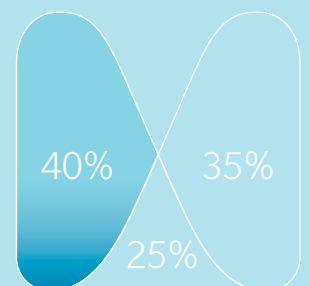


# CHAPTER 5

## THE ADEQUACY SUB-INDEX

The adequacy sub-index is determined by considering the benefits provided to both the poor and the median-income earner as well as several design features which enhance the efficacy of the overall retirement income system. The net household saving rate and home ownership rate are also included as non-pension savings can represent an important source of financial security during retirement.



The countries with the highest value for the adequacy sub-index are the Netherlands (75.9) and Canada (74.1), with India (37.3) and Singapore (41.9) having the lowest values. Whilst several indicators influence these scores, the level of the minimum pension (expressed as a percentage of the average wage) and the net replacement rate provided for a median-income earner are the most important.

Full details of the values in respect of each indicator in the adequacy sub-index are shown in Attachment 1.

## Question A1

What is the minimum percentage of the average wage that a single aged person will receive?

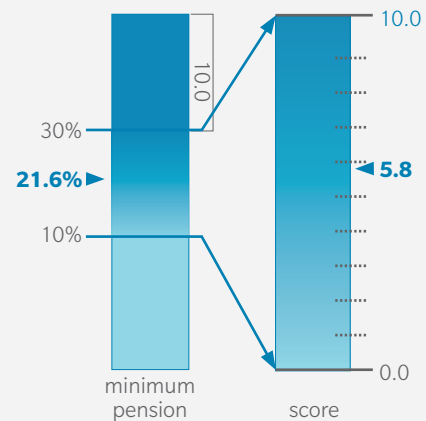
### Objective

An important objective of any retirement income system is to provide a minimum pension to the aged poor. In terms of the World Bank's recommended multi-pillar system, it represents the non-contributory or Pillar 0, which provides a minimum level of income for all aged citizens. It should be noted that this minimum pension assumes no work experience, but will often require a minimum period of residency.

### Calculation

There is no correct answer as to what the minimum pension should be, as it depends on a range of socio-economic factors. However, it is suggested that a minimum pension of about 30 percent<sup>13</sup> of national average earnings adequately meets the poverty alleviation goal. Hence a minimum pension below 30 percent will score less than the maximum value, with a zero score if the pension is 10 percent or less of average earnings, as such a pension offers very limited income provision. Minimum pensions of 30 percent of average earnings or higher receive the maximum score of 10.

## Calculating A1 — Minimum Pension



### Commentary

The minimum pension for most countries is between 15 percent in Chile and 36 percent in Brazil. India does not provide a minimum pension whilst Singapore provides very modest public assistance. The Chinese results have been modified as the minimum pension is not available throughout the country.

### Weighting

The major objective of any nation's retirement income system is to provide income support for its older citizens. The level of actual benefits therefore represents the major measurable outcome from the system. Hence this measure (which considers the income provided for the poorest in the community), together with the next measure (which calculates the income for a median-income earner), represent the two most important components within the adequacy sub-index. This indicator is therefore given a weighting of 17.5 percent in the adequacy sub-index.

<sup>13</sup>This level was chosen in 2009 when it was slightly higher than the OECD average of 27% for first tier benefits as shown in OECD (2009b), p157–160.

## Question A2

What is the net replacement rate for a median-income earner?

### Objective

In “Averting the Old Age Crisis”, the World Bank suggested that a target replacement rate for middle income earners from mandatory systems should be:

- 78 percent of the net average lifetime wage
- 60 percent of the gross average lifetime wage
- 53 percent of the net final year wage
- 42 percent of the gross final year wage

It also noted that “The government should not necessarily mandate the full pension that might be desirable for individual households.”<sup>14</sup> That is, these targets could be met through a combination of mandatory and voluntary provisions.

The OECD produces measures of the net replacement rate for an individual earning the median-income (revalued with earnings growth) throughout his/her working life. Median income is used as it is a better representation than the average earnings, which are skewed upwards by the highest income earners.

It should be noted that these calculations assume no promotion of the individual throughout their career; that is, the individual earns the median income throughout. Therefore replacement rates based on lifetime median income will be higher than when expressed in terms of final salary for most individuals.

The OECD expresses a target replacement rate of 70 percent of final earnings<sup>15</sup> which includes mandatory pension for private sector workers (publicly and privately funded) and typical voluntary occupational pension plans for those countries where such schemes cover at least 30 percent of the working population.

This indicator for the adequacy sub-index should only include mandatory components of a retirement income system for private sector workers, as voluntary plans that may include only 30 percent of the working population do not represent a good indicator of the total system.

The target benefits from a mandatory system should be less than 70 percent of final earnings to allow for individual circumstances and some flexibility. An objective of between 45 percent and 65 percent of final earnings is considered reasonable. Using the ratios between lifetime earnings and final earnings, the target for a net replacement rate (i.e. after allowing for personal income taxes and social security contributions) for a median-income earner from a mandatory system should be within the range of 70–100 percent of median lifetime earnings (revalued with earnings growth).

A net replacement rate below 70 percent of lifetime earnings suggests a significant reliance on voluntary savings whereas a figure above 100 percent does not provide the flexibility for individual circumstances and may suggest overprovision. The OECD average for a median-income earner is 72.0 percent of lifetime earnings.<sup>16</sup>

### Calculation

The maximum score for this indicator is obtained for any country with a result between 70 percent and 100 percent. Interestingly, only Brazil lies within this range, with only the Netherlands lying above it at 103.3 percent. Any score outside this range scores less than the maximum with a zero score being obtained for a result less than 20 percent or more than 150 percent.

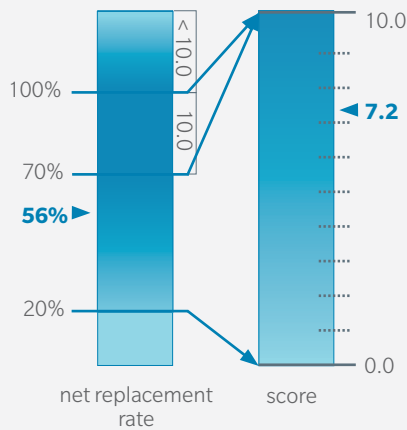
For Singapore, the OECD data lists the net replacement rate for mean income earners; we have therefore performed a positive adjustment to this figure in order to align it with the other results based on median-income earners. Notwithstanding this adjustment, the net replacement rate is less than 20 percent.

<sup>14</sup>World Bank (1994), *Averting the Old Age Crisis*, p295.

<sup>15</sup>OECD (2009a), *OECD Private Pensions Outlook 2008*, p121.

<sup>16</sup>OECD (2011), *Pensions at a Glance 2011*, p125.

## Calculating A2 — Net Replacement Rate for Median Income Earner



### Commentary

With the exception of Brazil, the Netherlands and Singapore, all countries have a result between about 40 percent (China, India and Japan) and 66 percent (Switzerland). The Singapore result, calculated by the OECD, is low due to the availability to members of most of their savings in the Central Provident Fund prior to retirement. On the other hand, the Netherlands result may be considered to produce a pension that is slightly too high for a median-income earner, whilst also not providing the appropriate individual flexibility throughout their lifetime. The Chinese figures have been adjusted to reflect the varying levels of provision that exist in practice.

### Weighting

As noted in the commentary for Question A1, these results represent a major outcome in the assessment of any retirement income system. As this indicator is likely to reflect the benefits provided to a broader group of retirees than the previous question, this indicator is given a higher weighting in the adequacy sub-index, namely 25 percent.

## Question A3

What is the net household saving rate in the economy?

### Objective

The living standards of the aged will depend on the benefits arising from the total pension system (which was covered in the previous two questions) as well as the level of household savings outside the pension system. In some countries, these savings may represent an important factor in determining the financial support available to the aged.

### Calculation

The rate of household savings is not readily available and we have therefore used data from the Economist Intelligence Unit and calculated the saving rate in the following way:

$$\text{Household Saving Rate} = \frac{(\text{PDIN} - \text{PCRD})}{\text{PDIN}}$$

where:

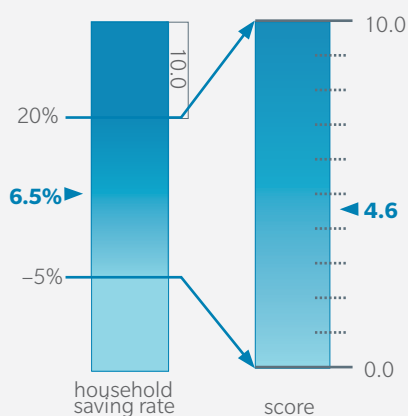
PDIN = Personal disposable income

PCRD = Private consumption

To remove some volatility that may occur in annual figures, we have averaged the 2009 and 2010 measurements.

The calculated household saving rates ranged from 0.4 percent in the Netherlands to 16.8 percent in China and 27.2 percent in India. We have provided a maximum score for any country with a saving rate of 20 percent or higher, and a zero score for any country with a saving rate of less than minus 5 percent.

### Calculating A3 — Household Saving Rate



### Commentary

The net household saving rate provides some indication of the level of current income that is voluntarily being set aside from current consumption, either for retirement or for other purposes.

### Weighting

The weighting for this measure has been set at 10 percent for the adequacy sub-index. This indicates the importance of household savings, although it is noted that some of this saving will be used for other purposes. It is also recognised that most voluntary household saving will be carried out by higher income households so that this measure is unlikely to assist those at lower and median income levels.

## Question A4

Are voluntary member contributions made by a median income earner to a funded pension plan treated by the tax system more favourably than similar savings in a bank account?

### Objective

The level of total retirement benefits received by an aged person will depend on both the mandatory level of savings and any voluntary savings, which are likely to be influenced by the presence (or otherwise) of taxation incentives which are designed to change personal behaviour.

### Calculation

This indicator was based on a two-point scale with a maximum score for “yes” and zero for “no”.

It should be noted that this indicator is concerned with any taxation incentives that make savings through a pension plan more attractive than through a bank account. The benchmark of a bank account was chosen as this saving alternative is readily available in all countries.

### Commentary

Most countries offer some taxation incentive for voluntary contributions with China and Japan being the exceptions. In Sweden, employees can contribute into individual retirement savings accounts and receive a tax deduction but they are not allowed to contribute into employer sponsored pension plans.

### Weighting

Taxation incentives represent an important measure that governments can introduce to encourage pension saving and long-term investments. Such incentives provide a desirable factor in the design structure of retirement income systems and we have therefore given this measure a weighting of five percent for the adequacy sub-index, which represents the same weighting as some other desirable design indicators discussed below.

## Question A5

Is there a minimum access age to receive benefits from the private pension plans<sup>17</sup> (except for death, invalidity and/or cases of significant financial hardship)? If so, what is the current age?

### Objective

The primary objective of a private pension plan should be to provide retirement income; hence the availability of these funds at an earlier age reduces the efficacy of such plans as it leads to leakage from the system.

### Calculation

The first question was scored on a three-point scale with a score of 2 for “yes”, 1 if it was applied in some cases and 0 for “no”. The second question was scored on a scale for those who said “yes” to the first question; ranging from 0 for age 55 to a score of 1 for age 60. Australia, China and Japan scored 0.5 as age 60 applies to some members.

A maximum score is achieved if a minimum access age exists and this age is at least age 60.

### Commentary

Many countries have introduced a minimum access age, while others have access provisions described in each plan’s set of rules. In some cases, early access is not prohibited although the taxation treatment of the benefit discourages such behaviour.

### Weighting

Ensuring that the accumulated benefits are preserved until the later years of a working life represents an important design feature of all pension arrangements. Hence, this desirable feature has been given a 10 percent weighting in the adequacy sub-index.

## Question A6

What proportion, if any, of the retirement benefit from the private pension arrangements is required to be taken as an income stream?

### Objective

The primary objective of a private pension system should be to provide income during retirement. Of course, this does not imply that a lump-sum payment is not a valuable benefit. It often is. Indeed, in a recent World Bank paper, Rocha and Vittas (2010) suggest that policymakers should target an adequate level of annuitization but should be wary of causing excessive annuitization. Hence, this indicator focuses on whether there are any requirements in the system for at least part of the benefit to be taken as an income stream, and if so, what level of annuitization is required.

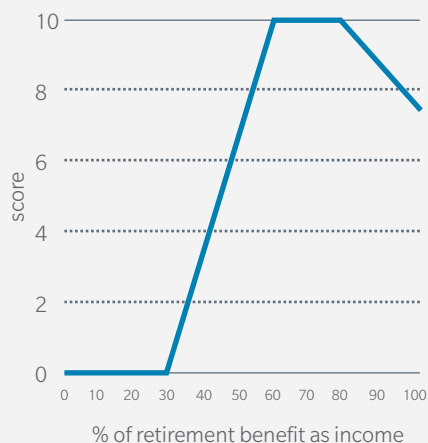
### Calculation

There is no single answer that represents the correct proportion of a retirement benefit that should be annuitized. However a maximum score should be achieved where between 60 percent and 80 percent of the benefit is required to be converted into an income stream. A percentage above 80 percent reduces the flexibility that many retirees need whilst an answer below 60 percent is not converting a sufficient proportion of the benefit into an income stream. A percentage below 30 percent results in a score of zero.

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<sup>17</sup>Private pension plans include both defined benefit and defined contribution plans and may pay lump-sum or pension benefits. They also include plans for public sector and military employees.

## Calculating A6 — Conversion to Income Streams



### Commentary

There is considerable variety between countries with some countries requiring most or all of the benefit to be converted into a lifetime annuity (e.g. the Netherlands and Sweden) whereas many countries have no requirement at all (e.g. Australia, Chile, China and Poland).

### Weighting

The requirement that part of a member's accumulated retirement benefit be turned into an income stream (which need not necessarily be a lifetime annuity) represents a desirable feature of a retirement income system and therefore a weighting of 10 percent has been used in the adequacy sub-index.

## Question A7

On resignation, are members normally entitled to the full vesting of their accrued benefit?

After resignation, is the value of the member's accrued benefit normally maintained in real terms?

Can a member's benefit entitlements normally be transferred to another private pension plan on the member's resignation from an employer?

### Objective

Most individuals do not stay with a single employer throughout their working life. It is therefore important that individuals receive the full value of any accrued benefit on leaving an employer's service and that the real value of this benefit is maintained until retirement, either in the original plan or in another plan.

### Calculation

Each of these three questions were scored with a score of 2 for "yes", 0 for "no" and between 0.5 and 1.5 if it was applied in some cases where the actual score depended on the actual circumstances.

### Commentary

There is considerable diversity to the extent that the real value of members' benefit entitlements can be transferred or retain their real value after changing employment. That is, in only nine of the sixteen countries is full vesting present, the real value of the benefits is maintained after resignation, and the accrued benefit can be transferred, where appropriate.

### Weighting

Maintaining the real value of a member's accrued benefit entitlements during a member's working life represents an important feature of all retirement income systems. Hence, this desirable feature has been given a 7.5 percent weighting in the adequacy sub-index.

## Question A8

Upon a couple's divorce or separation, are the individuals' accrued pension assets normally taken into account in the overall division of assets?

### Objective

The adequacy of an individual's retirement income can be disrupted by a divorce or separation. In many cases, the female can be adversely affected as most of the accrued benefits may have accrued in the male's name during the marriage or partnership. It is considered desirable that upon a divorce or separation, the pension benefits that have accrued during the marriage be considered as part of the overall division of assets. This outcome can be considered to be both equitable and provide greater adequacy in retirement to both individuals, rather than just the main income earner.

### Calculation

The question was scored on a three-point scale with a score of 2 for "yes", 1 if it was applied in some cases and 0 for "no".

### Commentary

In ten of the sixteen countries, it is normal practice for the accrued pension benefits to be taken into account in the overall division of assets upon a divorce or separation.

### Weighting

With a relatively high level of divorce or separation occurring in many countries, adequacy of retirement income for the lower income partner is improved if pension assets are considered in the overall division of assets. This desirable feature has been given a five percent weighting in the adequacy sub-index.

## Question A9

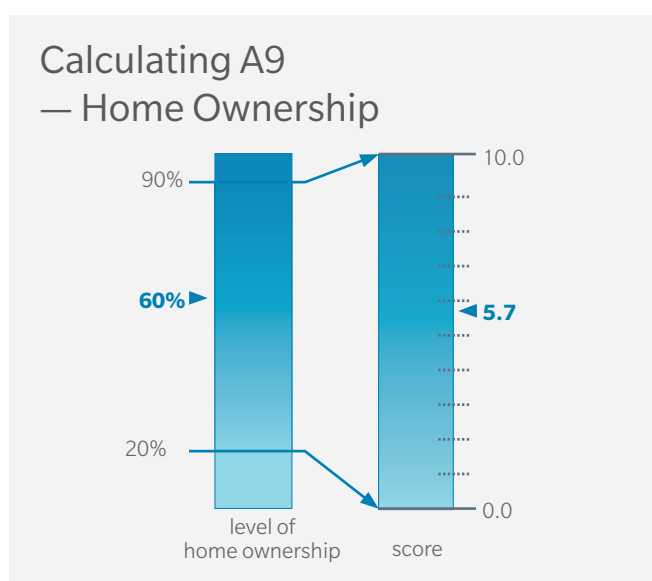
What is the level of home ownership in the country?

### Objective

In addition to regular income, home ownership represents an important factor in affecting financial security during retirement. Indeed in some countries, such as Singapore, a portion of the member's savings can be used to help purchase a home. In other countries, taxation support encourages home ownership.

### Calculation

A maximum feasible score is considered to be 90 percent. Hence a home ownership level of 90 percent or more would score maximum results whilst a score of 20 percent or less would score zero.



### Commentary

The level of home ownership ranged from 30 percent in Switzerland to slightly less than 90 percent in China, India and Singapore.

### Weighting

Home ownership represents an important feature of financial security in retirement. Hence, this indicator has been given a five percent weighting in the adequacy sub-index.

## Question A10

What is the proportion of total pension assets invested in growth assets?

### Objective

The investment performance of funded pension funds over the long term, after allowing for costs and any taxation, represents a key input into the provision of adequate retirement income. Yet, as Hinz et al (2010)<sup>18</sup> have noted correctly, international comparisons of investment returns might not be totally meaningful. They also note that any benchmarks need to consider a range of factors including the age of the plan member, the availability of other income (such as Social Security), the contribution rates, the target replacement rate, the risk tolerance of the member and the types of retirement income available.

It is apparent that there is no ideal asset allocation that is appropriate for all members at all ages. The growing interest in life cycle funds suggests that the best approach is likely to be a changing asset allocation during an individual's lifetime.

It is also important to recognise that the investment performance of a pension fund needs to focus on the longer term and not be focused on short term returns. With this in mind, we believe that it is appropriate for the investments of pension funds within any country to be diversified across a range of asset classes, thereby providing the opportunity for higher returns with reduced volatility.

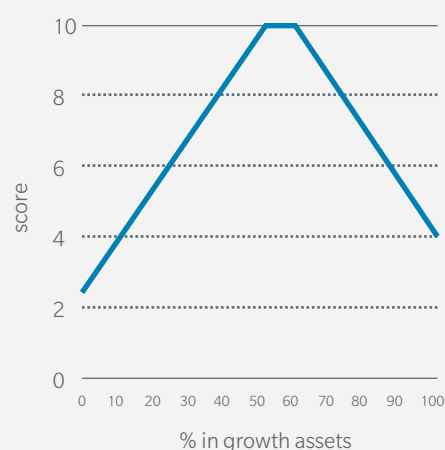
### Calculation

Many countries have pension fund assets invested in a range of assets ranging from cash and short term securities through bonds and equities to alternative assets such as property, venture capital and infrastructure.

As a proxy to this preferred approach, we have used the percentage of growth assets (including equities and property) in the total pension assets in each country.

A zero percentage in growth assets highlights the benefit of security for members but without the benefits of diversification and the potential for higher returns. In some emerging markets, it is also recognised that the capital markets are underdeveloped. Therefore a zero percentage scores 2.5 out of a maximum score of 10. This score increases to the maximum score of 10 as the proportion in growth assets increase to 50 percent of all assets. If the proportion is beyond 60 percent the score is reduced to reflect the higher level of risk and volatility.

### Calculating A10 — Percentage of Growth Assets



### Commentary

The level of growth assets ranges from virtually zero in Singapore to approximately 70 percent in Australia. Ten of the sixteen countries have a percentage between 30 percent and 60 percent which indicates a reasonable level of exposure to growth assets.

### Weighting

Asset allocation represents an important feature of all funded retirement systems. This indicator has therefore been given a five percent weighting in the adequacy sub-index.

<sup>18</sup>Hinz R, Rudolph H P, Antolin P and Yermo J (2010), *Evaluating the Financial Performance of Pension Funds*, The World Bank, Washington, p2.

## Sources of data for the adequacy sub-index

### Question A1

OECD (2011), *Pensions at a Glance 2011*, p109 for OECD countries.

OECD (2009c), *Pensions at a Glance Asia Pacific Edition 2009*, p24 for China.

Mercer calculations for Brazil, India and Singapore using government websites.

### Question A2

OECD (2011), *Pensions at a Glance 2011*, p125 for OECD and G20 countries.

OECD (2009c), *Pensions at a Glance Asia Pacific Edition 2009*, p31 for China and Singapore (adjusted).

### Question A3

Data from the Economist Intelligence Unit was provided for all countries.

### Question A9

The answers were sourced from a variety of sources including World Bank (2011), *World Bank Development Indicators 2011*.

### Questions A4, A5, A6, A7, A8 and A10

The answers were sourced from Mercer consultants in each country.