Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

10-Oct-2013

_____

English - Or. English

STATISTICS DIRECTORATE
COMMITTEE ON STATISTICS

Working Party on National Accounts

THE MEASUREMENT OF INTERNATIONAL PENSION OBLIGATIONS – HAVE WE HARMONISED ENOUGH?

Joint meeting

To be held on 1-2 October 2013
OECD Conference Centre
Beginning at 2:00 p.m. on the firt day

This document has been prepared by Dirk van der Wal (De Nederlandsche Bank) and will be presented under item 8 of the draft agenda

JT03346074

THE MEASUREMENT OF INTERNATIONAL PENSION OBLIGATIONS – HAVE WE HARMONISED ENOUGH?

Dirk van der Wal
De Nederlandsche Bank

Summary

In the domain of pensions & statistics comparability of pension entitlements across countries improved substantially due to the new SNA/ESA handbooks. In the near future, inclusion of unfunded workplace pension schemes in the core accounts and/or in the supplementary table on pensions will become the standard. This paper analyses pension entitlements for twelve OECD-countries according to new compilation rules. In spite of constructive European harmonization efforts, the paper identifies a number of measurement differences that may hamper a fair comparison of pension liabilities.

1   Introduction

Nowadays, many countries are confronted with an aging population. These changing demographic conditions raise challenges to ensure long-term adequacy of retirement benefits. Also, it raises questions on the sustainability of future public expenditure on pensions. These issues do not only concern future pension obligations of governments but may be valid also for private or personal pension schemes. In this respect it should be pointed out that pensions systems can differ significantly across OECD countries.

In this paper we will investigate how pension liabilities in the OECD area are reflected in published data on the OECD's website. This will be done in first instance for international datasets countries send to this organisation.

In comparing countries a number of differences could come to the surface as regards statistical recording of pension liabilities. Divergence may be related to differing national recording practices when countries implement the prescriptions laid down in the statistical handbooks. In addition, differing recording practices may also be the result of variation between national pension systems and internal accounting rules. We will investigate how this variation will contribute to those.

Currently, SNA 1993 and ESA 1995 recognise pension liabilities to beneficiaries only in private schemes that are funded, i.e. funds that contain reserves. Only pension provision that leads to the built-up of *reserves* represents equity holdings belonging to households. All other contingent or future liabilities in social security schemes, even when funded, or in private unfunded schemes are not treated as household equity, nor as liabilities of those schemes. To correct this incomplete coverage of workplace pensions SNA 2008 and ESA2010 now recognise pension liabilities in core national accounts from all employment-related pension schemes to households, whether funded or not. Although social security pensions do not count as pension entitlements of households – and stay out of the core accounts - they have to be included in a supplementary table. This table would then show a comprehensive picture of all social insurance pensions. This supplementary table could be of great help to identify what kind of obligations countries should record on pensions and whether this would contribute to improve international comparison of

national pension liabilities. On the other hand, a number of shortcomings will be pointed out as we will argue that a fair comparison is still away.

2   Datasets that publish pension liabilities

The OECD maintains four international databases in the pension's domain.

i.   *National Accounts*. Data on pension liabilities can be found in the liabilities side (LI) of Financial Balance Sheets of institutional sectors that recognise pension obligations, such as pension funds and insurance companies (S.125). Alternatively, one can find data on the assets side (AS) of the sector households' entitlements to future pension benefits. For our purpose we are interested in the category AF.612, i.e. Net equity of households in pension funds.

ii. *Institutional Investors Assets (IIA)*. The dataset includes financial assets, broken down into investment funds, insurance companies and pension funds, and other forms of institutional savings, as institutional sectors. Financial assets included are currency and deposits, securities other than shares, loans, and other equities and other financial assets. Total non-financial assets are also included. Because this database produces only assets and does not include liabilities it does not give direct measures of pension obligations.

iii. *Household Assets & liabilities (HAL)*. This database presents a detailed picture of financial and non-financial assets and liabilities distinguished, such as investment funds shares, net equity in life insurance and in pensions, several types of loans, consumer credit, non-financial assets. The same instrument as in the National Accounts i.e. AF.612 Net equity of households in pension funds is present. This is the mirror image of the liabilities side of the pension funds.

iv. *Funded Pension Statistics*. This dataset includes pension funds statistics with OECD (2005) classifications by type of pension plans (occupational and personal, mandatory and voluntary) and by type of pension funds (funded pensions, book reserved pension plans, pension insurance contracts, investment companies and bank managed funds). Also plans are classified in defined benefit and defined contribution. The dataset contains Net technical provisions of pension funds.

All databases are available on http://stats.oecd.org All four databases contain annual data, while i. and iv. also contain quarterly data.

2.1   Data availability

We will concentrate on major pension systems in important member states (Australia, Canada, France, Germany, Italy, Japan, the Netherlands, Portugal, Spain, the United Kingdom, the United States and Switzerland). These countries make up 79% of GDP and 68% of population in the OECD area. In addition, six of these economies have pension funds which together make up not less than 89% of all pension funds' assets in the OECD area (see figure).

Figure 1 Ownership of pension fund assets in OECD area, 2010
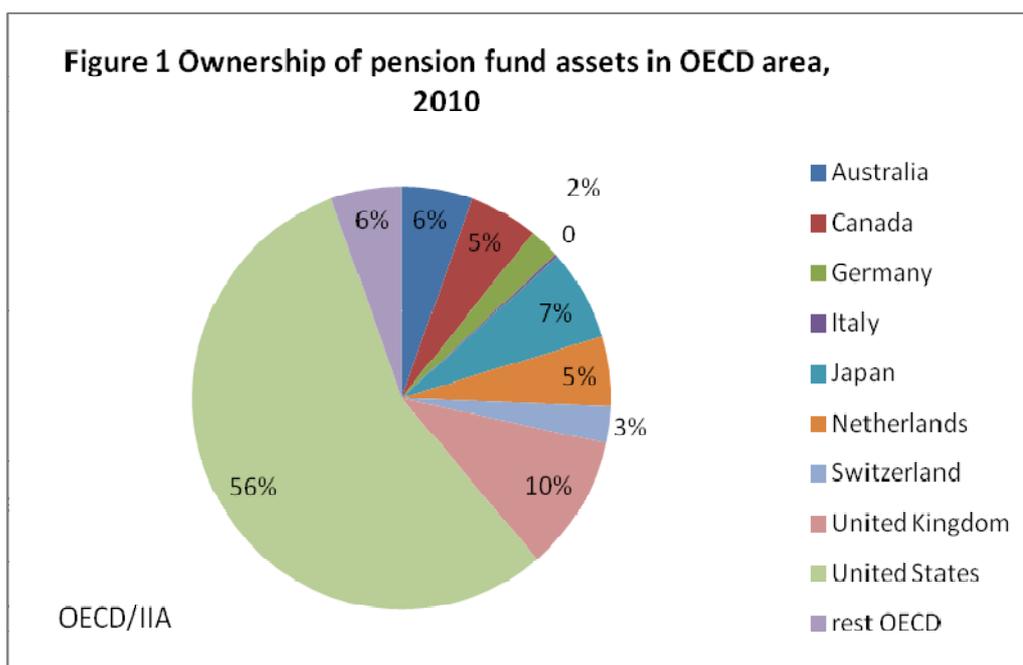
In table 1 OECD datasets on pensions are presented (excluding Institutional Investors Assets) in terms of data availability.

Table 1 Availability of 2011 data on pension liabilities/entitlements

|	NA/FBS; AF612 LI	FPS; Net technical provisions	NA/FBS; AF612 AS	HH A&L; AF612
Australia	x	x	x	x
Canada 2)				
France 2)	x	x	x	
Germany				x
Italy 1)	x	x	x	
Japan	x		x	x
Netherlands	x	x	x	x
Portugal	x		x	x
Spain	x		x	x
Switzerland		x	x	x
UK				
US	x		x	x

1) HAL: 2009 data.
2) HAL: 2010 data

Most countries publish 2011 data in National Accounts (NA) and household assets and liabilities (HAL). In order to choose one indicator of pension liabilities as a starting point for international comparison most countries publish household pension assets in the NA (third column). However, Canada and Germany do not have data here, while they do in HAL (although Canada only for 2010, just as France). Taking HAL as a basis makes that pension obligations of eleven of twelve countries can be analysed.

2.2 *Pension entitlements: a static view*

As far as the *liabilities* are concerned, there is no database where all pension liabilities are published for all countries. Not all countries report on AF.612 LI (liabilities side). For instance, Canada does not publish net equity on pension funds separately but includes this in a broader aggregate AF.6 (Insurance, pension and standardized guarantee schemes). This concept includes also net equity in life insurance and prepayment of premiums. Australia on the other hand reports its data to the OECD but the Australian Bureau of Statistics publishes on its own website AF.6 (insurance technical reserves). The United Kingdom does not report yet any separate data on pension obligations.

On the *assets* side most countries provide data to the OECD on AF.612; Italy's data for the database HAL over 2010 and 2011 have still to be published. The United Kingdom does not report any data on pension entitlements of households. Figure 2 brings together pension entitlements of households according to the indicator HAL for which most countries publish data.

Figure 2 Households net equity in pension funds in 2011, % GDP

source: OECD/HAL   ¹ incl. life insurance
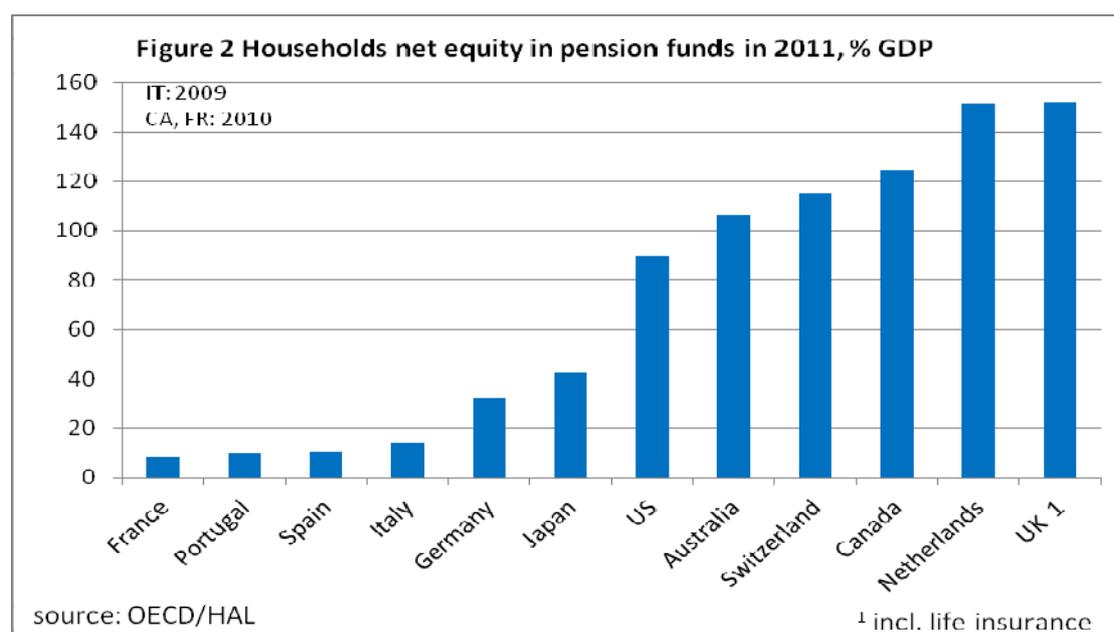
What is striking from figure 2 is that there seems to be countries with lower and also with higher net pension equities. One can perhaps distinguish between two groups of countries. In the first group (France, Portugal, Spain, Italy, Germany, Japan) the lower net equity to GDP ratio ranges from 9% in France to 43% in Japan. The second group of countries contain the American households who own 90% of GDP, and includes also Australia, Switzerland, the Netherlands, Canada and the United Kingdom (where the ratio of pension entitlements to GDP is even 152%). Why the United Kingdom has data on pension liabilities, despite the lack of data in OECD databases will be explained in section 3.

2.3   Pension entitlements in a dynamic perspective

Also in a dynamic perspective pension entitlements in the two groups of countries are different ((figure 3). Most of the countries in the second group show an upward trend until 2008. In that year however, there is a sharp decline in the value of pension liabilities to households. For countries that rely (partly) on defined contribution (DC) pension systems (UK, US, Australia) this could be due to the stock market decline as a result of the collapse of Lehmann Brothers. As is well known DC systems do not guarantee the amount they will pay out. Instead, their results depend on market returns and how much is paid in.

Figure 3 Household net equity in pension funds, % GDP
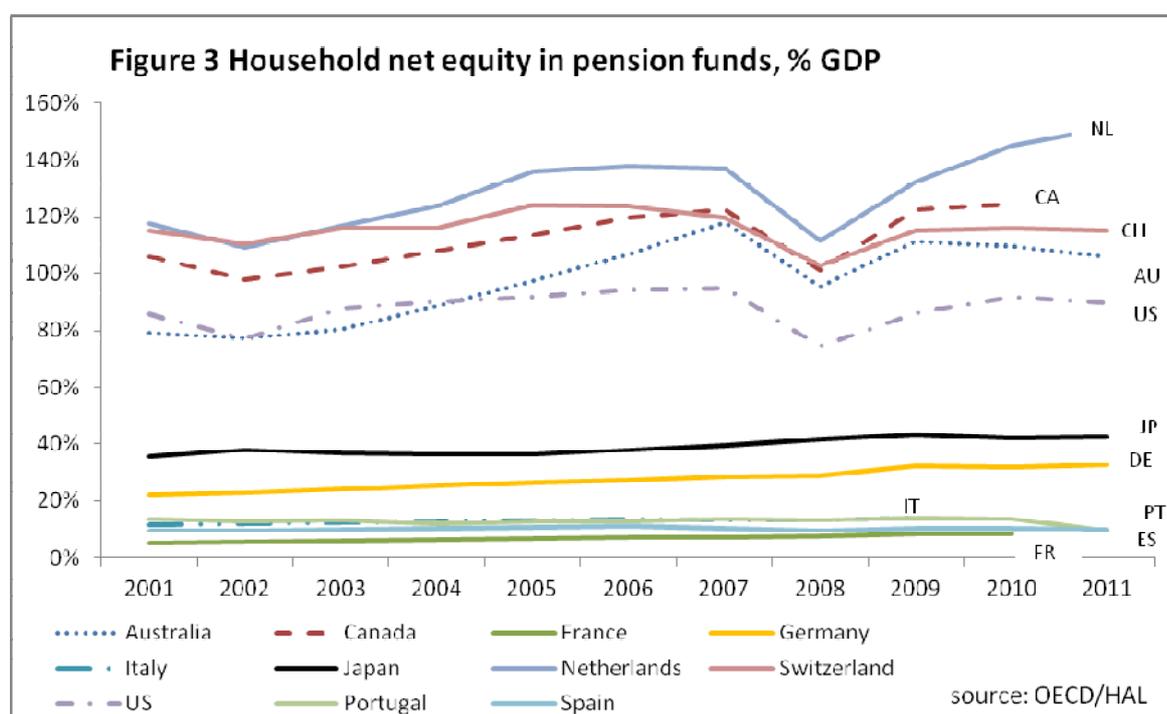
For other countries that have defined benefit schemes the sharp dip is puzzling (Canada, Netherlands, Switzerland). DB schemes guarantee more or less pension entitlements to participants, largely irrespective of financial market returns. Therefore, this may create some doubts whether these aforementioned countries really disseminated the liabilities side of the pension funds. Also, the opposed development of net technical provisions in Netherlands and Switzerland (heading upwards) according to data in FPS may underpin these doubts. For the Netherlands it appeared that data on liabilities have indeed wrongly been equalized to invested assets, including own equity of pension funds as well.[1]

3   Comparing pension obligations of OECD countries

We will highlight at least reasons for differences between national pension/GDP ratios. These will explain to some extent the variation shown in figure 2.

---

[1]   With the data 2010 revision due to ESA 2010 Dutch pension liabilities will be derived from reported obligations of pension funds to households instead of financial assets of the funds.

3.1 *Funded versus unfunded systems*

The distinction between two groups of countries reflects a very important institutional difference: are pension schemes funded or not? The answer to this has a substantial statistical impact. The countries in the first group have a large first-pillar-state pension in common. They have PAYG schemes without accumulated assets. As a result, the contingent liabilities of employer PAYG schemes in these countries are not recorded. The countries in the second group have funded pension systems; in the past contributions in excess of benefit payments have been saved and put into asset portfolios of pension funds. Together with income arising from investments and gains on assets, the result has been a large stock of earmarked financial assets. The second pillar here is most important in pension provision.[2] Because those countries decided to accumulate funds in the past, these show up in statistics. This institutional difference is the first source of statistical variation between national pension/GDP ratios.

3.2 *Discrepancy in national recording practices*

Second, there is also divergence because of various recording practices of countries.

As regards the *United Kingdom* it may come as a surprise that British citizens have much wealth in pension schemes. After all, the United Kingdom statistical authorities did not publish these as we have seen before (table 1). In fact the data in figure 2 reflect not only net equity in pension funds but net equity in life insurance as well. Only for this broader aggregate (SNA93: AF.61) are official data available. Up to now, the United Kingdom has not been able to make an official split between net equity in life insurance and that in pension funds. Traditionally, the private sector in the United Kingdom is very large and insurance companies are playing a big role in pension provision. Insurance companies not only manage investments for their own risk, but manage also pension insurance contracts. Besides, they take care of assets of workplace pensions and of so-called self-administrated workplace pensions and trusteed funds. Although an official estimate of separate pension liabilities is not possible now, the Office of National Statistics estimates that the majority of the liabilities falling under AF.61 lie in the pension field.[3] So the United Kingdom pension entitlements are substantial, and are by no means zero as it might look from international statistics. Still, the pension to GDP ratio is overestimated due to inclusion of equity on life insurance.

Germany includes reserves on behalf of health insurance. These are non-pension social insurance benefits. They amount to about 7% of GDP. Such reserves occur rarely. SNA suggests including them only for pragmatic reasons in pension entitlements.[4]

Within the group of countries with funded pension systems there are more differences underlying the data.

In *Australia* government employees are covered by DB schemes. These schemes are for a great part unfunded. According to current SNA93 rules unfunded employer pension liabilities should not be recorded. However, Australia has estimated these liabilities and they amount to 18% of GDP (end 2010). They are published under obligations of the sector general government S.13, and are also included in the net equity of households in pension funds (AF.612). On its website the Australian Bureau of Statistics

---

[2] Although Canada's first pillar is funded as well, these funds are owned by the government and are therefore not included in the data on net equity of households.

[3] Levy (2011).

[4] SNA 2008, p. 358.

notes that since January 2011 the financial accounts are based on SNA08 (where unfunded government employer pension liabilities indeed ought to be recorded in the core national accounts).

Canada presents another example of divergent recording practice. The Canadian government sector operates DB pension plans that are unfunded too. But since 2000 Canadian national accounts include a full actuarial treatment of those liabilities. The value of those government unfunded obligations amount to 14% of GDP (end 2010), and has been recorded in the NA in the liabilities of the general government sector S.13, as well as in the financial assets of sector households S.14-15. This recording practice goes beyond current SNA93. For a number of reasons, Canada prefers to express the recognition of unfunded government liabilities.[5]

Moreover, Statistics Canada has included some other items in household financial assets in HAL (AF.612). One component of this is 'other pension plans' (see AF.6124). Canada records here 'deposits accepting financial intermediaries' liabilities to the household sector', 'investment funds liabilities to the household sector' and 'other individual registered savings plans' (all of which are tax-sheltered). These three components – part of pillar three personal pension plans - of household financial assets are included in the Canadian pension/GDP ratio in figure 2. This recording practise goes beyond SNA 93.

In sum, recording practices in countries differ as some include unfunded government employer liabilities (Australia, Canada), while other countries do not (France, United Kingdom[6]). In addition, British households have substantial net equity in pension schemes. They are statistically mixed with net equity in life insurance. Further, Canada takes some pillar three personal pension plans on board, while other countries (the Netherlands, United States, Switzerland) do not. And Germany includes as the only country non-pension reserves in pension entitlements of households.

3.3   *Varying pension formulas: DB versus DC*

Third, another difference in the measurement of pension liabilities is that funded occupational pension schemes in various countries differ in their definition of pension benefits. Countries with built-up assets for retirement do not use the same pension formula. Some rely solely on DB types (the Netherlands), others have both DB and DC systems in place (Unites States). Also, some economies rely only on DC occupational schemes (France, figure 4).[7]

---

[5]   Tomas (2010).

[6]   Most public sector pension liabilities in the United Kingdom are unfunded.

[7]   Of course, the high DC share in e.g. Italy (91%) represents still a very small percentage of its GDP.

Figure 4 Relative shares of DB and DC pension funds assets (occupational plans), 2011, %
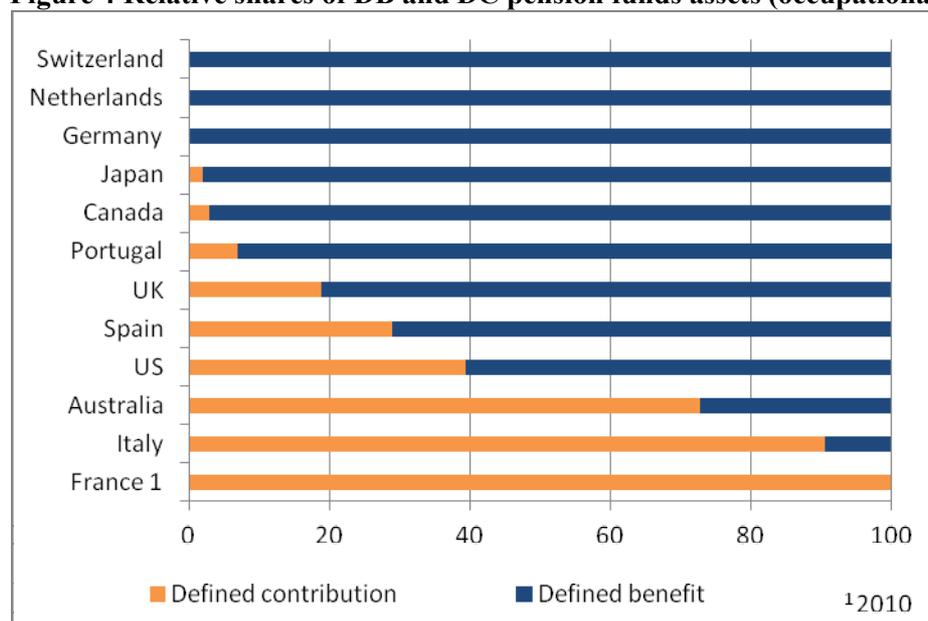
Source: OECD Global pension statistics (2011); national statistics

The varying shares of DC and DB pension assets have far-reaching implications. First, the measurement of pension liabilities in DC schemes is quite straightforward. They follow market prices of the invested assets that should support them. And because in most countries pension providers apply fair value pricing, it is reasonable to say that between DC pension schemes there will be less variation in valuation methods. As a consequence, DC pension liabilities can be compared. For example in Australia, and to some extent in the United States, DC elements play an important role in pension plans.

Other countries, however, do not have DC schemes but rely heavily on DB pension arrangements (Canada, Netherlands, Portugal, Switzerland, United Kingdom). More than 80% of occupational pension funds assets in these countries are of the DB type. Pension liabilities in DB schemes are differently measured; benefits here do not depend on investment returns but are set according to a formula that depend among others on earnings, age and career length. Because in DB schemes under- or overfunding is the rule rather than the exception, pension entitlements will not coincide with market value of funds' assets. This implies that if economies have different pension formulas, the measurement of plans will generate divergent results. Within the group of countries with funded pension schemes, disparity in the composition of DB and DC elements might lead to sizable differences in the measuring liabilities. Therefore, those pension obligations cannot be easily compared internationally.

3.4   Discounting DB pension liabilities: variation in discount rates

The fourth source of variation in measuring pension obligations stems from the fact that DB schemes in OECD-countries do not use the same type of discount rate to arrive at the current value of future retirement benefits. Essentially, there are two methods used in practice to set discount rates

(1) actuarial method

(2) fair value method

The first method fixes a pre-set expected rate of return on assets. This is motivated by the long-term orientation of pension funds.[8] Funds face a very long investment horizon, e.g. 60 years. In this period they could earn above-average returns in good times which could compensate for meagre years with low of even negative returns. This view has traditionally been taken by the actuarial profession. The method usually takes into account the rates of return that have been realised in the past.[9] For a long time pension liabilities had been valued using a fixed discount rate, based on an assessment of the long-term earning capacity of the assets held.[10] For instance, in the Netherlands a constant actuarial rate of 4% has been used until 2007.

This view has recently been criticised by economists.[11] They hold the view that an actuarial rate will only fully fund the scheme's liabilities if the assets indeed generate the expected yield in the next ten or twenty years. The actuarial view ignores that the funds' chosen asset allocation might result in different outcomes, including very bad outcomes. And bad outcomes deny the highly certain nature of DB pension benefits. Therefore, this economic view that is founded by standard finance theory, holds the principle that future streams of payments should be discounted at a rate that reflects their risk.[12] A case can be made that DB pension payments are almost risk-free; this is true in case the public sector is providing these schemes (like in the United States, the United Kingdom or in Canada) and include accrued pension rights that workers already have earned. Consequently, if pension payments are quite certain to be made in the future, then the right discount rate should be a current, risk-free interest rate, like Treasury bills or interest rate swap rates. In this way one enjoys the comfort that investments prevail today that will yield at least the same return to guarantee future pension obligations. Even if the pension promise is less certain then still it is to be preferred to use current market-determined interest rates while discounting DB pensions. Current rates *can* be earned which is not necessarily the case with assumed rates. For this reason the second method is also called fair value method. It reflects the emergence of fair value accounting and mark-to-market valuation principles in the nineties of the last century.[13] The fair value method has been founded in US GAAP and IFRS accounting rules for private sector companies.

---

[8]   Ponds et al. (2011).

[9]   The US stock market e.g. had an average rate of return of 4.4% from 1927-2008, Novy-Marx & Rauh (2009).

[10]   Ponds et al. (2011).

[11]   Novy-Marx & Rauh (2009), Biggs (2012a), Bodie (2012).

[12]   Novy-Marx & Rauh (2009).

[13]   Ponds et al. (2011).

Table 2 Discount rates used to calculate funded DB pension plans' liabilities

	Public sector scheme		Private sector scheme	
	Reference rate	Rate 2012	Reference rate	Rate 2012
Australia	*Actuarial method*: expected return on government bonds over the long term; different public entities however may use different rates	6%	*Fair-value method*: current, market-determined, risk-adjusted discount rates (in practice long term government bond rate at 30 June each year)	3.38%
Canada	*Actuarial method*: expected return on government bonds over the long term plus mark-up	5–6½ % [2]	*Fair-value method*: Federal high-quality debt instruments with cash flows that match both timing and amount expected of benefit payments (usually AA corporate bond yields)	4.78% [2]
Switzerland	*Actuarial method*: average of expected return on stocks (2/3) and return on government bonds (1/3) minus 0.5% (technische Referenzzinssatz) [3]	3.5%	*Actuarial method*: average of expected return on stocks (2/3) and return on government bonds (1/3) minus 0.5% (technische Referenzzinssatz) [3]	3.5%
Netherlands	No public pension schemes [4]	-	*Fair-value method*: interbank swap rates as proxy for risk free rate. Since September 2012 on the basis of 3 months average whereby for maturities > 20 years the Ultimate Forward Rate (4.2%) increasingly is taken into account.	2.38%
United Kingdom	*Actuarial method*: expected return on investments calculated as inflation rate (RPI) + approx. 3% on average	6.44% [5]	*Fair-value method*: variable market discount rate based on high-quality corporate bond yields	4.8% [5]
United States	*Actuarial method*: expected rate of return [1]	8%	*Fair-value method:* average of high-quality corporate bonds over past 25 years	6.5%

[1] US state and local governments DB pension plans. [2] 2011 data. [3] The outcome must lie between 3.5 - 4.5%.
[4] Due to privatisation of public sector employees' pension schemes in the 1990s funds' liabilities are now classified under private sector (financial institutions S.125). [5] Data refer to 2010. Public sector rates are based on scheme valuations of 34 London Local Government Pension Schemes. The average RPI-inflation in 2003-2012 was 3.3%.

Sources: AUS: International accounting standard, AASB 119; Bateman & Piggott (2011); Deloitte (2010); Fong, Piggott & Sherris (2012); Australian Government, the Department of Finance and Deregulation (2012); OECD/DAF information. CAN: Biggs (2012); Ontario Teachers' Pension Plan; Pension plan for the public service of Canada (Aon Hewitt); C.D. Howe Institute; Canadian Institute of Actuaries. CHE: Bunderates (2011). NLD: De Nederlandsche Bank. UK: London local Government Pension Scheme (data 2011); Independent Public Service Pensions Commission (Hutton report (2010). USA: Novy-Marx & Rauh (2009); Biggs (2012). National regulators on pension funds.

Table 2 shows the variation in discount rates. It includes countries that provide DB funded schemes. PAYG-schemes are not included because they do not disclose liabilities nor apply a discount rate. The sources for this table are mainly based on detailed reports available on internet. It should be pointed out that the actuarial assumptions on applied discount rates in *public* schemes regarding are not always made
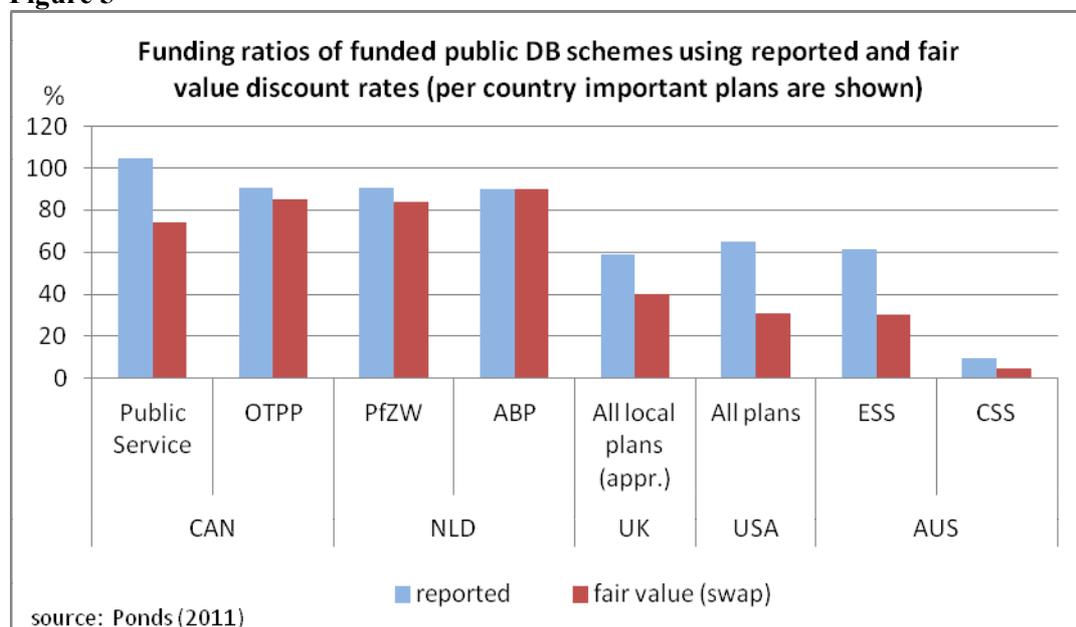
clear. It is less clear than in private pension DB schemes which use standardised fair value accounting assumptions.

Table 2 shows too that when the government sector is responsible for pension schemes the actuarial method is applied. In all countries this method is based on the expected return on assets that investment managers of these funds hope to achieve in the long run.

Discount rates used differ across countries, and need not be the same for all economies. National inflation will rates vary due to national differences in productivity between tradable and non-tradable sectors. Moreover, variations in used discount rates reflect different investment strategies and market views. Pension schemes have varying asset allocations which show up in the employed discount rates as a proxy for expected returns. In addition, member age profiles (does the scheme has younger or older members?) and life expectancy differ between countries.

What catches the eye in table 2 too is that *private* plans' discount rates are systematically lower than those in the *public* plans. This differing accounting practise has consequences. Lower discount rates used in DB pension plans generally increase liabilities, because a lower interest rate will be subtracted each year in discounting future pension payments. The result will be a higher present value of pension liabilities. Would it make a difference if public pension plans discounted their DB liabilities at the same fair value rates applied in private schemes? The answer is yes. Present value calculations of pensions take into account a multi-decennia time horizon. Small changes in underlying assumptions, like the discount rate, have a great impact. To show this the OECD made re-valuations of funded public schemes' liabilities using fair value discount rates (figure 5). As can be seen using fair value discount rates instead of actuarial rates resulted for some schemes in higher liabilities and in much lower funding ratios (assets/liabilities).

Figure 5

Funding ratios of funded public DB schemes using reported and fair value discount rates (per country important plans are shown)

source: Ponds (2011)

Especially in Canada, the United Kingdom, the United States and Australia funding ratios fall for some schemes substantially. On the other hand plans in the Ontario Teachers Pension Plan (Canada) and plans in the Netherlands used discount rates rather similar to rates already used in private plans. So a number of public sector retirement plans' liabilities seem to be understated because they use too high

(assumed) discount rates. For Canada and the United States the extent of underfunding has been documented elsewhere quite well.[14]

To some extent, public sector pension funds operate under national laws and a special regulatory framework. They do not have to comply with agreed accounting rules for private business like IAS. In some countries individual public funds are quite autonomous in their pension accounting practice.[15]

In sum, one can conclude that in OECD-countries a large variety in employed discount rates exists between funded public DB schemes and funded private pension DB schemes. Public schemes tend to use higher rates and underestimate liabilities. Pension obligations in public and private plans are measured differently. International statistics currently puts them together. This masks underlying valuation differences, making it hard to compare pension liabilities internationally. Of course, we cannot cover all pension schemes in the OECD countries reviewed, so the above comparison is only valid for the relevant countries. It should be added that there are also public pension plans with defined benefits that apply market-based discount rates.[16] Due to the national character of discount rates in public pension plans one can support results of a previous study that there is no international standardised method of reporting public sector pension liabilities.[17]

Is private sector pension accounting perfect?

However, the above does not imply that private sector plan accounting is perfect. IAS19 for instance prescribes that discount rates should be set by reference to high quality corporate bonds. But it does not specify which bonds. Especially the question which AA-bond curve one should use is a topic of debate. Moreover, the Canadian Institute of Actuaries noted that in the long end of the yield curve (with maturities longer than 15 years) insufficient bonds are available. Developing a yield curve from a small pool of bonds may lead to a significant amount of subjectivity.[18] KPMG observes the same for the long end in the euro zone. In addition, the turbulence in financial markets has led to more volatility in the composition of the AA-curve. Largely due to downgrades, the composition of the curve changes. Updates of credit ratings are not processed simultaneously by all providers of bond market data. Also, exact criteria which issues to include or exclude vary. Therefore, yield curves advised by actuarial firms to their private pension clients to make present value calculations will diverge.[19] Notwithstanding these flaws, due to international standards private pension DB plans can be better mutually compared.

4.   The role of the supplementary table to harmonize pension liabilities

The supplementary table on pensions (SToP) in SNA08 (table 17.10 [20]) tries to correct the incomplete coverage of pension entitlements of SNA93. This table supplements workplace-related pension claims (private, public, funded and non-funded) with future pension obligations in social security. SNA permits some flexibility in recording unfunded government employer pension schemes that are difficult to distinguish from social security retirement schemes. Some of these entitlements will be recorded in the core national accounts (and then automatically in the supplementary table), other obligations will only be

---

[14]   Novy-Marx & Rauh (2009), Laurin & Robson (2009), Biggs (2012a),

[15]   Vanderwal (2013).

[16]   See Ponds et al. (2011), p. 23.

[17]   Ibidem.

[18]   Canadian Institute of Actuaries (2011). KPMG observes the same for the long end in the euro zone.

[19]   KPMG (2012).

[20]   http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf, p. 370.

visible in SToP.[21] In this way the SToP provides a comprehensive analysis of all social insurance pensions.[22]

4.1   *SToP included in transmission programme ESA 2010*

This table is also part of the ESA 2010 transmission programme (table 29) and is compulsory for EU-countries. Every 3 years it has to be compiled, the first time in 2017 for data of 2015. In 2011, Eurostat and the ECB developed a Technical Compilation (TCG, Eurostat/ECB (2011). This handbook aims to support EU countries to compile data for the supplementary table. To promote international comparison in pension schemes' liabilities the TCG recommends some harmonised assumptions for all EU-countries:

1.   Application of PBO wage-growth assumption;

2.   Same discount rate applied to all EU-countries of 3% (5% nominal) in real terms with the following features [23] :
   - high quality government bonds of several European countries to obtain a proxy for a risk-free rate
   - long maturities;
   - to be used for all government managed pension plans (including social security schemes);
   - stable rate to avoid 'noise' from frequent changes;
   - should be reviewed regularly because of uncertainty about future rate developments;
   - inflation: stable rate of 2 %, in line with ECB medium-term inflation target;
   - indexation of pension benefits: according to country-specific indexation rules (which may be based on inflation, on wage growth or a mixture of the two).

3.   Demographic assumptions based on the newest EUROPOP projections of Eurostat.

To arrive at estimates of future liabilities of unfunded government employer pension plans and of social security PAYG-schemes an actuarial model is needed with a number of assumptions on, among others, accrued-to-date liabilities, life expectancy projections, wage growth, discount rate.

Same discount rate for all?

As we have seen the choice of the discount rate is a key assumption;   estimates of pension entitlements are very sensitive to even small changes. The recommendation of the TCG to use one, invariable, discount rate for all EU-countries' public pension schemes generates some problems. First, one rate for all can be misleading if national inflation rates differ (as they do within the EU). Second, one constant rate suggest that the actuarial method with expected (but perhaps not attainable returns) to discount pension liabilities is used, instead of fair value method that uses current market prices. Third, applying one rate for all assumes that the risk of future pension flows in public pension plans across the EU is the same. In reality, however, DB pension schemes between EU-countries differ in the degree of riskiness of the pension promise. The implication is that for countries with low inflation and strong nominal pension promises, the average discount rate of 5 % will be too high, and for other economies too low. This will result in underestimating pension liabilities in the first group and overestimate them in the second group of countries.

---

[21]   SNA provides some criteria on whether to record such schemes only in SToP or in both. Also countries have to motivate their recording decisions (SNA2008, p. 369).

[22]   Pillar 3 personal pension plans and social assistance by government are excluded.

[23]   Discount rate based on an historical average of 10 years government bonds in the euro zone and Germany in 1999-2009. The TCG realises that the choice of the wage rate and the discount rate are related to each other.

4.2 Country supplementary table data already published

A number of countries have made these estimates and have already published their pension entitlements in the context of the supplementary table. These data are not published in the regular OECD statistics. A Eurostat/ECB task force on pensions who designed this table also produced the first data for several European countries.[24] The task force was assisted by experts from the Research Center for Generational Contracts of the Freiburg University. Using the 'Freiburg model' one compiled estimates for selected government sponsored pension schemes (including social security pension schemes). In this pension model harmonised assumptions for the measurement of pension entitlements were applied (table 3).

Table 3 Pension entitlements calculated by the Freiburg model

Pension entitlements for government employees unfunded schemes [1]

country	year	model	wage growth	pension entitlements in % GDP
Germany	2006	Freiburg	ABO	41
			PBO	49
France	2006	Freiburg	ABO	50
			PBO	61
		National	PBO	53
Netherlands [2]	2006	Freiburg	ABO	4
			PBO	5
United Kingdom	2004-05	National	PBO	45
	2010	National	PBO [3]	58
Australia	2010	National	?	18

[1] Standard scenario: real discount rate 3%; real wage growth 1.5%, inflation 2%.
[2] Pension entitlements of the military pension scheme.
[3] Key assumptions along the lines of ESA 2010/TCG 2011.
Source: Eurostat/ECB (2008); Levy (2012); Khurmi et al. (2010).

Pension entitlements for other government employees unfunded schemes [1]

country	year	model	wage growth	pension entitlements in % GDP
Spain	2009	National	PBO	24
Portugal	2009	Freiburg	PBO	102
Poland	2006	Freiburg	ABO	25
			PBO	29

[1] Standard scenario: real discount rate 3%; real wage growth 1.5%, inflation 2%.
Source: Eurostat/ECB (2008); Cristobal (2011); de Almeida (2011)

Pension entitlements for social security pension schemes [1]

country	year	model	wage growth	pension entitlements in % GDP
Germany	2006	Freiburg	ABO	232
			PBO	278
France	2006	Freiburg	ABO	247
			PBO	293
	2005	National	PBO	327
Netherlands [2]	2006	Freiburg	ABO	129
			PBO	163
United Kingdom	2010	National	PBO [3]	263

[1] Standard scenario: real discount rate 3%; real wage growth 1.5%, inflation 2%.
[2] Pension entitlements of the military pension scheme.
[3] Key assumptions along the lines of ESA 2010/TCG 2011.
Source: Eurostat/ECB (2008); Levy (2012);

Pension entitlements for other social security pension schemes [1]

country	year	model	wage growth	pension entitlements in % GDP
Spain	2009	National	PBO	283
Portugal	2009	Freiburg	PBO	217
Poland	2006	Freiburg	ABO	255
			PBO	287
Sweden	2006	Freiburg	ABO	168
			PBO	198
Hungary	2006	Freiburg	ABO	228
			PBO	275
Czech Republic	2006	Freiburg	ABO	162
			PBO	200

[1] Standard scenario: real discount rate 3%; real wage growth 1.5%, inflation 2%.
Source: Eurostat/ECB (2008); Cristobal (2011); de Almeida (2011)

---

[24]   Eurostat/ECB (2008).

The accrued-to-date-liability concept has been used, so pension liabilities in the table reflect the already accrued pension rights. The results are only indicative; in many cases they have to be further developed. After the task force finished its empirical work in 2008, a number of countries continued with this work (results shown in the right panels). As can be seen, entitlements calculated by PBO are larger, as this assumes real wage growth. In ABO pension entitlements only rise with future inflation (diverging assumptions on real wage growth between countries are another source of statistical barriers to international comparison).

What is clear also is that entitlements for unfunded government employees' schemes are much smaller than those for social security PAYG schemes. Employees' schemes produce entitlements which are on average about 50% of GDP. Social security entitlements are however on average a factor of more than four times as large (233%). Of course, these averages are just illustrations of the differing magnitudes of the stocks of obligations, and their absolute values should not be taken as strict.

With these supplementary table calculations, it is possible now to compile a fairer comparison of pension liabilities as some statistical barriers have been removed. In figure 6 we assume that some calculations for some countries made in 2008-2009 still hold in general today.[25]

Figure 6
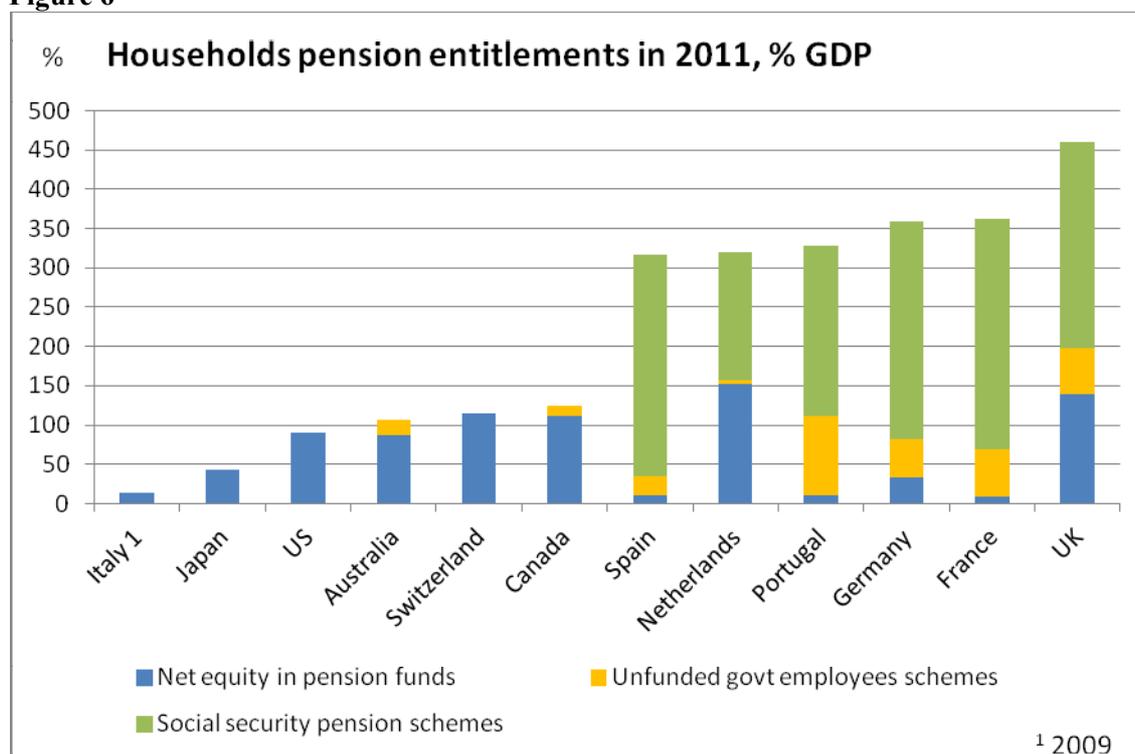
Source: OECD/HAL, national calculations

For the economies of Canada, Italy, Japan, Switzerland and the United States we are not aware of additional estimations of pension entitlements for unfunded workplace and social security pension schemes that should be included in the SToP, as this will be only mandatory from 2014, i.e. the starting point for SNA2008. Australia has published this table but cannot split the liabilities of pension funds into sponsorship. Besides, Australia does not operate a social security system; as a result no future pension benefits on this basis can be measured. Therefore, figure 6 can only offer a comparison of the six countries

---

[25]   This assumes that pension entitlements have increased at the same GDP growth rate in each country.

to the right. Apparently, social security covers much more citizens than those who work with the government. This is especially true for countries with a PAYG-system where the government takes care of your pension (e.g. Germany, France, Portugal, Spain, United Kingdom). In these countries, private sector workers' entitlements are included in state pension obligations. For other countries (the Netherlands) the social security pension entitlements are smaller because the workplace (second pillar) already takes care of the main part of pensions.

In general, figure 6 shows that including contingent liabilities result in a totally different picture than shown in figure 2. France, Germany, Portugal and Spain have made large (unfunded) government pension promises to its population. In terms of net pension equity to GDP they surpass the Netherlands. The already high pension/GDP ratio in the United Kingdom increases even more.

4.3   Conclusion: will the supplementary table achieve more comparability?

The goal of introducing the supplementary table in SNA08 was to generate comparable estimates for pension entitlements across schemes. In addition, the EU tries to harmonise also some accounting assumptions used. This is a constructive effort to foster international comparison.

First, SToP solves the problem of the uneven treatment of funded and unfunded employer pension systems. There should be now more transparency of pillar one and pillar two accrued pension liabilities.

Second, the idea of harmonising current different accounting assumptions in public sector schemes in the EU is a step forward too. Public schemes inside countries, but also across countries, can be better compared. Still, using one discount rate for all EU-countries seems to be an over-harmonisation, as it will lead to under- and overestimation of social insurance pension liabilities.

Third, an advantage is that all social insurance pension plans now come together in one picture.

However, some national reporting practises (par. 3.2) that deviate from statistical handbooks and questionnaire guidelines, will of course show up also in the SToP. This hinders comparability.

Further, the SToP does not solve the problem that countries have varying composition of DB and DC pension formula elements (par. 3.3). As both schemes use very different assumptions to arrive at the measurement of liabilities, economies with large DC pension schemes and small DB schemes will end up with different outcomes than if they would have large DB and small DC schemes.

Finally, as we have seen, ESA 2010 favours harmonised accounting assumption only in *public* sector schemes. However, ESA guidelines do not use fair value discount rates, but use rates based on expected returns. As we have seen the *private* sector pension schemes employ market based discount rates (par. 3.4). As a consequence, public and private sector pension schemes' liabilities are calculated in different ways. Moreover, as a result of systematically higher discount rates in *public* plans, their liabilities look smaller than their true value. This variety in discounting practice hinders comparing funding positions of national schemes too.

In sum, inclusion of the supplementary table facilitates to a great extent the comparison of government pension plans in social insurance, whether funded or not. Provisional calculations show that for the Netherlands, Germany, France Portugal, Spain and the United Kingdom social security pension schemes and employment related pension arrangements together can be compared better than before. This is a major, valuable, role played by this new table. But it is does not resolve the other measurement issues stated above. As a result, these shortcomings will still be a barrier to a reasonable comparison of pension obligations inside and also across countries.

One recommendation could be that all individual public and private pension schemes should be more transparent about their actuarial assumptions (e.g. discount rate, projected wage rate). Too many schemes are silent about this in their financial reports.

In addition, the international organisations could make clearer in their clarification notes to the tables what the underlying peculiarities are of the relevant countries. This could help users to understand the chances and limits of international comparison.

Literature

Almeida, A.M. de (2011) *Pension statistics for the new ESA: compilation issues and some results for Portugal*, presentation to the 2011 Working Party of Financial Statistics of the OECD, Oct. 2011

Australian Bureau of Statistics (2006) *Yearbook 2006*; Super fund lookup – an Australian Government Initiative

Australian Government, the Department of Finance and Deregulation (2012).

Bateman, H. & J. Piggott (2011), Civil Services and Military Retirement Income Provision in Australia, ARC Centre of Excellence in Population Ageing Research, Working Paper 2011/9

Biggs, A.G. (2012a) *Public Sector Pensions: How well funded are they, really*? State Budget Solutions, July 2012

Biggs, A.G. (2012b) *The accounting trick that will haunt public pensions*, American Enterprise Institute, September 2012

Blake D. & D. Harrison (2010) *An Evaluation of Investment Governance in London Local Government Pension Schemes*, The Pensions Institute/Cass Business School, November 2012

Bodie, Z. (2012), Mismatch risk, government guarantees, and financial instability: the case of the US pension system, in: *International Journal of Central Banking*, January 2012

Bundesrates (2011) *Bericht des Bundesrates zuhanden der Bundesversammlung über die Zukunft der 2.Säule,* December 2011

Canadian Institute of Actuaries (2011) *Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans*, Educational Note, September 2011

Cavieres, L., B. Zinni and S. Hagino (2012), *Pension funds: latest developments on the financial market of OECD countries, with a particular focus on Chile and Japan*, presentation to the 2012 Working Party of Financial Statistics of the OECD, October 2012

Coletta, M. and B. Zinni (2011) *Insurance corporations and pension funds in OECD countries,* paper presented to the 2011 Working Party of Financial Statistics of the OECD, October 2011

Coletta, M. and B. Zinni (2012) *Comparisons of insurance corporations and pension funds statistics available on OECD.Stat*, paper presented to the 2012 Working Party of Financial Statistics of the OECD, October 2012

Credit Suisse (2013) *The Three Pillar System*, https://pensionskasse.creditsuisse.com.

Cristobal, A. (2011) *Implementation of the new pension satellite account in Spain*, presentation to the 2011 Working Party of Financial Statistics of the OECD, October 2011

Deloitte (2010) Illustrative Superannuation Fund Financial Report, Financial Year ended 30 June 2010

Dippelsman, R. (2009), *Recording of Defined Benefit Pension Schemes in Macroeconomic Statistics*, in ECB/Eurostat, 2009

ECB/Eurostat (2009) *Workshop on Pensions*, Reimund Mink & Marta Rodriguez Vives (eds.), European Central Bank, 29-30 April 2009

European System of Accounts 1995

Eurostat/ECB (2008) *Final report of the Eurostat/ECB Taskforce on the statistical measurement of the assets and liabilities of pension schemes in general government to the CMFB*, Luxembourg, February 2008

Eurostat/ECB (2011) *Technical Compilation Guide for Pension Data in National Accounts*

Employment Research Benefit Institute, *EBRI databook on employee benefits*, http://www.ebri.org

Financial Times Deutschland (2012) *Pensionslasten erdrücken Konzerne* (2012), 14-8-2012

Fong, J.H, J. Piggott & M. Sherris (2012) Public sector pension funds in Australia: longevity selection and liabilities, ARC Centre of Excellence in Population Ageing Research, *Working Paper 2012/17*

Iwry, J.M. (2012), *Retirement savings defaults: the evolving US experience*, Presentation at the 2012 OECD-IOPS Global Forum, Chili

Khurmi, B., S. Naidu and P. Meadows (2010), *A progress report on compiling 2008 SNA table 17.10 for Australia*, presentation to the WPFS of the OECD, November 2010

KPMG (2012) *KPMG Pensions Accounting Survey in the Netherlands*, 2012

Laurin, A. & W.B.P Robson (2009), Supersized Superannuation: The Startling Fair-Value Cost of Federal Government Pensions, *The pension papers*, no. 122, December 2009, C.D. Howe Institute

Levy, S. (2012), *Pensions in the national accounts – a fuller picture of the United Kingdom's funded and unfunded pension obligations*, Office of National Statistics, April 2012

Lub, H. (2007), Pension schemes for (semi)-government employees in the Netherlands – a national accounts perspective, *IFC bulletin no. 28*, p. 224-229

Mink, R. (2011), New statistical requirements – pension and governments pension entitlements, in *Promoting excellence in European statistics, 20 years CMFB*, Lisbon 2011, p. 116-121

Novy-Marx, R. & J. Rauh (2009) The Liabilities and Risks of State-Sponsored Pension Plans, *Journal of Economic Perspectives* 23(4), 2009, 191-210

OECD (2005) *Private Pensions*, OECD Classification and Glossary

OECD (2011) *Pensions at a Glance*

OECD (2012) *Pensions Outlook*

OECD statistics on http://stats.oecd.org

Office for National Statistics (2011), *Pension trends; pension scheme funding and investment*, April 2011

Office for National Statistics (2011), *Pension trends, Pensions and tghe national accounts*, April 2011

O'Hagan, P. (2012), *Retirement wealth in Canada*, presentation to the 2012 Working Party of Financial Statistics of the OECD, October 2012

O'Hagan, P. (2012), *Household sector financial accounts and balance sheets estimates: Canadian practise,* presentation to the 2012 Working Party of Financial Statistics of the OECD, October 2012

Ponds, E., C. Severinson and J. Yermo (2011), Funding in Public Sector Pension Plans: International Evidence, *OECD Working Papers on Finance, Insurance and Private Pensions*, No. 8, OECD Publishing.

System of National Accounts 1993

System of National Accounts 2008

Statistics Canada, *Methodology by type of pension plan*, http://www.statcan.gc.ca

Tomas, A. (2010), *Canadian pension satellite account*, presentation to the 2010 Working Party of Financial Statistics of the OECD, November 2010

Verrinder, J. (2009), *Pension schemes in the international statistical standards*, in ECB-Eurostat, 2009

Zarco, I.H. (2011), *ESA2010: recording of pension schemes in national accounts*, presentation to the 2011 Working Party of Financial Statistics of the OECD, October 2011