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CONTENTS

03	Overview
05	Introduction
06	Regional Results
06	Western Europe and North America
	Box: The pension system in Cyprus
	Box: The pension system in Luxembourg
	Box: The pension system in Malta
	Box: The pension system in Canada
10	Eastern Europe
	Box: The pension system in the Russian Federation
	Box: The pension system in Turkey
12	Asia and Oceania
	Box: The pension system in New Zealand
14	Methodology and Data
16	Sub-indicators
16	Aging demographics
20	Pension system designs
22	Public finances
25	Abbreviations
27	Figures
29	Sources
31	Recent Publications

Overview

The Pension Sustainability Index (PSI) systematically examines relevant elements of pension systems in order to measure and evaluate the pressure on governments to reform their national pension systems. In this current study, Greece, India, China and Thailand were found to be in the greatest need of pension reform, though for different reasons. In India and China, overall coverage is still extremely low and adequate steps have yet to be implemented. Thailand has an extremely low retirement age and sporadic coverage. Greece's unfortunate first-place ranking is due to several factors. In 2009, Greece was already under tremendous pressure, ranking third worst overall and topping the list of European countries in urgent need of reform. Today, Greece's pension system is buckling under its sovereign debt crisis. Despite pension reforms initiated as a condition of International Monetary Fund (IMF) and European Central Bank (ECB) austerity packages, the legal retirement age in Greece is still low and public replacement rates¹ high. However, the greatest challenge to the Greek pension system is an old-age dependency ratio² well above the European average.

At the other end of the spectrum is Australia. The amount of burden a country's pension expenditures places on public finances is a core sub-indicator in this study. Therefore, Australia's two-tier system of lean public and highly developed funded pensions puts it under the least pressure to reform. Australia's success is followed in order by Sweden, Denmark, New Zealand and the Netherlands. The three western European countries benefited from their comprehensive pension systems, which are based on strong, funded pillars. In New Zealand, the aging process is still quite modest and coupled with a relatively low debt-to-GDP (gross domestic product) ratio, a not overly generous pension design and a labor force that tends to work beyond the statutory retirement age, its pension system is considered to be in only minor need of reform.

The main factor influencing results in Europe and the United States compared to the 2009 PSI was the increase in sovereign debt as a result of the financial crisis. Greece, Ireland, Italy and Portugal are of particular mention here. Compared to 2009, France and Spain lost any gains they had made from stepping up pension reforms to a worsening of other sub-indicators. Eastern Europe was hit particularly hard by the downturn. So much so, that some of its countries opted to revoke pension reforms, resulting in a very ambiguous picture of the pension landscape that, by its very nature, requires long-term stability. The Asian countries included in this study were able to ride the economic rollercoaster with only minor increases to their debt-to-GDP ratios and so held onto their 2009 rankings.

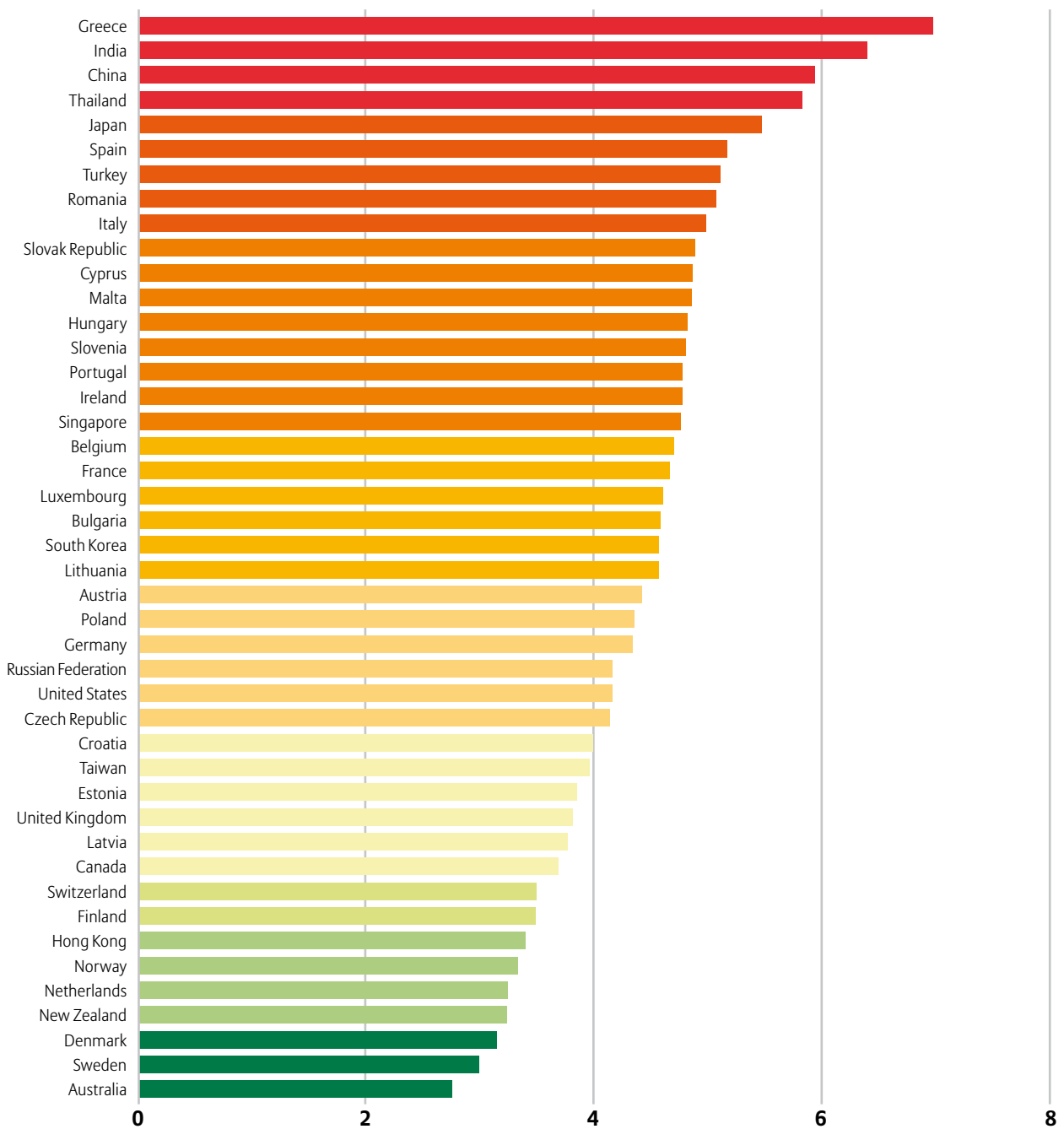
For this 2011 update, we extended our scope to include Canada, New Zealand³, the Russian Federation and Turkey as well as the remaining EU Member States (Cyprus, Luxembourg and Malta).

1 The old-age pension replacement rate is a measure of how effectively a pension system provides income during retirement to replace earnings that were the main source of income prior to retirement.

2 The old-age dependency ratio is the ratio of the number of elderly people (i.e., aged 65 and over) compared to the number of people of working age (i.e., 15-64 years old).

3 New Zealand was first included in May 2010. See Allianz Global Investors, 2010: Pension Sustainability Index – New Zealand included, *International Pension Issues*, No. 3

Figure 1: 2011 Pension Sustainability Index* – Overview



* Scale from 1 – 10: 1 minor need for reforms; 10 high need for reforms

Source: Allianz Global Investors, July 2011

Introduction

Driven by unfavorable demographic developments and unsustainable, outdated or fragmented systems, pension reform has been at the top of political agendas across the globe for many years now. The reform process in the wide range of countries addressed by this survey differs considerably from country to country, which is why Allianz Global Investors first introduced⁴ the Pension Sustainability Index. The Pension Sustainability Index is a tool that helps track and evaluate changes made to pension systems in different countries around the world. In addressing the sustainability of a country's public pension system, the PSI gives an indication of a country's need for reform. This can be difficult to fathom given the many country-specific institutional, technical and legal parameters. There are, however, certain key variables that impact the sustainability of national pension systems regardless of a country's distinct parameters. By taking a methodical approach to studying these dynamic variables, the PSI is able to measure and evaluate the pressure on governments to reform their pension systems.

It should be noted here that the adequacy of retirement income is not one of this study's sub-indicators and so is not factored into PSI results. First pillar pension reforms introduced over the last ten to 15 years have brought about drastic changes in the global retirement landscape. Pay-as-you-go (PAYG) systems are moving towards funded systems, defined benefit (DB) towards defined contribution (DC), and family support structures towards more formalized public ones (as is the case in Asia), raising the question of whether today's workforce will be able to generate enough retirement income to maintain their pre-retirement standard of living or whether they will be faced with income shortfalls or even old-age poverty. This is an important issue that has also been raised by the European Commission (EC) in its GREEN PAPER in 2010.⁵

The 2011 PSI employed the latest information available on demographic developments, sovereign debt, pension reforms and the effects of the financial crisis on public finances in Europe and North America. However, when considering results, it should be noted that the EC has not issued new projections of long-term changes in pension expenditures⁶ since the 2009 PSI was published.⁷

4 The basic concept of the formerly called Pension Reform Pressure Gauge was developed by Allianz Dresdner Economic Research and first published in Allianz Dresdner Asset Management's "Central and Eastern Europe Pensions: Reform trends and growth opportunities" in 2004. It was further developed and updated in: Allianz Global Investors, 2007: Central and Eastern European Pensions 2007: Systems and markets; Allianz Global Investors, 2007: Asia-Pacific Pensions 2007: Systems and markets; Allianz Global Investors, 2008: Funded Pensions in Western Europe 2008; Allianz Global Investors, 2008: Retirement at Risk: The US pension system in transition

5 European Commission, 2010: GREEN PAPER towards adequate, sustainable and safe European pension systems, COM(2010)365

6 European Commission, February 2009: The 2009 Ageing Report: Economic and budgetary projections for the EU-27 Member States (2008-2060)

7 Allianz Global Investors, 2009: Pension Sustainability Index 2009, *International Pension Papers*, No. 5

Regional Results

8 See section “Methodology and Data”

9 Australia might serve as an example of a country where the question of adequacy might become relevant. On the one hand, there is a small burden on public finances because of the way in which the pension system is set up. On the other hand, people can take out lump sums from their retirement funds to pay off mortgages. This, however, leaves them with less means to live on.

10 Allianz Global Investors, 2009: Pension Sustainability Index 2009, *International Pension Papers*, No. 5

The PSI uses a wide range of sub-indicators, such as demographic developments, public finances and pension system designs⁸ to systematically measure the need for pension reform. Taking all these sub-indicators into account, Australia’s pension system received the lowest score and is considered to be the best prepared for the future.⁹

WESTERN EUROPE AND NORTH AMERICA

Over the last decade, almost all western European countries have been trimming their public pension systems in an effort to strengthen pension sustainability. However, their 2011 rankings were impacted greatly by developments in public finances, which is a stark change from our 2009 study.¹⁰ For instance, due to its amount of sovereign debt, Italy ranked worse. Finland and Norway, on the other hand, benefited from their comparatively solid public finance situation. Additional beneficial components to Norway’s low index ranking are its high legal retirement age and moderate aging demographic.

The results of this study show Greece to be in the greatest need for reform. Not only does Greece have the worst ranking within Europe, it yields the highest score of all the countries considered in this study. At the heart of Greece’s deteriorating ranking are acute sovereign debt, a quite serious aging problem and a still generous pension system, despite pension reforms initiated as a condition of IMF and ECB financing initiatives.

Germany is able to hold onto its median ranking; adjustments made to its pension procedure to meet the challenges of the economic crisis were corrected and thus counterbalance the negative impact of its increased sovereign debt. Though France and Spain initiated further reforms, any gains were offset by other worsening sub-indicators.

The three EU Member States included for the first time in the PSI (i.e., Cyprus, Luxembourg and Malta) show mixed results. Luxembourg is pushed up by more favorable demographics than many other European countries, and pulled down by a still strong first pillar system that weighs heavily on long-term public finances, leaving it squarely in the middle. Though Cyprus faces some of the same challenges as Luxembourg, its higher ranking is due to a much larger debt-to-GDP ratio. In general, Malta’s ranking suffers from a still low retirement age and increasing longevity.

The pension system in Cyprus

The Cypriot pension system, which is almost entirely based on the first pillar, is composed of a mandatory social security fund, voluntary occupational pension funds and provident funds. Access to second pillar schemes is limited and, instead of savings being rolled over when an employee changes jobs, lump sums are paid out. A voluntary third pillar is still in its infancy. Several measures were introduced in 2009 to strengthen the long-term financial sustainability of the Cypriot pension system; the main being an incremental increase in contributions until 2039.¹¹ In 2010, two new pension regulations came into force. Regulation 1/2010 and Regulation 2/2010 provided a new framework for the investment strategies (shift from local to global assets) of Cypriot pension funds.

¹¹ International Monetary Fund, 2010: Cyprus. Staff Report for the 2010 Article IV Consultation

The pension system in Luxembourg

Luxembourg's pension system is clearly dominated by the first pillar, which has an almost 100% replacement rate for average earners. With the generosity of its first pillar, the second pillar remains undeveloped. The Luxembourg social security scheme provides substantial retirement benefits based on the following two main components: 1) contributions are 24% of gross income, split equally between employer, employee and the state, and 2) contributions must be paid in for at least ten years prior to retirement, which is usually at age 65, in order to claim an old-age pension. Though a 1999 law established a framework for occupational pension funds, coverage is still low. Luxembourg launched a cross-national Institution of Occupational Retirement Provision (IORP) in 2010.

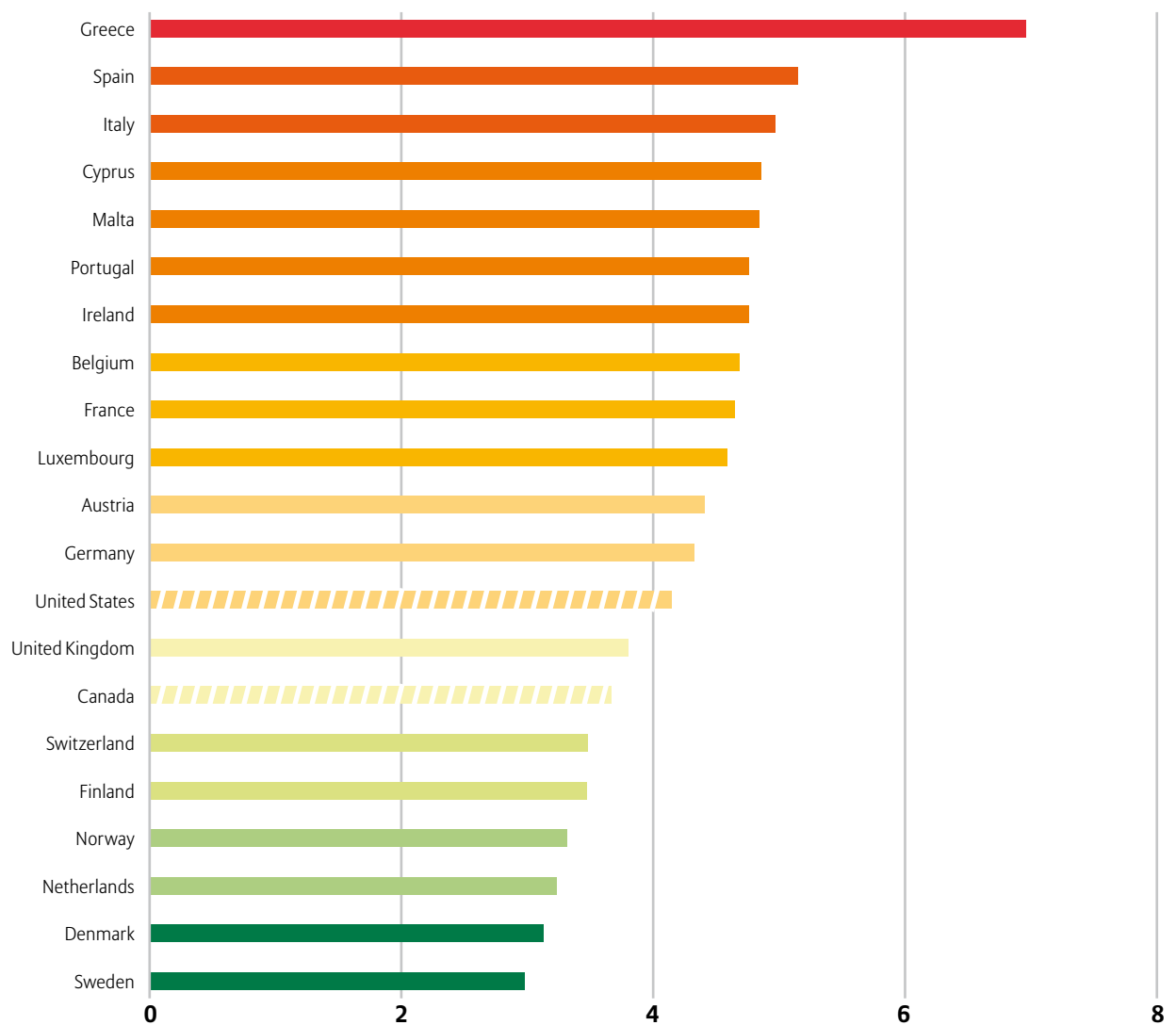
The pension system in Malta

Malta's pension system consists primarily of a mandatory, public pillar, PAYG pension scheme. Employer and employee each contribute 10% of basic wages and the state provides an additional 50% of the total contributions to finance benefits for old-age, survivors, disability, sickness and maternity, workplace injury and family allowances. The most recent pension reforms, which were implemented in January 2007, include equalizing and increasing the retirement age to 65, extending the contribution period for full pension from 30 to 40 years, gradually increasing the taxable income ceiling, and modifying the minimum pension guarantee. Second and third pillar schemes are still in the initial phase. A working group is currently discussing the introduction of a mandatory occupational plan funded jointly by employee and employer. A voluntary pension plan is also being developed.

Thanks to a baseline first pillar income, that keeps its pension expenditures relatively low, and a moderate aging trend, that is not expected to stretch public finances, Canada is in the happy position of being rated with a sustainable pension system. Taking all sub-indicators into account, Canada compares quite favorably with most of western Europe and the wider range of countries considered in this study.

The pension system in Canada

Canada's pension system is a three-tiered mix of public and private pension schemes. The first tier is a public PAYG, non-contributory pension scheme for citizens aged 65 and above. The second tier is a public contributory, earnings-related social insurance program with mandatory participation. The contribution rate for the occupational pension is 9.9%, which is shared equally between employer and employee. The third tier is a private pension scheme consisting of voluntary individual retirement savings plans, formally known as Registered Pension Plans (RPPs). In general, these are provided as single-employer plans; however, some industry-wide pension funds have also been formed. The newly launched Pooled Registered Pension Plans (PRPPs) are offered by employers who do not currently have their own private plans. These are then managed by financial institutions.

Figure 2: 2011 Pension Sustainability Index for western Europe and North America

Scale from 1 - 10: 1 less need for reforms; 10 more pressure for reform

Source: Allianz Global Investors, July 2011

12 Allianz Global Investors, 2009: Pension Sustainability Index 2009, *International Pension Papers*, No. 5

13 Allianz Global Investors, 2011: Turkey – A Race against Informality and Low Retirement Ages, *International Pension Papers*, No. 3

EASTERN EUROPE

As central and eastern Europe (CEE) transitioned from communism to social democracies, its countries began to introduce fundamental changes to their pension systems. Not only did countries cut the benefits of PAYG pension systems back to a replacement rate of just 45%, in order to close the gap between pre-retirement and retirement income, they also initiated either mandatory or voluntary funded pensions.

The financial crisis, which had a negative impact both on accumulated funds and national economies, however, tested their resolve. Economic growth slumped heavily and put a tremendous strain on public finances. With a dramatic rise in debt-to-GDP ratios, some CEE countries decided to put their fingers into the proverbial pension-fund cookie jar. To strengthen their long-term fiscal outlook, Estonia, Hungary, Latvia, Lithuania, Poland and Romania reversed their pension financing model, diverting contributions back from the privately funded second pillar to the unfunded public pillar. For example, the Baltic States cut the state's contribution rate to the second pillar. Hungary was much more unabashed, using pension assets to reduce sovereign debt and strongly encouraging employees to return to the first pillar. Though such measures may have ameliorated fiscal problems in the mid-term, their depleted pension resources will eventually butt up against increasing pension expenditures at the risk of long-term sustainability. As a result, CEE countries do not rank as well as they did in previous indices.¹²

Turkey makes its debut in the Pension Sustainability Index with the highest score in eastern Europe. As is the case in emerging Asian markets, Turkey's large informal sector is putting a drain on its pension system.¹³ The Russian Federation, another newcomer to this study, ranks among the top half of all countries considered. As is the case with the other eastern European countries, Russia's pension system has undergone major structural changes over the past years; developing from a single, publicly managed distributive system into a multi-pillar pension system. The positive impact of its good fiscal situation and low old-age dependency ratio, however, is offset somewhat by its low retirement age. And though its low replacement rate should, in theory, give it a positive boost, Russia does not yet have a mature funded pillar, which puts it at risk of having to initiate welfare policies to avoid old-age poverty – at least in the mid-term.

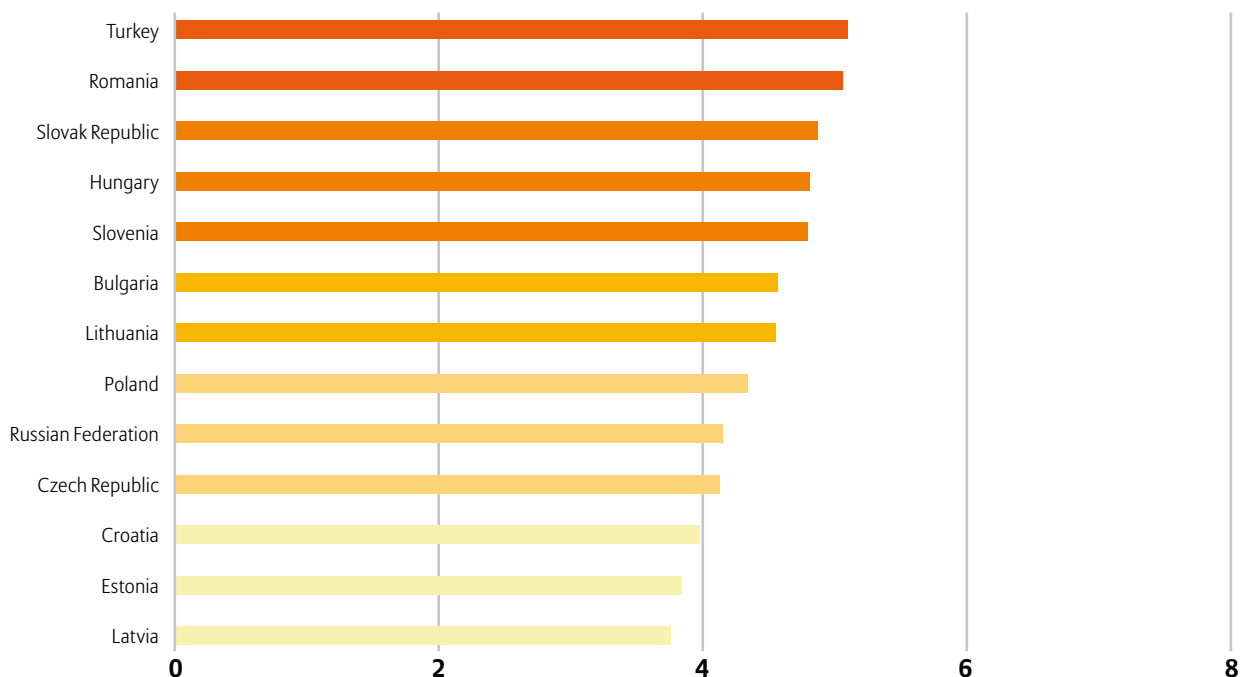
The pension system in the Russian Federation

The Russian pension system is a multi-pillar system consisting of a PAYG scheme and elements of funded and DC schemes. The first pillar consists of two parts: a basic pension on a PAYG basis with a strong redistributive element, and an earnings-related contribution recorded in notional accounts. The mandatory secondary pillar was introduced in 2002 and is directed towards the young workforce only.

The pension system in Turkey

The Turkish pension system consists of an earnings-related public scheme with a means-tested safety net and health insurance. In 2001, private pension plans were introduced to enhance the existing mandatory PAYG state pension scheme. Contributions made to private pension plans are tax-deductable.

Figure 3: 2011 Pension Sustainability Index for selected countries in eastern Europe



Scale from 1 - 10: 1 less need for reforms; 10 more pressure for reform

Source: Allianz Global Investors, July 2011

14 Allianz Global Investors, 2009: Pension Sustainability Index 2009, *International Pension Papers*, No. 5

ASIA AND OCEANIA

The need for reform in Asia, Australia and New Zealand is as different from country to country as are their diverse pension landscapes. In an overall comparison of the 44 countries included in this study, they rank among the very best and the very worst (see Fig. 1). Emerging Asian markets, in particular, are facing major structural changes. Strong economic growth has led to a prosperous middle class throughout the region. However, increased urbanization and a breakdown in traditional family structures have caused extreme socio-economic changes, which is altering the entire retirement landscape. Contrary to Europe, comprehensive pension systems are the exception and not the rule in most of Asia, and increasing the coverage of the public pension system is still a challenge. Therefore, many Asian governments are beginning to implement a multi-pillar system by introducing a variety of funded pensions.

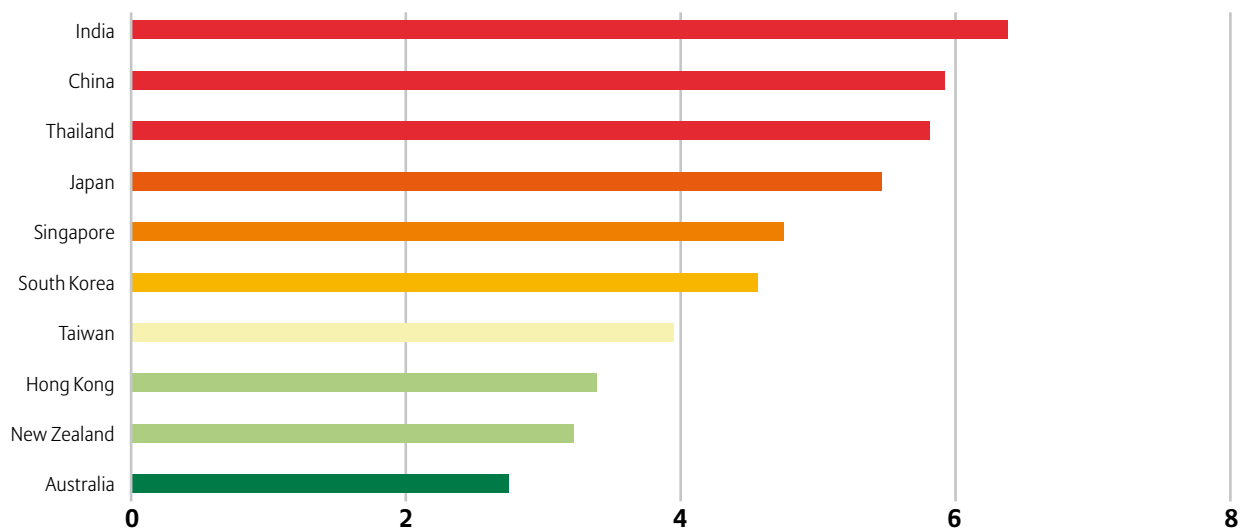
Country rankings here have not changed significantly compared to earlier studies.¹⁴ Despite setbacks to their funded systems as a result of the financial crisis, Australia and New Zealand's well-balanced old-age provisioning structures have won them high marks. In addition, favorable demographics and well-managed public finances have put them in a good position to provide for their senior citizens. This is not the case in India, which – of these regions – is under the most reform pressure. Extremely low coverage remains the primary challenge to India's pension policy (only 12% of the population is covered by any type of formal pension arrangement at all). China and Thailand, which also score badly, are in a similar position. In addition, Thailand's pension system is suffering from an extremely low legal retirement age (55 years). Though these countries have introduced pension reforms, there is still much work to be done.

The pension system in New Zealand

The Kiwi pension system is based on three pillars. The first pillar is a non-contributory, flat-rate pension called the New Zealand Superannuation (NZS), which is paid out to all residents fulfilling applicable residency requirements by the time they turn 65. The second pillar consists of occupational superannuation schemes and the KiwiSaver scheme. Introduced on 1 July 2007, the KiwiSaver is designed to increase the overall coverage of occupational complementary pensions, which before the introduction of the scheme stood at only 21%. The third pillar is composed of private pension savings meant to complement New Zealand's old-age provisioning system.

Among the Asian countries, Japan ranks fourth – despite good coverage. Japan is suffering from one of the highest old-age dependency ratios in the world. By 2050, it is expected to increase to an unsustainable level of almost 70%, compared to 42% in China. Another factor influencing Japan’s unfavorable ranking is its high sovereign debt, which leaves no room for subsidizing the pension system should it become necessary.

Figure 4: 2011 Pension Sustainability Index for selected countries in Asia and Oceania



Scale from 1 - 10: 1 less need for reforms; 10 more pressure for reform

Source: Allianz Global Investors, July 2011

Methodology and Data

The Pension Sustainability Index uses a wide range of sub-indicators, including their status and dynamics (e.g., the current and future demographic situation, the current state of public finances, key features of the pension system and the future shape of the pension system given reforms already in place) to measure the present status and future outlook of a country's national pension system.

Sub-indicators that might suggest a need for reform are current and expected old-age dependency ratios, the amount of sovereign debt, the first pillar replacement ratio, the role of funded pillars, pension expenditures and the legal retirement age. In addition, the PSI includes sub-indicators that are used to capture the progress of reform. For example, if radical reforms are introduced to address dramatic demographic changes, and so lay the groundwork for a solid pension system in the future, the reform pressure is not going to be very high. In such cases, even though an aging population would normally trigger a need for reform, reforms either already in place or planned would reduce the reform pressure. An increas-

Figure 5: Pension Sustainability Index – Sub-indicators, status and dynamics

Sub-indicators	Status	Dynamics
Demographics	Old-age dependency ratio (OAD)*	Change in OAD* until 2050
Pension system	Level of pension benefit from 1st pillar and coverage of workforce	Change in level of pension benefit
	Legal / effective retirement age	
	Strength of funded pillar and reserve fund (as % of GDP)	Reforms passed
Public finances	Pension payments / GDP	Change of pension payments / GDP until 2050
	Public indebtedness / GDP	
	Need for welfare support	

*Population aged 65 and older to population aged 15 to 64

Source: Allianz Global Investors, International Pensions

ing retirement age, a reduction in a previously high replacement ratio and the strengthening of the funded system are all evidence that reform is in progress. Each variable is given a score of 1 to 10, with 1 indicating less pressure for reform and 10 indicating more pressure for reform (e.g., high debt ratios, high replacement rates, high old-age dependency ratios or low legal retirement ages).

It is important to note that the PSI uses an intervallic scale to determine ranking. Since the index does not use cardinal numbers or metric values, results are not calculated and so minor differences in weightings cannot be fully differentiated between countries. The individual variables of the sub-indicators are combined into one score between 1 and 10, and the sub-indicators to a total score. A country with an overall score of 1 would indicate there is no need for reform; 10 would indicate there is great need for reform. Here is an overview of sub-indicators that would give a positive weighting:

- The national pension system has been designed to meet the needs of an aging society, i.e.,
 - the first pillar PAYG system offers moderate benefits and covers a large percentage of the workforce;
 - the legal retirement age is high and/or is based on long life expectancies;
 - funded pillars are in place to provide additional old-age income.
- National demographics do not put much pressure on reform, i.e.,
 - the old-age dependency ratio is favorable;
 - changes in the work-to-retirement balance are expected to be moderate.
- The government is in the position to cushion reform pressures, i.e.,
 - public pension payments are low;
 - the state has deep pockets so that it can either take on more debt or increase the burden on the economy to finance rising pension payments.

Because the variables used for their datasets are similar, almost all the data used for the PSI are taken from the databases of international organizations. Datasets from the EC's aging report were taken for almost all the variables used for European countries. For all non-European countries, data was taken from the 2010 revision of the UN's "World Population Prospects" (medium variant). Data from the OECD (Organisation for Economic Co-operation and Development) filled in any information gaps on pension coverage and funded pension systems. The IMF's world economy database of April 2011 (*see sources*) provided missing macro-economic data. Where necessary, national sources and statistics were added.

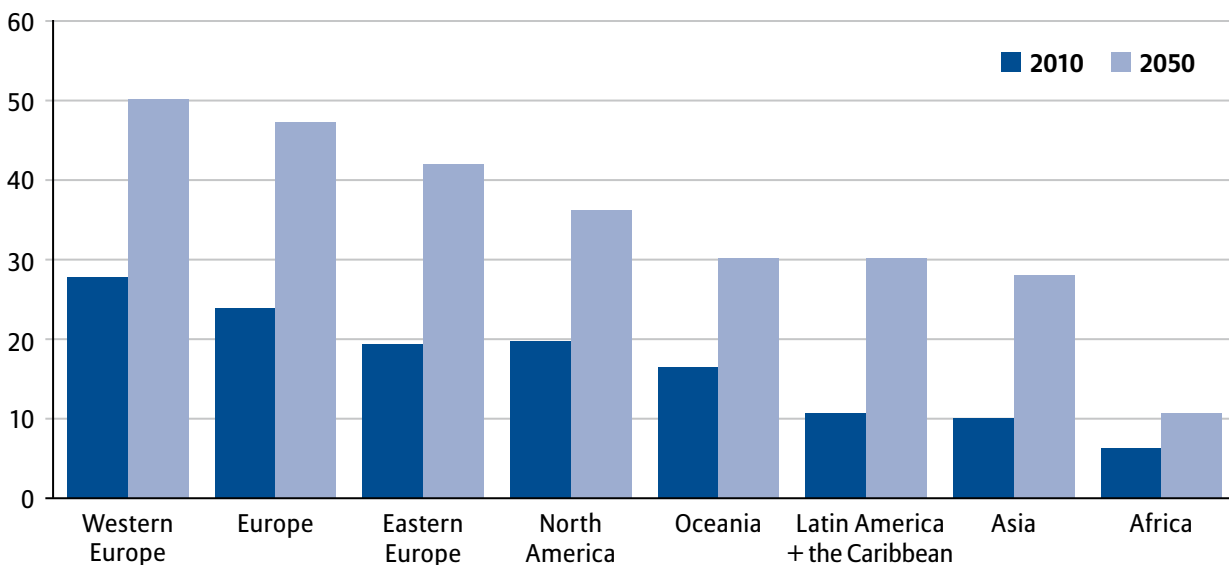
Sub-indicators

The Pension Sustainability Index uses a wide range of sub-indicators, such as demographic developments, public finances and pension system designs to systematically measure the need for pension reform. In order to understand the total ranking of the PSI, it is important to understand the underlying sub-indicators that influence its ranking rationale.

AGING DEMOGRAPHICS

One of the main forces driving pension reform today is the aging population. The old-age dependency ratio, which compares the number of people aged 65 or older (retired population) to the number of people aged 15 to 64 (working population), gives a clear indication of a country's aging demographics. This ratio is already quite high in 'older' Europe, which has seen a steady trend towards lower birth rates and increasing life expectancies. To put this into perspective, the old-age dependency ratio is 28% in western Europe, about 10% in today's younger regions (i.e., Asia and Latin America), and even less in Africa. Younger regions, however, will not remain unscathed from the effects of changing demographics and can expect to see rapid change – particularly in Asia and Latin America. Aging demographics are set to explode between now and 2050, by which time the old-age dependency ratio will have almost tripled in Asia and Latin America, more than doubled in eastern Europe, and increased by some 80% in North America and western Europe.

Figure 6: Old-age dependency ratio in Africa, Asia, Europe, Latin America and the Caribbean, North America and Oceania (2010 to 2050)



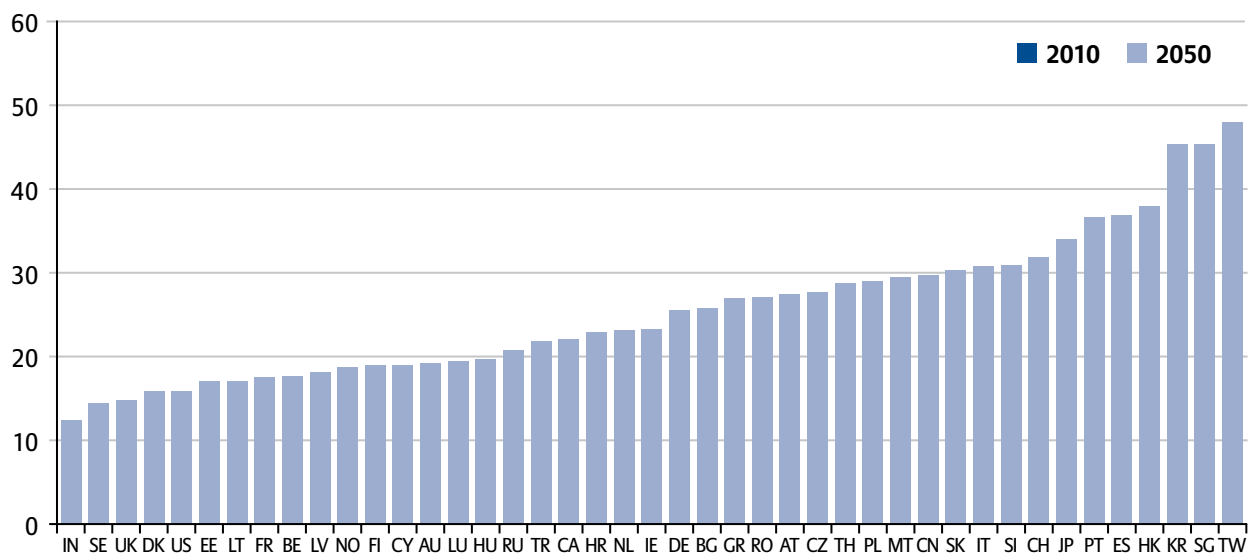
*Population aged 65 and older to population aged 15 to 64

Sources: UN Population Division (2011), Allianz Global Investors

The rapid change expected in Asia is due to a huge increase in life expectancies, which since 1950 has jumped from 43 to 69 years – the biggest leap of any region in the world. This 26-year increase in longevity compares to ten in Europe, ten in North America and 17 in Africa. At 22, only Latin America comes close. However, increased life expectancies are not the only problematic. Over the last 50 years, Asia has seen a steep decrease in its fertility rate. On average, every woman in Asia gives birth to 2.3 children, roughly 60% less than in 1950. Again, only Latin America is facing such a steep decline in fertility. Europe, on the other hand, has only seen a 43% decrease since 1950.

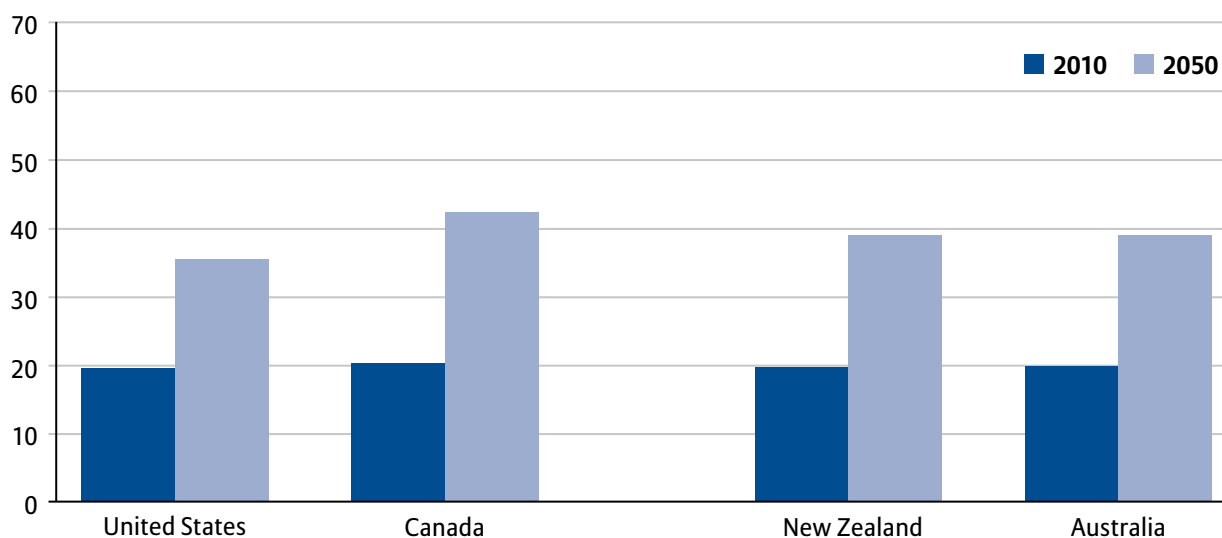
In taking a closer look at the different regions, it becomes clear that aging dynamics differ considerably from country to country. For example, with a 35% old-age dependency ratio, Japan is already considered to be an 'old' country and its old-age dependency rate is expected to double by 2050. This doubling is minor compared to young Asian countries like Taiwan, Korea and Singapore, where the old-age dependency ratio is expected to increase by four or five times, or Hong Kong, where it is expected to increase from 17% to 55%. Eastern European countries find themselves in similarly dire straights. Like Japan, most western European countries already have large older populations; but as baby boomers continue to reach retirement age, their old-age dependency ratios will increase substantially. Even so, the dynamics are not as significant as they are in Asian countries.

Figure 7: Old-age dependency ratios in Europe and selected countries in Asia, Oceania and North America (2010 to 2050)



See p. 25 for abbreviations; *Population aged 65 and older to population aged 15 to 64 Sources: UN Population Division (2011), Allianz Global Investors

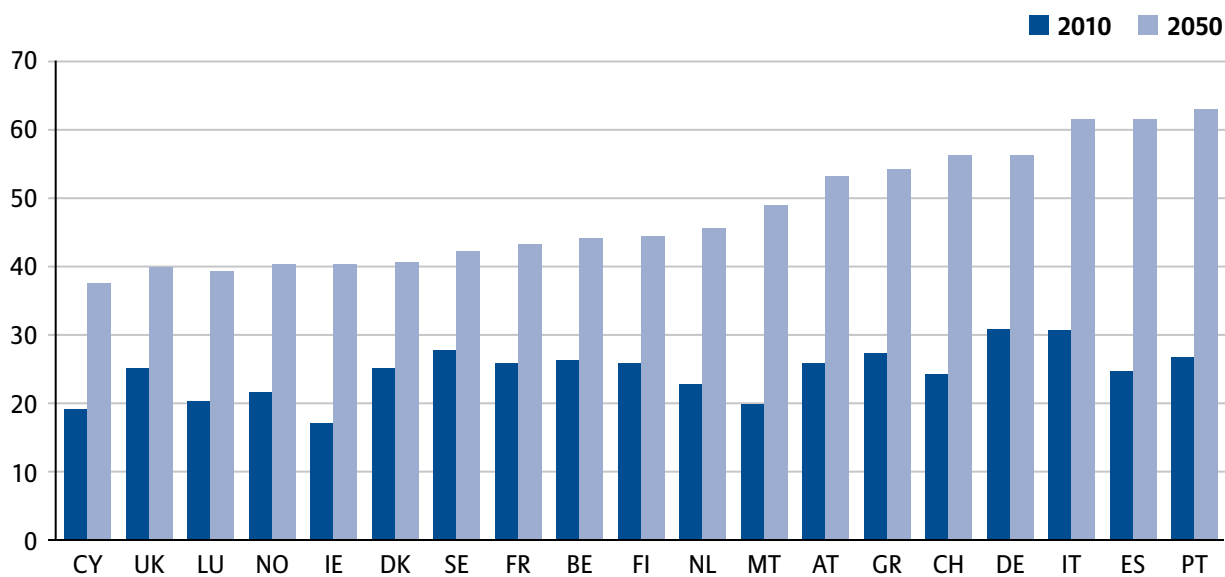
Figure 8: Old-age dependency ratios in the United States, Canada, New Zealand and Australia (2010 to 2050)



*Population aged 65 and older to population aged 15 to 64

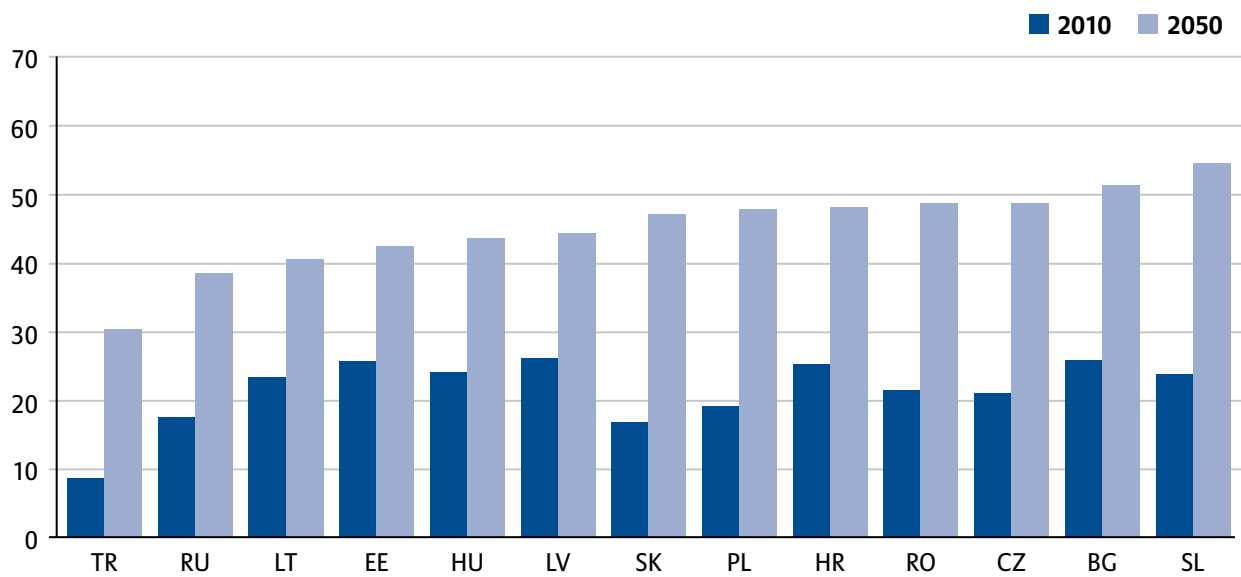
Sources: UN Population Division (2011), Allianz Global Investors

Figure 9: Old-age dependency ratios in western Europe (2010 to 2050)



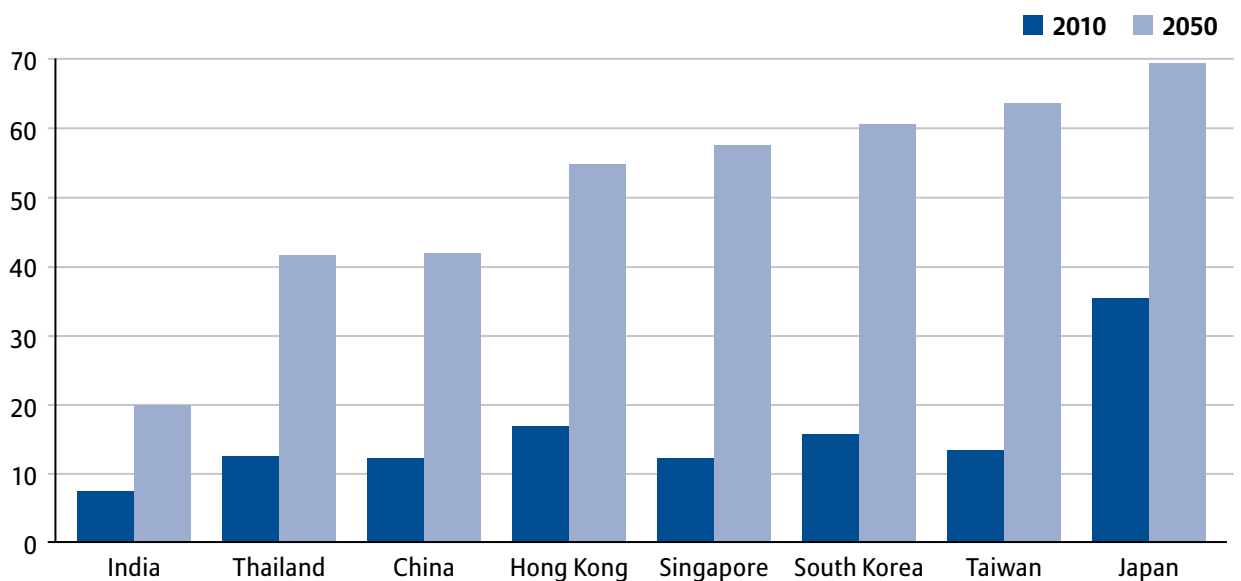
See p. 25 for abbreviations; *Population aged 65 and older to population aged 15 to 64

Sources: UN Population Division (2011), Allianz Global Investors

Figure 10: Old-age dependency ratios in eastern Europe (2010 to 2050)

See p.25 for abbreviations; *Population aged 65 and older to population aged 15 to 64

Sources: UN Population Division (2011), Allianz Global Investors

Figure 11: Old-age dependency ratios in selected Asian countries (2010 to 2050)

*Population aged 65 and older to population aged 15 to 64

Sources: UN Population Division (2011), Allianz Global Investors

PENSION SYSTEM DESIGNS

This second sub-indicator addresses key features of national pension systems and their future designs given reforms that have either already been introduced or have been agreed to, but not yet carried out. Over the past decade, many countries implemented parametric reforms to their pension systems (e.g., increasing the retirement age, changing the pension calculation, broadening the assessment base). The legal retirement age and actual exit age can have a tremendous impact on a country's ranking. For instance, in addressing the glut of 20th-century baby boomers in western Europe, many countries initiated early retirement programs to relieve the pressure on the job market. However, the result was portions of the Europeans were exiting the workforce well below the legal requirement age, which then put pressure on public finances. In contrast, other countries chose to increase the legal retirement age in order to lower the old-age dependency ratio – a move that generally has a positive effect on public finances.

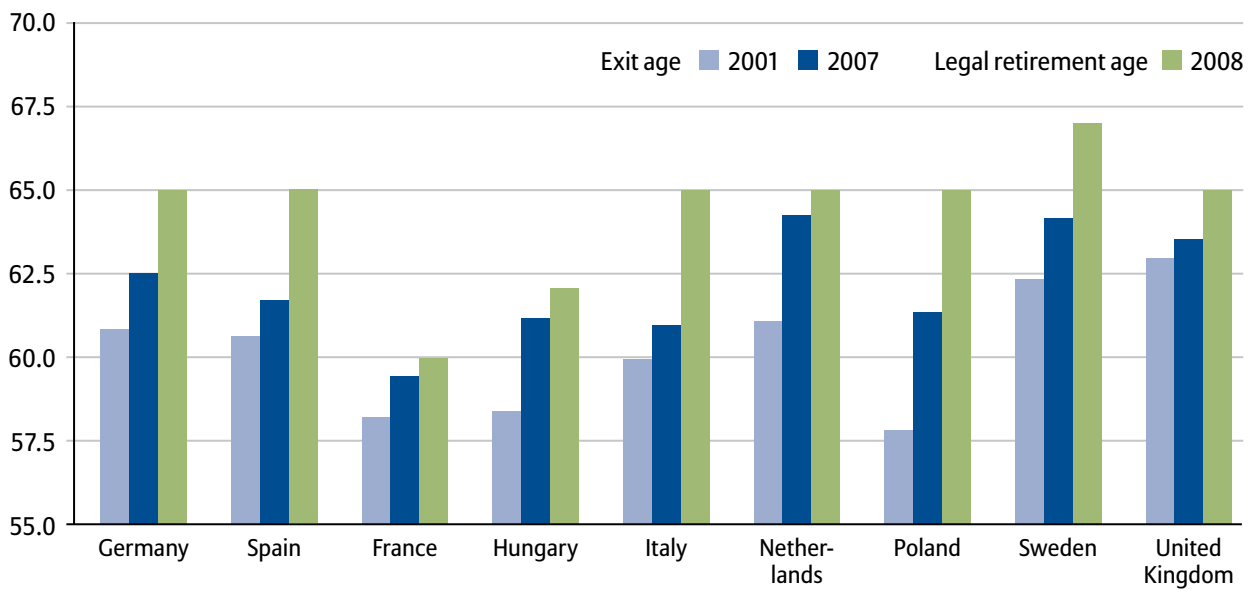
Many of the reforms initiated over the past couple of years were designed to lower replacement rates. However, upon closer examination, two very different approaches are apparent. Countries such as the United States, Australia, the United Kingdom and Ireland have a sort of bottom-draw pension system. Here, the public pillars cover only the most basic requirements needed to prevent old-age poverty. Any additional income required to maintain a certain standard of living must be generated through funded sources. The public pillars in continental Europe, particularly Greece, Italy and France, take a much more generous approach (*see Fig. 13*).

The transition from communism to social democracies forced CEE countries to implement fundamental reforms to their pension systems. With the average public pension cut back to a 45% replacement rate, CEE countries have had to initiate either mandatory or voluntary funded pension systems to help fill the gap.

The vast economic differences between emerging and developed countries in Asia has resulted in very diverse pension landscapes. However, when a country does decide to introduce a formal pension system, it generally follows the World Banks' recommendation of a balanced multi-pillar model. Only Singapore chose to operate a one-pillar system with multi-purpose funds that can be used for different purposes, making the pension level very low.

There is a flip side to reducing replacement rates. When retirement income is too low, old-age poverty becomes an issue and financing welfare programs may well put more pressure on public finances than any relief gained from lowering the replacement rate. This, in turn, affects the Pension Sustainability Index. Countries without additional funded systems in place to buttress their very low replacement rates will score poorly on this sub-indicator.

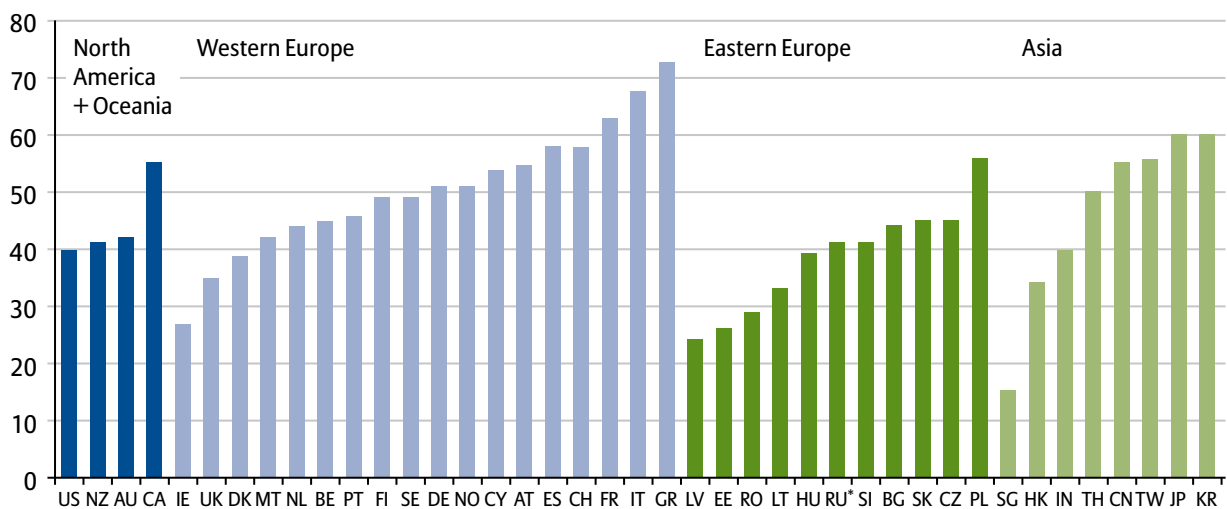
Figure 12: Actual exit age* and legal retirement age in selected European countries (2001, 2007 and 2008)



* male population only

Source: EU Commission, 2009 Ageing Report

Figure 13: Gross public pension in Europe and selected countries in Asia, North America and Oceania [% of average income]



See p. 25 for abbreviations; *Data from the Ministry of Finance, Ministry of Economic Development, and State Pension Fund of the Russian Federation

Sources: EU Commission 2009, OECD 2011

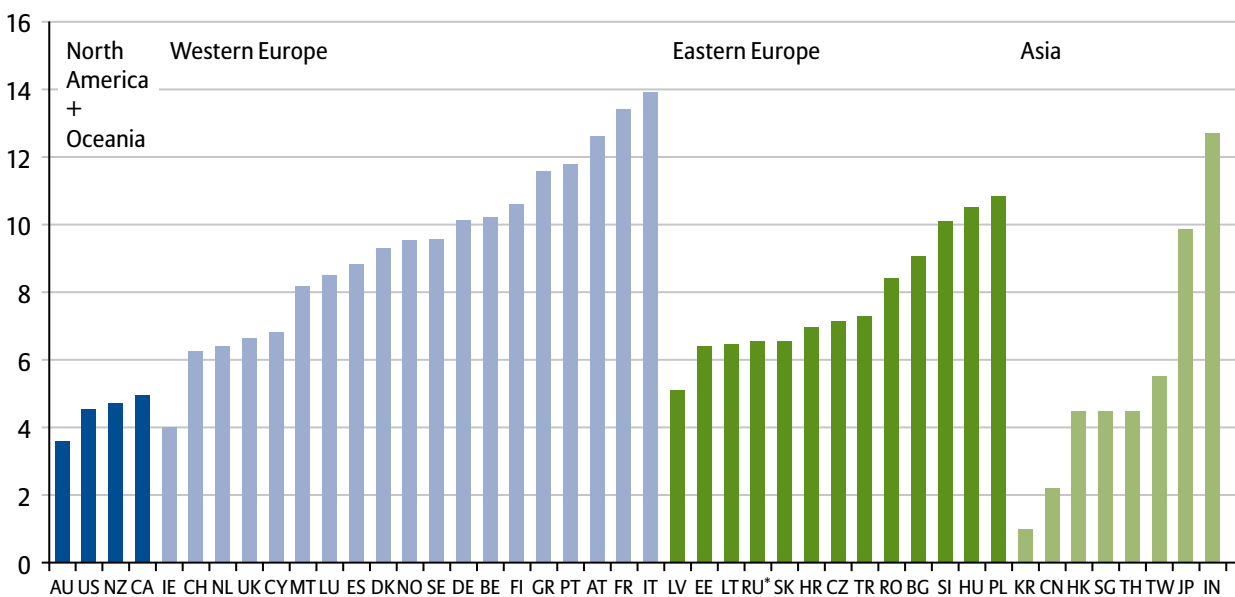
15 European Commission, February 2009: The 2009 Ageing Report: Economic and budgetary projections found for the EU-27 Member States (2008-2060)

PUBLIC FINANCES

Public finances is another one of the sub-indicators the PSI uses to rank countries. If pension expenditures are already high or if there is a dramatic increase, it will have a negative overall effect on public finances. The old-age dependency ratio is integral to understanding the economic impact of a retiring workforce on public finances. In a PAYG pension system, the workforce pays contributions into a social security system which, in turn, are paid out to retirees. In addition, governments are obliged to provide for their retired civil servants. Parameters considered here are pension expenditures, what these expenditures are as a percentage of GDP, and what changes are expected until 2050.

In 2010, the burden of European public pension systems on public finances was already 10.2% of GDP.¹⁵ Because countries with smaller PAYG systems, such as Australia, Canada, Ireland, New Zealand, the United States and most Asian countries typically have less to finance, they are usually considered to be under less financial stress. However, Asia as a whole has yet to initiate comprehensive old-age provisioning systems, thus putting it at more risk of having to subsidize public welfare programs.

Figure 14: Pension expenditures as a percentage of GDP in Europe and selected countries in Asia, North America and Oceania (2010)



See p. 25 for abbreviations; * Data from the Ministry of Finance, Ministry of Economic Development, and State Pension Fund of the Russian Federation
Sources: Compiled by Allianz Global Investors 2011 based on data from the OECD, IMF, EU Commission, National Statistics, Allianz Global Investors

An aging society will naturally cause pension expenditures to increase over the years. In western Europe, this burden is expected to amount to 12.4% of GDP by 2050.¹⁶ Many governments have already introduced reforms to lower pension levels and so decrease the overall financial burden. It should be noted that this current study uses projections from the “2009 Ageing Report of the European Commission” with base results for 2010 as reported by the EC.^{17/18}

As already mentioned in the 2009 PSI, data supplied by the Commission does not take in the effects of the crisis on each individual European country, but is calculated according to the impact the crisis had on the budgetary position of the EU-27 as a whole. Depending on the scenario, the EC projects that pension expenditures will increase by 0.6 to 1.1 percentage points over the long term.¹⁹ As the crisis continues, national deficits are deepening and debt burdens increasing, making it even more difficult to follow a long-term sustainable path. Reforms remain on the political agenda, especially in countries in which the economic crisis has further aggravated the need for reform.

According to the Commission’s aging report, some European countries will face a marked increase in pension expenditures. For example, Greek pension

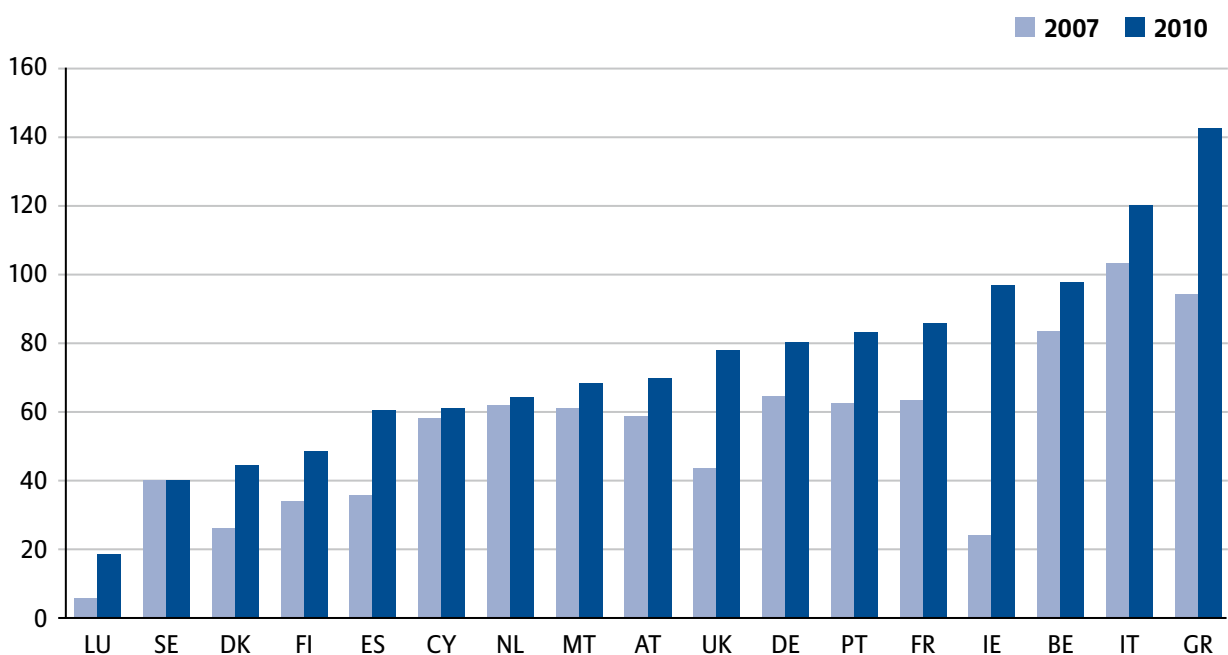
16 It should be noted that EC projections in its aging report were based on the Commission’s forecast of spring 2008, which does not include the financial crisis in its baseline projections for individual countries. The Commission, however, did calculate the potential impact of the crisis on the budgetary position of EU-27 as a whole. See the introduction to this paper.

17 European Commission, 2010: Public Finances in the EMU, *European Economy*, No. 4, p. 68

18 The report states that only Hungary presented a new set of projections on age-related expenditures

19 This refers to the “lost decade” and “permanent shock” scenarios. European Commission, 2009: The 2009 Ageing Report: Economic and budgetary projections for the EU-27 Member States (2008-2060), p. 195 f

Figure 15: Sovereign debt as a percentage of GDP in western Europe (2007 to 2010)



See p. 25 for abbreviations

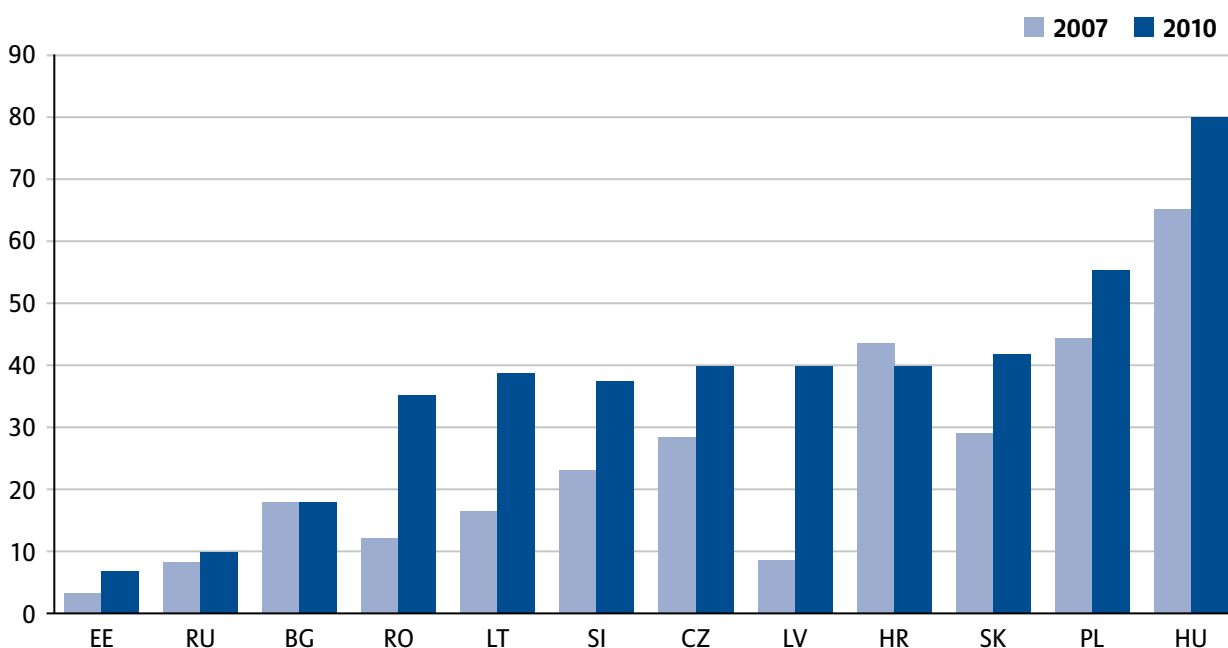
Sources: Compiled by Allianz Global Investors 2011 based on data from the EC, IMF 2011

expenditures as a percentage of GDP, which are already high, are expected to double between 2010 and 2050. The United Kingdom and Ireland, on the other hand, have a very basic first pillar system and any increase is expected to be moderate. Though eastern Europe has similar demographics, any increase in pension expenditures is expected to be moderate due to the old-age provisioning systems and funded elements put in place when their communist regimes collapsed.

Sovereign debt as a percentage of GDP is factored into the PSI to indicate how much public finances can be stretched. The financial crisis and its successive and extensive economic stimulus packages have put tremendous pressure on public finances. In some countries, sovereign debt has exploded in the last three years (see Fig. 15 and Fig. 16); so much so, that there is little room left to address rising old-age expenditures.

One way to revive PAYG systems is to increase contributions. In fact, increasing contributions and raising taxes can have a favorable impact on a country's ranking. However, with contributions and taxes already high in most countries, further increases are unlikely to be tolerated, which underscores the limitations there are to changing existing pension systems.

Figure 16: Sovereign debt as a percentage of GDP in eastern Europe (2007 to 2010)



See p. 25 for abbreviations

Sources: Compiled by Allianz Global Investors 2011 based on data from the EC, IMF 2011

Abbreviations

(Country Codes according to ISO 3166-1-alpha-2)

AT..... Austria	KR..... South Korea
AU..... Australia	LT..... Lithuania
BE..... Belgium	LU..... Luxembourg
BG..... Bulgaria	LV..... Latvia
CA..... Canada	MT..... Malta
CEE..... Central and eastern Europe	NL..... Netherlands
CH..... Switzerland	NO..... Norway
CN..... China	NZ..... New Zealand
CZ..... Czech Republic	NZA..... New Zealand Superannuation
CY..... Cyprus	OAD..... Old-age dependency ratio
DB..... Defined benefit	OECD..... Organisation for Economic Co-operation and Development
DC..... Defined contribution	PAYG..... Pay-as-you-go
DE..... Germany	PL..... Poland
DK..... Denmark	PRPP..... Pooled Registered Pension Plan
EC..... European Commission	PSI..... Pension Sustainability Index
ECB..... European Central Bank	PT..... Portugal
EE..... Estonia	RPP..... Registered Pension Plan
ES..... Spain	RU..... Russian Federation
FI..... Finland	RO..... Romania
FR..... France	SE..... Sweden
GDP..... Gross domestic product	SG..... Singapore
GR..... Greece	SI..... Slovenia
HK..... Hong Kong	SK..... Slovak Republic
HR..... Croatia	TH..... Thailand
HU..... Hungary	TR..... Turkey
IE..... Ireland	TW..... Taiwan
IMF..... International Monetary Fund	UK..... United Kingdom
IN..... India	UN..... United Nations
IORP..... Institution for Occupational Retirement Provision	US..... United States
IT..... Italy	
JP..... Japan	

Figures

Figure 1: 2011 Pension Sustainability Index – Overview	4
Figure 2: 2011 Pension Sustainability Index for western Europe and North America	9
Figure 3: 2011 Pension Sustainability Index for selected countries in eastern Europe	11
Figure 4: 2011 Pension Sustainability Index for selected countries in Asia and Oceania	13
Figure 5: Pension Sustainability Index – Sub-indicators, status and dynamics	14
Figure 6: Old-age dependency ratio in Africa, Asia, Europe, Latin America and the Caribbean, North America and Oceania (2010 to 2050)	16
Figure 7: Old-age dependency ratios in Europe and selected countries in Asia, Oceania and North America (2010 to 2050)	17
Figure 8: Old-age dependency ratios in the United States, Canada, New Zealand and Australia (2010 to 2050)	18
Figure 9: Old-age dependency ratios in western Europe (2010 to 2050)	18
Figure 10: Old-age dependency ratios in eastern Europe (2010 to 2050)	19
Figure 11: Old-age dependency ratios in selected Asian countries (2010 to 2050)	19
Figure 12: Actual exit age and legal retirement age in selected European countries (2001, 2007 and 2008)	21
Figure 13: Gross public pension levels in Europe and selected countries in Asia, North America and Oceania [% of average income]	21
Figure 14: Pension expenditures as a percentage of GDP in Europe and selected countries in Asia, North America and Oceania (2010)	22
Figure 15: Sovereign debt as a percentage of GDP in western Europe (2007 to 2010)	23
Figure 16: Sovereign debt as a percentage of GDP in eastern Europe (2007 to 2010)	24

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