

**An International Comparison of  
Pension System Performance in Delivering  
Adequate Retirement Incomes**

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## Executive Summary

As the world continues to grapple with the social and economic effects of population aging, the provision of financial security in retirement becomes increasingly critical. The continued march of population aging and the consequent need for financial security in retirement is one of the most important economic, social and political challenges of our time. Inadequate retirement savings leads to lower living standards in retirement and the increasing incidence of poverty among the elderly. Indeed, longevity risk is a global issue argued by some as placing further strains on already weakened public finances and posing a significant threat to financial stability (IMF 2012). While OECD countries have widely varying pension schemes, they all face similar challenges: how to provide adequate income in retirement while at the same time ensuring the financial sustainability of the arrangements. The mounting challenges of balancing adequacy and sustainability require Governments to answer tough questions of both intra- and intergenerational fairness.

In the Australian context, much attention has been drawn recently to the cost of the Australian superannuation system compared with pension systems overseas. Less consideration has been given to the actual benefits that Australians derive from this high cost system. The purpose of this paper is twofold: First, to examine the outcomes produced by the Australian retirement income system compared with pension systems in comparable countries overseas. The scope of retirement systems for this purpose includes both public pension and mandatory private savings systems (so called Pillar 1 and 2). The outcomes of interest for the purpose of this study are income adequacy and fiscal sustainability. Adequacy relates to the benefits that are currently provided by the system while fiscal sustainability focuses on the likelihood that the current system will be capable of delivering these benefits into the future. Second, to compare pension systems designs across the same group of countries, particularly focusing on exemplary systems, with a view to identifying suitable reform options.

Given the recognized robustness of the Australian retirement income framework, including both its universal means tested pension and compulsory complementary superannuation system, this paper is not considering broad structural reforms. Rather its focus is to identify significant parameters in the system that could be altered to deliver enhanced retirement outcomes for Australians.

While the living standards of the aged across the world are generally lower than those of the broader population, the evidence suggests that this disparity is greater in Australia than in almost all OECD countries. This conclusion is based on comparisons of living standards and poverty levels as outlined below.

In general terms, adequacy implies that people in retirement should enjoy a living standard that is comparable to the one they experienced during their working lives. This thinking leads to pension replacement rates as a meaningful measure of adequacy. Australia's relative performance in terms of this measure depends to a large extent on the bases of the analysis. Projections of replacement rates that assume the current design of the pension and superannuation systems has been in operation for the full working life of the retired population provide an unrealistically positive perspective on the Australian system's design. This shows Australia ranks highly (5th) in terms of net replacement rates for people on 50% of average wage, but less highly for those on 100% average weekly earnings (11th) and 150% of average weekly earnings (14th).

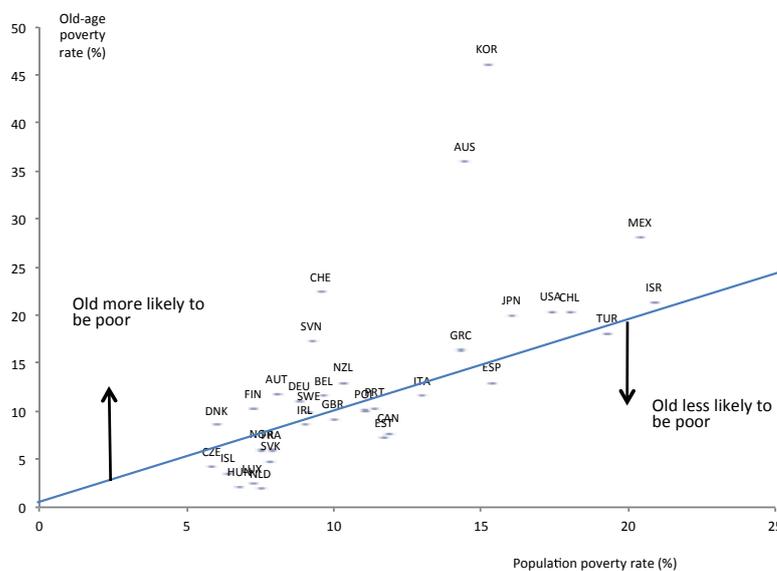
These results, however, provide little insight on retirement outcomes today or even within the medium term. Evidence on actual (rather than projected) replacement rates in the late 2000s presents a different picture. According to OECD estimates, Australia's replacement rate for over 65s at that time was the lowest among 34 OECD countries (69% of national mean income compared with an OECD average of 86.2%). Retirees over 75 years received an even lower replacement rate of 60% over the same period.

Another important indicator of adequacy is the rate of poverty. Given the difficulties in identifying absolute poverty levels across countries, relative poverty thresholds that are proportional to average or median incomes are normally used. A common poverty threshold is the proportion of over 65s with incomes below 50% of the median equivalized income. Using this measure, the OECD estimates that Australia (35%) had one of the highest poverty rates in the OECD region (average of 12.8%) during the late 2000s, second only to Korea (47%). While the living standards of the aged across the world are generally lower than those of the broader population, the evidence suggests that this disparity is greater in Australia than in almost all OECD countries.

Measures of financial income however provide only part of the story. Non-cash factors have an important bearing on living standards, including housing wealth and publicly provided in-kind services. While Australian retirees have a rate of home ownership of 85%, higher than the OECD34 average of 76%, a high proportion of these homeowner retirees had mortgages on their homes. Moreover, evidence from Australian Housing and Urban Research Institute (AHURI) indicates that the burden of mortgage costs is greater on low-income households than it is on high-income households.

While publicly provided services are estimated to enhance elderly incomes for Australian retirees by 35%, this rate is lower than the OECD average benefit of 40%. Taking into account in kind benefits of housing and publicly provided services therefore does not change the overall conclusion that retirees in Australia are relatively less well off than their OECD counterparts.

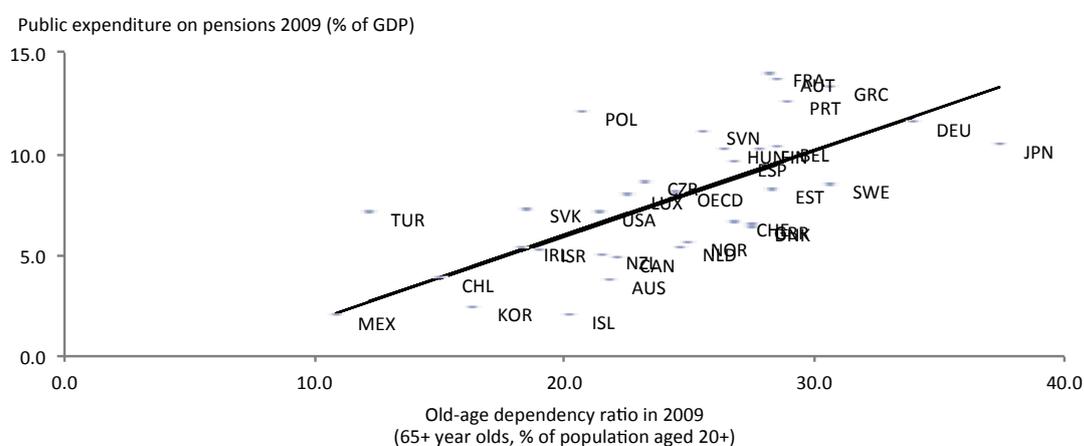
**Figure 1: Income poverty rates by age in OECD Countries**



The differences between Australia’s partially favourable projected retirement income versus unfavourable actual retirement income performance during the late 2000s can be explained, to some extent, by the lack of maturity of the compulsory superannuation system. It will be some decades before all retirees have been through the compulsory superannuation system so that its full impact will be felt on retirement outcomes.

Turning to fiscal sustainability, however, Australia rates highly among OECD countries. On the basis of the combined performance of a number of financial sustainability indicators (including pension and pension reserve fund assets as a percentage of GDP, public pension expenditures and the permanent budgetary adjustment required to ensure the sustainability in public finances) Australia ranks second among its peer group.

**Figure 2. Demographic pressures and public pension expenditure**



Source: OECD Social Expenditures Database (SOCX); United Nations, World Population Prospects – The 2012 Revision.

These results raise a number of important questions. Does the design of the retirement income system, including both the public pension system and the compulsory contributory superannuation system, provide a reasonable balance between the objectives of adequacy and sustainability? Notwithstanding that the system is fiscally sustainable, is it acceptable to have 35 percent of the aged population “at risk of poverty”? Given the relatively high cost of the Australian Superannuation system compared with pension systems overseas, as noted in the introduction, should Australians be content with the level of financial security offered by the retirement income system?

The proposition of this paper is that the answer to each of the above questions is an unequivocal no. Increasing the adequacy of retirement incomes without consideration of budgetary consequences is clearly not an option given fiscal pressures. The priority is therefore to identify measures that would improve the level of retirement income adequacy without compromising greatly on fiscal sustainability. For this purpose, this study examined pension systems whose performance could be considered exemplary (ie performing well against both adequacy and sustainability criteria) from which policy lessons could be drawn.

The pension system performances of a sample of 33 OECD countries were evaluated using six indicators of adequacy and fiscal sustainability. Scores were assigned to each

country on the basis of their performance against each indicator. These scores were then aggregated to allow best overall performers to be identified and ranked. (See Appendix A for the scoring method). It is acknowledged that inclusion of other criteria, such as market integrity, would no doubt have resulted in a different set of rankings. However this was not considered essential given the focus of this study on retirement outcomes. Figure 3 provides the summary results for each of the countries included in the analysis together with their scores against each of the criteria and final country rankings.

The results highlight the trade off between the objectives of income adequacy and fiscal sustainability given that countries that perform well against one objective tend to perform poorly against the other. Looking at scheme type, countries in the sample tend to be either predominantly defined contribution or predominantly defined benefit/hybrids. The results also indicate that DC funds are more likely to perform well against both adequacy and sustainability criteria.

On the basis of a review of the top and bottom performing systems, a number of parameters were identified as having a significant bearing on retirement outcomes in Australia. An evaluation of these alternative options suggests the following.

First, depending on the size of the increase, increasing the aged pension rate could have a significant impact on retirement outcomes, with associated budgetary costs. It would also help manage retirees' longevity risk but only by shifting more of this risk back to government. A pension rate increase would also affect incentives for voluntary savings adversely and encourage greater risk-taking in superannuation investment.

Second, the pension entitlement age in Australia is comparable to that of other retirement systems in the OECD although a number of the exemplars (Iceland and Norway) have higher pension entitlement ages (67 years for both men and women). The Czech Republic has even gone so far as to introduce an automatic pension age increase of two months each year. Whether increasing the pension age affects adequacy levels positively, however, depends on the ability of the aged to continue working. Raising the preservation age would likely be more effective than a further increase in the pension age in addressing adequacy particularly for older retirees (75 years plus).

Finally, most OECD countries place some form of limit on the amount of retirement benefits that may be taken as a lump sum. The superannuation systems largely unlimited access to lump sums creates a significant leakage from the system. This has adverse consequences for the level of retirement incomes with considerable recourse to the public pension system. Various options exist for reducing this leakage and encouraging greater reliance on post retirement income streams. The key advantage of these options compared with most other parametric reforms is that they allow retirees to manage key risks, namely longevity, investment and potentially inflation risk. Further advantages is that they can be implemented in a budget neutral way, their effect on living standards is immediate and they have a positive influence on incentives to work and save.

Compared with options involving some form of compulsion, the use of incentives (through the exclusion of all or part of income stream payments from pension means testing) provides the less distortionary means of increasing post retirement incomes, although this comes at a budgetary cost.

It needs to be recognized that trade-offs and synergies exist between objectives. For

example, increasing the adequacy of pension incomes by increasing the generosity of the pension promise is likely to affect fiscal sustainability adversely. On the other hand, encouraging accumulated assets to be converted to income streams at retirement eases the pressure on the public budget to provide a pension, manages longevity risk and improves the adequacy of retirement incomes.

**Figure 3: Summary of Pension System Evaluation**

Adequacy Score		Sustainability Score		Total Score		Total Score Ranked Order		
Score	Rank	Score	Rank	Score	Rank	Score	Rank	
France	29	1 Switzerland	25	1 Australia	35	13 Norway	44	1
Norway	28	2 Australia	24	2 Austria	18	30 Netherlands	41	2
Slovak Repub	27	3 Canada	21	3 Belgium	25	22 Canada	39	3
Czech Repub	26	4 United Kingd	21	4 Canada	39	4 Denmark	39	3
Estonia	24	5 Chile	20	4 Chile	27	21 Estonia	39	3
Denmark	23	6 Netherlands	20	6 Czech Repub	36	10 Iceland	39	3
Finland	22	7 Iceland	19	6 Denmark	39	5 New Zealand	39	3
Hungary	22	7 United State:	19	8 Estonia	39	6 Slovak Repub	39	3
Italy	22	7 Mexico	18	9 Finland	36	11 United Kingd	39	3
New Zealand	22	7 New Zealand	17	10 France	32	14 Czech Repub	36	10
Sweden	22	11 Denmark	16	11 Germany	22	28 Finland	36	11
Netherlands	21	12 Ireland	16	12 Greece	11	33 Sweden	36	12
Belgium	20	13 Norway	16	13 Hungary	30	17 Australia	35	13
Iceland	20	13 Estonia	15	14 Iceland	43	2 France	32	14
Luxembourg	20	13 Israel	15	15 Ireland	32	15 Ireland	32	15
Canada	18	16 Finland	14	16 Israel	25	23 Switzerland	32	16
United Kingd	18	16 Sweden	14	17 Italy	25	24 Hungary	30	17
Poland	17	18 Poland	12	18 Japan	18	31 Poland	29	18
Portugal	17	19 Slovak Repub	12	19 Luxembourg	25	25 United State:	29	19
Germany	16	20 Czech Repub	10	20 Mexico	28	20 Mexico	28	20
Ireland	16	21 Turkey	10	21 Netherlands	41	3 Chile	27	21
Austria	15	22 Japan	9	22 New Zealand	39	7 Belgium	25	22
Spain	15	23 Hungary	8	23 Norway	44	1 Israel	25	23
Greece	12	24 Portugal	8	24 Poland	29	18 Italy	25	24
Australia	11	25 Spain	8	25 Portugal	25	26 Luxembourg	25	25
Israel	10	26 Germany	6	26 Slovak Repub	39	8 Portugal	25	26
Mexico	10	27 Belgium	5	27 Slovenia	14	32 Spain	23	27
Slovenia	10	28 Luxembourg	5	28 Spain	23	27 Germany	22	28
Turkey	10	29 Slovenia	4	29 Sweden	36	12 Turkey	20	29
United State:	10	30 Austria	3	30 Switzerland	32	16 Austria	18	30
Japan	9	31 France	3	31 Turkey	20	29 Japan	18	31
Chile	7	32 Italy	3	32 United Kingd	39	9 Slovenia	14	32
Switzerland	7	33 Greece	-1	33 United State:	29	19 Greece	11	33

Source: Authors calculations based on data from OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries; [www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm); Standard and Poor's (2010). "Global Aging 2010 An Irreversible Truth." Global Credit Portal: RatingsDirect October 7.

## **1. Introduction**

As the world continues to grapple with the social and economic effects of population aging, the provision of financial security in retirement becomes increasingly critical. While OECD countries have widely varying pension schemes, they all face similar challenges: how to provide adequate income in retirement while at the same time ensuring the financial sustainability of the arrangements. The mounting challenges of balancing adequacy and sustainability require Governments to answer tough questions of both intra- and intergenerational fairness.

The focus of this paper is on the performance of pension systems in delivering adequate retirement incomes to all retirees. Recognising that the provision of retirement income must compete against all other claims for resources within the economy, the fiscal sustainability of any pension system is a significant evaluation criteria. While the supervision and regulatory environment is important for confidence in the overall integrity of the pension system, it is out of scope for this report.

The outline is as follows: Sections 2 and 3 provide international comparisons of retirement outcomes and fiscal sustainability respectively and identify the best performing systems in each case. Section 4 draws together the analysis of the previous two sections to identify the best performing systems overall. Section 5 provides a discussion of differences among pension systems in relation to a number of significant system design parameters with particular reference to the requirements for the payout phase.

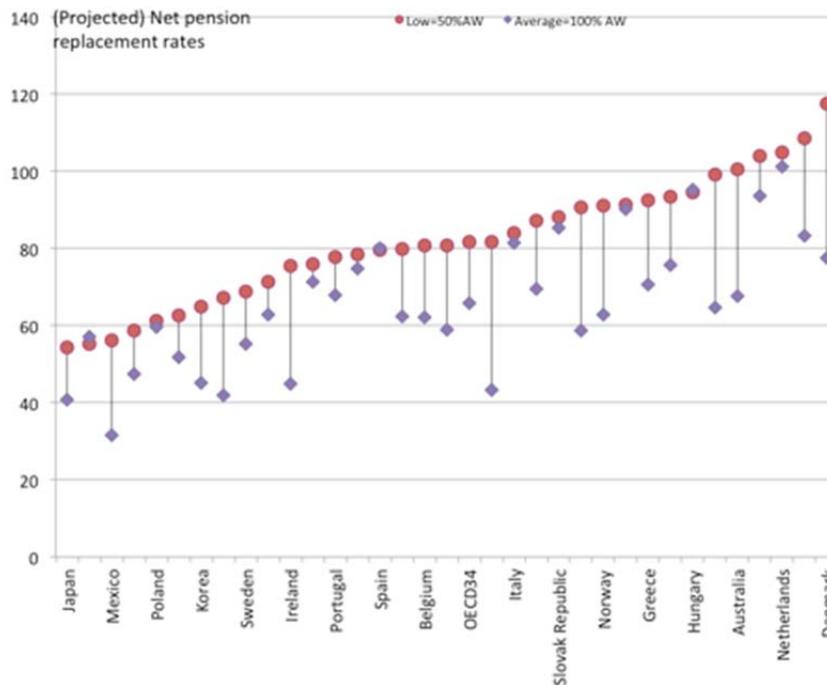
## **2. International Comparisons of Retirement Income Adequacy**

Recognising the important economic and social effects of population aging, the OECD has for many years undertaken extensive research comparing retirement income systems of its member countries and a selected group of non-members. The difficulties of comparing diverse retirement income systems often involving multiple programmes are not to be underestimated (OECD, 2011). Given these difficulties, the advantages of drawing on OECD analysis of pension systems are the large number of countries covered in the analysis (33-34 countries); and the considerable attention given to ensuring the comparability of the data.

The basis on which the systems are assessed has a significant bearing on the results. There are two main ways in which the adequacy of retirement systems can be assessed:

- First, by examining current retirement outcomes that are the result of the design and performance of the system over the past 40 years. These indicators of income and poverty are useful in assessing the performance of national pension systems of the past in delivering adequate retirement incomes today.
- Second, by examining projected outcomes based on the latest reforms to the retirement income system and assuming a 20 year old entered the employment market in 2012. This analysis is useful for assessing the efficacy of the current policy settings over a lifetime of operation.

**Figure 2.1. Theoretical net replacement rates at different earnings levels for full-career workers entering the labour market in 2012, OECD**



Source: OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries; [www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm)

The OECD undertakes its comparative analysis of retirement outcomes on both of these bases (OECD 2013). For the purpose of this paper, both sets of analyses are included recognizing the relevance of each.

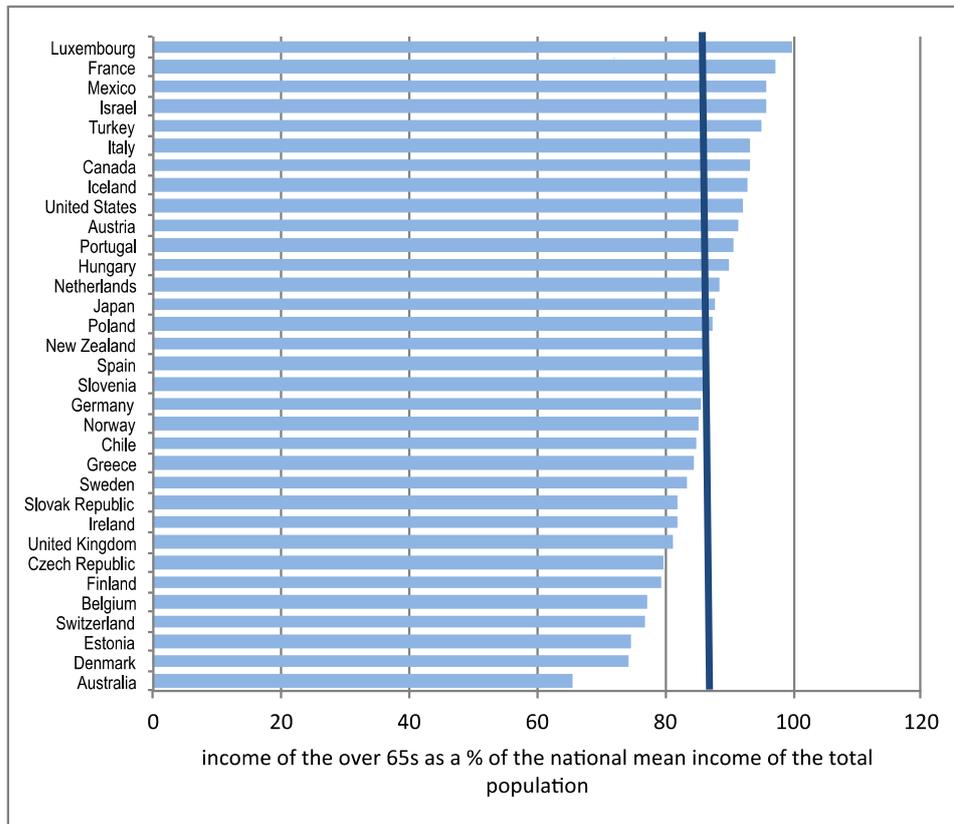
Two sets of indicators are normally used in evaluating the economic position of older people: The first examines the incomes of older people, comparing them with the population as a whole. The second looks at poverty among older people. The measurement of each of these indicators is discussed below together with a comparative assessment of Australia’s performance against each relative to comparable OECD countries.

A common measure for assessing the adequacy of retirement savings is the income replacement rate, the ratio of post-retirement income (or consumption) to pre-retirement income (or consumption) (Burnett, Davis et al 2014). Fig 2.1 shows OECD national net pension replacement rates (i.e. the ratios of pension benefits to earnings after taxes and social security contributions) for full-career workers entering the labour market in 2012 at average and low earnings relative to the economy-wide average. Using these forward looking estimates of future entitlement assuming current pension rules applied throughout the careers of retirees, Australia performs comparatively well. It ranks highly (5th) in terms of net replacement rates for people on 50% of average wage, but less well for those on 100% average weekly earnings (11th) and 150% of average weekly earnings (14th).

Looking at actual replacement rates in the late 2000s rather than projected replacement rates however provides a less positive picture for the over 65s in Australia. Figure 2.2 shows that elderly incomes in two-thirds of OECD countries accounted for an average of 86.2% of the total population’s, with many countries recording rates above 93%.

Australia was only one of three OECD countries – including Denmark and Estonia – with incomes for the over 65s less than 75% of the national average equivalent household disposable income. While the replacement rate for Australians over 65s averaged 69% for this period, those over 75 years received a lower replacement rate of 60%.

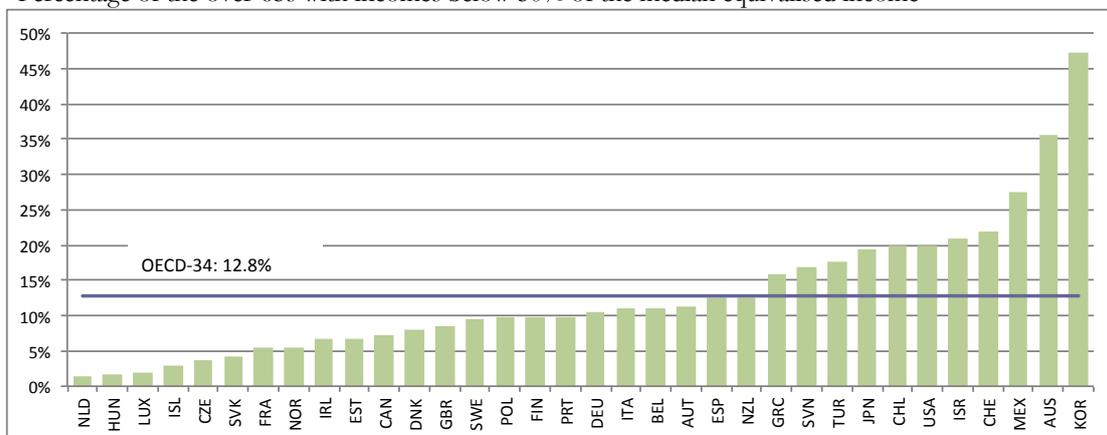
**Figure 2.2. Relative incomes of the over 65s, late 2000s**



Source: OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries  
[www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm)

**Figure 2.3. Poverty rates among the over-65s**

Percentage of the over-65s with incomes below 50% of the median equivalised income



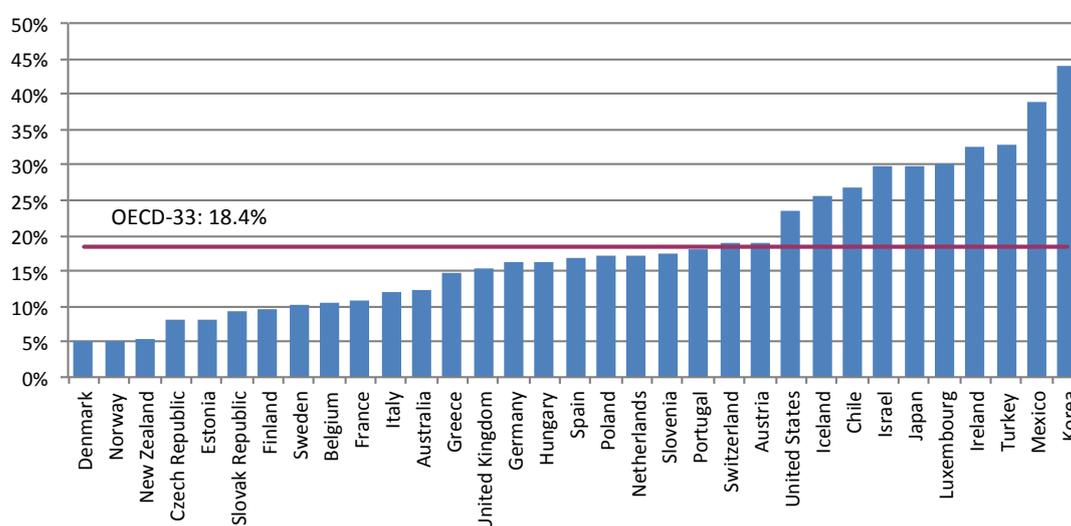
Source: OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries  
[www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm)

Relative poverty measures set the poverty threshold according to an income benchmark

for the population such as average or median income. Median income is more widely used, being less sensitive to outliers. A commonly used threshold for aged poverty is 50% of median equivalised income: people below this line are widely considered to be “at risk of poverty” (Burnett, Davis et al 2014).<sup>1</sup> The percentage of the population below this line (ie the head count ratio) provides an indicator of relative poverty. Figure 2.3 shows that the risk of elderly poverty, measured against this threshold was less than 13% on average in the late 2000s in OECD countries. In Australia, however, 35% of the over-65s were income poor, placing Australia in second place after Korea.

These results are consistent with analysis by Burnett, Davis et al. (2014) that shows that compulsory contributions to a retirement savings account (currently 9.25 per cent of wages and salaries) during an entire working life generates a median consumption level during retirement significantly below half of the median equalized income of the overall population.

**Figure 2.4. Median poverty gap among the over 65s, late 2000s**



Source: OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries  
[www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm)

While Figure 2.3 measures the proportion of the population at risk of poverty, it does not measure the degree to which they are below the poverty line. The depth of poverty is captured by the poverty gap indicator. Figure 2.4 shows that the poverty gap (ie the shortfall between aged income and the poverty line) is moderate by OECD standards. However these averages conceal the fact that there are much wider gaps among certain groups including single females and women in general.

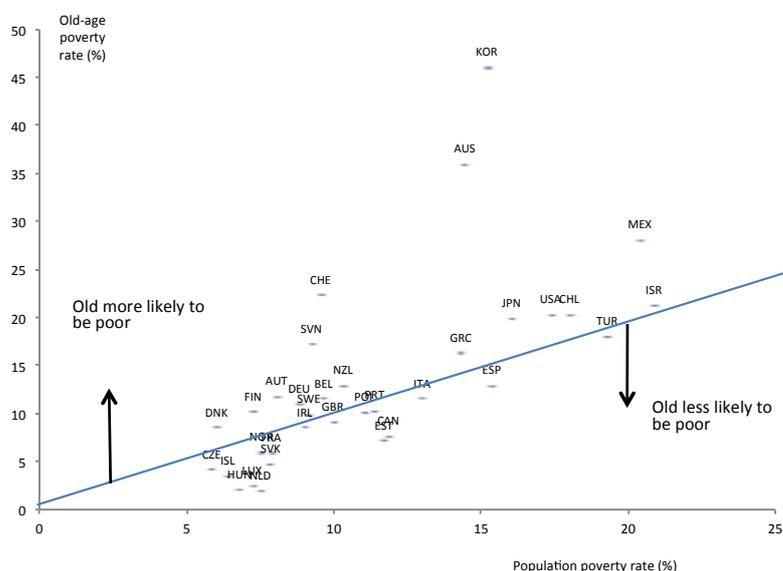
Further illustrating the relative position of the aged in Australia compared with their counterparts in OECD countries, Figure 2.5 compares relative poverty levels for the aged with those across the whole population. This indicates that poverty inflicts the aged rather than the young by a greater degree in Australia compared with all OECD countries except Korea.

The poverty rates and gaps shown above, however, capture only partially the risk of poverty in old-age because non-cash benefits such as the value of publicly provided

<sup>1</sup> The European Union uses a 60% cut-off point (before housing costs),

services, are not included in the measure of income. Housing wealth and access to publicly provided services can also make substantial contributions to standards of living in retirement.

**Figure 2.5. Income poverty rates by age**



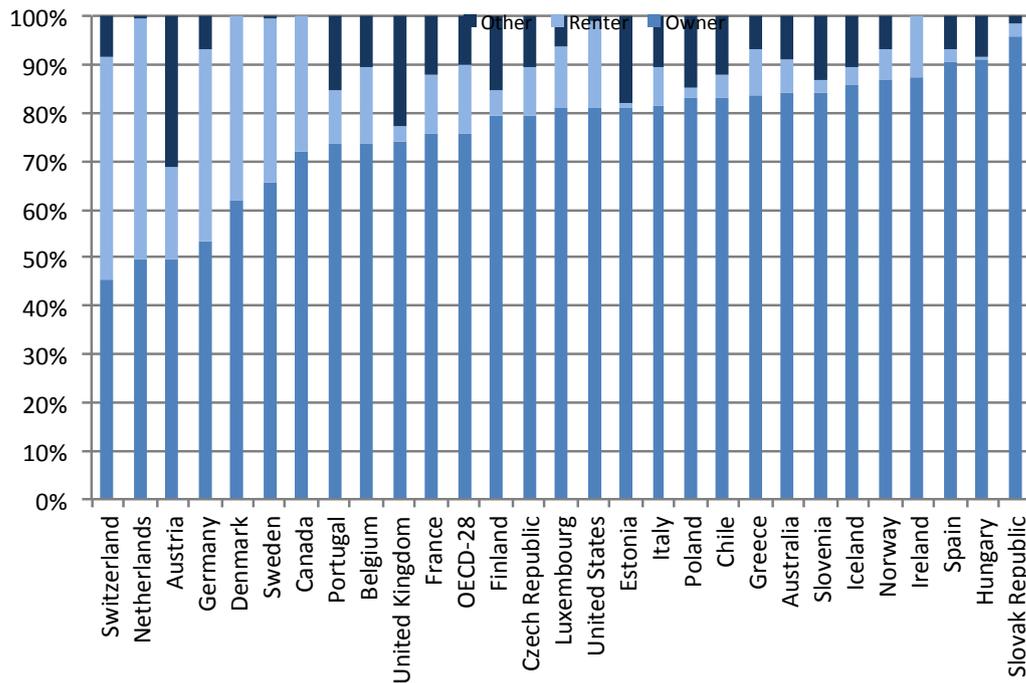
Source: OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries  
[www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm)

Figure 2.6 this shows Australian retirees have a rate of home ownership of 85%, higher than the OECD average of 76%. Those on higher incomes are more likely to have higher mortgages. However, evidence from Australian Housing and Urban Research Institute (AHURI) indicates that the burden of mortgage costs is greater on low-income households than it is on high-income households. The Australian example illustrates the impact of outstanding mortgage payments: the value of the net (of owner-specific costs) imputed rent estimated for outright owners in 2009-10 was AUD 251, compared to only AUD 31 for owners with mortgages (ABS, 2012, Table 19).

Publicly provided services are estimated to enhance elderly incomes for Australian retirees by 35% although this is still lower than the OECD average benefit of 40%. Therefore taking into account in kind benefits of housing and publicly provided services does not change the overall conclusion that retirees in Australia are relatively less well off than their counterparts in other OECD countries.

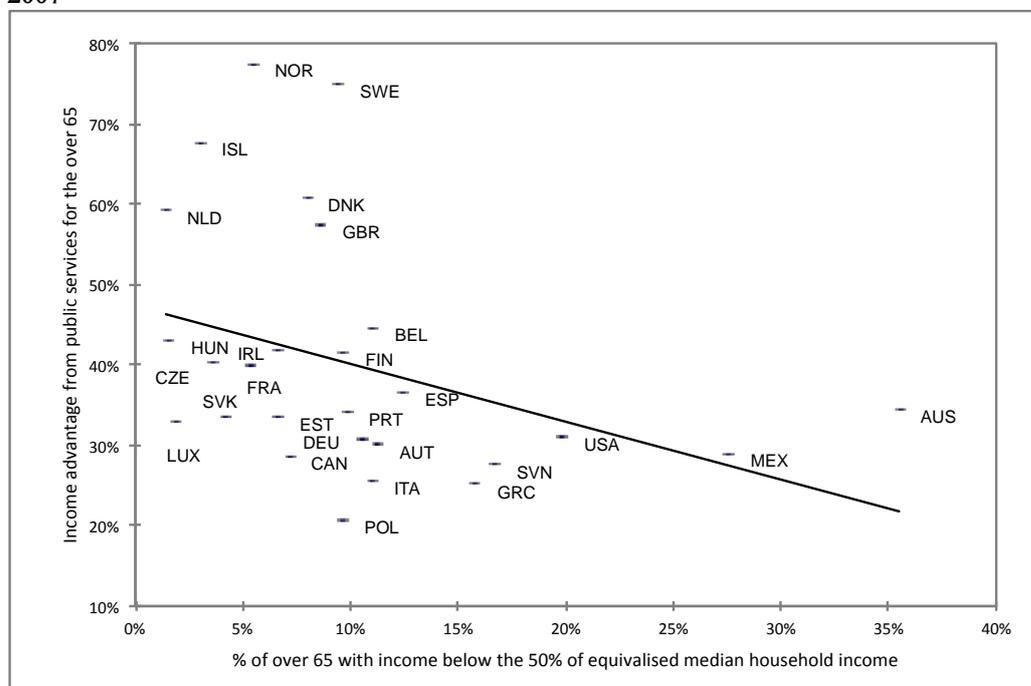
These results are broadly in accordance with the findings of the Global Age Watch Index by Help Age International (in affiliation with the United Nations). This index ranks countries according to the economic and social well being of older people. It does so on the basis of a number age-related indicators including income security and health status and employment and education. While Australia ranks well for the latter two indicators (4<sup>th</sup> in each case) it ranks poorly for income security (57<sup>th</sup>), well behind its peer group of Canada (26), USA (36) and New Zealand (43). (HelpAge International 2013)

Figure 2.6. Housing tenure among the over 65s aged in selected OECD countries, 2011



Source: OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries  
[www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm)

Figure 2.7. In-kind benefits enhance elderly incomes and reduce old age poverty rates, 2007



Source: OECD calculation based on data from Verbist, G., M. Förster and M. Vaalavuo (2012), "The Impact of Publicly Provided Services on the Distribution of Resources: Review of New Results and Methods", OECD Social, Employment and Migration Working Paper, No. 130, OECD Publishing, <http://dx.doi.org/10.1787/5k9h363c5szq-en>, and data OECD Income Distribution Questionnaire. OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries; [www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm)

For the purpose of rating pension system performance on adequacy, the indicators are

those discussed above, namely:

- Relative incomes of the over 65s, measured as income of the over 65s as a percentage of the national mean income of the total population.
- Poverty rates of the over 65s measured as the percentage of the aged with incomes below 50% of median equivalised income.
- Depth of poverty is captured by the poverty gap indicator that measures how far below the poverty line the median income of the aged 'at risk of poverty' lies.

Taking these three indicators together, the countries that perform the best in terms of adequacy are France (29), Norway (29), Slovak Republic (28), and the Czech Republic. Countries at the bottom of the adequacy scale include Switzerland, Chile, Japan and the US. The results are detailed in Figure 2.8.

**Figure 2.8: Evaluation of Pension System Adequacy**

	Poverty rates of over 65s, late 2000s, % below 50% median equivalised income			Relative incomes of the over 65s, late 2000s			Poverty gaps of over 65s, late 2000s, % below 50% median equivalised income			Total Adequacy	
	% of over 65s	Score	Rank	As % of national mean income	Score	Rank	% of Income	Score	Rank	Score	Rank
Australia	35%	0.0	33	65.4	4.0	33	12%	7.0	12	11.0	25
Austria	11%	4.0	21	91.3	10.0	10	19%	1.0	23	15.0	22
Belgium	11%	5.0	20	77.1	6.0	29	10%	9.0	9	20.0	13
Canada	7%	8.0	11	93.3	10.0	7	26%	0.0	25	18.0	16
Chile	20%	0.0	28	84.8	7.0	21	27%	0.0	27	7.0	32
Czech Repu	4%	10.0	5	79.8	6.0	27	8%	10.0	5	26.0	4
Denmark	8%	8.0	12	74.3	5.0	32	5%	10.0	1	23.0	6
Estonia	7%	9.0	10	74.5	5.0	31	8%	10.0	4	24.0	5
Finland	10%	6.0	16	79.5	6.0	28	10%	10.0	7	22.0	7
France	5%	10.0	7	97.2	10.0	2	11%	9.0	10	29.0	1
Germany	11%	5.0	18	85.4	8.0	19	16%	3.0	15	16.0	20
Greece	16%	0.0	24	84.4	7.0	22	15%	5.0	13	12.0	24
Hungary	2%	10.0	2	89.8	9.0	12	16%	3.0	16	22.0	8
Iceland	3%	10.0	4	92.8	10.0	8	26%	0.0	26	20.0	14
Ireland	7%	9.0	9	82.0	7.0	25	33%	0.0	31	16.0	21
Israel	21%	0.0	30	95.8	10.0	4	30%	0.0	28	10.0	26
Italy	11%	5.0	19	93.3	10.0	6	12%	7.0	11	22.0	9
Japan	19%	0.0	27	87.7	9.0	14	30%	0.0	29	9.0	31
Luxembourg	2%	10.0	3	99.9	10.0	1	30%	0.0	30	20.0	15
Mexico	28%	0.0	32	95.8	10.0	3	39%	0.0	33	10.0	27
Netherland	1%	10.0	1	88.6	9.0	13	17%	2.0	19	21.0	12
New Zealar	12%	3.0	23	86.2	9.0	16	6%	10.0	3	22.0	10
Norway (1)	5%	10.0	8	85.3	8.0	20	5%	10.0	2	28.0	2
Poland	10%	6.0	15	87.5	9.0	15	17%	2.0	18	17.0	18
Portugal	10%	6.0	17	90.8	10.0	11	18%	1.0	21	17.0	19
Slovak Rept	4%	10.0	6	82.1	7.0	24	9%	10.0	6	27.0	3
Slovenia	17%	0.0	25	85.9	8.0	18	17%	2.0	20	10.0	28
Spain	12%	3.0	22	86.1	9.0	17	17%	3.0	17	15.0	23
Sweden	9%	6.0	14	83.2	7.0	23	10%	9.0	8	22.0	11
Switzerlandanc	22%	0.0	31	76.9	6.0	30	19%	1.0	22	7.0	33
Turkey	18%	0.0	26	94.9	10.0	5	33%	0.0	32	10.0	29
United King	9%	7.0	13	81.2	7.0	26	15%	4.0	14	18.0	17
United Stat	20%	0.0	29	92.2	10.0	9	24%	0.0	24	10.0	30
										0.0	

Source: Authors calculations based on data from OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries; [www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm); Standard and Poor's (2010). "Global Aging 2010 An Irreversible Truth." [Global Credit Portal: RatingsDirect](http://www.globalcreditportal.com) October 7.

### 3. International Comparisons of Fiscal Sustainability

The indicators for fiscal sustainability are:

- Public expenditures on old-age and survivors' benefits as a percentage of GDP.
- Total pension and pension reserve fund assets, as a percentage of GDP; and
- Required Primary Balance that translates government debt ratios into projections of the permanent budgetary adjustment needed to ensure sustainable finances.

Each of these fiscal sustainability indicators is outlined below followed by the overall pension system index rankings.

The first indicator shows public expenditure for the aged including pension benefits and "non-cash" benefits in 2009. While public pensions represent the single largest item of government expenditure for the aged, important areas of non-cash spending are residential care and home help services. A lower level of spending relative to GDP indicates less reliance on the public purse and thus attracts a higher score.

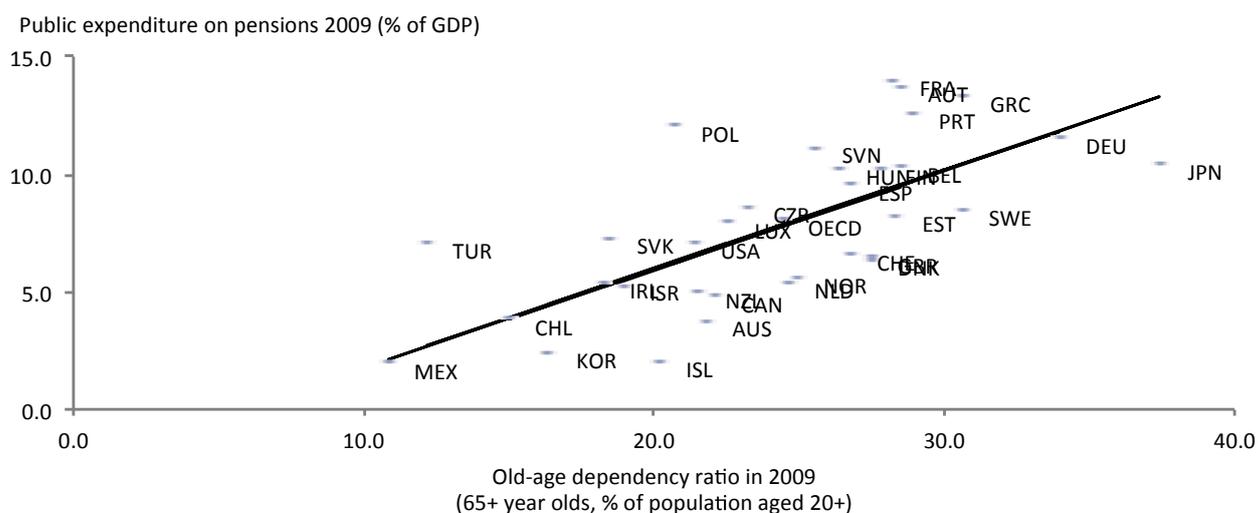
Comparing public pension expenditure with the old age dependency ratio shows broadly a positive relationship (Figure 3.1). However certain countries, including Australia, face similar demographic pressures but have significantly lower pension spending than the countries at the top of the scale. This is an illustration of Australia's superior performance on fiscal sustainability.

The second indicator reports assets in private pensions and public pension reserves for 2011 expressed as a proportion of GDP. The level of current assets set aside to pay for future retirement incomes represents an important indicator of a country's ability to continue to make these payments into the future. A higher level of assets relative to GDP indicates a higher level of preparedness to meet pension payments in the future thus attracting a higher score.

Substantial assets have been accumulated in many OECD countries to help meet future pension liabilities. Approximately half of OECD countries have also built up public pension reserves to assist with payment for public pensions. In 2011, three countries achieved asset to GDP ratios higher than 100% - the Netherlands 135.5%, Iceland 128.7% and Switzerland 110.7%. Australia 93.2% was only one of three countries including Finland 75.0% and the United Kingdom 95.8% that exceeded the OECD weighted average asset to GDP ratio of 73.8%. While the OECD asset figure for Norway excludes public assets held by the Norwegian Pension Fund Global, comprising some 121% of GDP, these have been included for the purpose of the current analysis.

The final fiscal sustainability indicator used is the Required Primary Balance sourced from Standard and Poor's (Standard and Poor's 2010B). This indicator translates government debt ratios into projections of the permanent budgetary adjustment that is needed to ensure the sustainability of public finances. More specifically, based on methodology published by the European Commission (Standard and Poor's 2010A), the sustainability gap indicates the difference between the current structural primary fiscal balance and that which would result in intertemporal budgetary balance over an infinite time horizon.

**Figure 3.1. Demographic pressures and public pension expenditure**



*Note:* Regression line is pension expenditure = -2.408 (1.917) + 0.4186 (0.07774) x dependency ratio, where heteroskedasticity adjusted standard errors are given in parentheses. The coefficient on the dependency ratio is significant at the 1% level and the R2 of the regression is 0.4832.

*Source:* OECD Social Expenditures Database (SOCX); United Nations, *World Population Prospects – The 2012 Revision*.

The sustainability gap for the advanced economies in the sample is 8.5% of GDP compared with 5.2% for emerging market economies. Within the advanced economies, considerable variation also exists with Norway (23.4), Luxembourg (16.2) and Greece (14.3) recording the highest sustainability gaps while Estonia (1.4%), Poland (2.8), and Mexico (3.3%) recording the lowest. Australia’s sustainability gap (4.4%) is also among the lowest in advanced economies. It is also worth noting the foresight shown by the Norwegian government in recognizing this demographic avalanche and taking early compensatory action. It syphoned off its considerable petroleum revenues into a sovereign wealth fund to be drawn on by future generations when oil reserves run out.

When the three indicators are taken together, the countries that perform the best in terms of fiscal sustainability are Switzerland (25), Australia (24), and Canada (21). Countries at the bottom of the fiscal sustainability scale include Greece, Italy, France and Austria. The results are detailed in Figure 3.2.

#### 4. Overall Evaluation of Pension Systems

Recapping, the indicators used for rating pension system adequacy are:

- Relative incomes of the over 65s, measured as income of the over 65s as a % of the national mean income of the total population.
- Poverty rates of the over 65s measured as the percentage of the aged with incomes below 50% of median equivalised income.
- Depth of poverty is captured by the poverty gap indicator that measures how far below the poverty line the median income of the aged ‘at risk of poverty’ lies.

Figure 3.2: Evaluation of Pension System Fiscal Sustainability

Column1	Column	Column	Column	Column	Column	Column	Column	Column	Column	Column	Column	Column	Column
	Public expenditures on old-age and survivors' benefits, 2009			Total Pension and Pension Reserve fund Assets				Required Primary Balance			Total Sustainability Score		
	% of GDP	Score	Rank	% GDP	Score	Rank		% of GDP	Score	Rank	Score	Rank	
Australia	5.07	9.0	7	98.2	8.0		5	Australia	4.4	7.0	29	24.0	2
Austria	14.00	0.0	33	4.9	-2.0		26	Austria	6.6	5.0	17	3.0	30
Belgium	10.20	4.0	23	9.2	-1.0		21	Belgium	9.3	2.0	5	5.0	27
Canada	4.55	10.0	5	74.6	6.0		9	Canada	6.5	5.0	18	21.0	4
Chile	3.58	10.0	4	60.4	5.0		10	Chile	6.5	5.0	19	20.0	6
Czech Republic	8.55	6.0	21	6.5	-1.0		23	Czech Repu	6.1	5.0	22	10.0	20
Denmark	8.17	6.0	19	49.7	3.0		12	Denmark	4.6	7.0	28	16.0	11
Estonia	8.07	6.0	18	5.3	-1.0		25	Estonia	1.4	10.0	33	15.0	14
Finland	11.13	3.0	27	75.0	6.0		8	Finland	6.7	5.0	15	14.0	16
France	14.10	0.0	34	4.6	-2.0		28	France	6.2	5.0	20	3.0	31
Germany	11.28	3.0	28	5.5	-1.0		24	Germany	7.7	4.0	12	6.0	26
Greece	13.16	1.0	32	0.0	-2.0		33	Greece	14.3	0.0	3	-1.0	33
Hungary	10.45	4.0	24	3.8	-2.0		30	Hungary	5.5	6.0	25	8.0	23
Iceland	2.22	10.0	2	128.7	6.0		2	Iceland	8.5	3.0	8	19.0	3
Ireland	5.58	9.0	9	54.8	4.0		11	Ireland	8.4	3.0	9	16.0	12
Israel	5.19	9.0	8	49.4	3.0		13	Israel	8.4	3.0	10	15.0	15
Italy	15.56	0.0	35	4.9	-2.0		27	Italy	6.2	5.0	21	3.0	32
Japan	11.83	3.0	29	48.2	3.0		14	Japan	8.3	3.0	11	9.0	22
Luxembourg	7.67	7.0	17	1.9	-2.0		32	Luxembou	16.2	0.0	2	5.0	28
Mexico	1.70	10.0	1	13.1	0.0		19	Mexico	3.3	8.0	31	18.0	9
Netherlands	6.07	8.0	10	135.5	10.0		1	Netherland	9.2	2.0	6	20.0	7
New Zealand	4.69	10.0	6	24.7	1.0		16	New Zeala	5.9	6.0	23	17.0	10
Norway	7.41	7.0	16	112.4	9.0		3	Norway	23.4	0.0	1	16.0	13
Poland	11.84	3.0	30	15.9	0.0		17	Poland	2.8	9.0	32	12.0	18
Portugal	12.47	2.0	31	12.9	0.0		20	Portugal	5.9	6.0	24	8.0	24
Slovak Republic	7.36	7.0	15	8.4	-1.0		22	Slovak Rep	5.4	6.0	26	12.0	19
Slovenia	10.96	4.0	26	2.9	-2.0		31	Slovenia	9.9	2.0	4	4.0	29
Spain	9.88	5.0	22	14.0	0.0		18	Spain	8.7	3.0	7	8.0	25
Sweden	10.75	4.0	25	34.2	3.0		15	Sweden	4.7	7.0	27	14.0	17
Switzerland	6.56	8.0	11	110.7	9.0		4	Switzerland	3.5	8.0	30	25.0	1
Turkey	6.91	8.0	14	4.1	-2.0		29	Turkey	7.3	4.0	13	10.0	21
United Kingdom	6.76	8.0	12	95.8	8.0		6	United Kin	6.7	5.0	16	21.0	5
United States	6.85	8.0	13	89.3	7.0		7	United Sta	7.2	4.0	14	19.0	8

Notes: Negative points awarded to Iceland for underfunded DB schemes.

Source: Authors calculations based on data from OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries; [www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm); Standard and Poor's (2010). "Global Aging 2010 An Irreversible Truth." Global Credit Portal: RatingsDirect October 7.

The indicators for fiscal sustainability are:

- Public expenditures on old-age and survivors' benefits as a percentage of GDP.
- Total pension and pension reserve fund assets, as a percentage of GDP; and
- Required Primary Balance that translates government debt ratios into projections of the permanent budgetary adjustment needed to ensure sustainable finances.

Drawing together the analysis above, this section identifies pension systems that perform well both in terms of providing income adequacy and fiscal sustainability. The overall index value assigns a 50% weighting to each criteria. Details of the scoring method used for each of the indicators, as discussed above is provided in Appendix A. The results are summarized in Table 4.1.

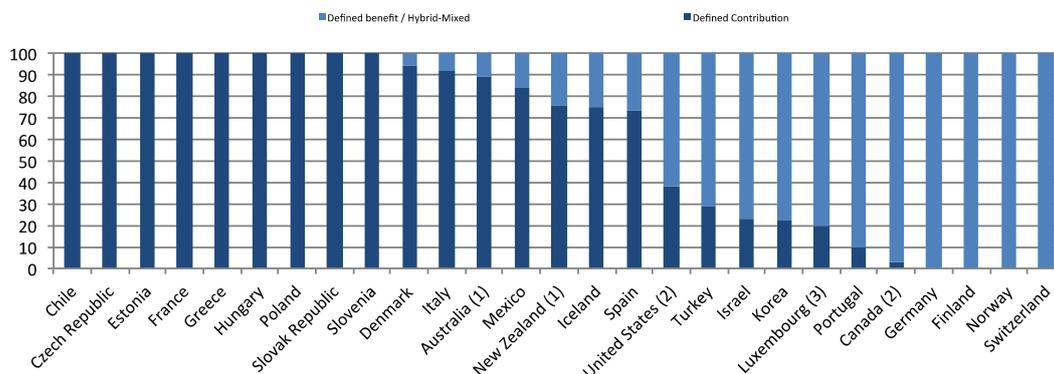
**Figure 4.1: Summary of Pension System Evaluation**

Adequacy Score		Sustainability Score		Total Score Ranked Order		
Score	Rank	Score	Rank	Score	Rank	
France	29	1 Switzerland	25	1 Norway	44	1
Norway	28	2 Australia	24	2 Netherlands	41	2
Slovak Repub	27	3 Canada	21	3 Canada	39	3
Czech Repub	26	4 United Kingd	21	4 Denmark	39	3
Estonia	24	5 Chile	20	4 Estonia	39	3
Denmark	23	6 Netherlands	20	6 Iceland	39	3
Finland	22	7 Iceland	19	6 New Zealand	39	3
Hungary	22	7 United States	19	8 Slovak Republi	39	3
Italy	22	7 Mexico	18	9 United Kingdo	39	3
New Zealand	22	7 New Zealand	17	10 Czech Republi	36	10
Sweden	22	11 Denmark	16	11 Finland	36	11
Netherlands	21	12 Ireland	16	12 Sweden	36	12
Belgium	20	13 Norway	16	13 Australia	35	13
Iceland	20	13 Estonia	15	14 France	32	14
Luxembourg	20	13 Israel	15	15 Ireland	32	15
Canada	18	16 Finland	14	16 Switzerland	32	16
United Kingd	18	16 Sweden	14	17 Hungary	30	17
Poland	17	18 Poland	12	18 Poland	29	18
Portugal	17	19 Slovak Repub	12	19 United States	29	19
Germany	16	20 Czech Republ	10	20 Mexico	28	20
Ireland	16	21 Turkey	10	21 Chile	27	21
Austria	15	22 Japan	9	22 Belgium	25	22
Spain	15	23 Hungary	8	23 Israel	25	23
Greece	12	24 Portugal	8	24 Italy	25	24
Australia	11	25 Spain	8	25 Luxembourg	25	25
Israel	10	26 Germany	6	26 Portugal	25	26
Mexico	10	27 Belgium	5	27 Spain	23	27
Slovenia	10	28 Luxembourg	5	28 Germany	22	28
Turkey	10	29 Slovenia	4	29 Turkey	20	29
United States	10	30 Austria	3	30 Austria	18	30
Japan	9	31 France	3	31 Japan	18	31
Chile	7	32 Italy	3	32 Slovenia	14	32
Switzerland	7	33 Greece	-1	33 Greece	11	33

Source: Authors calculations based on data from OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries; [www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm); and Standard and Poor's (2010). "Global Aging 2010 An Irreversible Truth." [Global Credit Portal: RatingsDirect](http://GlobalCreditPortal.RatingsDirect) October 7.

**Figure 4.2. Relative shares of DB, DC and hybrid pension fund assets in selected OECD countries, 2011**

As a percentage of total assets



Source: OECD Global Pension Statistics. OECD (2013), Pensions at a Glance 2013: Retirement-Income Systems in OECD and G20 Countries; [www.oecd.org/pensions/pensionsataglance.htm](http://www.oecd.org/pensions/pensionsataglance.htm)

The results highlight the trade off between the objectives of income adequacy and fiscal sustainability given that countries that perform well against one objective tend to perform poorly against the other. Australia's comparative strength lies clearly in

sustainability (ranked 2<sup>nd</sup>) although this comes at the expense of adequacy (ranked 25<sup>th</sup>). Looking at the scheme type, countries in the sample tend to be either predominantly defined contribution or predominantly defined benefit/hybrids (Figure 4.2). The results also indicate that DC funds are more likely to perform well against both adequacy and sustainability criteria.

The results provide a general guide as to the relative performance of the various systems rather than being definitive. While the inclusion of more indicators would improve the results, they are nonetheless useful within the context of considering the merits of alternative approaches and possible reform options. Parametric reform options were considered in the light of the performance of exemplary, as well as less exemplary performers.

## 5. Evaluation of Parametric Reforms

On the basis of a review of the top performing and bottom performing systems, a number of parameters were identified as having a significant bearing on retirement outcomes in Australia. These parametric reforms and their relative merits are discussed below and summarized in Figure 5.1.

### Age Pension Rate

Depending on the size of the increase, increasing the aged pension rate could have a significant impact on retirement outcomes, with associated budgetary costs. It would also help manage retirees' longevity risk but only by shifting more of this risk back to government. A pension rate increase would also affect incentives for voluntary savings adversely and encourage greater risk-taking in superannuation investment.

**Figure 5.1: Comparison of Parametric Reforms**

Reform Options	Fiscal Impact	Incentives to Work/Save	Effect on Adequacy	Impact	Retiree post retirement risk management		
					Investment Risk	Longevity Risk	Inflation Risk
Increase Age Pension Level	Negative	Negative	Immediate	Full	Yes	Yes	Yes
Increase Pension Age	Positive	Positive	Delayed	Partial	No	No	No
Increase Preservation Age	Positive	Positive	Delayed	Partial	No	No	No
Increase Contribution Rate	Positive	Negative	Delayed	Full	No	No	No
Remove Impediments to DLA	LT positive	Positive	Immediate	Partial	Yes	Yes	Yes
Provide Incentives for DLAs.	ST Negative LT Positive	Positive	Immediate	Full	Yes	Yes	Yes
Limit Lump Sum Benefits	Positive	Positive	Immediate	Full	Yes	Potentially	Potentially
Lifetime Annuity Default Option	Positive	Positive	Immediate	Full	Yes	Yes	Yes
Mandate Lifetime Annuities (full, partial, later stages)	Positive	Positive	Immediate	Full	Yes	Yes	Yes

### Entitlement Ages

One of the most visible and politically contested pension system reforms has been raising the retirement age. Pension ages have increased in most OECD countries and a retirement age of 67 is now becoming more common (OECD 2013). Some countries have gone even further, moving to 68 or 69 years, while the Czech Republic has introduced an open-ended increase of the pension age by two months per year.

Pension entitlement age in Australia is comparable to that of other retirement systems in the OECD although a number of the exemplars (Iceland and Norway) have higher pension entitlement ages, as noted above, that are equalized for men and women. Whether increasing the pension age positively affects adequacy levels depends, however, on the ability of the aged to continue working. While contributions are essential to building future pension entitlements, increasing pension age alone will not suffice. A holistic approach to ageing is needed to ensure people remain effective in the labour market. Given its relative level, raising the preservation age is likely to be more effective than further increasing the pension age in addressing adequacy particularly for older retirees (75 years plus).

### Contribution Rate

Increasing the contribution rate would have a positive long-term effect on living standards in retirement with a positive budgetary effect through lower pension outlays. On the other hand, higher post retirement living standards come at the expense of pre-retirement expenditures that in many cases may contribute to financial hardship or potentially crowding out other more life changing expenditures such as education. On its own, a higher contribution may do little to help retirees manage longevity risk unless it is supported by other measures.

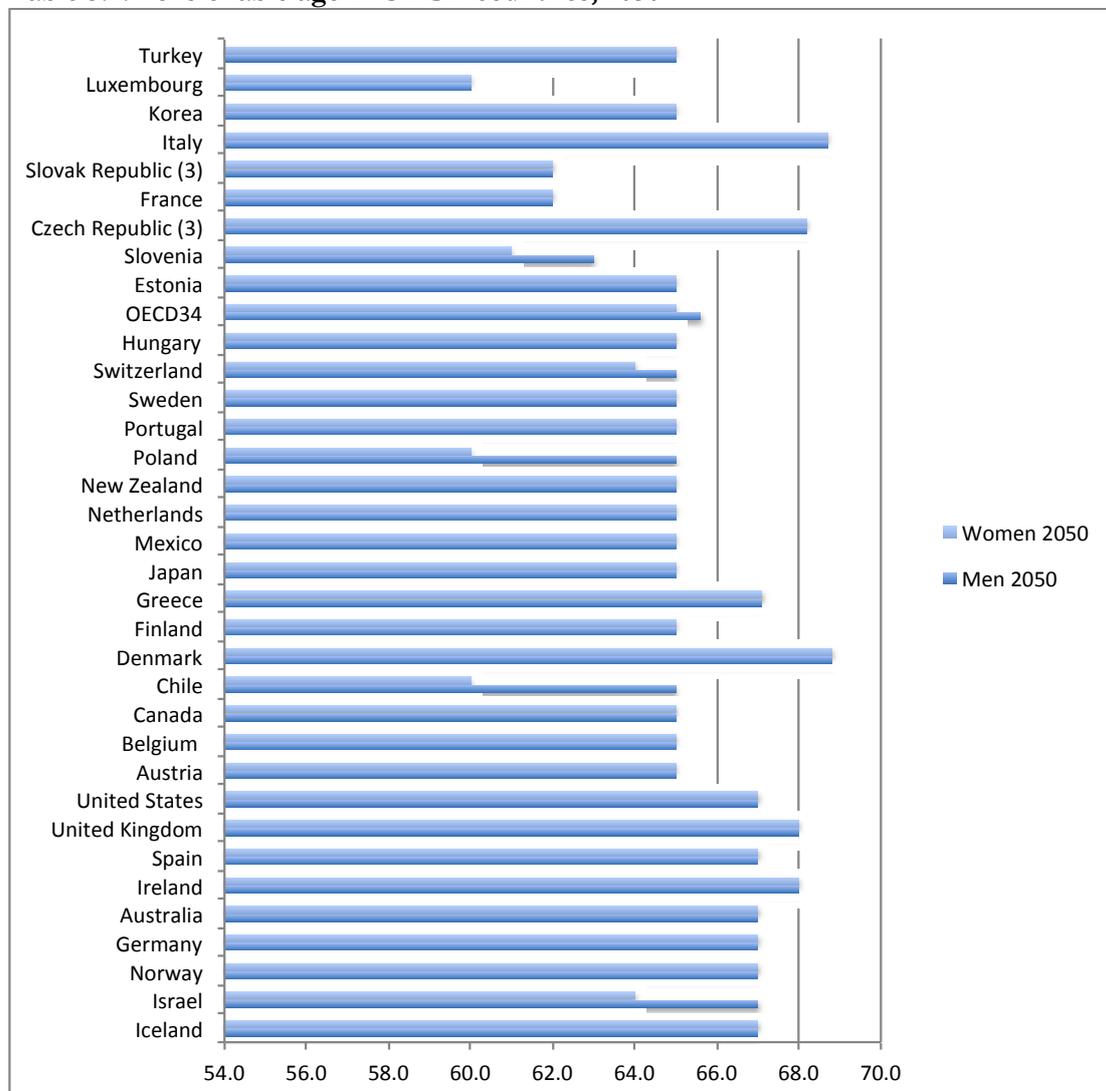
### Form of Retirement Benefits

There is increasing recognition that the outcomes of the Australian superannuation system could be enhanced by introducing a requirement that part of the retirement benefit must be taken as an income stream (Mercer, 2013). The World Bank's conclusions in relation to annuitization are noteworthy. First, it notes the need to ensure that retiring workers opt for an adequate level of annuitization, without forcing an excessive level of annuitization. Second, given the shortcomings of all types of retirement products, a combination of products should be favored covering different payout options over time (Rocha and Vittas 2010).

Cross-country comparisons of the form in which benefits are paid at retirement are summarized in Figure 5.2. This figure is broadly arranged from the least restrictive requirement of the left hand side, through to most restrictive requirements on the right. A number of conclusions are evident from these results.

First, 60% of the 30+ OECD countries included in the survey apply some form of limitation on lump sum payments at retirement. These limitations range from tax penalties, limits based on years of service or size of accrued benefits through to outright prohibitions.

**Table 5.2. Pensionable age in OECD countries, 2050**



Source: OECD (2013)

Second, many of the retirement systems that were identified above as high performing, in terms of both adequacy and fiscal sustainability, place a heavy reliance on income streams including requirements for total lifetime annuitization. Third, and conversely, many of the least well performing systems place a heavy reliance on lump sum benefits.

There are various options for encouraging greater reliance on post retirement income streams. The key advantage of these options compared with all other parametric reforms (apart from increasing the pension level) is that they allow retirees to manage key risks, namely longevity, investment and potentially even inflation risk. Further advantages is that their effect on living standards is immediate and they influence positively incentives to work and save.

Compared with options involving some form of compulsion, the use of incentives

(through the exclusion of all or part of income stream payments from pension means testing) provides the less distortionary means of increasing post retirement incomes although this comes at a budgetary cost. Currently all new sales of assets are included in the assets test for the aged pension. It would be expected that removing, or partially removing, lifetime annuities income streams from the aged pension asset test would encourage stronger growth in this segment. NATSEM has modeled the household and fiscal impact of such a policy change for a range of scenarios. Its median growth scenario shows around 17,765 families taking up lifetime annuities, with an increase in pension outlays of around \$149M over the budget forward estimates period (Phillips 2014).

Considering all the parametric reform options, encouraging a greater take up of income streams offers scope to enhance retirement incomes while allowing retirees to better manage their post retirement longevity, investment and inflation risk.

It needs to be recognized that trade-offs and synergies exist between objectives. For example, increasing the adequacy of pension incomes by increasing the generosity of the pension promise is likely to affect fiscal sustainability adversely. On the other hand, encouraging accumulated assets to be converted to income streams at retirement eases the pressure on the public budget to provide a pension, manages longevity risk and improves the adequacy of retirement incomes.

Figure 5.2: Overview of Pension Benefit Systems

Country	No limits on lump sums	Benefits determined by Plan	Voluntary Lifetime annuity	Preferential tax treatment	Minimum years of service	Minimum accrued benefit or assets	Minimum pension level	Limits on lump sums	Lump sums prohibited	Compulsory annuities	Other
<b>Income Stream Requirements</b>											
Australia	X			Draw down products							
Austria						< EUR9,900					
Belgium	X										
Canada				Min Withdrawal amount			DB: <2-4% of max pensionable earnings				3 types of income streams
Chile									4 types of income streams		
Czech Republic									3 types of annuities		
Denmark				X				X			Pure lump sums rare
Estonia				Benefits up to EUR 321 per month tax exempt			>25% national pension rate (NPR) (1)	If <25% NPR, withdrawal limited to 25% of NPR			
Finland									X	X	
France	PAYG scheme										
Germany		X									
Greece											
Hungary					<15 yrs					4 options	
Iceland										X	40 yrs = 56% of lifetime average salary
Ireland		DB						DC: 1.5 times final salary			
Israel		X					X				
Italy				>66% of capital (2)				50% of capital			
Japan					>20 yrs pension or lump sum; <20 yrs lump sum						
Luxembourg	X										
Mexico					> 24 years programmed benefits or life annuity						
Netherlands										X	
New Zealand		Some DB plans provide lump sums									
Norway									X		
Poland										X	
Portugal		X					>10% of minimum wage (3)	<33% of capital (4); 100% of capital if <10% of MW Part of accumulated capital			Benefits normally paid as pensions.
Slovak Republic											
Slovenia	X										
Spain	X										
Sweden		X						X		Life or fixed term	Benefits normally paid as pensions.
Switzerland							>10% of minimum pension	25% capital			Benefits normally paid as pensions (5)
Turkey											
United Kingdom				X						75% capital: annuity or income drawdown	
United States		DC plans	DB Plans								

Notes

(1) Capital in excess of amount require to fund annuity of 3 x the NPR may be withdrawn gradually

(2) Lump sum > 33% of capital are taxed twice on investment income component

(3) Conditions apply – requires agreement of pension fund manager, sponsor and retiree.

(4) If the retiree requests it and the plan allows for it.

(5) Tax rate on lump sums often less than pensions.

Source: (OECD/International Social Security Association/IOPS 2008)

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## APPENDIX A

Figure A.1: Scoring Method

Poverty Rates		Replace- ment Rates		Poverty Gaps		Reserve Assets		Public Expenditur e		Sustain- ability Gap	
Range	Score	Range	Score	Range	Score	Range	Score	Range	Score	Range	Score
Less than 6%	10	90% plus	10	0-10%	10	110% plus	10	Less than 5%	10	<2%	10
6-6.99%	9	85-90%	9	10-11%	9	100-110%	9	5-6%	9	2-3%	9
7-7.99%	8	80-85%	8	11-12%	8	90-100%	8	6-7%	8	3-4%	8
8-8.99%	7	75-80%	7	12-13%	7	80-90%	7	7-8%	7	4-5%	7
9-9.99%	6	70-75%	6	13-14%	6	70-80%	6	8-9%	6	5-6%	6
10-10.99%	5	65-79%	5	14-15%	5	60-70%	5	9-10%	5	6-7%	5
11-11.99%	4	60-65%	4	15-16%	4	50-60%	4	10-11%	4	7-8%	4
12-12.99%	3			16-17%	3	40-50%	3	11-12%	3	8-9%	3
13-13.99%	2			17-18%	2	30-40%	2	12-13%	2	9-10%	2
14-14.99%	1			18-19%	1	20-30%	1	13-14%	1	10-11%	1
15% plus	0			19% Plus	0	10-20%	-1	14% plus	0	11+%	0
						0-10%	-2				