Pension indicators

Reliable statistics to improve pension policymaking

Reliable statistics on aging and pensions are important for good governance and policymaking. However, the quantitative knowledge base on national retirement-income systems is often incomplete and, because it does not follow international statistical standards, it is difficult to compare countries’ experiences.

The collection and publication of a database of pension indicators is motivated by the rapidly changing pattern of pension provision around the world. As policymakers in more and more countries address the problems caused by population aging and the maturing of pension system, the demand for cross-country comparisons of pension indicators is both heavy and growing.

This demand has also led to a major expansion in the World Bank’s activities in pension reform. They now span the globe: Central and Eastern Europe, the former Soviet Union, Latin America, East and South Asia, the Middle East, North Africa and Sub-Saharan Africa.

The flow of information into the World Bank has increased as a result, meaning greater supply of, as well as demand for, pension indicators. But much of it is buried in studies of single countries, making it difficult to gather together and present on a comparable basis.

At the same time, the World Bank’s approach to pension policy has evolved, moving away from a somewhat narrow focus on issues related to financial and fiscal sustainability. Instead, there is now a more holistic framework, encompassing issues of adequacy of retirement benefits and old-age poverty, security of pensions in the face of risk and uncertainty, and administrative and economic efficiency. Work in these policy areas also needs a sound quantitative footing.

Along with more diversified issues and settings, there is a greater emphasis on a ‘results-based’ approach. Implementing such an approach means that inputs, processes and outputs need to be clearly distinguished so that the impact of policy changes can be identified, measured and assessed.

Origins
The Bank’s database on pensions was first established in the early 1990s to inform the analysis in *Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth*. This report, published in 1994, helped shape the global debate about the impact of population aging on pension systems and the appropriate policy response.

This pioneering work on collecting cross-country statistics on pension systems was updated in 2000. The new data were published in the World Bank’s Pension Reform Primer series as *International Patterns of Pension Provision* (Social Protection Discussion Paper no. 0009).

Version 3.0
A new update of the information along with a major expansion of the range of the data is being
readied for issue. This note is the first in a series of technical briefings that outline the different measures included in the database.

This introductory note gives a taste of the wealth of information that the database will provide. Subsequent briefings – as described below – provide more detail on the definition of different measures and document the sources of the data. These notes also present some of the results to aid users in interpreting different data.

Organization of the database

The database and indicators are organized into three sets of information, which together form a flow. The indicators of pension-system performance (at the right-hand side of Figure 1), depend on the design of the system and the context in which the system operates. For example, performance indicators of fiscal sustainability depend on underlying demographic pressures combined with the pension benefit formula.

Indicators in the database

The other nine technical briefing notes in this series will describe the different kinds of performance indicators.

Environment indicators

Countries differ in many important respects: demographic pressures, the macroeconomic situation and institutional structures. Assessing the performance of pension systems requires an understanding of the environment in which these systems operate. Moreover, the environment can significantly determine options for pension reform.

The demographic measures in the pension database aim to capture the dynamics of the population. Demographics are, of course, an important driver of the potential number of contributors to the pension system and beneficiaries of it. These in turn influence the revenues and costs of the system.

It is well known that the world’s population is aging. Furthermore, the rate of population aging is now expected to be even faster than in projections made just a few years ago. The old-age dependency ratio summarizes this effect, showing the percentage of the population aged over 65. The database includes historical information and the latest forecasts to 2090.

Population aging is driven by the pattern of births and deaths. Most countries of the world have seen continued growth in life expectancy, and many have experienced precipitous declines in the number of births. As well as life expectancy at birth, the database includes information on life expectancy at older ages (60 and 65), which is important for analysis of pension systems. The total fertility rate – the number of births per woman – is also presented in the database for the period from 1960 to 2006.
There are also indicators of the economic environment in which pension systems operate. Labor-force participation rates are shown by age and sex. These are an important determinant of the potential base of contributors to the pension system.

Measures of the government’s debt and deficit are included to show the degree of ‘fiscal space’, which might act as a significant constraint on the shape of pension reforms.

The financial and institutional measures also point to potential constraints on pension-system design. A poorly developed financial sector, for example, would make it difficult to implement a reform involving a shift to pre-funding to pay for pensions. The exact nature of the indicators under this heading is currently under discussion, in conjunction with closely related work on the enabling conditions for funded systems. The resulting measures, along with indicators of the effectiveness of government, will be added to the database at a later date. (See further reading below for existing World Bank work in this area on which the database will draw.)

Finally, most people in the world do not have access to formal pension systems. Detailed information on the role of informal support for older people is available, but only for a small number of countries. A more widely available indicator, presented in the database, looks simply at the proportion of older people living with their children or other family members.

**Indicators of pension-system design**

The starting point for the analysis is a taxonomy of national systems for retirement-income provision. Most countries have more than one type of program providing retirement benefits.

The first part of the **taxonomy** sets out the structure of schemes for private-sector workers (which may, of course, cover many public-sector workers as well). The categorization follows the World Bank’s multi-pillar framework.

- **Zero pillar**: these schemes are available to all older people, regardless of their pension-contribution history. They are often called ‘social pensions’ in recognition of their social-policy goal of offering a safety-net, minimum income in old age. They are publicly provided and usually (although not always) financed out of general government revenues. There are two main types: targeted programs, that pay benefits only to those with the lowest old-age incomes; and basic schemes, that pay a flat-rate benefit to all older people meeting certain eligibility criteria (such as age, for example).

- **First pillar**: these schemes are again publicly provided and are mandatory. However, they are usually (although not always) contributory. Unlike zero-pillar schemes, they pay benefits related in some way to individual earnings.

There are four main types of first-pillar scheme. Defined-benefit schemes have a formula directly relating retirement incomes to individual earnings. In points schemes, individuals earn pension points for each contribution which are then converted into a pension on retirement. In notional defined-contribution schemes, benefits depend on the amount of contributions made and notional interest credited to individual accounts. Finally, there are also publicly managed defined-contribution schemes, where benefits depend on the amount of contributions and the investment returns they earn. These are often known as provident funds.

A second distinction among first-pillar schemes is the way in which benefits are financed. Many are financed on a pure pay-as-you-go basis, where contributions from today’s workers pay the benefits for current pensioners. However, in some cases benefits are partially funded: the scheme accumulates assets, which will later be used to pay for part of people’s benefits.

Minimum pensions are often provided as part of first-pillar retirement-income provision. These differ from the targeted, social-pension
schemes of the zero pillar of the taxonomy in two main ways. First, there is typically a contribution or vesting requirement to qualify for first-pillar, minimum pensions. Secondly, targeted schemes usually take into account all sources of income when calculating entitlements. In contrast, the value of first-pillar, minimum pensions depends solely on pension income from the relevant scheme.

- **Second pillar:** these schemes are also mandatory. However, second-pillar schemes are privately provided. Most commonly, these are of the defined-contribution type discussed above. However, some countries mandate employers to provide private, defined-benefit schemes.

With defined-contribution plans, benefits are, by definition, fully funded at all times. With private defined-benefit schemes, most countries have regulation and supervision in place that seeks to ensure that the defined benefits are also fully funded on an actuarial basis.

These three pillars do not, of course, encompass all of the many ways in which people prepare for retirement or are supported in their old age. What distinguishes them is that participation is mandatory. For example, pillar three of the taxonomy covers voluntary private pensions, both personal (individual accounts) and occupational (employer-provided).

The database shows whether countries have a particular pillar in their retirement-income structure. If they do, then it provides key information such as the type of scheme and the way in which benefits are financed (funded or pay-as-you-go).

The data cover the main provision for workers in the private sector. In some countries, these arrangements apply more broadly to public-sector workers as well. In others, there is a range of special programs for particular groups of workers. While the database focuses on national pension provision, it does indicate whether civil servants – the group for which special provision is most common – are integrated into the national pension program or have their own, separate scheme.

The parameters shown are those that apply to workers entering the labor market today. In many countries, reforms have significantly changed the parameters and rules of the retirement-income system. Often, the result of these pension reforms is a set of complex transition rules under which people are partly covered under the pre- and post-reform systems. By presenting the parameters and rules for new entrants, the database focuses on the long-term stance of the retirement-income system. This approach is justified by the fact that this is the policy ‘margin’: the very existence of transitional parameters and rules demonstrates that it is generally only possible to change the pension system for younger workers and new labor-market entrants.

### Design indicators

<table>
<thead>
<tr>
<th>Structure of pension systems</th>
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<tbody>
<tr>
<td>Pillars</td>
<td>whether a pillar exists, type of scheme, financing mechanism</td>
</tr>
<tr>
<td>Civil service</td>
<td>integrated into national scheme or separate provision</td>
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<table>
<thead>
<tr>
<th>Qualifying conditions</th>
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<tbody>
<tr>
<td>Pension eligibility ages</td>
<td>statutory, standard and early ages by sex</td>
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<tr>
<td>Contribution history</td>
<td>years of contributions required to receive a benefit</td>
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<table>
<thead>
<tr>
<th>Parameters: contributions</th>
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<tbody>
<tr>
<td>Pension contribution rates</td>
<td>employee, employer and total</td>
</tr>
<tr>
<td>Social security contribution rates</td>
<td>employee, employer and total</td>
</tr>
<tr>
<td>Ceiling on pensionable earnings</td>
<td>(national currency, % of average earnings)</td>
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</tbody>
</table>

The remainder of the design indicators discusses the parameters and rules of the different schemes that make up a countries’ retirement-income provision. It begins with the conditions needed to qualify for benefits: the normal and early pension ages and the number of years of contributions required.
The structure of contributions is analyzed next. First, there are the rates of contributions for pensions, divided between those levied on employees and those on employers. In some countries, there is no separately identified ‘pension’ contribution. Instead, there is a broader ‘social security’ contribution that finances (and determines eligibility for) a range of different benefits. These overall contribution rates are therefore shown for all countries. The final element is the ceiling on pensionable earnings. In most cases, this is also the ceiling on earnings for contribution purposes.

The next part of the system-design indicators looks at the parameters and rules of different kinds of scheme.

For the zero pillar, the value of targeted and basic pensions is shown. With targeted schemes, a second key parameter is the withdrawal or clawback rate. This shows the reduction in the value of the entitlement as income from other sources increases. Many such schemes have a withdrawal rate of 100%, as income is simply topped up until it reaches the benefit target. However, many now have withdrawal rates of less than 100%. For example, in Australia and the United Kingdom, one extra unit of income from other sources results in a 40% reduction in means-tested benefits. This withdrawal rate is 50% in Canada. This withdrawal rate has important effects on economic incentives – to work and save, for example – and on the fiscal cost of providing retirement benefits.

For the first and second pillars, the four different types of scheme are analyzed separately. The key parameter of defined-benefit schemes is the accrual rate: the percentage of earnings gained in pension benefit for each year of contributions. The other two parameters relate to the way in which earnings are measured in the benefit formula. One shows the period covered to calculate earnings, which can be the average over the career or a limited number of best or final years. The other shows the valorization procedure. This is the way in which earlier years’ earnings are adjusted to take account of changes in costs or standards of living between the time the entitlement was earned and the time of retirement. Since this is generally linked to an index – such as prices or average earnings – this procedure is often also called ‘pre-retirement indexation’.

### Design indicators, cont.

<table>
<thead>
<tr>
<th>Parameters: zero pillars</th>
<th>Benefit level</th>
<th>(value of targeted and basic, national currency, % of average earnings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal rate</td>
<td></td>
<td>(reduction in targeted benefits as other income increases, %)</td>
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</table>

<table>
<thead>
<tr>
<th>Parameters: DB schemes</th>
<th>Accrual rate</th>
<th>(% of earnings replaced for each year of contributions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings measure</td>
<td></td>
<td>(lifetime average, limited number of best or final years)</td>
</tr>
<tr>
<td>Valorization</td>
<td></td>
<td>(adjustment in earlier years’ earnings with price or wage inflation or a mix)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameters: points schemes</th>
<th>Point cost</th>
<th>(earnings/contributions to buy one point, national currency)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point value</td>
<td></td>
<td>(pension value of one point, national currency)</td>
</tr>
<tr>
<td>Uprating</td>
<td></td>
<td>(indexation procedure for pension point value)</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Parameters: NDC schemes</th>
<th>Contribution rate</th>
<th>(per cent of earnings, employee plus employer)</th>
</tr>
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<tbody>
<tr>
<td>Notional interest rate</td>
<td>Notional interest</td>
<td>(linked to wage, wage-bill or GDP growth)</td>
</tr>
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</table>

<table>
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<tr>
<th>Parameters: DC schemes</th>
<th>Contribution rate</th>
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| Parameters: indexation    | Indexation of pensions in payment | (main earnings-related scheme: proportion linked to prices or wages) |

The key parameters with points schemes are the cost and value of the point. It can be shown that the ratio of the value to the cost is the equivalent of the accrual rate in a defined-benefit scheme.

For notional accounts, the database shows the percentage of earnings paid into the accounts by employees and employers (which is generally...
different from the total pension contributions levied, discussed above). The database also shows the notional interest rate that is earned by balances in the accounts. This is typically one, or a mix, of price inflation, average-earnings growth, wage-bill growth or GDP growth. Again, this has a parallel in defined-benefit schemes: the notional interest rate has exactly the same effect as the valorization of earlier years’ earnings in a defined-benefit scheme.

The final type of scheme is the defined-contribution plan. Here, the key parameter is naturally the mandatory contribution rate.

Indexation of pensions in payment rounds off the information on pension-system design. Most countries increase pensions in payment by an index of price inflation or growth in average earnings or some mix of the two. There are often multiple programs for providing retirement incomes. In these cases, indexation procedures are presented for the main scheme. Many countries do not have formal indexation procedures. In these cases, practice for adjustment is divided into two categories. With ‘discretionary’ indexation, periodic (e.g., annual) adjustment of pensions in payment is required, but the rate of increase is not defined. With ‘ad-hoc’ adjustment, both the rate and timing of increases is undefined.

Performance indicators
There is a set of six clear objectives and principles that all well designed pension systems share. These have been set out in a number of World Bank reports.

- **Coverage** of the pension system, by both mandatory and voluntary schemes
- **Adequacy** of retirement benefits
- **Financial sustainability** and **affordability** of pensions to taxpayers and contributors
- **Economic efficiency**: minimizing the distortions of the retirement-income system on individuals’ economic behavior, such as labor supply and savings outside of pension plans
- **Administrative efficiency**: keeping the cost of collecting contributions, paying benefits and (where necessary) managing investments as low as possible
- **Security** of benefits in the face of different risks and uncertainties

This framework illustrates the trade-offs inherent in the design of pension systems and reforms. For example, higher pensions from zero- or first-pillar schemes would improve the adequacy of retirement benefits but would also worsen fiscal sustainability. In other cases, there are synergies between different objectives. Encouraging later retirement improves both economic efficiency and financial stability. Similarly, extending coverage of pensions should also improve adequacy of future retirement benefits for today’s workers.

These six principles underlie the indicators of pension-system performance included in the database. In addition to statistics directly related to these principles, there are two complementary categories of indicators. The first looks at the effect of the pension system on the distribution of incomes in old age. The second examines the investment performance of pension funds: both publicly managed reserves and private plans.

The measures are designed to help in the diagnosis of the problems of pension systems, to act as an input to the policy choices involved in designing a reform and in monitoring the effectiveness of policy changes. As such, they are useful both to compare across countries and to assess the benefits of different policies within a country.

The first set of indicators look at issues of coverage of the pension system and the adequacy of benefits. They are closely linked: both indicate the success of the system in delivering retirement incomes.

**Coverage** of pension systems can be assessed with respect to contributors and beneficiaries: people of working age building up pension rights and people of pension age receiving benefits.
The former – coverage of the working-age population – is presented as an absolute number and expressed as a percentage of the labor force or of the population of working age (15-64). Coverage is defined as people who are ‘active members’, either as contributors or in terms of building up pension rights. The data include information from all schemes (such as civil service or other public-sector workers), not just from the main national scheme. Unfortunately, there are some insurmountable problems in getting accurate and comparable information: the data are therefore best estimates.

The number of recipients includes all benefit types: old-age, survivors and disability. Recipients are also shown as a percentage of the total population and of the population aged 65 and over. In many cases, the latter measure exceeds 100%, because there are many recipients under the age of 65.

The first adequacy indicator is based on forward-looking simulation of replacement rates for workers entering the labor market today. The replacement rate is the ratio of the pension entitlement when retired to individual earnings when working.

These results use the Apex model (Analysis of Pension Entitlements across Countries). The model is discussed in detail in Pensions Panorama, published by the World Bank, and in Pensions at a Glance, issued every two years by the OECD (Organisation for Economic Co-operation and Development).

Replacement rates are presented for people at different levels of earnings, based on the parameters and rules of the pension system. They are shown, in the first instance, for full-career workers. Modules that calculate taxes and contributions paid on earnings when working and pensions during retirement allow the computation of net replacement rates.

The indicators also include measures of pension wealth: the present value of the flow of pension benefits during retirement. This measure takes account of the effects of national life expectancy, pension age and indexation policy. The replacement rates give an indication of adequacy at the time of retirement; pension wealth gives a dynamic measure of adequacy across the period of retirement.

A complementary indicator is the empirical replacement rate, measured from administrative data. These show the benefits actually received by recent retirees. This illustrates the effect, on average, of incomplete contribution records on pension entitlements. This is more difficult to show with the previous, modeled replacement rates. However, these empirical replacement rates are backward-looking, in the sense that they reflect past parameters and rules of the pension system and historical economic performance.

The final indicators of adequacy are based on measures of older people’s incomes. The first compares the incomes of older people on average with those of the population as a whole. The second focuses on low incomes, giving the proportion of older people in poverty. Whereas the previous indicators of adequacy considered only the formal pension system, these income-distribution indicators reflect the full range of support open to older people: from families or from savings outside of the pension system. These indicators will be added to the database as they become available from ongoing work on old-age incomes and poverty using household-survey data.

Pension systems have a range of consequences for the distribution of income. However, analysis of these distributional effects is more complex than for other government transfer programs, which can be analyzed as a ‘snapshot’, using information for a single year. With pension systems, people are typically contributors and recipients at different points in their lives and both stages need to be taken into account when assessing the distributional impact of retirement-income provision.

The indicator chosen to illustrate the distributional impact of pension systems is the benefit/cost ratio. This compares, at a single point in time, the value of lifetime pension benefits (pension wealth, as discussed above) and the value of lifetime
pension contributions, paid by both employees and employers.

Pension systems can have a range of distributional effects. Some, such as providing higher benefits relative to contributions for low earners, are intended. Others, such as larger benefit/cost ratios for particular careers (late labor-market entrants, early retirees), may not be.

### Performance indicators

#### Coverage
- **Active members**
  - (number, % of labor force, % of working-age population)
- **Recipients**
  - (number, % of total and over-65 population)

#### Adequacy
- **Modeled replacement rates**
  - (gross and net, by sex and earnings level, % of individual earnings)
- **Modeled pension wealth**
  - (gross and net, by sex and earnings level, multiple of individual earnings)
- **Empirical replacement rates**
  - (% of individual earnings)
- **Incomes of older people**
  - (% of population incomes)
- **Poverty of older people**
  - (% of older people)

#### Benefit/cost ratios
- (by earnings level and for different career paths)

#### Financial sustainability
- **Projected pension spending**
  - (% of GDP)
- **Projected contribution revenues**
  - (% of GDP)
- **Implicit pension debt**
  - (% of GDP)
- **Present value of contribution revenues**
  - (% of GDP)

The benefit/cost ratios are calculated using the Apex model.

The next category of performance indicators looks at the financial sustainability and affordability of retirement-income provision. Pension systems involve long-term commitments: there is an average of 50-60 years between the time people pay their first contribution and draw their last benefit. The issue of financial sustainability can therefore only be addressed over a long time horizon.

The first two indicators of financial sustainability look at the flows of money in the retirement-income system. They show long-term projections of pension expenditure and revenues from pension contributions. Information is drawn from national sources and from work using the World Bank’s Prost model (Pension Reform Options Simulation toolkit).

The other two indicators in this category are stock measures. The first shows the present value of the future flow of pension expenditures. It is called the ‘implicit pension debt’ because it illustrates the scale of pension promises in the same way that measures of government debt show the scale of promises to holders of government bonds. The undertaking to pay retirement benefits is underpinned by a commitment to levy pension contributions on earnings. The present value of these flows of contribution revenues is also presented.

Pension systems have a range of effects in individuals’ economic choices, particularly in the labor market. The first performance indicator of economic efficiency looks at the impact of the pension system on financial incentives to retire. This is measured by the change in pension wealth for working an additional year. (Pension wealth, as discussed above, shows the lifetime value of retirement benefits.) The results, produced by the Apex model, are presented as a percentage of individual earnings. This means that they can be interpreted as an implicit tax or subsidy on working an additional year. Data are provided for each year between the ages of 50 and 70. This large range was chosen because it covers the period of possible early and late retirement ages in nearly all countries in the database.

The next two indicators of economic efficiency look at labor-market and pension-system outcomes. The first shows the average effective retirement age. This is calculated from labor-force participation data. The second gives the average age at which people begin drawing a pension. The two can differ for many reasons. People can start
drawing a pension but continue working. Those who are not covered by the formal pension system often need to continue working to advanced ages. For comparison with these indicators of behavior, the database also includes information on current pension-eligibility ages. (The indicator for pension-eligibility ages under ‘system design’ above shows the age of eligibility that applies to new labor-market entrants.)

The final indicator under the heading of economic efficiency is the ‘tax wedge’. This illustrates the total fiscal cost of employing a worker in terms of social security contributions paid by employees and employers and personal income taxes paid by employees. Results are shown for an average earner.

The next measures of pension-system performance relate to administrative efficiency. For public pension programs, the measure (of many potential indicators) included in the database is the cost of administering the schemes, which, for comparative purposes, is shown as the cost per member (both contributors and beneficiaries) relative to GDP per head.

For private pension schemes, a difficulty arises because the structure of charges differs between countries. Therefore, all the charges that would be paid by an average earner with a full career (flat-rate; proportions of earnings, contributions, assets or investment returns) are added and expressed as the charge ratio: the percentage of contributions that would be paid in charges. This is the same as the amount by which benefits are reduced because of charges. The size of the charge shown is the average across different providers.

Pensions are subject to many sources of risk and uncertainty because they are long-term contracts. There is, on average 50-60 years between the time a person pays their first contribution and the time the last benefit is drawn, either by members or their survivors. Much can change – in both economies and societies – over such a long period. The benefits of all types of pension scheme are subject to risks: what differs is the kind of risk.

There are four indicators that look at the degree to which pension benefits are subject to risk or, equivalently, the degree to which pension systems offer security against those risks, by diversification, for example.

### Performance indicators, cont.

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<th>Economic efficiency</th>
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<td>Retirement incentives</td>
<td>(change in pension wealth from an additional year’s work, % of individual earnings, ages 50-70)</td>
</tr>
<tr>
<td>Effective retirement age</td>
<td>(average age of withdrawal from the labor market)</td>
</tr>
<tr>
<td>Effective pension age</td>
<td>(average age of first receipt of pension, recent year)</td>
</tr>
<tr>
<td>Pension eligibility ages</td>
<td>(current ages, early and normal, by sex)</td>
</tr>
<tr>
<td>Tax wedges</td>
<td>(income tax, employee and employer social security contributions, % of gross labor costs)</td>
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<table>
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<tr>
<th>Administrative efficiency</th>
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<tbody>
<tr>
<td>Administrative costs of public pension schemes</td>
<td>(amount per member, % of GDP per head)</td>
</tr>
<tr>
<td>Administrative charges for private pension schemes</td>
<td>(% of contributions)</td>
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<th>Security</th>
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<tbody>
<tr>
<td>Investment risk</td>
<td>(% of pension package subject to investment risk)</td>
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<tr>
<td>Life-expectancy risk</td>
<td>(% of pension package subject to investment risk)</td>
</tr>
<tr>
<td>Role of public and private pensions</td>
<td>(% of pension package provided by private sector)</td>
</tr>
<tr>
<td>Financing mechanisms</td>
<td>(% of pension package financed pay-as-you-go, partial funding or full funding)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Financial performance</th>
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<tbody>
<tr>
<td>Investment returns on public pension reserves</td>
<td>to be added</td>
</tr>
<tr>
<td>Investment returns on private pensions</td>
<td>to be added</td>
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</table>

Investment risk has been at the forefront of people’s minds recently because of the impact of the financial crisis on the value of private-pension savings. Mandatory private pensions (see the discussion of second pillars above) have become much more widespread in the last 20 years. However, these are typically part of a retirement-
income package, which may also include a publicly provided minimum pension or earnings-related benefits (first pillars).

The indicator in the database aims to show the percentage of the total retirement-income package expected to come from different sources. This is calculated for full-career workers at different levels of earnings: in many cases, low earners will receive more of their total retirement income from the public programs. A weighted average is then calculated using a standardized distribution of earnings (since national data are not always available).

A second element of risk for individuals’ benefit levels arises from changes in life expectancy. As life expectancy increases, the annuity rates that are used to convert the amounts accumulated in defined-contribution pensions into an annuity are lower for a given age at which the pension is drawn. After retirement, individuals with annuities are protected against changes in life expectancy. But between the time they pay contributions and draw benefits, life expectancy will change and is uncertain. Even if individuals do not buy an annuity and instead make periodic withdrawals from their accounts, the money must be spread over a longer period.

Notional defined-contribution schemes have an annuity calculation in their benefit formulas. Also, a range of countries have introduced an automatic link to life expectancy in other types of first-pillar schemes: defined-benefit and points. Again, benefits will automatically fall as life expectancy increases.

The indicator shows the percentage of the total retirement-income package coming from schemes where benefits are automatically affected by changes in life expectancy. This is calculated in a similar way to the investment-risk indicator.

The final two security indicators look at diversification in retirement-income provision. The first looks at the role of the public and private sectors, while the second looks at different mechanisms for financing benefits. There is a significant degree of overlap between the two: most public pensions are provided on a pay-as-you-go basis (see the discussion of the indicators of pension-system design above). However, there are also examples of publicly managed defined-contribution schemes, often known as provident funds. And many countries have accumulated public reserves against future liabilities in the form of earnings-related (first- and zero-pillar) pensions and, in some cases, zero-pillar benefits.

The two indicators again show the percentage of the total retirement-income package coming from, in the first case, public and private sectors, and, in the second case, with funded, partially funded and pay-as-you-go financing.

All four of the security indicators, based on the make-up of the total retirement-income package, are calculated using the Apex model.

Finally, indicators of financial performance will be added at a later stage. This will cover both private pension schemes and public pension reserves. The objective is to have information on investment returns that adequately takes account of risk and uncertainty.

Getting hold of the information
This introductory briefing note has aimed merely to give a taste of the wealth of information that the World Bank Pension Indicators and Database will provide.

The subsequent nine briefings in this series focus on the groups of performance indicators. They are intended to provide more detailed information on the definition of the indicators, how they are calculated and data sources. They also present and discuss sample results.

The full set of 10 briefing notes, including this one, is listed in Table 5 below. The notes are designed to match as closely as possible the overall structure of the performance indicators in the pension database, which was set out above in Table 4.

(The research underlying the third briefing on adequacy – looking at incomes and poverty of older people – is not yet complete. The note on
investment performance of funded pensions is also forthcoming.)

In addition to the World Bank, other international organizations are major sources. These include Eurostat, the International Labor Organisation (ILO), the International Social Security Association (ISSA), the Organisation for Economic Co-operation and Development (OECD) and the United Nations Development Program (UNDP). Much of the material was also gleaned from national experts and the web sites of national authorities. Links to these web sites can be found on the World Bank’s pensions web site: www.worldbank.org/pensions.

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Information on complementary measures, not included in the database for reasons of space, will also be presented and the advantages and disadvantages of different approaches assessed. Examples of data for selected countries will be used to illustrate the results and their interpretation.

The data – along with a commentary on the results – will be published as *International Patterns of Pension Provision 2010*.

In addition to the paper, it will be possible to retrieve spreadsheets of the data from the World Bank’s pension web-site. This will be available initially only internally, on the intranet site. When the paper is published, these will also be available externally from www.worldbank.org/pensions.

Each spreadsheet will cover the information on a particular group of information from the database. These will match the tables in the *International Patterns 2010* paper.

The entire database will also be available as a single Stata dataset. This will enable users of Stata – a statistics and data program – more rapidly to build tailor-made tables and charts and explore the relationships between different indicators.

**Sources and further reading**


