 = 100), we see stark changes over time. With an increasing share of the population at older ages, the ability to raise revenues from the labour market falls. The magnitude of the effect is such that social contributions raised per capita are 13.4% lower in 2060 compared with 2015, due solely to population ageing. The ability to generate revenues from income, profit and capital gains (i.e. wealth taxes) and from goods and services (i.e. consumption taxes) remains steady over time. In the case of wealth taxes, this is consistent with the assumption that

older people may hold asset wealth that is taxable. As people age, they still contribute to this revenue stream. Consumption taxes remain steady because consumption itself does not vary markedly over the life course. The only revenue source that increases over time with population ageing is property taxes, as larger numbers of people own property as they age.

We apply the same per person taxes by age profile to the population data for Indonesia. In a country with Indonesia's age demographics, we would expect more people at traditional working ages over the next half century. The story is therefore very different from that of Japan (Figure 5). If a country with Indonesia's age structure had a level of labour market formality and ability to collect taxes consistent with the illustrative tax by age profile in Figure 2, the projected age structure changes through 2060 would be expected to pay a high dividend in terms of revenue generation. Per

Figure 4: How will per person tax and social contributions be affected by population ageing?
(Japan example, index 2015 = 100)
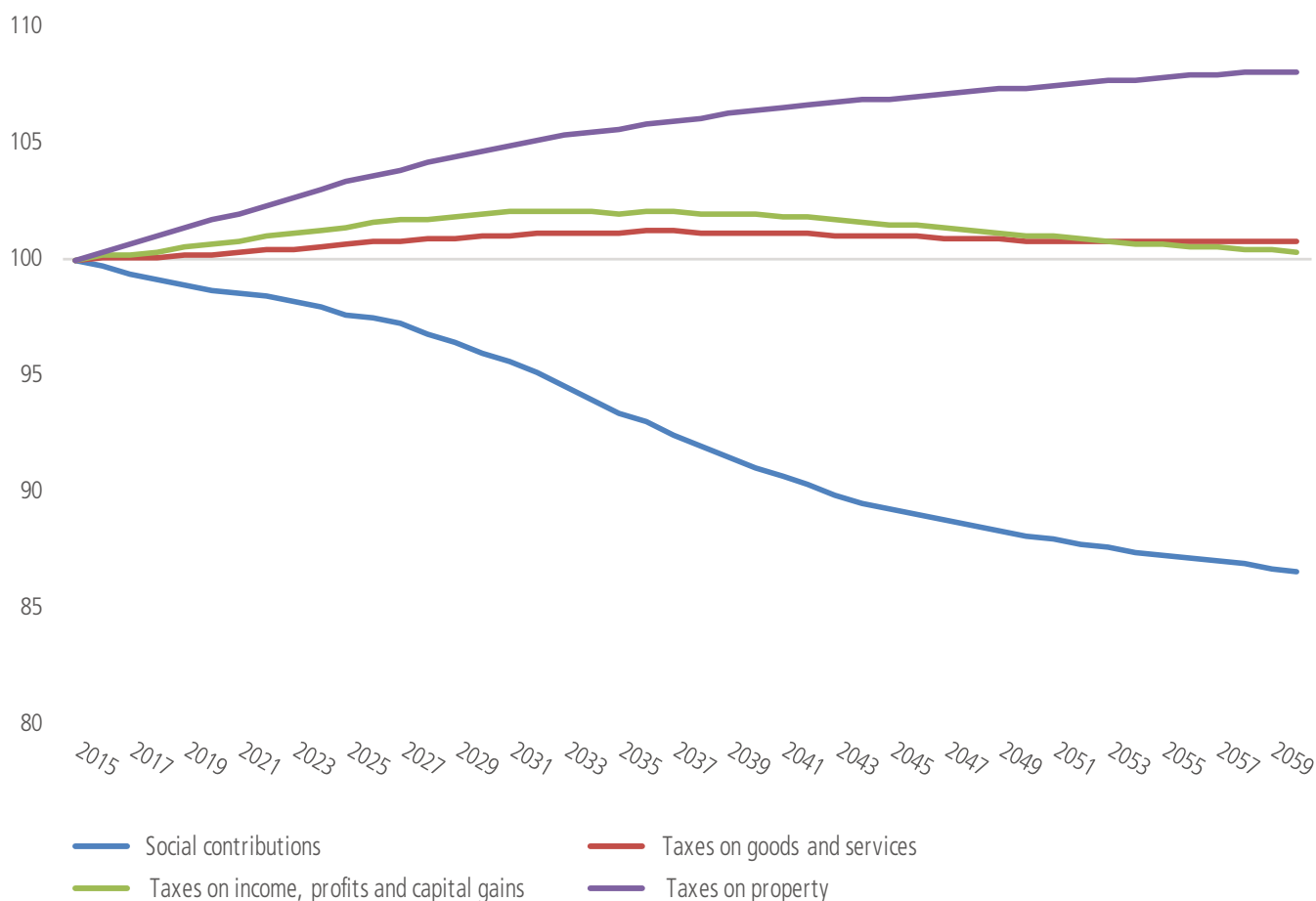
Source: Authors' calculations.

person revenues from social contributions would be 6.3% higher in 2060 than in 2015, attributable exclusively to the changing age-mix. Taxes on income and property per person would be expected to grow the most, but again, these projections assume the acquisition of property and other assets occurring in line with patterns in other countries. Tax revenues per person from consumption taxes would be expected to be 9% higher in 2060 than in 2015.

Appendix 2 contains estimates of how projected changes in the population age-mix of other selected countries will affect tax and social contributions per person.

What are the policy options to address declines in social contributions due to population ageing and how effective are they?

It is evident that population ageing will lead to changes in the ability to generate revenues from different tax and social contribution sources. In the case of a country with a

population profile like Indonesia, and assuming a high degree of tax compliance, the story is largely positive. Population ageing is likely to be beneficial for generating revenues. The challenge would be to develop more formal economies and adequate revenue collection mechanisms and these challenges are discussed elsewhere [16].

For a country with an ageing pattern more closely aligned to Japan, however, there may be challenges. Transition to an older population with comparatively lower labour force participation is expected to result in reductions in revenues per person. With the ageing of the population largely inevitable, what can be done in response?

In this next section we review a selection of policy options, primarily focused on addressing the expected shortcomings in revenue generation from the labour market (i.e. social contributions). We explore three scenarios that reflect tangible policy options. These options are:

    1) Expand the revenue base by increasing the number of contributors;

Figure 5: How will per person tax and social contributions be affected by population ageing? (Indonesia example, index 2015 = 100)

Legend:
- Social contributions
- Taxes on goods and services
- Taxes on income, profits and capital gains
- Taxes on property
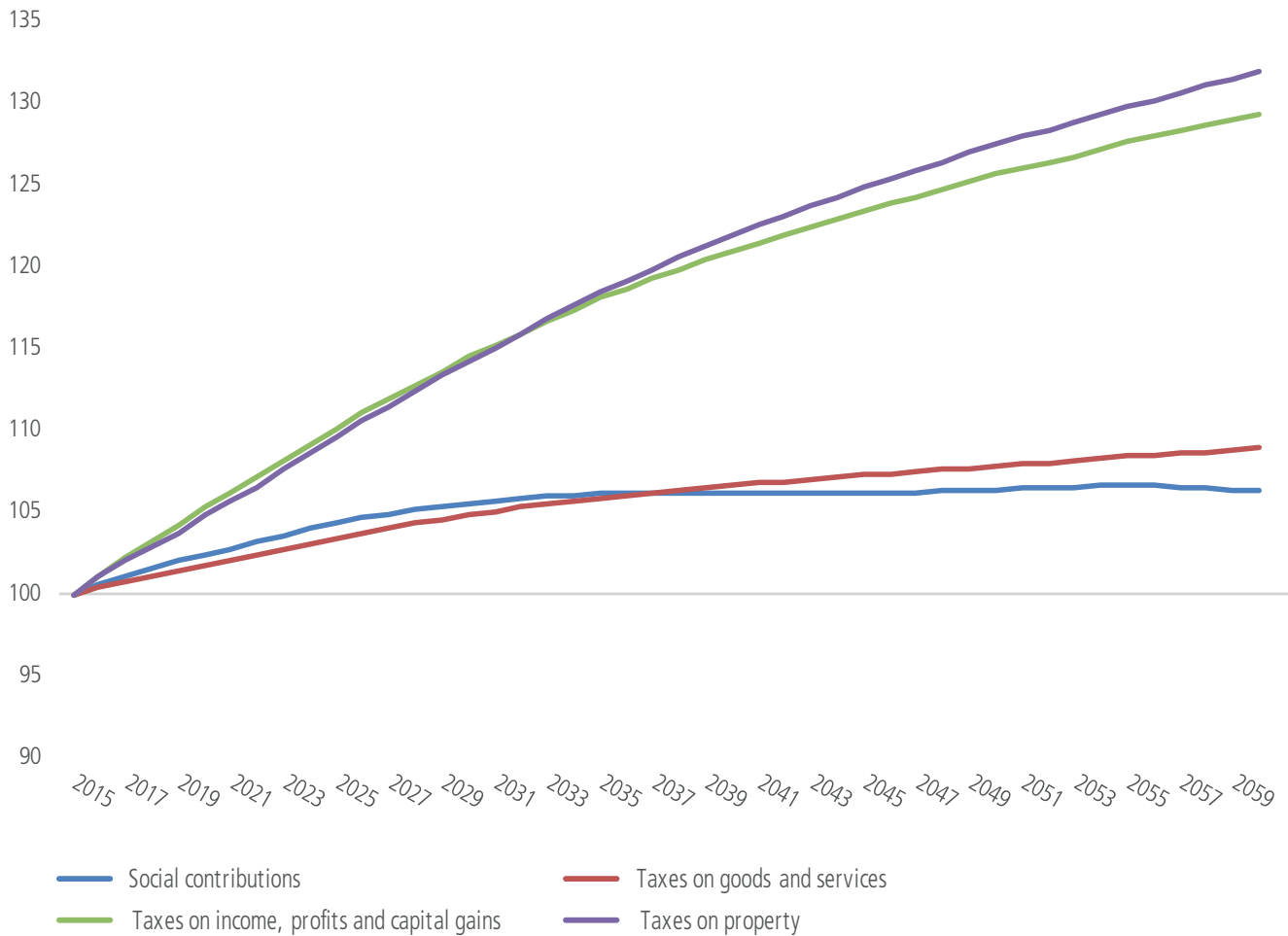
Source: Authors' calculations.

2) Increase the contribution rate; and

3) Diversify the mix of financing sources.

We report on these scenarios using the Japanese population projections in an effort to better understand the potential impact of policy options and provide general guidance.

Policy option #1: Expand the revenue base by increasing the number of contributors

In a country with an increasingly large older population (e.g. most high-income countries, including our example, Japan), increasing the number of contributors to the system implies increasing labour market participation. Increasing labour market participation at older ages, for example, could be done by raising the retirement age. Alternatively, increasing employment at younger ages could be done by allowing more immigration (see Box 3) or through efforts to increase the numbers of women in the workforce. In a country with a comparatively younger population, like Indonesia, the key strategy to increase the number of contributors to the

system is to increase the level of formality. This implies collecting employer contributions but also increasing consumption taxes.

We explore the possible revenue effects of raising labour market participation among older people. In practice, this would likely result from raising pension ages or otherwise increasing the effective retirement age. In our simulation, we operationalize this by making assumptions about the level of labour market participation among older people. At baseline, we assume a labour market participation rate of 40% among the age group 60 to 64 years, and 10% of those over age 65 years. This is roughly consistent with labour market participation rates by age in high-income countries according to the International Labour Organization [17]. It also ensures that, when extrapolating from the social contributions per person figures, contributions on a per labour market participant basis do not decline markedly with age. In each subsequent scenario, we hold the per labour market participant social contributions fixed and raise the labour market participation of these two age groups,
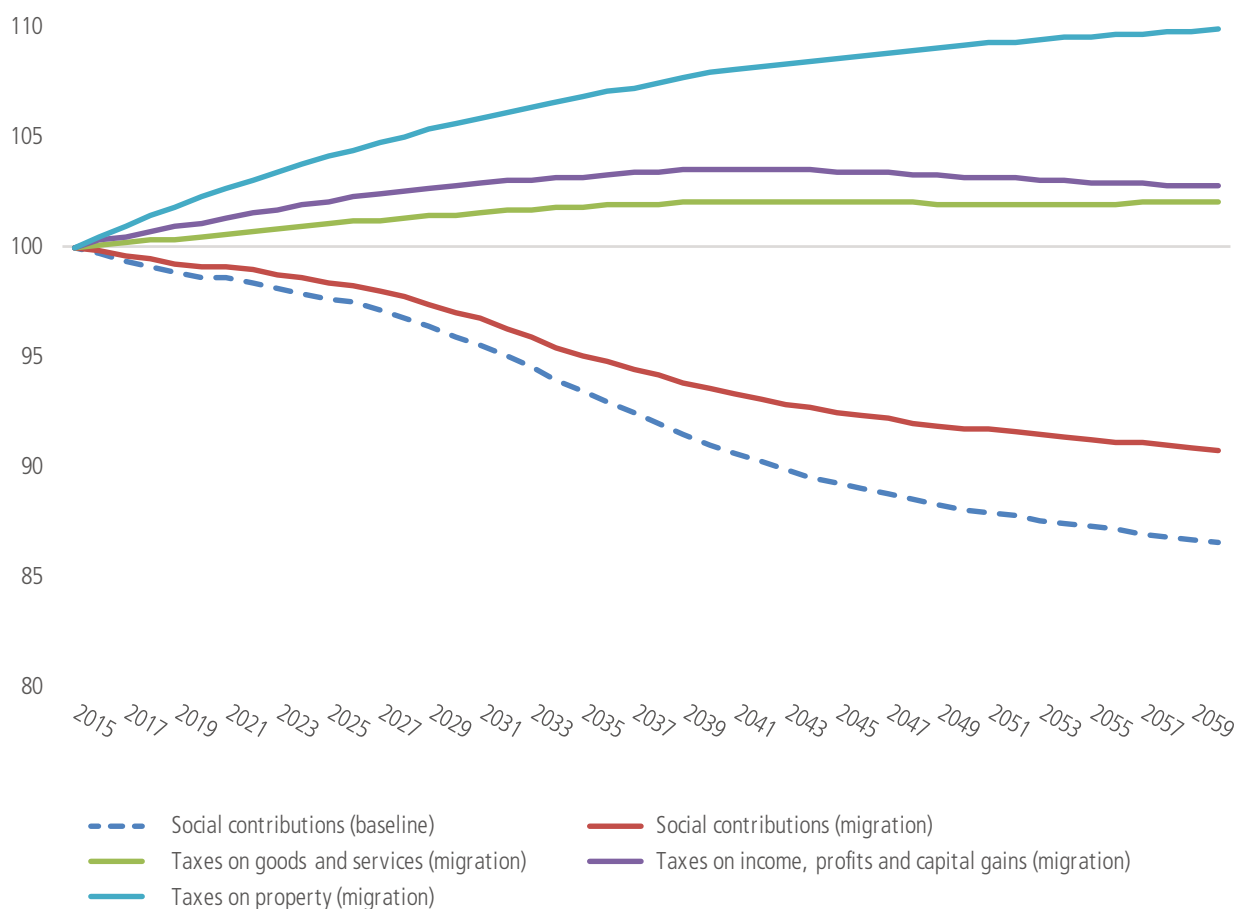
Box 3. Increasing migration to grow the working-age population

To simulate the possible effects of migration on revenue generation, we first calculate the percentage of the total population under age 65 in Japan (73.2% in 2015). We then calculate 73.2% of the baseline total population for each projection year and calculate the difference between that and the actual size of the population under age 65 in each projection year. This gives us the number of people in each projection year that would – in a hypothetical world – need to be reallocated from the over 65-year age group to the under 65-year age group to maintain the 2015 age distribution (i.e. the shares over and under 65 years).

This gives us a starting point for simulating the effects of migration on revenue generation. We assume that, in each projected year, these additional working-age people are migrant workers, who can be allocated equally into 5-year age groups among the working-age population (20–64 years). This would be analogous to a worker scheme that accepted migrant workers on an annual basis (i.e. they do not remain for the duration of the simulation). In 2060, for example, this would result in an increase in migration of 11.4 million people – amounting to 10.9% of the total population of Japan – a very high figure.

Figure 6 illustrates that these large increases in migration do moderate the reduction in per person revenues coming from social contributions, although only by a maximum of 4.2 percentage points by 2060 compared with the baseline projection of declining social contributions. Effects on other sources of revenues are negligible.

Figure 6: Policy Option #1a: Increase migration at working age (index 2015 = 100)

Legend:
- Social contributions (baseline)
- Social contributions (migration)
- Taxes on goods and services (migration)
- Taxes on income, profits and capital gains (migration)
- Taxes on property (migration)

Source: Authors' calculations.

respectively. For example, in the scenario where 10 percentage points more people over 60 years remain in the labour market, we assume a 50% participation rate for the age group of 60 to 64 years, and 20% participation for those 65 years and older, etc. This gives us a sense of how much per person revenues from social contributions would vary if a policy were in place that successfully raised labour market participation at these ages.

We illustrate how this affects per person social contributions using the Japan population projections (Figure 7). As expected, raising labour market participation at older ages

Figure 7: Policy Option #1b: Increase the number of contributors over the age of 60 (Japan, index 2015 = 100)
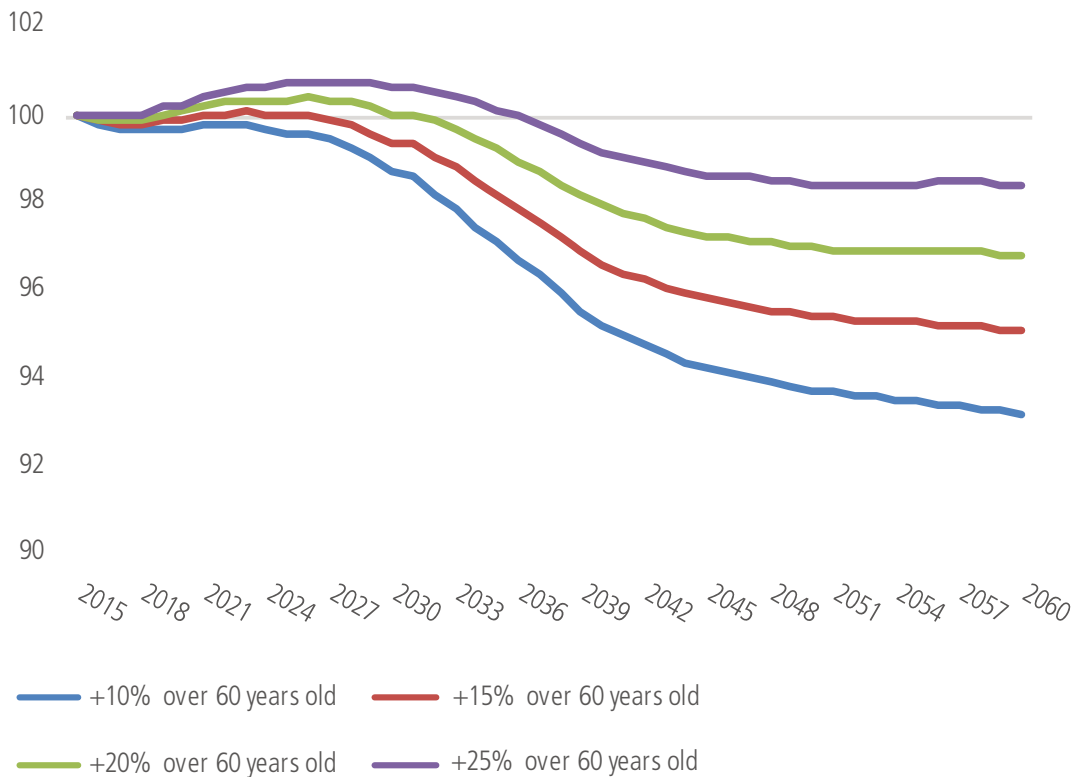
Source: Authors' calculations.

dampens the adverse effects of population ageing on per person revenues from social contributions. However, even raising labour market participation substantially by 25% (i.e. to 65% among people 60 to 64 years, and to 35% of all individuals 65 years or older) per capita revenues from social contributions are still 1.5 percentage points lower than they were in 2015 by the end of the projection period in 2060, due to population ageing.

Policy option #2: Increase the contribution rate

A second policy option is to consider changing rates of taxation to generate additional resources. Our focus is again on social contributions.

We simulate the effects of changing the contribution rate for social contributions uniformly across the population[3] at baseline without any feedback mechanism (i.e. without any changes in the underlying taxed source because of the taxation). Doing this will not change the rate of growth of per person revenues over time as compared to the baseline. In the case of social contributions, if there is no change in labour market participation (i.e. no change in the demand

for labour) or in wages resulting from an increase in the contribution rate, the effects on revenue generation per person will be exactly proportional to the increase in the change in the rate of contribution. Yet, the subsequent rate of growth will be the same as before. This is unlikely to occur in practice. However, the literature suggests that labour market responses to changes in taxation vary depending on the country context and the design of social protection systems [18–21]. In contexts where there is a high degree of informality already in the system, raising the rate of taxation may only worsen the problem, as was the case, for example, in Russia [22].

We present the change in social contribution rates needed annually to maintain consistent per person revenues in the context of a changing age-mix under an otherwise static system (Figure 8). We estimate that given the Japanese age demographics, annual social contribution rate increases would need to vary from around 0% in 2021 to 0.6% in 2034. Ultimately, social contribution rates would need to be 12.2 percentage points higher in 2060 than in 2015 to compensate for the effects of population ageing. This is again likely an underestimation, because social contributions assessed on employers and employees are likely to reduce demand for labour or reduce wages – especially when increasing by such a high percentage. Indeed, it may also be politically untenable to raise social contribution rates by such a high magnitude (around double the current Employees' Health Insurance premiums in Japan of around 10% of salary) [23].

3. An alternative policy option could be to raise the contribution rate assessed on pension income, particularly where it is lower than the contribution rate assessed on wages. This would limit the decline in per person social contributions at older ages shown in Figure 2, though it is difficult to estimate in our generic simulations without making strong assumptions about baseline differences in contribution rates applied to wages vs pensions, as well as differences in wage and pension levels.

Figure 8: Policy Option #2: How much would social contributions need to change by in each year to make up for the effects of population ageing? (Japan)
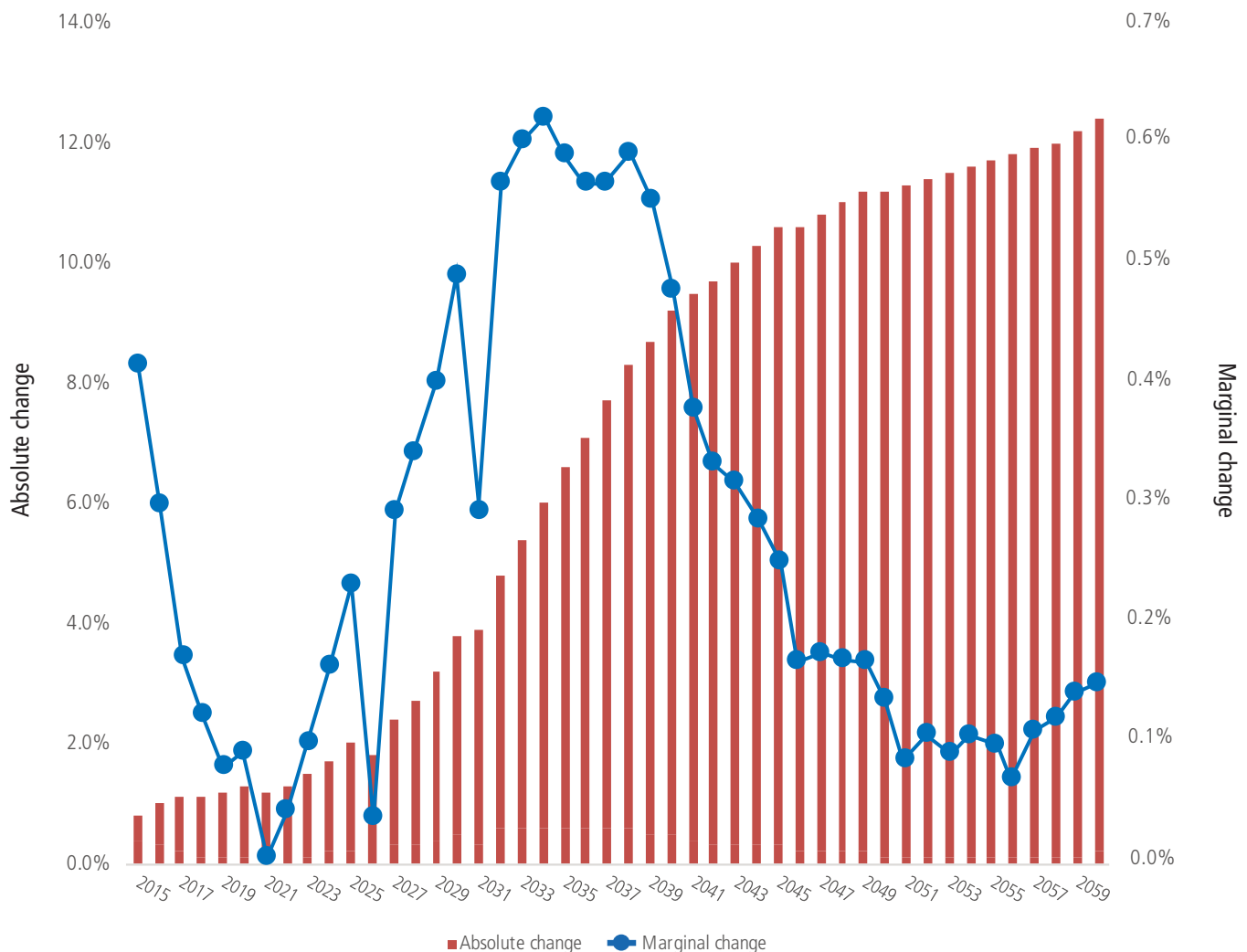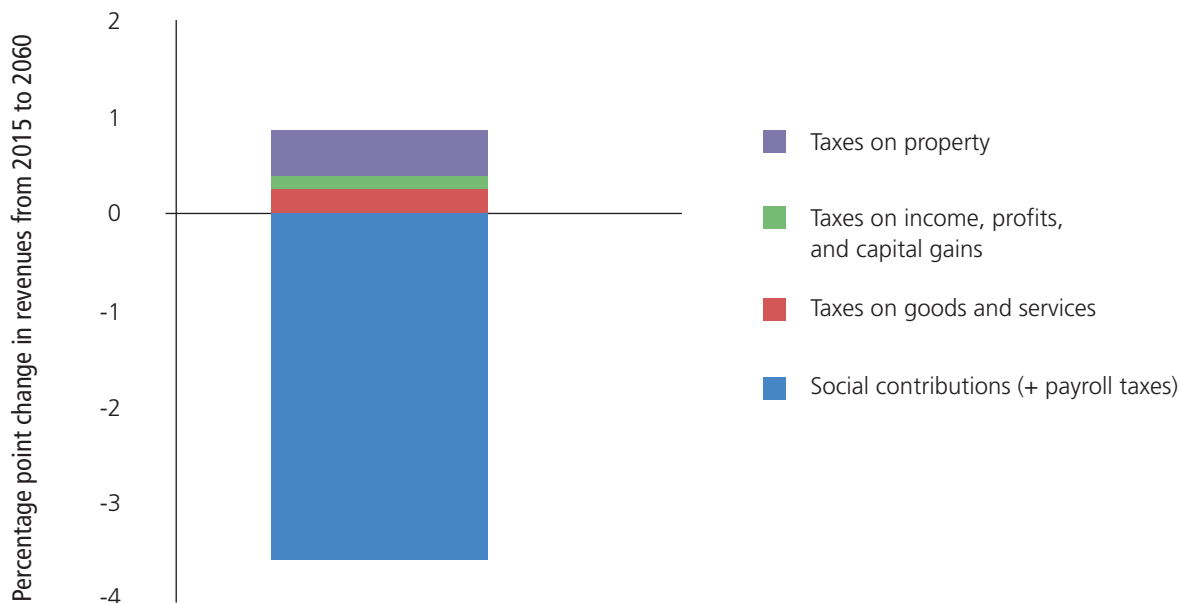

Source: Authors' calculations.

Policy option #3: Diversify the mix of financing sources

The third option we explore is diversifying the mix of financing sources to substitute for expected declines in per person social contributions. Diversification without having to broaden the revenue base or increase tax rates may be possible through the dividends from population ageing on existing revenue sources. As demonstrated in Figure 4, the changing age-mix will not necessarily lead to declining revenues for all sources of funding; using the Japanese age profile, consumption taxes, property taxes and wealth taxes appear less affected by the changing age-mix than those more directly linked to the labour market. The question is whether the dividends from population ageing for some sources of revenue are sufficient to make up for the declines in revenue in others, or whether other measures will need to be taken.

To assess the scope for diversification, we base our simulation on the OECD average distribution of public revenue sources in 2015 (Figure 1). From this starting point in 2015, total public revenues from these sources would be expected to decline by 2.6 percentage points by 2060 because of the changing age-mix as forecast using Japan's population (Figure 9). This reflects large declines in social contributions, which, on average, comprised around one-third of public revenues in OECD countries at baseline, but which will shrink by 13.4% per person by 2060. The dividend from population ageing that results in increases in per person revenues from taxes on property, taxes on income, profits and capital gains, and taxes on goods and services does not make up for the decline in revenues from social contributions (plus payroll taxes).

Figure 9: Policy Option #3: Will it be possible to substitute other revenue sources for the decline in social contributions?

Source: Authors' calculations.

Limitations

This analysis assumes that the average per person tax and social contributions by age shown in Figure 2 remain constant in the future, but that the age-mix of the population changes over time. This enables us to isolate the direct effects of population ageing on revenue generation for health and long-term care systems. However, changes in age structure may also affect the ability to generate revenues for health indirectly through other mechanisms, such as effects on labour productivity, economic growth, inequalities in income and asset wealth by age cohort, public debt and deficits, and politics.

For example, population ageing could have effects on the overall economy due to changes in the share of the population in formal labour, changes in labour productivity, as well as changes in saving and consumption behaviours [24]. If ageing led to slower economic growth through these mechanisms, then this would have adverse consequences for public revenues under current tax and contribution regimes as the tax base shrinks. This could imply important changes over time in the per person tax and social contributions by age profiles shown in Figure 2, particularly if there are disproportionate effects for certain age groups, and would alter the projections of future revenues for health in the context of population ageing.

Determining how population ageing will affect the overall economy is complex. Research using the NTAs suggests that changes in the share of the population who are 'productive' as compared to the share of the population who are 'consuming' will have direct effects on economic growth [25]. This is referred to as the first demographic dividend, measured as growth in the ratio of producers to consumers. That is, if the effective number of producers is growing more

slowly than the number of consumers (i.e. a negative first dividend), economic growth will be slowed as a result; one might expect this to occur if an increasingly large older population leaves the labour market en masse.

A related indicator, the second demographic dividend, looks at whether changes in the age-mix and the accumulation of savings and assets will lead to an increase in the productivity of workers. As the population ages, there becomes a need for people to save to help fund consumption at older ages (i.e. to fill the difference between labour income and consumption). This accumulation of savings and assets at an aggregate level could encourage investment and mean that population ageing raises the ratio of capital to labour, thus increasing labour productivity and supporting economic growth. Globally, the second dividend is projected to be positive on average for the foreseeable future according to NTA estimates, illustrating the asset intensification of the global economy resulting from population ageing [25]. However, it is important to note that these estimates from the NTAs fail to account for changes in income and asset wealth across age cohorts over time (i.e. they assume older people in the future will have the same consumption and wealth characteristics as older people today). Taken together, it becomes clear that the causal effects of ageing on the economy are complex and beyond the scope of this brief.

Another important factor that will influence the ability to generate revenues for health is the political priority for health. One might expect that, as countries become both wealthier and older, their populations will demand more health care and that this may lead governments to seek out ways to raise additional resources [26,27]. However, this is difficult to model as it varies depending on politics, societal preferences and other factors.

Discussion

How can countries generate stable revenues for health in the context of population ageing?

This policy brief considers the different ways that common health financing mechanisms are affected by population ageing. While associations have been demonstrated between ageing and health care expenditures, and ageing presents challenges for service delivery, it is important also to consider how population ageing affects the ability to raise revenues for health. The analysis here is normative in nature. Moving ahead, analyses using country-specific per person tax and social contribution by age profiles would be useful for countries to evaluate their own financing approaches and to consider possible policy options. This would provide an additional tool for countries to consider the long-term sustainability of their health financing – taking into account factors such as changes in population age structure, labour market participation and tax design. This would enable countries to assess how sensitive their systems are to these changes and consider courses of action in order to achieve predictable and stable revenues for health.

The lessons described here based on the simulations are important for both health policy-makers and finance policy-makers seeking to raise revenues.

In countries such as Japan, policy-makers can rely on well-developed tax collection systems but a large share of the population is already at older ages and out of the labour market. In this situation, relying primarily on the labour market to raise revenues for health leads to declining revenues per person over the coming decades. According to our simulations, this appears to be the case even after taking steps to broaden the revenue base or to raise contribution rates across the population. Diversifying the mix of revenue sources in favour of those sources that are less affected by ageing may be an appropriate solution. However, countries will still likely have to reprioritize their current public-sector budgets to allocate more resources to health (i.e. reallocate resources from other sectors) or increase tax rates on other revenue generation sources that do not decline with age, such as consumption.

In countries such as Indonesia, policy-makers have less developed tax collection systems, but much younger populations active in the labour market. Our analysis suggests that, in this situation, ageing presents an opportunity. There is great potential for countries who can improve tax collection to reap considerable benefits in terms of resource generation for health and other public-sector benefits. The priority therefore would be to reduce informality and improve the ability to collect revenues before a large segment of the population ages out of the labour force.

Countries are considering how to raise more revenues for health with the objective of moving towards universal health coverage. Each country naturally has a different starting point, and politically and practically there will be differences in the ability to raise revenues from different sources. Often the decision about how to raise revenues oscillates between options based on what may be politically feasible. For example, policy-makers in some countries may want to rely on social contributions to fund health if they think people are more willing to pay when their health care entitlements are linked to making contributions [28]. We demonstrate here that a system heavily reliant on contributions that are strongly linked to the labour market not only presents challenges for countries with low labour force participation, but is also unsustainable in the longer term as the population ages.

A key message is the importance of moving away from financing health through labour-related contributions and premiums. Entitlements should be delinked from the payment of contributions. By doing so, the question about equity in financing the health system can be addressed through taxation policy.

A key final message of this work is that public finance policy is health policy. This is not only because of the obvious overlap in health financing and public financing mechanisms, and the sizeable share of public sector resources that many countries allocate to health. For health financing to be sustainable in the context of population ageing, it makes sense that health is financed in a manner similar to the rest of the public sector. Nevertheless, doing so requires political commitment to allocate adequate stable resources to health and long-term care systems to maintain quality and accessible services.
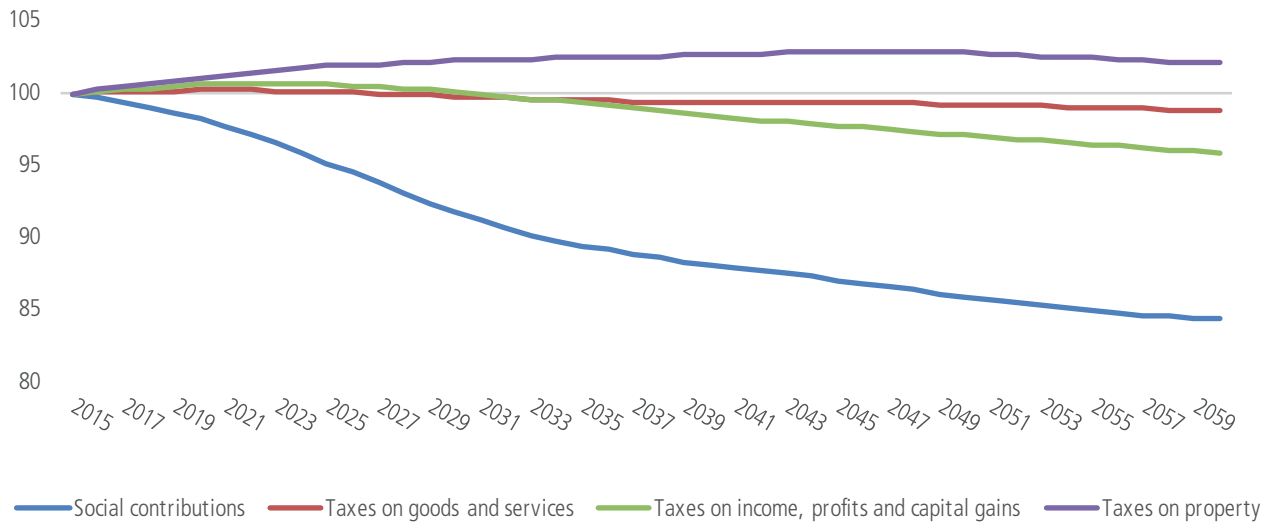
Appendix 1. Public sector revenues from taxes and social contributions, selected countries, 2016
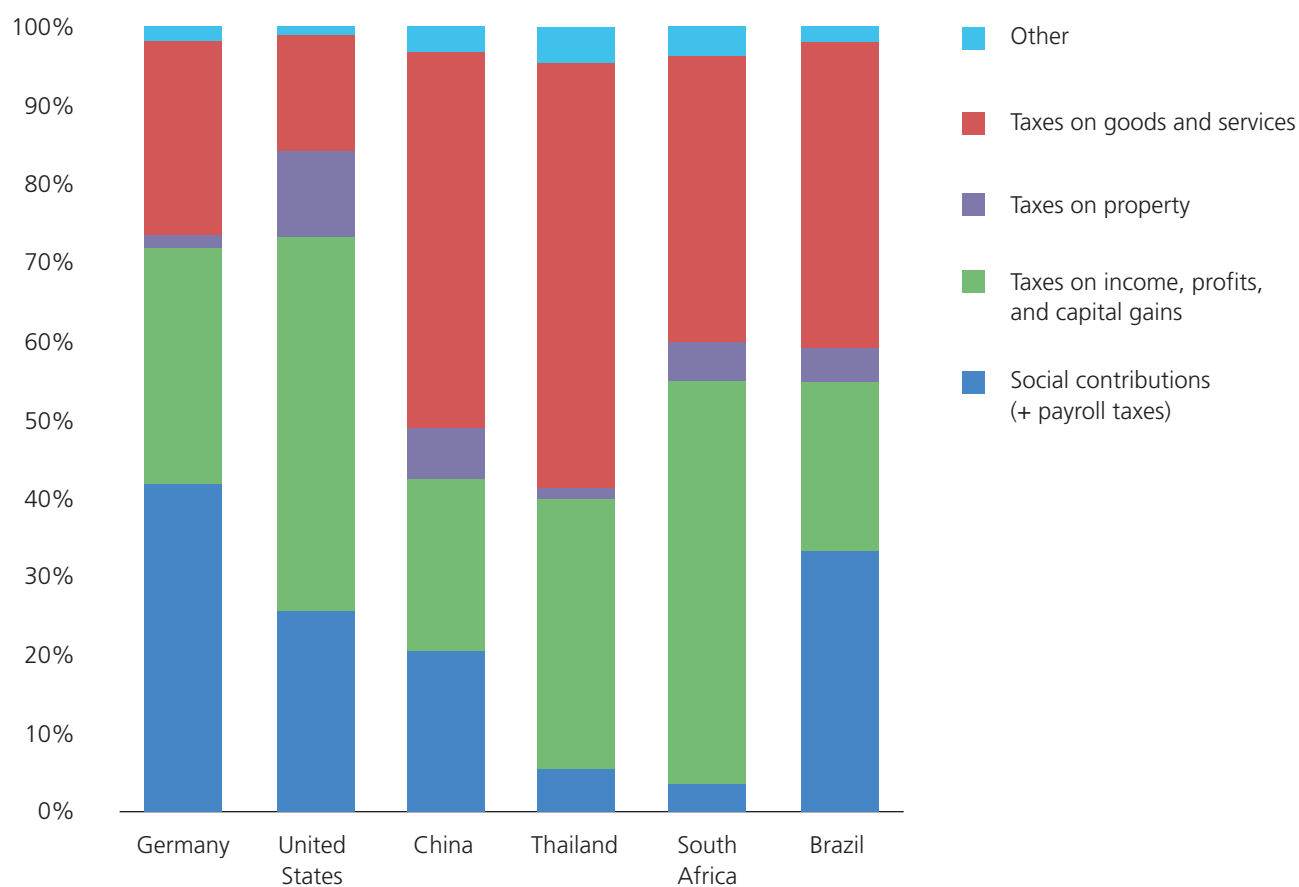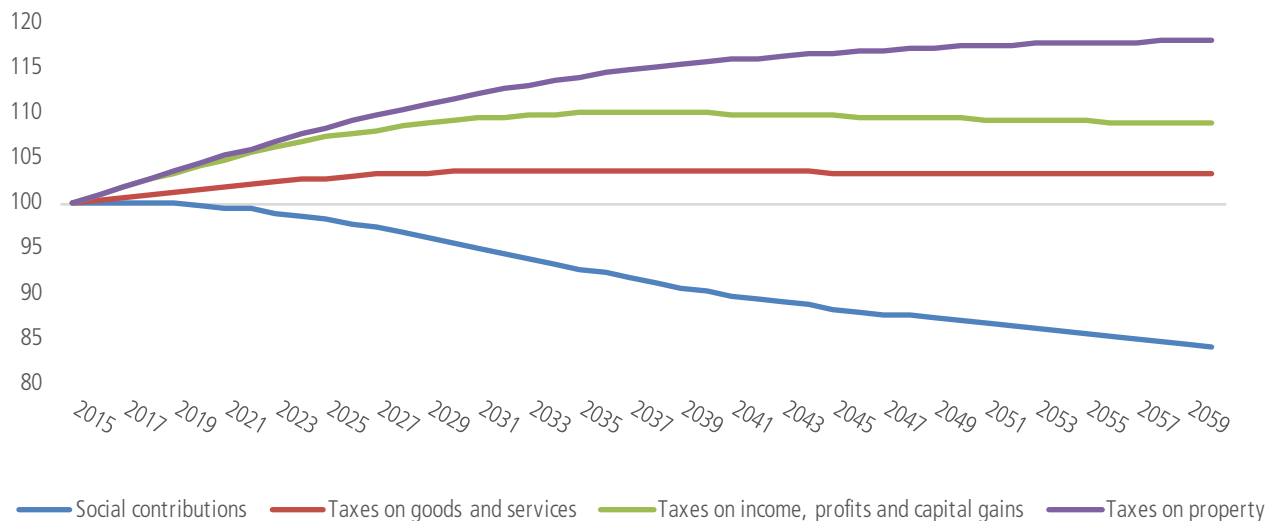

Source: [29].

Appendix 2. How will per person tax and social contributions be affected by population ageing? Selected additional countries, 2015–2060
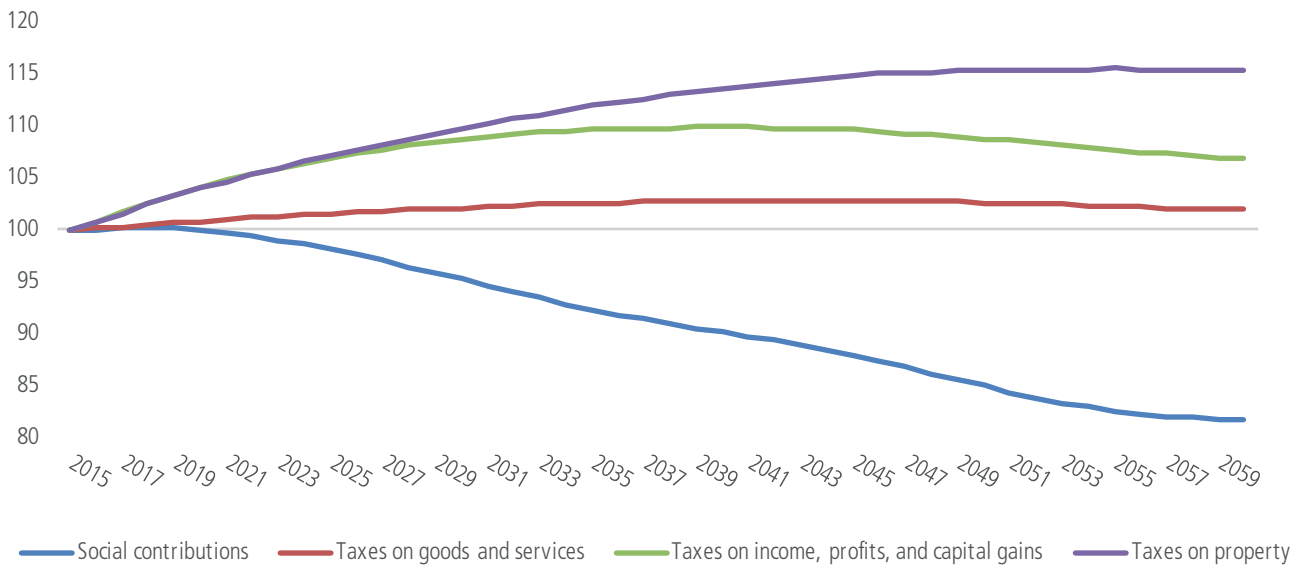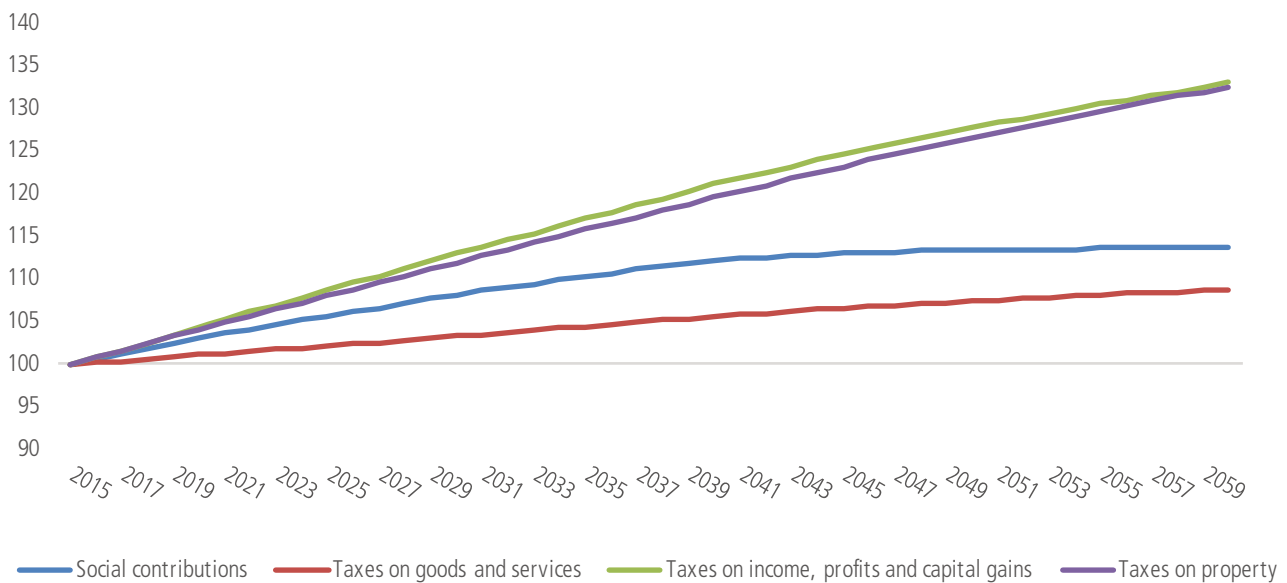
Germany

Source: Authors' calculations.
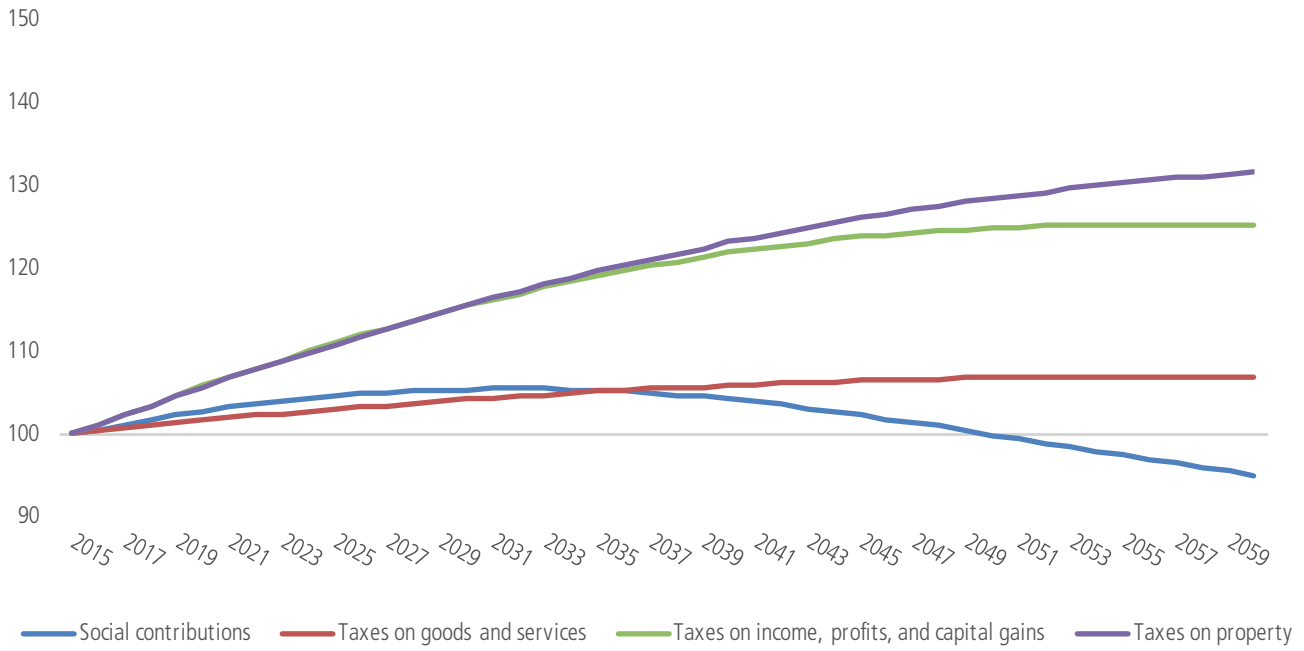
Thailand

Source: Authors' calculations.

China

Source: Authors' calculations.
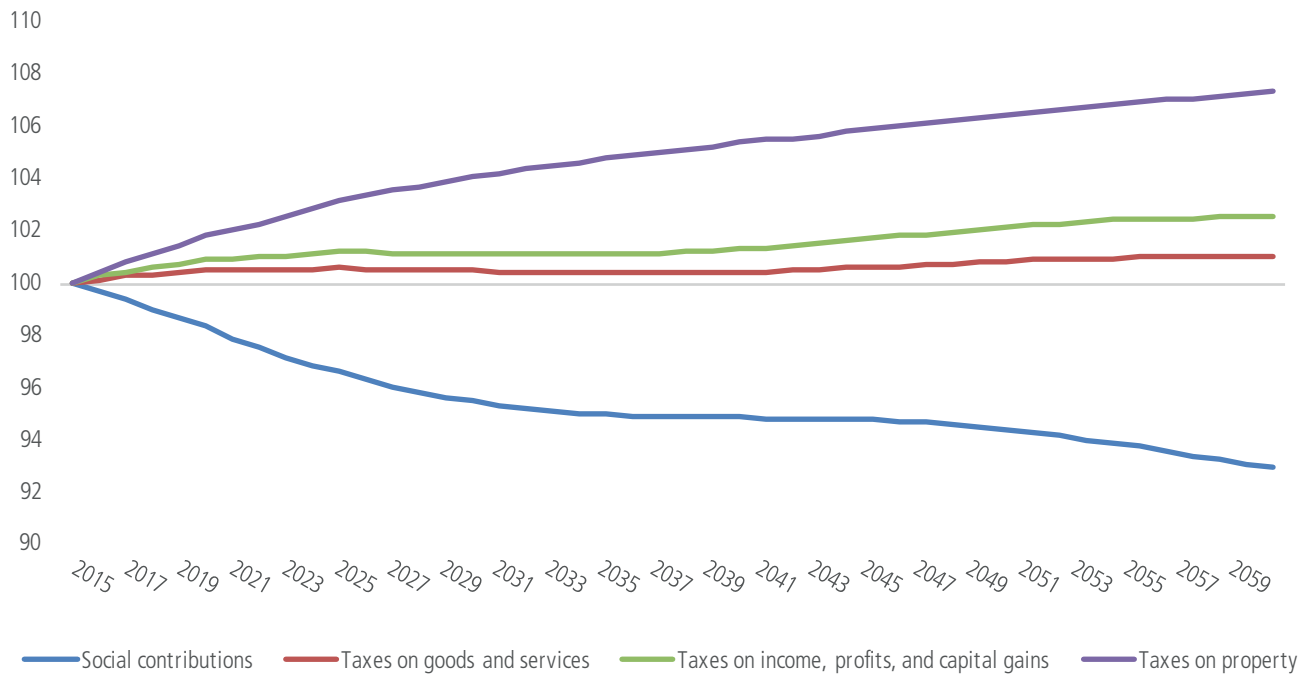
South Africa

Source: Authors' calculations.

Brazil

Source: Authors' calculations.

United States

Source: Authors' calculations.

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