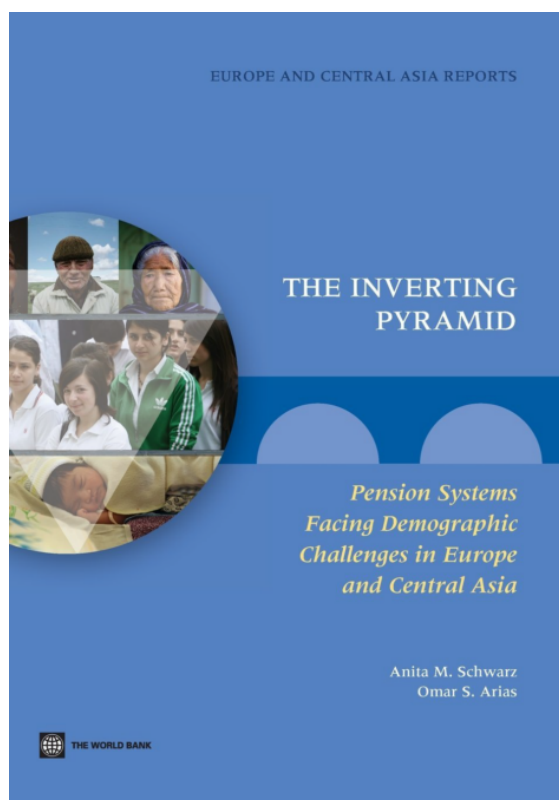


# THE INVERTING PYRAMID

*Pension Systems Facing Demographic Challenges  
in Europe and Central Asia*



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## OVERVIEW



THE WORLD BANK  
Washington, D.C.

2014

**This booklet contains the front matter and overview, as well as a list of contents from the forthcoming book *The Inverting Pyramid: Pension Systems Facing Demographic Challenges in Europe and Central Asia* (DOI:10.159/978-0-8213-9908-8). To order copies of the full-length book, published by the World Bank, please use the form at the back of this booklet.**

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## Foreword

The pension and old age security systems that originated in Europe in the nineteenth and twentieth centuries have been effective in sharply reducing poverty rates among the elderly throughout Europe. However, in many countries of the Europe and Central Asia (ECA) region, these systems now comprise the single largest expenditure item in the government budget. As these countries faced fiscal consolidation in the aftermath of the transition, many of them already substantially reformed their pension systems. Current demographic trends in the region, however, suggest that further reforms will be needed.

This book presents the historical evolution of pension systems in Europe, showing how policy makers were able to use the expanding population pyramid, with large younger cohorts and small older cohorts to expand the coverage and increase the generosity of pension systems. Levels of benefits were increased and the duration of retirement increased over time, making pension systems more expensive, with each generation receiving more generous benefits than the generation before. This book focuses on the impact of the break in this demographic evolution, whereby the prognosis for the future population structure is likely to resemble a column or even an inverting pyramid, with smaller cohorts of working age population

expected to support larger cohorts of elderly retirees. This change in the demographic structure calls into question the traditional financing mechanisms for old-age support, which relied on the labor taxes on the working age population to finance benefits for the elderly.

The good news is that, despite the demographic challenges, ECA countries do not have to roll back the progress they have made in reducing poverty among the elderly. If the generosity of the pension systems pension promise were rolled back only to where it was in the 1970s, when most of Europe had already achieved substantial poverty reduction among the elderly, the pension systems would be fiscally sustainable. Going back to the promise of the 1970s would involve adjusting the retirement age in line with rising longevity to ensure that average life expectancy after retirement is 15 years, thereby encouraging the elderly to spend their increased healthy years in the labor force rather than in retirement. As the working age population begins to shrink, keeping older workers in the labor force will become important, not just for financing the pension system, but also for maintaining overall economic growth.

Changes in pension policy will need to be accompanied by policies to increase labor market flexibility so as to encourage older workers to remain in the work force. Such policies include incentives for employers to provide lifelong learning and training specifically geared to older workers, and make workforce adaptations which allow older workers to retain a high level of productivity. In some countries, benefits will need to be streamlined to provide workers with basic benefits that ensure that they do not fall into poverty, but may not be sufficient to fully maintain the living standard they enjoyed while working. Tax and social protection systems need to encourage workers to save for a more generous level of retirement benefits than can be provided by the public system, if they desire more benefits in retirement. To that end, governments can encourage the financial sector to provide relevant savings instruments, while ensuring adequate transparency and regulation so that individuals have the opportunity to undertake additional savings without exposing themselves to unknown risks. Governments may also need to re-examine the efficiency of their revenue administration systems to help finance not just pensions, but all other societal needs. This book goes into each of these accompanying policies, but concludes that none of these by itself can address the impact of the demographic challenges that are underway. A combination of policies will be required to effectively face the challenges.

The book concludes that the inverting population pyramid clearly presents challenges to the provision of old age security, but consistent policy choices to return the pension system to parameters similar to those in the 1970s can result in sustainable systems of old age security. But this means that governments need to communicate to the population at large that the growth in generosity experienced in the past 100 years will not be able to continue and will in fact need to be rolled back somewhat. *The Inverting Pyramid* provides a wealth of statistics and analysis that will enable a better understanding of the changes that are needed and illustrates the possible trade-offs when policy makers or voters consider who they want to protect through their countries' pension systems, how much, and when.

Laura Tuck

*Vice President*

*Europe and Central Asia Region*

*The World Bank*

## Overview

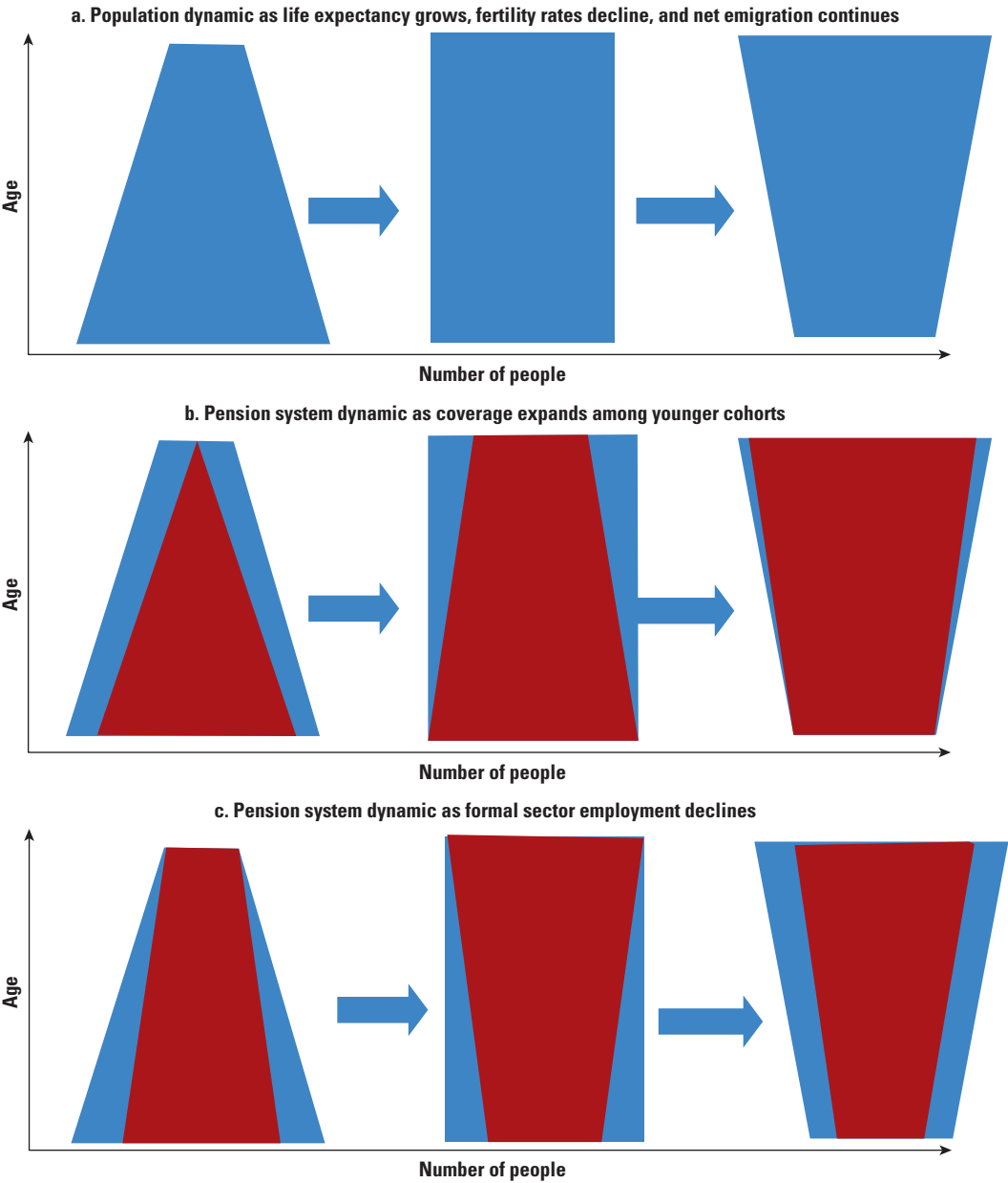
Europe's pension systems, among the most celebrated features of its social welfare model, face an uncertain future. They have achieved a significant reduction in old-age poverty but have become one of the largest expenditure items in government budgets. In many countries, pension rules encourage people to retire sooner while enjoying longer lives. In the past, pensions were financed largely by payroll taxes, which generated more and more revenue as the contributor population grew. This model of pension provision is now being severely tested as pension systems reach maturity, populations are aging, and the labor force is starting to shrink.

Aging in itself is not a problem. Longer, healthier lives are a wonderful achievement to be celebrated. What could become a problem is the refusal to adjust pension systems when the period of healthy and productive adult years is expanding. Comparing today's longer lifespans to those of the past, we see that educational years are expanding while the average age of retirement is staying the same or even falling. The result is to diminish the time spent in work and increase the duration of retirement. Living longer allows workers to work longer, and longer working lives would go a long way toward resolving the pension financing dilemmas. However, worker

aspirations for a youthful and leisurely retirement have prevented countries from raising retirement ages.

In the historical evolution of a typical country, the age structure starts out looking something like a pyramid, with a few elderly at the peak and large numbers of children at the base (figure O.1, panel a). Within this population pyramid, introducing a pension system

**FIGURE O.1**  
**Population and Pension System Dynamics**



produces its own pyramid. Initially, some portion of the working-age population contributes to the pension system, but a much smaller fraction of the elderly collect benefits, as only those with a contribution history are allowed to collect. Over time, more people of working age become contributors to the pension system, and more of the elderly collect pensions as older workers with contribution histories reach retirement age. As long as the pension system keeps expanding to cover an increasing share of the working-age population, the number of pensioners remains lower than the number of contributors and the pension pyramid remains a pyramid, even if the age structure of the population changes.

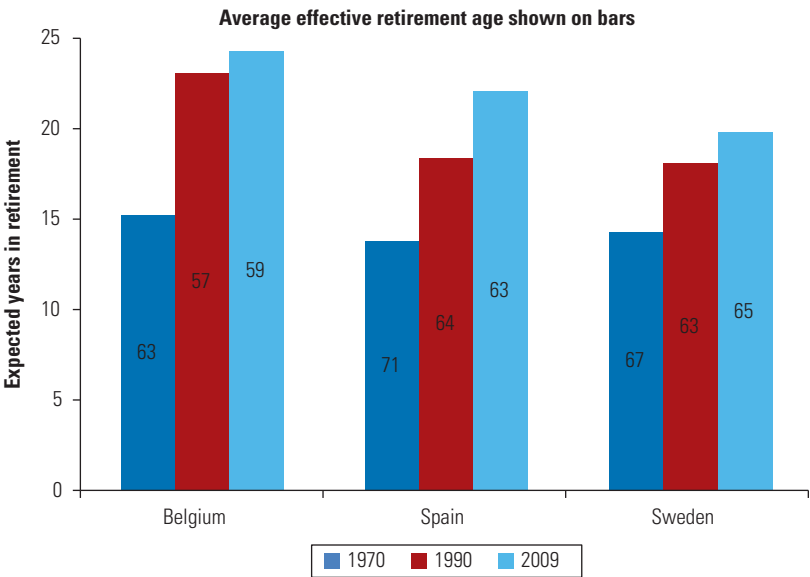
Since contributors to a pension system bring in revenue, as long as contributors far outnumber pensioners, the pension system generates surpluses. These surpluses could be saved to pay the future pensions of this growing group of contributors, but historically, surpluses have been used to increase the generosity of the pension system. Initially, the objective of the pension systems in Europe was to supplement the income of those who had lost significant work capacity due to age. Flush with revenues, the systems began providing pensions to all those above a certain age, regardless of work capacity. They then moved away from supplementing an elderly person's income to providing enough income so that the elderly no longer needed to work. And finally, the systems began to provide retirement incomes that grew in tandem with the productivity growth of the working-age population. Benefit levels in countries like the Netherlands doubled between 1957 and 1981, rising from 30 percent of average wage to 61 percent of average wage. Similar growth in benefit levels can be seen in Hungary between 1950 and 1985, where benefits increased from 22 percent to 55 percent of average wage.

The increased generosity was not limited solely to benefit levels, but also extended by lowering retirement ages. The effect was to increase the average lifespan after retirement, or duration of retirement. Between 1970 and 2009, the average age of retirement fell by eight years in Spain, four years in Belgium, and two years in Sweden. And the average time spent in retirement, which is affected by both the retirement age and life expectancy increases, increased by 9.1 years in Spain, 8.3 years in Belgium, and 5.5 years in Sweden, as shown in figure O.2.

Two critical changes have jeopardized this model of increasing generosity. The first is a profound demographic shift. The drop in fertility rates in Europe has changed the age structure of the population from a pyramid to a shape more like a column. In countries with substantial emigration, which tends to hollow out the working



**FIGURE 0.2**  
**Changes in Retirement Age and Impact on Duration of Retirement in Belgium, Spain, and Sweden, 1970–2009**



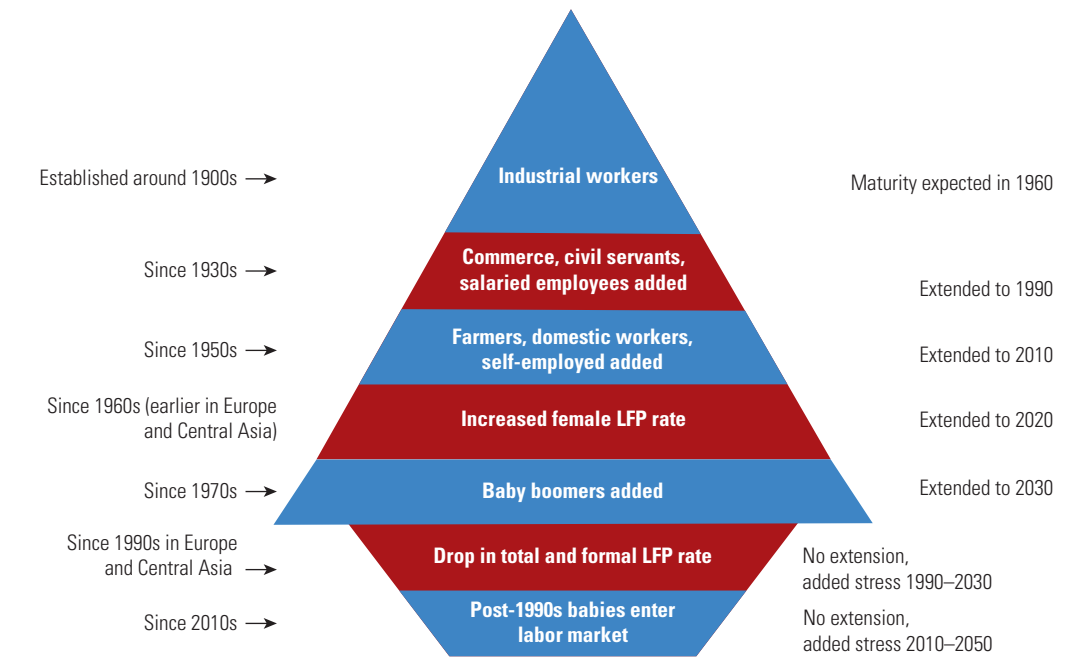
Source: OECD.

age population, the age structure has begun to look more like an inverted pyramid, as shown in figure O.1, panel a.

The second important change has been within the pension system itself. Initially, a relatively small number of workers were contributors—in some countries industrial workers, in others civil servants. Over time other groups were added to the pension system, including salaried employees of all types, farmers, domestic workers, and the self-employed. Growing female labor force participation added another large group of workers who had not contributed before, as shown in figure O.3. But once the bulk of the working-age population is contributing, the pension pyramid becomes constrained by the population pyramid, with no growth in contributors unless the working-age population expands, as shown in figure O.1, panel b.

The transition countries in the region, those that moved from central planning to a market economy, experienced a sharp downturn in employment during the transition process. These countries had reached full women’s labor force participation much earlier than the traditional market economies, so they began their transition with full cohorts of elderly already collecting pensions. The sharp drop in employment translated into a sharp drop in contributors. In many cases, the pension system began to resemble an inverted pyramid

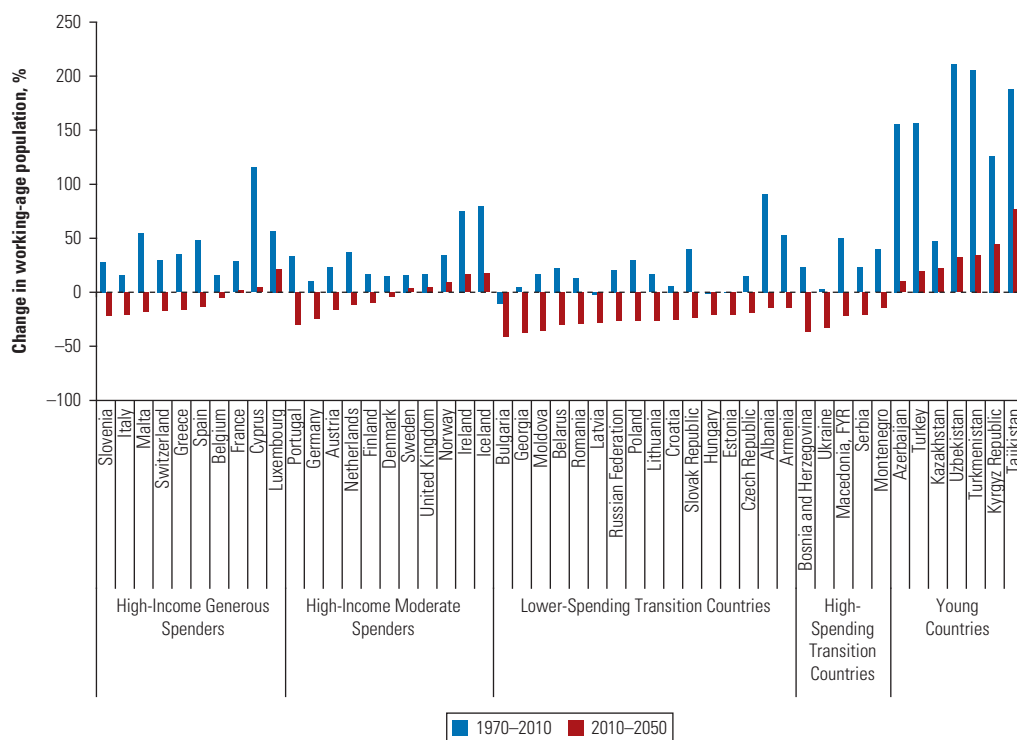
**FIGURE 0.3**  
**Extension of Coverage and Impact on Pension Systems in Europe and Central Asia, 1900s through 2050**



Note: LFP = labor force participation.

regardless of the shape of the population pyramid, as shown in figure O.1, panel c.

Furthermore, most of the transition countries suffered a sudden and prolonged drop in the fertility rate after transition to a market economy began in 1990. They have also experienced extensive and continuous emigration, with little immigration except in a few countries such as Russia, which has been able to draw workers from other countries of the former Soviet Union. The financial crisis hit many of the transition countries hard, particularly those in Europe, with a new wave of reduced employment and reduced numbers of contributors. While life expectancies in the transition countries of Central Europe and the Balkans have increased at a rate comparable to Western Europe's over the past 20 years,<sup>1</sup> the extent of the projected drop in the working-age population of these countries is unique. For example, Bulgaria is expected to experience a 40 percent decline in the working-age population between 2010 and 2050, as shown in figure O.4. The decline in the working-age population is expected to occur all over Europe, except in the few countries that can count on significant immigration and in the Young Countries, shown in the right-hand portion of figure O.4.

**FIGURE 0.4****Change in Working-Age Population in Selected European and Central Asian Economies, 1970–2010 and 2010–2050**

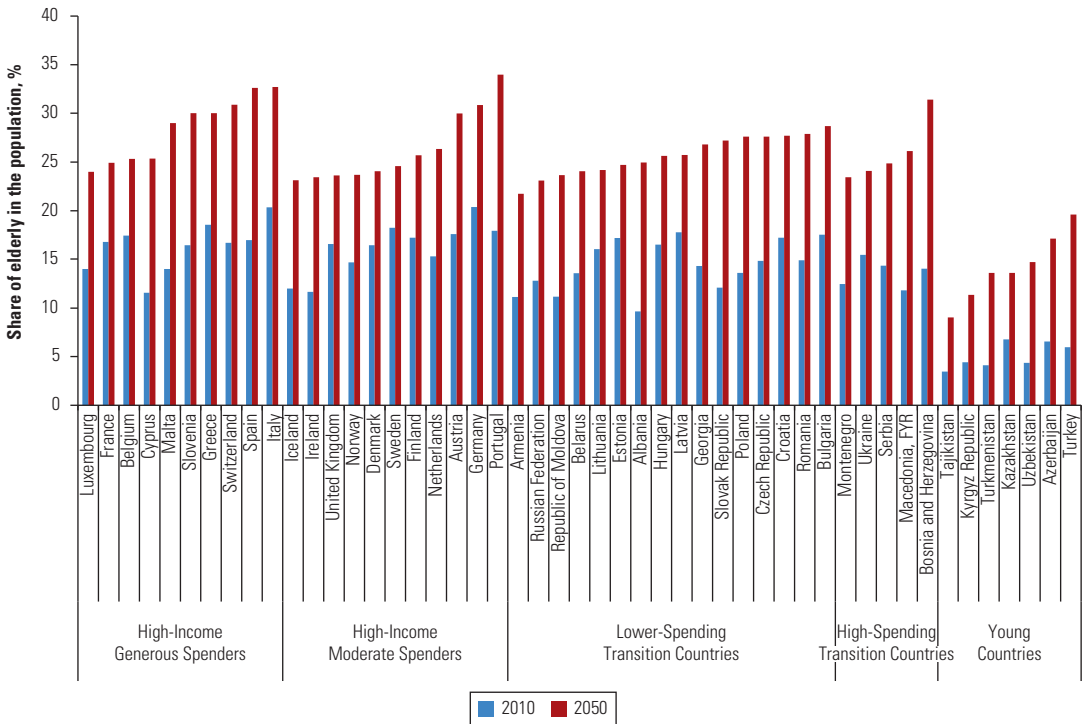
Source: United Nations population projections (UN 2011).

For the purpose of this analysis, the countries of Europe and Central Asia have been divided into five clusters. High-Income Generous Spenders have long retirement spans of 20 years or more, with pension benefits equal to 50 percent or more of gross domestic product (GDP) per capita. High-Income Moderate Spenders have retirement spans of 18 to 20 years and pension benefits around 50 percent of GDP per capita. Lower-Spending Transition Countries have retirement spans of 14 to 19 years and benefits around 35 percent of GDP per capita. High-Spending Transition Countries have retirement spans like those of the other transition countries, but with much higher benefit levels. Finally, the Young Countries are those where fertility is high enough that the working-age population is expected to grow between 2010 and 2050.<sup>2</sup>

Increases in longevity combined with the imminent retirement of the larger cohorts born after World War II are projected to substantially increase the percentage of the population over the age of 65, as shown in figure O.5. The combination of the two trends, increasing life expectancies and the shrinking number of contributors,

**FIGURE 0.5**

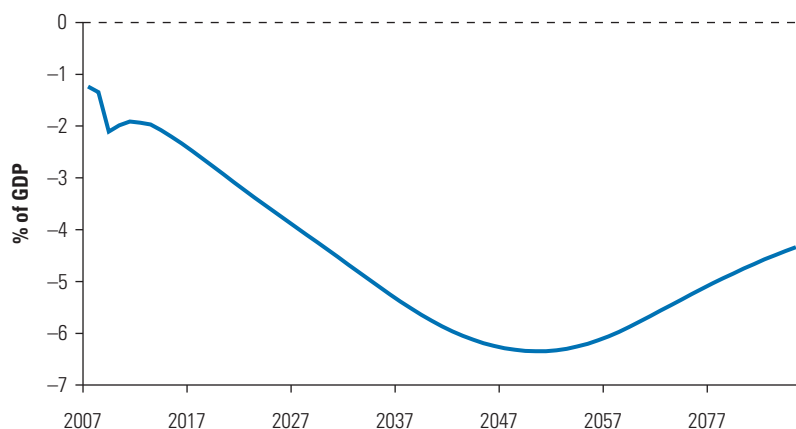
**Percentage of Elderly in the Population in Selected European and Central Asian Economies, 2010 and 2050**



Source: United Nations population projections (UN 2011).

is straining the region's pension systems. Projections for a hypothetical but typical Central European country suggest that pension system deficits could approach 7 percent of GDP by 2050, as shown in figure 0.6, if retirement ages and pension generosity remain the same as they are today.

Recognizing the coming demographic onslaught, almost all of the transition countries have undertaken pension reforms, making this the most reform-oriented region of the world. No single paradigm has emerged, and each country has ended up with a different pension design. The lack of convergence to a single design partly relates to the different weights that each society places on the two objectives of pension systems: (a) preventing poverty in old age and (b) replacing the income individuals earned during their working years. The first objective often requires redistribution from middle and high earners toward low earners, while the second suggests that high earners should keep the benefits of their higher contributions in the form of higher pensions for themselves. These two objectives have conflicting impacts on policy. In the first case, there is only a tenuous

**FIGURE 0.6****Projected Pension Deficits in an Average Central European Economy, 2007–2077**

Source: Projections generated using World Bank's Pension Reform Options Software Toolkit (PROST).

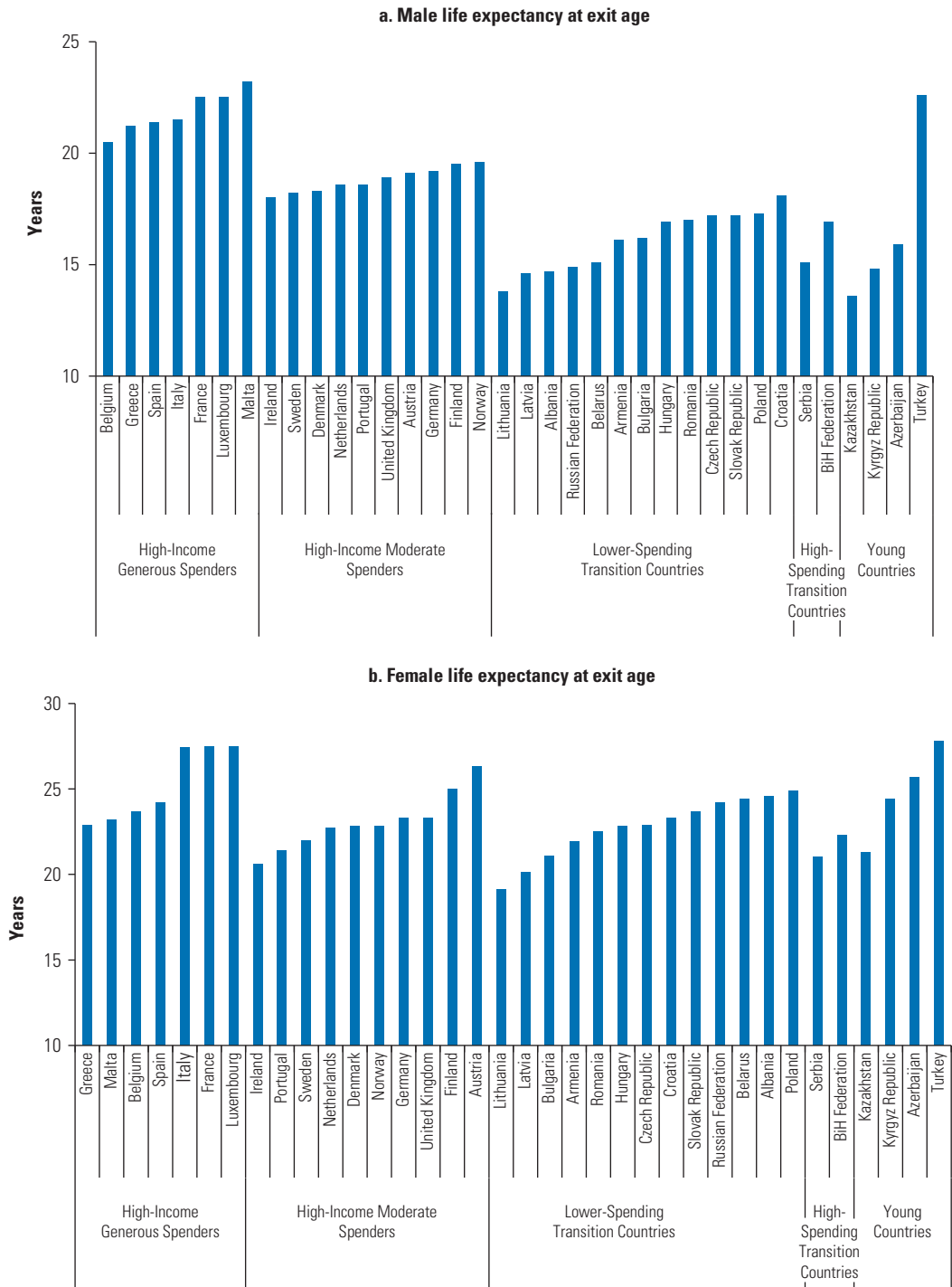
connection, if any, between contributions made by an individual and the eventual benefits he or she receives, while in the second case the link is much tighter. The different priorities lead to the different policy designs.

### Reforms Were Effective, but Not Effective Enough

Countries have undertaken a variety of pension reforms, including changes to contribution rates, benefit rates, the averaging period for income on which the pension amount is based, indexation of benefits after retirement, years of service required to be eligible for retirement, and the retirement age. These have been effective to varying degrees, but together they have not been sufficient to make pension systems sustainable.

Raising retirement ages has been effective, but retirement ages have just kept up with growth in life expectancy. In virtually all the countries, with the exception of Lithuania, Latvia, Albania, Russia, Kazakhstan, and the Kyrgyz Republic, the expected duration of retirement for men (that is, life expectancy at the effective retirement age) exceeds the 15 years typical of European countries in the 1970s. In all but Lithuania, the expected duration of retirement for women exceeds 20 years, as shown in figure O.7. Early retirement continues to be an issue, with more than 50 percent of pension being beneficiaries under the age of 65, particularly in the Young Countries.

**FIGURE 0.7**  
**Duration of Retirement in Selected European and Central Asian Economies, 2009**



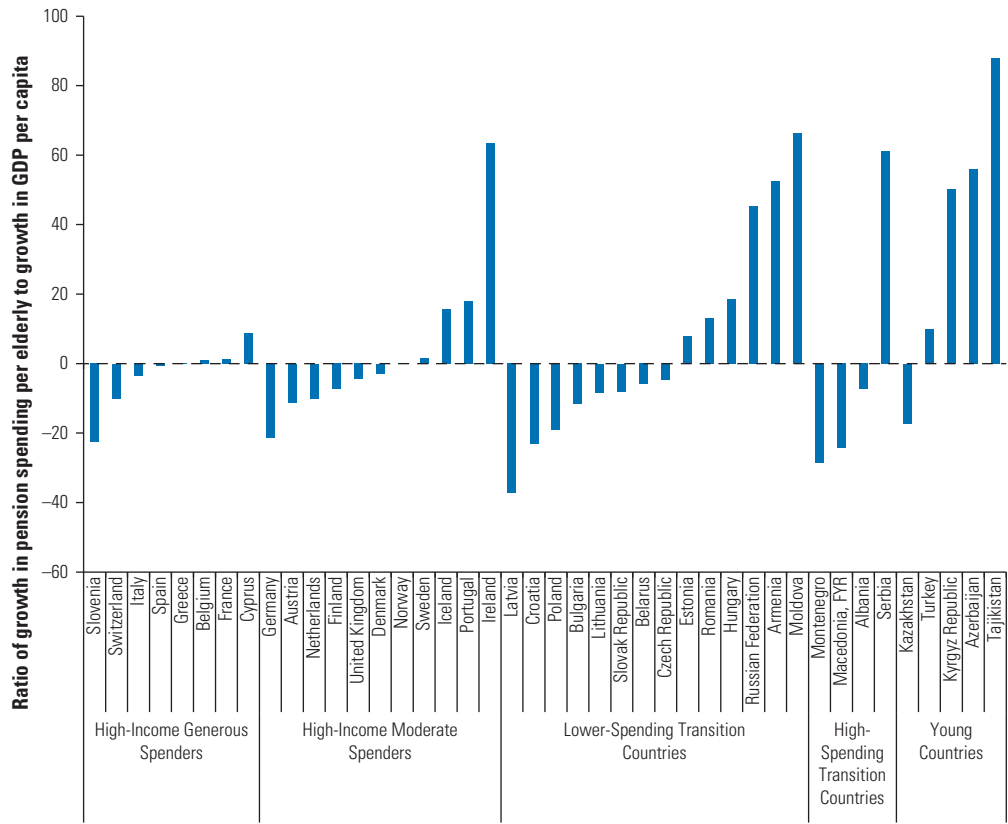
Source: Eurostat Statistics Database.  
Note: The Federation of Bosnia-Herzegovina (BiH Federation) and Republika Srpska, which together make up the country of Bosnia and Herzegovina, have separate pension systems and are treated as separate data points in the figure.

But even in the older countries, more than 40 percent of beneficiaries, on average, are under the age of 65.

Countries have also undertaken measures to curtail spending by reducing benefits. By indexing pension increases to inflation rather than to average wage growth, countries have attempted to reduce pension spending. Most countries are now basing pensions on average lifetime wages rather than on last salary in an attempt to link the benefit received with contributions paid; this also serves to reduce pension levels, since salaries earned earlier in a person’s career are typically lower than salary just before retirement. Benefits in some countries are adjusted downward as life expectancy grows. Despite this broad menu of expenditure-reducing measures, the impact has been relatively small on average, as shown in figure 0.8.

While there was significant benefit reduction relative to GDP per capita in many of the High-Income Moderate Spenders, as well as in

**FIGURE 0.8**  
**Growth in Pension Spending Per Elderly Person Compared to Growth in GDP Per Capita, Selected European and Central Asian Economies, 2001–2009**



Sources: Eurostat Statistics Database; country-provided data.

some of the Lower-Spending Transition Countries, there was on average no change in spending in the High-Income Generous Spenders. Moreover, sizable increases were recorded in some of the transition and Young Countries. One reason for the limited impact of benefit-reduction measures is that when they start to have an impact, beneficiaries demand that the cuts be reversed. Politicians respond by tacking on all kinds of ad hoc measures, like a “13th month bonus” or supplements, undermining the impact of the benefit reductions.

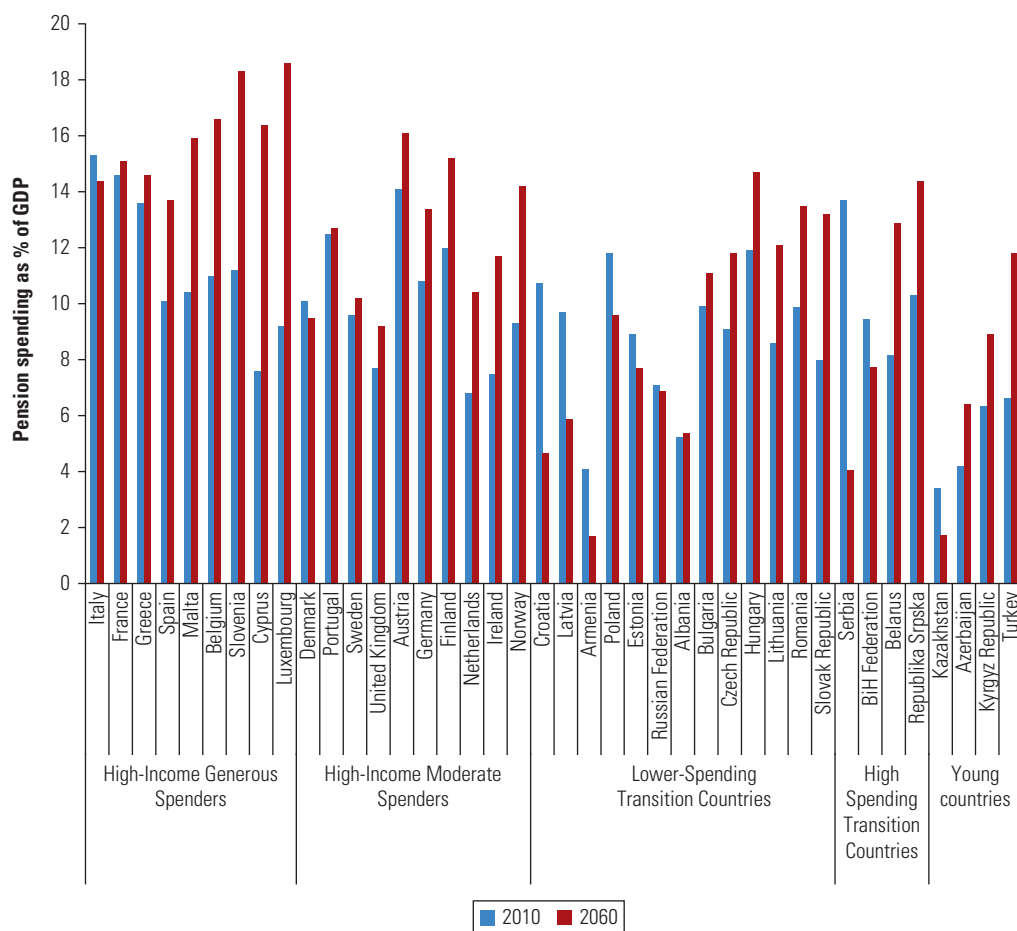
People generally feel that the elderly are entitled to a generous pension because they earned it through the contributions they made over their working lives. But the history of pension systems shows that the current elderly received such generous increases not because they themselves earned them, but because the demographic and coverage expansion allowed politicians to increase the generosity of pensions. As the demographics change and the capacity for coverage expansion is reached, politicians and the public will have to accept some reductions in generosity to bring benefits back to the more sustainable levels seen in the 1970s. This change raises issues of intergenerational inequity. Previous cohorts received not only what they paid, but also sizable dividends from future cohorts; today’s working cohorts and all future cohorts may not even receive the value of what they actually paid.

Countries might argue that they have already legislated changes that are gradually unfolding and are not yet reflected in figures O.7 and O.8. However, for most countries, already legislated future adjustments are not expected to bring the average pension system to fiscal sustainability, either. A comparison of pension spending as a share of GDP in 2010 and 2060 provides a sobering outlook (figure O.9). Very few countries can expect to see declines in pension spending over this half century, despite the reforms legislated to date. Those projected to experience a decline include Italy, Denmark, Croatia, Latvia, Armenia, Poland, Estonia, Russia, Serbia, Bosnia and Herzegovina, and Kazakhstan. And in the case of some of these countries, the decline in spending comes from projected benefit cuts that are likely to be socially unsustainable.

## **Pensioners as a Group Are Not Poorer than Younger People**

The earliest rationale for developing a pension system was to prevent old-age poverty. Today, data suggest that pensioners as a group are no longer poorer than the general population (figure O.10), and in some countries they are less poor. This is a great achievement of



**FIGURE 0.9****Current and Projected Pension Spending as a Percentage of GDP in Selected European and Central Asian Economies, 2010 and 2060**

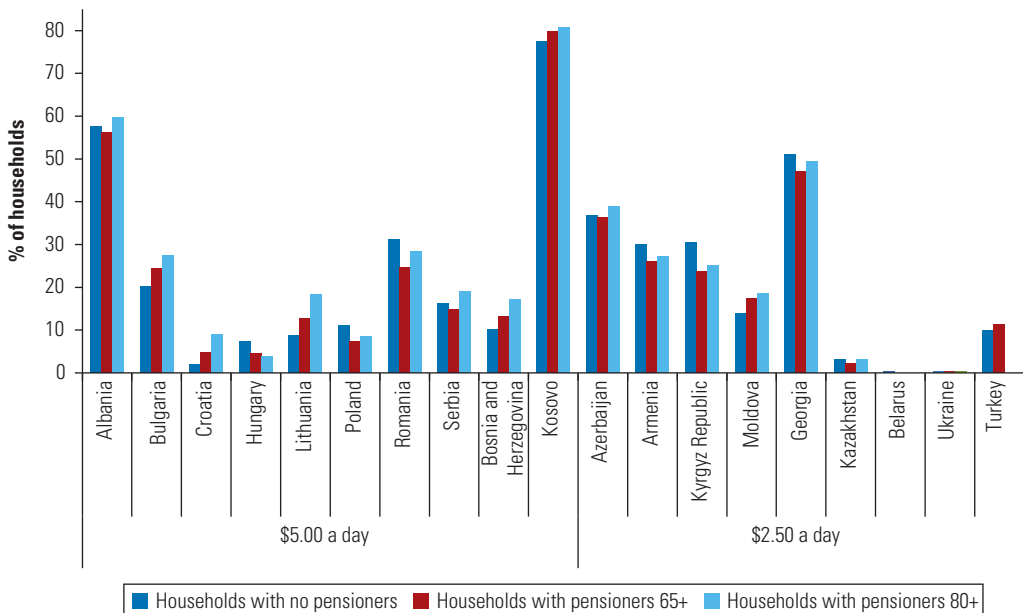
Sources: European Commission 2012 for European Union countries; for others, projections generated with World Bank's Pension Reform Options Software Toolkit (PROST).  
 Note: The Federation of Bosnia-Herzegovina (BiH Federation) and Republika Srpska, which together make up the country of Bosnia and Herzegovina, have separate pension systems and are treated as separate data points in the figure.

pension systems. Of course, there will always be individual pensioners who are poor, just as there are poor children and poor working-age individuals. But the data also suggest that the current generosity of pension systems might have overcompensated the elderly at the expense of other cohorts, so that a rebalancing might be required. However, this rebalancing would need to ensure that the elderly at greatest risk of poverty are protected.

The elderly at greatest risk may not be in the pension system at all. Transition countries since 1990 have experienced a sharp fall in formal sector jobs, those in which workers and their employers regularly make contributions to the pension system. The decline in formal

**FIGURE O.10**

**Percentage of Households, with and without Pensioners, in Poverty in Selected European and Central Asian Economies, 2009**



Source: Household survey data.

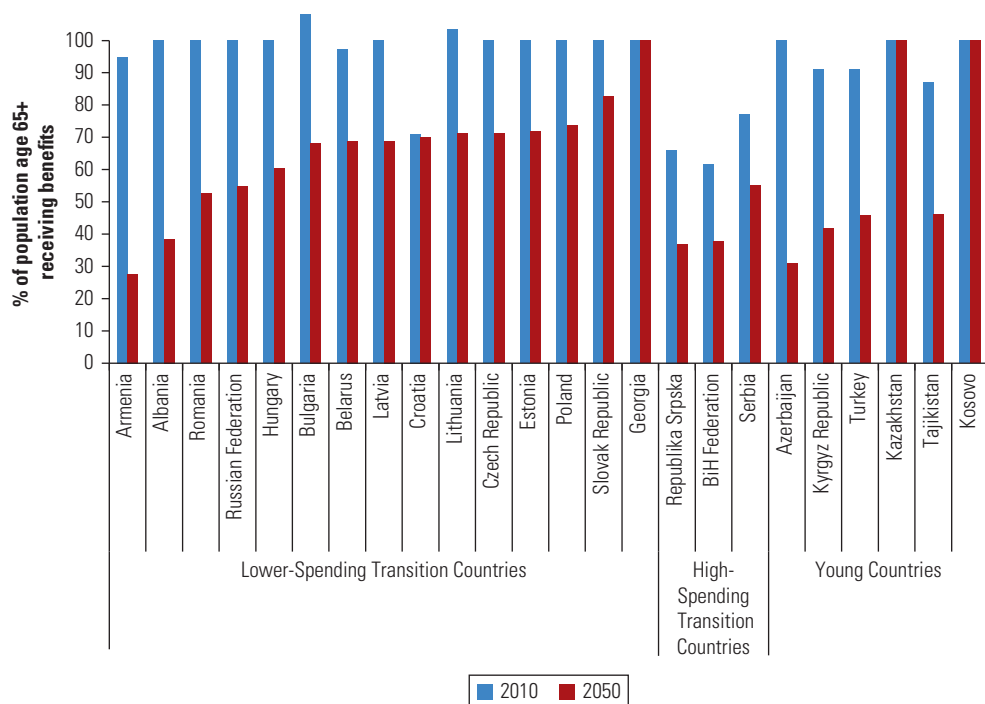
sector employment suggests that there are many workers without significant contribution histories who will begin to reach retirement age between 2020 and 2030. These workers may not have access to any pension when they retire. In addition to covering deficits in the pension system, governments will have to provide some subsistence to these individuals to prevent a sharp increase in suffering among the elderly. Figure O.11 illustrates the likely magnitude of this problem, showing the percentage of elderly receiving pensions today and the percentage likely to receive pensions in the future, based on the lower percentage of people of prime working age (35–45) who are contributing today as compared to in the past.

As governments recognize the need to reevaluate the generosity of current benefits, they have also begun to emphasize the importance of savings as a way to supplement the reduced public benefits in order to maintain adequate levels of overall welfare in old age. Despite efforts by governments to induce voluntary savings, limited savings have been accumulated to date in most countries (figure O.12).

Some countries allocated part or all of the pension contribution to individual savings accounts, for some or all cohorts, hoping to lower future public pension liabilities without significantly reducing future pension income. These countries were able to generate significant

FIGURE O.11

### Percentage of Elderly Receiving Social Insurance Benefits in Selected European and Central Asian Economies, 2010 and 2050



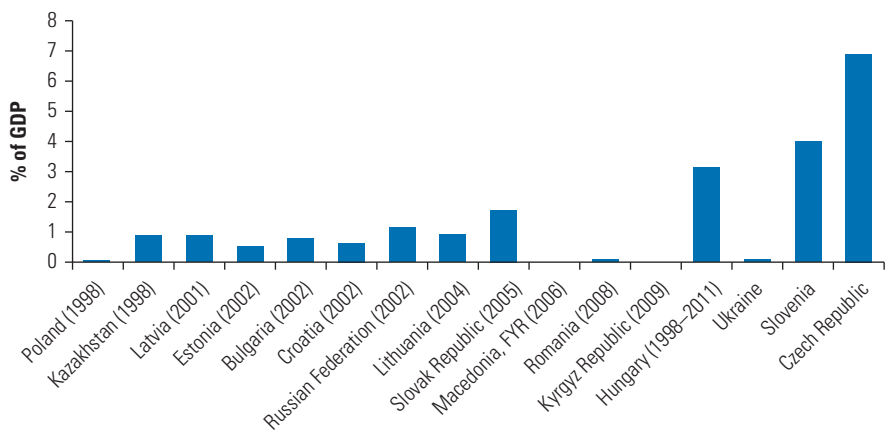
Source: Country-provided data.

Note: The Federation of Bosnia-Herzegovina (BiH Federation) and Republika Srpska, which together make up the country of Bosnia and Herzegovina, have separate pension systems and are treated as separate data points in the figure.

savings through the use of these individual savings accounts, as shown in figure O.13. However, since the revenue going to the public pension system was reduced in these countries, general government revenue was needed to help finance the resulting gap.

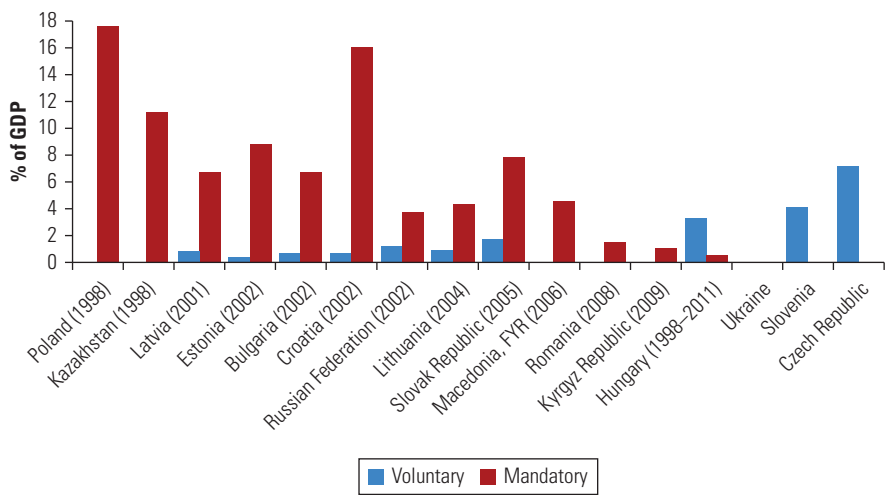
Subsequently, some of these countries, faced with a fiscal crunch from the financial crisis and the continuing euro area crisis, opted to reduce or eliminate the contributions to individual savings accounts. This solved their short-term problem of public pension scheme financing but at the expense of the expected long-term gains. These decisions were less about the performance of the individual savings accounts and more about the fiscal choices countries made after adopting the accounts and the reluctance of politicians to rationalize the pension system today in order to make it fairer and more sustainable in the future.<sup>3</sup> For example, Hungary ran fiscal deficits larger than 3 percent of GDP for nine of the ten years in the first decade of the millennium, even without including the pension deficits that came from the individual accounts. When the financial

**FIGURE 0.12**  
**Voluntary Pension Savings as a Percentage of GDP in Selected European and Central Asian Economies, 2012**



Source: World Bank Private Pensions (internal database).  
Note: The year in parentheses is the year of creation of the mandatory funded scheme. Data for Ukraine and Slovenia refer to year 2011.

**FIGURE 0.13**  
**Voluntary and Mandatory Pension Savings as a Percentage of GDP in Selected European and Central Asian Economies, 2012**



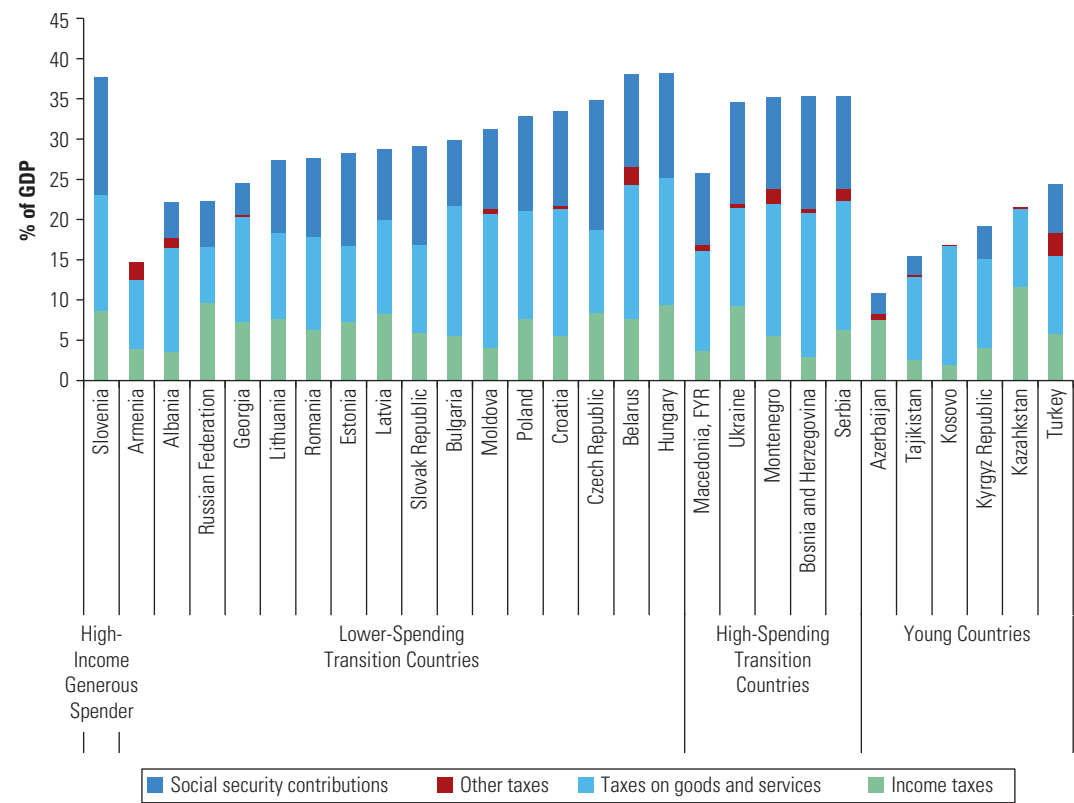
Source: World Bank Private Pensions (internal database).  
Note: The year in parentheses is the year of creation of the mandatory funded scheme. Data for Ukraine and Slovenia refer to year 2011.

crisis hit, financing such a large deficit was impossible, and Hungary opted to cut the individual savings account contributions rather than making other, more politically difficult spending cuts.

Non-Payroll Financing for Pensions Remains Limited

One response to the decline in contribution revenue coming from the smaller working-age population has been to explore other sources of financing for old-age support. The fiscal space for additional financing varies from country to country. The amount of government revenue generated and its composition, shown in figure O.14, suggests that many of the transition countries have already reached the revenue levels of countries in the European Union and Organisation for Economic Co-operation and Development (OECD). Social security contributions (SSC), collected primarily to finance pensions, health insurance, unemployment insurance, and sickness and maternity

FIGURE O.14  
Composition of Government Revenue in Selected European and Central Asian Economies, 2011

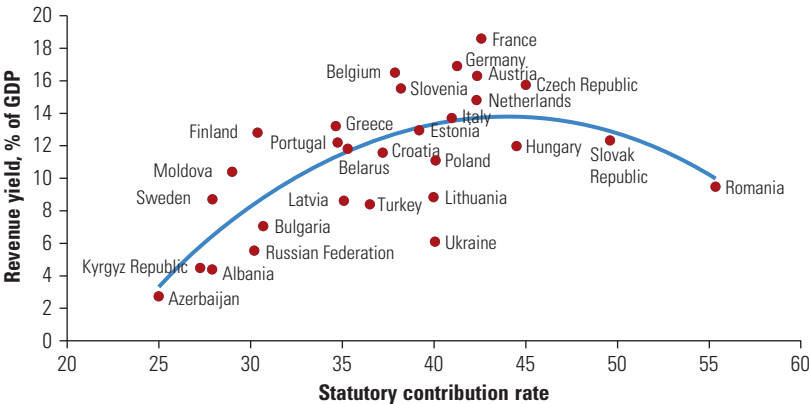


Source: World Bank staff estimates using OECD and World Bank data.

benefits, account for about 10 percent of GDP, or about 25 percent of government revenue. The average statutory payroll contribution rate, comprising both employer and employee contributions in countries in Europe and Central Asia, is around 32 percent, above the level of non-European OECD countries (average 24 percent). Taken together, labor taxes, including personal income taxes and contributions, account for about 40 percent of total gross labor costs on average, compared to 34 percent on average in OECD countries. The tax wedge is driven primarily by high social security contributions, which account for 65 percent of nonwage labor costs on average. This makes the region a high-tax area for labor, *with potential negative impacts on competitiveness, job creation, and growth.*

While already high SSC rates limit the room for further rate increases in most countries, several countries could enhance revenue yields from contributions through improved compliance and through changes in the earning base. Low compliance, which is particularly prevalent in the transition economies, means that the contribution rates are not generating as much revenue as expected. Countries like Romania and Ukraine seem to be trapped in a high rate–low collection cycle and may therefore have considerable room both to include more taxpayers and to include more of the wages individuals earn under the SSC (figure O.15). Policies to expand compliance may include reducing contribution rates, especially for low-income wage earners who are more likely to join the informal labor market when rates are high, while raising the

**FIGURE O.15**  
**Social Security Contribution Rates and Revenue Yield, Selected European and Central Asian Economies, 2011**



Sources: World Bank data; Eurostat Statistics Database.  
 Note:  $R^2 = 0.5266$ .

contribution limit of covered earnings. This broadening of the tax base is different from an across-the-board increase in the payroll tax rate because it restricts the tax increase to those with the highest earnings.

Supplementing or replacing social security contribution revenue with other tax revenue, an alternative, has a number of advantages. First, it reduces the impact of a shrinking labor force. Second, it helps spread the tax burden across more generations. And third, it may increase competitiveness. In particular, moving away from labor taxes and toward consumption taxes, such as a value-added tax (VAT), may generate more revenue in countries where the workforce is declining and may also help spread the increased tax burden across several generations. Since consumption taxes are destination-based (as opposed to origin-based labor taxes), a shift from labor taxes to VAT can also lower the cost of exports while increasing the cost of imports, thereby enhancing competitiveness. However, these potential benefits could come at a cost of lower progressivity in the tax system, with some negative impacts on equity. Moreover, the vast majority of countries already have consumption tax rates between 19 and 23 percent, suggesting limited room for increases.<sup>4</sup>

Property taxes are another potential revenue source, as a majority of countries in the region do not currently generate high revenue from property. Countries rich in natural resources could tap resource-related revenues. In fact, both Norway and Russia have earmarked their savings funds tied to natural resource revenues explicitly to pension obligations. Countries can also free up resources by reducing expenditures in other areas, such as energy subsidies, but an aging population would likely also require additional government expenditure in health services.

Any move to broaden the financing base for pensions would probably need to be accompanied by a change in the design of the pension system. When pension benefits are exclusively tied to payroll contributions, those who do not make sufficient contributions can reasonably be excluded from receiving benefits. This would no longer be justified if pensions were more heavily financed out of other revenue sources. Any broader financing of current schemes carries implications both for the level of benefits and for who receives them. Public schemes that are largely financed from general taxation may have to limit retirement benefits to basic income support to reduce the risk of old-age poverty rather than paying earnings-related pension benefits. This is the case in Denmark and Georgia.

Reforms to open fiscal space may be insufficient in themselves to achieve pension sustainability, but they can be important elements in

a comprehensive policy response to aging-related fiscal challenges. Policy makers undertaking these reforms would have to balance the need for revenue with the need to minimize distortions, efficiency losses, and adverse effects on tax compliance and equity.

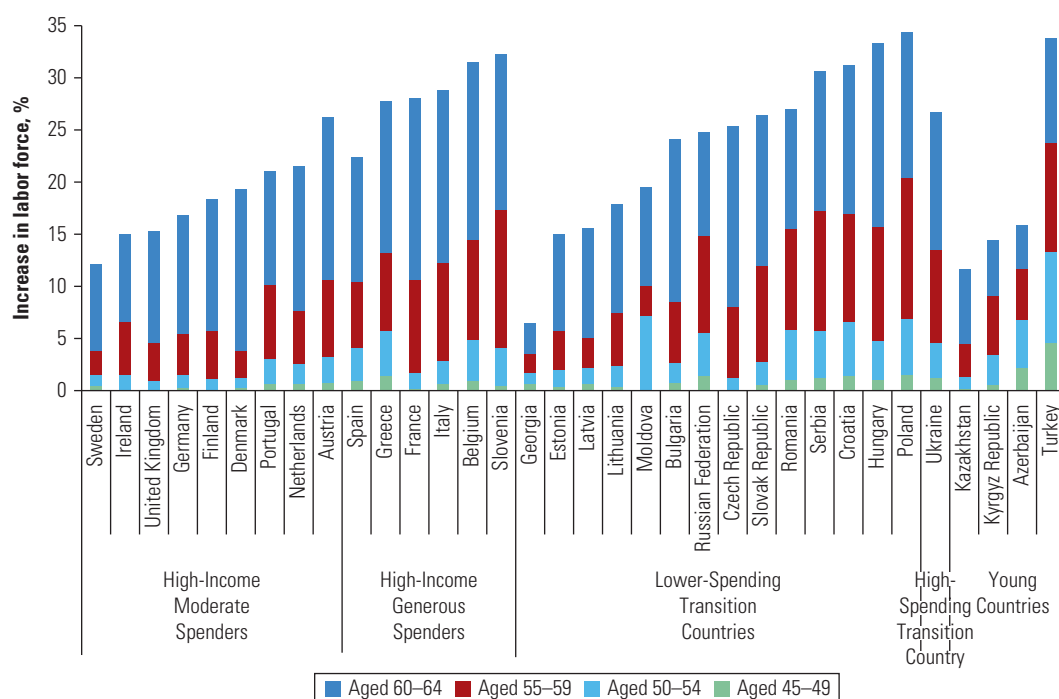
## More Active, Productive, and Longer Working Lives Can Help

Enabling people to work more productively and longer is no panacea, but it could be part of the solution. While there is scope in some countries to increase women's participation in employment, in the majority of countries both men and women are already actively involved in job markets in their prime working-age years. The main scope for adding to the base of contributors is among people older than 55.

Figure O.16 shows the potential growth in the size of the labor force of those aged 45–64 if labor participation rates for that cohort

**FIGURE O.16**

**Potential Labor Force Gain in the Population Aged 45–64, by Age Group, in Selected European and Central Asian Economies**



Source: World Bank estimates based on World Development Indicators and labor force and household surveys, latest years available.

Note: Potential gain is calculated as the projected increase in the size of the workforce aged 45–64 if the population aged 45–64 had the same participation rate as the 40–44 age group in each country. Data are for 2008 for all countries except Georgia, Moldova, and Ukraine (2005) and Kyrgyz Republic (2006).



were increased to the same rate as the cohort aged 40–44. As governments granted earlier and earlier retirement and increased the generosity of benefits, it became customary for many people older than 55 to move from work to leisure at these ages. Governments now face the challenge of inducing workers older than 55, who are even healthier than similarly aged cohorts in decades past, to remain in the labor force. And governments will need to start thinking about retaining workers even beyond 65. Europe has the lowest labor force participation rates among people over 65 of any region in the world. Europeans tend to be healthier and to have higher incomes than people in other regions, suggesting that an early withdrawal from the workforce is a choice made by individuals and society; increasingly, it is not an affordable choice.

However, to realize the potential of longer working lives, it is necessary to confront a number of stereotypes about older workers. One myth is that older workers prefer retirement to continued work. This is refuted by a recent Eurobarometer (2012) survey in which about two-thirds of workers in Europe and other countries said they prefer to have the option of combining work and retirement. A second myth is that older workers are less productive and are difficult to employ. In reality, studies show that most older workers can remain very productive over longer careers, compensating any loss of physical capacity with an enhanced ability to focus on the vital aspects of tasks and to negotiate difficult situations. Even if productivity may decrease somewhat at older ages, older workers can still be employable as long as seniority-based remuneration practices do not get in the way. Finally, despite evidence to the contrary, workers and employers continue to believe that keeping older workers on the job prevents the young from finding jobs. Study after study show that as more workers of any age are employed, the growing segments of the economy create more job opportunities for all workers, including youth.

Once they move past these misperceptions, policy makers in the region can make policy choices to confront the real barriers faced by older workers. The Eurobarometer survey found that most people believe that a lack of gradual retirement options, exclusion from training, and negative perceptions of employers about older workers are the main reasons that older people stop working. In focus group interviews of older workers in Croatia, Poland, and Russia, many reported a willingness to work longer, at least part time, but they are not always optimistic about the prospects. They become discouraged because employers are sometimes unwilling to hire older workers, and the legal framework may not support part-time work. Some employers worry about older workers' physical stamina, their ability

to learn new things, and their commitment to continued employment. Indeed, labor regulations too often limit hiring of older workers or do not provide flexible work schedules, while the design of the tax and social benefits system, including pensions, does not make (formal) work pay or discourages longer working lives. Opportunities for meaningful adult training or lifelong learning are also very limited for older workers in most countries in the region.

So what can be done to support older workers who are willing to stay longer in the labor force? Evidence suggests that three approaches can make a difference. First, governments can enact smart rules on part-time employment and provide options for gradual retirement, allowing older workers to combine part-time work with a partial pension. Government policy should not necessarily focus on bringing more workers into the formal labor force, but on keeping workers who are already in the formal labor force employed longer. Analysis shows that greater formalization of the workforce would only provide a temporary mitigation of the strain on pension systems. Since workers taking on formal work become entitled to future pensions, future pension expenditures will rise as the number of pensioners increase.

Second, employers can adopt small adjustments to the workplace for the purpose of raising the productivity and comfort level of older workers while increasing the profitability of the business. German automaker BMW recently made 70 relatively low-cost adaptations to an assembly line composed predominantly of older workers and found that productivity grew by a significant 7 percent. Older and younger workers bring different skills sets and experience and can complement one another in ways that increase productivity. Older workers can use the know-how and maturity derived from experience to effectively mentor younger workers, help teams focus on the vital aspects of a task, share tasks according to their strengths, and contribute to a better work climate. Age-diverse working teams are a smart tool that enables enterprises to adapt to and benefit from an aging workforce.

Third, employers, governments, and workers can invest more effectively in training at older ages. There is a need to rethink education, training, and lifelong learning systems to make them better fit an aging workforce. Training programs specifically adapted for older workers seem to be more effective than enrolling older workers in the same training programs used for younger workers. Over the past several years, scientists have looked more deeply into how brains age. As people pass middle age, the brain gets better at recognizing the “big picture” and may even solve problems faster

than a younger brain. Promising interventions indicate that with appropriate training strategies, mature brains can learn new skills. Recent evaluations of public and private workforce training strategies in the United States, largely focused on adults, have been shown to produce returns as high as 10–26 percent.

Finally, a number of studies suggest that actions to foster more active aging can improve health and well-being in old age. Studies using longitudinal data for individuals aged 50+ living in the United States and various European countries find that retirement in and of itself has a significant negative effect on cognitive functioning. Involuntary retirement has also been found to have adverse effects on the subjective well-being of pensioners, as work provides pensioners a sense of usefulness and identity in addition to income.

While increasing participation rates among older people can help stem the decline in the overall labor force, such increases face limits. Another potential tool for expanding the contributory base could be smart immigration policies. As the working-age population begins shrinking in Western Europe, higher wages and benefits in those countries will exert a strong pull on workers elsewhere. This will likely draw younger workers out of the poorer transition countries, which will further accelerate the shrinking of their workforce. The transition countries, even more than Western Europe, need to attract global talent to bolster their labor force. The pro-natalist policies that some countries are adopting, even if they were to succeed in raising birth rates—which they have not to date—would not provide enough workers soon enough to offset the worst of the demographic crisis. Immigration, by curbing the immediate decline in the workforce, can allow for more gradual increases in retirement age and adjustments to benefit generosity. Like formalization, however, immigration eventually adds to the long-term problem by leading to more future beneficiaries. Smart immigration policies thus do not invalidate the need for reforms, though they can allow the reforms to be implemented more gradually.

### **Old-Age Support Is Possible Despite Challenging Demographics**

Faced with these demographic constraints, countries may be forced to rethink whether their pension system designs will continue to provide the old-age security they want. Those countries where contributor growth is slowing and where the labor force falls below the 2010 level, even with increasing retirement ages, may need to reconsider

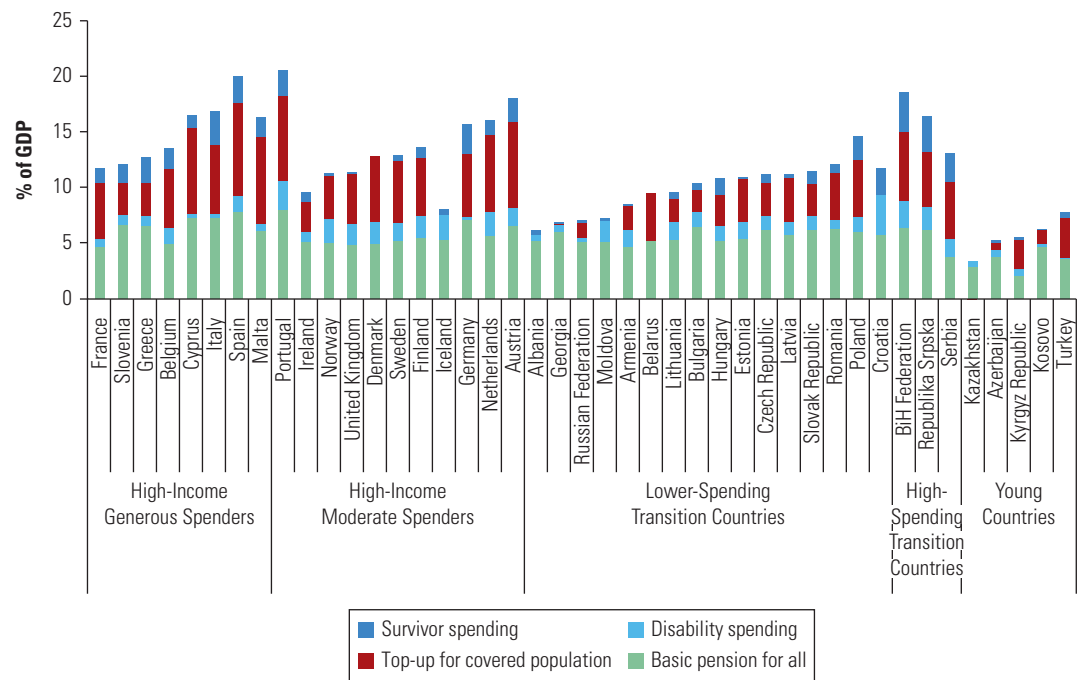
what benefits they provide and to whom. Other countries might need to rethink their pension model, irrespective of their labor force growth, as the percentage of elderly who are not eligible for benefits begins to rise.

Countries typically enact modest reforms of their existing systems, but given the scope of the projected demographic change, they might find it more useful to start by deciding where they want to be in 2050 and then deciding how to get there. Countries can first list the groups of people they want to protect through the pension system and try to quantify how many people are projected to be in each group by a long-run date like 2050. They can then define what benefits they want to pay each of these groups. Multiplying benefits by numbers of people will provide some measure of costs. The next step is to decide what budget envelope will be available to finance old-age and related security. To complete the calculations, countries will need to compare their estimated costs against their budget envelope to determine whether the proposed old-age security system is affordable. An example of such an exercise is shown in figure O.17 and described below.

The first priority could be to make sure that all elderly receive at least a poverty-level benefit. We assume for this exercise that the average effective retirement age can be raised to 65 by 2050 from its current age, which is estimated to be 62 for high-income countries and 60 for transition countries, with the prime-age labor force participation rate extended through age 64. The absolute minimum that a country has to provide must be sufficient to keep all elderly, defined as those 65 and older, regardless of contribution history, out of poverty. The benefit level assumed in figure O.17 is 20 percent of GDP per capita. The current poverty line is at approximately 20 percent of GDP per capita in lower-income countries, and a little lower in middle- and higher-income countries. Choosing 20 percent of GDP per capita instead of the absolute poverty line recognizes that poverty has both a relative and an absolute dimension. Countries are free to choose a different benefit level for this baseline benefit, but it should aim to cover the poverty line.

The bottom segment of each bar in figure O.17 shows the cost of providing this baseline benefit to all elderly as a percentage of GDP. This bottom segment includes the cost of providing this baseline benefit to those who have paid contributions and to those who have not. Currently, in most transition countries, almost all elderly are covered under the contributory system; the few who are not covered sometimes receive social pensions administered by the pension system, sometimes receive social assistance, and sometimes receive nothing.

**FIGURE 0.17**  
**Example of the Cost of Financing Pension Priorities in 2050 with an Effective Retirement Age of 65, Selected European and Central Asian Economies**



Sources: Eurostat Statistics Database; United Nations population projections (UN 2011); country-provided data.  
Note: The Federation of Bosnia-Herzegovina (BiH Federation) and Republika Srpska, which together make up the country of Bosnia and Herzegovina, have separate pension systems and are treated as separate data points in the figure.

In the future, there will be many more elderly without contributory pensions, and decisions will need to be made as to whether their benefits will be administered by the pension system or the social assistance system; in either case, this will be a cost for the government.

A second priority is to provide resources for those who are not healthy enough to work until retirement age. The second segment from the bottom in each bar represents the cost of disability payments. As we do not know how population health will evolve, we simply assume that the number of people receiving benefits and the benefit relative to average wage will remain roughly the same as they are today. This could be an underestimate, since older people are more likely to become disabled, and the number of people qualifying for disability benefits may increase as populations age. Similarly, increasing the effective retirement age means that some people who could have collected old-age pensions at the younger retirement ages of today may find themselves unable to work to higher ages and thus will need disability benefits. Nonetheless, improving health would

tend to reduce the number of disabled. The second segment of the bar is based on the assumption that these three effects cancel each other out and disability spending relative to GDP remains about where it is today.

A third priority is to provide additional benefits above the poverty-level pension for those who have contributed. In each bar the third segment from the bottom represents the cost of additional or “top-up” old-age benefits for these individuals. This is calculated by holding constant the ratio of the current old-age benefit as a percentage of average wage, regardless of what the pension law would project, and subtracting the base-level benefit to these individuals, which was already included in the bottom segment. Benefits are provided only to those 65 or older and only to those in this age group who contributed.

Figure O.17 shows this contributory benefit as a top-up to the base-level benefit for accounting purposes, but it may be administered differently. Many countries may prefer to combine this third segment with the portion of the first segment that goes to contributors as the contributory pension, administered by the pension system. The remainder of the first segment might be called a social pension and might be administered by a different social agency. The advantage of combining the contributor and noncontributor base-level benefits, as figure O.17 does, relates to financing. Taxes on a declining contributor base may not be sufficient to finance old-age security for contributors in the future and may need to be augmented by general revenue. Rather than financing the social pension through general revenue and then having to finance the deficit of the contributory system through general revenue, it might be cleaner to provide a base-level pension for everyone out of general revenue and then finance a smaller, additional benefit for contributors out of the smaller contribution revenue, with that top-up system being financially self-sustainable. However, these are implementation issues that countries can decide once the basic affordability decisions have been made.

A final priority is to provide benefits to surviving family members upon the death of the breadwinner. The top segment of each bar represents the cost of family and survivor pensions. As with disability pensions, the benefits as a percentage of average wage and the number of people receiving benefits are assumed to be roughly the same as they are today. Survivor benefits include benefits for widows and widowers and for orphans. Population aging suggests that the number of widows and widowers receiving benefits might increase, but the number of orphans might fall.

However, two factors suggest that overall survivor spending might decrease. First, higher labor force participation by women might lead

to more women collecting their own pensions rather than survivor benefits, reducing the number of beneficiaries, given that the vast majority of spousal benefits go to women. Second, the level of additional benefit per survivor would be lower than today. At present, contributory old-age pensions average around 50 percent of GDP per capita. Survivor pensions are typically 60–70 percent of average old-age pensions, which would amount to 30–35 percent of GDP per capita. Since 20 percent of GDP per capita is already included in the bottom segment of the bar for all individuals over the age of 65, only the difference would need to be provided as survivor pensions.

If effective retirement ages rise to 65 and benefit generosity remains where it is today, pension spending will rise dramatically in many countries. In comparing projected 2050 spending in figure O.17 to what countries are spending today, it becomes clear that spending in the future will be much higher; this is cause for concern, given that countries are already having trouble financing their pension systems. The High-Income Generous Spenders are today spending about 11 percent of GDP on pensions, while the High-Income Moderate Spenders spend about 10 percent of GDP. Transition countries spend on average 9 percent of GDP, while Young Countries spend only 5 percent. In 2050, by contrast, maintaining benefit levels similar to those shown in figure O.17 will cost High-Income Generous Spenders on average 15 percent and High-Income Moderate Spenders on average 14 percent of GDP. Lower-Spending Transition Countries will average 10 percent of GDP, while the High-Spending Transition Countries will average 16 percent. Even the Young Countries will experience a modest increase from 5 percent to 6 percent of GDP.

### **Countries Can Choose from a Menu of Options**

What to do? Countries have a number of options. They can look for alternative fiscal resources to make the future spending requirements affordable; this may mean cutting other expenditures to make more fiscal room for pension spending and looking for other revenue sources. They can revisit their pension spending priorities to see whether there is anything that can be reduced or eliminated. They can also look at increasing the labor force, either by raising retirement ages or by encouraging immigration or both. It should be noted that raising retirement ages affects both the expenditure and revenue sides of the pension balance, while immigration affects only the revenue side and also increases long-term liabilities.



With respect to pension spending priorities, countries can evaluate all four components to look for potential cost savings. On the base-level benefit, there are a number of options. First, countries could means-test this benefit for noncontributors. The only major group likely to be excluded by a means test is spouses in middle- and higher-income households who are either not working or working in informal labor markets. In countries where pension system coverage is moderate or high, suggesting there are few spouses in these categories, little is likely to be gained from means testing, particularly since administering a means test costs money.

The level of the benefit for noncontributors could be set lower than 20 percent of GDP per capita, but again this will have a small impact on countries that have moderate to high coverage and few noncontributors. Typically, countries with low coverage are also lower-income, and this 20 percent of GDP per capita might be very close to the poverty line, which would make it difficult to cut. The age at which the benefit is available could also be raised for noncontributors.

An alternative approach would be to provide the base-level benefit at age 65 but raise the age for the contributory benefit. This would provide some income to contributors at 65 but would encourage them to continue in part-time work until they reach the age when they can receive their full benefit. For low-income individuals involved in physically demanding labor, who typically start work early in their lives, the base-level benefit might represent the majority of their benefit anyway and would allow them to retire after 45 years of contribution. For higher-income people who start work later and typically have less physically demanding jobs, receiving only the base-level benefit at 65 might encourage them to continue working.

Other countries might find that they can introduce better controls on disability spending. Countries spend widely varying amounts on disability, with differences in benefit levels and in definitions and practices. Definitions have been moving away from the inability to do the previous job or the percentage of the body that is impaired and now emphasize incapacity to perform any type of work. On the other hand, many countries have begun to include illnesses that rely on subjective assessments, such as mental illnesses and addictions, which are more prone to fraud. Countries can compare their spending to that of other countries in the region to determine whether they could realistically expect reforms in disability to save expenditures.

Still other countries might find that their contributor benefits can be reduced. On the top-up benefit to contributors, the question



largely relates to the size of the benefit, since early retirement is assumed to have been largely eliminated. The inverting-pyramid countries that provide sizable benefits above the base level might find that these benefits have to be reduced. Higher earnings-related benefits might be possible only through increased private savings, which can supplement the base-level benefit and the smaller earnings-related benefit.

It may also be possible to find some cost savings in survivor benefits. Some countries provide benefits to widows and widowers well below the retirement age. While orphaned children do need to receive benefits, and those benefits could enable a spouse to stay at home and care for the children, in general spouses below the retirement age should be encouraged to work.

A measure that might complement, or even substitute for, benefit reductions is an increase in the retirement age. Such a decision does not mean giving up all the gains in old-age security achieved during the twentieth century, but only returning countries to the benefit duration they offered in the 1970s, before the last expansion of social security took place. People used to expect benefits only for the last 15 years of life. Raising the retirement age is extremely powerful since it has a three-pronged impact: (a) it reduces total pension spending by limiting the number of beneficiaries; (b) it increases pension contribution revenue by increasing the number of people working who can pay contributions; and (c) by increasing the labor force, it has a growth impact on GDP, which results in more noncontribution fiscal resources that can be used to support old-age security. If raising the retirement age is coupled with other policies, the duration of retirement can continue to be somewhat longer than 15 years.

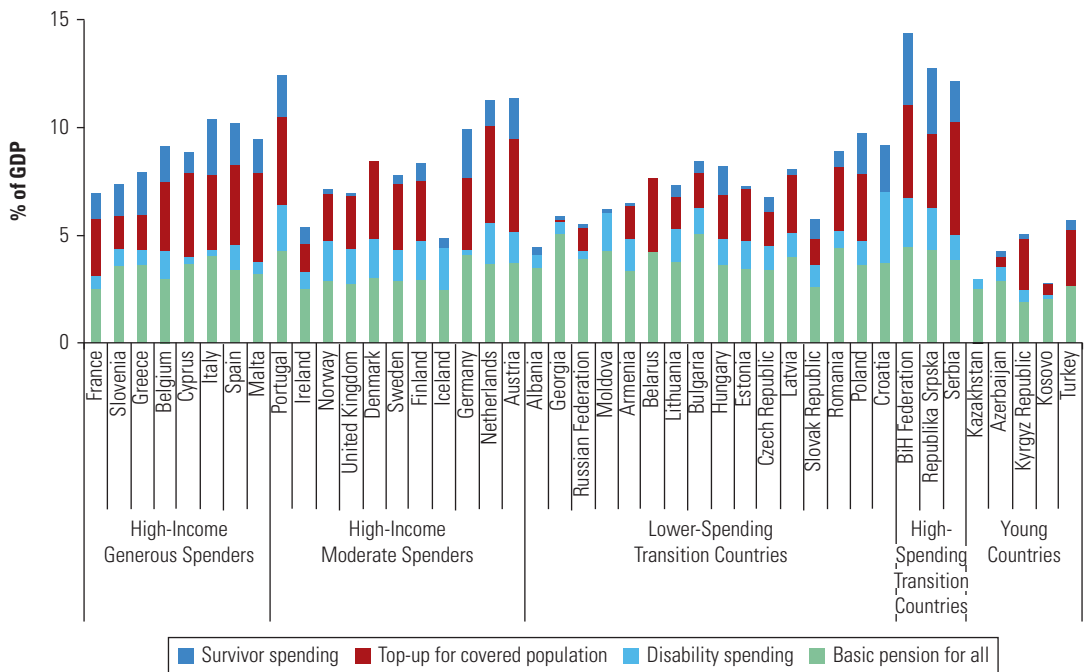
While raising retirement ages when there is moderately high unemployment may seem like a counterintuitive measure, countries need to prepare for the future, when the labor force will be shrinking. Changing societal expectations of early retirement and a long duration of retirement will take time. This process should begin now, so that those entering the workforce enter with the expectation that they should not expect to retire until age 65 or later. Such awareness is important to shaping the individual's life decisions in areas like education, career choice, and savings. Furthermore, while many people continue to believe the myth that early retirement of older workers will open up employment for youth, the large number of retirees that result from this early retirement cause a fiscal burden on the economy that results in higher taxes, crowding out of investment, and slower growth for everyone. The slower growth reduces the prospects of employment for younger people.

If retirement ages are raised to the point where life expectancy equals 15 years, most countries will be able to spend about the same as they currently spend or less, as a percentage of GDP, and offer benefits similar to those offered today. In figure O.18, High-Income Generous Spenders and High-Income Moderate Spenders can provide benefits in 2050 as generous as those that they provide today—that is, maintaining the same relation of average benefit to average wage—while spending only 9 percent of GDP. This is significantly below the spending levels for these countries shown in figure O.17. The Lower-Spending Transition Countries can provide the same generosity with only 7 percent of GDP, and Young Countries will find that they need to spend only 4 percent of GDP on average. Only the High-Spending Transition Countries will still need to spend 13 percent of GDP, which is likely to still be unaffordable. These countries will have to make spending decisions in addition to increasing the retirement age.

Once a country has decided on a combination of benefit changes, retirement age increases, and changes to immigration

**FIGURE O.18**

**Cost of Pension Priorities in 2050 with Retirement Ages Where Life Expectancy Equals 15 Years, Selected European and Central Asian Economies**



Sources: Eurostat Statistics Database; United Nations population projections (UN 2011); country-provided data.

Note: The Federation of Bosnia-Herzegovina (BIH Federation) and Republika Srpska, which together make up the country of Bosnia and Herzegovina, have separate pension systems and are treated as separate data points in the figure.

policy, it must turn its attention to implementation and accompanying policy changes. The first issue is how to finance the chosen benefit mix. In countries where the contributory benefits are very close to the base-level benefit—whether because contributory benefits are low today or because choices were made to reduce contributory benefits in order to make the system fiscally sustainable—the country may be well advised to consider moving away from a contributory tax basis and toward general revenue. In countries where the contributory benefit is significantly higher than the base-level benefit, the country may consider financing the base-level benefit through general revenue while maintaining self-contained, contribution-based financing for the earnings-related contributory benefit. Providing earnings-related contributory benefits, with higher benefits for higher earners, from general revenue can be regressive, as is currently the case when pension deficits, which arise from higher benefits for higher earners, are financed from general revenues.

Adequacy of benefits will most likely require generation of private savings. While retirement savings are always desirable, they become especially important if average contributory benefits come close to the flat base-level benefit. In this case, there is very little room for differentiated benefits for higher earners. Wage earners will always want and expect to have their retirement income somehow relate to what they earned during their working years. If the public benefit that middle- and higher-income people receive becomes very low relative to their past earnings, there will be public pressure to raise the benefit level for everyone, which may be unaffordable. A better solution may be to help these individuals generate enough private savings to complement the lower public benefit and create a link to their previous earnings from private savings. Policies such as automatic enrollment, well-designed default options, life-cycle portfolios, and a better institutional structure for pension funds can help generate these retirement savings.

Retirement age changes will require complementary labor market policies. Even raising the effective retirement age to 65, as was assumed in figure O.17, will require active policies on the labor market side. Moving to the retirement ages of figure O.18 will require even more proactive approaches. Early retirement practices need to be reevaluated, and policies that couple part-time retirement with part-time work need to be instituted. Labor policies that foster discrimination against older workers, including pay structures that strictly relate pay to seniority, need to be discouraged. Older workers also need to have access to retraining opportunities designed to

maximize their learning abilities and to workplace adaptations that can increase their productivity.

The bottom line is that countries will be able to provide old-age security despite the daunting demographics, but they will need to rethink the level of benefits they can provide and to whom. They may also need to return to a duration of retirement closer to what they had in the 1970s, before increasing generosity lengthened the time most people spend in retirement.

## Notes

1. The growth of life expectancy in the former Soviet Union shows a more mixed performance. For more details, see World Bank (2013).
2. While this analysis focuses on the countries making the transition from centrally planned to market economies in Europe and Central Asia, as well as Turkey, comparative information is provided on European Union member countries along with Iceland, Norway, and Switzerland. The analysis designates Belgium, Cyprus, France, Greece, Italy, Luxembourg, Malta, Slovenia, Spain, and Switzerland as High-Income Generous Spenders; Austria, Denmark, Finland, Germany, Iceland, Ireland, the Netherlands, Norway, Portugal, Sweden, and the United Kingdom as High-Income Moderate Spenders; Albania, Armenia, Belarus, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, the Russian Federation, and the Slovak Republic as Lower-Spending Transition Countries; Bosnia-Herzegovina (both entities), the former Yugoslav Republic of Macedonia, Montenegro, Serbia, and Ukraine as High-Spending Transition Countries; and Azerbaijan, Kazakhstan, Kosovo, the Kyrgyz Republic, Tajikistan, Turkey, Turkmenistan, and Uzbekistan as Young Countries.
3. Problems with individual savings accounts did exist in some countries, with high administrative fees in some and low rates of return in others, but these problems were fixable.
4. Some studies suggest that consumption taxes above 25 percent may induce people to change their behavior to evade taxes.

## References

- Eurobarometer. 2012. *Active Ageing: Report*. Special Eurobarometer 378. Brussels: European Commission.
- European Commission. 2012. *Pension Adequacy in the European Union 2010–2050*. Brussels: European Commission, Directorate-General for Employment, Social Affairs and Inclusion, Social Protection Committee.
- Eurostat Statistics Database. European Commission, Brussels. [http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search\\_database](http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database).

- OECD (Organisation for Economic Co-operation and Development). 2002. *OECD Economic Outlook*, no. 72 (December). Paris: OECD.
- UN (United Nations). 2011. *World Population Prospects: The 2010 Revision*. CD-ROM. New York: United Nations, Department of Economic and Social Affairs, Population Division.
- World Bank. 2013. *Getting Better: Improving Health System Outcomes in Europe and Central Asia*. Washington, DC: World Bank.
- . Private Pensions (internal database). Capital Markets Practice, Financial and Private Sector Development, World Bank, Washington, DC.
- . World Development Indicators (database). World Bank, Washington, DC. <http://data.worldbank.org/data-catalog/world-development-indicators>.