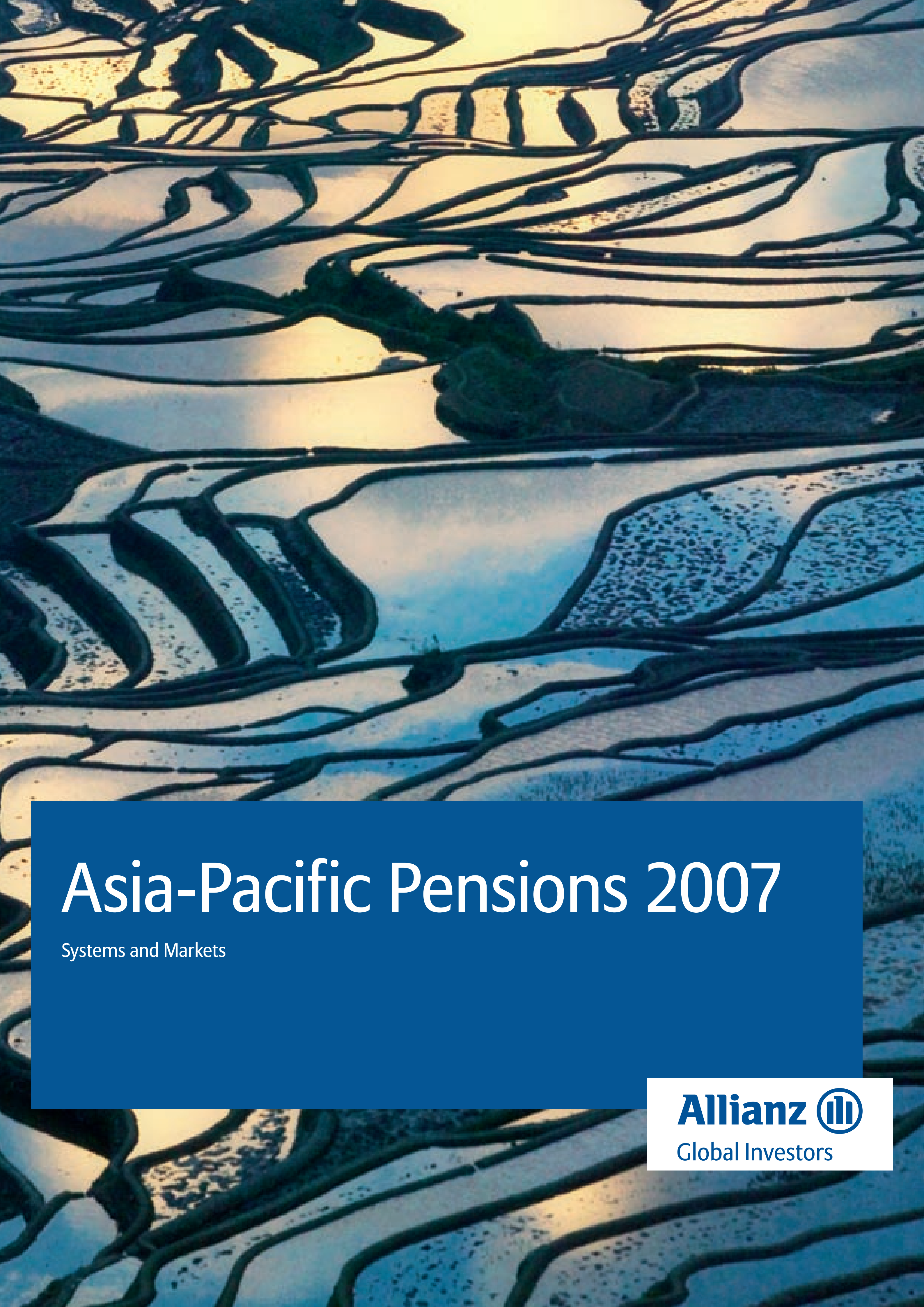

Asia-Pacific Pensions 2007

Systems and Markets

Allianz Global Investors

Contents

Pension systems in Asia are in transition, as far-reaching reforms have been triggered by socio-economic change and demographic development.

The reforms in Asia's emerging economies have focused on formalising and extending the coverage of pension systems. In Asia's developed economies, reforms have mainly concentrated on ensuring the sustainability of pension systems. These reforms and the resulting impact on pension markets are the subject of this study.

Asia has not been spared from the (almost) global trend of ageing populations. In fact, Japan and South Korea are among the most rapidly ageing societies in the world. Countries such as China will age within one generation, giving rise to major challenges for policy-makers. Others, like India, are showing comparatively modest ageing patterns.

Ageing is not the only factor that is having a major impact on Asia's pension systems. Industrialisation and urbanisation also play an important role, particularly in the emerging economies. Both developments have uprooted traditional, family-based structures of old-age provision. As a result, the establishment of formal pension systems has become a key political goal.

This second study on Asia examines nine pension systems and markets: Australia, China, Hong Kong, India, Japan, Singapore, South Korea, Taiwan and Thailand. This group includes the wealthy economies of Australia and Japan as well as rapidly developing countries such as China and India. Clearly, the dynamics of reform differ between these two groups. However, some common trends can be identified.

One of them is the growing importance of defined contribution schemes, which have been implemented in most of the countries under discussion in recent years. This development entails more individual responsibility. It also means that large parts of the population are becoming directly exposed to capital markets, which has led to the need for professional asset management.

Indeed, the quality of asset management will be decisive in securing the living standard of many of Asia's future retirees. The outsourcing of assets from public pension funds or pension reserve funds to private asset managers has also increased the importance of asset managers.

This study is divided into two parts. The opening article in part 1 focuses on macroeconomic and demographic developments, while the second looks at trends in Asian pension systems and markets. It includes our projections for pension asset development in all markets under investigation from now until 2015. A third article examines the design and advantages of capital market-based instruments in coping with longevity risk. The second part of the study analyses each pension system and market.

Asia's pension systems are a fascinating field of study and a highly promising market for financial institutions. We hope that this study contributes to a greater understanding of the systems and markets in place. It aims to create transparency on the different pension systems, in hopes that this will lead to increased cross-border knowledge-sharing, which is the basis of innovative approaches to pension system design.

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Introduction

An overview of macroeconomics and demographics in Asia-Pacific

The economic situation in Asia-Pacific

In economic terms, Asia has been the fastest growing region for almost a decade. China, still the world's most populous country, continues to see double-digit growth rates. And India is not lagging far behind. Growth in both countries has made a major impact on Asia as a whole. Singapore and Hong Kong have also recorded high growth rates recently, while economic activity in Taiwan, Thailand and South Korea has been rather lacklustre. Exports have been the driving force behind strong economic performance in Asia's emerging markets thanks to strong economic expansion in most of the world's regions, particularly in the US and Europe. Furthermore, Japan's stable economic upturn further boosted intra-Asian trade. Buoyant domestic demand in many countries has also contributed to the brisk economic growth seen in recent years. The Asian growth engine is in fine shape, and there is no indication that this will change anytime soon. With its abundance of natural resources, Australia is benefiting from demand in Asian economies, which are geared heavily toward manufacturing, especially China.

Asia – Less susceptible to crisis

Despite the expected global economic slowdown in 2007, notably in the US, which is the most important market for Asian exports, growth in Asia is expected to stay largely constant at around 8%. So how can the rather benign outlook be explained? The Far East not only has a young and growing population, the region also has one of the highest savings ratios in the world – up to 40% of GDP in some countries. Based on this high capital formation, production capacities can be rapidly built up. The downside to rapid growth is that it made Asian countries extremely susceptible to speculative bubbles in the past, as illustrated by the financial crisis in the late 1990s.

Thankfully, the economic situation across Asia is no longer what it was a decade ago. Dynamic economic development throughout the region is a product of strong international competitiveness and the corresponding export boom, with flows of goods within Asia increasingly dominating external trade. Today, almost every country in the Far East is a link in the global value chain. The economic outlook in the industrialised world plays an important role for Asia's emerging markets, thanks to these markets' strong focus on exports. This focus has enabled Asian countries to generate decent current account surpluses, which reduce the risk of another currency crisis.

China and India – The dominant emerging economies

Developments in China and India clearly dominate the view of Asia. China is now the world's fourth largest economy and third biggest trading nation. The country plays an increasingly important role as a production location for multinational companies. Foreign trade, the current account surplus and currency reserves will continue to increase in coming years. As a result, the Chinese currency remains under strong upward pressure. Evidently, the Chinese government is still keen to keep the currency undervalued in the interest of the export sector. We believe that the economy will continue to grow strongly, making China's global economic weight develop further.

It should be noted, however, that rapid economic growth has created many imbalances, not to mention a variety of social and environmental problems. An Asian Development Bank study shows that between 1990 and 2000, the increase in income inequality measured by the Gini coefficient was only more pronounced in Nepal than in China. The government is attempting to reduce the differences between coastal regions and the western provinces, which are generally more rural and much poorer. Increasing inequality and a rising number of citizens' protests have led to more social disturbances that could become a serious issue for the long-term economic outlook if the government fails to address them.

India's economic development can be hailed as another success story of the decade. Between 2003 and 2006, GDP rose by an average 8.4% a year, making India the second-fastest growing economy in Asia. On balance, many structural factors point to sustainable high economic growth. Positive demographic trends and a burgeoning middle class are bolstering the country's economic growth. Besides the booming services sector, the most important aspect of the new economic dynamism is industry's growing contribution to GDP growth. We believe that the Indian economy will continue to expand at an annual rate of 7.5 to 8.5%. Still, just like in China, India faces major obstacles on the road ahead. Inefficient bureaucracies and dismal infrastructure are the main impediments to even faster growth. If these issues are addressed and the educational system in the poorer parts of the country is completely overhauled, India will have a bright future.

Benign economic outlook

Following decade-long stagnation and deflation, Japan finally put its troubles behind it several years ago and has made its way back onto a stable growth path. The unemployment rate has reached a nine-year low, and income and consumption are rising. Many companies have undergone thorough restructuring processes in recent years, and have improved their competitiveness as a result. At the same time, the financial sector has regained stable footing after years of turmoil. In the coming years, real growth should average 2%.

Australia benefits from strong demand for commodities. We expect the country's solid growth to continue in the medium term, though not at the same brisk pace as in the second half of the 1990s. While Australia's rather large current account deficit does cast a shadow on the economy, so far it has not been an obstacle to further economic progress.

Despite two decades of high growth in Taiwan, the country's days of vibrant economic growth are over. Taiwan has already reached an economic welfare level (GDP per capita of EUR 12,142), which limits potential growth for the future. The country also faces some structural problems: the banking sector is weak and undercapitalised. Furthermore, Taiwanese industry continues to outsource production to the mainland, which will increase pressure on employment. In addition to this, political uncertainties and a potential military conflict with China pose a risk to future economic development. Bearing all this in mind, we expect moderate economic growth of 4% p.a. in the medium term.

The growth forecast for South Korea is only slightly better. We see real GDP expanding 4.5% p.a. in the medium term. The domestic economy remains weak in the face of sluggish private consumption. What's more, Korean household debt is relatively high due to high mortgage debt. To a certain extent, the property market is overheated. A price collapse in South Korea could delay the recovery of domestic demand. The investment outlook hinges on the export sector's future prospects, which are highly dependent on the global demand for IT products.

Thailand is currently suffering from weaker growth and some political turmoil. If the country manages to return to democracy, the outlook will be as bright as for the rest of Asia. It can capitalise on its strong tourism industry and overall economic development is well under way. GDP growth of about 5% is expected in the medium term.

Hong Kong's economic prospects are closely tied to the performance of mainland China. Manufacturing has moved to the mainland, and Hong Kong has become a service center for China with regard to trade and financial markets. In addition, Hong Kong's well established stock market will continue to be China's hub for raising equity. And growth is expected to remain stable at 5% in the coming years, unless the mainland's economy stagnates or US interest rates rise sharply.

The outlook for Singapore is even brighter, with medium-term average economic growth expected to be between 5 and 6% p.a. The city state's economic success can mainly be attributed to its prudent economic policies in response to the challenges of globalisation. The country's global trade network, excellent infrastructure and management expertise as well as the strong presence of international banks and companies increase Singapore's competitive edge as a regional financial and trade centre in Southeast Asia.

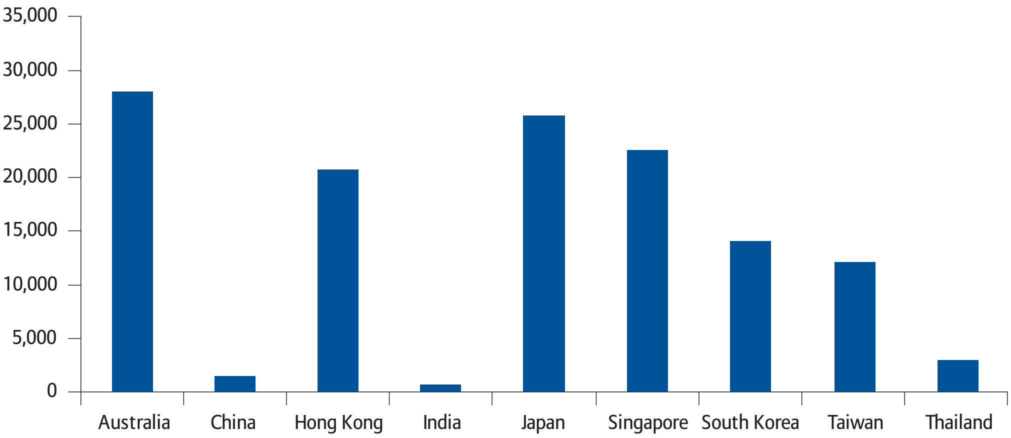
To sum up, the economic outlook for all the countries considered in this report is bright, even if growth figures vary within the region (see table 1).

Table 1: GDP growth

Change over previous year [%]					
	2005	2006	2007	2008	2009–2015
Australia	2.7	3.0	3.0	3.3	3.5
China	10.4	10.7	11.0	10.5	8.5
Hong Kong	7.3	6.8	5.5	5.0	5.0
India	9.0	9.4	8.5	8.2	8.0
Japan	1.9	2.2	2.5	2.0	2.0
Singapore	6.4	7.9	6.5	6.0	5.5
South Korea	4.2	5.0	4.8	5.0	4.5
Thailand	4.5	5.0	4.3	5.0	5.0
Taiwan	4.1	4.6	4.5	4.5	4.0

Source: Ecowin, Allianz Dresdner Economic Research

Chart 1: GDP per capita [EUR]



Source: Ecowin, Allianz Dresdner Economic Research

While overall growth figures show regional dynamics, they do not address the tremendous income differences across Asia. Measured in GDP per capita, countries such as Australia and Japan are among the richest in the world, while countries such as India are still very poor. The country's annual per capita GDP amounts to just slightly over EUR 615, which is still well below the common global threshold of EUR 758 (USD 1,000) for middle income countries. China's GDP per capita is about twice as high as India's, and Australia's GDP per capita is 18 times higher than China's. This gives an impression of the different levels of development among the countries analyzed in this study.

Fast growth is not only a good thing

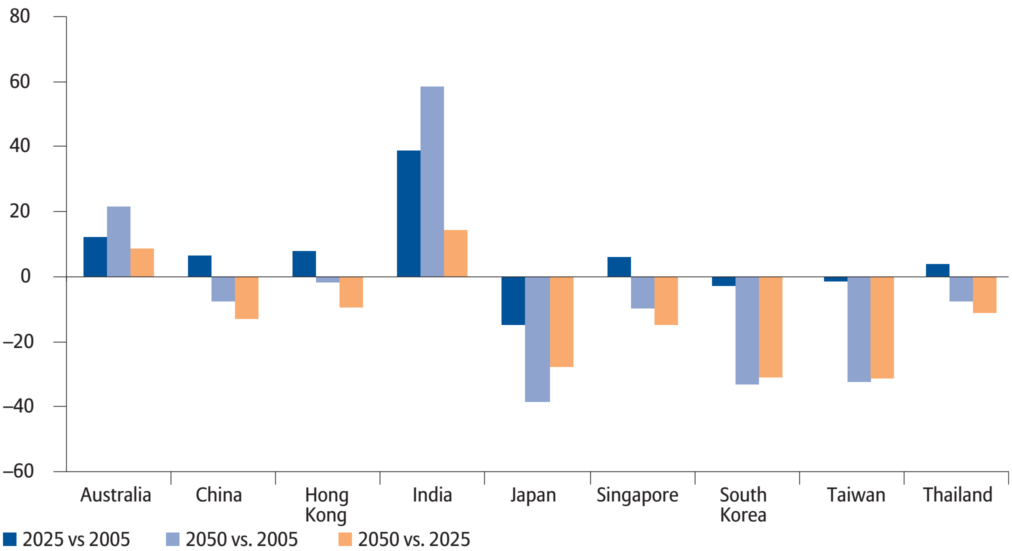
Income discrepancies within countries other than China are also enormous. An Asian Development Bank study found that from the early 1990s to the early 21st century, income inequality increased in India, South Korea and Taiwan. Yet increases in China were the most pronounced. However, income inequality does not necessarily rise over time. In Thailand for instance, income distribution has become more balanced in recent years. Still, income discrepancies are generally major in the countries addressed in the present study. The differences between the coastal and more western regions in China are by no means unique. In India, there are similar differences between regions.

Despite these discrepancies, living conditions and incomes throughout the region are generally improving. The ongoing integration into the global division of labour has included an increasing number of people in the formal economic sector. This process is most prominent in China, where millions of people head east each year in hopes of finding a manufacturing job in the coastal provinces. Such migration patterns can be observed in many Asian countries, albeit on a smaller scale. In this process, more and higher income is generated, and a new middle class emerges.

Demographics and the labour market

The development of the potential labour force, that is the portion of the population aged 15 to 64, should be considered when assessing Asia's long-term growth outlook. Demographic developments will not have a major effect on growth in years to come, with one exception. In Japan, the potential labour force is set to shrink by 15% between 2005 and 2025. South Korea will show a decline of 3%, and Taiwan's potential labour force will shrink by 1.5%, changes too small to affect the economy. In the next two decades, the potential labour force in all other countries will grow, in some cases quite substantially. India's potential labour force will grow almost 40%, and Australia's will increase by 12%.

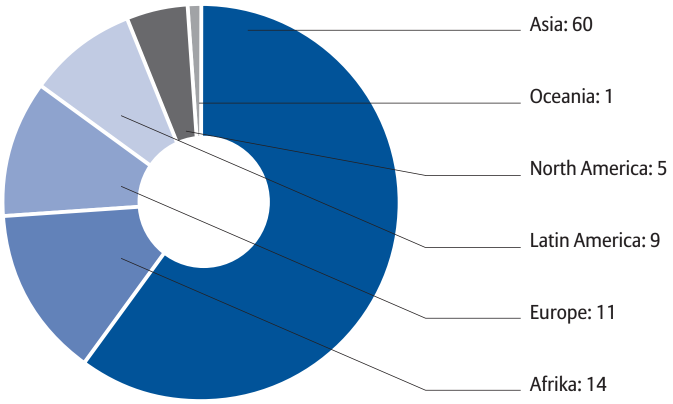
Chart 2: Changes in potential labour force [%]



Source: UN World Population Prospects 2006 Revision, Taiwan: Council for Economic Planning and Development

However, the picture is not as rosy for the period between 2025 and 2050. With the exceptions of India and Australia, the 15-64 age bracket will decline considerably in all other countries under consideration. The decline will be most pronounced in South Korea, Taiwan and Japan, which will see a decline of about 30% in this age group (see chart 2). The demographic reasons behind these developments are analyzed in greater detail in the following paragraphs.

Chart 3: Share of world population 2006 [%]



Source: UN

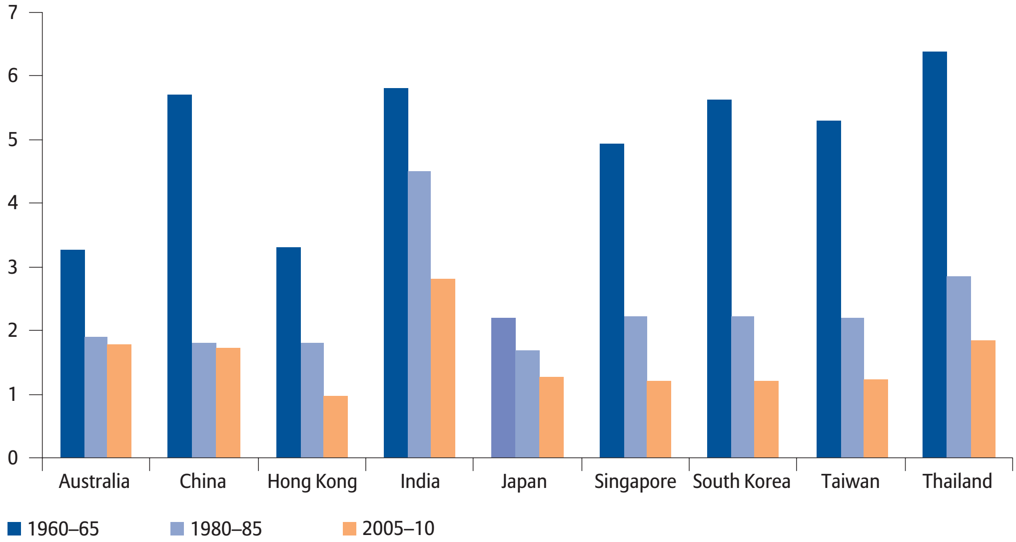
Asia's demographic situation – A mixed picture

At present, about 4 billion people live in the whole of Asia. The continent's population makes up 60% of the world's total population of 6.7 billion (see Chart 3). According to UN population forecasts, this ratio will not have changed much by 2050. 5.2 billion out of the world's 9.2 billion people will live in Asia by then – about 57% of the world's total population. Despite a declining population in Japan and the consequences of the one child policy in China, Asia's population will keep on growing. Nevertheless, global demographic trends also apply to Asia. Here, too, birth rates are declining and life expectancy is increasing, resulting in an ageing population. The median age – the age at which half the population is older and half is younger – is set to increase from 28 years today to over 40 years in 2050. Today, the median age in Europe is 39 years; in Japan, it is currently 43 years. The UN Population Division forecasts that the respective median ages will be 47 and 55 years in 2050. Compared to this, Asia will still be young. Still, some countries will face rapid demographic change.

Declining fertility – A global trend

Both higher life expectancy and lower fertility rates will lead to an increase in the median age. Longer life expectancy is leading to a higher number of older people, while there are ever fewer children. Across the whole of Asia, the total fertility rate, which shows the average number of children per woman of childbearing age, has declined from 3.6 at the beginning of the 1980s to about 2.3 today. Among the countries considered in this report, India shows the highest fertility. With 2.8 children per woman on average, Indian women give birth to one child more than women in Thailand, the country with the second highest fertility rate in our sample. Hong Kong has the lowest fertility rate, with 0.97 children per woman. With 1.21 children per woman, South Korea has the second lowest rate. Clearly, fertility varies between countries, but there is one common trend. Total fertility rates have declined rapidly in all of Asia (see chart 4). As recently as the early 1980s, only the rich countries of Japan, Australia, Hong Kong and Singapore showed fertility well below 2.1, the rate required to

Chart 4: Fertility rate [children per woman]

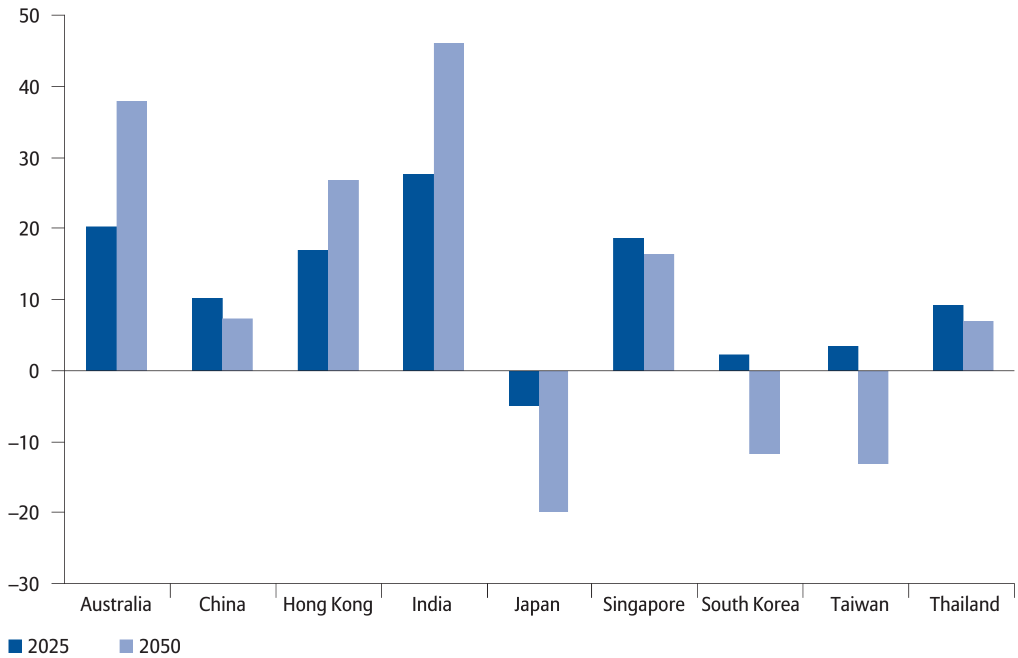


Source: UN World Population Prospects 2006 Revision, Taiwan: Council for Economic Planning and Development

keep the population constant in the long term. All other countries were well above this figure, with India and Thailand showing fertility rates of 4.5 and 2.85, respectively.

Today, only India has a fertility rate above 2.1. If current fertility rates do not rise again, the other eight countries will eventually have declining populations. Until 2050, however, only three countries will show a population decline relative to 2005. In the other countries, population figures will drop below 2005 levels at a later date. Even for India, the UN has forecasted a decline in fertility under the 2.1 level in two decades. If this forecast proves accurate, the Indian population will start to decline around 2065. Eventually, declining populations will become the order of the day in Asia, just like in other parts of the world. In the nine countries considered here, population changes in 2050 compared with 2005 are shown in chart 5.

Chart 5: Population change versus 2005 [%]



Source: UN World Population Prospects 2006 Revision, Taiwan: Council for Economic Planning and Development

These figures will be true only if migration levels into those countries are not high enough to offset the effects of the fertility changes. The second caveat is that the UN forecast with regard to future fertility developments is roughly in line with real developments. The current forecast is rather conservative, and assumes a long-term fertility rate of 1.85 children. This means that in countries where fertility is above 1.85, the rate will not drop below that level. All countries with an actual fertility rate below this target rate are forecasted to have a slowly rising fertility rate.

Longer lives – Individual pleasure and collective pain

The decline in fertility goes hand in hand with rising life expectancy. In recent decades, child mortality has decreased dramatically. Nowadays, increases in life expectancy are mainly the result of reduced mortality in higher age groups due to better nutrition, living conditions, hygiene and access to medical treatment. There is also a strong correlation between income and life expectancy – not only at an individual level, but also for entire countries. GDP per capita and average life expectancy are closely but not perfectly aligned in our country sample (see table 2).

Japan has the highest life expectancy, with girls born today expected to live 86 years. In India, the poorest country, this figure is 66.4 years. It has been 50 years since female life expectancy was that low in Japan. Life expectancy is increasing in all the Asian countries addressed in this study.

The biggest increases have taken place in South Korea. Since the early 1950s, female life expectancy has increased by more than 33 years (male life expectancy: 32 years). Since the beginning of the 1980s, the increases for men and women in the country have been 11.9 and 10.8 years, respectively – the biggest jump in all countries considered here. Together with a rapid decline in fertility, this explains why South Korea is the fastest ageing country of the world, which entails a host of problems for the retirement system.

Table 2: Country ranking according to GDP per capita and male life expectancy

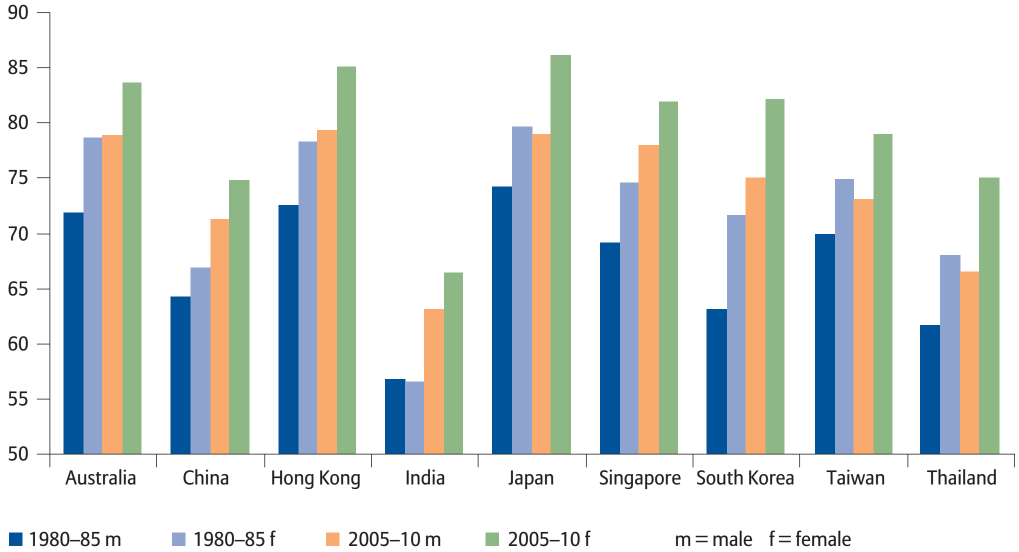
	Country ranking by	
Rank no.	GDP per capita	Male life expectancy
1	Australia	Hong Kong
2	Japan	Japan
3	Singapore	Australia
4	Hong Kong	Singapore
5	South Korea	South Korea
6	Taiwan	Taiwan
7	Thailand	China
8	China	Thailand
9	India	India

Source: Allianz Dresdner Economic Research, UN

China has done well with regard to life expectancy, too. Today, men live 32 years longer than 5 decades ago. For women, the figure is 32.5 years, only slightly lower than in South Korea. In contrast, female life expectancy in the United States has increased by roughly 9 years (male 9.5 years) since the early 1950s. In Germany, it has increased 11.2 years for men and 12.5 years for women.

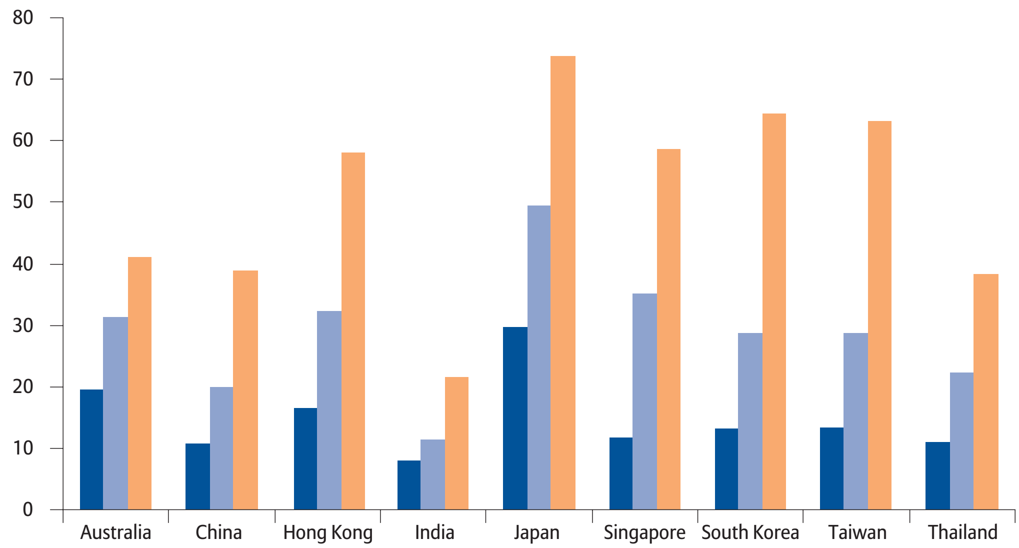
Australia, which stands out from the rest of our country set in many respects, is comparable to the US or Europe. Increases in life expectancy since 1950 have been 12 years for men and 11.2 years for women. This can be explained by the fact that life expectancy in the 1950s was already much higher in Australia than in the rest of Asia. It was roughly at the same level as Thailand's current life expectancy, and well above the

Chart 6: Longer lives – life expectancy at birth [years]



Source: UN World Population Prospects 2006 Revision, Taiwan: Council for Economic Planning and Development

Chart 7: Old-age dependency ratio (65 +/15-64)



Source: UN World Population Prospects 2006 Revision, Taiwan: Council for Economic Planning and Development

current figure for India. The process of catching up in terms of life expectancy is still in progress in Asia, and more increases will be seen in the future, albeit at a slower pace. This can be explained, as already mentioned, by the fact that big jumps in life expectancy are possible by lowering child mortality at birth and in the first few years of life. To increase life expectancy further, mortality at higher ages has to fall – a process which usually takes more time to show an impact comparable to life expectancy at birth. Chart 6 shows this development and depicts life expectancy in 1980/85 and in 2005/10 as calculated by the UN.

Combined with decreasing fertility, the increase in life expectancy is the driving force behind the rapid ageing process (often dubbed double ageing, as the two independent developments reinforce each other with regard to the population's age structure). Rapid changes in fertility and/or life expectancy accelerate the ageing of the population. These developments can be gauged by observing the change in the old-age dependency ratio, the ratio of the population aged 65 and over to the population aged 15 to 64. This figure illustrates how many pensioners (over 65) there are for every 100 people of working age (15 to 64). The latter are potentially active in the production process, and a high dependency ratio indicates that they have to care for a high number of elderly people.

South Korea and Taiwan show the steepest increases in old-age dependency and will likely be most affected by it, as the speed of the ageing process will leave them with little time to adapt (see chart 7). The highest ratio will be reached in Japan. Ultimately, the burden for the working age population will be highest there. In China, the ratio will more than triple by 2050, but the absolute level is still rather comfortable compared with many other countries in the region.

Providing for old age – Pension system concepts

The old-age dependency ratio is important because the elderly generally do not care for themselves. The ratio of the working age population to pensioners is important for the functioning of pension systems. If everyone worked and provided for their own income until death, pension systems would not be necessary and the dependency ratio would be little more than a statistical artefact. For various reasons, most societies have decided that the elderly should reduce their workload and receive the support of their children or society.

Clearly, older people who no longer work need resources to live on. There are only two basic ways of providing these resources. Traditionally, children have provided for their parents in the form of money or food, shelter and care. To ensure that they would receive these transfers, families invested in raising and educating their children, or what economists refer to as investments in human capital. Since the cost of raising children is high, people consumed less in their younger years, and could expect their children to provide for them later on. The only other way to provide for old age is to save money. Again, this means that people will consume less while they are young, putting funds away to secure their future. In this case, consumption in retirement is financed by the returns of the accumulated assets and/or their sale. Regardless of the chosen option, work-free golden years require limited consumption earlier on in life.

In modern societies, it is frequently not the family that provides for old age, but society as a whole. Pensions are very often organized as transfers from the working population to the retired population, either in the form of taxes or as social security contributions. Such a system is the large-scale equivalent of transfers within a family. But the fundamental mechanisms still apply. If the population of working age is too small to provide the necessary transfers to the elderly (due to a lack of children), pensions must be arranged differently. As seen above, the only way to provide the necessary funds for retirement is through the accumulation of capital during the working years. Funded systems are organized along these lines, while pay-as-you-go (PAYG) systems rely on transfers.

In light of the current demographic situation of most of the countries in our sample, large-scale PAYG systems do not make much sense. Apart from India, the demographic changes would pose too large a burden on younger generations. This does not mean that there is no room for PAYG systems in a country's pension system. Given the demographic situation, however, their scope is limited. A main task for PAYG schemes is to provide basic retirement income. Such a bottom layer in a pension system is frequently designed to prevent poverty among pensioners. Anything exceeding basic needs has to be financed through other means, usually pension income from funded sources.

Funded systems are the means of choice to provide the bulk of retirement income and to maintain the same standard of living after active working life has ended. And they have a few positive features. Most importantly, and in contrast to PAYG systems, funded systems are not tied to national economic and demographic developments, since savings can be invested abroad. What's more, funded systems can foster economic growth, provided that capital markets function well and investments are competitive, as they tend to increase savings and the supply of capital. The more abundant the capital, the less expensive it is, enabling more investment in the economy. Combining PAYG and funded systems in national pension systems makes it possible to provide both high and low income groups with retirement income and benefit from the respective advantages of PAYG and funded systems.

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Pension system and market trends in Asia-Pacific

In many parts of Asia-Pacific, the challenges of pension reform are quite different to those that Western industrialised countries face. While demographic development has put the established and mature systems in the West under pressure, several Asian countries have yet to even establish well-functioning systems with broad coverage. And they need to do so at a time when a worsening demographic situation is on the horizon. Asian countries face two major challenges: Not only must they establish and institutionalise pension systems, they must also prepare them for the coming demographic challenges.

The countries covered in this study differ widely in terms of economic development and pension system maturity. They can be broadly classified into two groups. Australia, Japan and Singapore form the first group of countries with well-established, comprehensive and mature systems. These three nations are also the wealthiest countries in terms of GDP per capita. The other countries addressed here are either in the process of establishing formal pension systems to varying degrees or have done so only in the recent past.

Classification of Asian pension systems

Markets with mature pension systems	Markets with maturing/emerging pension systems
Australia Japan Singapore	China India Hong Kong South Korea Taiwan Thailand

From family support to formal systems

Until recently, the latter group of countries largely relied on family support for the elderly. Traditionally, retirees' children have provided a substantial part of retirement income. Caring for the elderly was supported by strong family values and Asian social norms, which include the traditions of respect for the elderly and children's duty to care for their parents. Another source of income has traditionally been drawn from wages, as the elderly tend to work until they no longer can. According to the World Bank, in 1990, the average Korean over 60 earned 32% of his/her income by working. 55% was provided by his/her children, while public and private pensions accounted for only 3% of old-age retirement income. 10% came from other sources.

This informal system of old-age support went hand in hand with weak and limited public pension systems. Comprehensive social security systems are only available in a few countries and were established fairly recently. Public pension provision mainly focused on public sector employees, who enjoy quite generous pension schemes in most countries. In the past, the state tended to regard old-age provision for the private sector labour force as a private matter that families, employers and local communities had to handle. For this reason, occupational pension provision in many countries is limited to the employees of large enterprises.

In recent years, the system of informal family support has come under pressure. The main reasons include rapid economic growth and industrialisation, which have led to a decline of the agricultural sector, growing urbanisation, decreasing fertility rates and increased longevity. For instance, while 28% of South Korea's population lived in urban areas in 1960, this figure had risen to 80% by 2005. During the same period, the fertility rate dropped from 6.0 to 1.2 children per woman and life expectancy rose from 55 to 77 years. These socio-economic changes have resulted in increasing mobility and a general weakening of family ties. Hence, the need for formal retirement systems has increased dramatically. Without such systems, old-age poverty would rise dramatically.

Pension system design and reforms

Pension system design in Asia-Pacific differs from country to country; there is no single coherent model in operation. However, it can be argued that there is a widespread trend towards the multi-pillar model advocated by the World Bank, even though each country has a very different starting point and approach to it.

Australia and Japan run well-developed multi-pillar systems. Singapore is unique in operating a one-pillar system, the Central Provident Fund, which is a multi-purpose fund with schemes for health care, pensions, home ownership and other purposes. China is in the process of transforming its pension system and introducing a multi-pillar system. India is reforming pensions for its civil service in favour of a defined contribution system. This reform is also an attempt to advance retirement savings of all citizens.

The World Bank's three-pillar model

- First pillar: Publicly managed, financed by general taxes or social security contributions, pay-as-you-go and defined benefit
- Second pillar: Privately managed, funded and mandatory (defined contribution)
- Third pillar: Privately managed, voluntary retirement savings

(According to the model's latest formulation, there are two additional pillars: a zero pillar to provide a minimum level of protection and a fifth pillar, which consists of intra-family support)

Shape of Asian pension systems

	Public pensions		Occupational pensions		
	Social insurance	Multi-purpose Provident Fund	Mandatory occupational pensions	Voluntary occupational pensions	Tax-favoured voluntary pension savings
Australia	✓		✓		Voluntary contributions to superannuation , Retirement Savings Accounts
China	✓		✓	✓	Life insurance
Hong Kong	Partly		✓		Voluntary contributions to MPF
India			✓	✓	Public Provident Fund
Japan	✓			✓	Mainly life insurance
Singapore		✓			Supplementary Retirement Scheme
South Korea	✓			✓	Private Personal Pension Plans
Taiwan	✓		✓		Life insurance
Thailand	✓		Planned	✓	Retirement Mutual Funds

In 2000, Hong Kong introduced the Mandatory Provident Fund, a mandatory occupational scheme. The country also provides modest old-age benefits for needy retirees. South Korea established a comprehensive public pension system in 1988 and is in the process of replacing its severance pay system with formal occupational schemes. Taiwan recently introduced a new defined contribution system for private employees, and a new safety net will come into effect in late 2008. Thailand plans to introduce a mandatory occupational scheme for private sector employees with individual defined contribution accounts.

Extending the coverage of formal pension systems ranks very high on Asian countries' political agendas. However, the size of Asia's informal sector poses a major problem. In many countries, the majority of employees work either at very small enterprises, in the informal sector or are self-employed. This means they do not and often cannot participate in formal pension provision. In India, for example, around 90% of the workforce is active in the informal sector.

Schemes for civil servants have been another focus of reforms. Since these schemes were largely unfunded but fairly generous, in the past, the fiscal costs of maintaining them have become unsustainable. For this reason, reforms in this area are underway in countries such as India, where the old defined benefit schemes have been replaced with new defined contribution schemes for new entrants to the civil service. Thailand did the same with its schemes for civil servants in 1997.

In terms of payout and pension benefits, the formal pension schemes in place have often provided lump sum payments rather than annuities. There are signs that this is changing, however, and that beneficiaries can increasingly opt to receive their pension benefits in the form of annuities. This, for example, is the case in Taiwan, where the new occupational pillar foresees that larger employers can choose to provide annuities. The government is also considering introducing annuity payments for public service funds and the compulsory public labour insurance, which covers employees in the private sector. In some countries, however, the comprehensive implementation of annuities faces a major obstacle due to a lack of mortality tables and actuarial databases, as well as rapidly changing longevity rates and strong regional longevity differences. This is the case in China, where lifelong annuities are not yet available.

The voluntary savings pillar is generally underdeveloped in Asia, at least in comparison with OECD countries. While this does not seem surprising given that many of these countries are emerging economies with modest per capita income and wealth, there is a more specific reason for the underdevelopment of voluntary retirement savings and limited product choice, namely minor tax incentives. Only a few of the countries grant substantial tax incentives for private retirement savings. China and Taiwan give tax breaks for life insurance only, while in Australia and Hong Kong, voluntary tax-favoured contributions to the mandatory occupational funds are possible. Tax incentives in South Korea and Thailand are more generous.

As a result, savings products specifically designed for retirement purposes are rare in the voluntary pillar. However, the generally high saving rates in the region, up to 41% of GDP in China and 28% in Taiwan, indicate that people are willing to save. It can therefore be assumed that a considerable share of these savings is meant for old-age provision.

Pensions in China and India

The challenges of pension reform are particularly evident in China and India, as both countries have experienced spectacular economic growth. This implies the loosening of family-based provision. Both countries are in the midst of restructuring their pension systems, a process complicated by their enormous size.

China started a very far-reaching and comprehensive reform program in 1997 with the aim of establishing a multi-pillar system. Before its transformation into a market-based economic system, old-age provision was provided by state-owned enterprises in the form of defined benefit plans. Each state-owned enterprise set the rates for its employees, who usually enjoyed lifetime employment. While the schemes were controlled by the state, each state-owned enterprise essentially ran its own pay-as-you-go system. Benefits reached an average replacement rate of more than 80% of final salary, while eligibility conditions were generous. However, this system has proven unsustainable since the economy was opened up.

China is now in the process of unifying the existing systems and moving to a comprehensive multi-pillar pension system, at least in the urban areas. This system comprises a public defined benefit system, mandatory defined contribution accounts and voluntary occupational pensions, called Enterprise Annuities. The urban system is in the process of being implemented, and many pilot projects dealing with different elements of the system are running. The system in rural areas, where the majority of the Chinese population lives, is different. It is completely voluntary and in the hands of local governments, and benefits are much less generous than in the urban system. The Chinese population system has a coverage rate of 50% in urban areas and 9% in rural areas.

India, on the other hand, runs a very fragmented system. It consists of a limited social safety net, several schemes for public servants and two mandatory schemes for private employees from which employers can opt out and establish company funds. It also includes voluntary occupational schemes and a public provident fund to which voluntary pension savings can be directed. Employees in the informal sector, which constitute the overwhelming majority of employees, can contribute only to the latter. However, they rarely do.

In 2004, India established its new pension system to ease pressure on public finances from the old schemes for civil servants and to encourage citizens to save more voluntarily. The system is a defined contribution scheme and is mandatory for new entrants to the civil service. It will be also open to every citizen in hopes that informal sector workers will join on a voluntary basis. Due to political opposition, the system is not yet operating.

The contributions of civil servants are currently held by the central government. It remains unclear when the voluntary scheme will come into effect. While India's reform programme is less ambitious than China's, India's population will start ageing later than China's, and developments will be more moderate. As a result, India has a longer time frame to develop pension system solutions.

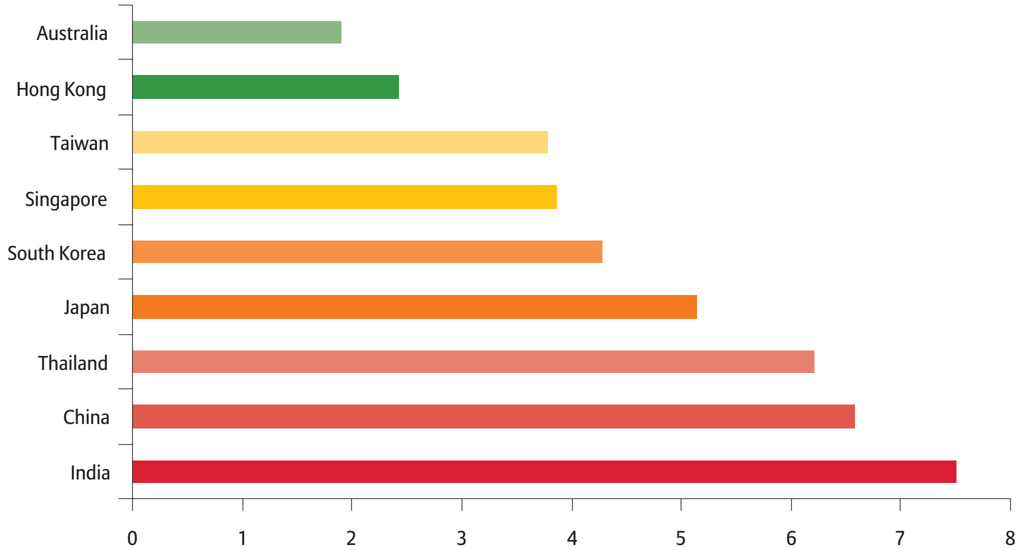
However, demographic considerations are only one factor in the development of pension systems. In the case of India, growing wealth and the decline of traditional family support structures will likely be more important for the emergence of pension systems, as these trends have created a strong demand for formal old-age provision among the population.

Pension reform pressure in Asia

In many countries around the world, reforming pension systems has been high on the political agenda for many years. The driving force has often been unfavourable demographic development coupled with unsustainable or outdated pension systems. However, since pension systems differ from country to country, problems and possible solutions differ. To understand the necessity for reform and the ability of existing pension systems to cope with demographic change in an international comparison, Allianz Dresdner Economic Research developed the Allianz Pension Reform Pressure Gauge. This indicator measures and illustrates pressure on governments to reform their pension systems by examining various dimensions of pension systems in a consistent manner. It therefore allows cross-national comparisons by measuring the sustainability of pension systems and the resulting need to reform them.

The Allianz Pension Reform Pressure Gauge for the Asian countries investigated in this study shows that reform pressure differs considerably from country to country. Australia is the country with the smallest necessity to reform its pension system, followed by Hong Kong and Taiwan. These countries have managed to establish comprehensive pension systems with a

Reform Pressure Gauge*



* Scale from 1-10: 1 low reform pressure, 10 high reform pressure

Source: Allianz Dresdner Economic Research

The Allianz Pension Reform Pressure Gauge

Pressure on pension systems mainly arises from two sources: demographic change and/or underdeveloped or unsustainable pension systems. To calculate reform pressure, reforms already passed and their future consequences must be taken into account. If demographic change has already led to adequate reforms and a solid future pension system, reform pressure can be considered eased. We have therefore distinguished between "the need for reform" and "reform progress". With this in mind, the indicator was revised in 2007. The Pension Reform Pressure Gauge now comprises a "Reform Demand Indicator" and a "Reform Progress Indicator". The data used to develop the "Reform Demand Indicator" include such elements as the current and future demographic situation, the size of government debt, the coverage of the main pension system, the replacement ratio and the retirement age. For the Progress Indicator, (future) changes in key pension system features triggered by already passed reforms are important. A rising retirement age or a stronger funded system are examples of reform progress.

Putting the emerging and extremely heterogeneous Asian economies into an indicator that was originally developed for the more homogenous European countries is no easy task, as not all data are available. To provide a clear impression of the state of the pension system, we stretched the definitions of some of the variables that are fed into the gauge. While better data availability may have marginally altered the indicator's reading for some Asian countries, a relatively clear picture emerges despite the shortcomings mentioned above.

strong funded pillar. Reforms are most needed in India and China, as overall pension coverage in both countries is still poor.

Pension market trends

Public pension funds

Acknowledging the demographic challenges ahead, several of the countries included in this study run dedicated reserve funds to bolster the future impact of demographic developments, as the Chinese National Social Security Fund demonstrates. In other countries, public pension funds manage the contributions of the funded or partially funded systems, as is the case in Japan, Singapore, South Korea and Taiwan. In 2006, Australia set up the Future Fund, a reserve fund that aims to cover future superannuation liabilities stemming from civil service schemes. The government provided start-up financing of EUR 35.9 billion (AUD 60 billion), and the fund is expected to grow to EUR 88.5 billion (AUD 148 billion) by 2020. Contributions will come from future budget surpluses.

Some of these funds have a high level of assets under management. What's more, assets in some funds are expected to grow substantially, as they are in the accumulation phase. The biggest pension fund worldwide is the Japanese Government Pension Investment Fund, which manages the reserves of the public pension pillars. It currently manages assets amounting to EUR 560 billion (JPY 88 trillion), which are expected to grow to EUR 1.1 trillion (JPY 166.5 trillion) by the end of 2008, as a transfer of funds from other sources is underway. The Chinese National Social Security Fund, which was established in 2000, is likely to grow to at least EUR 97.2 billion (RMB 1 trillion).

Traditionally, these public funds have been invested very conservatively. They tended to manage their assets in-house, and in many cases they had to fund government programs or infrastructure projects or give credits to the government. This pattern is beginning to change, as these funds are trying to achieve better returns on their assets. They are withdrawing from financing functions for government projects and, in some cases, from direct government control.

South Korea is a case in point. In 1998, almost 71.5% of National Pension System assets were invested in the public sector. By 2005, this figure had dropped down to zero, and 99.8% of assets were invested in the financial sector. In the past, the assets of the Japanese Government Pension Investment Fund were managed by a state agency. At first, it was under the control of the Ministry of Finance until the Ministry of Health, Labour and Welfare took over. In 2001, the pension fund in its current form was established. In 2006, it

Reserve/public pension funds in Asia

	Size of reserve fund, 2006 (or latest year available)	
	EUR	Local currency
Australia (Future Fund)	35.9 billion	AUD 60 billion
China (National Social Security Fund)	27.5 billion	RMB 283 billion
Japan (Government Pension Investment Fund)	560 billion	JPY 88 trillion
Singapore (Central Provident Fund)	63.1 billion	SGD 125.8 billion
South Korea (National Pension System)	142 billion	KRW 172 trillion
Taiwan (Public Service Pension Fund)	8.5 billion	NTD 365 billion
Taiwan (Labour Insurance)	10.2 billion	NTD 436 billion
Taiwan (New Labour Pension)	3.7 billion	NTD 159 billion
Thailand (Government Pension Fund)	7.6 billion	THB 356 billion

Source: OECD, National Statistics

became an independent administrative institution to achieve independence from the government. It now holds complete responsibility for managing and investing funds.

Another development has been the increase in the outsourcing of pension assets to private companies. The share of outsourced assets in Taiwan's Public Service Pension Fund, for example, increased from zero in 2000 to 28% in 2006. There are similar tendencies in China, South Korea and Japan.

Introducing defined contribution schemes

In recent years, the trend towards defined contribution (DC) schemes has accelerated in Asia-Pacific. Since 2000, new DC schemes have been introduced for various target groups in China, Hong Kong, India, Japan, South Korea, and Taiwan; Thailand also plans to start a DC scheme in 2008. In Australia and Singapore, DC schemes have a longer tradition.

This development is in line with trends in the rest of the world. Industrialised countries have experienced a shift from defined benefit (DB) to DC schemes in occupational pensions, which is particularly pronounced in the United States and United Kingdom. Many emerging economies in Central and Eastern Europe and in Latin America have also established DC schemes as a mandatory pillar.

The reasons for the recent wave of DC scheme introductions in Asia differ from country to country. In Thailand and India, the main reason for the reform was to replace the existing DB schemes for civil servants, which proved financially unsustainable for the government, with a DC system that makes contributions calculable. In Japan and South

Defined contribution schemes in Asia-Pacific

	Date of DC scheme introduction	Name	Type
Australia	1992	Superannuation	Mandatory occupational
China	2004	Enterprise Annuities	Voluntary occupational
Hong Kong	2000	Mandatory Provident Fund	Mandatory occupational
India	2004	New Pension System	Mandatory for new civil servants/voluntary for all citizens (planned)
Japan	2001	New Corporate Schemes (also DB plans possible)	Voluntary occupational
Singapore	1955	Central Provident Fund	Mandatory occupational
South Korea	2005	New Corporate Pension System (also DB plans possible)	Voluntary occupational
Taiwan	2005	New Labour Pension Scheme	Mandatory occupational
Thailand	1997	Government Pension Fund	Mandatory for new civil servants
	Planned for 2008	National Pension Fund	Mandatory occupational

Korea, the newly introduced DC schemes were meant to increase employer choice in voluntary occupational pension provision and modernise the company pension system. In Hong Kong, the mandatory DC system is meant to constitute the main pillar of pension provision. DC accounts in Singapore are more or less the only official source of retirement income. In China, the emerging Enterprise Annuity system is meant to complement the other pillars that are being built up.

DC systems allocate risks differently among sponsors and beneficiaries than DB systems do. The sponsor bears investment and longevity risks in DB systems, as benefits are fixed irrespective of capital market developments and cohort life expectancy. In DC systems, the plan member has to handle these risks. DC plans therefore imply a higher risk for the plan member, at least in these two regards, but also prospects for higher returns. Generally, DC plans imply higher individual responsibility and a strict link between contributions and benefits, as redistribution does not take place. From a plan sponsor's point of view, financial obligations and cost advantages are much more predictable with DC schemes.

From an economic point of view, the main advantage of DC schemes is their transparency and portability. This is what has made such plans increasingly popular. They vest immediately and are not an obstacle to job changes. What's more, employees do not lose their pension capital if the company they work for goes bankrupt. Portability is very important in Asian countries such as Taiwan. Under the country's old occupational system, employees had to have worked at least 15 years for the same company to receive pension benefits. This proved problematic, as the average tenure at a company is 8.6 years, which means that most employees were not eligible for pension benefits.

Capital market theory suggests that people should have a choice between different investment options in DC plans to match their degree of risk aversion and the type of funds they invest in their retirement savings. Individual choice may increase plan members' interest in their pension investments. It creates the demand for financial education, but it also requires financial education, which becomes necessary to ensure that investors make informed choices. Given that the choice of investments for retirement is extremely important to ensure a good standard of living and that defined contribution schemes are gaining importance worldwide, governments and financial service providers must increase their efforts to provide financial education.

Individual choice may also stimulate competition among providers as they try to provide tailored solutions for investors' preferences. Hence, choice can lead to a greater diversity of products, which increases consumer choice again, but presupposes efficient risk management on the part of financial providers. This, in turn, supports the development of national financial markets and their "institutional capital", including professional investment management, better governance structures and transparency. The development of efficient pension products depends on these factors as well, and on the development of sound actuarial databases to cover longevity risk, particularly for decumulation products.

For investors that do not have the experience or the interest to occupy themselves with financial matters, the concepts of default and lifecycle funds have become popular in many parts of the world. Default funds normally have a conservative asset allocation, while lifecycle funds adjust asset allocation to the age of the plan member.

Individual choice in Asian DC systems	
Australia	Yes
China	No
Hong Kong	Yes
India	Yes (planned)
Japan	Yes
Singapore	Yes
South Korea	Yes
Taiwan	No
Thailand	Not yet decided

Individual choice in DC plans is gaining a foothold in Asia-Pacific. Participants in Australian Superannuation schemes may choose their plan freely, regardless of their employer's decision. In Hong Kong's Mandatory Provident Fund scheme, participants can choose freely among funds offered by the trust scheme that the employer has chosen, one of which must offer capital preservation. Plan members in Singapore's Central Provident Fund are, within limits, free to choose financial products for their savings.

Participants in Japanese DC plans must have the choice between at least three investment options, one of which must guarantee capital preservation. The same applies to South Korea's new corporate DC schemes. In India's New Pension System, there will also be a menu of three funds with different asset allocations, and the safest fund will be the default option. The new Chinese occupational pension system does yet not foresee individual choice; the New Labour Pension scheme in Taiwan does not allow individual choice either, but this matter is currently under discussion. Whether or not there will be individual choice in Thailand's National Pension Fund has not yet been announced.

The future development of pension assets

High GDP growth rates, major structural changes in the economic environment – particularly a shift away from agriculture – and increasing demographic pressure have created abundant room for the pension industry's expansion. This is supported by government measures to strengthen funded systems.

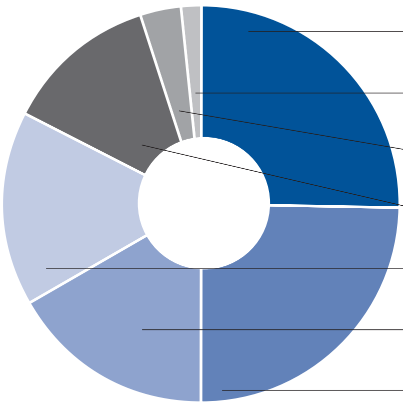
Due to the widely varying stages of economic development, the countries included in this study can be divided into two groups: emerging and industrialised economies. The pension markets of the emerging Asian economies, excluding Japan and Australia, are very fragmented, which makes it difficult to record all retirement assets under management. For the purpose of this study, we based our projection on funded systems in the corporate sector. One exception is India's NPS, which was established for new entrants to the civil service, but will also be open to all workers on a voluntary basis. Assets under management for the seven emerging economies amounted to EUR 251.9 billion[1] in 2006. Among these, Singapore's mature market holds the biggest share of 25.3%, followed by China, the most populous country, with 24.7%.[2] This picture changes considerably if the industrialised and mature markets of Japan and Australia are included. Each of these countries has more than twice the assets under management than the emerging markets combined. In 2006, the combined assets under management of the overall pension market in Asia-Pacific amounted to EUR 1,407.5 billion.

For all emerging countries under investigation, we assumed that only employees outside agriculture and mining have the opportunity to earn higher income and are thus able to save money for retirement or belong to a mandatory system. We also assumed that voluntary saving is still very low. Our projection took a labour force increase into account, based on UN population development projections. It also considered a sectoral shift from agriculture to industrial employment. We expect

[1] The effective pension asset volume of the emerging markets in 2006 turned out to be slightly higher than forecasted in our 2005 projection. To make a proper comparison, we had to exclude India, as we took different components of old-age provision into account. While the volumes for the six remaining emerging countries in our 2005 study were projected to amount to EUR 212 billion in 2006, they actually reached EUR 219 billion. The biggest difference was in China's 1B pillar, where we underestimated the number of participants and asset volumes. We were too optimistic about market development in South Korea and Taiwan. For Hong Kong, actual volumes were slightly higher than our projection due to a higher number of participants and better income development. In the case of Thailand and Singapore, our projections were in line with actual volumes.
Our projection for Australia was lower than the effective volume in 2006, as we assumed weaker stock market performance. Taking official data revision for Japan's corporate pensions into account, the 2006 projection from the first study lined up quite well with the actual data. While our first study projected that the entire market in Asia-Pacific (excl. India) would amount to EUR 1,367 billion, it actually reached EUR 1,375 billion.

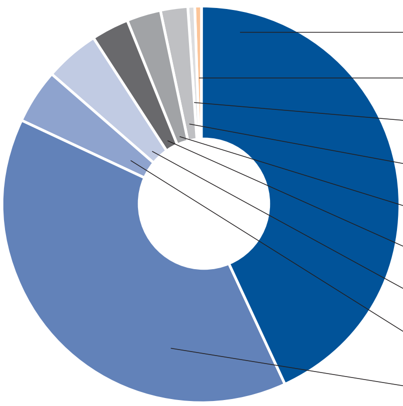
[2] It should be noted that Singapore's assets are not exclusively designed for retirement.

Distribution of pension assets in Asia's emerging markets, 2006 [%]
Total assets: EUR 251.9 bn



Source: National Statistics, Allianz Dresdner Economic Research

Distribution of pension assets in Asian-Pacific countries, 2006 [%]
Total assets: EUR 1,407.5 bn



Source: National Statistics, Allianz Dresdner Economic Research

pension assets in Asia's emerging economies to grow by 17.2 % p.a., reaching EUR 1,049.3 billion by 2015. For all of the Asia-Pacific countries covered in this study, we expect assets under management to rise by EUR 1,708.5 billion (CAGR 9.2%), to EUR 3,116 billion by 2015.

These growth rates combine different developments, such as a modest 6% growth rate p.a. in Singapore's long established system and Taiwan's rapidly growing new system, which is at 28.9% CAGR. The size of China's pension market is dominated by the public pillar's funded individual accounts (pillar 1B), which cover around 50% of the urban workforce, with assets under management of EUR 53.4 billion in 2006[3].

Even in a conservative scenario where coverage will expand only slightly, assets will grow sevenfold due to an increase in the urban workforce and rising income levels, particularly for high-income earners in rapidly growing urban areas. Considering the total workforce of 765 million people, however, these assets are too modest and concentrated in urban areas to meet the needs of an ageing society.

Another market with high growth potential in the projection period is Korea, which has both "private pension plans" and "new corporate pensions". While the former sets a solid asset base with prospects of higher coverage (15% of the workforce in 2006), the new program will probably see extremely

[3] See a detailed description for each country in the technical note included in each country report.

high growth rates of 70% per year. These growth rates are likely to be even higher, as we had to exclude existing severance pay assets from the scenario due to a lack of data. These assets can be transferred into the new corporate schemes, thus generating even more potential. The combined market will grow at an annual rate of 22.9% and increase by almost EUR 170 billion by 2015. India cannot reach the high growth rates and volumes of China or Korea. The majority of the country's population is not able to save, the pension system is very fragmented and the implementation of new schemes is slow. However, thanks to a more favourable demographic picture, pressure on India to reform is not as strong as the pressure on China. India will be the growth driver of Asian pension markets in 10 to 15 years.

With their mature pension markets, Japan and Australia are on an entirely different level. While both systems are currently comparable in size, with respective assets of approximately EUR 550 billion and EUR 600 billon, they have very different growth dynamics. With its young population, Australia will show an asset increase of EUR 860 billion by 2015, while Japan will more or less stagnate at today's level.

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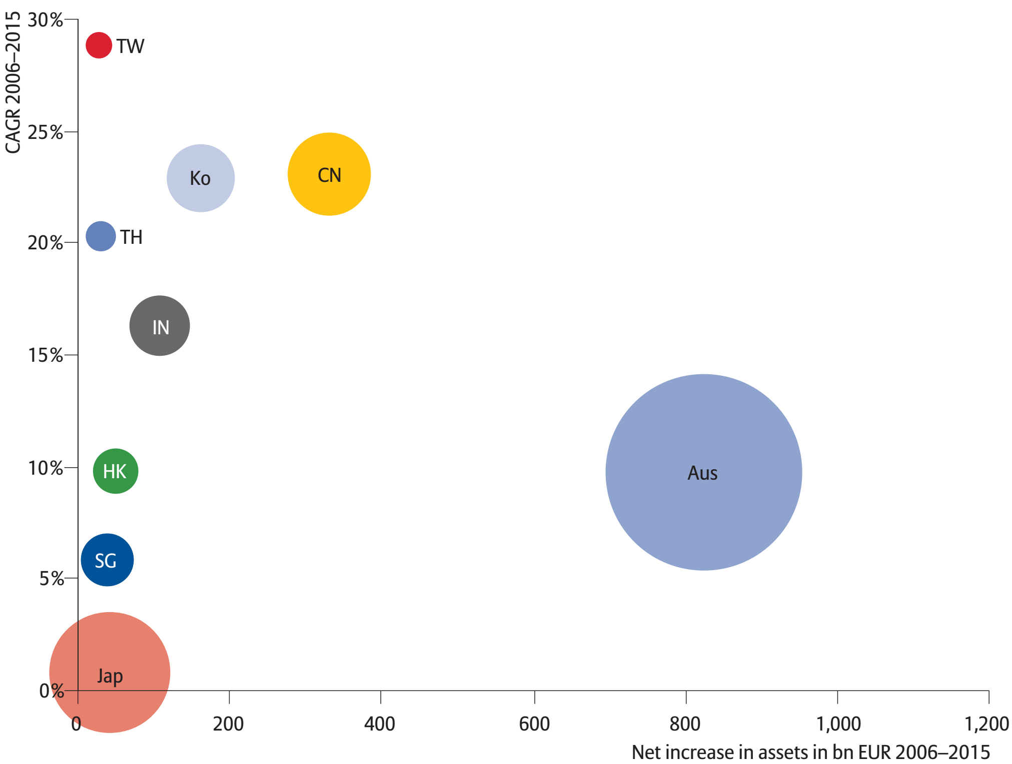
Development of pension assets under management



The size of the bubbles reflects the estimated asset volume in 2015

Source: Allianz Global Investors, Allianz Dresdner Economic Research

How to deal with longevity risk: A capital market perspective

The importance of longevity risk

"By providing financial protection against the major 18th and 19th century risk of dying too soon, life insurance became the biggest financial industry of that century... Providing financial protection against the new risk of not dying soon enough may well become the next century's major and most profitable financial industry."

Peter Drucker, "Innovate or Die", The Economist, 23 September 1999

The longevity problem

Modern health care has extended the average life span of people all over the world (see Figure 1), and it continues to increase. For instance, the life expectancy of an individual in Asia has risen from 40 years in the 1950s to almost 70 years today.

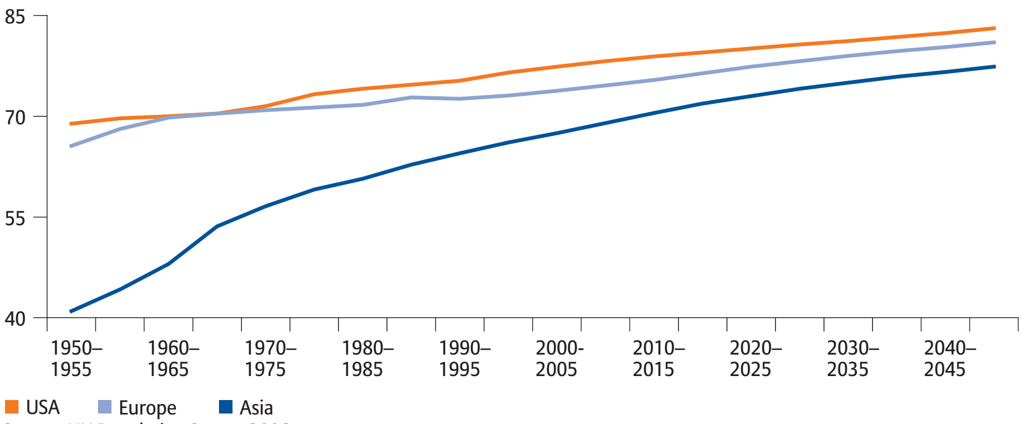
Most people would agree that increasing life expectancy is good news. But it is a double-edged sword, as many people may outlive their savings and be forced to accept a lower standard of living late in life. The risk of outliving one's assets is now commonly referred to as "longevity risk". In recent years, interest in this topic has picked up both among individuals and policymakers, as baby boomers approach retirement and start to think about how they will organize their finances to last.

Potential solutions for investors

There are several ways for investors to deal with longevity risk. First, they can decide to bear it. Second, individuals can transfer their own longevity risk to an insurance company by purchasing a life annuity to protect themselves. A life annuity is an insurance contract that pays out a regular income for life. Until now, this has been the standard option for investors to protect themselves against outliving their assets.

A third alternative recently emerged in the form of longevity-linked financial instruments such as longevity bonds or swaps. Asset managers can create investment solutions that make use of longevity instruments to offer individuals a convenient way to hedge longevity risk. In contrast to a life annuity that protects against individual longevity risk, such solutions can only hedge against systematic

Figure 1: Life expectancy at birth [years]



Source: UN Population Survey 2006

longevity risk, defined as the risk that a certain age group will live longer than expected. Such a solution should come at a more attractive price, however. In the following, we will focus on this third alternative.

Longevity-linked financial instruments

Recently introduced longevity-linked financial instruments offer a new approach to transferring longevity exposures efficiently. Longevity-linked securities can take various forms, and there are two prominent examples of first-generation capital market instruments that are linked to mortality rates.

In December 2003, Swiss Re and Vita Capital were the first companies to issue a three-year bond whose performance was linked to the evolution of a mortality index. The Swiss Re bond can be classified as a "principal-at-risk longevity bond" that pays annual coupons at an above-market rate and a refund of principal at maturity. Should an event occur where mortality is high, the repayment of principal is reduced (in line with the mortality index). As the principal was unprotected, investors ran the risk of losing the capital they invested in the bond. In fact, Swiss Re used the bond to hedge its exposure to catastrophic mortality risk.

In November 2004, the European Investment Bank issued a longevity bond that is a "coupon-based longevity bond". Coupon payments were linked to a cohort survivor index based on the mortality rates of 65-year-old English and Welsh males in 2003. As longevity increases, rising coupon payments help pension plans manage their exposure to longevity risk.

To assess the risk/return profile of longevity instruments, the characteristics of mortality rates must first be understood. The main properties of mortality rates are:[1]

- Mortality rates rise with age
- Women generally live longer than men
- Mortality rates have fallen and life expectancy has risen dramatically
- Changes in annual mortality rates have been quite volatile

For pricing, risk management and investing into longevity-linked instruments, future mortality rates are relevant. There are several ways of forecasting future mortality, ranging from statistical models that are fitted to historical data, to more fundamental models that link mortality rates to factors such as changes in public health. The classical benchmark model for mortality forecasts is the Lee-Carter Model (1992), which belongs to the category of statistical models.

The market for longevity and mortality derivatives has not yet taken off. This is because there is considerable demand for selling longevity risk, but only a limited supply of buyers. Natural longevity risk sellers are pension plans and annuity providers that are willing to offset some of their longevity exposure. Potential longevity buyers are hedge funds, endowments and other institutional investors seeking a new asset class that promises uncorrelated returns to traditional asset classes. However, for both parties to enter into a trade, the longevity product under consideration must be sufficiently customized to provide an effective hedge for the longevity seller and sufficiently standardized to ensure liquidity for the longevity buyer. Another major challenge in creating a liquid longevity market is basis risk, meaning the mismatch in longevity risk between the reference population and the investor's own risk. Examples are different population characteristics and/or different age profiles.

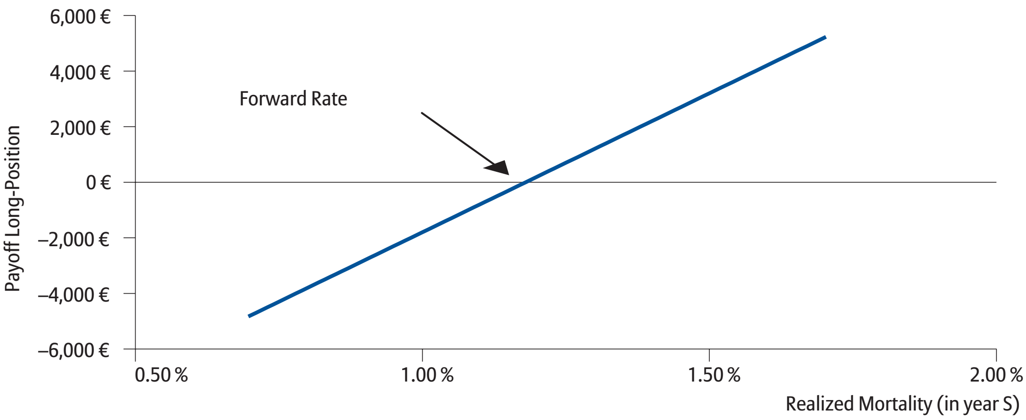
A number of different longevity/mortality risk transfer products have been proposed, including long-term longevity bonds, short-term catastrophe bonds, survivor swaps and annuity futures. A particularly interesting concept was just recently introduced by JP Morgan: q-forwards. The term "q_x" originates from the discipline of actuarial science and refers to the mortality rate of x-year-olds in a

[1] See Loeys et al (2007)

particular year. For example, a mortality rate q_{60}=1.18% means that for a given population, 1.18% of the cohort of 60-year-olds are expected to die the following year. The payoff of a long position of a q-forward with a notional of EUR 1m, maturity T, and reference year S (S<T) is given by

Since each set of mortality rates translates into a series of survival rates, q-forwards can be seen as building blocks to more complex longevity/mortality derivatives. They can be integrated into a portfolio to hedge pension or life insurance liabilities.

Figure 2: Payoff diagram of a q-forward contract with a forward rate of 1.18% and a notional of EUR 1 m



$$\text{EUR 1 m}^* (q_{realized} - q_{forward}),$$

where $q_{realized}$ is the realized mortality rate in year S and $q_{forward}$ is the forward price/strike price set at the inception of the contract, i.e. at time t=0. Figure 2 graphically illustrates the payoff function for a forward rate of 1.18%. If the realized mortality rate is above (or below) $q_{forward}$, the holder of a long position in the forward contract receives a positive (or negative) cash flow.

To determine the "fair" price, namely the forward rate of such a contract, several models can be applied. They can be divided into two broad groups: models under the real-world (or physical) measure or models under the risk-neutral measure, also known as no-arbitrage models. Since there is still no underlying market for mortality instruments, the no-arbitrage approach is difficult to apply. For this reason, it is standard market practice to use statistical or actuarial models, such as the aforementioned Lee-Carter Model, to forecast future mortality. Investors willing to take on longevity risks demand a (risk) premium. It is therefore likely that the mortality forward rate is set below the expected mortality rate of a statistical model.

Life-cycle investing with longevity risk protection

Life-cycle investing refers to how people should make investment decisions throughout their lifetime. Today, investing for retirement is a major issue for billions of people around the world.

Throughout their lifetime, investors have to deal with three major sources of risk: market risk (e.g. equity market risk), inflation risk, and longevity risk. Market and inflation risk are well understood and can be actively managed using liquid derivatives contracts (e.g. inflation swaps to hedge against inflation risk). Longevity risk, however, has thus far not been well understood and is difficult to manage.

Whether (or when) an investor outlives his or her assets is driven by three key variables: market return, inflation rate and longevity. Longevity is important, as it determines the time span during which accumulated wealth is distributed. If an individual lives longer than expected, the amount available for consumption is reduced. This presents a major risk to investors and should therefore be considered in life-cycle models.

Including longevity bonds or derivatives in life-cycle asset allocation provides protection against increases in "systematic" longevity. An increase in longevity during the accumulation phase of a life-cycle impacts actuarial assumptions (mortality tables), making a potential fixed annuity less attractive at the time of retirement. It should be noted, however, that the price or cash flow of longevity instruments increases, too. If correctly balanced, the net effect should be sufficiently small.

As the individual likelihood of death within the accumulation phase is relatively low, longevity/mortality instruments that refer to a large population are well-suited to hedge against systematic longevity risk. During the decumulation phase, individual longevity risk gains relevance over systematic longevity risk. This is also a consequence of the increasing volatility of life expectancy. As a result, efficient hedging of individual longevity risk in the decumulation phase requires the use of customized insurance components that can be supplemented by standardized longevity instruments.

Summary

Increasing life expectancy is a source of risk to individuals, as it generally implies higher consumption in relation to accumulated capital. The standard way to hedge against longevity risk is to purchase life-long annuities. Just recently, capital market products (bonds, swaps, options) that promise a hedge against "systematic" longevity risk have been proposed. Investors employing longevity-linked financial securities during the accumulation phase to cover systematic longevity risk would particularly benefit from greater liquidity and flexibility. The market is at an early stage of development and is often compared with the credit derivatives market from a decade ago.

The emergence of a market for longevity products is good news for clients, investors and asset management firms, as they will gain easy access to capital market instruments that enable the management of longevity risk, one of the major risks of life-cycle investing.

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Country Reports

Australia

Simplifying and streamlining superannuation

Pension System Design

Australia operates a three-pillar pension system that very much resembles the World Bank model. The public pillar is composed of a means-tested, tax-financed Age Pension that provides subsistence-level benefits. The pension system is predominantly based on a mandatory second pillar consisting of funded individual pension accounts provided by superannuation funds. In addition, individuals may contribute voluntarily to their superannuation funds or to Retirement Savings Accounts; in both cases, plan members enjoy tax advantages.

In July 2007, the compulsory superannuation system saw its biggest reform since its inception in 1992. The reform was intended to remove some of the weaknesses of the old system. In particular, the complicated taxation system was simplified, incentives for the self-employed to join the system on a voluntary basis were strengthened and the eligibility age for superannuation benefits increased to the age of 60.

Next to the United States and Canada, Australia belongs to the group of traditional immigration countries that are less affected by the demographic challenge than most OECD countries. Thanks to high net immigration rates, Australia will not see its population decline over the next four decades. Nevertheless, Australia's population is ageing. Low fertility rates of 1.79 children per woman (below the natural replacement rate of 2.1) and increasing life expectancy will increase the median age from 36.7 years today to 43.4 by 2050. During the same period, the old-age dependency ratio will worsen from 19 to 41.

Demographics and macroeconomics	
Population [m]	20.7
Population over 65 [%]	13.1
Old-age dependency ratio*	2005: 19
	2050: 41
GDP [EUR]	580.4 billion
GDP per capita [EUR]	28,270
GDP growth 2001–2006 [av. in % p.a.]	3.2
GDP growth 2007–2015 [av. in % p.a., est.]	3.4
Unemployment rate [%]	4.3

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

Although assets in the superannuation system amounted to EUR 606.7 billion at the end of 2006, we expect a CAGR of 10.3% in the projection period until 2015. This increase will mainly stem from a growing number of employees and a high equity portion in pension portfolios.

Public Pensions

Australia's state pension system operates on a non-contributory basis and is financed by general tax revenues. The Age Pension provides means-tested benefits for men over 65. Women currently qualify for the Age Pension at different ages, depending on their date of birth. By 2014, the age limit will be set at 65 for both men and women.

Eligibility for Age Pensions is subject to income and asset tests. The asset test foresees that Age Pension payments are reduced by EUR 0.9 (AUD 1.5) (pension taper rate) per fortnight for every EUR 598 (AUD 1,000) of assets above the relevant threshold. The asset test was reformed in September 2007. Previously, the Age Pension was reduced by EUR 1.8 (AUD 3) per fortnight. Asset limits range from EUR 311,513 (AUD 520,750) to EUR 566,196 (AUD 946,500), depending on family status and home ownership. The reduction of the pension taper rate automatically increased the pension payments of many retirees. The income test foresees that singles/couples with additional income of up to EUR 79/139 (AUD 132/232) per fortnight qualify for a full pension. Additional income of up to EUR 873/1,459 (AUD 1,460/2,439) partially reduces the Age Pension with a full reduction for earnings exceeding these limits. About 75% of retirees receive an Age Pension.

The Future Fund, established by the Future Fund Act 2006, aims at funding costs arising from unfunded public sector superannuation liabilities. These liabilities will become payable to public servants and defence personnel from 2020 onward. Current unfunded liabilities, which amount to EUR 2.7 billion (AUD 4.5 billion) per annum, are covered by the government budget. Liabilities are expected to grow to around EUR 88.5 billion (AUD 148 billion) by 2020 and to more than EUR 119.6 billion (AUD 200 billion) by 2046.

The Future Fund is funded by budget surpluses and privatisation revenues. Its balance in August 2007 was approximately EUR 35.9 billion (AUD 60 billion). It is expected to hit its planned asset target of EUR 88.5 billion (AUD 148 billion) in 2020. The investment strategy is determined by the Future Fund Board of Guardians, an independent body subject to an investment mandate given by the Australian government. The targeted long-term average return should be at least 4.5 to 5.5% per annum, and the stake in foreign equities is limited to 20%.

In response to the growing fiscal burden, most public defined benefit superannuation schemes are now closed to new members and have been replaced by fully funded accumulation schemes. Only the Military Benefits Superannuation Scheme will continue to exist on an unfunded, defined benefit basis.

First pillar design	
Contribution rate	Tax-financed
Gross replacement rate [%]	40
Legal retirement age	65 men, 63 women

Occupational Pensions: Superannuation

In 1992, Australia successfully implemented the superannuation system, a mandatory, earnings-related pension scheme. The public old-age pension was considered insufficient in providing adequate retirement income. Prior to that, superannuation was largely optional and confined to bigger corporations. Recent amendments that came into force in July 2007 focused particularly on the tax treatment of super payouts, super withdrawal, deduction limits for super contributions and on easing account consolidation.

Institutional framework

Above a certain income level, employers in Australia are obliged to make superannuation contributions of 9% of their employee's wages to a fund that is chosen by the employee. These mandatory contributions, which are fully vested, portable and generally fully funded, are placed in individual accounts. Additional voluntary contributions by employers and employees are possible, and individual choice was introduced in 2005. Employees can switch funds once within a 12-month period.

Defined contribution funds are the dominating form of pension plan in Australia with a market share of approximately 80%. Before the compulsory superannuation system was introduced, defined benefit plans were the prevalent form of occupational pension provision.

Superannuation funds are predominantly provided through a trust structure within which trustees hold superannuation assets on behalf of members. Different types of pension schemes operate in the Australian superannuation market. Entities can be classified in two categories. While regulations stipulated by the Superannuation Industry Supervision Act classify superannuation entities in terms of public or private offerings, responsible regulatory authority and size, the functional view is more common. The following types of funds exist:

- Corporate funds are usually single-employer sponsored superannuation funds that can either be public or non-public offer. A group of related companies may also offer corporate funds to their employees
- Industry funds encompass a range of employers within a specified industry
- Public sector funds are sponsored by government agencies or state-owned enterprises
- Retail funds are independent entities not related to a specific employer. Large financial institutions offer these funds to the public on a commercial, for-profit basis
- Small superannuation funds include small APRA funds (SAFs), single-member approved deposit funds and self-managed superannuation funds (SMSFs). APRA stands for Australian Prudential Regulation Authority. Alongside the Australian Taxation Office (ATO), it is the regulatory authority responsible for SMSFs. Both SMSFs and SAFs are superannuation entities with less than five members. In a self-managed fund, the individual is his own trustee and therefore legally responsible for the fund and the investment strategy.

Many funds offer a choice between different investment options within the superannuation fund. For instance, 80% of funds with assets of at least EUR 59.8 million (AUD 100 million) do so. This group represents around 60% of superannuation assets. 45.2% of individuals make use of their right to choose. Since 2005, employees have been allowed to choose the fund into which employer contributions should be paid. Should an employee disregard his or her right to choose, assets are allocated to a default investment strategy chosen by the employer. For the vast majority of funds, the default strategy is a balanced growth option with 60 to 75% of assets in high volatility, high expected return asset classes. The proportion of assets invested in the default strategy is lowest for retail funds. In contrast, industry fund members are most likely to pick the default option.

There are 30 million superannuation accounts for a workforce of 10 million people. On average, members have three accounts each with current or former employers, and some people have additional individual accounts. The reform that came into effect in July 2007 has made the process of pooling assets from different funds into one easier. This reform may reduce the large number of superannuation accounts.

Investment regulations

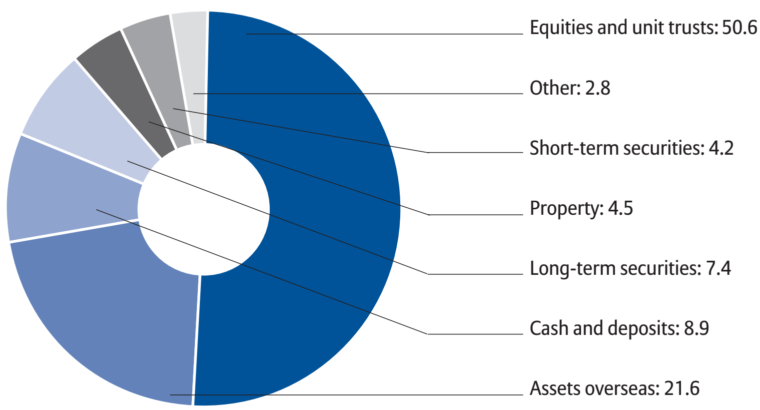
Investment regulations in Australia follow the prudent person principle. Hence, pension fund managers do not face quantitative investment regulations on specific asset classes. Only a few restrictions apply to the investment of fund assets:

- Up to 5% of total assets may be invested in the sponsoring employer or a related party
- Superannuation funds are prohibited from borrowing
- Restrictions apply on lending to members and on acquiring assets from members

Asset allocation

Much like in most Anglo-Saxon countries, Australian superannuation entities have a high exposure to equity. Superannuation

Asset allocation of superannuation entities, March 2007 [%]



Source: Reserve Bank of Australia

funds own around one third of the Australian stock market; superannuation funds outside life offices have EUR 503.1 billion (AUD 841 billion) assets under management, with an average allocation to domestic equity and unit trusts of 50.6%. This is followed by overseas assets, with a share of 21.6%.

Pension benefits and taxation

Pension benefits are available either as a lump sum or as a life annuity, or a mix of both. Fund governing rules stipulate how benefits will be paid. Lump sum payments are the most popular payout option. Pension payments from public sector funds are usually paid out as lifetime annuities.

In terms of taxation, there are two types of superannuation funds that can be distinguished: taxed and untaxed funds. Taxed funds are the most common. The main difference is that the taxation of taxed funds takes place only on the fund level. Contributions, investment earnings and losses are considered as taxable income to the fund. Earnings on assets segregated to provide pension payments are tax-exempt. In the case of untaxed funds, only the pension benefits are taxed.

Compulsory employer contributions are tax-exempt, as are employee top-up contributions up to EUR 29,910 (AUD 50,000). Until 2011-2012, individuals over 50 may make additional contributions up to EUR 59,820 (AUD 100,000) on a tax-exempt basis. From 2012-2013, the lower limit will apply. The contribution limits for voluntary top-up contributions were only recently increased. Changes were part of the superannuation reform. Self-employed people are now able to claim a full tax deduction for their superannuation contributions.

Pension benefits from taxed superannuation funds up to EUR 598,200 (AUD 1 million) are not taxed, provided that the retiree receives the benefits after the age of 60. Benefits in excess of that sum are subject to the top marginal tax rate. Federal and state governments and some large companies offer their employees untaxed super funds. The assets in these funds are not taxed until the benefit is paid.

Superannuation funds that are in compliance with the Superannuation Industry Supervision Act (SIS Act) and that have opted to be regulated receive favourable tax treatment. A lower tax rate of 15% applies to income received by taxed superannuation funds. Income received from untaxed super funds is taxed by the individual at a rate of 15%, which applies to lump sum payments. Benefits taken as regular income are taxed at the individual tax rate, less 10%. Funds, either taxed or untaxed, that do not comply with the regulatory provision as defined in the SIS Act and that have not opted to be regulated, are subject to a tax rate of 45%.

Prior to the reform, superannuation benefits were split up into eight different parts, which were then taxed in seven different ways. Simplifying tax rules for superannuation was one of the core elements of the current reform. People in untaxed super funds, such as public servants, have to pay tax on their payouts. However, the applicable rate was reduced in July 2007, for those taking their pension after the age of 60.

Private Retirement Savings

Voluntary private pension arrangements are also provided by superannuation funds. Additional employee contributions can be paid to existing occupational pension plans or into separate funds regulated under the Superannuation Industry Supervision Act. In this case, the same investment regulation, supervision, payout options and tax treatment apply as to mandatory superannuation assets. Since 2004, the government has co-contributed to the voluntary contributions of low-income earners.

In addition to superannuation funds, retirement savings accounts (RSAs) are available for tax-favoured private retirement savings. An RSA is a superannuation account offered by APRA-approved financial institutions. Only deposit-taking institutions such as banks, building societies, credit unions, life insurance companies and prescribed financial institutions can be approved as an RSA provider. There are currently eight such institutions operating in the market. Retirement savings accounts differ from other superannuation funds in that they do not have a trust structure and provide a guarantee on capital.

Benefits can be taken as a lump sum and a fixed-term or life annuity, depending on the rules stipulated by the RSA. The same taxation applies as for superannuation benefits. Employee contributions are made from after-tax salary. Employers are also allowed to contribute. Their contributions are tax-exempt, but are taxable income to the fund, which is taxed at a rate of 15%. The same applies for investment returns.

Pension Market Trends

Pension market structure

Australia has a highly developed and sizeable pension market. By the end of 2006, superannuation funds had accumulated around EUR 606.7 billion in assets. In relative terms, these assets account for about 100% of GDP.

The superannuation landscape has changed over the past 10 years. While corporate and public sector funds dominated the market in 1996 with a combined share of 40%, this figure had dropped to 20% by 2006. Market share has shifted in favour of industry and small funds, which now account for 40%.

As of March 2007, a total of 344,965 entities operated in the market. Today, retail funds hold the largest portion of superannuation assets. 99.7% of superannuation entities are funds with less than five members, but they manage about 24% of assets only. This means that 0.3% of superannuation entities manage 76% of overall assets.

The life insurance market is concentrated, with the top three life insurers accounting for 63% of total market share. The corresponding figure for the top ten life insurers is 93%. In total, there are 35 life insurance companies operating in the market. Foreign providers represent 28% of total life assets. The superannuation business is one of the major pillars for life insurers in Australia. 22% of total superannuation assets are allocated to life insurance companies. This, in turn, accounts for 88% of their total assets. Due to strong competition, life insurers have lost a sizeable part of their market share to other financial institutions.

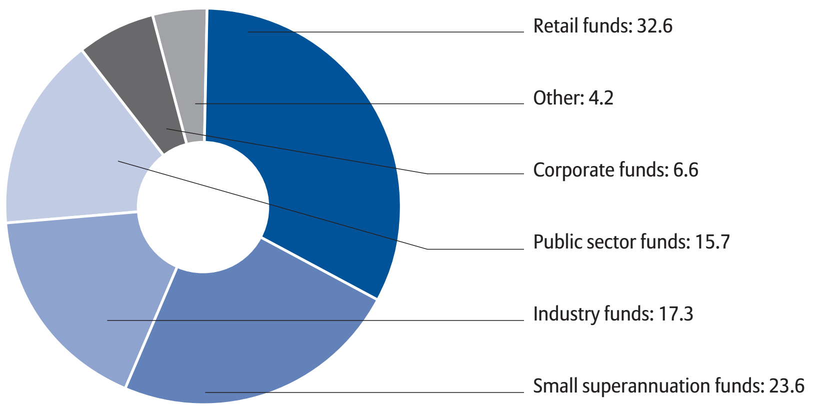
Insurance density in Australia, which is measured in premiums per capita, is the sixth highest in Asia-Pacific at EUR 1,053. Life insurance penetration accounts for 3.8% of GDP. In terms of total life premium volume, Australia is the 15th biggest market worldwide.*

Future pension assets

In the past, the mandatory nature of occupational pensions in Australia resulted in substantial pension asset growth. Annual growth rates throughout the 1990s hovered around 15%. The stock market slump at the

Pension Markets

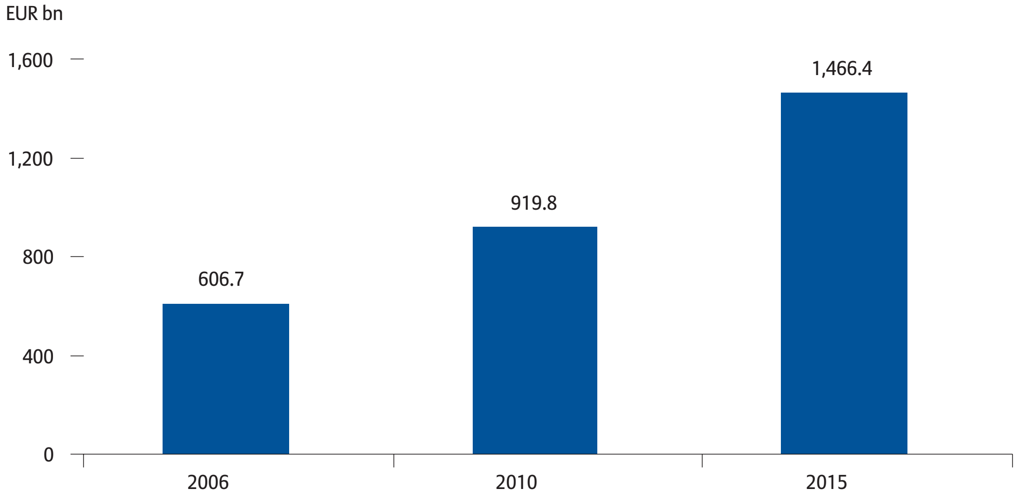
Superannuation assets by entity, March 2007 [%]



Source: APRA, 2007

* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

Australia: Pension assets under management*



* Superannuation scheme
Source: Australian Prudential Regulation Authority, Australian Bureau of Statistics, Allianz Dresdner Economic Research.

Technical note

The number of employees was taken from the Australian Bureau of Statistics' labour force projections. Contributions per account are growing more slowly than income. Since the mandatory system already has a high participation rate in occupational pensions, we factored in only a small further increase to 92% in 2015.

turn of the millennium depressed growth rates, as pension funds held a large portion of shares. Since 2004, growth rates have risen to almost 20%. This increase was driven by increasing contributions from both employees and employers and supported by strong stock market performance.

Despite past growth, the market still has considerable potential, particularly since the recent simplification of taxation rules made pension savings even more attractive. Pension assets make up a sizeable portion of overall financial assets, which totalled EUR 1,287 billion in 2006, or 198% of GDP. 57% of financial assets are invested in insurance and pension products, which encompass more than superannuation assets. Pension assets in the superannuation scheme alone amounted to EUR 606.7 billion by the end of 2006.

Our projection considered the increasing size of younger age groups, which will result in a growing number of employees, a moderate increase in income and a favourable stock market performance of 8% p.a. Since the portion of shares in the pensions portfolio has been 50% in recent years, the annual increase in pension assets will remain high. We expect a CAGR of 10.3% and pension assets amounting to EUR 1,466.4 billion by 2015.

Besides India, Australia is the only country covered in this study for which demography does not pose a severe problem, as net immigration helps ensure that the population ages slowly. The Australian pension system is often considered a role model not only for Asia, but for other countries around the world as well. Thanks to its well-established and mandatory occupational pillar, Australia has one of the most developed pension markets worldwide.

China

Building a three-pillar system

Pension System Design

China's pension system has seen far-reaching structural reforms in recent years. At least in urban areas, the system currently in place has three pillars. The public pillar is divided between a pay-as-you-go scheme and funded individual accounts. Voluntary occupational pensions in the form of Enterprise Annuities form the second pillar, and the third pillar consists of voluntary private savings.

Demographics and macroeconomics	
Population [m]	1,329
Population over 65 [%]	7.7
Old-age dependency ratio*	2005: 11
	2050: 39
GDP [EUR]	2,036 billion
GDP per capita [EUR]	1,542
GDP growth 2001–2006 [av. in % p.a.]	9.8
GDP growth 2007–2015 [av. in % p.a., est.]	9.0
Unemployment rate [%]	4.1

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

The economic reforms in China that started in the late 1970s had a strong impact on the system that existed at the time, in which state-owned enterprises directly provided pensions to their employees, supported by fiscal subsidies. The pension system was part of the "iron rice bowl", an all-encompassing social security system for employees of state-owned enterprises. In 1997, the Chinese government decided to introduce the basic parameters of a multi-pillar system. Furthermore, the National Social Security Fund (NSSF) was established in 2000 and is meant to cushion the financial impact of demographic developments on the pension system. In 2004, the Enterprise Annuity system was created, which is a voluntary occupational pension system. Recent reforms and reform debates included the decision to fill up the funded accounts in the first pillar, which were often emptied in favour of the pay-as-you-go pillar. Reforms also include outsourcing occupational funds created before the Enterprise Annuities to private companies, extending pension system coverage and initiating several pilot projects.

China is not exempt from negative demographic developments. While the old-age dependency ratio is currently 11, it will reach 39 by 2050. According to the IMF, the working population as a proportion of the total population will peak in 2010 and fall steadily afterwards. The median age is forecasted to rise from 32.5 years in 2005 to 48 years in 2050. Clearly, China's population is ageing quickly, which will have a strong impact within one generation.

Pension assets in funded individual accounts currently amount to EUR 53.4 billion. For this part of the pension system, we expect that the annual growth rate will lie between 23.4% and 25.6%. The Enterprise Annuity system, the assets of which currently stand at EUR 8.9 billion, is expected to grow at a rate of 21.2% p.a. until 2015.

Public Pensions

The rural pension system

The public pension system in China comprises an urban and a rural system. The latter was specifically designed for rural areas and differs considerably from the system in place in urban areas. Pension participation is voluntary and operational matters are left to local governments. Benefits are far less generous compared with the urban pension system, and participation in the rural system is very limited. According to 2003 estimates, 54 million people participated, which accounts for 9% of the total rural population. In 2006, a pilot project was launched in rural Beijing to include more people. It aims to include greater Beijing's rural population of over three million people in the formal pension system.

The urban pension system

Following pilot projects in Shanghai and Guangzhou, the urban pension system was officially launched in 1997 with the announcement of a revised pension policy. While pensions were provided by state-owned enterprises in the previous system, a social insurance system took over. The reform started at the provincial level with a view to expanding it to the national level.

This public pension system consists of pillar 1A, a pay-as-you-go portion, and pillar 1B, a funded portion consisting of individual accounts. Pillar 1A is financed exclusively by employer contributions of 20% of wages, whereas pillar 1B is financed by employee contributions of 8%. The pay-as-you-go portion is intended to provide a replacement rate of 35% of the employee's final salary, and the funded portion aims to replace 24%. Contribution rates were changed in 2006. Until then, pillar 1A was financed by a 17% employer contribution. Pillar 1B was financed by employee contributions amounting to 3% of their salaries, and by employers, who made an 8% contribution. The urban pension system has a coverage rate of 50%.

Although it is fully funded in principle, pillar 1B has suffered because local governments took capital from these accounts to cover pension deficits in the pay-as-you-go pillar and to pay out benefits. This led to the problem of "empty accounts". To remedy the situation, the Chinese authorities have taken steps to "refill" pillar 1B through fiscal transfers from the local and central government. This measure is part of a pilot pension reform project in the Liaoning province that started in 2001. The project aims to fill empty accounts with funds equivalent to 5% of salaries. 3.75% is financed by the central government, and the remaining 1.25% is financed by the local government. Once the accounts have been filled, the balance increases by 1% of salaries each year until 8% is reached.

After the pilot reform led to positive results, the reform was extended to the provinces of Heilongjiang and Jilin in 2004, and to another eight provinces in 2006. Eventually, the reforms will likely be extended across the country. Future reforms will likely focus on establishing the pension system on a national level. Today, pension pooling operates at the provincial, county or municipal level. Administration is decentralized, meaning that local discretion is considerable.

Rural migrant workers in urban areas, of which there are approximately 150 million, are not generally covered by the urban pension system. Participation is allowed, but not compulsory. Both employers and rural migrant workers are reluctant to join, because joining entails higher labour costs for employers and migrant workers are more interested in immediate wages than in pensions. What's more, their high mobility

First pillar design (urban pension system, pillar 1A and 1B)	
Contribution rate [% of gross salary]	Employers: 20
	Employees: 8
Gross replacement rate (target)	59
Legal retirement age	60 men, 50-55 women

across regions impedes participation. In order to encourage employers and employees to participate, local governments have started experimenting in their regions. For example, in some cities the contribution rate to pillars 1A and 1B has been reduced from 28% to 14%, with sole contribution from employers. In others, contribution rates are 8% for employers and 5% for migrant workers.

The National Social Security Fund

Strictly speaking, the National Social Security Fund (NSSF) is not part of the pension system. However, it is important for the pension system, as its function is to build up capital for public pension deficits resulting from upcoming demographic development. The NSSF was founded in 2000 and is currently in the accumulation phase. It is managed and controlled by the National Council of the Social Security Fund, which was established at the same time. It is unclear when payments will start. Some sources think that decumulation will begin when the fund reaches assets of at least EUR 97.2 billion (RMB 1 trillion). Others suggest that decumulation will commence from 2030 onwards, when the demographic situation will likely begin to deteriorate. The assets of the NSSF come from four sources:

- Fiscal transfers from the central government budget
- Proceeds from the listing of state-owned enterprises
- Lottery proceeds
- Investment income

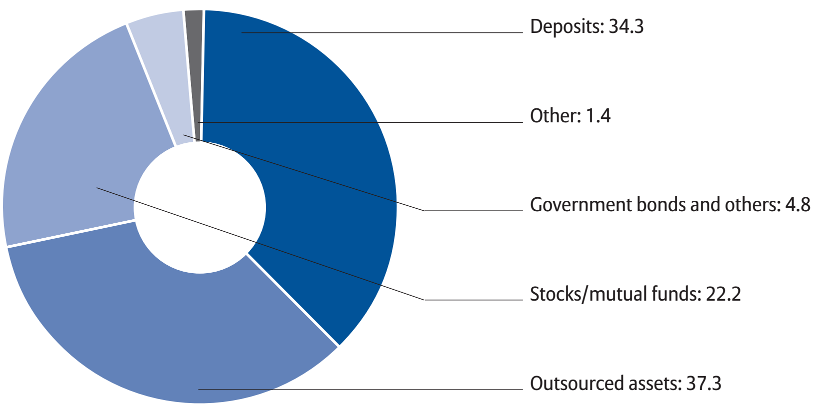
The bulk of the NSSF's assets comes from fiscal transfers (65% in 2005), followed by the proceeds of privatisation (16.2%), investment income (10.5%) and lottery income (8.3%). In 2006, the NSSF's total assets amounted to EUR 27.5 billion (RMB 283 billion). Asset allocation was very conservative in the initial period of operation, but investment in deposits has decreased gradually since then. Meanwhile, the share of outsourced assets has increased steadily, from 24.1% in 2003 to 37.3% in 2006.

The NSSF's investment policy is based on the priorities of asset security and liquidity. As a result, regulations determine that deposits and government bonds combined must amount to at least 50% of assets. At least 10% must be invested in deposits alone. The maximum limit for corporate bonds is 10%, and the combined limit for shares and mutual funds is 40%. In 2003, the NSSF began outsourcing some of its assets. As of 2005, five national and/or joint ventures were selected to manage NSSF assets. In 2006, the NSSF allotted five investment mandates to foreign asset managers to manage international investments of EUR 758 million. In the future, the central government's contribution to "refill" pillar 1B will be managed by the NSSF. The initial amount is EUR 972.1 million (RMB 10 billion).

Occupational Pensions: Enterprise Annuities

Enterprise Annuities were established in 2004. Besides the newly established Enterprise Annuity funds, there are also legacy funds, company funds that were established before

NSSF asset allocation 2006 [%]



Source: OECD, National Council of Social Security Fund Statistics the Enterprise Annuity legislation was introduced. These legacy funds have assets of EUR 7.3 billion (RMB 75 billion) under management. They are currently managed by local social security agencies, but the government intends to hand the management over to private companies. To make this process easier, the Ministry of Labour and Social Security introduced a temporary guideline in April 2007 on how legacy funds can be transferred to the private sector. Two of the largest local administration centres were reformed; one was turned into an independent insurance company, while the occupational pension business of the second centre was handed over to two Chinese financial institutions. Group pension insurance contracts are another means with which employers can provide their employees with old-age pension funds.

Institutional framework

Enterprise Annuities are voluntary occupational plans that are fully-funded defined contribution accounts. They are established as a trust that can take the form of either an internal or external trustee model. The internal trustee, which is known as the pension council in China, is similar to the trust system in the UK. Financial institutions serve as external trustee, which is referred to as the professional trustee in China. In the case of the pension council model, at least one-third of trustee members should be employee representatives. There is no such requirement for the professional trustee model.

Employer contributions are limited to a twelfth of employee salaries, and the combined employer/employee contribution should not exceed a sixth of total wages. To provide Enterprise Annuities to their employees, enterprises must have participated in the urban pension system, be financially sound and have collective bargaining mechanisms in place.

Until now, Enterprise Annuity schemes have primarily been adopted by large, profitable, mostly state-owned enterprises. Total assets amount to EUR 8.9 billion (RMB 91 billion). However, 82% are held in legacy funds. As of mid-2006, 263 enterprises in China had introduced new Enterprise Annuity schemes that covered 940,000 participants.

Only licensed financial institutions are allowed to manage and administer EA assets. By the end of 2005, 37 financial institutions had been granted a license after they fulfilled several preconditions. Among these 37 institutions, there were 5 trustees, 11 account administrators, 6 custodian banks and 15 asset managers. The Chinese authorities are expected to grant more licences in late 2007. Regulations stipulate that custodians must be independent from other service providers. In the internal trustee model, the trustee should outsource administration, asset management and custody services to other institutions that are licensed to operate these businesses. In the external trustee model, the trustee can also provide administrative and asset management services, but not custody. In some provinces, local governments have put regulations in place that require asset managers to provide a certain level of returns.

Investment regulations

Enterprise Annuity regulations foresee quantitative restrictions on investment policy. The most important regulations currently in place stipulate the following:

- At least 20% of assets must be invested in high liquidity money market instruments such as deposits, central bank notes and short-term bond repos
- A maximum of 50% of assets can be invested in term deposits, contractual deposits, government bonds, corporate bonds, convertible bonds and securities. At least 20% should be invested in government bonds
- A maximum of 30% of assets can be invested in stocks, investment-linked insurance products and equity funds. Investment in equities should not exceed 20%

With financial market development and more regulatory experience, investment restrictions are likely to be eased in the future. Other regulations affect pension service providers' fees. Fees are capped and differ according to the type of service:

- Trustees: Up to 0.2% of the net value of the pension fund
- Administrator: Up to EUR 0.5 (RMB 5) per month, to be paid by the plan sponsor

- Custodian: Up to 0.2% of the net value of the pension fund
- Investment manager: Up to 1.2% of the invested net value of the pension fund

Pension benefits and taxation

If enterprises provide Enterprise Annuity plans, there is a tax exemption for employers of 4% of wages. There is no tax benefit for employee contributions. However, tax benefits differ in practice from province to province. For example, in mid-2006, it was 5% in Anhui and 12.5% in Hubei. More tax relief will likely be granted to both employers and employees in the future, and a harmonised tax system is expected to be implemented. Investment income and pension payments are taxed according to standard tax rates, so Enterprise Annuities are subject to an ETT system.

Private Retirement Savings

Voluntary pension savings are fairly underdeveloped in China. There is currently no tax relief available for voluntary private pension products; life insurance products are an exeption and subject to modest tax relief. There are no official plans to introduce tax incentives for voluntary retirement savings, as the government's first priority is to develop public pensions and the Enterprise Annuity system. Nevertheless, according to survey research, 50% of the inhabitants of larger cities are willing to buy retirement products.

Pension Market Trends

Pension market structure

In the medium term, the Enterprise Annuity market is likely to develop into the most promising pension submarket in China. Until now, 37 financial institutions have been granted a license to operate in this market, and more licenses are likely to be granted in the near future. Due to the market's early stage of development, no clear trends have thus far materialised. The future of the Enterprise Annuity market depends strongly on whether Chinese employers, particularly small- and medium-sized enterprises, accept the new system. The right incentives and regulations are therefore needed.

China is the world's eighth biggest life insurance market in terms of total life premium volume. Still, the country has major growth potential. Life insurance density in China amounts to premiums of EUR 26 per capita. The corresponding value for Japan, the biggest Asian market, is EUR 2,144. A similar picture arises with regard to life insurance premiums as a percentage of GDP: the value for China is 1.7%, while Japan has a value of 8.3%. The leading Asian nation in this respect is Taiwan, which has a life insurance penetration of 11.6%.*

There are 20 domestic and 25 foreign companies/joint ventures operating in the Chinese life insurance market. Domestic insurers hold 94% of market share; the largest two account for 67% of the market. The market is heavily fragmented between fast-growing coastal regions and the rest of the country. Combined with Shanghai and Beijing, the regions of Guangdong, Jiangsu and Zhejing account for almost 37% of life insurance premiums.

Future pension assets

Our projection concentrates on pension asset potential in urban areas, funded individual accounts and Enterprise Annuities. We have not considered the NSSF, as its asset accumulation is subject to political decisions and therefore impossible to predict. The NSSF funds totaled EUR 27.5 billion (RMB 283 billion) at the end of 2006. We have not considered the rural pension scheme either, as reliable projections are not possible because its operation is left to local governments. This implies that there are substantial regional regulatory differences and other discrepancies. Furthermore, contributions seem to often be used for current pension payments, meaning that asset accumulation does not necessarily take place. Funds currently amount to EUR 3.44 billion (RMB 35.4 billon).

At present, 141.3 million employees are participating in pillar 1B, the funded

* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

individual accounts. We have calculated two scenarios for this part of the pension system: in the first, optimistic scenario, we have assumed an increase in participation to 75% by 2015. In the second, conservative scenario, we have calculated a coverage rate of 55% in 2015. Our calculation is based on the official contribution rate of 8% of wages.

At the end of 2006, the assets of the funded individual accounts in the basic pension programme amounted to approximately EUR 53.4 billion. In the optimistic scenario, we have forecasted an increase in annual flows of 20.6% p.a., which would imply an asset volume of EUR 414.4 billion in 2015 and a CAGR of 25.6%. In the second, conservative scenario, contributions will rise by 16.8% and assets will amount to EUR 354 billion in 2015 (CAGR of 23.4%).

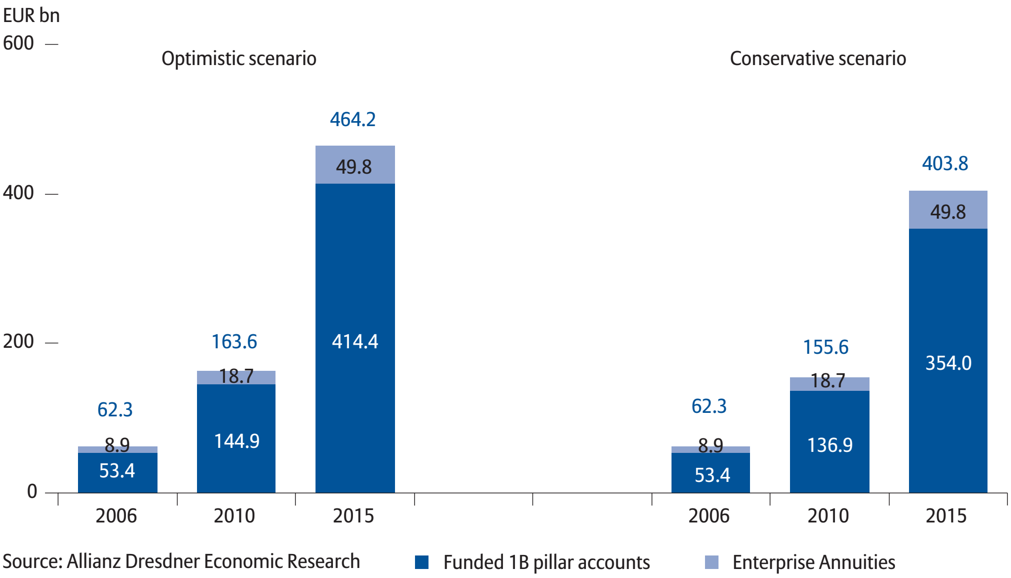
Additional pension asset potential is generated within the voluntary occupational pension programme. At the end of 2006, 9.6 million Chinese participated in the Enterprise Annuity scheme, including legacy funds, with assets totalling EUR 8.9 billion. Our projection assumed that participation will increase to 20% by 2015 in the highest income class, to 7% in the second and 2% in the third. This will lead to about 20 million participants in 2015. The upper group is assumed to voluntarily

Technical note

The projection is based on population, workforce and income data provided by the UN, China's National Bureau of Statistics and various statistical offices across China. We have assumed that the total number of economically active people will increase in line with population growth in the different age groups; i.e. a constant labour participation rate. We have also factored in a shift away from employment in rural areas and into urban areas. Employment in rural areas was around 63% in 2006 (481 million) and will drop to about 58% by 2015.

Chinese statistical offices provided data on income distribution, which we have used to differentiate old age savings. The Chinese government reports income growth of 14.4% in urban areas on average. We have applied the spread noted in Beijing's statistics to the actual growth level. For the projection period, we have factored in 9% average wage growth. High wage growth rates result in an upward shift in income distribution, which we have taken into account in our projection. Data on the disposable income of urban households in 2006 has been provided by the National Bureau of Statistics of China.

China: Pension assets under management



Source: Allianz Dresdner Economic Research contribute 8% of their annual wages in addition to employers' contributions. The second income group will save 4% and the third 1%. Based on these assumptions, annual flows will rise to EUR 7.1 billion by the end of the projection period (23.8% CAGR) and assets under management will amount to EUR 49.8 billion in 2015, with a CAGR of 21.2%.

China's pension reforms are ambitious, but necessary given that the preceding system was completely different, but inadequate for the new economic environment. Given the size of the country and the regional differences within it, implementing the new system is a considerable challenge. This may be the main reason why the government has focused on developing a formal pension system in urban areas. With its very low coverage, the rural pension system has not seen far-reaching reforms.

While the system for the urban areas has been legislated, implementation is ongoing. Reforms tackled two of the main issues, namely the refilling of empty accounts in pillar 1B and the introduction of occupational pensions through the Enterprise Annuity system. It should be noted that even between urban areas, there are considerable differences that hinder the implementation of Enterprise Annuities. Regional disparities in tax rules for Enterprise Annuities and the uncertainty regarding their future development are among the biggest obstacles to the system's acceptance and diffusion. At present, large enterprises are the main participants in the system. At this point, small- und medium-sized enterprises seem to be reserved. To realize the goals of the reforms, the basis of the new system needs to be developed, and much of its success will depend on future regulations.

Hong Kong

Banking on mandatory occupational pensions

Pension System Design

Hong Kong's pension system is quite recent and based on a strong occupational pillar. The public pillar is intended to provide a social safety net for the needy. The occupational pillar is a mandatory defined contribution system that has been in operation since 2000, and the third pillar comprises voluntary pension savings.

The introduction of the mandatory occupational pillar, called the Mandatory Provident Fund Scheme (MPF), has been the biggest change to Hong Kong's pension policy over the last decades. Before the MPF system was established, occupational schemes existed, but only on a voluntary basis with limited coverage. These Occupational Retirement Schemes Ordinance plans still exist. Further reforms will very likely deal with the fine-tuning of the MPF system. Recent reforms affected transparency and MPF fund disclosure as well as supervisory issues.

Demography was one of the main reason why a formal pension system was established. With 0.97 children per woman, Hong Kong has the lowest fertility rate in the world, while life expectancy is among the highest in the world. As a result, the current population is one of the oldest in Asia, after Australia and Japan. The old-age dependency ratio stands at 16 today, and will increase to 58 in 2050.

Assets under management in the Mandatory Provident Fund scheme amounted to EUR 20.8 billion in 2006, while assets in the Occupational Retirement Schemes Ordinance plans stood at EUR 21.5 billion. Assets in the former are likely to grow by 15.4% per year until 2015, while the latter will see annual growth of 1%.

Demographics and macroeconomics	
Population [m]	7.2
Population over 65 [%]	12.0
Old-age dependency ratio*	2005: 16
	2050: 58
GDP [EUR]	143.9 billion
GDP per capita [EUR]	20,189
GDP growth 2001–2006 [av. in % p.a.]	4.7
GDP growth 2007–2015 [av. in % p.a., est.]	5.0
Unemployment rate [%]	4.8

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

Public Pensions

The overall social security system in Hong Kong has five subsystems. The Social Security Allowance Scheme covers the elderly and includes old age and disability allowance. The scheme for retirees is divided between 65 to 69-year-olds (Normal Old Age Allowance) and over 70-year-olds (Higher Old Age Allowance). It provides flat rate benefits of currently EUR 61 (HKD 625) a month for the former and EUR 69 (HKD 705) for the latter, and is financed entirely from the state budget. The Normal Old Age Allowance is means-tested, while the Higher Old Age Allowance is not. The official retirement age is 65 for both men and women.

In 1997, a reform was passed that introduced the Portable Comprehensive Social Security Assistance scheme. It allowed retirees over 60 who receive social security benefits to settle in the bordering provinces of

Guangdong or Fujian while continuing to receive their benefits. The idea behind this scheme is that the cost of living is lower in these provinces than in Hong Kong, enabling retirees to enjoy a higher standard of living.

Other public schemes cover civil servants, judicial officials, school teachers and the staff of public hospitals and clinics. Civil servants who started working in or after 2000, however, were no longer allowed to join the old public pension schemes; they had to join the MPF system first. They are eligible to join the Civil Service Provident Fund scheme only once they have received permanent contracts. The contribution rates for this scheme, which are covered by the government, increase according to years of service.

Occupational Pensions: Mandatory Provident Fund Scheme

The MPF system became law in 1995 and was implemented in late 2000. Until then, there were voluntary occupational schemes that emerged in the 1970s and 1980s and were established mainly by larger companies. Except for tax breaks, these schemes were practically unregulated. This changed in 1993, when the Occupational Retirement Schemes Ordinance (ORSO) regulated occupational pensions to protect participants and support scheme establishment. ORSO schemes, which can be of the defined benefit, defined contribution or hybrid type, covered around 30% of the formal workforce. Contribution rates varied depending on scheme regulations. After the MPF system was introduced in 2000, these schemes were allowed to continue operating and be exempt from MPF requirements, provided that they met certain standards specified by the Mandatory Provident Fund Schemes Authority. ORSO scheme members were given the one-time choice between staying in the existing scheme and joining the new MPF scheme. From 2001 to 2006, the number of ORSO schemes decreased from 9,800 to 7,700. 512,000 employees are now covered by the schemes. Of the 7,700 schemes, about 83% are defined contribution schemes. Assets under management amount to EUR 21.5 billion (HKD 221 billion).

Institutional framework

The MPF system is based on mandatory personal defined contribution accounts. Participation is mandatory for full and part-time employees between 18 and 65 years of age, provided that the latter have been employed for more than 60 days. Employers and employees contribute 5% of wages each, up to a limit of EUR 1,949 (HKD 20,000) a month. The self-employed must also contribute 5% of their income. Casual employees contribute fixed amounts based on a contribution table, as do their employers. The MPF system is meant to generate a replacement ratio of 30% to 40%. The retirement age is 65 for both men and women; early retirement is possible after the age of 60. MPFs to which the contributions are directed must be established as trusts with trustees approved by the Mandatory Provident Fund Schemes Authority. The schemes can take three forms:

- Master trust schemes in which membership is open to the employees of more than one firm and to the self-employed
- Employer-sponsored schemes in which membership is limited to the employees of a single employer and its associated companies
- Industry schemes established for employees by employers of certain industries

The employers choose the MPF scheme, which is provided by banks, insurance companies, asset managers and trust companies. Master trust schemes are by far the most popular type of MPFs. Out of 41 schemes, 37 are master trust schemes, two are employer-sponsored schemes and two are industry schemes. The two industry schemes were established for the employees of the catering and construction industries, in which labour mobility is high. As long as members stay in the same industry, they do not need to change plans. Employers, employees and the self-employed can make additional contributions voluntarily.

Registered MPF schemes may consist of one or more constituent funds, each of which must be approved by the Mandatory Provident Fund Schemes Authority. The funds must provide differing investment policies, and employees must choose between them. Most schemes offer four to six options, one of which must be a capital preservation fund. Asset managers must be independent of the scheme's trustees and the custodian. They must also be a company incorporated in Hong Kong, have a certain amount of paid-up share capital and they must be licensed to manage assets and carry out related business. MPF coverage is high: 99% of relevant employers and 98% of relevant employees are covered, as are 74% of the self-employed.

Investment regulations

MPF funds are subject to quantitative investment limits. However, since there are different types of funds, there is no general equity limit. The main regulations include the following:

- A maximum of 10% of assets must be invested in securities and other permissible investments issued by a single entity
- A minimum of 30% must be held in Hong Kong Dollar investments. Hence, foreign equity exposure may not exceed 70%
- No more than 5% may be invested in warrants
- Unless a prior approval from the MPFA is obtained, no more than 25% may be in cash deposits if the total market value of the constituent fund is less than EUR 779,680 (HKD 8 million). If the value exceeds this amount, a maximum of 10% in cash deposits are permitted
- No more than 10% of assets may be invested in shares listed on a non-recognized stock exchange or securities of a kind approved by the MPFA. More than 10% can be invested in shares listed on a recognized stock exchange, in authorised unit trusts or mutual funds of a type approved by the MPFA

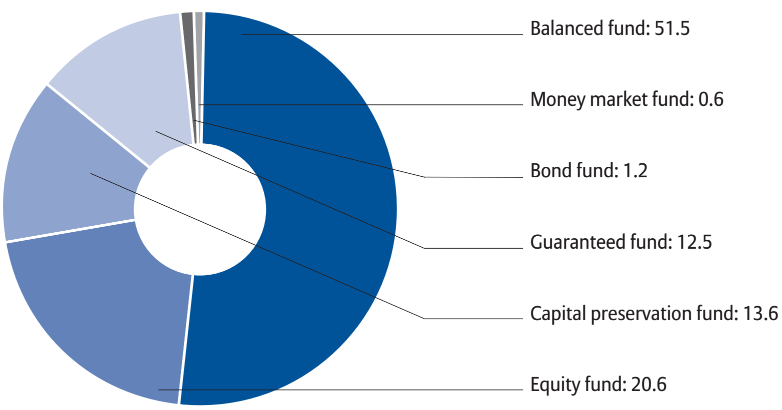
In the case of employer-sponsored MPFs, no more than 10% of assets may be invested in securities of or issued by the employer or an associated company.

As of late 2006, there were 315 approved constituent funds offered in the MPF system. 292 of these were in master trust schemes. Balanced funds are the most commonly offered type of fund (137), followed by equity funds (84), capital preservation funds (41), guaranteed funds (31), bond funds (17) and money market funds (5). The popularity of the different fund classes is reflected in asset distribution between the different funds. Balanced funds account for more than half of all assets in the system, followed by equity and guaranteed funds.

Hong Kong remains the preferred location in terms of geographical asset allocation. In 2006, the MPF constituent funds allocated 53% of their assets at home, while 14% were invested in Europe, 8% in Asia (excluding Hong Kong), 7% in North America and 18% in other regions.

The MPF system is consulting-intensive. More than 24,400 registered intermediaries are in the business of selling and/or

Distribution of assets under management by MPF fund type 2006 [%]



Source: OECD, MPF schemes statistical digest 2006 advising on MPF schemes, the overwhelming majority of which are individual advisors. 19 trustees are authorised to conduct MPF business.

Pension benefits and taxation

Benefits are paid out as lump sum; members are not required to annuitise their capital. Contributions are tax-deductible up to a maximum of EUR 1,170 (HKD 12,000) a year for employees and up to 15% of salary for employers. Investment income and benefits are tax-exempt, which means that Hong Kong runs an EEE system.

Private Retirement Savings

Much like in the rest of Asia, the voluntary private pension pillar in Hong Kong is fairly underdeveloped. There is no special legislation for private pension products, and there are no tax advantages available. However, since income tax rates in Hong Kong are among the lowest in the world, tax incentives would probably not be as effective as in other parts of the world.

Private old-age provision relies on common types of savings such as bank savings, insurance contracts, investment funds and private investments. Voluntary contributions to the MPFs are the only tax-favoured way to save specifically for old age. The combined mandatory and voluntary MPF contributions are tax-deductible up to a limit of EUR 1,170 (HKD 12,000). It seems that a limited number of employers and employees take advantage of this opportunity. Around 12% of total contributions to the MPF system are voluntary.

Pension Market Trends

Pension market structure

In late 2006, there were 41 schemes in the MPF market. 37 of these were master trust schemes, 2 were industry schemes and 2 were employer-sponsored schemes. There were 19 trustees and 315 constituent funds on offer. The overall MPF market is concentrated to some degree, with the five largest providers controlling around 75% of the market. Some providers recently began introducing multi-manager platforms that offer both in-house and third-party funds.

The density of Hong Kong's life insurance market is the second highest in Asia behind Japan. Premiums per capita amount to EUR 1,865. Insurance penetration amounts to 9.2% of GDP, which is the fourth highest value in Asia.* Unit-linked products are the fastest-growing segment in the market, accounting for almost half of new premiums in 2005. Whole life policies remain the most popular product overall. In terms of premiums in force, the market shares of the top five non-linked providers account for around 60% of the market.

Future pension assets

The mandatory MPF system covered 2.1 million employees and 285,000 self-employed in 2006. Since there is a minimum income level for contributions, about 16% of economically active people do not need to participate. A further 512,000 are covered by the ORSO schemes. Assets under management in MPF schemes amounted to EUR 20.8 billion in 2006, while assets in ORSO schemes amounted to EUR 21.5 billion.

Our projection assumed a constant income distribution and a modest rise in the MPF scheme participation rate among the self-employed. Employee participation will run parallel to the development of the workforce and will increase slightly in the projection period. Because of the already high participation rate, a further increase in coverage is not possible. Due to the minimum income levels and the cap on contributions, an increase in income – particularly in the upper income groups – will not have any effect on total contributions.

Growth will be generated by new labour market entrants. Since employers will not be willing to pay into a voluntary system in addition to the mandatory one, the MPF will

* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

Technical note

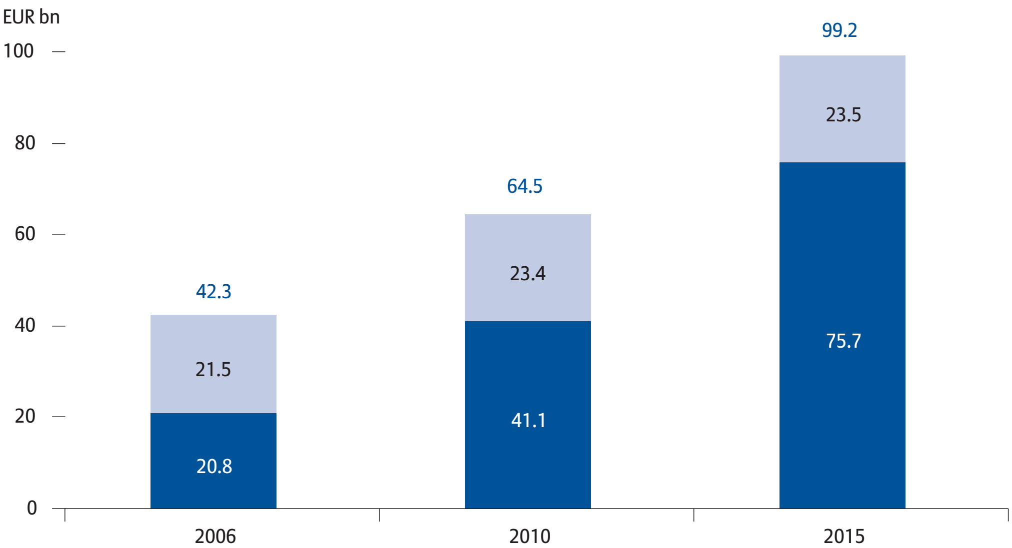
The projection is based on population and workforce data provided by the UN and the Census and Statistics Department of Hong Kong. Data on income distribution are taken from the Statistical Yearbook of China 2006, and from the population census of the Census and Statistics Department of Hong Kong. Contributions are calculated on the basis of average income per income class, with the upper income groups capped at EUR 1,949 (HKD 20,000) per month.
As MPFA statistics show, the equity portion has increased in recent years and reached 58% in 2006. With this development in mind, we based our calculations on an equity portion of 50%. Equity performance is expected to be 10% p.a. and we assumed a 3% interest rate. The combined return stands at 6.5%, slightly lower than the average return between 2001 and 2006. We assumed that the asset allocation of ORSO DC schemes would be based on the same structure as MPF schemes. We also assumed a conservative approach for ORSO DB schemes with an equity share of 25%.

continue to gain importance while ORSO will lose more members. Assets under management in the MPF scheme will reach EUR 75.7 billon in 2015, which means 15.4% growth p.a. Assets in ORSO schemes will grow by only 1% p.a., reaching EUR 23.5 billion. The combined market will increase by about 9.9% p.a.

The MPF system has reached one of its main goals, namely comprehensive coverage of the working population. The system has been successfully implemented and will provide the main share of pension income for future retirees. The lack of a comprehensive social insurance system as a public pillar remains an issue, however. Its absence may lead to insufficient retirement income, especially for low-income earners. This may result in MPF participants making overly conservative investment choices, as they try to avoid the risk of unfavourable returns on their MPF assets.

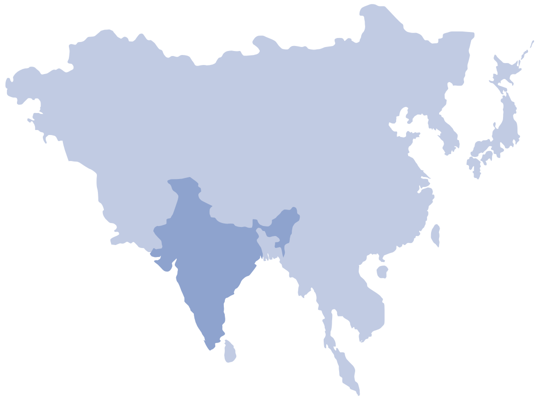
Other current discussions focus on the question of whether the MPF's targeted replacement rate of 30-40% is realistic in light of the current system's parameters, particularly the relatively low contribution rate. There have been proposals to raise mandatory contributions or the contribution cap. A conversion of lump sum payments and employee choice of the MPF provider are also being debated. Despite such unresolved issues and the short time that it has existed, the MPF system has evolved into a solid and working foundation for Hong Kong's retirement system.

Hong Kong: Pension assets under management



* Occupational Retirement Scheme Ordinance
Source: Mandatory Provident Fund Schemes Authority, Allianz Dresdner Economic Research

India



A fragmented system

Pension System Design

Demographics and macroeconomics	
Population [m]	1,169
Population over 65 [%]	5.0
Old-age dependency ratio*	2005: 8
	2050: 21
GDP [EUR]	708.0 billion
GDP per capita [EUR]	615
GDP growth 2001–2006 [av. in % p.a.]	7.4
GDP growth 2007–2015 [av. in % p.a., est.]	8.1
Unemployment rate [%]	3.1

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

India operates a fragmented and complex pension system with a wide variety of schemes. The basic structure is the following: in the realm of public pensions, there is a limited social safety net for the elderly poor. The old-age provision for civil servants is the most developed part of the system; they are covered by several schemes. Workers in the organised portion of the private sector are covered by mandatory plans operated by the Employees' Provident Fund Organisation, which runs two pension schemes. Employers can decide to opt out of these schemes and establish Exempted Funds. There are also voluntary pension schemes in the organised sector called superannuation funds. Voluntary private pensions are available for the self-employed and for workers in the organised and unorganised sectors.

The main challenge of Indian pension policy is the pension system's limited coverage. The schemes cover civil servants and employees from the organised sector. However, the overwhelming majority of the labour force works in the unorganised sector, and most of these people do not enjoy any occupational old-age provision.[1] Only around 12% of the population are covered by any formal pension arrangement. Family members and the community are therefore very important in securing the living standard of the elderly, but increasing mobility has put these structures under pressure. A major reform was introduced in 2004 in the form of the New Pension System, which covers new entrants to the central government's civil service. This defined contribution scheme replaces the preceding unfunded defined benefit scheme. The new scheme has two aims: first, to replace the financially unsustainable schemes for civil servants and second, to provide a viable voluntary scheme for workers in the unorganised sector.

India will witness remarkably different and much more positive demographic developments than most of the other Asian countries. The current fertility rate stands at 2.8 children per woman, significantly above the natural reproduction rate of 2.1. With a median age of roughly 24 years, the current population is very young. A shrinking population is not an issue in India, as the country's population is expected to grow from 1.16 billion today to 1.66 billion in 2050. Still, India's population will age, albeit at a moderate pace. The old-age dependency ratio will increase from 8 today to 21 in 2050.

[1] Formal or organised sector workers include employees of companies that are covered by some statute, are registered and supply regular accounts. Small companies (under 20 employees) do not need to register and are therefore not part of the formal sector.

Assets in the Employee Provident Fund system currently amount to EUR 40.1 billion, and we expect a yearly growth of at least 14.9% until 2050. For the New Pension System, our projection foresees a rapid asset built-up, with an asset volume between EUR 17.6 billion and EUR 22.9 billion by 2015.

Public Pensions

Public pensions comprise a limited safety net for the needy elderly population, two pension schemes for civil servants and the New Pension System, which replaces the civil servants' schemes for new entrants. In addition, employees in the public and private sectors with more than five years of tenure receive a gratuity upon retirement or if they leave the company before retirement. This gratuity is paid by the employer. It is equivalent to 15 days of final salary for each year of service; the maximum amount is EUR 6,013 (INR 350,000). There are also two major ongoing pilot projects in the realm of pensions. One focuses on better coverage for workers from the unorganised sector, and the other provides "micro-pensions" to unorganised workers and the rural population.

Social security

The National Old Age Pension scheme was introduced in 1995 and is part of the National Social Assistance Programme. It aims to expand the social safety net for the poor. Needy persons over 65 below the poverty line are eligible for this scheme, which provides monthly benefits of EUR 3.4 (INR 200), an increase from EUR 1.3 (INR 75) in 2006. It is estimated that around 16 million people are entitled to benefits under this scheme.

Central Civil Service Pension Scheme/ Civil Service Provident Fund

The Central Civil Service Pension Scheme and the Civil Service Provident Fund are mandatory schemes for civil servants that were established in 1972 and 1981, respectively. Both schemes are now only available to existing central government employees. The Civil Service Pension Scheme is an unfunded defined benefit, pay-as-you-go scheme. Employees do not contribute, while the respective employer pays 8.3% and the government adds 1.16%. To qualify for a pension, ten years of service are necessary, and the pensionable age is 58. The maximum benefit is 50% of the final salary, and one-third of the pension value may be withdrawn as a lump sum. Pension schemes for the civil servants of state governments generally have a similar structure.

The Civil Service Provident Fund is run for employees of the Central Government. While it is designed as a provident fund on a defined contribution basis, it actually operates on a pay-as-you-go basis; current contributions are used for financing the pension benefits of current pensioners. Members have to contribute monthly and can freely decide which amount they would like to contribute between 6% and 100%. The employer does not pay contributions, and benefits are paid as a lump sum after at least 20 years of service. The government credits the accounts with an interest rate that is determined each year; currently the rate is 8.5%.

The pension system for civil servants delivers a high replacement rate. However, it has been exposed to rapidly rising financial burdens for the government and seems unsustainable in the long run. For this reason, access to the old schemes was closed for new entrants and replaced by a different system.

New Pension System

The New Pension System, a defined contribution scheme, was introduced in 2004 and has since covered new entrants to the central government's civil service. An exception is armed forces personnel, which is not in the scope of the New Pension System. Public service employees who worked for the government prior to 2004 have remained in the old system. Employers and employees contribute 10% of salary each and contributions are placed in individual accounts. The minimum retirement age in the new system is 60 years and taxation is based on the EET principle, with mandatory annuitisation of 40% of accumulated capital. While the scheme is designed for central government employees, 26 of the 29 state governments have indicated that they plan to join the scheme. The New Pension System has a targeted replacement rate of 50% of final wage.

The Pension Law, which will establish the details of the new system, has not yet been passed. Hence, implementation has only begun for central government employees, for which parliamentary approval is not necessary. For the time being, contributions are held by the central government and awarded a rate of return of 8%. The scheme will be mandatory for civil servants, but open to every Indian citizen, meaning that employees from the organised and unorganised sectors as well as the self-employed will be able to participate. Their participation will be voluntary, and employers will not be obliged to contribute. It is not clear when the voluntary component of the New Pension System will become effective.

Once the system is running, members will be able to choose between three funds with different investment strategies and risk-return profiles. If they fail to make a choice, their contributions will be transferred to a default fund, which is the safe fund. Assets in the three funds will be allocated as follows:

- Growth: At least 25% of assets must be invested in government securities and 25% in corporate bonds; up to 50% may be invested in domestic equities and up to 10% in international equities
- Balanced: At least 30% in government securities and 30% in corporate bonds; up to 30% in domestic equities and up to 10% in international equities
- Safe: At least 60% in government securities and 30% in corporate bonds; up to 10% in domestic equities

Only passive investments in equity will be allowed in each of the funds. Active management is only permissible for bonds without a standard benchmark. There will be no government guarantees.

To provide funds to the system, asset managers will need to be licensed. The administrative framework for the New Pension System foresees that contributors can access Points of Presence, such as post office and bank branches, to ensure nationwide distribution.

The Points of Presence will be service providers for all sorts of New Pension System issues, such as opening accounts or collecting contributions. Contributions will then be directed to the Central Recordkeeping Agency, which forwards the capital to the various fund managers, who then put it in the chosen fund. Recordkeeping is centralised to keep fees low.

The NPS will have tier-I and tier-II accounts. Tier-I accounts are the mandatory pension accounts for civil servants without the possibility of premature withdrawal. Tier-II accounts are voluntary. They will consist of savings that can be withdrawn, are subject to minimum contributions to the tier-I account and will not enjoy tax advantages.

Even though the law has not been passed due to opposition in Parliament, some states and the governing coalition, the interim supervisory authority has already been established. The Pension Fund Regulatory and Development Authority (PFRDA), which has brought pension regulation under one roof, aims to oversee the implementation of pension reforms and the development of the overall pension system. It was established in 2005 and drafted the pending law on pension fund regulation as well as the New Pension System. The PFRDA has been authorised through executive order to establish the Central Recordkeeping Agency and to appoint three fund managers from the publicly-owned financial institutions for the New Pension System; the three chosen managers are supposed to manage the funds on an interim basis.

Occupational Pensions

Employees' Provident Fund Organisation

The mandatory pension scheme for the private sector is managed by the Employees' Provident Fund Organisation (EPFO). It was set up in 1952 and covers employees in 181 specified economic sectors at firms with more than 20 employees. It is part of the central government's Labour Ministry and administers and regulates all employee benefits, while outsourcing the management of the scheme's assets to fund managers. Traditionally, assets have been managed by state-owned banks. Employers can be exempted from participation if their pension plans provide at least the same level of benefits.

The EPFO operates three major schemes: the Employees' Pension Scheme, the Employees' Deposit Linked Insurance Scheme and the Employees' Provident Fund Scheme. All three are mandatory for employees. While the Employees' Deposit Linked Insurance Scheme is a life insurance scheme to which only the employer contributes 0.5% of wages, and which is intended to provide benefits to the family in case of the breadwinner's death, the other two schemes are directly pension-related.

The Employees' Pension Scheme is a defined-benefit plan to which employers and the government contribute 8.33% and 1.16% of salary, respectively. The assessment ceiling is EUR 112 (INR 6,500). Retirement under this scheme is possible at age 58, while early retirement with reduced benefits is possible from age 50 onwards. One-third of the capital can be withdrawn as a lump sum. The Employees' Pension Scheme follows the EET taxation principle and covers 32 million members.

The Employees' Provident Fund Scheme is a defined contribution scheme with an administered rate of return that provides lump-sum benefits at the time of retirement. Members can make partial withdrawals for specific purposes, such as buying a house or covering medical expenses. Employers and employees each contribute 3.67% of wages. Also in the Employees' Provident Fund, the assessment limit is EUR 112 (INR 6,500), voluntary employee contributions of up to 100% of basic salary are possible. The taxation principle is EEE, meaning that contributions, investment returns and benefits are tax-exempt. The stated rate of return, which is fixed by the government, is currently 8.5%. Employers must make up for shortfalls in investment income. The Employees' Provident Fund covers 43 million employees.

Apart from these schemes, there are special mandatory provident funds for certain occupational groups, such as the Coal Miners' Provident Fund, the Assam Tea Plantation Provident Fund, the Jammu and Kashmir Provident Fund and the Seamen's Fund. Although managed by different trusts and fund managers, these funds follow the same investment and return rules as those regulated by EPFO, and cover around 2 million members.

Exempted Funds

Exempted Funds can be established as a substitute for the EPFO plans, provided that benefits at least match the ones of the EPFO plans and that the EPFO agrees.

If employers set up Exempted Funds to substitute the EPFO, employees must participate in the scheme. They are established as independent trusts and governed by employer and employee representatives as trustees. Contribution levels are the same as in the EPFO system and must provide the same rate of return; the retirement age ranges between 58 and 60 years. Employer and employee contributions are tax-deductible, investment income is tax-exempt and benefits are taxed.

There are strict investment regulations for the Exempted Funds that specify minimum investment limits. The regulations are as follows:

- 25% of assets must be invested in central government bonds
- 15% of assets must be invested in state government bonds or bonds of public sector enterprises guaranteed by central or state governments
- 30% are required to be invested in bonds of public financial institutions or public sector enterprises

The remaining assets can be invested in the same asset categories. Since 1998, trustees have had the option of investing a maximum of 10% in private sector bonds.

Voluntary occupational schemes

Voluntary occupational schemes, called superannuation funds, target organised sector employees and provide additional pension benefits, mainly in the form of defined contribution plans. A main reason to set up voluntary funds is the low income limit in the Employees' Provident Fund, which means that group pension plans often only cover senior executives. Superannuation funds can either be run internally as a trust fund, or externally in cooperation with life insurance companies.

The upper limit for employer contributions to the superannuation funds is 15% of salary; the same limit applies to employees. Contributions are tax-deductible, as is investment income, but benefits are taxed. Tax-exemption for employer contributions applies up to EUR 1,718 (INR 100,000) per employee. The same limit is valid for all employee contributions to pension and life insurance schemes.

Superannuation funds are required to annuitise the accumulated capital by buying an annuity from a life insurance company. However, 30% to 50% of the capital can be taken as a lump sum. Investment regulation of superannuation funds is the same as for Exempted Funds if they are managed in-house by trustees. In contrast, externally managed funds increasingly offer investment choices for members. Current discussions on this issue focus on whether superannuation funds should have the possibility to invest in approved funds of the New Pension System in the medium term, which would make guidelines for internal and external superannuation consistent.

Private Retirement Savings

The main vehicle for private retirement savings is the Public Provident Fund, which was established by the government in 1968. It is open to all individuals, including the self-employed and employees from the unorganised sector, who are not covered by the occupational systems. Employees from the organised sector can also join in addition to their other pension arrangements. The Public Provident Fund is a defined contribution scheme with individual accounts and an administered rate of return of currently 8%. Participants can contribute between EUR 8.6 (INR 500) and a maximum of EUR 1,203 (INR 70,000) per year. Accounts can be opened at any branch of the State Bank of India, its associated banks or at a few other designated nationalised banks. They can also be opened at post offices.

Capital in Public Provident Fund accounts can be completely withdrawn after 15 years; partial withdrawals are possible after 5 years. Neither contributions, nor investment income, nor benefits are taxed, so taxation is based on the EEE principle. Around three quarters of contributions are used as loans for state governments. Public Provident Fund coverage is modest, and it is often used as a tax-reducing rather than a retirement savings vehicle. Survey research showed that only about 20% of Public Provident Fund participants intend to use the benefits for retirement purposes.

In addition to the Public Provident Fund, there are many individual pension arrangements available on the market, such as life insurance, annuities, and a variety of saving schemes with tax-advantages, which often are counted as pension savings. However, the existing voluntary schemes failed to cover significant portions of unorganised sector workers. The Asian Development Bank estimates that fewer than 3% of unorganised sector workers currently participate in voluntary schemes. This was a main motivation for the introduction of the New Pension System, which is likely to change the voluntary pension market significantly once the voluntary component is in operation.

Pension Market Trends

Pension market structure

Indian pension markets have major growth potential. Depending on the speed of its implementation and the acceptance of its voluntary component, the New Pension System will experience rapid asset growth. Roughly 300 million employees of India's workforce of 380 million are working in the unorganised sector, most of them in agriculture.

International asset managers are also eligible to run funds in the New Pension System as joint ventures. Apart from the three asset management licenses already granted, it is likely that more will be auctioned in the future. Since India's insurance market was deregulated in 1999, which marked the end of a state monopoly, private and foreign companies have entered the market and now may also manage superannuation funds. This development has brought new products to the market such as unit-linked pension products for superannuation schemes.

India is ranked twelfth worldwide in terms of current life premium volume. It has the 5th biggest market in Asia behind Japan, South Korea, China and Taiwan. However, in terms of premiums per capita, the value for India stands at EUR 26, while the corresponding value for Japan is EUR 2,145. The gap is smaller when looking at life premiums as a share of GDP. In this regard, India's value is half of Japan's 8.3%.* Currently, 16 life insurers are operating in the Indian market, 13 of which are joint ventures between Indian companies and foreign multinationals. Foreign firms can hold a maximum of 26% of shares in domestic insurers. In terms of market share, the former monopolist Life Insurance Corporation of India held 90% of the market in 2005, but the private companies had a 22% share of new business.

Future pension assets

Mandatory arrangements under the EPF account for the lion's share of assets under management in India's pension system. By the end of 2006, the funds, including the Exempted Funds, held assets of EUR 40.1 billion. Almost 43 million employees were covered by the system. For a comprehensive projection, the mandatory and additional voluntary parts have to be taken into consideration. Given rising employment in industry and the service sector, we project 11.2% growth in annual flows in the coming years for the mandatory part of the EPF**.

For the voluntary part of the EPF, we based our projection on the high-income segment of employees. This group is likely to see high income growth and can therefore be expected to set aside additional savings. We calculated two scenarios: In the "optimistic scenario", we assumed a participation rate of 30% among high-income earners, which will rise to 50% with a savings rate of 6% of the wage above the mandatory contribution rate. In this "optimistic scenario", pension assets will amount to EUR 165.5 billion by 2015 (CAGR 17.1%; mandatory and voluntary). With half the participation and savings rates of the optimistic scenario, the second, "conservative scenario" amounts to EUR 139.9 billion by 2015 (CAGR 14.9%).

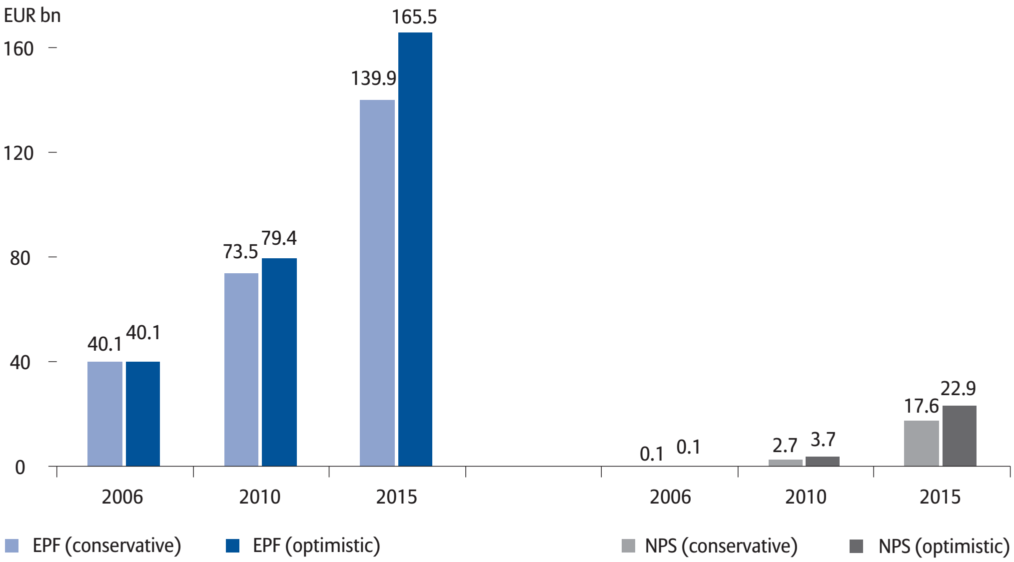
Although contributions are already being collected from public workers, the NPS is not yet fully operational. Implementation of the voluntary part is not yet on the horizon. For this reason, public and unorganised workers needed to be separated with different starting years for our projection. New entrants to the public sector already contribute. We based our projection on the change in public employment and assumed that 80% of the increase in the number of public workers is made up of young, new entrants. Since the total contribution rate is 20%, contributions from 450,000 members amounted to approximately EUR 73 million in 2006. These contributions will rise tenfold due to a rapid rise in membership. Assets under management will increase to almost EUR 4 billion by 2015 (CAGR 49%).

Since it is difficult to foresee when the NPS will definitely be implemented for the unorganised sector, we assumed a starting year of 2008 with an initial participation of 2.5%. Participants will include unorganised sector workers who are in a position to save regularly; we expect the participation rate to rise to 7.5% by 2015. By then, there will be about 11 million workers contributing about EUR 270 million. Combined assets under management will grow rapidly, amounting to EUR 17.6 billion by 2015. In the optimistic scenario of NPS, participation and savings rates would double, leading to assets under management of EUR 22.9 billion.

* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

** Due to a lack of data availability, we do not deal with superannuation funds

India: Pension assets under management



Source: Allianz Dresdner Economic Research

Technical note

The projection is based on UN population data and workforce and employment data provided by the Asian Development Bank. The Asian Development Bank reports a labour force of 380 million. We assumed an increase in the total number of economically active people in line with population growth in the respective age groups. We also factored in a shift from employment in agriculture to industry and services. Employment in agriculture was around 60% in 2000, 56% in 2005 and will slip to about 50% by 2015. We assumed that almost all of these workers do not save for old age provision, as they still rely on family support. If they save at all, their savings are being directed into education.

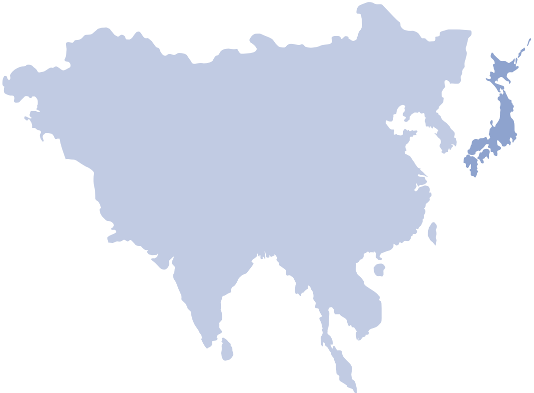
About 100 million people belong to the urban workforce. We defined two specific groups. The first group comprises a high-income group of about 10% of urban workers, and the second comprises the rest of the workforce, of which only about 60% are able to save for old age, or work for companies whose employees have to join EPF. This proportion is set to rise during the projection period, as employment prospects for urban workers improve. Among this remaining group, there is high participation in EPF schemes.

For the NPS, we started out with the total of 11 million central and state government workers reported by the Asian Development Bank. We estimated that the unorganised workforce counts 300 million people. Since the NPS was introduced for new entrants, we took only the annual change in public employment into consideration. These assumptions led to an initial data set of around 450,000 members, which will rise to 3 million. In 2006, contributions amounted to EUR 73 million and can be expected to rise to EUR 753 million. Income data are based on information provided by the Invest India Economic Foundation (IIEF) Pensions Policy Toolkit for four groups of public sector employees. For the voluntary part (unorganised workers), we used data from the National Data survey as reported by the ABD.

India's pension policy challenges differ from those of other Asian countries. While most other countries face a severe demographic challenge, Indian demographics will develop more favourably. However, like the other countries, India is in the process of restructuring its pension system, especially to increase the coverage of formal pension systems. In this area, India lags behind countries such as China, which already has established the foundations for a nation-wide system of old-age provision in the public and occupational pillar. Informal family and community support play a crucial role for the majority of retirees in India. However, the country's dynamic economic development and dwindling family support systems are very likely to increase the demand and the necessity for formal pension systems.

There is currently a wide and complex variety of existing schemes, which predominantly target civil servants and employees in the organised sectors. The New Pension System has the potential to modernise pensions for civil servants, but also to provide unorganised sector workers with access to a formal pension system on a voluntary basis. The architecture of the NPS is quite innovative in terms of distribution and investment choice, and has the potential to provide higher workforce coverage once it finally comes into effect. The establishment of a pension regulator will also support the modernisation of India's financial system. Nevertheless, the success of the New Pension System will depend on the acceptance of unorganised sector workers. The issue of how to cover unorganised sector employees is therefore likely to remain high on the agenda in years to come.

Japan



Struggling with demographics

Pension System Design

In recent years, the Japanese pension system has undergone various reforms in the public and occupational pension pillars. The current system consists of the flat-rate National Pension System and employment-related pensions for public and private sector employees; these two elements combined form the public pension pillar. Employers can establish Employee Pension Funds that operate as occupational pensions, but that substitute benefits from the earnings-related part of public pensions and can provide additional benefits. Moreover, employees whose employers do not provide occupational pensions and the self-employed can set up defined contribution accounts at the National Pension Fund Association. Defined benefit and defined contribution corporate pension plans were introduced in 2001. Voluntary private pension plans can take a variety of forms in Japan.

In 2004, public pensions were the subject of major reform. Automatic adjustment of benefit levels was introduced to allow the pension system to adapt flexibly to demographic and economic change. In the realm of occupational pensions, new corporate plans of the defined benefit or defined contribution type were introduced earlier.

Japan's demographic development is a major challenge. The country has one of the fastest ageing populations in the world. In fact, many observers consider the country to be the oldest society in the world even now. The current old-age dependency ratio stands at 30 and will worsen to 74 in 2050. During the same period, Japan's population will decrease from 128 million to 102 million. The fertility rate of 1.26 children per woman lies considerably below the rate of 2.1 that is needed to maintain the population. At the same time, Japan's life expectancy is among the highest in the world.

Demographics and macroeconomics	
Population [m]	128
Population over 65 [%]	19.7
Old-age dependency ratio*	2005: 30
	2050: 74
GDP [EUR]	3,241.5 billion
GDP per capita [EUR]	25,334
GDP growth 2001–2006 [av. in % p.a.]	1.5
GDP growth 2007–2015 [av. in % p.a., est.]	2.1
Unemployment rate [%]	4.1

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

Nevertheless, we expect corporate pension assets to grow only 1% per year until 2015, starting from a basis of currently EUR 548.9 billion.

Public Pensions

National Pension System

The National Pension System was introduced in 1959 and is mandatory for all residents between 20 and 59 years of age. Contributions to the National Pension System are deducted from contributions for the employment-related portion of the public pension. For the self-employed, the contribution amounts to EUR 88 (JPY 13,860) a month. Monthly pension benefits after 40 years of working life and from age 65 onwards, the official retirement age for the

National Pension System, amount to EUR 420 (JPY 66,000). Shorter contribution periods result in lower benefits. The system receives substantial subsidies of currently one-third of payments from the Japanese government, a share that will be raised to 50% by 2009.

First pillar design	
Contribution rate [% of gross salary]	Employer: 7.32
	Employee: 7.32
Gross replacement rate [%]	60
Legal retirement age	60

Employee Pension Insurance

The second part of public pension provision is earnings-related. Private sector employees are covered by Employee Pension Insurance, which was introduced in1944. Public sector employees are covered by the Mutual Aid Association. The contribution rate to Employee Pension Insurance is 14.64% of wages, which is equally split between employers and employees. A part of this contribution is deducted for the National Pension System. Employees aged 60 and over with 25 years of contributions are entitled to benefits from the Employee Pension Insurance scheme. Retirement age will rise to 65 for men by 2025 and by 2030 for women. The Mutual Aid Association, which covers employees working in central and local governments as well as private school employees, operates mainly along the same lines.

Over the years, the public pension system has been continuously reformed, with major reforms introduced in 1985, 1996, 2000 and 2004. These reforms were triggered by official population projections and the regular mandatory review of public pension finances. Time and again, projections showed that Japan's demographic situation was even more serious than anticipated in the previous projection. The 2002 projection revealed that to keep benefits constant, pension premiums would need to be raised to 25.9% of annual wages rather than the expected 20% given constant benefits.

In response to these findings, the 2004 reform aimed at balancing benefits and contributions in the long term. A major element of the 2004 reform was that the total contribution rate to Employee Pension Insurance would be increased by 0.354% annually until it reaches 18.3% in 2017, after which date it will be fixed at this level. The government subsidy to the National Pension System is also set to be increased from one-third to one-half of payments by 2009.

What's more, the reform introduced the automatic adjustment of benefit levels by "adjustment indexation" to ensure a financial balance even if the demographic situation worsens. The new indexation takes the decline of contributors into account as well as higher life expectancy. This modified design will gradually decrease benefit levels and the replacement rate. However, it was stipulated that if the replacement ratio falls below 50% from currently around 60%, the indexation would be changed. Projections foresee that the 50% level will be reached by 2023.

Government Pension Investment Fund

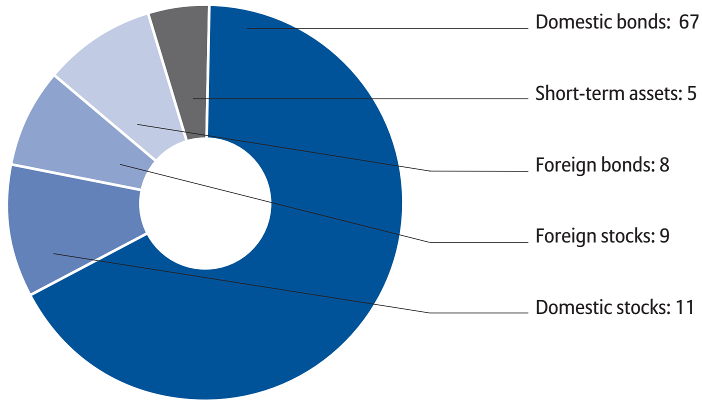
While both the Employee Pension Insurance and the National Pension System operate on a pay-as-you-go basis, they have accumulated large reserves. Until 2000, these reserves were managed and invested by the Pension Welfare Corporation, which was established in 1961. Technically, the Trust Fund Bureau of the Ministry of Finance was responsible for the reserves. In 2001, the Government Pension Investment Fund was set up to replace the Pension Welfare Corporation. As a result, responsibility was transferred from the Ministry of Finance to the Ministry of Health, Labour and Welfare. In 2006, the Government Pension Investment Fund became an independent administrative institution to achieve a higher level of independence from the government, also in terms of its governance structure.

The Government Pension Investment Fund is the largest pension fund worldwide. In 2005, it directly managed assets of around EUR 560 billion (JPY 88 trillion). However, the transfer of assets to the Government Pension Investment Fund has not yet been completed. The deadline for a complete transfer has been set for 2008. According to the Nomura Research Institute, its assets will amount to EUR 1.1 trillion (JPY 166.5 trillion) by then. The Government Pension

Investment Fund is obliged to manage its assets based on a pre-determined benchmark. This principle portfolio aims to meet the targeted rate of return, which is 3.37%. The principle portfolio for 2008 foresees that 67% of assets must be allocated to domestic bonds, 11% to domestic stocks, 8% to foreign bonds, 9% to foreign stocks and 5% to short-term assets. There is a permissible range of deviation between 5% and 8% for each asset class.

The principle portfolio is reviewed each year. According to estimates, outsourced assets amounted to EUR 337 billion (JPY 53 trillion) in 2005 and are expected to grow to EUR 719 billion (JPY 113 trillion) by 2009, when the asset transfer will be complete.

Principle portfolio of the Government Pension Investment Fund 2008 [%]



Source: OECD, Ministry of Finance Japan

Occupational Pensions

In Japan, voluntary occupational pensions come in a variety of forms. Traditionally, the occupational pension system comprised two schemes: Employee Pension Funds and Tax-Qualified Pension Plans. As these two were considered neither sustainable nor sufficient for retirement income security, defined contribution and defined benefit plans were introduced in 2001 and 2002. There is also the National Pension Fund Association, which is open to the self-employed and to employees whose employers do not operate a company pension scheme. Besides these schemes, employers also use book reserve arrangements. In addition, the government has created Smaller Enterprise Retirement Allowance Mutual Aid plans specifically for small businesses.

Employee Pension Funds

Employee Pension Funds were introduced in 1944 and cover firms with over 500 employees. The plans, which are defined benefit schemes, have two components. The first part substitutes Employee Pension Insurance. This means that firms may opt out of the public scheme on the condition that Employee Pension Funds provide 50% higher benefits than Employee Pension Insurance (10% for existing Employee Pension Funds). The rebate on the contribution to the Employee Pension Insurance scheme varies. The Ministry of Health, Labour and Welfare determines the exact rebate separately for each plan. The second component offers complementary pension benefits.

Employee Pension Funds can be established in three ways. Single-employer funds are sponsored by one employer, which must employ at least 500 people. Allied-employer funds are sponsored by several employers that belong to the same group; they must have at least 800 employees in total. Multi-employer funds are sponsored by associations of employers and must have a minimum of 3,000 employees. The establishment of an Employee Pension Fund is subject to the approval of the Ministry of Health, Labour and Welfare. Approval depends on the fulfilment of several prerequisites, including the consent of at least 50% of full-time employees.

Employee Pension Funds are independent legal entities that are managed by a management committee comprising an equal number of employer and employee representatives. This committee decides whether to manage fund assets in-house or to contract management out to a trust bank or life insurance company. The assets can also be outsourced to the Pension Fund Association, the association of all Employee Pension Funds. Employees contribute 50% of the substitutional component of the Employee Pension Fund, while employer contributions to the additional component are usually higher than those of the employees.

The part of Employee Pension Funds that replaces Employee Pension Insurance is subject to the same benefit formula as applied to the Employee Pension Insurance itself and is paid as an annuity. At least half of the additional benefits from Employee Pension Funds should also be paid as annuities. Employee Pension Funds must contribute to a compulsory insolvency insurance scheme that protects their assets. All other occupational schemes are not required to do so.

Employer and employee contributions are tax-deductible without limits. Investment income is taxed in principle, but only under rare conditions. However, the tax is frozen until 2009. A portion of benefits is taxed as income; the amount depends on total pension income.

Since the prudent person principle was introduced in 1998, Japanese pension funds have no longer been subject to investment limits. Previously, the 5:3:3:2 rule was in place, which stipulated that at least 50% of assets had to be invested in bonds, while a maximum of 30% could be invested in domestic equities or assets denominated in foreign currencies. A maximum of 20% could be invested in property. Asset allocation of Employee Pension Funds is much more equity-driven than in other Asian countries, with a sizeable share of foreign investments.

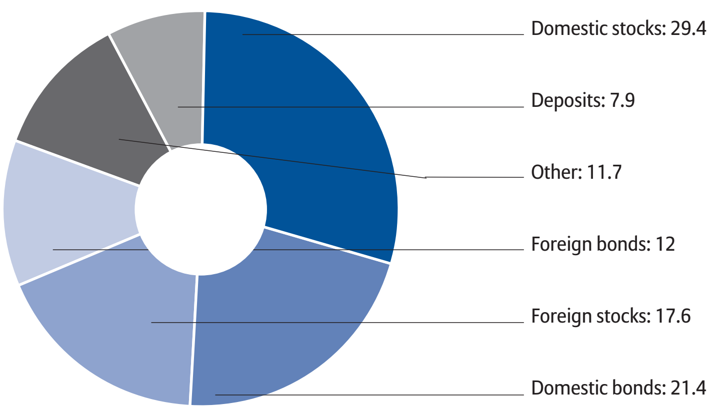
Tax-Qualified Pension Plan Scheme

The Tax-Qualified Pension Plan Scheme was established in 1965 and targets smaller companies with 15 or more employees. The plans are funded by employers, and voluntary employee contributions are possible, but rare. Benefits can be paid as an annuity or as a lump sum. The Tax-Qualified Pension Plan Scheme was underfunded and lacked protection of plan participants. Moreover, the rights and responsibilities of employers and plan members were not clearly defined. For these reasons, pension legislation in 2000 determined that no new Tax-Qualified Pension Plan Scheme could be established, and that existing ones either had to be converted into the new defined benefit or defined contribution schemes or wound up by 2012. They can be also converted into the Smaller Enterprise Retirement Allowance Mutual Aid scheme. The new corporate schemes were also introduced due to the demand for "pure" company pension schemes that were not related to the public scheme like Employee Pension Funds are.

New Corporate Pension Schemes

The introduction of the defined contribution scheme in 2001 and the defined benefit scheme in 2002 was the result of the lacking sustainability of existing corporate schemes. Employers were allowed to return the portion of Employee Pension Funds that substituted Employee Pension Insurance and transfer the complementary component to the new corporate schemes. As mentioned, the Tax Qualified Pension Plan Schemes can be converted into the new schemes. The new plans are not mutually exclusive; employers can operate defined benefit and defined contribution plans

Asset allocation of Employee Pension Funds 2005 [%]



Source: OECD, Nomura Research Institute

simultaneously. Similar to all Japanese pension funds, the prudent person principle applies.

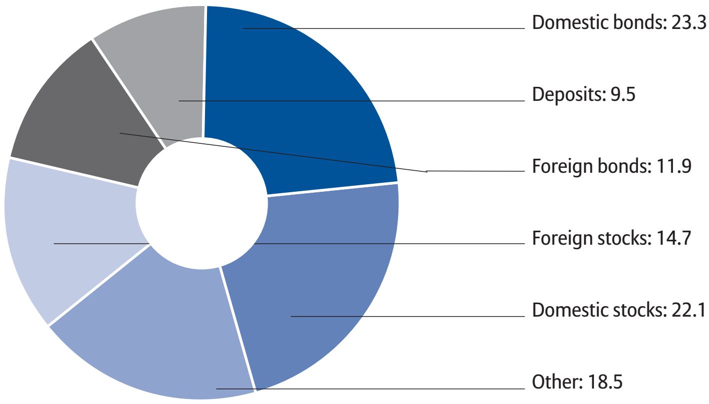
Defined benefit schemes

Defined benefit plans can be of the fund or the contract type; both can be established by one or a group of employers. In the case of the former, plans must be implemented through the establishment of a pension fund, which is an independent legal entity that is completely separate from the sponsoring employer. It is managed by a management committee comprising an equal number of employer and employee representatives, just like Employee Pension Funds. Contract type plans are concluded with banks or life insurance companies. In both cases, the plans must be based on a pension contract between the sponsoring employer(s) and their employees. Among other things, the plans must regulate contribution rates and define benefit qualifying conditions and structures/ formulas. Furthermore, sponsoring employer(s) must obtain the approval of the Ministry of Health, Labour and Welfare. While fund-type plans may manage assets in-house, they tend to outsource to banks or life insurance companies.

If employees have been enrolled in the plan at least three years, they are entitled to a benefit in the form of a lump sum upon termination of employment. If the duration of their membership meets the eligibility criteria stated in plan articles, which should be less than 20 years, they receive deferred pension payments. Benefits may be paid as life annuities or as temporary annuities with a period of at least five years. The benefit level usually depends on the reason for termination of employment. Pensionable age depends on plan rules, but must be no lower than 50 and no higher than 65. There are no legal rules regarding benefit adjustment. If the funding level falls below the required level, the fund (in the case of fund type) or the employers (in the case of contract type) must restore a fully funded position within a certain period. If assets exceed the maximum funding amount, contribution to the plan should be reduced by the excess amount.

Employer contributions for defined benefit plans are tax-deductible without limits.

Asset allocation of defined benefit pension funds 2005 [%]



Source: OECD, Nomura Research Institute

Employee contributions are permitted and are tax-deductible up to a limit of EUR 318 (JPY 50,000) per year. Investment income is taxed (at a rate of 1.173%), but this tax will be frozen until 2009. While a portion of pension benefits is considered taxable income, the level of tax exemption depends on total pension income.

Defined contribution schemes

Defined contribution plans also come in two forms. Corporate defined contribution plans can be established by single employers and must be implemented through a contract with a pension management organisation, such as trust banks, insurers, or fund managers. These institutions must be registered with the Ministry of Health, Labour and Welfare. Each plan must be based on a contract between the sponsoring employer and its employees. The contract with the provider must be approved by the Ministry of Health, Labour and Welfare. Self-employed persons or employees whose employer does not operate an occupational pension plan can conclude a personal defined contribution plan. These plans are managed by the National Pension Fund Association, which is a public body. As is common with defined contribution plans, they are fully portable. If employees switch to a new employer that does not operate a pension plan, they must transfer their accumulated capital to a personal plan at the National Pension Fund Association.

Employee contributions to corporate defined contribution plans are prohibited; employers pay the total contribution. The plan must offer its members a choice among at least three investment options. At least one of these must guarantee the preservation of the principal. Members must have the opportunity to switch every three months. Defined contribution plans vest after three years of employment. The accumulated capital can be withdrawn as a lump sum. The tax deduction possible depends on the number of plans a company operates. If the employer operates only the defined contribution plan, the tax-deductible yearly contribution amounts to EUR 3,514 (JPY 552,000) per employee. If it also sponsors a defined benefit plan, the limit is lowered to half of that sum. The taxation of defined contribution plans is the same as that of defined benefit plans.

According to the Nomura Research Institute, defined contribution plans generally offer more than the required three investment options. 12-14 investment products are usually on offer, and a majority of these are investment trusts and other securities. Most of these products are specifically designed as defined contribution pension funds. Of the total assets in defined contribution plans, 44% are invested in deposits, 19% in insurances, 34% in investment trusts and 3% in other vehicles.

In terms of total assets, the most popular defined contribution investment trusts invest in Japanese equities, followed by Japanese balanced funds, foreign bonds, Japanese bonds and foreign equities. A majority of assets are passively managed.

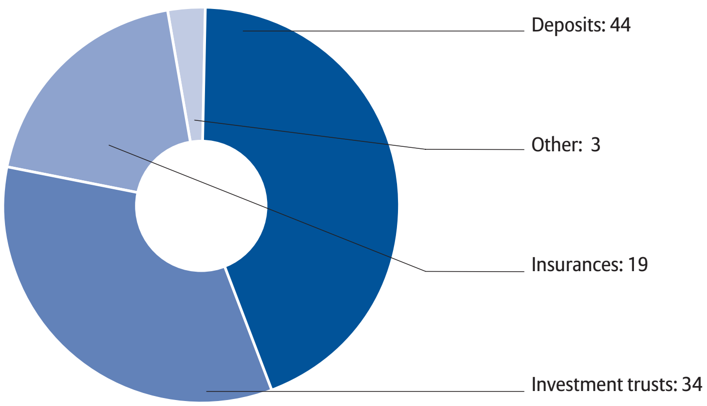
Private Retirement Savings

Private individual pensions have traditionally been dominated by life policies and individual annuities, which have mainly been provided by life insurances or the Postal Life system. Individual life premiums are tax-deductible up to a sum of EUR 318 (JPY 50,000) per year, depending on the level of premiums. Annuities tend not to be of the lifetime type, but rather of the fixed-term type.

Since 2002, the self-employed or employees whose employers do not provide occupational pensions may join National Pension Fund schemes. These are provided by the National Pension Fund Association, which is the administrator. The schemes are individual defined contribution accounts, and products are provided by life insurers, banks and other financial institutions. Contributions are income tax-deductible up to certain limits.

The self-employed may also contribute to other schemes operated by the National Pension Fund Association, which were established in 1991 and include regional or occupational pension funds. Today, there are around 70 such funds in operation. These funds provide higher tax incentives than life insurance plans. Tax exemption amounts to EUR 5,190 (JPY 816,000) rather than the EUR 318 (JPY 50,000) that applies to life insurance. These plans operate on a defined benefit basis.

Asset allocation of defined contribution pension funds 2006 [%]



Source: OECD, Nomura Research Institute

Pension Market Trends

Pension market structure

One driver of Japan's corporate pension market will be the migration of assets from the Tax-Qualified Pension Plan Schemes, which must be terminated by 2012. Another is the acceptance and adoption of the new corporate pension schemes. Currently, Employee Pension Funds account for about 47% of corporate pension assets, while defined benefit plans account for 27%, Tax Qualified Pension Plans for 21%, DC plans for 1.4%, and other plans for 3.6%.

Since many employers decided to return Employee Pension Fund scheme funds that substituted the Employee Pension Insurance and switch to the new corporate schemes, the number of Employee Pension Funds has declined considerably, as have their assets. The same is true for the soon-to-be terminated plans of the Tax-Qualified Pension scheme. In contrast, since they were introduced in 2001, the number of defined contribution plans grew to 1,900 with 1.7 million participants in mid-2006, according to the Normura Research Institute.

The Japanese life insurance market is well-developed. Its total life premium volume is second only to the United States, and it is five times larger than South Korea's market, the second largest in Asia. Its share of the world market amounts to 16%. Premiums per capita amount to EUR 2,145, again the highest value among Asian countries. However, premiums represent 8.3% of GDP, which is lower than the values for Taiwan and South Korea.*

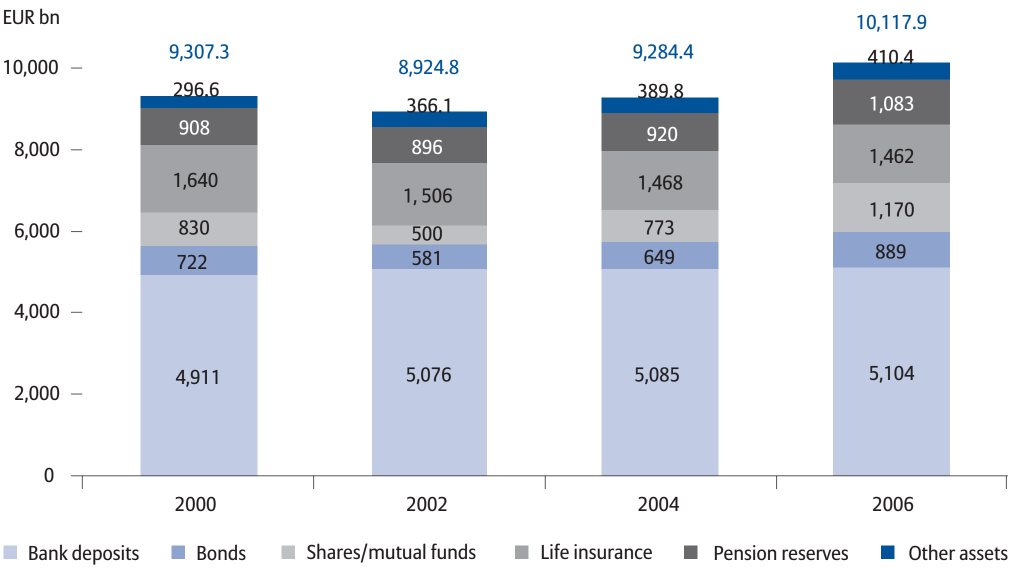
Future pension assets

Total financial assets show that the assets of Japanese households more or less stagnated between 2000 and 2004. Even before this period, asset accumulation slowed down after the stock market and housing bubbles had burst in the late 1980s. This was followed by years of economic stagnation, extremely low yields and crises in neighbouring regions. The situation made a turn for the better in 2005, when financial assets increased considerably due to strong stock market development. In 2006, the financial assets of private households amounted to EUR 10.1 trillion.

Compared with the world's other major regions, Japanese households have a very conservative portfolio structure and invest about 60% of their financial assets in low-risk/low-yield investment products such as bank deposits. This is quite different in other industrialised countries and explains why financial assets increased only slightly in the second half of the 1990s, despite the

Pension Markets

Financial assets in Japan - Private households



Source: Bank of Japan

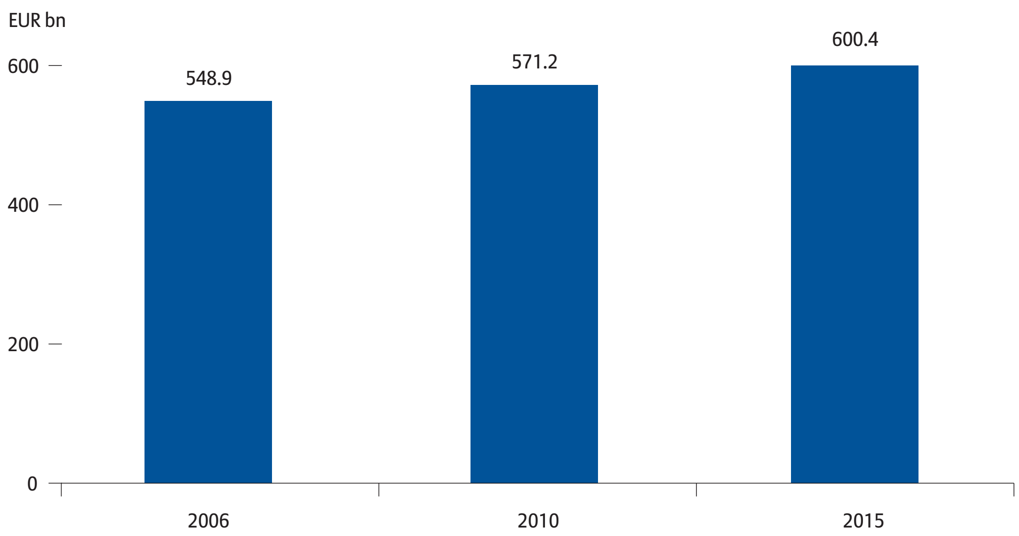
* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

global stock market boom. In Japan, asset accumulation is largely based on savings rather than asset appreciation. Since the savings rate has fallen steadily from a high of around 25% in the 1970s to only 3% in recent years, and because the economy is moving slowly, the growth potential of financial assets is limited. Nevertheless, with a total of EUR 2.55 trillion in pension and insurance reserves, Japan is one of the world's major pension markets.

We expect savings rates to remain low in the projection period, as contributions to the public pillar are set to rise, leaving less room for additional saving by younger people. With slow economic and income growth, savings volumes will barely increase. Financial assets will increase mainly as a result of stock market appreciation. We expect financial assets to reach EUR 10.74 trillion by 2015, representing an annual growth rate of only 0.7%. By then, the pension and insurance sectors will amount to EUR 2.63 trillion, meaning an annual growth rate of a mere 0.4%. The sector is driven by opposite effects: stagnation in insurance reserves due to increasing outflows, a growing demand for retirement products, and a small increase in pension reserves as people are confronted with decreasing levels of public pension provision.

Our pension asset projection focused on the assets in corporate pension schemes: Employee Pension Funds, the Tax-Qualified Pension Plan, and the new DB and DC schemes. The new DB and DC plans are very likely to see substantial growth. However, these plans will substitute other schemes, particularly the Tax-Qualified Pension Plans, which will be closed by the end of 2011. They will also replace portions of Employee Pension Funds, as employers will retransfer the contracted-out part of Employee Pension Insurance and introduce DC plans instead. Clearly, there will be major structural changes within the corporate pension sector, but only a moderate overall build-up of assets. We expect corporate sector pension assets, currently amounting to EUR 548.9 billion, to increase to EUR 600.4 billion by 2015. This equals a CAGR of only 1%.

Japan: Pension assets under management*



* Employee Pension Fund, Tax Qualified Pension Plan, new DB/DC Schemes
Source: Nomura Research, Allianz Dresdner Economic Research

Technical note

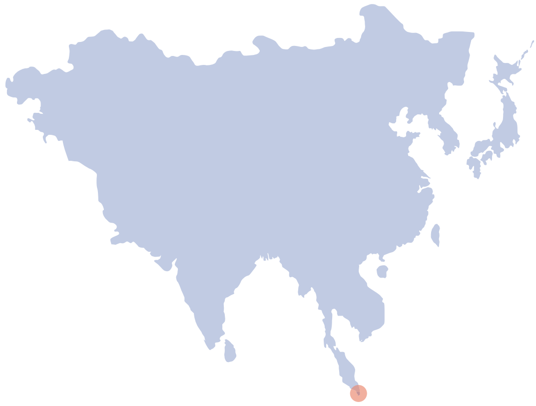
Since pension assets are part of the financial assets of private households, we based our estimate on financial flow statistics reported by the Bank of Japan. These statistics illustrate savings behaviour over a long period of time (this information is not available for other Asian countries). Given that saving is the key determinant of accruals in financial assets, assumptions need to be made about the development of disposable income and savings rates. For disposable income, we assumed an increase in line with nominal GDP growth. The growth forecasts for real GDP and inflation up to 2015 are based on Allianz Group Economic Research projections. Data on savings rates up to 2008 are based on OECD statistics. In light of demographic development, we have assumed that the future savings rate will remain low.

Annual investments are initially divided into the acquisition of financial and non-financial assets. For the purposes of the projection, we assumed a continuation of average behavioural patterns from the past ten years. We have also based inflow allocation to the various financial instruments on the development of the past ten years. Allowances have been made for the likelihood of additional funds being channelled into the new DB/DC schemes to make a small build-up of pension reserves possible. Younger people in particular acknowledge the need for private old-age provisioning. Growth rates from this approach were applied to the corporate pensions segment.

The challenges of ageing in Japan are considerable. It already has one of the oldest populations in the world, if not the oldest. For this reason, pension reforms aim to achieve greater system sustainability. The automatic balancing mechanism for public pensions was inspired by reforms in Sweden, but adjusted to the Japanese environment. It provides a flexible and self-controlling mechanism to adjust to demographic changes. Similarly, the termination of the Tax- Qualified Pension Plan Schemes within the next five years and the introduction of new corporate DB and DC schemes will lead to higher retirement income security, as these measures are a means of coping with underfunding problems.

Given the future decrease in public pensions, it is doubtful that benefits, particularly in the second pillar, will be sufficient to secure an adequate living standard for all Japanese pensioners. Our projection has assumed a growth rate of corporate pension assets of only 1% over the next 8 years, which is by far the lowest value for Asia, and also far lower than the likely development in Europe. While Japan will certainly remain one of the key pension markets in Asia and worldwide, it remains to be seen whether the pension reforms introduced will be sufficient in the medium- and long-term.

Singapore



Relying on one pillar

Pension System Design

Singapore's pension system is one of the oldest and most developed national schemes in Asia. The system rests predominantly on one pillar: the Central Provident Fund, which provides for most social security functions. Social risk pooling and redistribution does not take place, a comprehensive social security system does not exist and individuals rely exclusively on defined contribution funds accumulating in the individual accounts of the Central Provident Fund. In addition, a non-contributory pay-as-you-go pension scheme, otherwise known as the Government Pension Scheme, exists for some categories of civil servants. There is also a Savings and Employees scheme for certain categories of armed forces personnel. The Supplementary Retirement Scheme, a voluntary private pension scheme without employer involvement that enjoys tax advantages, completes Singapore's pension landscape.

One major challenge for Singapore's pension system is that many Singaporeans enter retirement without adequate retirement savings because they make excessive withdrawals prior to retirement. For this reason, there is an increasing need to enhance the adequacy of Central Provident Fund retirement savings. The minimum amounts to be held in accounts destined for retirement rose recently, and will continue to rise until 2013. In addition, the amounts that can be withdrawn for special purposes before retirement will be limited from 2008 onwards. At the end of September 2007, the government announced that three major changes would be made to the Central Provident Fund. These changes aim to improve retirement adequacy by increasing the legal retirement age, paying a higher Central Provident Fund interest rate and introducing a compulsory insurance scheme covering longevity risks. Extending the coverage of the Central Provident Fund to people employed in the informal sector and the self-employed also ranks high on the political agenda and is currently under discussion.

Demographics and macroeconomics	
Population [m]	4.4
Population over 65 [%]	8.5
Old-age dependency ratio*	2005: 12
	2050: 59
GDP [EUR]	104.0 billion
GDP per capita [EUR]	23,737
GDP growth 2001–2006 [av. in % p.a.]	4.0
GDP growth 2007–2015 [av. in % p.a., est.]	5.6
Unemployment rate [%]	3.4

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

Given a low fertility rate and increasing life expectancy, Singapore belongs to the group of Asian countries hardest hit by demographic change. Singapore is set to become one of the oldest countries in the world, meaning that it faces major demographic challenges in the years ahead. The old-age dependency ratio will worsen from 12 today to 59 in 2050. The median age will also soar from 37.5 to 53.7 years by 2050. Given high net immigration rates, the non-resident population in 2006 grew at a rate of 9.7%. Singapore's population is set to continue growing until it peaks in 2035.

In 2006, the CPF had an asset volume of EUR 63.1 billion (SGD 125.8 billion); we expect an annual growth rate of 5.9% until 2015. Assets in the Supplementary Retirement Scheme amounted to EUR 578 million (SGD 1,17 billion); our projections foresee a CAGR of 14.8%.

Public Pensions: The Central Provident Fund

Institutional framework

The Central Provident Fund (CPF) is the statutory authority that administers Singapore's public pension system. Established in 1955 by the British colonial administration, the CPF was intended to provide retirement income security for private-sector employees. With continuous amendments over the past five decades, it has developed into a multi-purpose fund consisting of a variety of different schemes. The major schemes under the CPF other than for retirement purposes include healthcare, home ownership and insurance schemes for family protection. It also comprises an asset enhancement scheme that allocates a portion of accumulated assets to products offered by external financial institutions.

In contrast to the majority of other publicly managed pension schemes, the Singaporean system operates on a fully funded basis. The CPF does not include social risk pooling and redistributive elements. Individuals rely exclusively on defined contribution funds accumulating in individual accounts. The CPF covers private and most public sector employees as well as the self-employed, who may join on a voluntary basis.

In recent decades, total membership in the fund has nearly tripled. At the end of 2006, it had over 3.1 million members with assets amounting to EUR 63.1 billion (SGD 125.8 billion). In relative terms, CPF assets account for 60% of GDP. The balance of the CPF has shown a steady growth rate of 20.6% p.a. since its inception in 1955, which can partially be attributed to increasing contribution rates.

The CPF is managed by a tripartite board of government, employee, employer and industry representatives that is appointed by ministers. The CPF is responsible for the custody of funds and for administering the programme. However, it does not have any investment responsibilities.

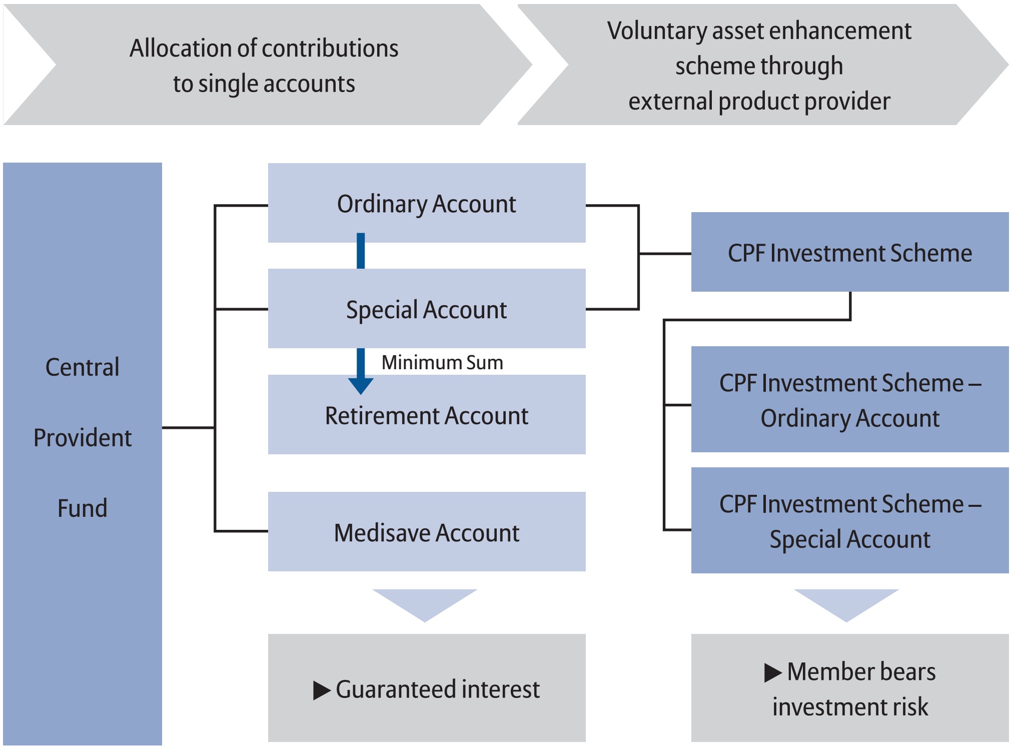
The scheme operates on a fully funded basis and is financed by employer and employee contributions that are credited to three accounts. Employees with monthly earnings above EUR 247 (SGD 500) are obliged to contribute to their CPF accounts. A lower limit applies to employers, who must pay CPF contributions for employees whose monthly wages exceed EUR 25 (SGD 50). Monthly contributions are capped at a salary ceiling of EUR 2,224 (SGD 4,500). The share contributed to the different accounts varies depending on the employee age structure. The lion's share is distributed to the Ordinary Account.

- Ordinary Account (OA)
  Savings from contributions accumulated in the Ordinary Account may be used to buy residential and non-residential property as well as approved assets and insurance funds. The account balance can also be used to cover education costs and can be redirected to affiliated accounts.
- Special Account (SA)
  Contributions directed to the Special Account are dedicated to old age, contingency purposes and investment in retirement-related financial products.
- Medisave Account
  Medisave Account savings are used to meet hospitalisation and medical care expenses and to pay for approved medical insurance premiums.

From the age of 55 onwards, CPF members have an additional Retirement Account. From 2012 to 2018, retirement age will gradually increase to 65 years. The Retirement Account is used to set aside a statutory Minimum Sum, which must be held for the exclusive purpose of retirement. Currently, the Minimum Sum amounts to EUR 49,232 (SGD 99,600) and will be increased continuously to EUR 59,316 (SGD 120,000) by 2013. The required amount from this point on will be indexed to inflation. 50% of assets must be held in cash, while the remaining can be pledged with a property. The Minimum Sum is taken from the Special and/or Ordinary Account balances. Any balances in excess of the Minimum Sum may be withdrawn from age 55 onwards, once the required amount of EUR 5,684 (SGD 11,500) has been set aside in the Medisave Account. Excess balances may be withdrawn annually. In line with the increase of the Minimum Sum the Minimum Amount required in the Medisave Account will increase to EUR 12,358 (SGD 25,000) by 2013 to enhance the adequacy of savings for medical expenses during retirement.

Since the housing crisis in Singapore in the 1960s, the state has been involved in improving the population's housing situation. Homeownership plays an important role in Singapore, with over 90% of the population owning the homes they live in. In order to finance property purchases or pay monthly housing loan instalments, CPF members may use their

Overview of Central Provident Fund Accounts



CPF contribution rates for 2007*

Age group	Employer contribution [%]	Employee contribution [%]	Total [%]
35 years & below	14.5	20	34.5
35–45 years	14.5	20	34.5
45–50 years	14.5	20	34.5
50–55 years	10.5	18	28.5
55–60 years	7.5	12.5	20
60–65 years	5	7.5	12.5
Over 65 years	5	5	10

Source: OECD

* Applicable to employees who are Singapore citizens or permanent residents with monthly earnings exceeding EUR 742 (SGD 1,500). Those with earnings of EUR 742 (SGD 1,500) and lower pay reduced rates to increase their take-home pay.

Ordinary Account balances. The basic idea is that owning a house provides financial security in retirement. However, in the past, withdrawals for property purchases far exceeded 100% of the original price of the property. In order to safeguard retirement savings, the amount that can be withdrawn for property purposes has been reduced.

For the majority of the workforce, total contributions to the three accounts amount to 34.5% of total wages, of which 14.5% are made by the employer and 20% by the employee. Effective from July 2007, the employer contribution rate was increased by 1.5 percentage points. From the age of 50, contribution rates decrease to encourage the employment of older people.

While contributions are split between the different accounts, the Ordinary Account attracts the bulk, especially for younger people. For employees younger than 35, 23% of the 34.5% contributions are paid into the Ordinary Account. The rate decreases as employees get older, with people over 65 contributing less than 1%. In contrast, the share directed into the Medisave Account is between 6.5% and 9%, increasing as people get older and have more medical costs. Employees up to the age of 55 accumulate assets in their Special Account with contributions between 5% and 7%, depending on their age.

In line with the CPF Act, savings accumulating in the three different accounts earn a guaranteed minimum interest rate of 2.5%. The interest rate is adjusted quarterly and is calculated based on a weighting of 80% on 12-month fixed deposit rates and 20% on the savings rates of the major local banks. The Special Account, Medisave and Retirement Account are credited an additional 1.5 percentage points above the effective OA interest rate of 2.5%. For the period of July 2007 to September 2007, the CPF Board continued to pay interest at a rate of 2.5% per annum for savings in the Ordinary Account and 4% for the Special, Medisave and Retirement Accounts. The guaranteed minimum interest rates apply if the 12-month fixed deposit rates and the savings rates of the major local banks are lower.

The CPF interest rate framework will be modified from January 2008. To improve the return on CPF savings, the CPF Board will pay an additional 1% interest rate subject to a cap of EUR 29,700 (SGD 60,000) of a member's combined balances, of which no more than EUR 9,900 (SGD 20,000) of the Ordinary Account is taken into account. The interest rate applicable to savings in the Special, Medisave and Retirement Accounts will be related to the yield of 10-year Singapore Government Securities plus 1%. The rate will float in the same manner as bond yields. The guaranteed floor of 4% currently applicable will be retained for the first two years. From 2010 onwards, the lower guaranteed rate of 2.5% will apply to all accounts.

The Singapore Government Investment Corporation (GIC) is the body responsible for investing the scheme's assets. The vast majority of capital in Ordinary and Special Accounts is held in CPF guaranteed accounts, which must be invested in non-marketable government floating rate bonds, issued primarily to the CPF. At the end of 2006, EUR 53.4 billion (SGD 108 billion) were invested in the specially issued Singapore Government securities. Assets outside the guaranteed accounts are invested through the CPF Investment Scheme.

CPF Investment Scheme

Members who wish to manage and enhance their CPF savings and returns can do so through the CPF Investment Scheme (CPFIS), which provides CPF members with more choices in investing their savings. All members who are at least 21 years of age are eligible to participate. The CPF Investment Scheme comprises the CPFIS – Ordinary Account and the CPFIS – Special Account, into which members may invest the full balance of their Ordinary and Special Accounts. From April 2008, restrictions will apply to the CPF investment scheme. The first EUR 9,900 (SGD 20,000) from the Ordinary and Special Accounts combined will no longer to be used for the CPF Investment Scheme. Money already invested will not be affected. This measure will reduce assets available for investment in externally managed products to approximately EUR 20.8 billion (SGD 42 billion).

Investment regulations

Under the two schemes, a broad range of financial instruments is available for investments. Full account balances can be invested in fixed deposits, government bonds, annuities and endowment insurance policies, investment-linked insurance products as well as unit trust and Exchange Traded Funds, among others. Some restrictions apply to assets from the Special Account, as only selected investment-linked products, unit trusts and ETFs are available for investment. Restricted only for savings in the CPFIS Ordinary Account, a limit of 35% applies to the following asset classes:

- Shares
- Property funds or real estate investment funds
- Corporate bonds

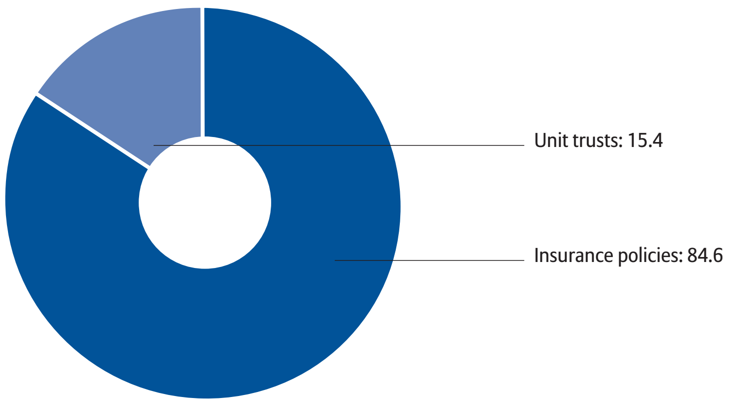
An additional 10% of investable savings in the OA can be invested in gold, gold ETFs and other gold products. All investments must be made in Singapore Dollars.

The asset management of the CPF Investment Scheme is outsourced to external service providers. Since its introduction in 1997, EUR 15.6 billion (SGD 31.6 billion), or 24.5% of total CPF assets, have been transferred to the CPF Investment Scheme. Of this amount, EUR 12.8 billion (SGD 25.9 billion) have been invested in the CPF Investment Scheme - Ordinary Account and the remaining EUR 2.8 billion (SGD 5.7 billion) in the CPF Investment Scheme - Special Account. The bulk of assets lies with insurance policies.

Pension benefits and taxation

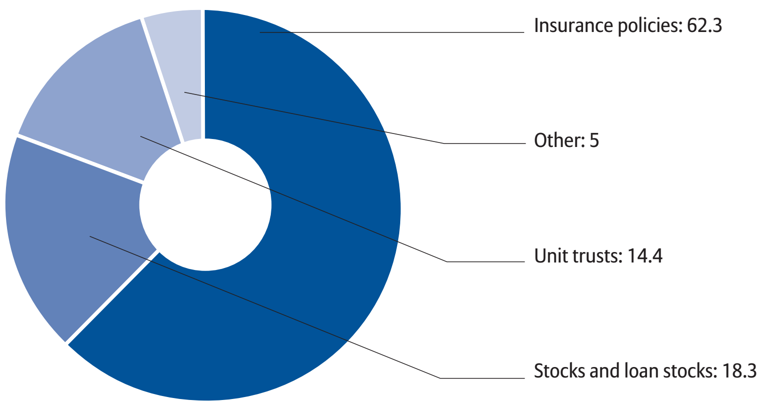
From the age of 62, CPF members may claim their pension. Beneficiaries are free to buy a life annuity, place their assets with a participating bank as a fixed deposit or leave it in their Retirement Account to earn interest. If they do not choose one of these

Asset allocation of CPFIS-SA as of March 2007 [%]



Source: CPF Board, 2007

Asset allocation of CPFIS-OA as of March 2007 [%]



Source: CPF Board, 2007

options, the default option applies, through which the beneficiary will receive payments for a period of 20 years.

The government plans to implement a National Longevity Insurance Scheme with compulsory longevity insurance under the umbrella of the CPF. As life expectancy rises, beneficiaries run the risk of running out of savings. Annuities aim to secure lifelong income. Beneficiaries will have to take a part of their Minimum Sum to buy a deferred longevity insurance at age 55, which will become payable when the beneficiary gets 85. For the first time, the new scheme contains a risk-pooling element, as premiums are combined in a common pool. While the National Longevity Insurance Scheme has been drafted, an implementation date has not yet been determined. The government still has to work out the detailed scheme in collaboration with industry representatives.

Mandatory CPF contributions are tax-exempt for both the employer and employee. The same applies to pre-retirement and retirement withdrawals from the accounts. The EEE taxation system applies. Both the employer and employee may voluntarily contribute to the CPF, but these contributions are not subject to tax breaks.

Other public schemes

There are two other special public pension schemes covering certain categories of government employees: the Government Pension Scheme for public sector employees and the Savings and Employees Scheme for certain categories of armed forces personnel. The number of public servants covered by the Government Pension Scheme has declined substantially in recent decades. This has mainly been due to the tightening of eligibility criteria, which shifted most civil servants to the CPF framework. At present, only a few public services and political appointees are covered by this scheme.

Private Retirement Savings

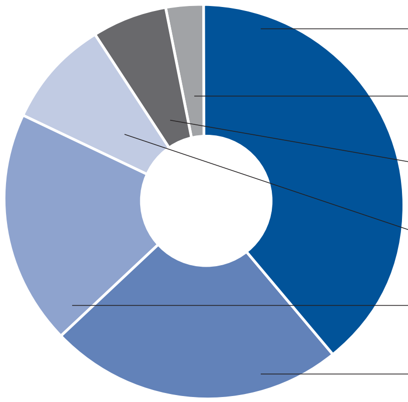
In addition to the CPF scheme, a voluntary pension system called the Supplementary Retirement Scheme (SRS) was introduced in 2001. The scheme is operated by three local banks and participation is voluntary. In addition to the SRS operators, financial institutions may act as SRS product providers, provided that they are licensed by the Monetary Authority of Singapore (MAS). Once approved by the MAS, the product provider may offer a wide range of financial products such as shares, ETFs, unit trust, fixed deposits, insurance policies as well as corporate and government bonds. Investment in direct property and certain insurance products is prohibited.

Individuals may voluntarily contribute to the SRS up to a contribution cap. They may open one account only at one of the three SRS operators. For Singaporeans and permanent residents of Singapore, the contribution ceiling is set at EUR 5,672 (SGD 11,475). For foreigners (expatriate employees), the limit was EUR 13,235 (SGD 26,775) in 2007. The higher contribution ceiling for non-permanent residents serves as a substitute for those who were not granted the favourable tax treatment under the CPF scheme. Contributions to the SRS enjoy tax relief. Employers are not permitted to contribute to their employees' SRS accounts.

There are no specific regulations in force with regard to member protection and member rights. Accumulated savings are not protected against losses in the event of market fluctuations, or if the product provider goes bankrupt. In addition, products in the SRS do not have to provide a guaranteed return.

Upon retirement, SRS members are free to withdraw accumulated savings in a lump sum, spread withdrawals over a period of ten years after reaching the statutory retirement age, or receive a lifetime annuity. While SRS balances can be withdrawn at any time, they only receive favourable tax treatment once the statutory retirement age has been reached. At this point, only 50% of the money withdrawn is subject to individual income tax. Otherwise, a penalty tax of 5% applies and the entire amount is taxed. Contributions up to the mentioned ceilings are eligible for tax relief. Any excess contributions are charged with a penalty tax. Investment gains accrue tax-free in the

Composition of SRS accounts 2006 [%]



Source: MoF

SRS. Only Singaporian dividends are taxable income for the employee.

Since its inception, the SRS has grown fast given its short history and voluntary nature. At the end of 2006, assets amounted to EUR 578 million (SGD 1.17 billion) compared with EUR 77.6 million (SGD 157 million) in 2001. The asset allocation of SRS portfolios is quite conservative, as the lion's share is invested in insurance policies, followed by a large allocation to cash.

Pension Market Trends

Pension market structure

The Central Provident is meant to cover all of the population's retirement provision needs. Additional retirement-related savings are therefore low. Irrespective of high growth rates since its inception, the assets of the Supplementary Retirement Scheme as a share of GDP remain low, with a share of 0.5%. Business for external financial service providers predominantly arises from the management of assets in the Central Provident Fund Investment Scheme.

There are currently 50 financial institutions involved in managing assets worth EUR 15.6 billion (SGD 31.6 billion). These can be grouped into 5 categories: banks, insurance companies, investment administrators, fund management companies and local representatives of recognised funds. A large portion of CPF Investment Scheme assets has been allocated to insurance policies, illustrating the popularity of less risky products that provide some protection in the event of death. Around 66% of the two schemes' assets have been invested in insurance products.

Among the nine Asian countries covered in this study, Singapore ranks 8th in terms of total life premium volumes in 2006. Globally, the country ranks 28th. In terms of life insurance density, Singapore has a value of EUR 1,225 in premiums per capita, which puts the country in 5th place in Asia. Japan, the biggest Asian market, has EUR 2,144 per capita volumes. In relative terms, life insurance premiums amounted to 5.4% of GDP in 2006. Taiwan is the leading nation in this area, with life insurance penetration of 11.6%.*

Future pension assets

Due to the multi-purpose character of the CPF, it is very difficult to clearly identify the pension assets in this system. In all, the CPF had total assets of EUR 63.1 billion (SGD 125.8 billion) at the end of 2006. 25% of these assets are in the CPFIS scheme, which allows investment choice. Hence, only a comparatively small proportion of funds is channelled into investment products other than government securities.

Since the CPF is a mature scheme, market growth cannot be generated by increasing participation rates. Our projection took

* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

Singapore's rapidly aging workforce into account. We assumed that older employees will not fully participate in income increases, which are assumed to grow parallel to GDP. Contribution rates are supposed to stay constant throughout the projection period, so that an increase in income will be reflected by an increase in contributions. Furthermore, the CPF operates a very conservative investment strategy; shares account for 6% of total investments. We expect that assets in the CPF system will grow at 5.9% per year, resulting in an asset volume of EUR 105.5 billion in 2015.

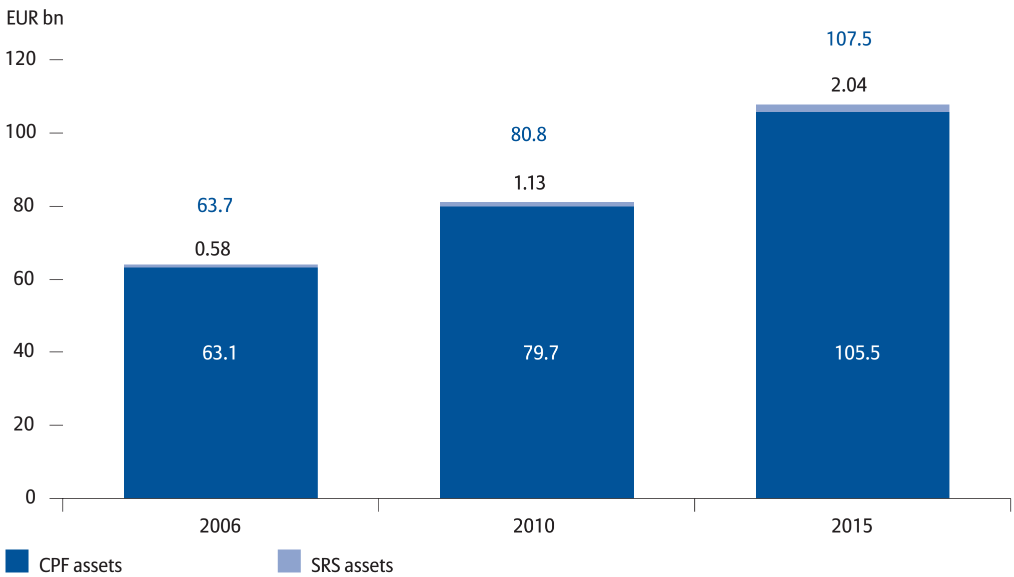
The SRS scheme is particularly appealing to higher income earners. Participation is modest and stood at 35,760 at the end of 2006, while assets amounted to EUR 578 million (SGD 1.17 billion). Contributions of 15% of the income ceiling of EUR 37,814 (SGD 76,500) can be made, and this amount is tax-exempt. As participation spreads from the upper income classes to the lower ones, average contributions will decrease, even if all contributors fully exploit the tax advantage. There is no indication that the SRS participation rate will pick up quickly. For this reason, we have assumed a slow increase in membership of 2.5% a year and an increase in the income ceiling to EUR 39,544 (SGD 80,000) by 2015. This scenario indicates a slow further up-take, with flows increasing only by around 2% and assets amounting to EUR 2.04 billion by 2015 with a CAGR of 14.8%.

By the end of the projection period, we expect CPF and SRS assets to reach EUR 107.5 billion (SGD 214.4 billion) with an annual growth rate of 6%. However, we must bear in mind that most CPF assets are not exclusively assigned to retirement.

With its exclusive reliance on fully funded accounts in the Central Provident Fund, complemented by voluntary retirement savings, Singapore's pension system is quite unique in Asia. It is a mature system that is "demography-safe" because it is fully funded. Given Singapore's likely demographic development, this is very important. The absence of a social security system means that individual responsibility plays a major role.

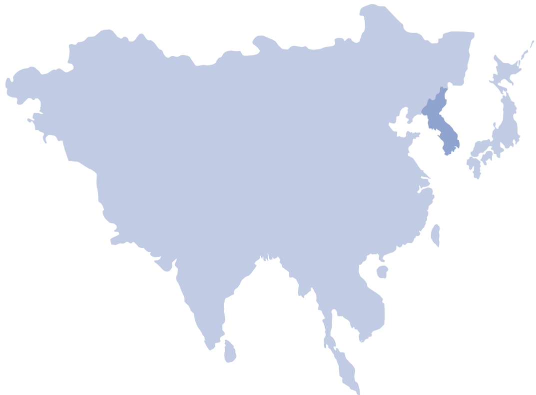
The main challenge for pension policy is to make sure that not too much capital is withdrawn before retirement, which is often the case. Recent reforms that have increased the minimum amount to be left in the accounts are a step in the right direction, while the plans for a National Longevity Insurance Scheme intend to prevent retirees from running out of money. These reforms have the potential to remedy the weaknesses arising from the multi-purpose character of the Central Provident Fund, which is an otherwise consistent system.

Singapore: Pension assets under management



Source: CPF statistics, Department of Statistics, Ministryof Finance, Allianz Dresdner Economic Research

South Korea



Modernising occupational pensions

Pension System Design

South Korea's pension system has taken shape in the last two decades. In 1988, the state-run National Pension System was established, covering workers in the private sector. Before it was introduced, public pensions covered only government employees, private school teachers and military personnel, and these schemes still exist today. Traditionally, employees in the private sector have been covered by the severance pay system, which has been mandatory for firms with more than four employees since 1961. It provides employees with certain entitlements when they leave the company. In 2005, the legislative foundations were laid to transform the severance pay system into a funded corporate pension system. The new corporate pension system is currently in the start-up phase. Tax-favoured private pension plans have been available in South Korea since 1994.

Apart from the reform of the corporate pension system, the National Pension System is also undergoing reforms. 2008 will see the introduction of a basic pension pillar, which will aim to provide means-tested retirement benefits to combat poverty among the elderly. Contribution rates are also set to rise.

South Korea faces one of the most severe demographic challenges in the world. Today's dependency ratio stands at 13. It is expected to rise to 64 by 2050. The total population is expected to peak at around 50 million in 2020 and decline by about 15% until mid-century. The dependency ratio in South Korea is changing faster than in any other OECD country. While the proportion of elderly people is currently the second lowest in the OECD, it will be among the highest by 2050. This demographic pattern can mainly be explained by the fact that South Korea has rapidly transformed from an agricultural to an industrial and urban society. In the 1960s, 28% of the population lived in urban areas. In 2005, that figure had risen to slightly over 80%. This transformation had a noticeable impact on fertility. From the 1960s to 2005, Korea's fertility rate dropped from 6.0 to 1.2. The current fertility rate is far below the rate of 2.1 children per woman required to maintain the population. It is also the lowest in the OECD. During the same period, life expectancy increased from 55 years in 1960 to 77 years in 2006.

In 2006, assets in the new corporate pension system amounted to EUR 631 million in 2006, and we expect a CAGR of 70% until 2015. According to our estimates, private pension plans, the assets of which currently amount

Demographics and macroeconomics	
Population [m]	48
Population over 65 [%]	9.4
Old-age dependency ratio*	2005: 13
	2050: 64
GDP [EUR]	692.4 billion
GDP per capita [EUR]	14,410
GDP growth 2001–2006 [av. in % p.a.]	4.6
GDP growth 2007–2015 [av. in % p.a., est.]	4.6
Unemployment rate [%]	3.5

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

to EUR 30.4 billion, will show a CAGR of 16.8% during the same period.

Public Pensions

Korea's elderly were traditionally supported by their children. According to the World Bank, even in 1990, average Koreans over 60 received 55% of their income from their children. Public and private pensions accounted for roughly 3%, while the rest was wage income. However, due to industrialisation and demographic development, the system of family support is becoming less common and formal systems have been established. These will cover the bulk of retirees in the medium-term.

National Pension System

The National Pension System (NPS), established in 1988, is a partially funded, defined-benefit system. Its coverage has been gradually expanded. Initially, the scheme covered all workers in firms with 10 employees or more. In 1992, it was extended to firms with 5 or more employees. From 1995 onwards, it covered fishermen, farmers and the rural self-employed. Finally, in 1999, the urban self-employed were included in the system. These steps made a steep increase in coverage possible, from 4.4 million people in 1988 to 12.8 million people in 2006. This means that 53% of the labour force is now covered by the NPS, a high coverage rate compared to many other Asian countries. Groups that are not in the system include many self-employed as well as low-income people, temporary and daily workers as well as self-employed workers who do not declare income.

Employers and employees contribute 4.5% of wages each. The benefit formula consists of basic and earnings-related portions. The system is progressive and applies an average accrual rate of 1.5% over a 40-year contribution period. This aims at a gross replacement rate of 60% of lifetime average income for persons with a 40-year work history; initially, a 70% replacement rate was targeted. Benefits are paid mainly in the form of an annuity, which is indexed to prices, with the full pension available at age 60. The retirement age will rise to 65 by 2033. The increase in retirement age was part of a

First pillar design	
Contribution rate [% of gross salary]	Employers: 4.5 Employees: 4.5
Gross replacement rate	58.5
Legal retirement age	60

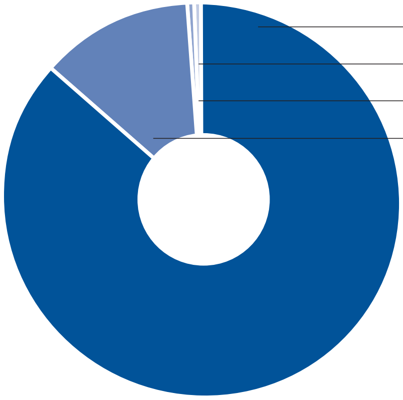
1998 reform package that also lowered accrual rates, thereby decreasing replacement rates. The reform was drafted by the National Pension Reform Board, which was established to avert the foreseeable NPS financial crisis. Full NPS pension payments will begin in 2008, when the first participants have completed the minimum 20 years of contributions.

The debate about further NPS reforms has been ongoing. In 2003, a bill was introduced in Parliament that aimed to reduce the replacement rate from 60% to 50% and suggested that the contribution rate be increased to 15.9% by 2030. However, this bill was not accepted. In July 2007, a compromise proposal was passed in the National Assembly, which foresees that the contribution rate remains at 9%, while the replacement rate will be reduced to 50% in 2008 and then decrease by 0.5% each year until it reaches 40% in 2028.

Another reform concerns the introduction of a basic pension pillar in 2008, which will initally cover 60% of retirees with benefits equal to 5% of average wages. This benefit is meant to combat old-age poverty in South Korea. Although not decided at this stage, in the future this pillar will probably aim to provide universal benefits to all retirees with a projected replacement rate of 20%. The financing details of this new scheme have not yet been finalised. However, to achieve the extra 20% replacement rate, there must be contributions on top of the NPS.

Since payments have not yet begun, assets accumulated in the NPS have grown substantially since its inception. In 2006, assets amounted to EUR 142 billion (KRW 172 trillion). This makes the NPS one of the largest pension funds in the world. The NPS' investment policy has gradually changed in the last few years. While a sizable portion of

Asset allocation of NPS investment in the financial sector 2005 [%]



Source: OECD, National Pension Research Institute, Financial Supervisory Authority

assets was traditionally invested in government projects such as railroad and rural infrastructure, financial market investments now account for the overwhelming majority of assets.

99.6% of NPS funds are currently invested in the financial sector, 0.2% in the welfare sector and another 0.2% in the public sector. 86.6% of these assets are invested in bonds, 12.5% in equities, 0.5% in alternatives and 0.4% in cash.

7.3% of assets were invested in foreign bonds, 0.4% in international equities. Outsourcing of NPS assets has accelerated in recent years. For example, in 2005, 3.1% of domestic bond management was outsourced, as was 5.8% of domestic equities management. The corresponding values for 2003 were 0% and 3.5%.

Despite its current surpluses, the NPS will face serious financing difficulties in the long-term due to South Korea's demographics. Under current parameters, the fund's surplus will be exhausted by 2047.

Other public schemes

Apart from the NPS, South Korea runs additional pension schemes for public sector employees, which were introduced before the NPS and operate independently from it. In all, they cover 1.4 million employees, or 6% of the workforce. The Government Employees Pension System was established in 1960; the Military Personnel Pension System was introduced in 1963; and the Private School Teachers Pension System came into force in 1975.

These schemes operate according to the pay-as-you-go principle and are earnings-related. At 17%, contributions are higher than in the NPS, and are equally shared between the government and employees. At around 70% after 30 years of contributions, replacement rates are generous. However, all three schemes are either already facing financial hardship, or will in the future. The scheme for government employees generated a deficit for the first time in 1995, and this deficit is expected to grow substantially in coming years. The scheme for teachers is in better financial shape, but is expected to generate a deficit by the mid-2020s. The scheme for military personnel has been dependent on substantial direct government support since the mid-1970s, since contribution periods are much shorter for the military than for other sectors due to very early retirement. Total government subsidies currently amount to EUR 1.2 billion (KRW 1.5 trillion) and are expected to increase substantially.

Occupational Pensions

South Korea has two occupational systems that exist alongside each other. One is the severance pay system, which was introduced in 1961. In order to build a modern corporate pension system, the government drafted a severance pay reform plan in 2003, which was approved by the National Assembly in 2005. This reform aims to convert the severance pay system into a modern corporate pension system.

The severance pay system

Until recently, the severance pay system was the main pension scheme for private sector employees, and it is mandatory for companies with five or more employees. Contributions are made by employers only, who contribute 8.3% of wages. Employees are entitled to severance pay after one year of continuous employment. When they leave the company, they receive one month's pay for every year completed, regardless of the reason why they are leaving. Payment is based on the salary of the employee's final three months of employment. For certain types of acquisitions, such as property, accumulated severance may be paid while workers are still employed. For this reason, only around 50% of severance payments are actually saved. Companies running severance pay schemes may qualify for tax benefits of up to 30% in the case of internal reserves and 100% in the case of external funding. Investment income is tax-exempt, while benefits are taxed; benefit taxation differs for annuities and lump sums.

A shortcoming of the system is that it is mandatory for firms with five or more employees only, and such companies account for less than half of the total workforce. Additionally, around a quarter of those entitled to severance pay do not receive it because of their employers' financial difficulties. Employers have traditionally financed severance payments through book reserves, as advance funding is not required. A 1997 reform made it easier for financial assets to be managed internally or externally though insurance companies. If employers decide to fully or partially fund severance payments, they use insurance or trust-based contracts. However, most plans continue to be based on unfunded book reserves. According to estimates, 75% of severance pay liabilities are unfunded. Benefits are typically paid out as lump sums, but annuitisation is possible. Due to the severance pay system's shortcomings, particularly in terms of funding, and because of incomplete coverage, the scheme could not be classified as a genuine pension system. This is why the government attempted to modernise the system with a reform that introduced corporate pension plans.

The new corporate pension system

The new system, which is based on the Employee Retirement Security Act (ERSA), operates on a voluntary basis. Companies with five or more employees can convert severance pay into corporate pensions. This conversion needs to be based on an agreement between employers and employees, and at least 50% of a company's employees must agree to the conversion. Unlike in the severance pay system, from 2010 onwards enterprises with less than five employees will also be allowed to participate in the new system. Part-time employees are also meant be covered by it. Employees can contribute voluntarily.

The new system allows both DB and DC plans. Plan sponsors and members are free to choose the plan they want. Much like the existing severance pay system, DB plans must provide a minimum benefit equivalent to one month's final salary per year of service. They must also have a vesting period of 10 years. DB funds must be managed by a separate trust, which can either be a bank, insurance or trust company. In the case of DC plans, employers must make contributions of at least 1/12 of total annual salary. Additional employee contributions are also possible.

DB plans require funding of 60% of accrued termination benefits, while DC plans must be 100% funded. Employers with less than 30 employees are allowed to offer Individual Retirement Accounts (IRA) instead of occupational schemes. These accounts are subject to the same regulatory treatment as the DC schemes. Sponsors must provide at least three investment options in DC plans and Individual Retirement Accounts, including one with an interest guarantee. Benefits are payable in the form of annuities from age 55, based on number of years of service.

Both plans are subject to investment regulations that are based on Financial Supervisory Service guidelines. More flexible guidelines are under consideration, as DC regulation is currently markedly strict. Both DB and DC schemes can invest without limit in government and investment grade bonds as well as in bond

Asset investment regulations of the New Corporate Pension System [% of assets]		
	DB plans	DC plans and IRAs
Domestic or foreign listed equities, equity funds	30	Not allowed
Subordinated bonds, stock-indexed equity (max loss 40%)	30	Not allowed
Mixed funds (with 40 to 60% equities)	40	Not allowed
Non-investment grade bonds	40	Not allowed
Funds with more than 50% investments in foreign bonds	40	30
Investment-grade bonds of OECD countries	40	30

funds. The main quantitative limits are shown in the table above.

Upon termination of the employment contract, employees can either receive a lump-sum payment, transfer their assets to another ERSA plan or roll it over to an IRA. The minimum benefit of one month's salary for each year of service is always fully vested. Benefits can be paid out in the form of annuities or lump sums if the employee retires at age 55 and has at least 10 years of service. If the employee does not meet these requirements, the accumulated benefits must be transferred to an Individual Retirement Account.

A new tax law became effective on January 1, 2006. The limit allowing employees to have tax relief benefits for their personal saving plans, including ERSA plans, increased from EUR 1,984 (KRW 2.4 million) to EUR 2,480 (KRW 3.0 million). The amount of annuity income that can be deducted from taxes increased from EUR 4,961 (KRW 6 million) to EUR 7,441 (KRW 9 million) per year. Employer contributions to an ERSA DB or DC plan and investment income are tax-deductible, while pension payments are subject to taxation. Hence, taxation in the occupational pillar follows the EET principle.

So far, the take-up of the new corporate schemes has been slow. As of December 2006, 16,000 companies (3.5% of all companies), had introduced the new plans. It was expected that DB plans would initially dominate, as employees and trade unions are more familiar with DB schemes. Trade unions were also assumed to prefer that the sponsor bears the investment risk. Survey research shows that this holds true, at least among large companies. Out of the 59 largest companies in Korea that are implementing the new system, 75% chose a DB scheme.

Private Retirement Savings

Private personal pension plans have been available in Korea since 1994 and have grown substantially since then. Personal pension plans are various types of personal annuities and can either be tax-exempt or non-tax exempt. Savings are tax-exempt up to a limit of EUR 2,480 (KRW 3 million). A lower tax rate on additional annuity income is available under certain conditions, which include a holding period until the age of 55, annuity payments of at least 5 years and a contribution period of at least 10 years. Given that these plans provided attractive returns even without tax exemptions, many investors choose to terminate their plans prematurely. For this reason, they are often seen more as a financial investment than as old-age provision. According to estimates, private pension plans covered roughly 15% of employees at the end of 2005, and the average contribution is said to lie between 2% and 5% of salary. Taxation is of the EET type.

Pension Market Trends

Pension market structure

To participate in the pension market, providers must be authorised by the Financial Supervisory Service. At present, 47 companies have this authorisation. The new corporate pension market is fairly concentrated. In 2006, the three biggest players had a market share of 48%, and the biggest five held 66% of the market. Insurance companies accounted for 58% of the corporate pension market, banks held 33% and securities houses 9%. In terms of assets under management, defined benefit plans accounted for 57% of the market, defined contribution plans for 28% and Individual Retirement Accounts for 15%.

South Korea adopted International Financial Reporting Standards in 2007, which could make DC schemes more popular. From 2011 onwards, listed companies will be obliged to apply the IFRS standard, while other companies will have to do so two years later. The adoption of IAS 19 in particular implies that shortfalls must be recognised immediately on the company's balance sheet, which may imply higher pension expenses and a higher volatility at most companies with unfunded pension schemes. Such standards have also driven the adoption of DC schemes in the Western world.

While personal pension plans are mainly provided by insurance companies, banks and asset management companies are also active in the market. The predominance of insurance companies can be explained by their long involvement in this market, their strong distribution channels and the fact that the market was opened to other financial institutions later. Additionally, banks and asset management companies provide only tax-exempt and temporary life annuities, whereas insurers also offer lifelong and variable annuities. A new development is the growing popularity of bankassurance, which was introduced in 2003.

At 7.9% of GDP, life insurance density in South Korea is the fourth highest in the world; the country accounts for 3.3% of the world life insurance market.* Domestic life insurers make up the bulk of the market; the three biggest insurers account for 64% of premiums written and for 75% of total assets. Foreign companies account for a total of 18% of written premiums and 12% of total assets.

Future pension assets

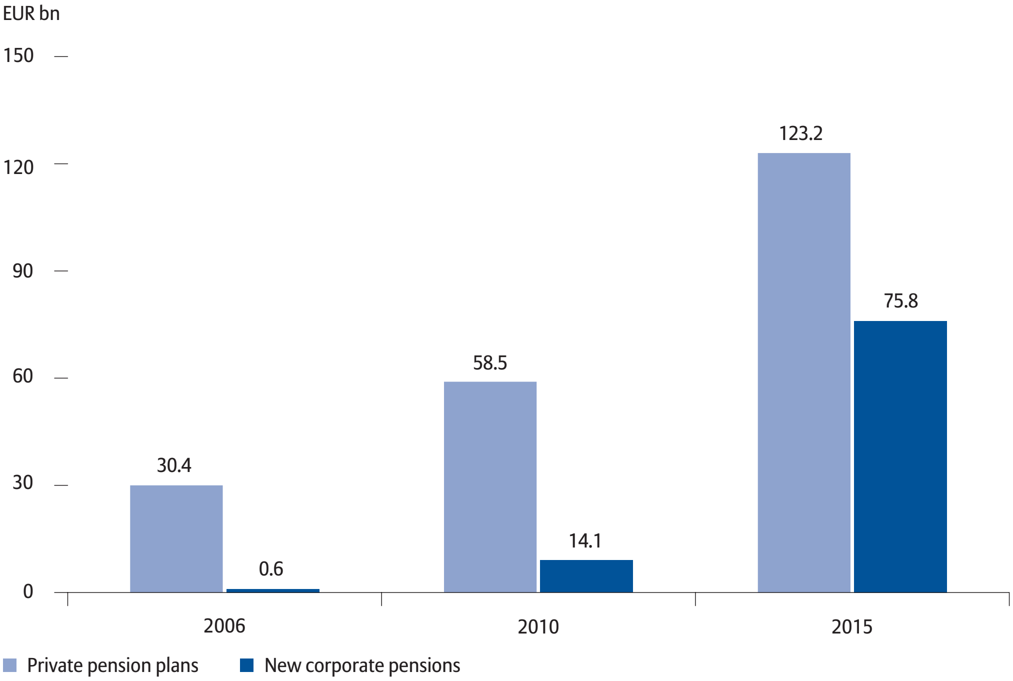
Initial experience has shown that the implementation of the new corporate pension programme is more difficult than originally expected. Nevertheless, participation grew at a rate of 17% per month during the second half of 2006, and assets increased by 30% per month. By the end of 2006, 213,000 people had joined the new schemes and assets stood at EUR 631 million.

Because of the slower than expected take-up, we have calculated only one, conservative, scenario for pension asset development. Since there is no information on existing assets in the severance pay system, which can be transferred to the new system, we have not taken these potential amounts into account. In an optimistic scenario, a larger transfer of SPS assets would boost growth. This may happen in 2011, when companies are required to apply International Financial Reporting Standards. In our scenario, contributions will rise by around 42.8% p.a. due to strong income increases, particularly within high-income groups, and a rising coverage. Assets under management will amount to EUR 75.8 billion in 2015 (CAGR 70%).

Further potential is generated within the private pension program. Assets amounted to EUR 30.4 billion in 2006 with a participation rate of 15% of the working population (3.2 million). For this pension scheme, we assumed that higher and middle income employees would participate, as would a small group of low income workers. Participation will

* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

Korea: Pension assets under management



Source: Allianz Dresdner Economic Research

Technical note

The projection is based on population, workforce and income data provided by the UN, the International Labour Association, the Korea Labour Institute, the Asian Development Bank and the National Statistical Office of Korea. We have assumed an increase in the total number of economically active people based on population growth in the respective age groups; i.e. a constant labour participation rate. We have also factored in a minor shift away from employment in agriculture and industry into services, as Korea already has a large portion of employees working in the services sector. Employment in agriculture was around 8% in 2005, while 28% of the labour force worked in industry. The combined figure will slip to about 32% by 2015.

The National Statistical Office of Korea provides data on income distribution for households, which we have taken into account to differentiate old age saving. We combined the data into three income groups: 30% of the employees are in the lower group, which earns 70% of average income; 50% are in the middle bracket, earning the average wage of around EUR 2,100 (KRW 2.54 million) per month and 20% have a salary of about 150% of the average. We calculated with differing growth rates in the three income groups (4%, 6%, 8%).

We also assumed that between 2007 and 2015, corporate pension scheme coverage will spread from 3% to 25% in the higher-income group; from 1% to 13% in the middle bracket and from 0.5% to 4% in the lower-income group. We applied the severance pay contribution of 1/12 of annual wages to our calculation for all groups, as this is the amount payable by the employer. The employee does not make an extra contribution in our calculation.

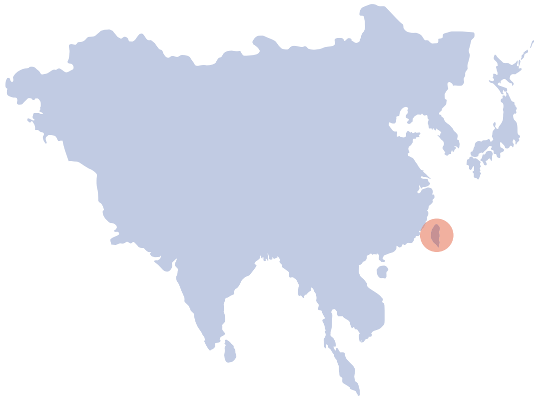
increase to 45% by 2015 in the highest income class (30% in 2005), to 25% in the second (15% in 2005) and to 10% (5% in 2005) in the low income class. This will lead to around 5.6 million participants in 2015. We have taken 5%, 3% and 2% contribution rates for the upper, middle and low income groups, respectively. According to these assumptions, annual flows will increase by 13.5% and assets under management will amount to EUR 123.2 billion (16.8% CAGR).

Even though it is one of the most established in Asia's emerging economies, South Korea's pension system is in transition. The new occupational system, the future basic pillar, as well as the National Pension System reform have changed the basic parameters of the pension system. These changes have been inevitable given the scale of South Korea's demographic challenges. The new corporate pension plans will be essential for retirement income security as benefits from the first pillar are being trimmed down. These plans enable companies to establish formal occupational plans, a substantial improvement over the severance pay system, as it provides a much higher predictability of retirement income for employees. While the initial take-up among firms was modest, the system will experience enormous growth rates in the years to come.

All these developments and its advanced economic status make South Korea one of the key pension markets in Asia. Since South Korea will experience the demographic transition earlier than many other countries, the solutions found in South Korea have the potential to lead the way for other countries in the region and elsewhere.

Taiwan

Expanding coverage and modernising pensions



Demographics and macroeconomics	
Population [m]	22.8
Population over 65 [%]	10.0
Old-age dependency ratio*	2005: 13
	2050: 63
GDP [EUR]	276.7
GDP per capita [EUR]	12,142
GDP growth 2001–2006 [av. in % p.a.]	3.2
GDP growth 2007–2015 [av. in % p.a., est.]	4.1
Unemployment rate [%]	4.1

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

Pension System Design

Taiwan's pension system is in a process of transition and reform. In the realm of public pensions, there is a basic safety net for the elderly and schemes for civil servants, namely the Government Employees' and School Staffs' Insurance and the Public Service Pension Fund. For private sector employees, there are several occupational schemes. Labour Insurance consists of several types of insurance protection, among them old-age insurance, while the Old Labour Pension Fund is a specific pension plan. However, the latter is to be succeeded by the New Labour Pension System, established in 2005. Voluntary private pension savings are not specifically subsidised and mainly consist of life insurance contracts and other savings vehicles.

A major reform took place in 2005, when the New Labour Pension System was introduced. It is a defined contribution scheme that is meant to solve the portability and underfunding problems of the Old Labour Pension Fund. Another recent reform measure is ongoing. A new National Pension, the relevant bill was passed in July 2007, will be introduced in October 2008. The new public scheme aims to provide a more comprehensive safety net and will integrate the fragmented old-age allowance systems. The reform discussion also focuses on converting lump sum payments into annuities in the Labour Insurance. A proposal is currently under parliamentary review.

Like most other countries in the region, Taiwan's population is ageing rapidly. The fertility rate, which was four children per woman in 1970, had dropped to 1.2 in 2005. While the old-age dependency ratio is currently quite favourable at 13, it will increase dramatically to 63 by 2050. The total population will drop from 22.8 million to 19.8 million in the same period.

The New Labour Pension System will drive Taiwan's pension market. We expect that total assets in this scheme, which currently amount to EUR 3.7 billion, will show a CAGR of 28.9% until 2015.

Public Pensions

Social security

The social benefits system for the elderly is fragmented. Four different systems are in operation, which cover low-income elderly people, farmers and aboriginal people. As of July 2006, 70% of over 65-year-olds (1.6 million) have received monthly old-age allowances between EUR 70 (NTD 3,000) and EUR 140 (NTD 6,000). These benefits are financed by the state budget. Around 50% of recipients are covered by the old-age allowance. Eligibility criteria include an annual income of less than EUR 11,635 (NTD 500,000). The current old age allowance provides a replacement rate of roughly 7% of the average wage.

Taiwan's government intends to integrate the fragmented old-age allowance systems. The new National Pension will gradually replace the different systems. The National Pension Law was passed in July 2007 and the scheme will start operation in October 2008. It will cover about 3.5 million people. Participants of other national pension programs will not be included. Contribution rates in the first year of implementation will be 6.5% of the national minimum wage; this percentage will be raised every two years to a maximum 12%. Participants will pay 60% and the government will contribute 40% of that sum. Contributions for low-income employees will be fully paid by the government. Retirement age will be set at 65. If members have participated in the system less than 10 years, they will receive lump sum benefits. Otherwise, they qualify for life-long annuities.

Public sector pensions

Public sector employees are covered by two pension schemes that complement each other. The Government Employees' and School Staffs' Insurance provides disability, death and retirement benefits. It is a defined benefit scheme with a current contribution rate of 7.15%; employees pay 35% of that contribution, while the government and employers share the remaining 65%. Benefits are paid as a lump sum at the age of 65, or when employment is terminated after the age of 55 and participation has exceeded 15 years.

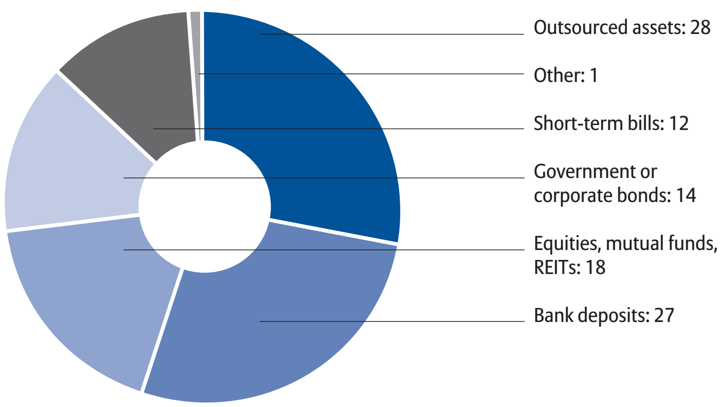
The Public Service Pension Fund (PSPF), which dates back to 1943, is a mandatory defined benefit scheme for civil servants, teachers and military personnel. While the PSPF was completely financed by the government until 1995, this was changed subsequently. The contribution rate in 2007 is 12%; employees pay a 35% share, while the government and employers cover the remaining 65%. Contributions rates varied between 8% and 12% until 2006, when the universal rate of 12% was introduced.

Members can retire at age 65, and early retirement is possible with more than 25 years of service. Payout options depend on years of service: participants with more than 15 years of service can choose between lump sum payments, monthly payments or a combination of both. Participants with less than 15 years of service receive lump sum benefits. While lump sum benefits are capped at 53 months' salary, annuities have a maximum replacement rate of 70% of the final gross salary.

As of 2006, the PSPF had 591,000 members, representing 3.7% of the workforce, and EUR 8.5 billion (NTD 365 billion) in assets under management. Investments are not regulated by law, but are made according to an internal process. The PSPF management committee manages the fund while the PSPF Supervisory Committee controls and oversees it. The former submits the annual investment plan to the Supervisory Committee for approval and then manages the fund assets accordingly. The plan includes asset classes to invest in, the investment ratio of different asset classes and the target rate of return.

With around 40% of invested assets, bank accounts and short-term bills dominate the Public Service Pension Fund's asset allocation. To improve investment performance, the PSPF has started outsourcing assets to domestic and international asset management companies. At the end of 2006, 28% of total assets under management were outsourced to private asset managers.

Public Service Pension Fund asset allocation, 2006 [%]



Source: Public Service Pension Fund

The main challenge for the PSPF is the ageing of its members. According to actuarial studies, the scheme is significantly underfunded and the current surplus is not sufficient to cover future liabilities. The PSPF itself asserts that it may go bankrupt in 2035 if the contribution rate cannot be increased to sufficient levels or fund performance enhanced.

Occupational Pensions

There are three pension schemes available for private sector employees: Labour Insurance, Old Labour Pension Fund and its successor, the New Labour Pension System. Labour Insurance and the other systems complement each other and cover around 8 million employees, roughly 50% of the workforce.

Labour Insurance

Labour Insurance was introduced in 1958 and provides two types of insurance: regular insurance (maternity, sickness, medical expense, injury, unemployment, old age and death) and occupational insurance (sickness, medical expense, injury and death). It is mandatory for employees between 15 and 60 years of age who work in companies with more than five employees.

Labour Insurance is the largest occupational insurance scheme in Taiwan in terms of membership and assets. In late 2006, it had 8.7 million members and assets of EUR 10.2 billion (NTD 436 billion). The current contribution rate is 6.5%; the rate can be increased up to 11% without legislative approval. Contributions are capped at EUR 1,022 (NTD 43,900). They are shared by employees (20%), employers (70%) and the government (10%). The self-employed contribute 60%, while the government covers the remaining 40%.

Benefits are paid as lump sums only. Their level depends on years of service and salary during the last three years of working life. During the first 15 years of contributions, each year is credited with one month's salary. Additional years of service are credited with two months' salary. After 30 years of participation, the maximum lump sum amounts to EUR 46,075 (NTD 1.98 million). In March 2007, the government proposed that lump sum payments be replaced with lifelong annuities; the bill is currently in the legislative process. If it is approved, the law could become effective in 2009.

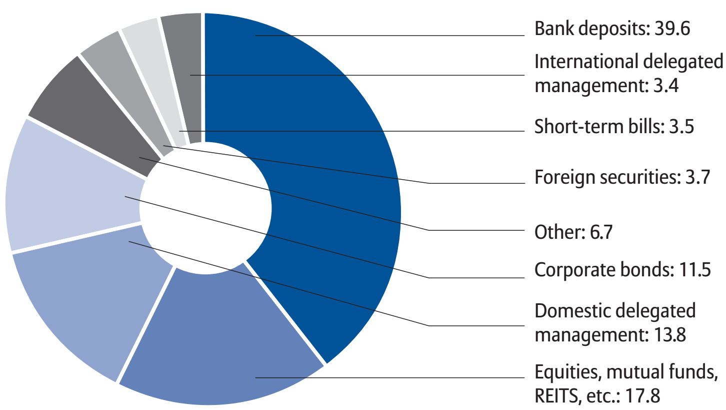
Benefits are paid only under certain vesting requirements. For example, members must be at least 55 and have been members of Labour Insurance for at least 15 years. 50-year-olds with more than 25 years of membership can also receive benefits, as can 60-year-old males and 55-year-old females with at least one year of membership.

The Bureau of Labour Insurance manages the Labour Insurance funds, while the Labour Insurance Supervisory Committee assumes supervisory responsibilities. Assets are partially outsourced to external asset management companies. There are quantitative investment restrictions, which include the following:

- A maximum of 5% of assets can be invested in any single domestic equity or domestic fund directly, while external asset managers can invest up to 10%. The same rule also applies to overseas investments
- A maximum of 35% of assets can be invested overseas

Although investments in bank accounts dominate asset allocation with 40% of total assets, their share has been decreasing. This trend is likely to persist as the Labour

Labour Insurance Fund asset allocation, 2006 [%]



Source: Bureau of Labour Insurance

Occupational Pensions

Insurance Fund continues outsourcing assets to external asset management companies. Currently, 13.8% and 3.4% of assets are outsourced to domestic and international asset managers, respectively. According to official announcements, the fund will continue to outsource assets.

Old Labour Pension Fund

In addition to Labour Insurance, employers are obliged to contribute to the Old Labour Pension Fund that was introduced in 1984; employees do not contribute. Employers have to contribute between 2% and 15% of the employees' gross salary to the fund, which holds a separate reserve account for each participating company. The Old Labour Pension Fund is a defined benefit scheme with lump sum payments; for every year of the first 15 years of service, the equivalent of two months' salary is accumulated. For additional years, the equivalent of one month's salary applies. There is a maximum payment equivalent to 45 months' salary.

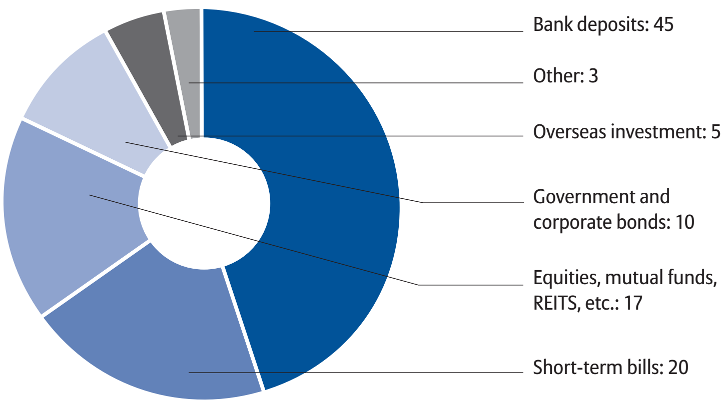
Fund management of the Old Labour Pension Fund was carried out by the Bank of Taiwan until the Labour Pension Fund Supervisory Committee was established in July 2007. It is foreseen that the the Bureau of Labour is fully responsible for fund administration, and the Supervisory Committee acts as fund manager and supervisor. Asset allocation is similar to other public pension funds in Taiwan, with 45% of assets in bank accounts. However, according to official announcements, the Old Labour Pension Fund's investments will become more diversified, and outsourcing will increase now that the Supervisory Committee has been established.

The Old Labour Pension Fund has suffered, because only about 10% of the private sector workforce was eligible for benefits. This is the result of strict eligibility criteria and the structure of companies in Taiwan. To receive benefits, employees must have worked for the same employer for more than 25 years, or they must be 55 and have least 15 years of tenure with the same employer. However, average tenure in Taiwan is only 8.6 years, and the average life span of Taiwanese firms is 13 years.

This is why the overwhelming majority of employees does not fulfil eligibility criteria and cannot receive pension benefits from the Old Labour Pension Fund, as the scheme is not portable. As a result, only employees of large companies or state-owned enterprises are likely to receive retirement benefits. Moreover, full funding of the Old Labour Pension Funds was not required until 2005, and employers often contributed the lower limit of 2% to meet the basic requirements.

In light of the Old Labour Pension Funds' shortcomings, new pension legislation was passed in 2004. The New Labour Pension Act determined that employers must fund their pension liabilities by the end of June 2010. The core of the law was the introduction of the New Labour Pension System; Old Labour Pension Funds were closed to new joiners. New labour market entrants or those who

Old Labour Pension Fund asset allocation 2006 [%]



Source: Council of Labour Affairs

change jobs must join the New Labour Pension Scheme.

New Labour Pension Scheme

The New Labour Pension Scheme is a defined contribution system with fully portable individual accounts. Members of the Old Labour Pension Funds are given the one-time choice of either staying in the old system or joining the new pension scheme. They can do this during the switching period of five years, which will draw to a close at the end of June 2010. Employees have to be enrolled in either the Old or the New Labour Pension Fund.

Each member of the New Labour Pension Scheme must set up an individual retirement account at the Bureau of Labour Insurance. Employers contribute 6% of employees' salaries (up to EUR 3,491 / NTD 150,000) to employee accounts; they can contribute more if they wish. Employees can voluntarily contribute up to 6% of their salary. Benefits are paid at the age of 60. If membership has lasted less than 15 years, benefits are paid as a lump sum; otherwise members are eligible for monthly payments. Companies with more than 200 employees can choose to provide pension benefits in the form of annuities instead of individual retirement accounts, provided that at least half the employees or the trade union approve.

Taxation is based on the EET principle. Contributions and investment income are tax-exempt, while benefits are partially taxed. In the case of monthly payments, EUR 15,730 (NTD 676,000) a year are tax-exempt. The taxation of lump sum payments is progressive.

The New Labour Pension Scheme includes a minimum guaranteed rate of return. If the return scheme is less than the two-year bank deposit rate, i.e. around 2% in 2006, the government covers the difference. Investment regulations include the following:

- A maximum of 5% of assets can be invested in single equities and funds
- Any single equity holding must not exceed 10% of the units launched
- Any single mutual fund holding cannot exceed 10% of the fund shares launched

It has not yet been decided whether there will be equity or foreign investment limits. At the end of 2006, assets under management in the New Labour Pension Scheme reached EUR 3.7 billion. The number of participants reached 4.3 million, a participation rate of 79%.

The Labour Pension Fund Supervisory Committee supervises and manages the New Labour Pension Fund. However, as the establishment was delayed, the New Labour Pension Scheme has not been investing its assets, which have been idle in bank accounts for two years since the new scheme was launched. In July 2007, when the Supervisory Committee was finally set up, it announced that fund management would partially be outsourced to asset management companies, starting with domestic outsourcing mandates.

Private Retirement Savings

Private retirement schemes are not regulated by law and there are very limited fiscal incentives for voluntary retirement savings. Essentially, the only savings vehicle that is tax-favoured is life insurance, which enjoys general tax relief for insurance products. The policy owner can deduct a maximum of EUR 558 (NTD 24,000) of life insurance premium from his taxable income. The Taiwanese also save voluntarily with a wide variety of savings instruments that are not specifically for old-age savings. Taiwan has a savings rate of 28% of GDP, which is exceptionally high. A good part of these savings is intended to secure living standards after retirement.

Pension Market Trends

Pension market structure

Several developments drive the Taiwanese pension market. Outsourcing pension assets from public pension funds to private and foreign asset managers has become increasingly common in recent years. This is equally true for the PSPF, the Old Labour Pension Fund and Labour Insurance. Outsourcing began with domestic mandates and was extended to international mandates later on. In 2003, EUR 380 million were handed over to external asset managers. In 2005, EUR 303 million were outsourced to four foreign asset management companies. In 2006, EUR 455 million were outsourced to three foreign companies. Each mandate requires a certain target return. Following satisfactory performance of outsourced assets, the Taiwanese authorities have plans to expand outsourcing. In the future, outsourced assets will likely be invested mainly in foreign markets rather than in the Taiwanese market.

While the New Labour Pension scheme has not yet allowed individual choice, the topic of introducing participants' choice in the years to come is currently being discussed. This would make asset managers even more involved in the New Labour Pension scheme. The choice offered would likely be between three funds with different asset allocations and risk/return profiles. To a certain degree, asset volume in the new system will depend on the employees' willingness to contribute voluntarily.

Two other developments are noteworthy. The New Labour Pension scheme is evidence of a shift from defined benefit to defined contribution schemes in Taiwan, a development observable in many countries around the world. Second, while Taiwanese pensions were traditionally of the lump sum type, developments in the public and private occupational funds point to the mounting importance of annuities. Plans to introduce annuities into Labour Insurance and the possibility of receiving them in the New Labour Pension Scheme is evidence of this development.

Life insurance is a very popular financial instrument in Taiwan. The life insurance coverage rate (the ratio of life and annuity policies to the population) was 184% in 2006, implying that on average, every Taiwanese citizen has more than one life insurance policy. At 11.6%, Taiwan has the highest life insurance penetration rate, insurance premiums as percent of GDP, in Asia and the third highest worldwide. In absolute terms, Taiwan is the fourth biggest market in Asia. Premiums per capita amount to EUR 1,364, the third highest value in Asia.*

There are 30 life insurance companies operating in the Taiwanese market that generated EUR 37.2 billion (NTD 1.6 trillion) in premium income in 2006. The three biggest insurers had a market share of 48%, and domestic insurers accounted for 76.5% of the market. Individual life business is the main market driver, while group insurance holds only a small share of the market. In recent years, unit-linked products and annuities have been gaining popularity in Taiwan. Another recent development relates to retirement savings products from the asset management industry. Life cycle funds, which adjust asset allocation based on the fund's target date, have been available in Taiwan since 2005.

Future pension assets

Our projection for the development of pension assets focused on the New Labour Pension Scheme, which employees could choose to join or not. Since the new system provides lower benefits, but for a much broader basis of employees, it can be assumed that employees who are eligible for pension benefits under the old system will remain in their system. This applies particularly to older employees at large companies. We assumed that employees younger than 45, a group that includes about 5.4 million employees, will be covered by the new program.

By the end of 2006, 4.3 million people, or 79% of employees, had chosen to join the New Labour Pension Scheme. Contributions amounted to EUR 2.5 billion, total assets to EUR 3.7 billion. The bulk of these contributions were paid by employers; only 305,000 people joined on a voluntary basis. We expect membership in the mandatory part of the new scheme to continue growing as new employees enter the labour market. The participation rate will reach about 85% by the end of 2015, for a total of approximately 4.8 million members. Contributions will rise on the basis of an increase in participation and average "contribution wage" growth of 2%. This increase is much lower than the expected income growth and probably does

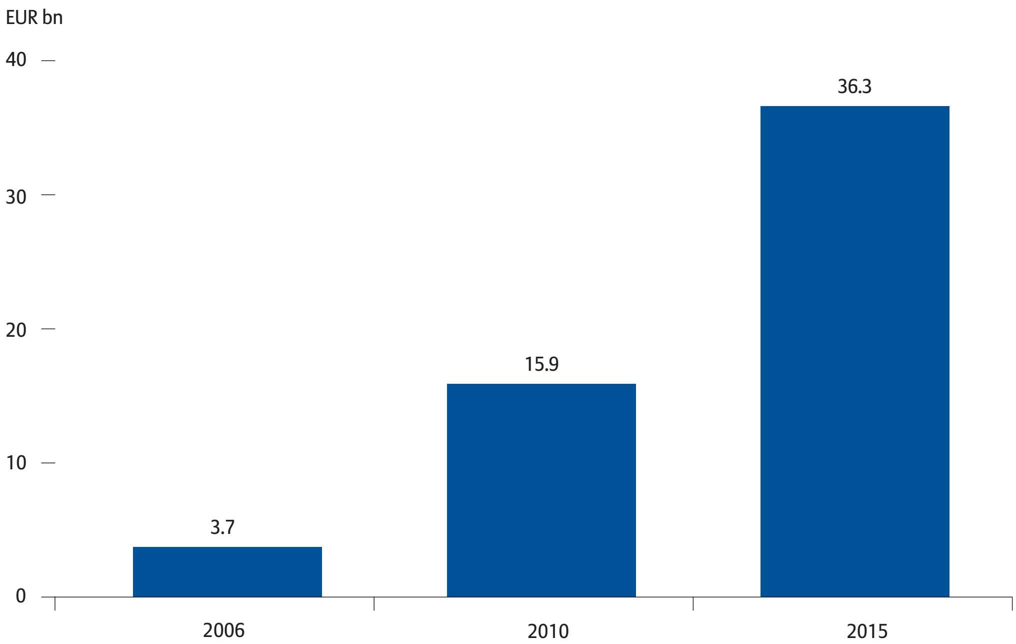
* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

not include extra payments, bonus payments and the like. In 2006, contribution wages were even lower than those reported for 2005. Based on these assumptions, we expect contributions to increase to around EUR 3.15 billion by 2015. This represents an increase of 3.3% per year, which is essentially the result of a moderately growing workforce.

For the voluntary part of the New Labour Pension Scheme, we expect a slow asset build-up as acceptance has been low so far. In the first year, participation even decreased. We have assumed that only parts of the upper income groups will save for old-age provision with the new system: 14% of the highest quintile (increasing to 20% by 2015) are expected to do so, as are 3% of the fourth income quintile (increasing to 10%) and some middle income groups (reaching 5% participation in 2015). People in the upper group are expected to put an extra 6% of their income into the pension plan, while the lower groups are expected to set aside 4% and 2%, respectively. This will provide an additional EUR 200 million in contributions in the coming year. As income and participation increase, contributions will reach EUR 540 million by 2015 (CAGR 13.4%). Total annual mandatory and voluntary contributions amounted to EUR 2.5 billion in 2006 and will increase to EUR 3.69 billion by 2015 (CAGR 4.4%).

Based on these assumptions, total pension assets under management in the New Labour Pension Scheme are expected to amount to EUR 36.3 billion by 2015, which represents an average yearly growth of 28.9%.

Taiwan: Pension assets under management*



* New Labour Pension scheme
Source: Bureau of Labour Insurance, Allianz Dresdner Economic Research

Technical note

The projection is based on population, workforce and income data provided by the UN, the Bureau of Labour Insurance and the Taiwan Statistical Data Book 2006. The latter also provides data on income distribution, which we have used to differentiate voluntary saving. We assumed a slightly above-average increase for the upper income level. Since investment rules are very conservative, we based our calculations on a 3% interest rate.

Taiwanese pension policy has laid the foundation for a reformed pension system. The introduction of the New Labour Pension Scheme and the introduction of the National Pension in 2008 will lead to a much higher coverage of the population. This is crucial, as Taiwan's retirees often rely on many different sources of income, as is the case in many other parts of Asia. While family support has been one of the most important components of retirement income, economic development and increased mobility have made it more difficult to ensure. For this reason, formal systems must now compensate.

Taiwan's emerging pension system is largely based on the World Bank model. Once implemented and properly running, it will be one of the most advanced pension systems in Asia, providing diversified retirement income in the public and occupational pillars. It should be noted that the issues of individual choice in the New Labour Pension System and appropriate regulation, especially regarding investments, will remain crucial pension policy issues, as they will have a significant impact on the level of future retirees' income.

Thailand

Establishing a mandatory second pillar

Pension System Design

Thailand's pension system was completely restructured in the late 1990s. It now comprises the Old Age Pension, a pay-as-you-go financed state pension scheme for the private sector workforce, and the Government Pension Fund, a defined contribution pension system exclusively for civil servants. Participation in these two schemes is mandatory. Occupational pensions may be provided on a voluntary basis by provident funds. In addition, voluntary retirement savings can be made through personal savings plans, including the Retirement Mutual Funds, which target employees not covered by provident funds and/or those who wish to enhance their retirement savings.

The Government Pension Fund was introduced in 1997 and covers central government officials. In the long term, this new defined contribution system will replace the former unfunded defined benefit scheme. Civil servants employed in areas other than the central government are provided with defined benefit pension promises and/or enjoy coverage under employment-related provident funds.

In 2008, the government plans to introduce the National Pension Fund (NPF), a new mandatory retirement savings program. It is intended to supplement current pension arrangements, as they have failed to provide sufficient coverage. The proposed mandatory pension scheme, which is set to cover employees in the formal sector, will be defined contribution in design, with individual savings accounts. Asset management will be outsourced to external fund management companies.

During the last century, Thailand's population was one of the fastest growing in Asia. In the 1970s, the National Family Planning Program attempted to reduce high fertility rates. The measures implemented successfully reduced population growth. The fertility rate dropped from 6.4 children per woman in 1960, to 3.8 in 1980, and to 1.8 today. For this reason, Thailand is currently facing the same demographic challenge as most other countries in the region. The drop in fertility levels and increasing life expectancy are causing the old-age dependency ratio to rise considerably. It is expected to worsen from 11 today to 38 in 2050. This will lead to a rise in the median age, from 32.6 years today to 43.6 years by 2050.

The Provident Funds' current pension assets amounted to EUR 8.2 billion at the end of 2006, while those of the Retirement Mutual Funds amounted to EUR 540 million. We expect annual growth of 18.8% until 2015 for the former and of 21.5% for the latter. For the soon to be implemented National Pension

Demographics and macroeconomics	
Population [m]	63.9
Population over 65 [%]	7.8
Old-age dependency ratio*	2005: 11
	2050: 38
GDP [EUR]	164.6 billion
GDP per capita [EUR]	2,594
GDP growth 2001–2006 [av. in % p.a.]	5.1
GDP growth 2007–2015 [av. in % p.a., est.]	4.9
Unemployment rate [%]	1.5

Data from 2006 or latest available year

* Ratio of over 65-year-olds to 15–64-year-olds

Fund, we project rapid asset growth, to EUR 4.3 billion over the same period.

Public Pensions

Old Age Pension system

Pension coverage for private sector employees has only existed since 1999. As part of the social security system, the compulsory old-age defined benefit scheme was introduced to complement the existing system that covered only disability, maternity and sickness. The Old Age Pension is a pay-as-you-go pension scheme that is financed by both the employer and the employee. Participation in the scheme is mandatory for private sector employees. The employer and the employee each pay a contribution rate of 3% of gross salary, up to a contribution assessment ceiling of EUR 319 (THB 15,000). The government adds an additional 1%.

With dwindling family support for the elderly that has resulted from the demographic transition and higher mobility, formal retirement schemes are gaining importance. Since the inception of the Old Age Pension, several amendments have been made. These have aimed to extend mandatory participation to smaller companies. Today, every company with at least one employee is obliged to contribute to the Old Age Pension. There are currently 9 million employees covered by the scheme. Around 22 million people are employed in informal activities and are therefore not covered by social security.

To receive a full pension, contributions must have been paid for at least 15 years. Pensions are payable at the age of 55. Those with a contribution record of less than one year are paid a lump sum benefit that equals the amount of paid contributions. If an insured person has contributed for more than one but less than 15 years, he or she receives a lump sum based on contributions paid, plus interest. A retiree with full pension entitlement can expect a pension of 15% of their average income in the five years prior to retirement. There are additional benefits for every year of contribution beyond the minimum of 15 years. This means that the maximum replacement rate can reach 35% of average pre-retirement income. Contributions to the Old Age Pension are tax-deductible and benefits are tax-exempt.

First pillar design	
Contribution rate [% of gross salary]	Employers: 3 Employees: 3 Government: 1
Legal retirement age	55

The first pension payouts will start in 2014. The current surplus is entirely invested in Thai bonds by the Social Security Office. Negative cash flows are expected as early as 2026. The accumulated reserves will be exhausted by 2049, implying a predictable burden on the governmental budget.

Public service schemes

Until 1997, all public sector employees were covered by the old civil service scheme, which was a non-contributory defined benefit plan. With the introduction of the Government Pension Fund in 1997, the public sector pension landscape became more heterogeneous. Today, different schemes apply for central government officials, central government regular employees and local government officials as well as employees of state-owned enterprises.

However, most pension schemes offered have one feature in common. Defined contribution pension plans now supplement the former defined benefit pension schemes. Central government employees were given the choice between the newly established Government Pension Fund and the old civil service scheme. Local governments retained the old system, and some state-owned enterprises replaced the old pension scheme with provident funds. Under the defined benefit system, central government officials are entitled to receiving a pension in the form of annuity payments, provided that they have at least 25 years of service, or 10 years of service and are aged over 50. In general, lump sum benefits are paid to those who have at least ten years of service, or one year of service and are over 50. Pensions are based on the average income of the five years prior to retirement and should not exceed 70%. Defined lump sum benefits, otherwise known as gratuities, equal the last month's salary multiplied by years of service.

Government Pension Fund

Central government officials in Thailand are covered by the Government Pension Fund (GPF), a defined contribution scheme. Established under the GPF Act in 1997, government officials were given the choice either to join the GPF or stay in the old defined benefit plan on a non-contributory basis. All new governmental employees must join the Government Pension Fund as contributing members. The Government Pension Fund currently covers 1.17 million civil servants.

Contributing members pay 3% of their salary and the employer matches this amount. To compensate for benefit losses caused by the switch from the old defined benefit scheme to the new defined contribution scheme, the employer contributes an additional 2% of salary for both contributing and non-contributing employees. The Government Pension Fund consists of three accounts. The member account is made up of contributions paid by employers and employees. The second account, the government reserve account, acts as a buffer fund to pay for officials' gratuities and pensions in case of a national economic crisis. The government must allocate a minimum of 20% of the annual budget for gratuities and pensions to this account, provided that it has not reached three times the annual expenditure budget for officials' gratuities and pensions. While a third account called the general account also exists, it is of minor importance. It contains assets withdrawn from individual accounts. As of March 31, 2007, total assets amounted to EUR 7.6 billion (THB 356 billion), of which EUR 6.3 billion (THB 295 billion) were allocated to member accounts.

In addition to any applicable benefits from the old defined benefit system, civil servants who have opted to join the GPF will receive the amount accumulated in the GPF scheme plus interest as a lump sum at the age of 60.

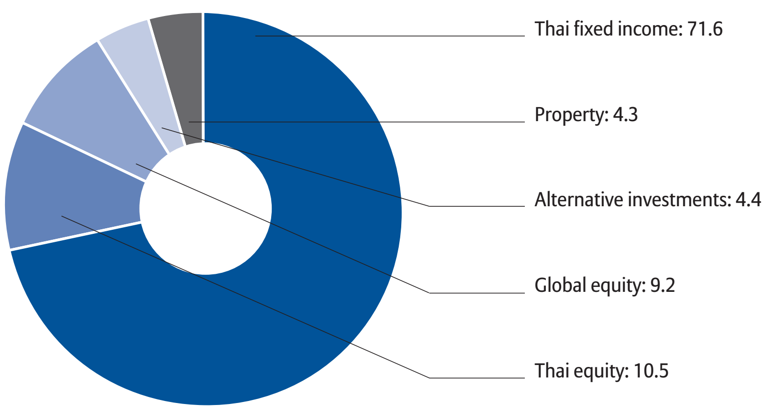
Under the GPF framework, annuities are not available and assets are not portable. GPF contributions are tax-exempt up to EUR 6,378 (THB 300,000) annually. Upon retirement, benefits are not subject to income tax.

The Government Pension Fund Act sets quantitative investment principles for the fund. At least 60% must be invested in low-risk securities, and no more than 20% may be allocated to shares and debentures. The Board of Directors has approved an investment policy stipulating that the allocation between asset classes should be 80:15:5 for fixed income, equity and property. As of December 2006, the asset allocation in effect became less conservative than stipulated by the Board, with a higher allocation to equity and property.

The National Pension Fund

Thailand is currently planning to introduce the National Pension Fund (NPF), a new mandatory retirement savings scheme for all workers in the formal sector. The NPF will operate with individual accounts on a defined contribution basis. Employees and employers will have to contribute 3% of wages each within the first five years. Contribution rates will increase to 4% in year 6, and to 6% in year 11. Contributions are tax-exempt. Assets will be managed by private assets management companies, which will be required to obtain licenses from the Securities and Exchange Commission of Thailand.

Government Pension Fund asset allocation, December 2006 [%]



Source: Government Pension Fund 2007

While the implementation of the National Pension Fund was originally scheduled for January 1, 2007, it has been delayed. It is now expected to start operating in 2008. There will be a phased implementation, primarily covering enterprises with at least 100 employees only. Companies with 10 to 99 employees will have to implement the scheme in year 6, and companies with less than 10 employees will be obliged to do so in year 11. A steering committee was commissioned to develop an appropriate structure for the scheme, in line with existing pension arrangements. The National Pension Fund is intended to complement rather than replace existing voluntary pension arrangements.

Occupational Pensions : Provident Funds

Institutional framework

Company-sponsored pension plans can be provided on a voluntary basis in the form of registered provident funds. Establishing a provident fund is mandatory for companies listed on the stock exchange. Set up as independent legal entities under the Provident Fund Act, provident funds are separated from the sponsoring undertaking. Assets must be kept with a custodian that has to be approved by the Securities and Exchange Commission.

A fund committee comprising employer and employee representatives is responsible for supervising the fund's activities, appointing a management company responsible for administration and managing assets. They are also in charge of determining the appropriate investment strategy. Management companies generally offer a set of investment strategies that the fund committee may choose to invest in. Provident fund providers may be commercial banks, finance companies, securities companies, mutual fund management companies and life insurance companies, among others. Furthermore, fund providers must obtain a license from the Ministry of Finance to carry out private fund management. Employees may contribute between 2% and 15% of their salary, and the employer matches this amount. Contributions in excess of 15% must be approved by the Ministry of Finance.

Each fund must define its own rules with regard to vesting periods of employer contributions. If it does not, the entire sum accumulated is paid to the employee upon termination. Almost 100% of provident funds registered in Thailand require a period of 10 years or less for members to obtain the full a mount of employer contributions included. Less than 5% extend the mandatory period beyond 10 years. There is no requirement for plans to insure against financial losses, i.e. no preservation of member contributions has to be provided. There are currently 519 provident funds in the market, and 42% of these have more than 1,000 members. The number of provident funds has steadily decreased over time as a result of consolidation into pooled arrangements. Around 87% of provident fund assets are allotted to asset management companies.

Provident Fund statistics, end of 2006	
Members	1.9 million
Assets under management [EUR]	8.2 billion
No. of provident fund providers	20

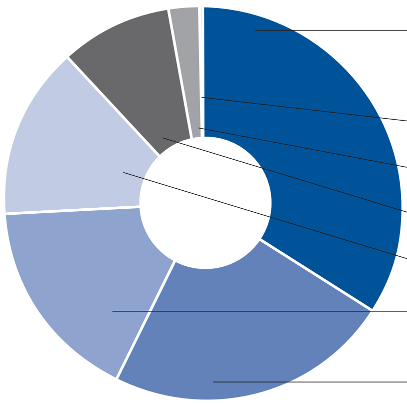
Investment regulations

The fund committee is free to define a specific investment strategy that the chosen management company must implement. It can also give the fund manager the freedom to manage investments at his discretion. In order to diversify investment risk, limits are imposed on different asset classes set by the Securities and Exchange Commission. Effective asset allocation can be seen as quite conservative, with the bulk of assets invested in less risky assets such as bank deposits and government bonds.

- No more than 15% of total assets may be invested in the sponsoring employer and its affiliated companies
- No more than 15% in rated securities issued by one company

- No more than 15% in unrated securities (with a limit of 5% for securities issued by one company)
- No more than 20% in securities issued by a commercial bank, a finance company or the Industrial Finance Corporation of Thailand
- No more than 65% in general mutual funds
- No more than 10% in specific mutual funds
- No more than 15% in property funds (with a maximum limit of 5% for each fund)
- No more than 100% in a mutual guarantee fund, in which the capital and return are guaranteed
- No more than 65% may be invested in a mutual guarantee fund, in which only capital is guaranteed
- No more than 10% may be invested in a mutual guarantee fund, in which capital is only partially guaranteed

Provident fund asset allocation, June 2007 [%]



Source: Thai Provident Fund, 2007

Pension benefits and taxation

Accumulated capital is usually paid out as a lump sum equal to accumulated employee contributions and employer vested contributions, plus interest. There is no requirement to buy an annuity.
Employee contributions are tax-exempt up to certain limits. A tax allowance of EUR 213 (THB 10,000) applies, which means that yearly contributions up to that sum directly reduce the tax liability. In addition, contributions exceeding EUR 213 (THB 10,000), but not higher than EUR 6,165 (THB 290,000) per annum, are tax-exempt, provided that they do not exceed 15% of income. In contrast to a tax allowance, tax-exempted amounts are deducted from gross income, therefore reducing the amount assessable for income tax, but not the tax burden itself. The employer can deduct up to 15% of salary as expenses for corporate tax purposes. From the age of 55, benefits from provident funds are tax-exempt without limit, as long as membership in the plan has been at least five years. The EEE taxation principle applies.

Private Retirement Savings

Since 2001, individuals have been able to set additional voluntary tax-privileged retirement savings aside through Retirement Mutual Funds (RMF). RMFs are offered by mutual fund management companies that must provide investors with funds of varying risk profiles, either as equity, fixed income or mixed funds.

Voluntary private pension savings that are invested in Retirement Mutual Funds (RMF) are tax-privileged. As for provident funds, the EEE taxation system applies. However, favourable tax treatment is subject to

Retirement Mutual Fund statistics, end of 2006	
Net assets [EUR]	540 million
Number of funds	70

Private Pensions

certain conditions. Individuals have to continuously buy RMF units until the age of 55, unless they do not have an income in a given year. In addition, savings must amount to at least 3% of income, or EUR 106 (THB 5,000), whichever is lower. The amount invested in Retirement Mutual Funds may not exceed 15% of annual income or a maximum of EUR 6,380 (THB 300,000).

Pension Market Trends

Pension market structure

Provident fund assets have seen steady double-digit growth in the recent years, and assets under management now amount to EUR 8.2 billion (THB 389 billion), or 5% of GDP. There are currently 20 financial institutions that are licensed to provide provident fund services: 13 asset managers, 4 banks and 3 insurers. 87% of provident fund assets are allocated to asset management companies. With the introduction of the National Pension Fund, which requires mandatory employer and employee contributions, the provident business may suffer from declining growth. This is because employers currently offering a provident fund on a voluntary basis may reallocate a part of their contributions to the NPF. Should this be the case, the National Pension Fund will replace rather than complement existing pension arrangements. At present, the impact of the NPF on the voluntary provident fund business remains unclear.

In 2005, Thailand's life insurance market managed assets equivalent to EUR 3 billion (THB 141 billion), an increase from EUR 2.7 billion (THB 127 billion) in 2004. Total assets are managed in almost equal parts by local and foreign life insurance companies. In terms of total life premium volume, Thailand ranked 33rd worldwide in 2006. Per capita figures show a life insurance density of EUR 46, which is quite low. In contrast, Japan, Asia's biggest market, has EUR 2,144 in per capita terms. In relative terms, life insurance premiums amounted to 1.9% of GDP in 2006. As the leading nation in this respect, Taiwan had a life insurance penetration of 11.6%.*

Future pension assets

Projections for the Thai pension market have to take three schemes into account: the Provident Funds (PF), the voluntary Retirement Mutual Funds (RMF), and the mandatory National Pension Fund (NPF), to be launched in 2008.

Assets under management in the PF reached EUR 8.2 billion at the end of 2006. Since membership is mandatory for some companies, there is still room for expansion. Together with income increases and a growing workforce in the formal sector in general, we expect assets under management to grow by 18.8% to EUR 38.5 billion by 2015.

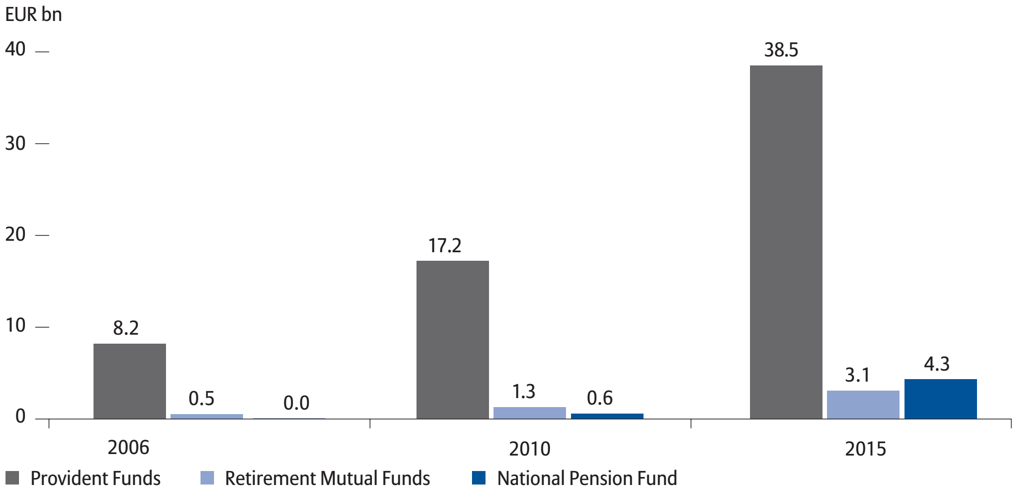
The voluntary RMF held EUR 540 million in assets under management at the end of 2006. As membership is limited to employee groups with higher income levels and participation is spreading slowly, total contributions will gradually increase (11.5%). However, since investment rules are relatively liberal, we have assumed an equity share of 40% for the RMF. Assets under management will grow considerably to reach EUR 3.1 billion (CAGR 21.5%) by 2015.

Growth potential partially depends on the implementation of the mandatory savings system. The Ministry of Finance expects the NPF to start with bigger companies, and assumes that companies with only one employee will have joined the system by 2018. Transferring these assumptions into the projection framework delivers continuously high growth rates: 38.4% growth for contributions between 2008 and 2015, and 73% growth for assets under management. The savings process will start in the three upper income classes and will spread to the lower ones. Our calculation assumed mandatory contribution rates of 3% of income for both employers and employees, as planned by the government. For the NPF, the government will impose stricter investment rules, meaning that the share of equities will amount to about 10%. Based on these assumptions, we expect assets under management to amount to EUR 4.3 billion by 2015.

Pension Markets

* Data from Swiss Re Sigma, World Insurance in 2006, No. 4, 2007

Thailand: Pension assets under management



Source: Bureau of Savings and Investment Policy, Allianz Dresdner Economic Research

Technical note

The PF projection is based on income distribution statistics by industry from 2000, which were provided by the National Statistics Office of Thailand. We adjusted these statistics to reflect the current employment structure and average wages. We also made assumptions on participation (higher participation rates of higher income groups, as companies that have to contribute are larger and pay higher incomes) and contribution rates, which can vary between 2% and 15% for both employers and employees. According to available data and our assumptions for 2006, assets amounted to EUR 8.18 billion, with 1.8 million members in the Provident Fund. We assumed a stock market increase of 10%, as the funds concentrate on local and regional bourses with higher growth potential and an equity share of 12%.

For the development of RMF, we adjusted the starting data set based on the assumption that participation in the RMF is concentrated in employee groups with higher income levels (20% to 30% in the upper group; 10% to 12% in the second group and a stable portion of 5% in the third group, out of seven groups). Assumptions about moderate increases were made in light of the planned introduction of a mandatory pension system. As a starting point, this data set showed roughly half a million members and assets under management of EUR 540 million.

We used the same data set for NPF as for RMF. The participation rates will start out on a moderate level due to introductory problems or delays, but will then pick up fast. By 2010, 50% of the highest income group, 30% of the second, 20% of the third, 6% of the fourth and 4% of the fifth will participate in the new system. By 2015, these portions will rise to 90/70/50/30/20%, respectively.

Over the last decade, Thailand has resolutely developed its pension system. Among Asia's emerging markets, it is the only country other than South Korea with a comprehensive and mature public pension pillar, at least in the formal sector. This is remarkable, especially because Thailand has third-lowest per capita income of the countries covered in this study. Compared with other Asian countries, Thailand established a DC scheme for civil servants very early to ease the pressure on public finances stemming from DB schemes.

The planned introduction of the National Pension Fund, a mandatory defined contribution pillar for private sector employees, will help provide diversified retirement income. With a social insurance system, the future DC pillar for the private sector and the voluntary Retirement Mutual Funds, Thailand will have a pension system that is largely based on the World Bank model. The coverage of workers in the informal sector, however, will remain on the political agenda in years to come.

Data

Pension assets under management projections

	Volume EUR bn		net increase	CAGR
	2006	2015	Volume EUR bn	
Australia	606.7	1466.4	859.7	10.3%
China*	62.3	403.8	341.5	23.1%
Hong Kong	42.3	99.2	56.9	9.9%
India*	40.2	157.5	117.3	16.4%
Japan	548.9	600.4	51.5	1.0%
Singapore	63.7	107.5	43.8	6.0%
South Korea	31.0	199.0	168.0	22.9%
Taiwan	3.7	36.3	32.6	28.9%
Thailand	8.7	45.9	37.2	20.3%

* Conservative scenario

Emerging market ex. Japan/ Australia	251.9	1,049.3	797.4	17.2%
Asia	1,407.5	3,116.0	1,708.5	9.2%

	Distribution of pension assets in Asia [%]	
	2006	2015
China	4.4	13.0
Hong Kong	3.0	3.2
India	2.9	5.0
Singapore	4.5	3.4
South Korea	2.2	6.4
Taiwan	0.3	1.2
Thailand	0.6	1.5
Australia	43.1	47.0
Japan	39.0	19.3

	Distribution of pension assets in Asia's emerging markets [%]	
	2006	2015
China	24.7	38.5
Hong Kong	16.7	9.4
India	16.0	15.0
Singapore	25.3	10.2
South Korea	12.3	19.0
Taiwan	1.5	3.5
Thailand	3.5	4.4

Demographics in Asia

Old-age dependency ratios

Country	Old-age dependency ratio*	
	2005	2050
Australia	19	41
China	11	39
Hong Kong	16	58
India	8	21
Japan	30	74
Singapore	12	59
South Korea	13	64
Taiwan	13	63
Thailand	11	38

* Ratio of over 65-year-olds to 15–64-year-olds

Source: Allianz Dresdner Economic Research, UN

Fertility rates

Country	Fertility rate 2005–2010
Australia	1.79
China	1.73
Hong Kong	0.97
India	2.81
Japan	1.26
Singapore	1.21
South Korea	1.21
Taiwan	1.23
Thailand	1.85

Source: UN World Population Prospects, 2006

Imprint

Publisher:
Allianz Global Investors AG
Nymphenburgerstr. 112–116
D-80636 Munich
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Layout:
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Closing date:
October 15, 2007

This study was conducted in cooperation with Allianz Dresdner Economic Research. The OECD provided information on the second and third pillars.

This document is issued in the United States by Allianz Global Investors Distributors LLC, a U.S.-registered broker-dealer located at 1345 Avenue of the Americas, New York, NY 10105.

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