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WORKSHOP ON PENSIONS

29-30 APRIL 2009
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EDITORS

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CONTENTS

FOREWORD

The first ECB/Eurostat Workshop on Pensions, which was held in Frankfurt on 29 and 30 April 2009, served to bring together a wide range of experts from national central banks, national statistics institutes, international organisations, and research institutes to reflect on the accounting issues involved in the recording of pension schemes under the System of National Accounts, 2008 (2008 SNA) and also under the European System of Accounts which is currently under revision. At the same time, it provided the opportunity to discuss user's needs and the political messages on this important topic, not least with regard to the sustainability of public finances.

This foreword provides a short overview of the various contributions made by the authors and discussants in the five sessions of the Workshop. Mr. Steven Keuning's welcome speech, given in his capacity as the ECB's Director General Statistics, touched on some key issues of the workshop by referring to the new recording of pension entitlements in the 2008 SNA, in particular in relation to measures of fiscal sustainability.

The issue and discussion papers are presented according to the five sessions of the Workshop: Session I was dedicated to discussing the concept of accrued-to-date pension entitlements from a national accounts perspective. Session II dealt with the experience of pension modellers and accounting standard setters as to how to compile and record pension entitlements. Session III was organised as a panel to illustrate the user's perspective.

Session IV and Session V focused on national experience in compiling accrued-to-date pension entitlements under government schemes. Seven country cases were presented and discussed: the country cases for Spain, Luxembourg, Finland, Canada, the United States, Poland and Germany. In a closing address, Mr. Werner Bier, the ECB's Deputy Director Statistics, Mr. Eduardo Barredo-Capelot, Head of Unit C5 at Eurostat, and Mr. Reimund Mink, a, Senior Adviser at the ECB, concluded the Workshop by focussing on how to communicate the results presented at this Workshop to the public at large.

The content of the e-book is structured by session. Each session contains an introduction with a short overview of the various papers, followed by the issue papers and the discussion papers themselves. The e-book has been compiled and edited by Ms. Marta Rodriguez and Mr. Reimund Mink, both of whom work at the ECB in the Directorate General Statistics.

INTRODUCTION

BY STEVEN KEUNING,
DIRECTOR GENERAL STATISTICS, EUROPEAN CENTRAL BANK

Ladies and gentlemen,

INTRODUCTION

On behalf of Mr Walter Radermacher, Director General of Eurostat, and myself I would like to welcome you to the ECB/Eurostat Workshop on Pensions. I would like to thank all of you who are participating in this Workshop and as well everyone who is involved in organising it. Let me start by saying that I am particularly happy that many of you who have contributed to the successful completion of the System of National Accounts, 2008 (2008 SNA), and specifically of the accounting treatment of pensions that it incorporates, are also present today.

Recently, the UN Statistical Commission has adopted the 2008 SNA as the international statistical standard for national accounts and has encouraged countries to implement it. In the area of balance of payments, the sixth edition of the IMF's Balance of Payments and International Investment Position Manual (BPM6) will be published soon. These two handbooks are seen as constituting the new global international statistical standards. The European System of Accounts (ESA 95) as a counterpart to the SNA is also under revision. For EU countries, its importance goes far beyond that of the SNA, as it is a legal instrument with a very significant impact on key policy decisions in the European Union. Among other effects, it has a direct bearing on the so-called excessive deficit procedure, the contribution to the EU budget, the allocation of regional funds by the European Union and the contributions of Member States to the capital of the ECB.

Considerable attention has obviously been given to the revision of the government accounts and specifically to the impact of the revision on the recording of government deficit and debt. Thus, the new recording of pension entitlements and its impact on these variables is one of the topics of this discussion.

NEW RECORDING OF PENSION ENTITLEMENTS IN THE 2008 SNA

In the discussions from 2004 on how to record pension entitlements in the new SNA the question arose as to whether all or only part of them should be covered within the asset and liability boundary. This question is closely linked to the issue of the extent to which the recording of pension entitlements in the national accounts should be harmonised when the underlying institutional reality differs significantly across countries. For the time being, the institutional differences across countries related to pension schemes (capitalised versus pay-as-you-go) generate significant differences in the accounts, not least because they lead to different economic behaviour. In particular, pension assets (in other words, future pension rights)

in countries with mainly capitalised systems are recorded as household wealth, while future pension rights in countries with government-sponsored pay-as-you-go schemes (like France, Germany, Italy or Spain) are not recorded. Of course, the entitlements in the former case are contractually determined.

In essence, there is now consensus in the 2008 SNA on distinguishing pension schemes sponsored by general government, which should be recorded in the core national accounts, from those schemes that should be recorded only in a new supplementary table on pensions (like social security schemes). The updated SNA includes such a table showing the flows and stocks of all pension schemes. For the benefit of users of the accounts, all countries will be expected to produce the new table, and it was suggested that this table would be compulsory for all EU countries under the new ESA regulation.

In 2007, work of the Eurostat/ECB Task Force on Pensions, mandated by the Committee on Monetary, Financial and Balance of Payments statistics (CMFB), concentrated on the design of the supplementary table. The overall aim of the table is to present the opening and closing stocks of pension entitlements for all social insurance pension schemes (including social security), and the transactions and other economic flows during the period that account for the difference between the opening and the closing positions, thus systematically showing pension obligations for all these schemes, and thereby facilitating international comparability. It was clearly indicated in the January 2008 CMFB Report of the Eurostat/ECB Task Force on Pensions, which was presented to the Economic and Financial Committee (EFC), that the pension entitlements derived for government-sponsored pay-as-you-go schemes are not measures of fiscal sustainability which require elaborate modelling simulations. Instead they display the cost of terminating such a pension scheme at the reference date of the accounts.

LONG-TERM SUSTAINABILITY OF PUBLIC FINANCES

In Europe, the Stability and Growth Pact, which was adopted in 1997, strengthened the Treaty provisions on fiscal discipline in the European Union. Government sector accounts as part of the system of national accounts play a key policy role in this field. The new Code of Conduct of the Pact has also incorporated guidelines on the countries' strategies to ensure the sustainability of public finances, especially in view of the economic and budgetary impact of ageing populations.

Timing nicely with the Workshop is the recent release by the European Commission (DG ECFIN) and the Economic Policy Committee's (EPC's) Ageing Working Group (AWG) of the "2009 Ageing Report: Economic and budgetary projections for the EU-27 Member States (2008-2060)". This report is based on the need for the Council to "regularly review the long-term sustainability of public finances, including the expected strains caused by the demographic changes ahead". In 2006, the ECOFIN Council gave a mandate to the EPC to update and further deepen its common exercise of age-related expenditure projections by autumn 2009, on the basis of a new population projection by Eurostat, which was released in April 2008.

ACCRUED-TO-DATE LIABILITIES AND FISCAL SUSTAINABILITY

An advantage of this Workshop is that it brings together national accounts experts who have contributed to developing the concept of accrued-to-date liabilities for measuring government-sponsored pay-as-you-go pension schemes and analysts dealing with fiscal sustainability indicators. Two straightforward questions that need to be answered are whether the data derived for the supplementary table on pensions will be appropriate to serve as an input for the AWG pension projections and what the link is and what the differences are between the approaches of accrued-to-date liabilities and implicit liabilities, in terms of fiscal sustainability indicators?

The data on pension entitlements following the accrued-to-date liabilities approach are compiled ex-post; they are not projections. However, the closed system implicitly used for this approach may be expanded in a consistent way, to derive liabilities for open systems on a gross or even on a net basis, by compiling net open system liabilities following a generational accounting approach.

According to the 2009 Ageing Report, sustainability conditions are defined by comparing current government debt figures with the discounted values of all future primary balances. Sustainability gaps emerge because these discounted values are usually too small to offset current debt. According to the report, age-related government expenditure, as a percentage of GDP, will increase for the European Union as a whole, from 2007 to 2060, by 4.7%, and half of this increase results from the increase in pension expenditure.

The economic and budgetary projections made by the AWG are based on such sustainability indicators. In addition to Eurostat's population projections, the main data source for the report is government finance statistics following ESA 95 principles. In recent years, Eurostat, with the assistance of the CMFB, has taken a number of decisions that have clarified the national accounts for the government sector in Member States and have made them more comparable. There have also been international initiatives to align government accounting practices and international statistical standards. The outcome of this work has been a new chapter on general government and public sector accounts in the 2008 SNA. A similar chapter is under preparation for the new ESA.

FUTURE CHALLENGES

An ageing population raises challenges from an economic point of view. Their seriousness depends on how economies respond and adapt to these changing demographic conditions. Policy-makers need to ensure long-term fiscal sustainability in the face of clearly anticipated risks, as well significant uncertainty. In this context future pension expenditure has to be taken into

consideration especially as Europe is in the midst of the deepest recession in decades, which is putting unprecedented stress on economies while also having a major impact on the sustainability of public finances.

I hope that we will continue to enjoy the support that we have received in the past from so many of you. I wish you a stimulating and enjoyable workshop today and tomorrow.

SESSION I

PENSION SCHEMES IN INTERNATIONAL STATISTICAL STANDARDS

INTRODUCTION

Session I of the Workshop on pensions deals with the subject of pension schemes in international statistical standards. These standards are the System of National Accounts, 2008 (2008 SNA), the new revision of the European System of Accounts currently under preparation (new ESA). Both, the 2008 SNA and the new ESA deal with pensions and their accounting treatment in separate chapters.

To shed further light on the current work in this area there are three presentations on this topic. John Verrinder's (Eurostat) presentation is on pension schemes in the new ESA and in the 2008 SNA. John starts with a short description of the current recording of pension schemes in the 2003 SNA and in the ESA 95, highlight the incomplete coverage of pension entitlements – specifically those under government schemes. He goes on to describe the long and complicated process of how the new recording of pensions was developed from 2002. It started with an Electronic Discussion Group led by the IMF, continued with the lively discussions at the Advisory Expert Group (AEG) from 2004 to 2007 and was successfully concluded by a compromise solution adopted by the United Nations Statistics Committee (UNSC) in 2008. The major achievement of this work was the design of a supplementary table on pensions in social insurance. Various modelling issues are considered like the valuation of wage increases, the choice of the discount rate, and the treatment of transfers of pension schemes and of pension reforms. Finally, some information is given on the current revision of the ESA 95 in relation to pensions.

Robert Dippelsman (IMF) concentrates in his presentation on the recording of defined benefit pension schemes in macroeconomic statistics. These schemes are defined in such a way that the benefits payable to the employee on retirement are determined by the use of a formula. They are set in contrast to defined contribution pension schemes. Rob clearly indicates that defined benefit pension schemes may be funded or unfunded. Moreover, actuarial methods are required to derive measures of pension obligations based on the pension formula. In a further step, the difference is shown in the treatment of unfunded government employer retirement schemes in the 1993 SNA compared with the Government Finance Statistics Manual (GFSM 2001), in which such obligations are treated as contractual liabilities for a government to its employees. This is in line with the accounting standards applied for the private sector (IAS 19). Finally, the proposed future treatment of pension schemes is described as part of a big picture, namely to recognise defined benefit pension entitlements as financial assets and liabilities, taking into account the higher range of uncertainty than for most other financial instruments due to the application of actuarial methods and the difficulty that social security and government employee benefit elements are often combined.

John Walton deals with the guaranteeing and insuring of defined benefit pension entitlements. He distinguishes between three levels of security for pension entitlements under autonomous and non-autonomous pension schemes as they exist in various countries. He further explores whether funding of the guarantor

exists and whether it is independent of government. Accordingly, different levels of cover are distinguished for the different schemes. In this context he thinks that this distinction might not be shown in the supplementary table as there is to be no option to show different degrees of quality of an asset due to guarantees. In a further step, he considers options for how to treat these guarantees – as contingencies or as financial instruments, taking into account the recommendations on the treatment of guarantees in the 2008 SNA.

Gabriele Semeraro (Banca d'Italia) as the discussant of this session provides an overview of the three contributions looking, at the common elements and also some specific issues. All the papers are seen to shed some light on more general properties of pension schemes. While the paper of John Walton focuses on aspects of guarantees (explicitly or implicitly) given to the beneficiary of the entitlements, the presentations of John Verrinder and Robert Dippelsman deal with the new statistics in general as they are presented in the new international statistical standards.

PENSION SCHEMES IN THE INTERNATIONAL STATISTICAL STANDARDS

BY JOHN VERRINDER

I   INTRODUCTION

This article explains the background and main results of the Eurostat/ECB Task Force on pensions.

The System of National Accounts 1993 (SNA93) and its European Equivalent (ESA95) record pension schemes in "social insurance" according to their features:

– *Private funded social insurance schemes* – insurance technical reserves (liabilities/assets), actuarial treatment;

– *Unfunded social insurance schemes operated by employers* – no reserves, actuarial treatment in principle but not in practice;

– *Social Security* – no reserves, no actuarial treatment.

Thus there is a potentially inconsistent treatment of pensions across sectors/ countries depending on administrative set-up. In the lead up to the revision of the SNA93 this was identified as an area of concern and there was an IMF-led Electronic Discussion Group in the period 2002-2004, which culminated in discussions at the SNA Advisory Expert Group (AEG) in the period 2004-2007. The AEG concluded that:

– In principle pension obligations (assets/liabilities) should be recorded on an actuarial basis for all employer schemes (whether funded or unfunded),

– but recording of social security remains unchanged.

2   THE SUPPLEMENTARY TABLE ON PENSION SCHEMES IN SOCIAL INSURANCE

It quickly became apparent that the first of these conclusions raised some important issues in Europe, notably in the difficulty to distinguish unfunded government employer schemes from social security. The following discussions led to a worldwide compromise, which would allow for some flexibility in recording unfunded government employer schemes under clearly defined conditions.

Following these discussions, the SNA 2008 Chapter 17 (part 2 deals specifically with pensions) was adopted by UN Statistical Commission in August 2008, subject to some specific follow-up issues, notably the concept of a sponsor, the criteria for core/non-core accounts treatment pension obligations, and the recording of actuarial gains/losses.

Within Europe, work on pensions started in a Eurostat Task Force on pensions, which explored the difficulties of distinguishing government employer and social security pension schemes. Given the importance of the issue, a Task Force of the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB) was established. This was jointly chaired by ECB/Eurostat, consisted of members from many EU countries plus the OECD and the IMF, and delivered its final report to the CMFB in February 2008 (available on the CMFB website: www.cmfb.org).

A key element of the worldwide compromise was the compulsory production of a *Supplementary Table for pensions*. This is designed to make pensions data more visible and to aid international comparison. It reconciles opening and closing stocks of pension entitlements through rows show transactions and other economic flows, notably:

– Contributions received which lead to entitlements;

– Benefits paid;

– "Changes in pension entitlements" (the net of the above entries);

– Other changes in entitlements (reforms, modelling, etc).

The columns of the table show the types of pension schemes, with "non-core" schemes clearly distinguished in separate columns.

It became clear in designing the table that economic flows would have to be clearly identified – they would have a knock-on effects throughout the national accounts. In general the approach taken was to define what is in the "other economic flows", and many transactions lines, with the "residual" left as imputed employer social contributions (i.e. the remaining part to be met by the employer). Other economic flows obviously include modelling effects which are split between revaluations (discount rate) and other changes in volume (other assumptions).

The measurement of pension entitlements relies heavily on the availability of source data; in general statisticians are not resourced or professionally equipped to model pension schemes. However statisticians need to understand the sources (whether actuarial reports, business accounts, sustainability models…) in order to make appropriate estimations.

For *defined contribution schemes*, the pensions entitlements are inextricably linked to the assets of the scheme (assets = entitlements), which means that the main issue is to obtain estimates of asset values.

For *defined benefit schemes*, given that the eventual pensions are based on a formula, they can only be estimated based on a model applying the formula with given assumptions. SNA 2008 does not seek to impose practical measurement requirements, though it does mention some key assumptions.

Of all the assumptions discussed at the Eurostat/ECB Task Force, *the one which generated the most discussion was the treatment of future wage rises*. Eventual benefits in a defined benefit scheme depend on final or average salary, and the usual career path of an employee involves periodic wage rises due to promotion. There are two ways in which future wage rises could be taken into account:

– Include them as they occur (Accrued Benefit Obligation, or ABO)

– Project them in model (Projected Benefit Obligation, or PBO)

The SNA 2008 describes the issue in detail but does not recommend one or the other approach, leaving the decision to the modeller, who would need to consult carefully the applicable rules for each specific pension scheme.

A few other important points were raised in the drafting of the SNA 2008 chapter:

• The output of pension schemes should be measured for all schemes!

• The notion was established of the "Sponsor" of a pension scheme–a unit which determines the conditions of a defined benefit scheme and possibly has a legal burden to meet shortfalls in pension scheme. Assets and liabilities are to be recorded in the national accounts system to reflect the relationship between the sponsor and the unit administering the scheme.

• Transfers between pension schemes should be recorded as financial transactions, with a pension liability being recorded for government if government assumes responsibility for future payments of a non-government scheme.

• The reform of a pension scheme could be transaction or other economic flow depending on whether or not the reform is negotiated between employer and employees.

• The treatment of "actuarial gains/losses" (if model assumptions do not turn out to be correct) is still a source of debate, since they could be viewed either as transactions or as other economic flows.

Eurostat is developing the revised European System of Accounts (ESA); a draft chapter on pensions has already been made available. The key principles of the revised ESA are fully in line with SNA 2008. However the ESA will contain:

- Stricter criteria on the core/non-core recording of pension entitlements to ensure consistency across EU – in practice this means that entitlements of unfunded government sponsored employment related pension schemes will only be recorded in the Supplementary Table;

- More guidance on key modelling issues, such as:

    – ABO versus PBO;

    – Discount Rate.

There is the intention to draw up a compilers' guide, which will contain further information on practical issues and assumptions.

The Supplementary Table will be a compulsory part of the revised ESA transmission programme, and more emphasis is placed on the Table in the ESA chapter.

3   TIMETABLE FOR THE REVISED ESA

The timetable for the revised ESA envisages:

- Until November 2009: Drafting of chapters and comments of MSs.

- December 2009 – June 2010: Finalisation of the new ESA regulation and adoption of the Commission proposal.

- 2012: Adoption of the ESA regulation by the Council and the European Parliament.

- 2014: Implementation of new ESA and transmission programme (but it is important to note that back-series will be needed, including for pensions).

RECORDING OF DEFINED BENEFIT PENSION SCHEMES IN MACROECONOMIC STATISTICS

BY ROBERT DIPPELSMAN

I   INTRODUCTION

Obligations under defined benefit pension schemes can involve a major future burden for both public and private employers, and a corresponding asset for the beneficiaries. Similarly, the emergence of those pension benefit obligations imply current cost incurred by the employer and income earned by the employee. However, under previous statistical standards, these liabilities (and the corresponding assets) were only recognized to the extent that they were funded. The previous treatment was paradoxical, in that these obligations are most likely to cause problems when no fund had been set up to provide for them.

For economic analysis, it is important to understand these asset and liabilities, because they affect financial position and have liquidity implications for the future. In line with general accrual accounting principles, it is also important costs incurred during the period are measured, including accrual of the rights to pensions to be paid in the future. For the employer, failure to take these expenses and liabilities into account may lead to misunderstanding of actual costs and poor decisions, such as a bias in favor of incurring unrecognized expenses and failure to make proper provision for future cash flow commitments.

This paper provides an overview of the treatment of defined benefits pension schemes in accounting and statistical standards. Because the statistical treatment analyzes the operation of these schemes by breaking them down into several different underlying economic processes, it requires a range of imputations, partitions, and rerouting. Furthermore, defined benefit pension schemes raise additional issues of measurement because the estimation of future benefits is subject to a range of uncertainty.

2   DEFINITIONS

A defined benefits pension scheme is defined in the *2008 SNA* as "… one where the benefits payable to the employee on retirement are determined by the use of a formula, either alone or a minimum amount payable" (paragraph 17.129). The factors taken into account in the formula can include factors such as years of service, final salary or salary over a period, family situation, age at retirement, and options taken by the employee as well as changes in the cost of living.

Defined benefits schemes are contrasted with defined contribution pension schemes, in which the benefits are determined by contributions and the return on funds invested. The two types of scheme have very different ways of bearing of the risk of changes in market performance. With a defined contribution scheme, the variability of market returns is the risk or benefit of the employees, while for a defined benefit scheme, the return is determined by the formula, so is not affected by market conditions (as long as the sponsor of the scheme remains solvent).

The term "pension scheme" can be contrasted with "pension fund." A pension scheme is a set of rules and arrangements for paying pensions, while a pension fund is a designated pool of assets that is used to pay benefits. Defined contribution schemes always have a fund and the issue of underfunding does not arise. Defined benefit schemes sometimes but not always, have a fund. If there is no fund, the employer meets the costs from its own resources, so it is a pay-as-you-go arrangement. If there is a funded defined benefit scheme, it may be fully funded, underfunded, or overfunded. With an underfunded scheme, the funds are inadequate to meet the estimated present value of entitlements that have arisen from labor that has already been provided. In the case of an overfunded scheme, the funds are more than the present value of pension entitlements, as can arise if the fund's returns have exceeded expectations or if there have downward revisions in the estimates of variables such as life expectancy or salary growth. Underfunded and unfunded schemes usually give rise to the greatest economic policy concerns as they generate require additional funding in the future.

The formula used in a defined benefit scheme usually includes at least some items that are not known at the individual level at the time they are accrued. For example, while doing work in the period adds to the length of service by a known amount, the exact benefit may be affected by factors such as departure before vesting, age at retirement, length of life of the employees and their dependents, future general salary increases, and the employee's future promotion path. While individually, these factors can be highly uncertain, the values can be actuarially estimated for a whole group of employees with greater accuracy, based on past behavior and possibly adjusted for trends. Despite the ability to make actuarial estimates, there is still a degree of uncertainty greater than other financial liabilities such as a loan or a bond. Measurement is also much easier for defined contribution schemes, because it is determined on the basis of the assets of the fund.

3   TREATMENT IN THE ACCOUNTING STANDARDS

A.   PRIVATE SECTOR

For private sector defined benefit plans, International Accounting Standard (IAS) 19 requires that actuarial techniques be used to estimate the amount of benefits. It requires discounting the future benefits to present value, valuing any assets of the pension scheme at fair value, and recognizing changes in the present value of future benefits resulting from changes in the actuarial assumptions and estimates. Businesses that follow these standards will be able to understand the recognition of pension entitlements and will be able to supply

the necessary statistical data. However, the degree of standardization of detailed techniques in practice is possibly an issue, for example on the choice of discount rates, and whether the estimates take into account existing compensation levels (accumulated benefit obligation) or estimated compensation levels that existing employees will have in the future (projected benefit obligation).

The United States General Accepted Accounting Principles (Statement No. 87 and 132) also recognize pension entitlements in expenses and liabilities. However, general accrual principles are qualified by delayed recognition, so that changes in the pension entitlements and changes in the value of assets set aside to meet those entitlements are not recognized as they occur but are recognized systematically and gradually over subsequent periods, although additional disclosure is specified for notes to the balance sheet. As suggested in the text of the statements, it was recognized that the standards involved some compromises from first principles.

B.   PUBLIC SECTOR

For the public sector, International Public Sector Accounting Standard (IPSAS) 25 sets out standards which also require recognition of accrued pension entitlements as an expense and liability. (See http://www.ipsas.org/PDF_ipsas_standards_ifac/IPSAS25.pdf). In IN7 the Standard requires an entity to:

(a) Account not only for its legal obligation, but also for any constructive obligation that arises from the entity's practices;

(b) Determine the present value of defined benefit obligations and the fair value of any plan assets...;

(c) Use the Projected Unit Credit Method to measure its obligations and costs;

(d) Attribute benefit to periods of service under the plan's benefit formula, unless an employee's service in later years will lead to a materially higher level of benefit than in earlier years;

(e) Use unbiased and mutually compatible actuarial assumptions about demographic variables (such as employee turnover and mortality) and financial variables (such as future increases in salaries, changes in medical costs and relevant changes in state benefits). Financial assumptions should be based on market expectations, at the reporting date, for the period over which the obligations are to be settled…

4 TREATMENT IN THE STATISTICAL STANDARDS

A. SYSTEM OF NATIONAL ACCOUNTS 1993 (1993 SNA) AND EUROPEAN SYSTEM OF ACCOUNTS 1995 (ESA 95)

In the previous standards, funded entitlements were recognized as an instrument:

> Net equity of households on life insurance reserves and on pension funds (AF.61) Reserves held against life insurance and annuity policies by insurance enterprises, whether mutual or incorporated, and by pension funds. These reserves are considered to be assets of the policyholders and not of the institutional units that manage them (*1993 SNA* Chapter 13 Annex).

Since net equity of households in pension funds was limited to reserves held, the obligations of unfunded schemes were not recognized, as was the underfunded amount in the case of underfunded schemes.

The *1993 SNA* gives indications that it realized that this was not an entirely satisfactory treatment. In paragraph 13.88, it was recommended that a memorandum item of the present value of the promises to pay future benefits be shown in the balance sheets of households and employers.[1] For the corresponding income and expense, there is recognition that benefits should be taken into account in principle. The contributions could in principle "be based on the same kind of actuarial considerations that determine the level of premiums charged by insurance enterprises" (paragraph 8.72). However there is also discussion of the practical difficulties in measurement for unfunded schemes. Recognizing the difficulties, it is concluded in paragraph 8.73 that "the benefits actually paid in the current period may nevertheless provide the best available estimates of the contributions and the associated remuneration."

The *1993 SNA* shows an awareness of the issue of unfunded obligations, but fell short of recognizing them in the same way as other liabilities.

B. GOVERNMENT FINANCE STATISTICS MANUAL 2001 (GFSM 2001)

GFSM 2001 generally follows the *1993 SNA* closely in terms of content, although with some presentational changes to meet some particular analytical needs. However, in paragraph 4.35 it is very explicit in stating:

> Contrary to the *1993 SNA*, transactions in unfunded government employer retirement schemes are considered in this manual to involve a contractual liability for a government to its employees.

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1   While *ESA 95 is* generally consistent with the *1993 SNA*, the memorandum item is not mentioned.

This divergence between the *1993 SNA* and *2001 GFSM* reflected the growing concern of policymakers and government finance experts that unfunded obligations of governments were a major and growing issue for some countries. In some cases, the unrecognized obligations were of comparable magnitude to the conventional liabilities in the form of bonds and notes. Off-balance sheet liabilities are a matter of particular concern for analysts.

As a consequence, the pension liability is included in the balance sheet of government and payment of benefits to retirees and their families are regarded as withdrawals from the value of the assets of households, rather than transfers.

C.   SYSTEM OF NATIONAL ACCOUNTS 2008 (2008 SNA)

By the time of the update of the *SNA*, the concerns that had been recognized in the text in the 1993 edition were becoming a matter for wider concern. The inconsistency between the treatment of funded schemes and unfunded ones was recognized as being a serious anomaly. The concerns about the extent of off-balance sheet liabilities of government employer schemes that had been recognized in *GFSM 2001* were also relevant to analysis of governments in the *SNA* context. As well, some private employers, such as the US car manufacturers, had suffered weakened balance sheets because of underfunded pensions. Over the same period, there had been increasing recognition of pension entitlements in the accounting community, so that the actual or potential availability of actuarial estimates was much improved since 1993.

As a result of these concerns, the statistical community agreed to move the *2008 SNA* in the direction already taken in the accounting profession and *GFSM 2001*. Nevertheless, it was recognized that the practical implementation would still have some difficulties, especially due to variation in methods of valuation and because many governments had not adopted the international accounting standards for pension schemes. There are also difficulties when government employee pension schemes operate in conjunction with social security. An irony associated with the improved treatment of defined benefit schemes is that such schemes are becoming less common, particularly in the private sector, and many existing schemes have been closed to new staff.

A new instrument "pension entitlements" (AF63) was created to recognize pension obligations, regardless of whether and how the schemes was funded:

> Pension entitlements show the extent of financial claims both existing and future pensioners hold against either their employer or a fund designated by the employer to pay pensions earned as part of a compensation agreement between the employer and employee. The only transaction for pension entitlements recorded in the financial account is the difference between net contributions receivable and benefits payable (paragraph 11.107).

As a consequence of the recognition of the entitlements as being an asset of households, it is necessary to show them as being built up by contributions over the period of employment. For actual contributions by employees it is

straightforward. For actual contributions by employers, the contributions are rerouted (from employers through households to the entity that is responsible for the pension scheme's liabilities). The rerouting is necessary to include the contribution in household income and correctly show which party acquires the asset. For unfunded or underfunded amounts, an employer contribution is imputed, and then rerouted through households.

As part of the change from the 1993 to the 2008 treatment, the terminology was amended from "reserves" in the *1993 SNA*, where only funded obligations were recognized, to "entitlements" which also covers entitlements where there are no reserves. "Entitlements" tends to highlight the beneficiaries' viewpoint, while "obligations" tends to emphasize the employer's viewpoint, but national accounting needs to use the same term for both parties. Another implication of the changed treatment is that the income accruing on the pension entitlements in the case of defined benefit schemes is not based on the returns on invested funds, if any, but the increase in entitlements due to the unwinding of the discount factor.

In the *2008 SNA*, there is also a recognition of the possibility of nonpension liabilities, such as for health insurance and other allowances. In countries where employers provide health insurance cover for their retirees at concessional rates, these may be an important issue.

A new instrument "claims of pension funds on pension managers" (AF64) is identified to cover the situation when the scheme is a separate entity from the employer or other sponsor of the scheme. When the sponsor has responsibility for any underfunding, the claim of the pension fund is shown under this heading. Alternatively, if the scheme is overfunded, and the surplus is repayable to the sponsor, the asset is negative.

In addition to changes in the value of pension entitlements arising from employment during the year, the value may also alter due to changes in the plan benefit conditions and actuarial assumptions, which are recorded as other change in volumes. Changes due to price indexation are treated as revaluations, as are promotions (although mainly arising with the accrued benefit obligation method).

The value of pension entitlements are subject to a range of uncertainty. However, this is not a unique situation in accounting or statistics. For example, actuarial estimates are already used in national accounts data for the closely related activities of insurance and annuities. However, statistical compilers cannot be expected to undertake actuarial estimation themselves, so there is a constraint of data available from compilers; or possibly, data as supplied could be adjusted by adjustments to cover gaps or differences in treatment. Countries vary in the extent to which accounting practice recognizes pension entitlements. Although not able to duplicate the work of actuaries, it is important that statistical compilers have some understanding of the methods used so as to identify problems of comparability. As common in statistics, there may be a margin of uncertainty, but omitting the pension entitlements is the equivalent of making an estimate

of zero, which is not an uncertain figure, but is certainly wrong. The revision of assumptions underlying actuarial estimates also raises difficult issues. They were subject to different views in the *SNA* revision process as to how they would be recorded, such as whether there should be backward revision of estimates for earlier periods or one-off changes through other changes in volume.

The definition given in paragraph 19 is limited to schemes related to employment, so excludes social security schemes, which resemble defined benefits schemes in some ways, but the requirement to pay benefits is of different nature, more policy-driven and less contractual. Nevertheless, the *2008 SNA* notes that the line between pension and social security schemes is not entirely clear-cut, and arrangements may differ between countries. It shows income and stocks for pension entitlements under social security schemes in a supplementary table (Table 17.10) with different kinds of pension schemes, but does not include them in the core accounts. While not in the core accounts, the data are likely to be of interest to analysts and policymakers. In some countries, social security entitlements are large and helps to address fiscal sustainability issues. Although the *2008 SNA* supplementary table refers to social security pension obligations, health and other obligations may also be relevant in some countries.

D. BALANCE OF PAYMENTS AND INTERNATIONAL INVESTMENT POSITION MANUAL (BPM6)

BPM6 was developed in parallel with the *2008 SNA* and is completely consistent. Its previous edition had given minimal consideration to cross-border pensions, but with globalization of labor markets, the issue has become more important in some cases. For example: multinational companies may have a single pension scheme for employees in different countries; guest workers and other expatriate employees may accrue entitlements in their host country, then return to their home countries; mobile workers can be employed in several different countries during their careers; and people may move to sunnier or cheaper countries after retirement. Depending on the international mobility of its labor force, the issue may be minor for many countries, while in others, it could be economically significant either as a source or recipient of pensions, so statistical compilers need to monitor the situation in their countries.

The principles for measurement are the same as in the *2008 SNA*. For measurement of nonresidents' claims on residents, the residents are pension funds or employers, which are generally capable of reporting data. They usually have some indication of the residence of the beneficiaries, although ratios may be needed to split totals that cover both residents and nonresidents. However, for residents' claims on nonresident employers or pension funds, the data situation is more difficult, because the local parties are a diffuse group of individuals. In those cases, estimation may need to be made with ratios in conjunction with demographic data on retirees from abroad, or data on a pensions from abroad received through the banking system or reported for taxation. When pension recipients change residence to a country, there is an entry for other change in volumes for the pension entitlements.

E.   RECORDING OF 2008 SNA ENTRIES

The recording of defined benefit schemes has a impressively long list statistical complications: It involves entries in the production, generation of income, distribution of primary income, secondary distribution of income, use of income, and financial accounts (but not the capital account). As well, there are complications involving indirectly measured output, rerouting (employer contributions are rerouted through the beneficiary households), and imputations (for unfunded liabilities). There is also a special entry for "adjustment for change in pension entitlements" to reconcile the fact that payment of pension benefits are treated as secondary distribution of income, while at the same time as the withdrawal of a financial asset that has been accumulated over previous years.

These processes can be illustrated from the numerical example (*2008 SNA* Table 17.8, summarized in the Table below). The example covers a defined benefit scheme with a separate fund that is partly funded:

From observed transactions:
    Employers make actual contributions of 10.0.
    Households make actual contributions of 1.5.
    The pension fund generates income on its assets of 2.2.
    Benefits are paid to retirees and other beneficiaries of 19.0.

From actuarial estimates:
    The underfunding for the year is 4.1, which is therefore the employers' imputed contribution.
    The property income payable (due to the discount factor) is 4.0, which is also treated as a pension supplement.

Derived items are:
    Pension fund output is 0.6 (difference between total inflows to the fund and total outflows – (10.0+4.1+1.5+4.0-16.0-3.0, i.e., employers' actual contributions plus employers' imputed contributions plus household actual contributions plus household pension contribution supplements less benefits payable less increase in pension entitlements, respectively).

    Household pension contributions are 19.0, including actual contributions by households, rerouted actual and imputed contributions by employers. (10.0+4.1+1.5+4.0-0.6, i.e., employers' actual contributions plus employers' imputed contributions plus household actual contributions plus household pension contribution supplements less pension schemes service charges, respectively). (In this way, the contributions, actual and imputed, can be seen as giving rise to the liability).

    Change in pension entitlements is 16.0 (19.0-16.0, i.e., contributions less benefits).

Example – Accounts for Defined Benefit Pension Scheme

	Uses				
	Employer	**Fund**	**Households**	**Other**	**Total**
Production account					
Output					
Generation of income account					
Employers' actual pension contributions	10.0				10.0
Employers' imputed pension contributions	4.1				4.1
Distribution of primary income					
Employers' actual pension contributions					
Employers' imputed pension contributions					
Property income				2.2	2.2
Prop. inc. payable on pension entitlements					
Secondary distribution of income					
Household pension contributions			19.0		19.0
Pension benefits		16.0			16.0
Use of income					
Final consumption expenditure			0.6		0.6
Adj. for change in pension entitlements		3.0			3.0
Saving/net lending/net borrowing	-10.0	-5.3	17.5	-2.2	0.0

	Changes in assets				
Financial account					
Net lending/net borrowing					
Adj. for change in pension entitlements			3.0		3.0
Pension fund claim on sponsor		4.1			4.1
Other financial assets	-10.0	-2.3	14.5	-2.2	0.0

	Resources				
	Employer	**Fund**	**Households**	**Other**	**Total**
Production account					
Output		0.6			0.6
Generation of income account					
Employers' actual pension contributions					
Employers' imputed pension contributions					
Distribution of primary income					
Employers' actual pension contributions			10.0		10.0
Employers' imputed pension contributions			4.1		4.1
Property income		2.2			2.2
Prop. inc. payable on pension entitlements			4.0		4.0
Secondary distribution of income					
Household pension contributions		19.0			19.0
Pension benefits			16.0		16.0
Use of income					
Final consumption expenditure					
Adj. for change in pension entitlements			3.0		3.0
Saving/net lending/net borrowing					

	Changes in liabilities				
Financial account					
Net lending/net borrowing	-14.1	-5.3	17.5	-2.2	0.0
Adj. for change in pension entitlements		3.0			3.0
Pension fund claim on sponsor	4.1				4.1
Other financial assets					

Saving is the same as net lending/net borrowing in this case because there are no capital account entries. In the *1993 SNA* treatment, all the underfunding would have been omitted (and hence any items where 4.1 was taken into account the above example would be calculated without that amount). As well, the property income payable to the beneficiaries would have been 2.2 instead of 4.0.

5   CONCLUSION

The recognition of defined benefit pension entitlements as assets/liabilities and income/expenses in macroeconomic statistics improves the relevance of the statistics by giving a more complete picture of their economic effect. The treatment is in line with economic principles because these entitlements represent a future benefit/burden that accrues from current activities and will remove the anomalies of ignoring underfunded and unfunded entitlements until they are paid.

Accounting practice increasingly recognizes these entitlements, which will assist in adoption of the methodology. However, it should be taken into account that these changes add some additional burdens in data collection and compilation. It will also be important to keep users informed of the explanation for the change, the methods used, and the size of the effects.

GUARANTEE OR INSURANCE OF DEFINED BENEFIT PENSION ENTITLEMENTS

BY JOHN WALTON [1]

ABSTRACT

In some countries there is a degree of guarantee of the pension entitlements of members of autonomous defined benefit (DB) schemes. Often the guarantor takes over the assets and liabilities of schemes which are in deficit when a sponsoring employer becomes insolvent. The guarantee may be only for a proportion of the entitlements, and may have an upper limit. The UK, USA and the provincial government of Ontario (Canada) are examples.

In other countries, regulation is very tight and such guarantee arrangements have been unnecessary. The Netherlands is the main example.

Likewise, in Germany and some other countries with non-autonomous DB schemes, there is a need for a guarantor. Then the guarantee applies, not just to the deficit of an autonomous scheme with segregated assets, but to the entire entitlements (the "book reserves"), or to a proportion of them.

In this paper I refer to and draw on OECD's summary of an examination of such arrangements and of the desiderata for them. I then consider the treatment of these activities in the national accounts, looking forward to the SNA 2008 basis, and in the Supplementary Table. One approach is to assume – perhaps doubtfully, because of systemic risks – that a guarantor's objective is achievable to have usually a positive level of technical provisions (technical reserves), actuarially sufficient to cover future calls to activate guarantees. There is then a choice between considering the counterpart of these technical provisions – representing the net assets of the guarantor – as either contingent or actual assets of the pension schemes whose members benefit, potentially, from the guarantee.

The SNA 2008 treatments of both standardised and one-off guarantees on *loans* do not attribute, before activation, any excess of the guarantor's assets over its liabilities as assets of the bodies receiving the guarantee. If either treatment is applied to guarantee schemes for autonomous funded *pension schemes*, the amounts paid to a guarantor, as premiums (or levies), would not lead to a result in which the net assets of the guarantor are regarded as part of the level of collective savings for pensions.

An alternative for pension schemes would be to treat the guarantor as a kind of reinsurer of the risks incurred by the pension schemes (who incur investment risk and so can be thought of as similar to direct insurers), located therefore in the same sub-sector. Then the technical provisions of a guarantor with assets exceeding activated claims would be combined with those of pension schemes. Likewise, if the guarantor has net liabilities. Another treatment in which the guarantor is regarded as a specialist insurer in the insurance sub-sector probably lacks this symmetry.

The paper also considers the direct implications of these treatments for the Supplementary Table, including what happens when entitlements are transferred to a guarantor, and some indirect implications. There are country notes for Germany, the Netherlands, UK, USA and Ontario (Canada).

INTRODUCTION

The risks, through insolvency of a sponsor, to the obligations of funded defined benefit (DB) pension schemes are insured or guaranteed in some countries, usually compulsorily. There is a detailed description of these arrangements in *OECD Working Papers on Insurance and Private Pensions*, No. 5, April 2007, which also considers desiderata for them. The paper, by Fiona Stewart, is entitled "Benefit Security Pension Fund Guarantee Schemes". It is available for download at www.oecd.org/daf/fin/wp.

In this note I consider the recording of such insurance or guarantee arrangements in the national accounts and in national and sector balance sheets. I mention the possible implications for the Supplementary Table. Country notes include some updating of the OECD report for Germany, UK and USA and Ontario (Canada), see the Annex. The system in the Netherlands, which has many funded DB schemes, is also considered, as a major example of a country which has avoided the need for a pension insurance or guarantee system through other means;[2] and the Netherlands are also included in the country notes.

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2   The OECD Working Paper also covers guarantee schemes in Japan, Sweden and Switzerland.

I   AUTONOMOUS FUNDED DB PENSION SCHEMES: LEVELS OF SECURITY OF ENTITLEMENTS

First level. Segregation of the assets of the fund, under control independent of the sponsor (by "Trustees", in the UK).

Second level. Regulation, for example of the targeted level of funding and of the speed of recovery when underfunded. Regulation has recently been tightened in the UK and USA.

Third level. Establishment by law of a protection scheme or fund ("pension insurer"), which guarantees all or a large part of the obligations of a pension fund if the sponsor becomes insolvent, and which levies a premium from the active pension funds. The level of the guarantee may be less than the full entitlement, and is often subject to an upper threshold.

All these levels take account of the risks of default, including fraud or bad management as well as insolvency of the sponsor. There is also a risk of default due to changes in the markets for financial investments, which is more difficult to cover by insurance or guarantee, as all funds face the same problem – see "systemic risk", 3 below. Usually these risks faced by DB pension funds are not covered by pension insurers when the sponsor remains solvent, but there is an association between the two types of difficulty.

All three levels of security now exist in UK and USA and Ontario (Canada). With very tight regulation of funding levels, the second level suffices in the Netherlands: the funds are required to maintain assets at 105 per cent of liabilities (measured using current market interest rates for discounting) and to maintain a buffer reserve for fluctuations in the value of investments, interest rates and currencies – leading to an average fully funded level, with 'normal' interest rates, of some 120-130 per cent of liabilities. Once a deficit at the 105 per cent level emerges, the funds are allowed a short recovery period for restoration of the funding levels. Until recently this was three years, but a temporary extension to five years is now being considered, in view of the difficulties caused by the current very low interest rates and the disturbances on the financial markets. Also see the country note on page 42.

A further possibility, which may replace the possible third level of security, is that an autonomous DB fund hands over all or part of its risks (from mortality, survivorship or the return on investments) to a life insurer, or to a consortium of life insurers. In that case, solvency of the fund depends on solvency of the insurer. "Multi-employer" schemes may or may not include such transfer of risks.[3]

It is worth noting that the guaranteed amounts are probably related to entitlements on the accrued benefit obligation (ABO) basis at the time of wind-up after an

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3   In the USA, some multi-employer schemes are covered by the Pension Benefit Guarantee Corporation, and pay lower premiums than individual funds.

insolvency, rather than entitlements on the projected benefit obligation (PBO) basis. See section 9, on page 39 below, first paragraph, for a further discussion.

2 ENTITLEMENTS IN NON-AUTONOMOUS DB SCHEMES

A degree of priority for the claims of the "book reserves", or pension entitlements, is a possibility. But as the assets to support these obligations are not segregated, insurance of the risk of insolvency of the employer is vital. It exists in Germany and in Sweden. In Germany the insurer is established by law as a mutual insurance corporation, and it is the same in Sweden; their income and expenditure accounts follow the pattern usual for non-life insurers.

However, in both countries autonomous funds with segregated assets also exist; in Germany they are quite new (since 2002) and are covered by the pension insurer. Also, some companies with a non-autonomous scheme have segregated investments in a separate legal entity, corresponding to part of their pension obligations. In Germany the premiums payable to the insurer by the non-segregated schemes are much higher than those payable by the segregated schemes, because in the event of failure the insurer has to cover the full level of the pension obligations, not just the amount of any shortfall in segregated assets.

3 DESIDERATA FOR PENSION INSURERS OR GUARANTORS

This is a summary of the full survey in OECD Working Paper on Insurance and Private Pensions, No.5 (pages 11-13), mainly taken from the conclusions of that paper, setting out "principles for the successful operation of a pension benefit guarantee system". Readers are recommended to go to the original source. The excerpts below are shown in quotation marks.

- *Regulation*: "accurate and consistent funding rules: pension benefits should be fully funded and plan sponsor should be required to act swiftly in order to limit losses. Successfully combining a guarantee scheme with funding rules ensures some upside limit to potential claims and makes the guarantee scheme affordable. Consistent and adequate financial measurement and disclosure are required."

  Earlier, the report suggests that, for autonomous schemes with diversified assets "good funding rules can achieve almost all of what a guarantee scheme is striving for, are arguably easier to design and manage and, especially when combined with other measures (such as asset liability matching or priority bankruptcy rights) offer a high level of protection" but points out that, for the non-autonomous schemes, the OECD Guidelines of 2002 say "the establishment of an insolvency guaranty scheme should in general be required for occupational defined benefit plans that are financed through the book reserve system."

- *Limited benefit coverage:* such as a ceiling on benefit coverage and exclusion of benefits granted prior to insolvency.

- *Risk based pricing:* so as to avoid *moral hazard* (the adoption by funds of "riskier models of behaviour as an undesirable response to the financial protection provided by the insurance carrier") and *adverse selection* (or cross subsidisation of failing schemes by the viable ones).

- *Prudent asset liability management:* both of pension funds and of "the guarantee fund itself, if it takes over the assets of insolvent schemes".

- *Adequate powers:* "a pension guarantee scheme needs to have adequate powers to avoid moral hazard and prevent plan sponsors using their guarantee as a 'put' for their pension liabilities… Any guarantee scheme needs to operate without undue political influence."

Earlier, the OECD report says that
- *Systemic risk* is an unavoidable disadvantage.

"This stems from the fact that the bankruptcy and underfunding risks of pension plan members are correlated, meaning that the insured risk cannot be spread sufficiently" and goes on to say that insurance cover cannot be provided for systemic risks "such as macroeconomic weakness, which increases the bankruptcy risk of all companies, or sharp equity market and interest rate declines."

The following thoughts occur to me. It is evident that systemic risks also affect the pension funds, to a higher degree when there is no insurance/guarantee body. But funds may be less inclined to limit benefits in the face of systemic risks when there is one.

In my opinion, despite the present crisis, a further difficulty of pension insurance or guarantee is the risk of overfunding of the insurance/guarantee body in the long-term, in view of the difficulty of assessing the systemic risks. There are usually no competing bodies to limit possible overfunding, and, even if there are, on the analogy with mutual life insurers, an over-cautious accumulation of reserves could still result.

4   ACTUAL SITUATION OF PENSION INSURERS OR GUARANTORS

Funding of guarantor		
	Funding objectives Independent of Government?	**Risk based Levies?**
Germany	Yes	No
UK	Yes	Yes
USA	? No	No
Ontario (Canada)	No	Yes

Levels of cover		
	Upper limit?	**Proportion only?**
Autonomous		
UK	Yes	Yes
USA	Yes	?
Ontario (Canada)	Yes	Yes
Non-autonomous		
Germany	Yes (100%)	No

Levels of cover	
	Action after a claim
Autonomous	
UK	Takes over the fund and pays compensation
USA	Takes over the fund and pays compensation
Ontario (Canada)	Pays the unfunded proportion
Non-autonomous	
Germany	Buys annuities

5   POSSIBILITIES FOR TREATMENT IN THE NATIONAL ACCOUNTS

I try to look forward to treatments in SNA 2008 (and in the revised ESA that will follow it) but, in the country notes, the references to current treatments refer, of course, to SNA 1993 and ESA 1995.

There appear to be several options for the treatment of a pension insurer or guarantee body in the national accounts and national and sector balance sheets, associated with the possible risk of default of a DB pension scheme from insolvency of the sponsor or other causes. The situation probably varies between countries, depending on the legal status and *modus operandi* of the insurance/guarantee entity.

A primary distinction is between treatments which treat the net assets of the insurance or guarantee body as *contingent* assets of the insured entities and treatments which regard these net assets as *actual* assets of these entities, attributable to the insured entities – collectively, even if not individually.

• *Contingent assets of the insured entities*

   (i)   The insurer/guarantor is classified as an ordinary non-life insurer (on the criterion of 'no certainty of benefit')

   (ii)   It is classified as a financial auxiliary (a treatment following ESA 1995, perhaps subject to change in the next ESA)

(iii) It is classified as an issuer of guarantees:
     (a) One-off (perhaps as a financial auxiliary)
     (b) Standardised [4]

- *Actual assets of the insured entities, taken collectively*

  (iv) The protection body is classified as a specialist insurer (on the basis that its technical reserves/technical provisions are part of overall saving for pension provision)

  (v) In the case of autonomous pension funds, it is regarded as like a reinsurer and is combined with the funds.

  (vi) Its activities, if located in Government, are part of unfunded social insurance (perhaps unlikely)

The advantage of treatments as actual collective assets of the insured entities is to portray the feature that the existence of a protection body with net assets improves the 'quality' of individual pension entitlements, by reducing deficits of the funds, when taken collectively. The entitlements, taken collectively, are then seen in direct relation to all the assets supporting them. A treatment as collective assets diversifies risks, by adding the net assets of the protection body to the collectivity of assets available for the funding of pension obligations. As a DB pension fund itself incurs investment risk, and possibly mortality/survivorship risk as well, it is like an insurer, so that the guarantee body could be regarded as like a reinsurer offering "excess of loss" cover.

Protection bodies as issuers of guarantees. It is useful at this point to look at discussions in the AEG for the 2008 SNA about guarantees on loans.[5] The note setting out conclusions on this issue (No. 37) distinguishes between standardised and one-off guarantees. Standardised guarantees on loans are "issued in large numbers, usually for small amounts", and have the characteristic of the pooling of risks, such that the levies or fees paid are expected to cover the predicted risks of default on loans, as with insurance. However, the present value of these predicted risks (similar to technical provisions in insurance) is not regarded as an actual asset of the collectivity of the entities receiving the guarantee, but as a 'stand alone' liability of the guarantor, with no counterpart asset. One-off guarantees are regarded only as contingent assets of the guaranteed entity at the time when issued, and are not recorded in the core accounts until they are activated, with the full amount of premiums or levies being treated as payments for a service.

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4   Standardised guarantees on loans are similar to insurance, and in SNA 2008 the treatment in the income and expenditure accounts is the same as for insurance, but I have been advised that in balance sheets there is a difference between the recording of an issuer of standardised guarantees on loans and the recording for an insurer, in regard to the treatment of the counterpart to their technical provisions, see section 5 of this paper. The treatment for loans suggests that any entity, benefitting from standardised guarantees accorded to it, should be treated as having no actual asset in respect of a guarantee until it is activated. However, the case of guarantees relating to pension funds is not mentioned specifically in SNA 2008.

5   See AEG issue paper No.37: and the paper for the fourth meeting of AEG "Granting and Activation of Guarantees in an updated SNA", by Reimund Mink (SNA/MI.06/18).

Thus both types of guarantees, if similarly applied, in regard to the risk of default of DB pension funds, would exclude attribution to the funds of the technical provisions (net assets) of the guarantor, unlike the treatment under insurance. Likewise, there would be no question of attributing negative technical provisions, if a guarantor has claims exceeding assets.

Protection bodies as specialist insurers. Another possibility would be treatment of a protection body as part of insurance proper. What is at issue here is whether a protection body can have a secure basis on which to make actuarial provision for future claims, like an insurer. That appears to be the intention and the practice in some countries. The difficulty is systemic risk, but it should be noted that the risks being covered are both that a pension fund is in deficit and that the sponsor becomes insolvent – not just that the fund is in deficit, perhaps temporarily because of unusually low interest rates, whilst the sponsor remains solvent.

In the first and fourth cases listed in page 33 and 34 above – treatment as insurance proper – the technical provisions of the insurer would be attributed to the "policy-holders", which are the funds. In these cases, the body accepting the risks of default could be called a "pension insurer".

If it were treated as an ordinary non-life insurer – leaving aside for the moment the proposed substitution of expected claims for actual claims – each year's provision for claims, unlike life insurance, would take account only of events which had occurred in the year, that is, insolvencies giving rise to a call on the guarantee; provisions from current premiums for future claims would not be treated as technical provisions but as second line reserves funded out of operating surplus. (However, the substitution of expected claims blurs the distinction between events that have happened and provision for future events; it would be difficult to estimate statistically the expected claims of a pension protection body.)

In some cases such as health insurance a provision for future events is made (and so it would be, if term insurance were treated as non-life insurance, on the 'no certainty of benefit' criterion). Therefore, if the treatment as a pension insurer includes provision for future events within the insurer's technical provisions, these would include the balance of its reserves held for future claims (somewhat similar to the "life insurance provision" of a life insurer). Thus, these liabilities of the guarantor would be attributed as assets to the pension funds which benefit from the guarantee. But symmetry might require attribution of negative technical provisions, when a pension insurer has claims from actual events exceeding its assets.

If it can be considered that the normal situation is one where the pension insurer has positive net assets, it makes sense to attribute the technical provisions of the guarantor to the pension funds which it covers, because the funds' deficits, in aggregate, would thereby be reduced. This appears to be consistent with

the fact that there is an increase in the 'quality' of the given DB entitlements.[6] The pension funding sub-sector is often thought of as being analogous to life insurance, primarily because it shares the savings element of the latter. Therefore the attribution of an insurer's net assets to the pension funds, even if only taken collectively, as cover for risks faced by them as policy-holders, looks at the similarity between pension funding and life insurance through their contributions to collective saving. However, there would be difficulty when a pension insurer is in deficit; in that case there are likely to be variations in national law about what should be done – for, instance higher premiums or levies, lower guarantees or the possibility of bail-out by Government.

6   OTHER FEATURES RELEVANT TO TREATMENT IN THE NATIONAL ACCOUNTS

Activities of a pension fund guarantor after activation. Another feature relevant to the treatment in the national accounts is what happens when there is a default of a pension fund. If the guarantee body takes over the obligations of a failed fund, and pays pensions etc itself, rather than purchasing annuities, it acquires features such as the management of pension payments which are similar to those of a pension fund proper.

Combination of a 'guarantor' with autonomous pension funds. Treatment of the guarantee body as like a reinsurer and its combination with autonomous pension funds, as in the penultimate bullet in the list on page 34, would produce a similar effect to treating them as specialist insurers – that of increasing the 'quality' of the given DB entitlements, through reducing the excess of obligations, taken in aggregate, over the combined assets (assuming a 'normal' situation where the pension insurer has net assets). Transactions between pension funds and a guarantee body would be recorded in the same way as those between direct insurers and reinsurers.

Combination also has the advantage of leaving the sector classification unchanged when a fund is wound up and its assets are transferred to the insurance or guarantee body.[7] Thus it avoids entitlements, covered by insurance, being transferred to a separate sub-sector whenever the insurance is triggered, and avoids some differences of treatment stemming from the possibility of different practices once this happens.[8] It also takes account of the fact that the guarantee body may well get involved in the administration of pensions. A difficulty remains, however: that of possible lack of symmetry of recording if the pension

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6   A similar effect, through a different route, is seen in a tightly regulated system such as the Dutch one, where the balances of the individual funds reflect higher requirements for the actual asset holdings of each fund. When pension guarantees are treated as insurance, the net asset holdings of the insurer would be regarded as bolstering the reserves of the funds, when taken collectively.

7   In the USA national accounts, benefits paid by the Pension Benefits Guarantee Corporation are split between those previously funded by failed pension funds (around 60 per cent), which remain in the pensions funding sub-sector, and those funded by premiums, which are public social insurance. See footnote in page 44.

8   In the UK, the Pension Protection Fund takes over insolvent funds after an assessment period, itself invests transferred assets and itself pays the guaranteed element of pensions.

insurer has a deficit, including differences between countries in law and practice about what should then be done.

Public or private sectors. The guarantee body or insurer could be classified as a publicly controlled corporation or as a private sector corporation, depending on the circumstances. If it depends on money from Government, it could be classified to General Government. It could either be classified as part of funded social insurance, or – less likely – as part of unfunded social insurance, if owned or controlled by Government. Unless it is profit making, its output of services would be represented by its administrative costs, which may be included in the premiums levied, or may be charged separately. These administrative costs become intermediate consumption of the premium payers.

Which treatment is best? Very uncertain. It will depend on law and practice in each country, which may well differ. On both the SNA 2008 bases for the guarantee of loans, the net assets (or net liabilities) of the guaranteeing body would be kept away from the guaranteed entities until such time as a guarantee is activated; and after activation a guarantor may acquire some functions similar to those of the funds themselves.

In a 'normal' situation where a body accepting risks of default of DB pension funds has net assets, there are advantages of:
a)   classifying it as a specialist insurer with attribution to policy-holders, or
b)   treating it as like a reinsurer and combining it with pension funds in the same sub-sector.

If so, the aggregated level of a deficit of the autonomous funds, attributed to the sponsors, is reduced by the level of the technical provisions of the insurer (if positive), consistently with an increase in the 'quality' of the given entitlements of members of DB schemes due to pension insurance. Or if the aggregated level of the funds is a surplus, it is increased.

Symmetry of recording would also require attribution or combination of any deficit of the 'pension insurer', at least in regard to claims known to exist at its accounting date. On treatment a.), there might be lack of symmetry in the recording of any provisions for future claims – included if positive, not included if negative. On treatment b.), any provisions for future events would be included whether positive or negative.

7   EXISTING CLASSIFICATIONS IN THE NATIONAL ACCOUNTS (ON SNA 1993/ESA 1995 BASIS)

Existing classifications (SNA 1993)	
UK	S.125
USA	Public social insurance (part) and pension funds (part)
Ontario (Canada)	Government, sub-sector provincial Government
Germany	S.125, pension funding sub-sector

Treatment of levies or premiums. For DB schemes, the Supplementary Table records both opening and closing levels of the actuarially determined entitlements and the factors accounting for changes in these. The actuarial valuation of DB entitlements is not directly affected by pension insurance; but the 'quality' of the entitlements is. There appear to be two options for treatment of the levies payable to a guarantor/insurer in respect of autonomous schemes. Either they could be treated as directly payable by the sponsor, so by-passing the accounts of the pension fund, or they could be regarded as payable by the fund with reimbursement from the sponsor. The latter seems preferable. In the case of non-autonomous schemes, they are paid by the employer. They could be either payments for a service (when contingent assets of the entities receiving the guarantees) or – when actual assets of the entities receiving the guarantees insurance – premiums, consisting of a risk premium (or net premium) matched by a provision for present or future claims, and a smaller charge for a service.

Treatment of lost and relocated entitlements. When a fund is closed whilst in deficit, for whatever reason, presumably the entitlements lost without compensation are "Other Volume Changes". When there is no guarantee or insurance, a fund in deficit may remain active during a run-down period, even though the sponsor is insolvent; there is then a moot question: at what stage are some entitlements lost? Probably it is at the time when the sponsor backs out, unless the participants retain a credible legal claim on the fund for the lost part of their entitlements, whilst the fund remains in being.

If a fund is guaranteed or insured, and a large part of the entitlements is potentially picked up by a guarantor or insurer, the balance lost by individual members still seems to part of "Other Volume Changes". But this could well be the net effect of:
a)   what the loss would be if not guaranteed or insured, and
b)   a degree of restitution by the guarantor or insurer.

For instance, the funding level of the original scheme might be only 60 per cent and, depending on its rules, this might affect the entitlements of active members more than those of retired members. Leaving this complication aside, the average level of entitlements might be restored by the guarantor/insurer to 90 per cent of their original level. Thus "Other Volume Changes" of the sub-sector pension funding would reduce entitlements by 40 per cent and "Other Volume Changes" of the sector in which the guarantor/insurer is located would increase the entitlements by 30 per cent of their original level.

Thus the entries in row 6 of the Supplementary Table (Transfer of pension entitlements between schemes) would show, in Column B for DB schemes, the loss of 60 per cent of entitlements and this would carry through to Col. I (Total: pension schemes) when the guarantor/insurer is in another sector. However, on Option (v) of the list on page 34 above – combining the guarantor/ insurer with the DB pension funds – there would be no net effect. Likewise, on the USA treatment – see footnote 1 on page 44 – the 60 per cent stays where it is.

9   INDIRECT IMPLICATIONS FOR THE SUPPLEMENTARY TABLE

There may also be some indirect implications. I can think of three. First, ABO/ PBO (accrued benefit obligation / projected benefit obligation). By definition an guarantor/insurer encounters a claim only when there is a failure. Thus, the ABO basis applies. IAS 19, on the other hand, looks at a going concern basis (PBO), coupled with defining a state of being fully funded as that required in a potential wind-up situation. Thus a current market rate of interest is used for discounting estimated future outgoings to the present day. (If the interest rate tallies with that used by annuity providers, a fully funded scheme could purchase annuities sufficient to fund existing and future pensions, with some allowance for expected future increases in real wages.)

The possible existence of guarantee/insurance arrangements does not seem to figure in IAS 19 but arguably, on a going concern basis, the potential claims of funds, taken collectively, on the net assets of the guarantor/insurer should be credited to their balance sheet. (This is based on the idea that the guarantor/ insurer's net assets are regarded as part of collective savings for future pensions, and so as *actual* assets of the funds – see options (iv) and (v) on page 34.)

Secondly, the very existence of a guarantor/insurer alleviates day-to-day funding requirements, to some extent, by spreading risks. The levies which it charges will cover the risk of collapse of the sponsor at a time when the relation between market interest rates and longer term investment yields is adverse, as well as the risk of collapse at other times. Thus it may become unnecessary for each fund to seek to cover individually the risk of volatility in the relationship between market interest rates and longer term investment yields – the risk of collapse, due to failure of the sponsor, could be viewed in a longer-term manner. In other words, the discount rate used for valuing liabilities – when making funding decisions – could perhaps be smoothed, as was usual practice in many countries, before IAS 19. In this connection, it is interesting to note the following statement by the UK Pension Protection Fund about the basis on which it determines its aggregate requirement for levies.[9]

"To determine the aggregate levy schemes pay, the Pension Protection Fund uses a long term risk model (LTRM). This ensures that the Pension Protection Fund adjusts for short term volatility and uncertainty by taking a longer term time horizon. The LTRM generates a probability distribution of claims on the Pension Protection Fund on different longer term horizons from five to twenty years, taking into account a very large number of possible economic and financial market outcomes".

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9   Source: Note 1 of the Pension Protection Fund's series of monthly updates providing the latest estimated funding position of almost 7,800 predominantly private sector defined benefit (DB) pension schemes in the UK. This does not indicate how the aggregate levy is distributed amongst individual funds; the Pension Protection Fund is responsible for keeping the assumptions used for valuations in line with estimated pricing in the bulk annuity market – see the country note for the UK.

This appears to suggest that recovery periods from a position of deficit could take account of the impact of such short-term volatility, on the basis that premiums reflect cover.

Thirdly, there may also be an implication for the on-going study of the core/non-core boundary. A degree of guarantee established by law of the entitlements of members of the DB schemes of *private* sector employers, if it exists, implies that their entitlements are relatively secure at the ABO level. Thus, by implication, it would become politically difficult for *Government* to change the structure of the DB schemes set up for their own employees, in such a way as to reduce, retrospectively, the ABO level of their entitlements (viz., a retrospective change in the accrual rate). On the other hand, restructuring of social security pension schemes involving changes in accrued-to-date entitlements are common. Thus, when a guarantee scheme exists, the case may be strengthened for inclusion in the core accounts of any unfunded entitlements of General Government employees, in schemes which are distinct from social security (Col. G of the Supplementary Table).

10   UPDATED COUNTRY NOTES

At Annex, pages 41-45. Also see the OECD Working Papers on Insurance and Private Pensions, Nos. 5 and 17, for more detail. In the country notes I have drawn extensively on both papers. Paper No.17, issued in April 2008. is entitled "Fund Regulation and Risk Sharing", by Colin Pugh and Juan Yermo.

ANNEX

A1   GERMANY (BOOK RESERVE SYSTEMS ONLY)

Regulation	
Funding target	Not applicable (book reserve system).
Discounting of obligations	6% fixed,[1] the required basis for corporate taxation.
ABO/PBO	ABO, the required basis for corporate taxation.
Recovery periods	Not applicable.
Remarks	Some autonomous schemes with segregated assets, which started in 2002, are also covered by the insurance and pay much lower premiums.
Guarantee/insurance body	
Name	Pensions Sichererungs-Verein Versicherungsverein auf Gegenseitigkeit (PSVaG).
Classification in the national accounts	S.12502, sub-sector, private pension funds.
Level of compensation:	
A proportion only?	No, 100%
Upper threshold?	7,400 euro per month.
Annuities, or self-financing? [2]	Annuities are purchased through a consortium of life insurance companies.[3] (Consideration, earlier, of introduction of a capitalised system – self investment of premium income and own payment of compensation – is no longer active.)
Investment restrictions	No.
Independence from Government	Yes.
Remarks	Premiums are flat, based only on the level of obligations (book reserves) – 0.18% for 2008, 0.30% for 2007 and, on average, 0.38% in the five years 2002-2006. German companies have generally accepted the fact that viable companies subsidise those companies which fail, as an acceptable ingredient of the book reserve system. A risk-based structure of premiums was considered two years ago (with a lawsuit), but has not led to a decision.

1) The Accounting Law Reform has proposed taking the average of market interest rates over the past seven years.
2) After assuming obligations of failed schemes.
3) For this purpose, when PSVaG purchases annuities from insurance companies, a discount rate of 2.5% is used for valuing the entitlements of previous employees of failed companies.

Regulation	
Funding target	105% of obligations, plus a buffer reserve for volatility in investments, currencies and interest rates, equal in total to some 120%-130% of obligations on average.
Discounting of obligations	Market based. The central bank publishes each month a yield by duration curve, based on the inter-bank swap market.
ABO/PBO	Mostly PBO, but can exclude inflation proofing of deferred benefits or of pensions in payment.
Recovery periods	105% target: limited to three years, but currently a temporary extension to five years is being considered. Investment buffer reserve: 15 years.
Remarks	No known instance of failure whilst underfunded, to date. The current difficulties (very low interest rates) could lead to a restructuring of benefits of some schemes at a lower level, probably starting with fringe benefits such as inflation proofing of pensions, which is discretionary and is linked to funding levels. The rules of some schemes provide for changes in employee contribution rates when there are funding difficulties.
Insurance/guarantee body	None.

A3   UK

Regulation	
Funding target	The Pensions Act 2004 set up a new Pensions Regulator with substantial powers, but it does not have a prescriptive minimum funding requirement. One measure of adequate funding, perhaps a lower bound (being less than on the ISA 19 basis), is to hold assets matching what would have to be paid to an insurance company to take on payment of compensation at the same (restricted) level as payable by the Pension Protection Fund (the so-called "Section 379 basis"). Obligations include statutory price indexation of deferred benefits and pensions, now capped at 2.5%.
Discounting of obligations	At market rates (implied by the S.379 basis), depending on the bulk annuity market, but there may be some flexibility, on a going concern basis.
ABO/PBO	? (but it is PBO in the UK accounting standard, FRS 17).

Recovery period	Ten year maximum.
Remarks	The Pensions Regulator identifies 'at risk' funds and establishes a funding target for them and an associated recovery plan. It seeks to 'educate' Trustees.
Guarantee/insurance body	
Name	Pension Protection Fund (PPF).
Classification in the national accounts	S.125.
Level of compensation:	
A proportion only?	90% of entitlements for active members, 100% for pensioners.
Upper threshold?	An annual pension of £28,000, currently.
Annuities, or self-financing?[1]	Self-financing.
Investment restrictions	No. Stated objective is 70% in bonds (?).
Independence from Government	Yes, the Act requires the PPF to be self-financing, gives it freedom to set levies, subject to an upper limit, and provides some discretion in reducing compensation, should the PPF get into in financial difficulty.
Remarks	After an initial period, 80% of the levy will be risk related, depending both on the degree of underfunding and on an independent assessment of the financial strength of the sponsor.

1) After assuming obligations of failed schemes.

A4   USA

Insurance relates to private corporate schemes; funded DB schemes for State and local government employees are regulated differently and are not insured.

Regulation	
Funding target	Yes. The Pension Protection Act, 2006, establishes minimum funding standards & identifies "at risk" schemes.
Discounting of obligations	Investment grade corporate bonds of the appropriate duration.
ABO/PBO	Generally ABO.
Recovery period	Not more than seven years.
Remarks	No statutory indexation of benefits.
Guarantee/insurance body	
Name	Pension Benefit Guarantee Corporation (PBGC).

Classification in the national accounts	Split between a part treated as social insurance of Government, national accounts when payments are funded by the pool of premium income, and a part remaining classified as pension funding, when benefits are paid out of the resources of the fund, when taken over.[1]
Level of compensation:	
A proportion only?	?
Upper threshold?	Yes.
Annuities or self-financing?[2]	Self-financing.
Investment restrictions	Yes (for premium income).
Independence from Government	No-premiums set by Congress.
Remarks	Also covers multi-employer schemes (lower premiums).

1) Information from BEA:
"The sectoring is a bit complicated. When a plan fails and is taken over by the PBGC, the plan will typically have enough assets to fund a significant proportion of the promised benefits (I'd guess 60 per cent would be typical) Those assets are available to the PBGC to help fund the promised benefits. So we split the benefit payments into a part that is paid for out of plan assets and a part that is paid for out the resources of the PBGC itself (which come from insurance premiums paid by the funds). The benefits that are funded by the resources of the PBGC are classified as social insurance paid by government. As for the plan assets, they are already the property of the plan participants, so the interest and dividends earned by these assets are part of household income and the benefit disbursals funded by earnings on plan assets are just a financial transaction." (Author's Note: that is, these disbursals are not treated as part of household disposable income, "dual recording" not being used).
2) After assuming obligations of failed schemes of unfunded entitlements of schemes in deficit whose sponsor fails.

A5   ONTARIO (CANADA)

Regulation	
Funding target	100% of technical provisions and 100% of going concern liabilities as valued at PBO on projected unit credit method.
Discounting of obligations	Federal bonds of appropriate maturity + 0.5%.
ABO/PBO	Both.
Recovery periods	Five years.

Remarks	The above are mostly Provincial Government regulations. No statutory price indexation.
Guarantee/insurance body	
Name	Pension Benefit Guarantee Fund.
Classification in the national accounts	Consolidated within the Provincial Government subsector, Government sector.
Level of compensation:	
A proportion only?	Yes, based on a share of funding.
Upper threshold?	Yes, lower than USA, at 12,000 Canadian dollars, fixed[1].
Annuities, or self-financing?[2]	Annuities.
Investment restrictions	Probably not.
Independence from Government	Sets own premiums, but has had to borrow from Provincial Government.
Remarks	Premiums now are a rising proportion of the degree of under-funding, rising from 0.5% to 1.5% of underfunding as a proportion of total obligations (10%, 10-20% and 30%+). Any indexation of benefits in scheme rules not covered. Mult-employer schemes not covered.

1) The fund will provide for benefits based on a share of funding up to $1000 per month. For example, at the time of bankruptcy of an employer if the pension plan was able to cover 70% of the assets required to fund the benefits payable, the fund would pay $300 in benefits. Any benefits in excess of $1000 per month would not be covered.

2) After assuming obligations of failed schemes.

DISCUSSION ON SESSION I

BY GABRIELE SEMERARO [1]

I   INTRODUCTION

This discussion is based on the papers by John Walton, Robert Dippelsman and John Verrinder, all devoted to the new statistical treatment of pensions in the international standards, from different viewpoints. John Walton chooses to focus on a specific, technical point. But the result looks like a test for the whole picture, able to shed some light on more general properties. Robert Dippelsman discusses the developments of new pension statistics, with specific regard to leading role played by the IMF and the concern of government finance experts. John Verrinder presents the new statistics with more emphasis on European contributions, notably in the field of pension modelling and measurement techniques (ABO/PBO, discount rate, treatment of reforms).

In this discussion, I will focus on three specific points, explicitly or implicitly suggested by the papers: the problems of "quality of assets" reflected in the accounts; the importance of modelling aspects, including the separation between transactions and other economic flows; and the coverage of the new criteria on constructive obligation (where should they stop?).

2   ISSUES ON THE QUALITY OF ENTITLEMENTS

The starting point for John Walton's paper is the existence of a second level protection for pension schemes, observed in many countries. This additional protection is normally imposed by the state or a guarantor, and ranges from simple regulation to taking over the assets and liabilities of schemes in deficit when a sponsoring employer becomes insolvent. The paper's purpose is to identify an appropriate treatment in the "core" national accounts, as well as in the Supplementary Table on pensions foreseen in the new System of National Accounts (SNA 2008). At one extreme there is the possibility of regarding the additional level of insurance as contingent liabilities: this basically means recording *nothing*, at least before activation of the "guarantees". At the opposite extreme there is the possibility of treating the protection body as taking part in the insurance process (by adding its own net assets to the original schemes, and by diversifying risks). The body would then act as a sort of reinsurer of the risks incurred by the pension schemes. This basically means recording *something*, in form of actual assets, fully recognised in the system.

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1   Banca d'Italia, Economic and Financial Statistics Department. The views expressed herein are those of the author and are not necessarily endorsed by the Bank of Italy.

One of the conclusions is that several options may be adopted for the treatment of a pension guarantor in the national accounts, and the best treatment may vary between countries, depending on the legal status and the operating rules of the guarantee entity. In addition to the specific points directly raised by Walton, it seems natural to ask ourselves something more general. It seems that cases where recognition of assets is more likely are those where some reserves are built up by the guarantor (may be using premiums). Other forms may be less likely to be recognised in the accounts: for example, where there are no payments that might be thought of as part of a reinsurance scheme; nonetheless, in comparison to the former, those latter forms may provide the same level of security, due to a strong degree of commitment by the guarantor. Are we sure that, in the new SNA, entitlements with the same intrinsic value are measured in a consistent way?

The existence of a protection body causes an improvement in the 'quality' of individual pension entitlements, that should be captured in the system of the accounts. Walton's discussion is more focused on schemes where the guarantee resembles the form of a sort of private scheme and standard actuarial techniques are therefore applicable. A representative example is the case where a protection scheme is established for autonomous DB schemes, levies premiums and builds up net assets, in order to reduce the funding risk of the first level schemes. This latter arises from investment risk incurred by the DB funds, as well as from mortality/survivorship risk, and its relationship with the premiums levied by the protection body could be assessed in a standard way. However, it should be stressed that other cases exist, where the "quality" of individual pension entitlements is "de facto" increased by a guarantor, without the form of an explicit reinsurance scheme. Standard actuarial values would take into account the life expectancy, the expected income and age of retirement, and other information on the side of the insured. Things are more complicate on the side of the insurer. Calculations could be made for the investment risk of the fund. A second level fund (combining financial as well as mortality/survivorship risk) may also be assessed, even though incurring some additional estimation problems (see Walton's comments on the risk of overfunding). However, the level of commitment of a third party, as well as the probability of default of all subjects on the insurer side might prove not easy to measure. Of course, it is easy to write down a formula showing the final value as a function of all relevant probabilities. But unfortunately, tables with tested coefficients are available for the employee side, not for the level of commitment of a public protector. Nonetheless, if entitlements were allowed to be exchanged on an appropriate market, their value would be in principle impacted.

This introduces one key, general issue of the new treatment of pensions in the SNA 2008, that is the different properties of actuarial values versus market values. As a general rule in national accounts, consistency within financial instruments of different "quality" is assured by reference to market evaluation. Bonds with the same nominal value and interest payments may differ in the probability of default, depending on a number of factors, including the behaviour of the issuer. However this difference will be reflected in different market values. Actuarial values are tentative substitutes for market values, but this substitution is not perfect. It would be not fully appropriate to object that non standardised

protection would be treated as any other (non standardised) guarantees in the SNA 2008. The value attached to liabilities issued by a corporation would be affected by a guarantee, even though the guarantee itself is not recorded. Whereas in the case of DB pension schemes, if the guarantee does not enter the actuarial formula, it is definitely lost in the accounts. As a consequence, different categories of households may face the same level of expected benefits (and actuarial values), with different levels of protection. The entitlements shown in the national accounts may be the same. However, the economic behaviour of the two groups would likely differ: when planning current and future expenditure, households would reasonably take into account the additional level of security. The national accounts would not capture some significant factor impacting on the economic behaviour. It should be noticed that some problems are not direct consequences of the use of actuarial methods as substitutes for market values. As suggested by Walton in other occasions, they may depend on the specific actuarial approach that has been favoured by the national accountants. The current actuarial method is strictly linked to a break-up basis, expressing the cost of terminating the pension schemes. This method is deemed by the accountants to be closer to the concept of current market value. However, there are cases in the national accounts where the break-up basis may significantly diverge from market values, as defined and used in other cases.

Again, investigation of the topics discussed by John Walton reminds us that actuarial values are useful and necessary in the new SNA; but for the purposes of national accounts, they are still imperfect substitutes for market values.

3   COMPARISON BETWEEN SNA 2008 AND ESA 2010

The presentations by Robert Dippelsman and by John Verrinder have some elements in common, since both of them recall the reasons for changing pre-existing rules and comment on the current solutions. However, the presentation by Dippelsman is focused on the SNA, in relation to the big picture provided by the pre-existing International accounting standards and IMF's Manual on government finance statistics (GFS 2001), as well as the 6th Manual on balance of payments. On the other hand, Verrinder's focus is on the ESA, with specific regard to the European debate and contributions. Verrinder recalls the inputs from the first Eurostat Task Force on pensions, that explored the difficulties of distinguishing government employer and social security pension schemes. Then, a CMFB task force was established, jointly chaired by ECB/Eurostat and collecting members from many EU countries plus OECD and IMF. This task force final report, welcomed by CMFB in February 2008, was strictly related to the Draft revised ESA chapter on "Pensions" (17), summarised and commented by Verrinder. In order to add something to their very clear interventions, I will concentrate more on points where the two presentations, though consistent, show alternative points of view.

It is worth comparing how the two authors deal with the problem of reliability of estimates for pension entitlements. When reviewing the reasons for changing the previous treatment of pensions, Dippelsman recalls the particular concern for

the IMF about off-balance sheet liabilities. Omitting unfunded schemes would facilitate incurring unrecorded expenses and accumulation of obligations and would mean that vulnerabilities are not reflected in balance sheets. Following Dippelsman, this explained the original deviation of the GFSM 2001 from the pre-existing SNA. Measurement of pensions depends on the award formula in conjunction with assumptions about life expectancies of employees and dependents, staff turnover, future general salary increases, the employees' future promotion path, etc. This raises statistical concerns on the degree of estimation of actuarial figures and on revision of assumptions. Nevertheless, is the agreeable conclusion implicit in the reasoning, estimates subject to revisions are better than off-balance liabilities.

Verrinder's approach also takes into account the same problems of reliability. However his discussion is more biased toward technical solutions minimizing the effects of assumption revision. This aspect is related to emphasis assigned by Verrinder to modelling issues and accurate separation between transactions and other economic flows. The idea is that accurate modelling prescriptions help to obtain "clean" flows, only explained by underlying economic events, and less dependent on assumption revisions. Those latter revisions would then impact on other economic flows (or OEF, that is: changes in stocks not polluting flows). This diverse approach reflects the different purposes of SNA and ESA: the former is a general guidance for macroeconomic statistics in all countries. Whereas the latter (apart from being used in less countries) is more related to administrative uses, including the Eccessive Deficit Procedure foreseen in the European Stability and Growth Pact. Where the SNA include some solutions, the ESA should foresee one solution (leaving aside non-core liabilities of Government, where flexibility is recommended).

The most important difference may be observed in the case of ABO and PBO recording, that are two alternative ways to model promotions. The usual career path of an employee involves periodic wage rises due to promotion: under ABO treatment, future wage rises are included when they occur, whereas under PBO they are projected in the model and recorded before they occur. SNA 2008 describes the issue but does not recommend one or the other approach. However, a clear preference is expressed on the distinction between flows and OEF:

"The question arises, though, of how to record the impact of promotion on the employee if an ABO recording is used. (...) A simpler and adequate solution is to treat the rise in salary as a price change and record the change in the revaluation account." (SNA2008, 17.185)

This basically means that the impact of promotions, treated as *transactions* in PBO recording, is a *revaluation* if ABO is used. In the long run transactions are not the same. By contrast, comparison with the corresponding articles of the draft updated ESA shows some differences in substance:

"The impact of wage increases should be reflected in transactions, because awarding a wage increase is a conscious economic decision taken by the employer. Moreover, in concept the ABO and PBO approaches lead in the long

run to the same transactions recorded, even if the timing of those transactions would differ (...)." (ESA 2010, 17.147 (draft))

This means transaction neutrality over time: the only difference for ABO and PBO measurement approaches is the timing of the recording of transactions and entitlements whereas, as just seen, the SNA would imply that over time the transactions observed under an ABO measurement approach would not be the same as those for a PBO approach.

The preference in the SNA seems to be related to problems of aggregation.[2] In the context of the previous remarks, it is worth noting the origin of the opposite position, which has been preferred in the ESA. It has been discussed by the CMFB task force, when investigating the issue of actual computation of transactions versus other changes. It was discussed the case of summing individual calculations as well as the case of cohorts aggregation (a point mentioned in 17.185). The result was that aggregation does not seem to have strong implications for the split between transactions and other flows. Consider, for example, death before retirement. In the one case it should relate to individual death; in the other case it would relate to a generalised decrease in the life expectancy for some cohort. But exactly the same formula would allow for separating transactions from other changes. More in general, our ability to define and compute other changes seems not impacted by the level of aggregation, under both ABO and PBO approaches.

The second reason for the preference in the ESA is also interesting, since relates to the different use in comparison to the SNA (notably in the context of the EDP). The reason is that, when presenting some simulation for a big European country, it appeared that promotions may account for more than 30% of total entitlements. It appeared unreasonable that such a huge amount could either correspond to "surprise" revaluations, or to transactions impacting deficit and GDP. Leaving to countries the option to record or not record transactions amounting to 30% of total stock, it was argued, might result in a serious loss of credibility of the new statistical rules. The practical solution was recognising ABO and PBO as different techniques for identifying the same transactions. The (allowed) choice between ABO and PBO would then impact just the time of recording.

4   WHAT COMES NEXT?

The presentations by Dippelsman and Verrinder clarify most of the points on which a final agreement has been made. It is natural to ask ourselves which points of their surveys are not yet completely defined and which points are likely to change in the future. One first, obvious point refers to the treatment

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2   The rationale is provided in the same article: *"(...) Any version of treating the increase as a form of compensation of employees or investment income falls back into the assumption that the aggregate of entitlements is the sum of the individual entitlements but without looking at other individual impacts on the aggregates such as when someone leaves and looses pension entitlement because not enough time has been served or when someone dies before retirement age. (...)"* (SNA2008, 17.175).

of unfunded employer schemes vs. social security. Are there valid reasons for a different treatment? A continuous source of incomprehension and scepticism on this issue relates to the different meaning that the word "pensions" seems to assume, in the USA . Of course, behind the different meaning of words there is a substantial difference in the institutional mechanisms.

On the one hand, it is true that in the USA and other countries social security might be thought of as substantially different from all pension schemes, included those reserved to government employees. On the other hand, in many European countries, liabilities incurred in the context of social security may have the same award formula and financing mechanism as the schemes for government employees. At least in those cases, the argument by Dippelsman on omitted liabilities that may lead to poor decision making, would seem to be true for social security as well. However, the precise borderline between core and non-core pension liabilities, as well as other issues concerning the practical compilation of the Supplementary Table, far from being closed, may deserve further analysis and further attention in the near future.

Another point that is somewhat "borderline" in the current standard, but may deserve further attention in the future, is about health liabilities. Some seminal elements may be found again in the IMF's manual on government finance statistics (GFSM 2001). For example:

"(…) An unfunded scheme can pay pensions and other retirement benefits that generate liabilities or it can pay other types of social benefits, such as health care." (GFSM 2001, A2.24.)

However, in GFSM 6.15-6.18 imputed contributions only refer to retirement benefits:

"Social contributions are payments, actual or imputed, made by general government units to social insurance schemes to obtain entitlement to social benefits for their employees, including pensions and other retirement benefits. (…)"(GFSM 2001, 6.15)

As recalled by Dippelsman, explicit recognition of some health liabilities can be found in Ch.13 of SNA2008.

For the time being, it is not clear what the range of application for health liabilities might be. No revolution seems to be expected by statisticians in this regard, at least in the context of this SNA. What is sure is the increasing concern by economists and government finance experts about the growth of (unfunded) health expenditure to GDP. This is even found in countries with a mainly private health system, like the U.S. (see for example Kotlikoff (2009)). It should be added that many of the arguments for health liabilities resemble those adopted in the past for supporting the notion of pension liabilities. Even though it is not the first item in the agenda of statisticians, this may be the issue deserving more interest in the medium range future.

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SESSION II

EXPERIENCE OF ACCOUNTING STANDARD SETTERS AND PENSION MODELLERS

INTRODUCTION

Session II deals with the experience of accounting standard setters and pension modellers. Three papers were presented.

Gabe de Vries (Sigma Statistical Consultancy) considers accounting standards for pension schemes.

Matthias Heidler, Christoph Müller and Olaf Weddige (Freiburg University) discuss concepts of modelling pension entitlements. After describing the concept of accrued-to-date liabilities, as applied in national accounts in the context of open-system gross and net liabilities, the paper outlines the main features of the Freiburg model to estimate, on an actuarial basis and with harmonised model assumptions, the pension entitlements of various defined benefit employer pension schemes and social security pension schemes in EU countries. Detailed revenue and expenditure data as well as population data have been made available for the various pension schemes in a comparable format. Some effort has been devoted to the appropriate design of the pension benefit formula. This refers specifically to the type of indexation of pensions as well as to the treatment of reductions due to early retirement. Moreover, recent reforms of the pension schemes have been taken into account, like the change of retirement age or of the wage indexation formula. The impact of such reform measures on the pension entitlements are assessed in some case studies.

Michel Englert (Bureau Fédéral du Plan in Belgium and Member of the Working Group on Ageing) presents the work on pensions by the EPC Working Group on Ageing. Forecasts of future pension expenditure and other age-related public expenditure in each of the 27 EU Member states are used to evaluate the sustainability of public finances in each of those states. This evaluation rests on a concept of implicit liabilities which is very different from the one used in the work currently being carried out in order to introduce the implicit liabilities of pensions into the national accounts. Both this concept of implicit liabilities and AWG's forecasting methods are an integral part of the budgetary surveillance mechanisms that have been installed at the EU level.

Marshall Reinsdorf (US Bureau of Economic Analysis) discusses these three papers.

PENSION ACCOUNTING STANDARDS

BY GABE H. DE VRIES [1]

ABSTRACT

This paper deals with the international and national accounting and reporting standards that are relevant concerning the concept of pensions.

The IAS 19, the preliminary views to revise the IAS 19 and the IPSAS 25 discuss the subject premarily from the employers' position. They see accounting and reporting from the angle of the employers' annual account, the picture that should be produced to ensure that these annual accounts reflect fairly the employer's financial situation, the level of the own reserves and the changes over the accounting year. The developers of the updated System of National Account have to decide to what extent this angle should coincide with the national accounts' perception of pensions.

The definitions and terminology differ between slightly between the corresponding documents. This abstact mainly takes the "Preliminary views" as the starting point.

These accounting standards define post-employment benefit schemes as (see "preliminary views"):

Post-employment benefit promises are formal or informal arrangements under which an entity (i.e. the employer, ghdv) is obliged to provide employee benefits (other than termination benefits) payable after the completion of employment.

This concept is wider than old age pensions only, it includes e.g. post-employment medical care and long-term disablement pensions.

Post-employment benefit schemes are broken down into defined benefit plans/ promises and contribution-based promises. The classification of schemes, according to these three (draft) international accounting standards, is deducted from the scheme's characteristics during the accumulation phase only (the period of employment with the employer).

If a scheme/promise is of a defined benefit nature from the employee's point of view but of a contribution-based nature from the employer's point, the later is decisive. The aspect that after the accounting year no further financial consequences are with the employer, is what matters in classifying a promise as a contribution-based promise.

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An employer should report the annual contribution and possibly the unpaid part thereof in its annual accounts with contribution-based promises. With defined benefit, the difference between the gross entitlements of (former) employees and the corresponding assets should be reported on the employer's balance sheet. Also, the current and past service costs (not yet accounted for in earlier years) plus interest costs and actuarial gains/losses should be reported in the employer's profit and loss account. The gross entitlements should take the past and projected future career with the employer as the reference.

Insurers on the other hand would only include the past career of the employee in the calculation of the gross entitlements. The same would apply to pension funds. A non-autonomous pension scheme, i.e. where the employer is the pension institution, would follow the employer's definition of the gross entitlements.

Consequently, the employer(s) should report the over- or underfunding of the pension fund in its (their) own annual account (only with defined benefit schemes). The supervisory safeguards, applying to the pension institution, are not mentioned in these accounting standards. They, as a consequence, are excluded from the definition and calculation of the employer's claim/liability against the pension scheme.

An exception to the reporting of the position with a defined benefit scheme is where the scheme is with a multi-employer fund that does not account separately the position of each individual employer in the multi-employer scheme. Here only premiums and late/early payment could be reported by the individual employers.

I   INTRODUCTION [2]

Pensions have become increasingly important within the economies of the European countries over the recent decades. It is not only from the perspective of the aging of the European population and the need to facilitate the income of the elderly that this issue became important. Other relevant perspectives to look at pensions are:

- The large amount of funds that are available with the life insurers and pension funds who became major players on the European financial markets;
- The amount of premiums/contributions that are paid by the working population;
- The corresponding liabilities of employers and pension institutions;
- The effect thereof on the economic situation and development.

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2   This text makes reference to the draft version of the SNA and the latest available draft of the ESA, on several places. These drafts are labelled as SNA and ESA as appropriate for simplicity reasons. In case reference is made to the present official versions this will be indicated explicitly.

The interest concerning the issue of pension premiums/contributions, claims/benefits and the amount of the assets associated with the pension schemes rose accordingly in society in general. Parallel, the interest in the accounting world rose also.

Simultaneously, confusion on the concept of 'pensions' can still be observed. One can see that the state pensions and the employment related pensions are mixed up. Also, the old age pension and other classes of pensions, esp. the disablement pension, frequently are not properly distinguished.

This paper deals with the way the various classes of (persons), institutions and corporations report or should report their transactions in the field of pensions. Emphasis will be on the employment related old age pensions. Various sets of new and amended accounting rules were developed over the recent years. These are international rules but national ones as well, either developed independently or as a national version of newly developed international standards.

These rules can be distinguished into private sector and public sector accounting rules. A further breakdown is between accounting rules regarding the business sector in general on the one hand and those dedicated standards applicable to specific branches of industry on the other. With the latter especially the financial sector in general and particularly the insurance and pension industry should be mentioned.

This paper aims at summarising the main features of the international and national accounting and reporting standards as seen from the perspective of the system of national accounts, the SNA and the ESA. From this perspective the main elements within these business accounting and reporting standards are the definition of the concept of 'pension schemes' and 'pension promises', the breakdown into separate classes of benefits/promises and the way the financial consequences of these schemes should enter the business accounts of enterprises and government.

Concerning these main elements, the similarities and differences between the business accounting and reporting standards on the one hand and the national accounts' standards on the other will be discussed below.

1.1   ACTORS IN THE FIELD OF PENSIONS

A series of relevant parties exist in the field of pensions.

a. Private individuals: they could be involved in a pension scheme in their role of an employee or as a former employee with deferred rights or as pensioner. A further role could come from the position as a surviving relative (wife/husband or child) of a former employee who died (either in service or whilst being a pensioner).

According to the insurance terminology, especially the following breakdown of the roles that these individual persons have regarding the pension contract is relevant:

- Policyholder: this is the contract partner in the pension contract who is paying the premium/contribution (or the employer is paying on behalf of the policyholder);
- The insured person: this is the person who's life or death is insured on the pension contract;
- The beneficiary: this is the person who (will) receive(s) the pension benefit.

One and the same person could play various roles in this "pension play" during some period. So, the employee will be both the policyholder and the insured person during the employee's active period in many cases. After retirement, this person has the role of the beneficiary as well. In case of death of the (former) employee, the surviving spouse (and the children) will take over these roles.

b. The employer: the employer is (one of) the organiser(s) of the pension scheme. The scheme can be a single employer scheme or a multi employer scheme (e.g. a pension scheme for a branch of industry). The employer(s), normally, is (are) a large contributor(s) or often the sole contributor(s) of the scheme. Employee's contributions into the pension scheme only exist as well.

  With non-autonomous pension funds, the employer also has the role of a pension institution, i.e. all pension entitlements are on the employer's balance sheet as eventually are the corresponding assets (depending whether the scheme is funded or 'not funded or partially funded'). Also, the claims/benefits paid to the beneficiaries are included as expenditures in the employer's profit and loss account with a non-autonomous scheme. Premiums/contributions, both the employer's and the employees' part, are not explicitly mentioned within the employer's accounts in case of non-autonomous pension plans in many cases.

c. Pension institution: this is the entity that runs the scheme or a series of schemes from the same (group of) employer(s) or a random class of employers. Depending on the pension institution's characteristics, dedicated organs with the pension institution could perform specific tasks and have specific responsibilities.

The pension institution could especially be one of the following categories of institutions[3]:
- A (non-)life insurer that offers group (non-)life insurance.[4] This insurer might insure a large number of pension schemes and/or reinsure a series of pension institutions;

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3   The list of pension institutions and the corresponding accounting rules will vary by country. Especially, the accounting rules with the (non-) life insurers, banks and investment institutions are largely harmonised within the European Union. Reporting for statistical purposes with these units is also coordinated within the EU.
4   A non-life insurer could take on board only specific classes of pensions, esp. long-term disablement.

The (non-)life insurer could insure all risks associated with the pension scheme such as the short and long life risk, the investment risk, credit risk etc. It is as well possible that the insurer takes over the responsibility of only some and/or part of these risks.

- A pension fund that insures the pension scheme or schemes of a single employer or of a series of employers. The fund could reinsure part or all of the risks associated with the corresponding pension scheme(s) with a (non-)life insurer; Depending on the scheme's conditions, either the fund itself or the employer is responsible to meet the pension obligations;
- A pension fund insuring the pension scheme or schemes of a series of employers. The fund could reinsure part or all of the risks associated with the corresponding pension scheme(s) with a (non-)life insurer. A distinction exists between the case where the fund has separate accounts with the individual employers – a so-called 'Institution for Occupational Retirement Provisions (IORP)' – and the case without separate accounts. No solidarity between the employers exists with an IORP, implying that depending on the scheme's conditions, either the fund itself or the individual employer is responsible to meet the 'own' pension obligations. With the other multi-employer pension funds the group of participating employers or the pension fund itself – depending on the scheme's conditions – is responsible to meet the scheme's obligations.
- The employer can act as a non-autonomous pension fund[5]; specific risks, including the risk of default of the employer, can be reinsured with a (non-)life insurer or a reinsurer. The employer will be responsible and accountable for any deficit in the scheme in most cases;
- A government institution that is responsible for managing employment related pension scheme(s);
- Banks, investment companies etc. could be responsible for administrating non-autonomous pension schemes. Also, with an autonomous scheme, these institutions could administer the corresponding institution. They could insure or even might be obliged (re)insuring the part of the associated risks of a non-autonomous scheme with a (non-) life insurer or a reinsurer.

d. Government, a government agency or a legally independent institution as supervisory authority in the field of private pension. This entity might also set the relevant accounting rules concerning the various classes of pension institutions as relevant within the country – whether or not co-operating with government (ministry of social affairs, ministry of finance, and ministry of economic affairs) – regarding the pension institutions.

The role of government in the field of employment related pension schemes (in addition to the state pension), therefore, could be one from a series of options. Government could be involved in the pension contract as the employer, as the pension institution (a non-autonomous pension scheme regarding its own employees), as the pension institution regarding own or private sector employees or as the supervisory authority.

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5   This category includes the case of a non-autonomous scheme regarding government employees. This scheme is not classified as a social security scheme (S.1314).

Because regarding individual persons no accounting rules exist, a complete and consistent description of their individual pension situation is hardly collectable with private persons directly.[6] The description of a full picture of the country's pension situation, therefore, needs to be solely/largely based on the information receivable from the various pension institutions and the relevant employers. However, the accounting rules and standards vary with the various classes of the institutions that are relevant in the country's full pension landscape. As a consequence, the information received from the various classes of entities needs to be transformed to arrive at uniform national accounts definitions, classifications and accounting standards and they need to be integrated in the national accounts in a second run, to arrive at a coherent picture of the country's economy. This transformation, however, is not an easy task because of differences in the accounting rules and standards and the complexity of the relevant concepts.

1.2   SOME NATIONAL ACCOUNTS TERMINOLOGY

Two pairs of national accounts concepts are important when discussing the accounting rules and standards. These concepts are discussed in this section.

Autonomous and non-autonomous pension entities
A pension entity is said to be an autonomous entity if it constitutes a separate and independent institutional unit. The autonomous pension entity makes it own decisions and is accountable for these decisions.

A non-autonomous pension entity is part of the employer's institutional unit. Decisions are made by the combined unit that is also accountable for these decisions. The term 'book-reserve' is also used for the corresponding pension schemes.

The concept of accountability does not imply that the autonomous or non-autonomous pension entity is responsible for the entity's financial position, independently of the cause of any surplus or deficit. This responsibility and accountability is to be allocated in accordance with the corresponding scheme's arrangements and the relevant legislation in the country.

'Fully funded' and 'not funded or partially funded' pension schemes [7]
Fully funded schemes are schemes where the value of the investments associated with the scheme is intended to be at least equal to the scheme's obligations.

The scheme's obligations should cover the full present value of the future costs of the amount of the entitlements of the scheme's policyholders, including policyholders with deferred entitlements and/or the actual beneficiaries, as existing at the end of the accounting period. This amount should include the corresponding claims / benefits handling costs.

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6   Some data from individuals might be collected from the tax authorities. The tax authorities will use specific accounting rules, different from those of employers and the pension institutions. These tax-based accounting rules are not dis-cussed in this paper.

7   SNA uses the term 'unfunded' pension schemes where the ESA uses the term 'not funded or partially funded' pension schemes.

Any temporally shortfall of the scheme's investments compared to its obligations would not disqualify the scheme for being a funded scheme. Only, the scheme conditions and / or national legislation should require to arrive at a surplus within a defined and limited period. Also, the scheme conditions and / or national legislation could require a certain surplus to exist.

The class of 'not funded or partially funded' pension schemes deals with all pension schemes where the intension of a surplus of the scheme's assets over its liabilities does not exist.

These definitions don't refer to legally mandatory of voluntary buffers, additional reserves and corresponding assets to protect the pension rights of the employees. These buffer funds complicate the preceding definitions. The buffer fund as such is part of the (non-technical) reserves of the pension entity whereas the corresponding assets are part of the entity's investments. These assets should be taken on board when deciding whether the scheme is funded or partially funded. On the other hand these buffers should be an ingredient of the pension entity's own funds. They should not constitute a liability against the employer.

2   VARIOUS SYSTEMS OF ACCOUNTING RULES AND STANDARDS REGARDING PENSIONS

The international accounting standards board (IASB) sets the international accounting standards (IAS) and the international financial reporting standards (IFRS) regarding private sector entities. These standards apply to the business sector in general. A series of accounting entries (such as 'compensation of employees', 'intermediate consumption', 'taxes' etc) are relevant and identical with non-financial and financial corporations. Those common rules and standards could be found in the existing standards.

Concerning the pension discussion, the dedicated International Accounting Standard 19 'employee benefits' (IAS 19) is especially relevant. Apart from other elements, it sets the present international standard for accounting and reporting on pensions as an element of the employee benefits.

The international public sector accounting standards board (IPSASB) produces the corresponding international public sector accounting standards (IPSAS) that are relevant with public sector entities. A dedicated standard is developed in the field of employee benefits, the international public sector accounting standard 'employee benefit' (IPSAS 25). This standard is strongly based on IAS 19, the private sector standard concerning employee benefits.

Since the IAS 19 has been published a series of comments has been received. Following these comments the IASB has decided to review IAS 19. The IASB has so far produced a report on preliminary views to amend IAS 19. Views and comments on this report could have been sent in until September 2008.

The preliminary views especially relate to post-employment benefits as a major component of employees benefits. These possible revisions mainly concern defined contribution schemes (labelled 'contribution-based promises in these 'preliminary views' on revising IAS 19) will be discussed also.

The International Accounting and Reporting Standards discussed so far, are oriented towards either the employer mainly. The accounting standards board ('ASB', the UK standard-setter in business accounting), in collaboration with the European financial reporting advisory group (EFRAG) has led the development of a paper on "the financial reporting of pensions, a PAAinE [8] discussion paper".[9] This paper represents a "fundamental reconsideration, starting from first principles, of the accounting that should be required for pensions".[10] This discussion paper takes a fresh look into the issue whereas the other initiatives as mentioned in the preceding text start from the idea of improving existing standards. ASB, EFRAG and the other participating standard-setters expect a large impact of their discussion paper on the future standard-setting process.

The European accounting and reporting directive concerning non-financial corporations is closely in accordance with the IAS and IFRS. Additionally, separate accounting/reporting directives exist with banks, (life and non-life) insurers and investment companies with the European Union.

National accounting legislation regarding the financial and non-financial corporations is according to these European accounting and reporting directives. Also supervisory accounting information is expected to be largely in line with these European accounting/reporting directives. Only series of supervisory details will – if and where necessary – be added.

No dedicated European accounting/reporting directive regarding pension institutions exists. Only in as far as they belong to classes of institutions to whom other accounting/reporting legislation applies (such as banks, investment companies and (non-) life insurers) pension accounting is according to European accounting/reporting standards. Nevertheless, individual countries might have developed national legislation on the accounting and reporting of the pension institutions. As far as pension funds are concerned, they are expected being fairly similar to the life insurance accounting/reporting standards.

IAS 19 and IPSAS 25 are viewing the accounting and reporting standards regarding pensions from a single perspective, the employers' point of view. Looking at the pension subject from this dedicated employers' angle implies that only/mainly considerations that are relevant with the corresponding employers are

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8   PAAinE: Europe's 'Pro-active Accounting Activities in Europe'. This is a partnership between the European Financial Reporting Advisory Group ('EFRAG') and European standard-setters. The Coordinating Group of PAAinE, which comprises representatives of the standard-setters of EFRAG, France, Germany, Italy, The Netherlands, Poland, Spain, Sweden and the United Kingdom.
9   The discussion paper can e.g. be obtained from http://www.efrag.org/projects/detail. asp?id=70
10 See "The financial reporting of pensions", page 2.

considered in developing these rules and standards. This could have implications concerning the content of these rules and standards that are not relevant with other players in this field.

The effect of this one sided orientation of IAS 19, IPSAS 25 and IFRS could be that dedicated amendments, deletions and/or supplements might be necessary when considering the various rules and standards from the perspective of the other players like government (as a pension institution), pension funds, (non-)life insurers, employers, employees, etc.

The System of National Accounts has such a multi-sector perspective. It takes into consideration the impact of rules and standards with all payers in the field. Nevertheless IAS, IFRS and IPSAS will constitute important ingredients within the total process.

3   IAS 19 'EMPLOYEE BENEFITS'

The IAS 19 on employee benefits is part of the total set of international accounting and reporting standards, concentrating on all types of employee benefits.

The concept 'employee benefits' is defined as:[11]
Employee benefits consist of all forms of consideration given by an entity (i.e. the employer, ghdv) in exchange for services rendered by employees. These benefits are broken down into:

- *Short-term employee benefits, i.e. all employee benefits which fall due wholly within twelve month after the end of the period in which the employees render the related service;*

- *Post-employment benefits, i.e. all employee benefits which are payable after the com-pletion of employment;*

- *Other long-term employee benefits, i.e. all employee benefits (other than post-employment benefits and termination benefits) which do not fall due wholly within twelve month after the end of the period in which the employees render the related service;*

- *Termination benefits, i.e. employee benefits which are payable as a result of either:*

  - *An entity's decision to terminate an employee's employment before the normal retirement date;*

  - *An employee's decision to accept voluntary redundancy in exchange for those benefits.*

11 Source: IAS 19, art. 9.

Within the present context, the post-employment benefits benefits – i.e. those post-employment benefits as meant under the second bullet – are central. IAS 19 distinguishes within this class of employment benefits:[12]

• Retirement benefits, such as pensions;

• Other post-employment benefits, such as post-employment life insurance and post-employment medical care.

It seems worth noting, this second class includes the benefits to (former) employees in case of long-term[13] disablement. This class of post-employment benefits has little explicit attention so far in the System of National Accounts. ESA and SNA seem limiting themselves to old-age pensions when dealing with post-employment benefits. This apparent difference might constitute a source of difference between both the business accounting and reporting standards on the one hand and the System of National Accounts on the other.

Within the category of post-employment benefits plans – applicable to both types of post-employment benefits plans as mentioned in the preceding paragraph – IAS 19 distinguishes two subcategories: defined contribution and defined benefit plans.

IAS 19 defines the defined contribution plans as:[14]

• *The entity's formal or constructive obligation (i.e. the employers' obligation, ghdv) is limited to the amount that it agrees to contribute to the fund. Thus, the amount of the post-employment benefits received by the employee is determined by the amount of contributions paid by an entity (and perhaps also the employee) to a post-employment benefit plan or to an insurance company, together with investment returns arising from the contributions;*

• *In consequence, actuarial risk (that benefits will be less than expected) and invest-ment risk (that assets invested will be insufficient to meet expected benefits) fall on the employee.*

This definition of defined contribution plans implies that further obligations, either formally or informally, do not exist with the employer once the company has paid the annual amount. The benefit is straightforwardly calculated from the agreed and paid amounts and any investment income without a guarantee or whatever on the level of the investment income or the benefit that will be paid at or after retirement (or any other type of termination of employment qualifying for the receipt of post-employment benefits). The risks regarding the level of the investment income, the (change of the) value of investments etc. are fully and solely with the policy-holder/beneficiary.

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12 Source: IAS 19, art. 24.
13 Long-term is defined as "a period of one year or more" according to IAS 19 art. 7.
14 Source: IAS 19, art. 25.

IAS 19 defines the defined benefit plans as:[15]

- *The entity's obligation (i.e. the employers' obligation, ghdv) is to provide the agreed benefits to current and former employees;*

- *Actuarial risk (that benefits will cost more than expected) and investment risk fall, in substance, on the entity. If actuarial or investment experience are worse than expected, the entity's obligation may be increased.*

The main distinguishing factor with the defined contribution plans is that the obligations of the employer haven't come to a final halt after the annual payment has been made. In later years, the employer could be obliged to pay additional amounts into the plan concerning employment services rendered in earlier years.

The breakdown of post-employment benefits plans and the associated definitions according to the IAS are close to those of SNA (see para 7.147 and 7.148) and ESA (see para 4.10) in con-tent. The wording, however, is different. An explicit statement on the identity or on the difference of IAS/IFRS/IPSAS and SNA/ESA seems useful.

An element of potential difference between SNA/ESA and IAS/IFRS/IPSAS is the aspect used as the distinguishing characteristic between defined benefit and defined contribution. SNA/ESA emphasise the fact that the benefit is calculated using a formula with defined benefits. IAS/IFRS/IPSAS on the other hand starts from the idea that the employer is or is not sure having paid the full-required amount concerning any year of service. Whenever the employer – through a formal or an informal obligation – might have to supplement the funds of the pension institution (which supplement corresponds to some or all preceding years of employment) at any time in future, the corresponding scheme is classified as a defined benefit scheme according to IAS/IFRS/IPSAS.[16] If not, these accounting standards classify the scheme as a defined contribution scheme.

The classification of post-employment benefits plans does not vary dependently whether the scheme is a single or a multi-employer plan. Where a multi-employer defined benefit plan has separate accounts by participating employer, the employer shall report its share in the schemes' surplus or deficit under this defined benefit plan. If no separate accounts exist (esp. where all employers are equally responsible to the scheme) the employer could only report the financial consequences of this scheme under its liabilities and expenditure as if it is a defined contribution scheme.[17]

The reporting on state pension plans should be according to the same standards as applicable to multi-employer plans.

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15 Source: IAS 19, art. 27.
16 Example. A scheme is promising a pension of €100 a month pro year of employment payable for 15 years at the maximum. After 40 years of service the pension will be €4,000 a month. This scheme should be classified under 'defined benefit' according to the IAS 19. If the scheme would additionally include the condition that the employer, after having paid the required amount concerning the year, no further premiums regarding this year could become due, the scheme should be classified under defined contribution according to the criteria of IAS 19.
17 For more details see IAS 19, art. 29-39.

If the post-employment benefit plan is insured with a life insurer, the employer shall report this plan as a defined contribution plan – whatever its characteristics as perceived by the (former) employees – unless the employer will have a legal or constructive obligation to either:

• *Pay the employee benefits directly when they fall due;*

• *Pay further amounts if the insurer does not pay all future employee benefits relating to employee service in the current and prior periods.*

If the entity retains such a legal or constructive obligation, the entity shall treat the plan as a defined benefit plan.[18]

From the preceding definitions from the IAS 19 it will be clear that classification and treatment of post-employment benefit plans according to IAS is solely from the employers' point of view. So, an insured defined benefit plan from the (former) employees' point of view (e.g. an average or final pay pension) is classified as a defined contribution plan in case all associated risks are with an insurer. This limitation to a single angle to classify these plans might constitute a source for differences between IAS on the one hand and the national accounts on the other.

Accounting and reporting differs between defined contribution and defined benefit plans according to the IAS 19.

3.1   IAS 19 REPORTING OF DEFINED CONTRIBUTION PLANS[19]

3.1.1 THE BALANCE SHEET AND THE PROFIT AND LOSS ACCOUNT

When an employee has rendered service to an employer during a period, the employer shall recognise the contribution payable to a defined contribution plan in exchange for that service:[20]

• In the balance sheet: as a liability (accrued expense), after deducting any contribution already paid (…);
• In the profit and loss account: as an expense (…).

Defined contribution plans should be funded by nature according to IAS 19 with an external entity; it is a funded autonomous pension scheme according to the national accounts' terminology. So, the contribution is always payable to an external pension institution.

So, according to IAS 19 only contributions and late (or early) payment of these contributions should enter the employers' accounts. The pension entitlements of the (former) employees and the corresponding assets don't enter the employers' accounts.

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18 Source: IAS 19, art. 39-42.
19 The following part describes the main features of IAS 19 and the 'preliminary views' from the perspective of the system of national accounts.
20 Source: IAS 19, art. 43-45.

3.2 IAS 19 REPORTING OF DEFINED BENEFIT PLANS[21]

Defined benefit plans on the other hand might be 'not funded or partially funded' according to IAS 19. In the latter case the contributions might be paid into an external pension institution (an autonomous pension fund) or with the employer (a non-autonomous pension fund) that is responsible for the payment of the benefits. The employer, however, remains liable for supplementing the pension institution's funds in case the institution's assets fall short compared to the scheme's entitlements. This obligation to supplement the pension institution's assets constitutes an important characteristic of this class of benefit plans; the employer has not irrevocably satisfied its obligations on paying the year's contributions into the scheme. In any future year, the (formal or informal) obligation could appear for additional payments relating to earlier years.[22]

The employer should report an entry in its balance sheet and an entry in its profit and loss account to reflect the effect of the defined benefit plan on the employer's profit and the level and composition of its assets and liabilities. These two elements are the subject of the next paragraphs.

IAS 19 limits this reporting requirement of the claim/liability of the employer against the pension institution to the larger corporations, mainly those corporations on the country's stock market. Other corporations might – depending on national legislation – be excluded from this reporting requirement.

3.2.1 THE BALANCE SHEET

The employer's defined benefit liability at the end of the year equals:[23]

The gross defined benefit obligation
Minus
The fair value of the plan's assets.

This net figure could be negative; this means that the employer has a claim against the pension institution (the scheme is overfunded), or positive, a liability of the employer (the scheme is underfunded). The standard does not mention any possible separate treatment of an obligatory overfunding (e.g. as a consequence of the existence of mandatory buffers with the scheme. These mandatory buffers exist only because of supervisory regulations. They don't exist in the accounting standards. As a consequence, the definition and calculation of employer's liability don't take account of these buffers. The buffers remain outside both terms in the definition above (i.e. they aren't part of the gross obligations or of the assets associated with the scheme).

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21 More details on the accounting and reporting standards concerning defined benefit plans see IAS 19, art. 46-126.
22 It is well possible that the plan excludes the obligatory supplementing of the plan's funds in cases specified in the plan's conditions.
23 IAS 19 distinguishes two further elements to include in the calculation of the employer's defined benefit obligation. These two elements, i.e. any actuarial gains (less any actuarial losses) and any past service cost not yet recognised, are of a smaller importance within a national account's framework.

The ESA (see para. 5.100, 5.106) and the SNA (see para. 11.108[24]) acknowledges a claim against the corresponding employer. I.e. the ESA is aware of the possibility of underfunding but not of the opposite possibility. The claim in case of underfunding is classified under 'insurance technical provisions' whereas it is the balance between such a provision (the gross 'provision for pension entitlements') and the available assets with the pension institution.

3.2.2 THE PROFIT AND LOSS ACCOUNT

The employer shall account for an expenditure that equals the net total of:[25]
- Current service cost;
- Interest cost;
- The expected return on any plan assets and on any reimbursement rights;
- Actuarial gains and losses, in accordance with the entity's accounting policy;
- Past service cost.

The current service costs should be calculated using a specific actuarial method, the projected unit credit method. Each year of employment gives rise to an additional unit of benefit entitlement under this method. These are measured separately to build up the final obligation. This calculation should take account of the future increases of the employee's future benefits.[26] Further a series of actuarial assumptions should be made, e.g. on mortality, both during and after employment, the proportion of plan members with dependants eligible for benefits, the discount rate, future salary and benefit levels and the expected rate of return on plan assets.

Interest cost is computed by multiplying the discount rate as determined at the start of the period by the present value of the defined benefit obligation throughout that period, taking account of any material changes in the obligation.

The expected return on plan assets is based on market expectations, at the beginning of the period, for returns over the entire life of the related obligation. The expected return is calculated by multiplying the fair value of the plan's assets during the year (so incorporating changes in this value during the year because of transactions) by the expected rate of return.

4   PRELIMINARY VIEWS ON AMENDMENTS TO IAS 19 EMPLOYEE BENEFIT

As the International Accounting Standards Board (IASB) has received a series of comments on the existing IAS 19, it decided to launch a revision project

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24 The SNA acknowledges the possibility that the claim on the employer could become negative because of high investment income (but not mentioning e.g. higher prices of the scheme's assets, actuarial factors or the discount rate). The text seems implying that this negative claim remains classified under assets (with a minus-sign) with the pension institution.

25 Only the most relevant entries as mentioned in IAS 19, art. 61 are listed here.

26 E.g. the case where pension rights are received over the 10 or 40 years of service, more years don't produce a further growth of the post-benefit benefits. These 10 or 40 years should be included in the calculation.

concerning this standard dedicated to post-employment (benefit) promises.[27] A heavy emphasis is with contribution-based benefit promises, i.e. defining and distinguishing these promises on the one hand and the accounting and reporting of contribution-based benefit promises on the other.

One of the suggested changes deals with the terminology used and the definitions of post-employment benefit promises and its two constituent subcategories.

The "preliminary views on amendments to IAS 19 employee benefits" suggested amending these definitions as follows:

Post-employment benefit promises
Post-employment benefit promises are formal or informal arrangements under which an entity (i.e. the employer, ghdv) is obliged to provide employee benefits (other than termination benefits) payable after the completion of employment.

A defined benefit promise
A defined benefit promise is a post-employment benefit promise that is not a contribution-based promise.

A contribution-based promise
A contribution-based promise is a post-employment benefit promise in which, during the accumulation phase, the benefit can be expressed as:

- The accumulation of actual or notional contributions that for any reporting period would be know at the end of that period, except for the effect of vesting[28] or demographic risk;

- Any promised return on the actual or notional contributions is linked to the return from an asset or a group of assets or an index. A contribution-based promise needs not to include a promised return.

With post-employment benefit plans where the accumulation phase consisting of both a period with a defined benefit promise and a period with a contribution-based promise should, according to the preliminary views of the IASB, be considered as two separate promises.

Also, the IASB in its 'preliminary views' suggest that the classification of post-employment benefit promises should depend solely on the characteristics of these promises during the accumulation phase (the deferment and the pay-out phase are considered as irrelevant for the classification of the promise).

It should be decided whether this classification of pension plans/promises, solely based on the accumulation phase would satisfy the ideas of the system of national accounts.

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27 With the "preliminary views on amendments to IAS 19 employee benefit" the IASB has changed its terminology into 'post-employment (benefit) *promises'*, replacing the term 'post-employment *benefits'*. Also, the term '*defined contribution* plans' is replaced by *contribution-based'*.

28 Vested pension promises are those promises that are not conditional on future employment.

The 'preliminary views' distinguishes three further characteristics that are relevant with the definition of the concept of a 'contribution-based promise':[29]

- *A promised return might exist but (if it exists) only one that is linked to the return from an as-set, group of assets or an index.*

The option of a promised return widens the reach of the 'contribution-based promises' compared to IAS 19 (and consequently reduces the reach of 'defined benefit promises'). Esp. it allows for unfunded promises or for delayed payments.

The linkage with an external rate of return does not imply that the promised return should be equal to this external rate; e.g. the promised return might be ½ this external rate or 100 basis point over/below this external rate.

Therefore, a post-employment benefit promise of 5% of the annual income plus an accumulated return of e.g. 75% of the share total return index satisfies the conditions for a contribution-based promise according to these Preliminary views;

- *The promise might be funded or unfunded 'not funded or partially funded';*
- *The contribution is known at the end of the corresponding period except that this definition is independent of vesting conditions[30] and demographic risks.*

The classification of post-employment benefit promises, therefore, would not change dependent on the vesting of these promises and in case of vesting on the relevant conditions.

Neither is the classification dependent on the absence or presence of demographic risks (such as the longevity risk). A fixed conversion rate of the accumulated sum at retirement, therefore, would not withhold the benefit being classified as a contribution-based promise (the longevity risk is with the employer).

According to the 'preliminary views' of the IASB the borderline between contribution-based promises and defined benefit promises has been shifted. This is to say that the class of 'contribution-based promises' has been enlarged whereas the class of 'defined benefit promises' has become smaller.

This change of opinion by the IASB seems decreasing the conformity of the presently proposed SNA/ESA-classification of pension promises with the IASB-classification.

The liability and expense under a contribution-based promise should, according to the 'preliminary views' include as well the contribution as the promised rate of return (if any). Valuation should be at discounted value, discounted against a rate derived from present market conditions. Variations in the liability according to a contribution-based promise would result from changes in the relevant discount rate.

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29 Source: 'preliminary views on amendments to IAS 19', art. 5.12 -5.59.
30 Independency of vesting conditions would mean that the classification does not change whether or not the promise is or is not conditional on further prerequisites (such as length of service).

Valuation of the corresponding liability should take account of various risks that would affect the value of the employees' claim against the employer. The 'preliminary views' mention the risks of variations in the prices of the relevant assets, demographic risks and credit risks (i.e. the risk that the assets of the promise plus the employer's assets are insufficient).

Changes in the liability corresponding to contribution-based promises would follow from the service costs (i.e. the annual contribution) on the one hand and value changes on the other. Within the latter a series of components could be distinguished. No sufficient reasons are recognised by the IASB to report these other element separately according to its 'preliminary views'.

The service costs should be reported in the employer's profit and loss account. Regarding the other fair value changes, the 'preliminary views' do not give final guidelines. Though most probable, the IASB seems preferring the inclusion in the profit and loss account.

5   IPSAS 25 'EMPLOYEE BENEFITS'

IPSAS 25, the dedicated government oriented version of IAS 19, draws heavily on IAS 19. Parallels are numerous, therefore. The main feature they have in common is that both IPSAS 25 and IAS 19 describe the treatment of 'employee benefits' from the employers' perspective. Neither of these accounting standards, therefore, is directly applicable to pension institutions (apart from the accounting for the employment benefits concerning the pension institutions' own employees, see also introduction, art. 1).

As IPSAS 25 is based on IAS 19, it is using the terminology as used in IAS 19, giving no regard to the 'Preliminary views'. The corresponding definitions and classifications are not repeated in this section.

The employer's liability is defined in accordance with IAS 19, as reproduced in para 3.2. As in IAS 19, the defined benefit obligation towards the employees is the present value of the plan's obligations before deducting the plan's assets. However, IPSAS 25 does not reproduce the limitations to this reporting requirement.

The employer's expenditure is defined in accordance with IAS 19. The current service cost with defined benefit obligation should include all future years during which the employee's service will constitute a material higher defined benefit obligation.

One question is whether ESA and SNA in their definition of the asset/liability of the employer against the pension plan and the corresponding expenditure (see para 3.2) would limit this definition to the past period of service only or would include all future years of services with increasing promises. In other words, SNA and ESA should consider whether the projected income over the full career is the starting point or the past period of service only.

6   INSURANCE ACCOUNTING [31]

The Council Directive on the annual accounts and consolidated accounts of insurance undertakings as amended by Directive 2006/46/EC of the European Parliament and of the Council of 14 June 2006 gives rules for the account of life and non-life insurers.

A first observation is the fact that the word 'pension' only appears once within the accounts themselves (provisions for pensions and similar obligations; item liability e.1). However, it refers to the provision for pensions for the insurer's own employees; this item is not part of the insurance technical provisions of the insurer.

Additionally, the directive obliges that the notes to the accounts shall show separately the funds that the insurer manages on behalf of pension funds (see art. 2.2). Countries may deviate from this article (under further provisions). Additionally, article 10 gives more detailed guidelines concerning the reporting of participation in an investment pool (joint investments).

It follows that contributions, benefits and technical provisions concerning pension plans is combined with the (non-pension insurance related) life insurance premiums, claims and technical provisions.

The directive requires also that the written direct premium should be broken down into individual and group premiums in notes to the accounts. It is questioned whether group insurance is identical to the insurance of pension plans.

Pension insurance with life insurers mainly is in nominal amounts. Where the plan includes the formal employer's obligation for an annual increase of the pension benefits compensating e.g. for the effect of inflation, additional annual premiums/contributions are to be paid by the employer (and the employees). With informal inflation proofing of pensions, additional premium payments are also necessary: here depending on the extent that this informal usage is a constructive obligation.

A core-issue is the measurement of benefits, contributions and the technical provisions. Written premiums/contributions and incurred claims/benefits don't constitute a major problem; the amounts invoiced according to the pension contract should be entered into the accounts, both the business accounts and the national accounts. Consequently, the earned premiums/contributions and paid claims/ benefits are also straightforward. Expectantly, only little difference between the insurer and the employer would exist.

More difficulties are expected to exist regarding the technical provisions. It is reiterated that the employer would report the corresponding expenditure and liability as follows.

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31 Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings.

Table 1	Employer's reporting of pension plan's assets/liabilities and expenditure

	Contribution-based	Defined benefit
Expenditure	Contribution	Change in gross pension entitlements based on projected salaries + interest costs – extern return on assets +/- actuarial gains/losses
Liability	Non-paid contribution	Gross pension entitlements – fair value of assets

Source: Missing.

With pension benefit plans, an insurer would have three entries in its balance sheet:
- Non-paid contribution (see also footnote 32);
- Pension plan assets;
- Gross pension entitlements.

6.1 CONTRIBUTION-BASED PENSION PROMISES

Regarding the non-paid contribution, no difference in accounting exists between the employer and the insurer with contribution-based pension benefit plans. Both the insurer and the employer will account for the corresponding amount. Only, the insurer might be allowed (depending on national legislation) to report this entry under its 'life insurance provision'[32] whereas the employer should report this liability separately according to IAS 19. Also, timing differences might cause a further difference between the employer's reporting and the insurer.

The pension plan assets don't enter the employer's balance sheet by definition in case the plan is with a life insurer. Only, the life insurer does not distinguish these assets separately; they are merged with the other investments of the insurer. Reporting is under 'investments for the benefit of life-assurance policyholders who bear the investment risk'.[33] So, pension plans' assets can't be seen separately from the life insurer's balance sheet.

The pension plan entitlements don't enter the employer's balance sheet by definition in case the plan is with a life insurer. They would enter the employees' balance sheet (in case these balance sheets would exist). Only, the life insurer does not distinguish the corresponding provisions separately; they are merged with the other provisions of the life insurer. Reporting is under 'technical provisions for life-assurance policies where the investment risk is borne by the

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32 See 'Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings', art. 25 1st para.
33 See 'Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings', art. 6 asset item D.

policyholders.[34] So, the pension plans' entitlements can't be seen separately from the life insurer's balance sheet.

Additional problems concerning the provisions and assets can follow from mandatory buffers with the insurer. On the liability side of the insurer's balance sheet these buffers should be reported in a dedicated provision, combined with those concerning other insurance contracts. These buffers, however, by their very nature would affect the insurer's assets also.

6.2 DEFINED BENEFIT PENSION PROMISES

The pension plan assets don't enter the employer's balance sheet by definition in case the plan is with a life insurer. However, the life insurer does not distinguish these assets separately; they are merged with the other investments of the insurer. Reporting is (depending on the type of insurance contract linked, with profit, non-linked) either under 'investments' or under 'investments for the benefit of life-assurance policyholders who bear the investment risk'.[35] So, pension plans' assets can't be seen from the life insurer's balance sheet. They are part of possibly two classes of assets.

The pension plan net entitlements (gross entitlement less the assets' fair value) should enter the employer's balance sheet in case the defined benefit plan is with a life insurer where this life insurer should report the gross entitlements (under the insurer's liabilities) and the corresponding assets (under the insurer's assets) and the employer has kept an ultimate responsibility to honour the claims following from the pension contract.[36] The gross liabilities would also enter the employees' balance sheet (in case these balance sheets would be drawn up). However, the life insurer does not distinguish the corresponding provisions separately; they are merged with the other provisions of the life insurer. Reporting is (depending on the type of insurance contract: linked, with profit, non-linked) under either the 'life-assurance provision' or the 'technical provisions for life-assurance policies where the investment risk is borne by the policyholders'.[37] So, the pension plans' entitlements can't be seen separately from the life insurer's balance sheet.

Regarding the non-paid contribution, no difference in accounting exists with defined benefit pension benefit plans. Both the insurer and the employer will account for the corresponding amount. The employer, however, won't report this entry separately in case the employer has retained an ultimate responsibility to honour the pension contract's entitlements. They will be merged with the net defined benefit pension entitlements (gross value less the assets' value) in this

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34 See 'Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings', art. 6 liability item D.
35 See 'Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings', art. 6 asset item D.
36 This requirement might be limited to the country's larger corporations, often those quoted on the country's stock market.
37 See 'Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings', art. 6 liability item D.

case. Also, the insurer might be allowed (depending on national legislation) to report this entry under its 'life insurance provision'.[38] On the other hand, the insurer is reporting both the plans' assets and gross pension entitlements separately.

As with contribution-based promises, further complications could come from timing differences between the employer and the insurer.

6.3   PENSION REPORTING WITH INSURERS AND EMPLOYERS: OVERVIEW OF DIFFERENCES

The table below summarises the differences between insurers' accounting and employers' reporting of pension schemes. As both preceding subchapters, this table distinguishes contribution-based and defined benefit promises.

Table 2 Reporting of pension plan's assets/liabilities				
	Contribution-based plan		Defined benefit plan	
	Employer	Insurer	Employer	Insurer
Non-paid contribution	Yes (with 3b)	Yes, (with 3a)	Yes (with 3b)	Yes, (with 3a)
Plan's assets	-	Yes [1]	-	Yes [3]
Pension entitlements				
Gross value	-	Yes [2]	-	Yes [4]
Net value	No (= 0)	-	Yes	-
Mandatory buffers				
Assets	No	-	No	Included
Liabilities	No	-	No	Separate entry
Valuation of entitlements				
Past carrier only	No	No	No	Yes
Past and future carrier	No	No	Yes	No

1) Part of 'investments for the benefit of life-assurance policyholders who bear the investment risk'.
2) Part of 'technical provisions for life-assurance where the investment risk is borne by the policyholders', possibly including the non-paid contribution.
3) Part of 'investments' and/or 'investments for the benefit of life-assurance policyholders who bear the investment risk'.
4) Part of the 'life insurance provision' and/or the 'technical provisions for life assurance where the investment risk is borne by the policyholders', possibly including the non-paid contribution.

38 See 'Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings', art. 25 1st para. The text of the directive seems to imply that reporting of non-paid premiums/contributions under the life insurance provision should not depend on the type of policy (linked, with profit, non-linked).

So, it is rather complicated to link employers' data on the value of the pension entitlements with those of life insurers even in cases where the relevant employers are identifiable uniquely. The corresponding figures with the insurers and the employers (nearly) always are part of a larger entry in their balance sheet. Less difficult is the interrelation concerning the premiums/contributions.

A further question has to be addressed: the valuation of the gross pension entitlements with the insurer. Two observations can be made:
- The insurer has obligations according to the pension promise up to date only; the insurer has no obligations that incorporate future years of service and future increases of salaries.
- The insurer will try to have assets in the contract that at least equal the amount of obligations under the pension contract.[39]

The net obligations of the insurer regarding the pension contract, therefore, will approximately be zero. The insurer's net obligations therefore deviate from the employer's obligations that incorporate also future years of employment with the company.

These valuation differences create an imbalance in the system:
- The employer reports liabilities equal to the net amount of the gross entitlements concerning past and future years of the employees' career with the company less the value of the insurance contract;
- The employer would disregard safety provisions (buffers) with the insurer (an obligatory surplus of the assets over the obligations under the pension contract); whether the employer should account for deficits with the insurer (assets are less than the pension entitlements) depends on the nature of the contract (who is ultimately responsible for the payment of benefits?);
- The insurer reports liabilities equal to the amount of the gross entitlements over the past years of the employees' career with the company;
- The employees have a claim on the insurer equal to the value of the gross entitlements over the past years of the employees' career with the company.

If we would agree on the valuations as described in the preceding points, it is the employer's valuation of the pension entitlements that causes the imbalance in the system.

39 For simplicity reasons, this does not take account of the insurer's obligation for an actuarially based safety margin. A difference between the pension entitlement and the assets might come from the system of financing the contract. A simple example from the field of life insurance might illustrate this. This example deals with a simple risk insurance annexed with a loan. Such a contract will have a constant premium (in most cases) whereas the risk of death of the insured increases over the maturity of the contract (due to the increasing age of the insured). The insurer will, therefore, set aside a (small) technical provision to be built during the first half of the contract and to be used during the second half to accommodate for this increasing risk.

7   PENSION FUNDS' ACCOUNTING

This part of the paper deals with dedicated external pension institutions not being a life insurer. A major group of these institutions concerns the pension funds, a separate institutional unit that insurers the pension promises concerning the employees of a single employer or a group of employers, quite often employers in the same branch of industry. Legislation on pension funds is largely national legislation. Therefore, legislation – including accounting – might differ between the European countries.

The main difference between a pension fund and a life insurer is that the first is dedicated to a single employer or a single group of employers. This implies that the entries with a pension fund concern pension insurance only. No combination of pension with other classes of (life) insurance occurs. Apart from these elements, the characteristics are largely identical: esp. both expectantly operate on an actuarial basis in offering coverage for pension risks. Also, both life insurers and pension funds operate on a funded basis.

An apparent difference could be the insurance of inflation proofing. With pension funds this was rather common (at least in The Netherlands) whilst insurers normally insure nominal obligations only. With both classes of institutions an increase of benefits because of inflation, however, is only feasible with an additional premium/contribution. So, difference is limited in this respect.

The pension fund's accounts will show premiums/contributions earned, claims/benefits incurred, the technical provisions for pensions and the associated assets. These entries would be reflected in the employer's (and employees') accounts. The main cause for differences concerns valuation differences, which will mainly relate to the pension entitlements. The pension fund will report the amount of the gross entitlements over the past years of the employees' careers with the company in case of defined benefit pension promises. Future years of the employees' ca-reers with the company will not be taken on board. With contribution-based promises the pension entitlement would equal the funds pension related assets, which would also be equal to the employer's obligation.

8   NON-AUTONOMOUS PENSION SCHEMES

With co-called non-autonomous pension schemes, the employer operates as the pension institution, either on a funded or a non-funded basis. This type of pension institution is not allowed in all European countries, mainly from the perspective of safeguarding the pension entitlements of the employees, esp. in case the employer goes bankrupt. Compensation for this aspect of risk could be found in an obligatory insurance with a non-life insurer. With non-pension post employment benefits legislation on the structure might differ or even be absent. So, a separate fond might be mandatory in the field of pension benefits whereas with non-pension benefits (such as health plans, disablement plans and sick leave plans) non-autonomous schemes could exist.

A non-autonomous pension scheme won't show premiums/contributions received from the corporation's employer. These are consolidated within the corporation's accounts. They will only show claims/benefits to the former employees (and their surviving relatives), the pension enti-tlements and the associated assets (if the scheme is funded).

Here the pension entitlements will incorporate the total amount of the employees' entitlements over the past and future years of the employees' careers with the company (in accordance with IAS 19) that would – with a funded scheme – expectantly be equal to the scheme's assets.

CONCEPTS OF MODELLING PENSION ENTITLEMENTS – THE FREIBURG MODEL

BY MATTHIAS HEIDLER, CHRISTOPH MÜLLER AND OLAF WEDDIGE[1]

I   INTRODUCTION

Demographic developments present a major future risk for the public pension systems of most developed countries. Continuously increasing life expectancy and large age groups of the so-called baby-boomer generation in combination with low fertility rates since the mid-1970s will cause considerable enhancements of the old-age dependency ratio which means that public pension systems organized on a pay-as-you-go (PAYG) principle will be forced to either raise contribution rates or taxes, or shorten future replacement rates. This trend raises some important issues in the context of projecting future pension payments. One of these issues refers to the question of measuring the public pension entitlements of private households until today. From a fiscal perspective, these entitlements are equal to the accrued-to-date liabilities (ADL) of a public pension system.

In this paper we will present ADL for public pension schemes of 19 EU countries. These measurements become increasingly important in the context of the recent update of the 1993 System of National Accounts (SNA93). According to this new legislation – approved by the UN Statistical Commission in February/ March 2007 – (implicit) pension liabilities of social security pension funds have to be recorded in a supplementary table of the National Accounts.[2]

We will proceed as follows: In chapter 2, we provide a basic description of the so-called Freiburg model which has been developed by the Research Center for Generational contracts (RCG) at the Freiburg University in order to estimate the ADL of a pension scheme. Chapter 3 describes the data necessary for the application of the Freiburg model and introduces the basic assumptions. In chapter 4 we present the results of our calculations for 19 EU countries. Chapter 5 contains some limitations and possible extensions of the Freiburg model. The paper finishes with a summary of our findings and a short outlook for future research.

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1   Freiburg University.
2   Within the EU, it is also planned to produce a specific section on pensions in the revised 1995 European System of National and Regional Accounts (ESA95) which shall follow the updated SNA93. For a description of the recent steps taken to reform the SNA93 see Mink (2007). For a short portrayal of the reasons to change the SNA93 see Mink and Rother (2007) or Semeraro (2007).

2   THE BASICS OF THE FREIBURG MODEL[3]

The starting point for the Freiburg model is the method of generational accounting.[4] For this project, the method is applied for public pension schemes[5] in isolation and for the group of existing retirees and current contributors (future retirees) only.[6] The core presumption is a projection of per capita future pension benefits based on today's existing retirees' benefits. We outline below the entire calculation procedure in five steps.

Step 1:   Age-sex-specific projections of base year's population need to be calculated. The demographic model used to generate these projections is based on a discrete and deterministic formulation of the cohort component method.[7]

Step 2:   The projection of these pension benefits is the centre piece of the calculations since we develop the accrued-to-date claims by modification

3   In this paper we will introduce the Freiburg model in a rather short and non-technical way. For an extensive technical description of the Freiburg model see Heidler et al. (2009). This method was developed by Auerbach et al. (1991, 1992 and 1994). See Raffelhüschen (1999) and Bonin (2001) for a detailed depiction of theory and application as well as limitations of the method of generational accounting.
4   This method was developed by Auerbach et al. (1991, 1992 and 1994). See Raffelhüschen (1999) and Bonin (2001) for a detailed depiction of theory and application as well as limitations of the method of generational accounting.
5   The terms "public pension scheme", "government pension scheme" and "pension scheme in general government" are used as synonyms. However, we differentiate between two different types of schemes. The government employer pension scheme indicates a pension scheme for civil servants, whereas a social security pension scheme describes a general pension scheme. For a discussion of the definition of government pension schemes see Eurostat/ECB Task Force (2008).
6   For a close look on the application of generational accounting to public pension schemes see Ehrentraut (2006) and Heidler (2009) who employed the concept of open-system net liabilities to investigate the sustainability of the German statutory pension scheme.
7   For a detailed description of the demographic model applied see Bonin (2001).

Chart 1   Rescaled profile of average existing retirees' benefits in 2006

(social security Germany; male; in Euro)

x-axis: age in 2006
y-axis: text illegible
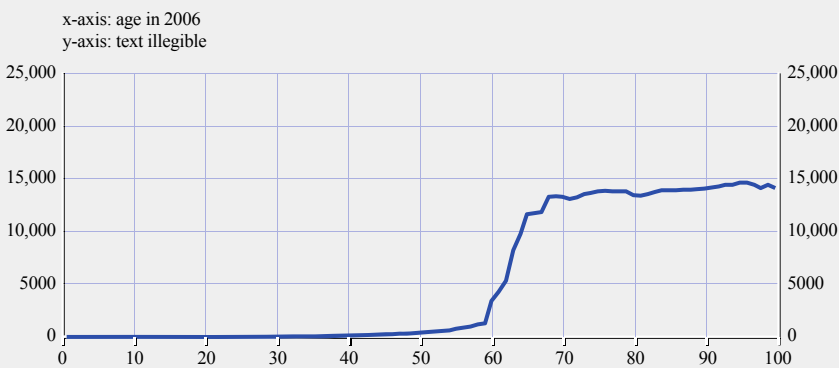
Source: Own calculations.

of the existing retirees' benefits. First of all, the benefits are calculated by distributing the aggregated amount of today's pension expenditures to the different cohorts in retirement age. By this procedure we create an age-sex-specific benefits' cross-section profile generated from the budget and micro data of the observed country. For the sake of clarity, in Chart 1 we show the male profile for the German social security pension scheme as an example.

Step 3: The age-sex-specific pension profile for future retirees is calculated by manipulating the base year existing retirees' benefits. An average individual born receives a future benefit in a certain year which is composed of the pension payment one year earlier corrected by the growth rate plus the pensions paid to new retirees in this year. Thus, the age-sex-specific benefit profile for future retirees builds up step by step.

Step 4: Now, in order to meet ADL, only the part of the future pension benefits (of current workers) has to be considered which is earned until the base year. Chart 2 shows how this procedure changes the future retirees profile. Once again, the German social security pension scheme is employed as an example.

Chart 2 Accrued-to-date amount of average future retirees' pension benefits profile from 2006 to 2055

(social security Germany; male; in euro)

x-axis: age in year
y-axis: text illegible

— 2006
····· 2015
---- 2025
— 2035
····· 2045
--- 2055

Source: Own calculations.
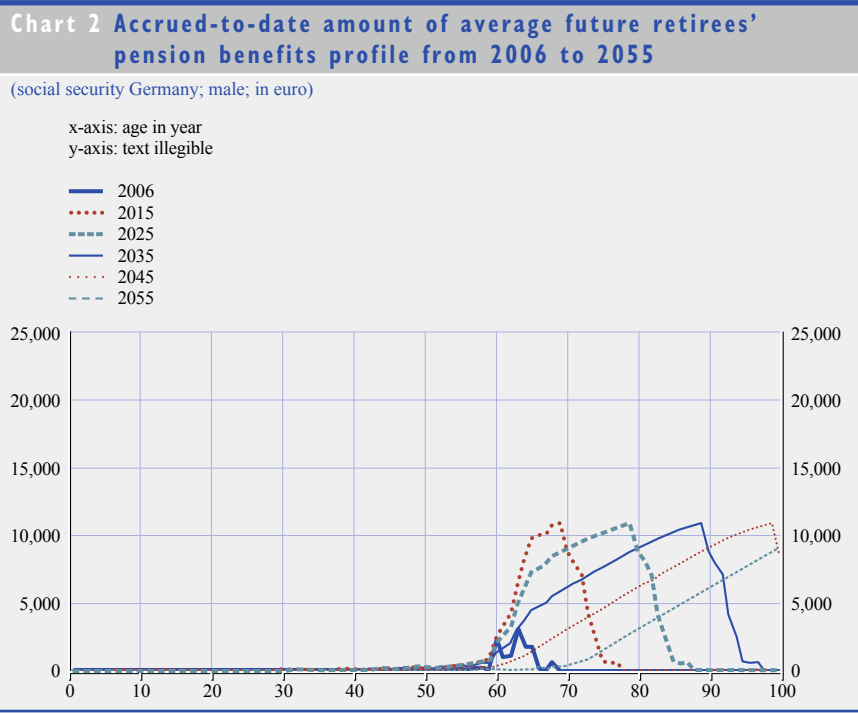
Step 5: Finally, the ADL of the pension scheme are calculated by discounting and summing up the above projected pension benefits over the cohorts living in the base year.

3   DATA AND ASSUMPTIONS

When calculating the ADL of a pension scheme, a comprehensive data set and a number of assumptions are needed. This section aims to introduce both the data (3.1) and the assumptions (3.2) to deploy the Freiburg model.

3.1   NECESSARY DATA

In general, four types of data are needed for the application of the Freiburg model. These types are given by population data, age-sex-specific pension benefits, aggregated pension expenditures for a certain base year and general characteristics of the pension scheme to be examined.

Eurostat provides population projections reaching until 2060. Due to the fact that our calculations reach as much as 100 years into the future, it is necessary to conduct our own projections which prolong official forecasts. However, our projections are based on the baseyear populations and assumptions from Eurostat.

Data regarding age-sex-specific pension benefits is normally taken from micro-data surveys such as the Survey on Household Income and Wealth (SHIW) in Italy or the Socio-Economic Panel Study (SOEP) from the DIW (German Institute for Economic Research) in Berlin, Germany. However, in many cases the administration body of the pension scheme provides age-sex-specific data regarding the recipience of pension payments. As this data encompasses the full category of persons in question instead of a (representative) sample, it is used preferably. In the case of our calculations,[8] age-sex-specific pension benefits were supplied by national central banks or national statistical bodies. Furthermore, data regarding pension expenditures in the base year is generally taken from national accounts' statistics.

The design of a pension scheme represents a crucial point when calculating its ADL. This involves issues like the classification of a pension scheme (DB, NDC, hybrid system), the consideration of past contributions, the indexation of existing pensions or regulations regarding early and late retirement. The sources of these pieces of information are manifold; both international pension surveys[9] and country-specific pension literature contain comprehensive descriptions of the constructions of the various pension schemes. Furthermore, experience shows that the support of national experts is a vital source, too.

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8   See Müller et al. (2009).
9   See for example European Commission (2007), MISSOC (2009) or OECD (2007).

3.2   GENERAL ASSUMPTIONS

As stated above, a whole set of assumptions has to be taken when computing pension liabilities. The possibly strongest assumption states that fiscal policy will not change over time. In other words, the design of the pension scheme to be examined will stay indefinitely constant at the status quo of the base year.

The projection of future age-specific pension benefits demands an assumption regarding the annual rate of wage growth. Since any long-term forecast of future growth must remain arbitrary, we do not make use of sophisticated forecasts. Instead, a supposedly constant rate of wage growth is applied in all future periods. The growth rate is set to approximate the average long-term rate of productivity growth observed in the past. We do not design specific growth patterns for the individual EU member states but rather employ a growth rate of 1.5 per cent per annum in real terms. However, this procedure is open for discussions, and by using varying wage growth paths for different countries one might be able to show the impacts of diverging economic developments on the pension liabilities of the different countries in a more adequate way.

Similar to the growth rate parameter, forecasts regarding the prospective interest rate development are uncertain. Therefore, irrespective of national peculiarities we apply a single uniform discount rate to take all pensions back to the base year. A reasonable range of interest rate assumptions is determined by the fact that public expenditures are significantly more uncertain than non-risky long-term government bonds on the one hand, but not as volatile as the return on risky assets on the other hand. We generally opt for the lower bounds of the discount rate. Thus, we normally choose a standard real discount rate of three per cent per annum, which reflects the ten-year average of Euro area ten-year government bond yields.

At this point it is worth mentioning that the use of a constant discount rate as well as a constant wage growth rate implies a serious simplification. In general, more comprehensive sensitivity analyses could take account for possible variations of these parameters. This also counts for the other key economic parameters (unemployment rates and participation rates respectively), or changes in the behaviour of economic actors.

4   CROSS-COUNTRY COMPARISON OF ADL

In this chapter we will present the results of our calculations.[10] Chart 3 shows the ADL of public pension schemes of 19 EU countries in alphabetical order, expressed in per cent of the corresponding country's GDP.

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10 These calculations follow the approach of projected benefit obligations (PBO). For a detailed description of the differences between PBO and accumulated benefit obligations (ABO) see Heidler et al. (2009).

Chart 3 **Cross-country comparison ADL in 2006**

(in percent of GDP 2006)

■ government employer pension scheme
▦ social security pension scheme
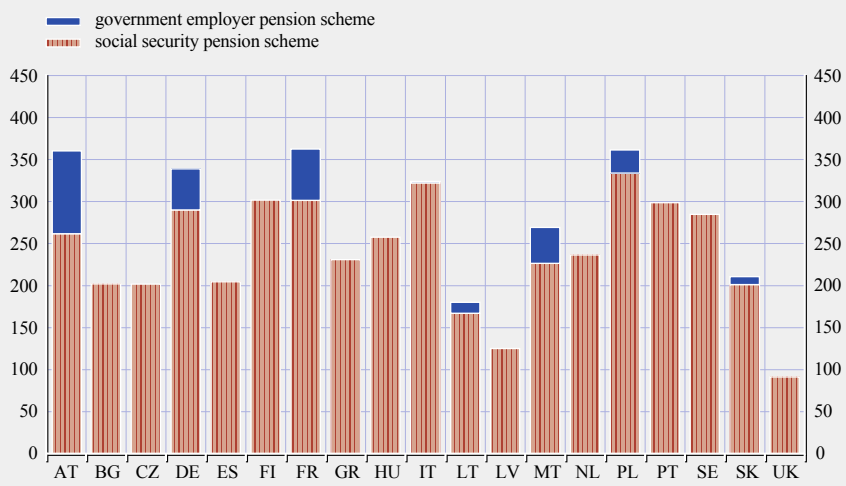
Source: Own calculations.

As shown in Chart 3, the largest pension liabilities in per cent of GDP can be found in France (362.2), Poland (361.1) and Austria (359.9), followed by Germany (338.6) and Italy (323.1). It might be a coincidence that all these countries possess a special pension scheme for civil servants but even without these schemes they rank among the highest figures observed. Most of the other countries show pension liabilities in the range of 200 to about 300 per cent of GDP. These are Finland (301.4), Portugal (298.3) and Sweden (284.5) followed by Malta (269.0), Hungary (257.5), the Netherlands (236.2) and Greece (230.7). Slovakia (210.5), Spain (204.2), Bulgaria (201.8) and the Czech Republic (201.4) can be regarded as having a medium level of pension liabilities. The lowest liabilities have been calculated for the United Kingdom (91.2) followed by Latvia (124.8) and Lithuania (179.9).

In a further step we examined the main determining factors for the different results shown above.[11] Table 1 summarizes our findings.

Three points (•••) indicate that the respective factor will considerably increase pension liabilities. One point (•) on the contrary implies the opposite and two points (••) a degree in between. This approach shall be illustrated by an example: Finland shows relatively high (•••) initial pension expenditures as well as a relatively high (•••) increase in the development of elderly people. Furthermore, the Finnish indexation of pensions can be regarded as quite low (•/••) but not very low (•) and it has introduced modest pension reforms (••) in recent years.[12] Overall, Finland features the 6th highest pension liabilities in terms of GDP.

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11 For an extensive description of these determining factors see Müller et al. (2009).
12 Since we compare pension liabilities at the end of 2006 only pension reforms legislated up to this point have been considered in Table 1.

	Initial level of pension expenditures in % of GDP	Development of elderly persons (60+)	Pension Indexation	Profound (•), Moderate (••), No (•••) recent pension reforms	Ranking of pension liabilities
Table 1					
AT (Austria)	•••	••	•	•	3
BG (Bulgaria)	••	•	••	••	15
CZ (Czech Republic)	••	••	••	•	16
DE (Germany)	•••	••	•••	•/••	4
ES (Spain)	••	••	•	•••	14
FI (Finland)	•••	•••	•/••	••	6
FR (France)	•••	•••	•	••	1
GR (Greece)	••	•/••	•	••	12
HU (Hungary)	••	•	••	••	10
IT (Italy)	•••	••	•	•	5
LT (Lithuania)	•	•	•••	••	17
LV (Latvia)	•	•	•/••	•	18
MT (Malta)	••	•••	•••	•	9
NL (Netherlands)	•	•••	•••	•••	11
PL (Poland)	•••	•••	•/••	•	2
PT (Portugal)	•••	••	•	•/••	7
SE (Sweden)	••	••	•	•	8
SK (Slovakia)	••	•••	••	••	13
UK (United Kingdom)	•	••	•	•/••	19

Table 1 Main determining factors of pension liabilities in the EU

Hence, it can be stated that the fewer points a country shows in total, the smaller are its pension liabilities in terms of GDP. However, it should be kept in mind in this context that the initial level of pensions apparently is the main determining factor for the level of pension liabilities.

5   LIMITATIONS AND POSSIBLE EXTENSIONS

To understand the outcomes of our model it is essential to grasp the channels which lead to the respective results. In this context it is of interest how the outcomes change if one varies the assumptions taken. Sensitivity analyses which assess the robustness of a model are useful tools for this purpose. They give an indication to which extent the model is driven by the taken assumptions.

Table 2 illustrates the respective sensitivity analysis for the ADL of the German public pension system (base year 2006). Looking at these results a significant limitation of the Freiburg model becomes obvious. Given a small alteration

Table 2 Sensitivity analysis of the German social security pension scheme (ADL)

(percentages)

Parameters		Amount of ADL
r	g	(relative deviation to standard scenario)
2.0	1.0	9.6
2.0	1.5	21.0
2.0	2.0	34.2
3.0	1.0	-8.5
3.0	**1.5**	**0.0**
3.0	2.0	9.8
4.0	1.0	-22.1
4.0	1.5	-15.6
4.0	2.0	-8.2

Source: Own calculations.

of the assumed interest rate (r) from three to two percent the outcome changes considerably by 21 percent (using the PBO approach). The level of the growth rate (g) also has a considerable impact on the results of the Freiburg model – as shown in Table 2. Since the future is uncertain by nature, this constraint of the model cannot be overcome. Nevertheless, the sensitivity analysis demonstrates once again the importance of choosing appropriate assumptions.

A further limitation to mention is straightforward and counts for every model: the model can only be as accurate as the given input data. This aspect represents a constraint especially for the calculation of pension reforms and of cohort-specific pension levels.[13]

There is also another significant limitation to be mentioned: The introduced model does not take into account future behavioural changes. So far we suppose that future pensioners will take retirement decisions similar to those of their present counterparts.[14] But what happens if future pensioners will change their behaviour and retire significantly later (earlier) than today? The answer to this question depends on the respective pension scheme examined. If the pension increments (decrements) for late (early) retirement can be considered actuarial neutral the behavioural changes should have no impact on our results.[15] However, as Queisser

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13   For a detailed description of the limitations and possible extensions of the Freiburg model see Heidler et al. (2009).

14 In addition, in case of pension reforms which lead to an increase of the statutory retirement age we assume that the pension behaviour is unaltered, effective retirement age stays constant and the respective retirees put up with resulting pension decrements. However, an exemption is made when the minimum retirement age is increased within the framework of a pension reform – for example in Austria (with the reforms of 2000 and 2003) or in the UK (with the reform of 2007). In such cases we increase in our calculations also the effective retirement age by the respective years.

15 Actuarial neutrality in the context of pension systems means that the present value of accrued pension benefits does not change due to an earlier or later pension start date. For a detailed description of this concept see Queisser and Whitehouse (2006).

Table 3 Impact of a change in retirement behaviour on ADL (here: German social security pension scheme)	
(percentages)	
Behavioural change	**Amount of ADL (relative deviation to standard scenario)**
Postponed retirement by one year	-2.7
Postponed retirement by two years	-5.2

Source: Own calculations.

and Whitehouse (2006) indicate, numerous pension systems in the OECD cannot be considered actuarial neutral. A substantial number of countries does subsidize early retirement and penalize late retirement since pension decrements as well as increments are lower than an actuarial neutral rate. As a consequence, we will overestimate (underestimate) pension liabilities if future pensioners decide to retire later (earlier) than today. In Table 3 we demonstrate the impact of a change in pension behaviour for the case of Germany. As illustrated, a postponement of the retirement by one (two) year(s) lowers the ADL for Germany by 2.7 (5.2) per cent.[16] Consequently, a possible extension of the Freiburg model could take into account predictions of future pension behaviour – similar to Berkel and Börsch-Supan (2004). However, the data basis to forecast pension behaviour within a large cross-country comparison is presently not available.

6   SUMMARY AND OUTLOOK

With the demographic challenges ahead, the calculation of ADL offers a valuable tool to evaluate pension systems under various perspectives. First of all, this approach helps to assess the costs of terminating unfunded public pension schemes. The concept of ADL also represents a useful tool to examine various pension reforms – such as changes in pension indexations or minimum retirement ages – and their impact on pension entitlements. Moreover, measuring ADL can give a further insight when looking on the impact of PAYG pension schemes on national savings. In this context, ADL quantifies the social security wealth which represents a significant determinant on saving rates – as has been pointed out first by Feldstein (1974). With the current revision of the SNA93 and the resulting implementation of ADL in national accounts a further impetus has been given to pay attention to the concept of ADL.

This paper introduces the approach of the Freiburg model to quantify ADL. The presented model has been applied to carry out benchmark calculations of 19 EU member states on behalf of the Eurostat/ECB Contact Group on Pensions. After a short introduction, in chapter 2 we outlined the calculation procedure

16   For the calculation of these figures we assumed that from the year 2010 onwards all future new retirees aged 60 to 67 will postpone their retirement by one (two) year(s). The outcome greatly depends on the country-specific pension regulations – namely the pension increments and decrements – as well as the country-specific life expectancies.

of the Freiburg model step by step. Chapter 3 gave an overview of the general assumptions and the data supply necessary for the application of the model, while in chapter 4 the main results of our calculations were presented. The following chapter 5 revealed that the Freiburg model entails a large degree of simplification using a limited set of input factors. However, this leads to a major strength of the model: It fits very well when only a limited amount of data can be provided – as it is mostly the case when undertaking large country comparisons.

Several interesting issues could be raised for future research in connection with the Freiburg model. One concerns the field of application. So far the concept of ADL has only been carried out for calculating entitlements of pension systems. But one may argue that entitlements also exist in other fields of unfunded social security systems as for example long term care insurance. Therefore, future research could extend the concept of ADL to other social security systems which are based on a PAYG principle.

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IMPLICIT LIABILITIES AND SUSTAINABILITY OF PUBLIC FINANCES IN THE EUROPEAN UNION

BY MICHEL ENGLERT [1]

1 INTRODUCTION

At the end of April 2009, the Economic Policy Committee and the European Commission published a bulky report presenting new long-term projections for public spending in the field of social security [5]. This report is the result of several years of work accomplished by the "Working Group on Ageing" (AWG) of the Economic Policy Committee. This group, chaired by Mr Henri Bogaert, Head of the (Belgian) Federal Planning Bureau, is made up of experts in budgetary forecasts who represent various public offices in the 27 EU Member States, as well as of several international organisations, among which the European Commission, which is in charge of the AWG's technical secretariat.

This paper is of particular interest in the context of the discussions on the implicit liabilities of pensions, as it focuses on a forecast of future pension expenditure in each of the 27 EU Member States, which is then used as a basis to evaluate the sustainability of public finances in each of those States. This evaluation rests on a concept of implicit liabilities which is very different from the one used in the work currently carried out in order to introduce the implicit liabilities of pensions into the national accounts. Both this concept of implicit liabilities and AWG's forecasting methods are an integral part of the budgetary surveillance mechanisms that have been installed at the EU level.

Section 2, which deals with the institutional framework, covers the provisions that have been made in the light of the budgetary surveillance mechanisms and which have led to the creation of the AWG and to the definition of its missions. Section 3 aims at defining both the budgetary cost of ageing and the concept of budgetary sustainability, on the basis of which the AWG's forecasts are converted into operational indicators aimed at evaluating budgetary sustainability. Sections 4 and 5 present a brief summary of the methods and results of the last forecasts, firstly as a whole, and then, more specifically those which are relevant to pensions.

2 INSTITUTIONAL FRAMEWORK

The budgetary surveillance mechanism that was set up at the EU level is an original response to a fundamental inconsistency which is built in the design of responsibilities as regards economic policy within the European Union. This inconsistency is the result of the compromise that lies at the foundation of

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the Economic and Monetary Union, i.e. the coexistence of a monetary policy managed at a supranational level (for the countries which take part in the single currency, i.e. currently 16 out of the 27 Member States) alongside with budgetary policies which have remained a national competence.

The founding texts of this mechanism are article 104c of the Maastricht Treaty (1992) and the Protocol on the excessive deficit procedure, which sets the reference values for budgetary deficit (3% of GDP) and public debt (60% of GDP). These threshold values act as triggers for starting the excessive deficit procedure. However, the actual development of surveillance mechanisms dates from 1997, with the Stability and Growth Pact, which consists of two Council regulations [7] [8]. The first one, which acts as the "preventive arm" of this mechanism [7], sets an obligation for the Member States to draw up yearly stability and convergence programmes (SCP) with medium-term objectives (MTO) to reach a budgetary position "close to balance or in surplus (CTBOIS)". The second one acts as the "corrective arm" [8]: it specifies how to recognize, correct and possibly penalize an excessive deficit situation. This second regulation will not be further discussed in this paper, as it is the first of these two regulations, i.e. the "preventive arm", which lies at the basis of the AWG and of its missions.

The 1997 version of the "preventive arm" in the Stability and Growth Pact basically aims at helping the Member States to progress towards (at least) budgetary balance in order to prevent them from slipping over the fateful deficit threshold (3% of GDP), without having to act against the variations of the budgetary balance due to cyclical fluctuations, while promoting a budgetary position that progressively reduces the load of public debt. No reference was made to the possible future impact of ageing on the deficit and on public debt. However, as soon as the evaluation procedure of the EU Member States' public finances (on the basis of their stability and growth programmes) was set up, the Economic Policy Committee established the Working Group on Ageing Populations (AWG) in order to examine the economic and budgetary consequences of ageing. On the basis of the first age-related public expenditure projections prepared by the AWG in 2001 and 2003, the Commission enriched its evaluation of the budgetary position of the Member States by using these projections in order to assess the long-term sustainability of their public finances.

The 2005 reform of the Stability Pact refined and reinforced its preventive arm via a new version of the former regulation [9][2] by introducing the principle of "differentiated MTO for individual Member States, taking into account the diversity of economic and budgetary positions and developments as well as of fiscal risk to the sustainability of public finances, also in face of prospective demographic changes" (cf. [9], [11]).

A so-called "Code of Conduct" [11] was established in 2005 in order to precisely specify all rules and procedures for both the corrective and the preventive arm of the Stability and Growth Pact. Among other things, this "Code of Conduct" specifies the format and content of the Stability and Convergence Programmes,

2   The "corrective arm" was also revised at the same time [10].

which must include the long-term projections carried out by the Working Group on Ageing. The Code of Conduct also states that these projections cover five age-related public expenditure items, namely: pensions, health care, long-term care, education and unemployment benefits. It refers to these projections by stating that the so-called "implicit liabilities" [11] ought to be taken into account in order to set the Member States' medium-term budgetary objectives (MTO).

The current procedure through which these projections are taken into account in the Commission's evaluation of the long-term budgetary sustainability of the Member States is indeed based on this concept of implicit liabilities, which is presented in the next section.

3   IMPLICIT DEBT AND SUSTAINABILITY

The intertemporal budgetary constraint dictates the sustainability condition: the discounted value of the total future primary surpluses should be (at least) equal to the public debt at the starting point (see Box 1).

Now what is happening if the sustainability condition is not satisfied? In that case, it is possible to assess the permanent (and constant) budgetary adjustment required to restore sustainability – a budgetary consolidation effort evenly spread over time. This required adjustment is called the "sustainability gap" (see Box 2).

Of course, ageing implies that the future variations of the primary balance are negative, reflecting the increase in age-related public expenditures if all other public finance items are assumed to be constant in GDP terms. This increase – or budgetary cost of ageing – tends to inflate over time.

Box 1 The sustainability condition

current public debt D_{t_0} + discounted value of all future expenditure = discounted value of all future revenues.

If *revenue$_t$ – primary expenditure$_t$ = primary balance PB$_t$*

the sustainability condition is

$$D_{t_0} - \sum_{t=t_0+1}^{\infty} \frac{PB_t}{(1+r)^{t-t_0}} = 0 \quad (i)$$

where all variables are expressed in GDP terms (D, PB in % of GDP; r is the differential between the nominal interest rate i and the nominal GDP growth rate y, *i.e.* $1+r = (1+i)/(1+y)$)

Source: [6], [13].

If $\displaystyle\sum_{t=t_0+1}^{\infty} \frac{PB_t}{(1+r)^{t-t_0}}$ is too small to satisfy equation (i) – *see box* 1 – to ensure

sustainability, by how much ($=S_2$) should PB_t be permanently increased to restore sustainability?

$$D_{t_0} = \sum_{t=t_0+1}^{\infty} \frac{PB_t + S_2}{(1+r)^{t-t_0}} \qquad (note: \sum_{t=t_0+1}^{\infty} \frac{1}{(1+r)^{t-t_0}} = \frac{1}{r})$$

$$\longrightarrow S_2 = r D_{t_0} - r \sum_{t=t_0+1}^{\infty} \frac{PB_t}{(1+r)^{t+t_0}}$$

$$\longrightarrow S_2 = r D_{t_0} - PB_{t_0} - r \sum_{t=t_0+1}^{\infty} \frac{\Delta PB_t}{(1+r)^{t-t_0}} \quad \text{where } \Delta PB_t = PB_t - PB_{t_0}$$

S_2 is the sustainability gap.

Source: [2], [6], [13].

In this approach, the total discounted value of the future expected increase in age-related expenditures is referred as "implicit liabilities" (see Box 3).

The development presented in Box 2 clearly shows two components of the 'sustainability gap'. The first one represents the required permanent adjustment of the primary surplus, leaving aside the future expected variations in the primary surplus. The second one is the additional permanent adjustment that is required due to the expected deterioration of the primary surplus resulting from the budgetary cost of ageing.

ΔPB_t is generally negative, reflecting the decrease in the primary balance due to the future increase of age-related expenditure.

– ΔPB_t is the budgetary cost of ageing, assessed on the basis of the impact of ageing on social expenditure (pensions (+) + health care (+) + long-term care (+) + education (-) + unemployment (-)) – assuming constant tax pressure and constant non-age related primary expenditure in GDP terms.

$$-\sum_{t=t_0+1}^{\infty} \frac{\Delta PB_t}{(1+r)^{t-t_0}}$$

is the total discounted value of the contribution of the future expected increase in social expenditure to future deficits, referred to as "implicit liabilities" in EC/ECOFIN Council documents.

Source: [2], [6], [13].

It is worth underlining the main specificities of the above-mentioned implicit liabilities.

Firstly, the traditional budgetary principles (unity, universality) apply here to public finances as a whole. In particular, financing public pensions is dealt here in the context of financing total public expenditures using total public revenues, without taking into account the specific financing sources of public pension schemes. This approach either corresponds to a situation where pensions are indeed directly or indirectly financed by the general government budget or translates the fact that even when financing public pension schemes is theoretically clearly specific and independent, the general budget will be, in practice, the financing source in the last resort.

Secondly, the level of economic activity plays a major role for implicit liabilities as indicator for the 'carrying capacity' of an economy to finance public expenditures, in particular social expenditures. In the approach developed here (Boxes 1, 2 and 3), all the aggregates are expressed as a percentage of GDP.

Thirdly and as a consequence, implicit liabilities and the sustainability gap will be influenced by the choice of the scenario concerning future economic growth, population outlooks and social policy. The economic growth will impact the financial weight of future age-related public expenditures; furthermore these expenditures will themselves be influenced by the evolution of employment and incomes as well as by population outlooks (and by the population health which is an important determining factor of acute health care and long-term care expenditures).

Fourthly, the implicit liabilities are estimated without making a distinction between accrued rights at the starting point and future rights. As far as pensions are concerned, such a distinction is not useful to assess the sustainability of public finances. Moreover, it is sometimes difficult to make such a distinction in certain 'Pay As You Go' (PAYG) public defined-benefit (DB) pension schemes where even the 'accrued rights' depend partly on parameters which are influenced by the profile of the whole career or by the situation when retiring.

The assumptions and methodologies at the basis of projections of age-related public expenditures therefore play an important role in the calculation of parameters of budgetary sustainability. The present article is not aimed at presenting those assumptions and methodologies in detail. Section 4 describes them briefly. For any further detail, we refer to the related publications (cf. [5], [12]).

Section 4 also presents briefly the results of the last projections of AWG (2009) and hints at the various scenarios selected as sensitivity tests.

4   PROJECTING AGE-RELATED EXPENDITURES

The common methodological framework and assumptions are aimed at producing comparable projections across the 27 Member States (2007-2060) [5]. The preparation phase included a literature survey, the consultation of invited experts, notably via workshops and, of course, the contribution of AWG members

(27 Member States + Norway + ECB + OECD + IMF + Chairman Henri Bogaert from the Belgian Federal Planning Bureau). The demographic projections were prepared by EUROSTAT.

The main features of the demographic and macroeconomic projections can be very roughly summarized as follows [5]:

– a convergence approach for the demographic projection;

– a cohort approach for the participation rates used in the labour force projection;

– an assumption of unchanged structural unemployment rates combined with an assumed fall to the EU15 average for those with initially high structural unemployment rates;

– a production function approach for the potential GDP projection; an assumption of a constant real interest rate.

In practice, calculations are performed by the EC for four out of five age-related expenditure items; for pensions, national models are used (see Section 5). The idea is to capture the detailed specific national pension legislation and retirement behaviours, in given and agreed demographic and macroeconomic scenarios (see Chart 1).

Chart 1 A common methodological framework
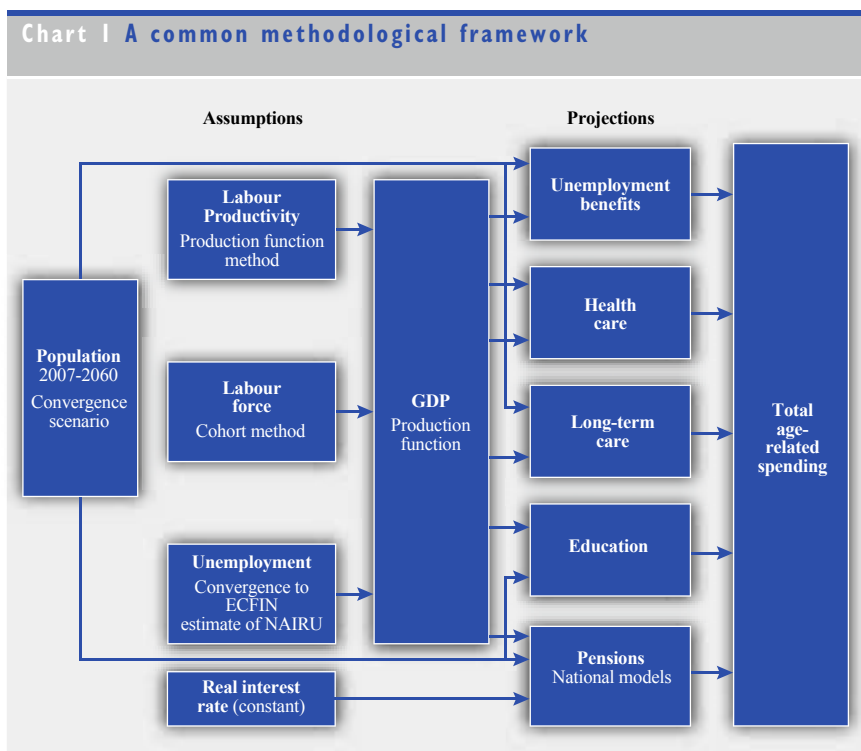
Source: [5].

The baseline is a no-policy change scenario and therefore should not be interpreted as a forecast, in particular when projected evolutions are clearly unsustainable and will necessary lead to changes in policy, in other words to changes in the legislation. In addition, 26 alternative scenarios have been simulated, from which 6 are policy variants. All the others are sensitivity tests concerning assumptions surrounded by huge uncertainties (see Table 1).

Table 1 Sensitivity tests and policy scenarios

	Demographic variants	Macroeconomic variants	Health care variants
Testing macroeconomic uncertainty (6 (7) variants) and uncertainty of demographic drivers (7 variants)	- higher life expectancy - zero migration	Higher - employment rate - participation rate older workers - labour productivity 3 crisis scenarios (higher interest rate)	3 "health status" scenarios: - pure demographic - constant health - death-related costs
Testing uncertainty of non-demographic drivers for health and long-term care: 6 variants			- income elasticity = 1 - EU 12 cost convergence - labour cost
Testing policy changes: 6 variants			

Table 1 Sensitivity tests and policy scenarios (cont'd)

	Long-term care variants	Education variants
Testing macroeconomic uncertainty (6 (7) variants) and uncertainty of demographic drivers (7 variants)	2 "disability status" scenarios: - pure demographic - constant disability	
Testing uncertainty of non-demographic drivers for health and long-term care: 6 variants	3 cost scenarios: - in line with GDP per capita - fast/slow growth in unit cost	
Testing policy changes: 6 variants	- 3 scenarios with shift from informal to formal care	- higher teacher/students ratio - higher compensation - "Lisbon target" for tertiary level

Source: on the basis of [5].

An example of the baseline results of the 2009 AWG projections is presented in Chart 2 for the EU as a whole and in Table 2 for selected Member States.

The sensitivity tests show that the results are relatively robust. The alternative scenarios give more or less important differences when considering the items separately, but the differences – although significant – are not that impressive compared to the total budgetary cost of ageing in the baseline, except for the zero

Chart 2 The Cost of Ageing in EU 27

(percentage of GDP; 2009 AWG projections)
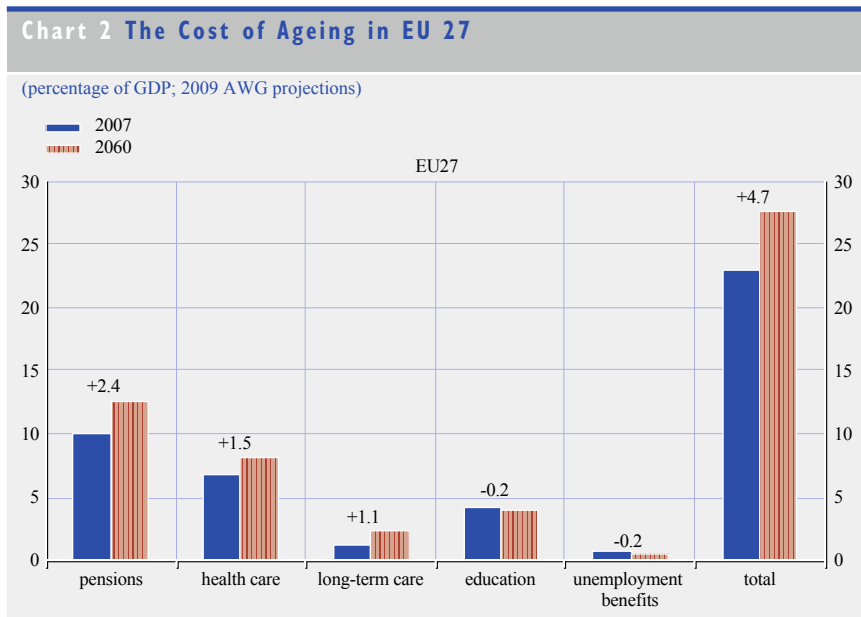
Source: [5].

Table 2 Age-related government expenditures, 2007-2060, for selected Member States

(percentage point; change of GDP; 2009 AWG projection)

	Pensions	Health care	Long-term care	Unemployment benefits	Education	Total
GR	12.4	1.4	2.2	-0.1	0.0	15.9
RO	9.2	1.4	0.0	0.0	-0.5	10.1
BE	4.8	1.2	1.4	-0.4	0.0	6.9
DE	2.3	1.8	1.4	-0.3	-0.4	4.8
IT	-0.4	1.1	1.3	0.0	-0.3	1.6
PL	-2.8	1.0	0.7	-0.1	-1.2	-2.4
EU27	2.4	1.5	1.1	-0.2	-0.2	4.7

Source: [5].

migration scenario, and to a much lesser extent for the "high life expectancy" and the "crisis" scenarios (see Table 3).

It should be noted that applying the basic principle of a "no-policy change scenario" is not always straightforward:
− policy changes are well taken into account when they are already enacted; nevertheless, this sometimes raises interpretation problems
− does "no policy change" mean "constant legislation" or are recurrent measures taken into account?
There are obvious discrepancies in the treatment of pension legislation and legislation in the other fields of social protection as far as, for age-related public expenditure other than pensions, the EC relies on standard approaches for the 27 Member States, which makes it impossible to take national legislation and policies into account.

In fact, the focus of the exercise is specifically on pension expenditures, thus on pension policy and pension reforms, but in the context of the possible impact of ageing, on public finances as a whole.

Table 3 Sensitivity tests and policy change scenarios

(2009 AWG projection)

	Change 2007-60, p.p. of GDP, difference from baseline (EU27)			
Macroeconomic variants	Higher productivity (growth rate + 0.25 p.p.)	Higher employment (rate + 1 p.p.)	Higher participation employment older workers (rate + 5 p.p.)	Crisis scenario: permanent shock (maximum impact)
- total cost of ageing	-0.5	-0.4	-0.3	+1.6
- pensions	-0.4	-0.1	-0.1	+1.1
Demographic variants	Higher life expectancy (2060: + 1y.)	Zero migrations	Health status variants	Disability status variants
- total cost of ageing	+1.1	+3.1	-0.4 to +0.6	-0.1 to +0.1
- pensions	+0.3	+1.8		
Non-demographic drivers (health and long-term care)	Health care	(Health care, EU 12 cost convergence)		Long-term care
- total cost of ageing	-0.4 to +0.3	(+2.3 for EU 12)		-0.3 to +0.3
Policy change (long-term care and education	Long-term care		Education	
- total cost of ageing	+0.2 to +0.6		+0.1 to +0.5	

Sources: [5] and own calculations.

5   PROJECTING PENSION EXPENDITURES

Public pensions in the works carried out by the AWG have a very broad definition[5], including different forms of retirement usually not referred as "pensions" in national administrative practice. In the European System of Accounts (ESA95) and in national accounting, the corresponding schemes belong to the general government sector, namely:
– old-age benefits;
– early retirement benefits;
– disability benefits;
– survivor's benefits (by social security and by other public bodies).

They include earning-related, flat-rate, means-tested pensions. Gross pensions (no deduction of tax and social security contributions on pensions) are considered.

Thus the above-mentioned expenditure items impact the budgetary cost of ageing and the sustainability assessment.

The benefits which are not included in the AWG definition of public pensions are:
– the statutory funded part of old-age pension schemes attached to NDC schemes;
– the private pensions benefiting from a government guarantee (contingent liability);

Member States were free to provide, on a voluntary basis, projections concerning:
– net pensions and tax/social security contributions on public, occupational and private pensions;
– occupational pensions;
– private pensions.

The pension models are quite diverse in nature. All these models have been peer-reviewed in the AWG and documented. Nevertheless, no very clear general picture emerged from this peer-review process, given the heterogeneity of the numerous models: each of the 27 Member States uses its own model and sometimes different models for different pension schemes. Nevertheless, their common feature is their ability to simulate pension expenditures until 2060, within a given demographic and economic context. Most if not all of them are deterministic models (not stochastic). Large differences exist in the level of disaggregation. Some models work with highly aggregated pensioners' categories characterized by one average benefit (in general referred to as semi-aggregated models), whereas others are microsimulation models using large, sometimes very large samples of individual data (see reference [3] for a detailed overview of these models).

The cornerstone of the peer review of the pension projections is the breakdown of the results into four driving forces, namely (see Box 4 and Table 4):
– the demographic factor (ageing);
– the percentage of pensioners in the age group 65 and over;
– the employment rate;
– the benefit ratio.

$$\frac{Pension\ Exp.}{GDP} = \overbrace{\frac{Population\ 65+}{Population\ 15\text{-}64}}^{Dependency\ Ratio} \times \overbrace{\frac{Number\ of\ pensioners}{Population\ 65+}}^{Coverage\ Ratio}$$

$$\times \overbrace{\frac{Population\ 15\text{-}64}{Working\ People\ 15\text{-}64}}^{1/Employment\ Rate} \times \overbrace{\frac{\dfrac{Average\ Pension}{GDP}}{Working\ People\ 15\text{-}64}}^{Benefit\ Ratio}$$

Source: [5].

Table 4 **Breakdown of the public pension spending to GDP ratio over the 2007-2060 period for selected Member States and for EU**

(2009 AWG projection)

	2007 level	Dependency ratio contribution	Coverage ratio contribution	Employment effect contribution	Benefit ratio contribution	Interaction effect	2060 level
RO	6.6	13.6	-4.9	0.3	1.7	-1.5	15.8
BE	10.0	7.4	-0.9	-0.5	-1.0	-0.3	14.7
DE	10.4	7.9	-1.9	-0.8	-2.2	-0.8	12.8
IT	14.0	10.4	-3.2	-1.1	-5.5	-1.0	13.6
PL	11.6	13.4	-6.3	-1.0	-7.1	-1.8	8.8
EU27	10.1	8.7	-2.6	-0.7	-2.5	-0.6	12.5
EU15	10.2	7.7	-1.8	-0.6	-2.3	-0.6	12.6
EU10	9.7	11.8	-4.9	-0.7	-3.9	-1.3	10.7

Source: [5].

Not surprisingly, it appears from Table 4 that the main driver of the increase in the public pension expenditures over the projection period is the demographic factor (summarized by the contribution of the dependency ratio to this increase). The differences across Member States have to do with the differences in the ageing challenge and in the possible – but for most Member States limited – lightening of the budgetary impact of ageing thanks to other factors.

Indeed, the coverage ratio has an important impact in countries where pension reforms tend to increase the effective retirement age significantly. The benefit ratio can also contribute to reducing the budgetary cost of ageing in reforming countries where public pension benefits are, on average, set to decrease (compared to the general living standard) either through parametric reforms affecting the pension formula or the privatization of large components of pension schemes. In both cases, the long-term social sustainability of these developments remains an open question.

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DISCUSSION ON SESSION II

BY MARSHALL B. REINSDORF [1]

I   COMMENTS ON "ACCOUNTING STANDARDS FOR PENSION SCHEMES" BY GABE DE VRIES

This paper concerns the actual and proposed accounting standards for pension obligations, which are governed by the international accounting standards board's (IASB) IAS19 in the case of private sector entities and by the international public sector accounting standards board's (IPSASB) ISAS25 in the case of government entities. These standards adopt the point of view of the employer. They distinguish between defined contribution (DC) plans, in which future events cannot affect the employer's obligation arising from employee's service in a given year, and defined benefit (DB) plans, in which future actuarial experience and future investment returns can affect the employer's obligation arising from employee service in a given year. For defined benefit plans, the accounting standards require publicly traded corporations to include the unfunded pension liability (the difference between the gross liability for future benefits and the plan assets) on their balance sheet and the pension expense on their income statement. The pension expense consists of current service cost, interest on the opening benefit liability less expected returns on plan assets, actuarial gains and losses, and other items. The current service cost should be calculated using the *projected unit credit* method. The government accounting standards for pensions (for their own employees) parallel those for the private sector, but the requirement to use the projected unit credit method is replaced by less-specific requirement to use a method that includes effects of future service in calculating current service cost.

The paper also identifies two data problems involving life insurance companies. One of them is that effects of future service are included in the PBO measure of the pension obligation reported by employers, but excluded from the accrued-to-date benefit liability reported by the life insurers who have been contracted to manage the plan and assume its obligations. (Employers sometimes contract with a life insurer to manage their plan and pay the benefits that are due, or they may purchase annuities from a life insurance company when employees retire.) The other problem is the limited availability of information on defined benefit plans that are managed by life insurance companies. Our experience in the US national accounts confirms this latter point: obtaining information on plans managed by life insurers is a problem for us in measuring DB pensions.

Finally, the paper notes that accounting rules and standards vary among the various classes of the institutions that are part of each country's pension landscape. This creates a difficult task for the national income accountant of transforming the information reported by different entities into a common standard to produce a coherent picture for the country as a whole.

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1   US Bureau of Economic Analysis.

The paper discusses a proposal to broaden the definition of "contribution-based plans" in IAS19 that would shift some hybrid plans from the DB category to the DC category. If this proposal is implemented, hybrid plans where the contributions are notional rather than actual will still need to stay in the DB category for national accounts purposes. Notional contributions that do not correspond to actual contributions would have to be shown as imputed contributions in national accounts according the 2008 SNA, but imputed contributions from employers can only be shown for DB plans. Moreover, the principle that in a DC plan the employer's pension expense for service during a time period is known with certainty at the end of the period would, in some cases, be violated if hybrid plans were classified as DC plans. For example, some hybrid plans promise a rate of return on notional contributions that depends on a stock market index. A subsequent rise in the index that is not matched by an actual rise in plan assets would increase the employer's obligation. Finally, if hybrids were classified as DC plans in European national accounts, international comparability would suffer. In the US, hybrid plans with notional contributions are considered to be defined benefit plans in labor and tax law, and the US national accounts classify pension plans as DB plans or DC plans based on their legal status.

The second difference between private pension plan accounting and the accounting scheme that has been recommended for national accounts concerns the definition of employer's current pension expense. In the SNA 2008, the employer's pension expense for a DB plan equals the value of the benefit entitlements accrued through service (which is known as "current service cost" in private pension plan reporting):

The imputed contribution by the employer… must be such that the sum of the employer's actual contribution [and] any contribution by the employee [and] the imputed contribution by the employer is equal to the increase in benefit[s] due to current period employment plus the costs of operating the scheme. (SNA 2008, 7.65)

More items are included in the employer's pension expense in private plan accounting. Besides current service cost, this expense includes: cost of interest on the accrued benefit liability minus the expected return on plan assets, actuarial gains and losses, and past service cost. (Past service cost generally arises when employees receive credit for years of service before plan inception or before they entered the plan, and the resulting costs to the plan are amortized.) Some kinds of plan amendments might also be added to this list.

The 2008 SNA does not fully explain how we should account for these pension expense items. It does, of course, cover the current service cost, and its lack of discussion of actuarial gains and losses, plan amendments and past service costs does not seem to be a problem. Various treatments for actuarial gains and losses and plan amendments are possible depending on the circumstances, so it is reasonable to leave the matter up to the discretion of the individual statistical

agencies responsible for preparing the national accounts. Also, past service costs should not arise because lump sum credit for extra years of service granted to employees when they enter the plan should count as current compensation.

Yet how to treat the difference between the interest on the accrued benefit liability and the actual property income earned on plan assets is, however, a question that requires a more complete answer than is provided in the 2008 SNA. Plan participants earn imputed interest income on the value of their previously accrued benefit entitlements. The SNA 2008 shows this imputed interest income as payable by the plan to the participating households and as contributed by the households back to the plan under the heading "household pension contribution supplements" (SNA 2008, 17.156). This is entirely appropriate, but it leaves open the question of how the plan obtains the resources to pay this imputed interest income to the households.

The most logical option for avoiding an imbalance between the plan's sources and uses of income would be to record the employer's imputed contributions as amounts that the employer borrows from the pension plan and to let imputed interest charges accrue on these borrowings. (After all, the imputed contributions represent amounts that are due to the plan in the current period but that are going to be paid with interest in some future period.) In principle, the sum of the actual property income that the plan earns on its assets and imputed interest income that the plan earns on loans to the employer arising from past imputed employer contributions should then equal the imputed interest received by households on the value of their pension entitlements. In this way, the pension plan's sources and uses of income will balance.

Nevertheless, national income accountants may prefer to account for the interest due on past imputed contributions in the same way that the private plans do. Under this approach, the difference between the actual property income received by the plan and the imputed interest payable on the households' accrued benefit entitlement would be simply be included in employer's imputed contributions along with the difference between current service cost and employer's actual contributions. Although doing this has the advantage of simplicity, it will change the interpretation of employer's imputed contributions from an item that has to be added to employer's actual contributions to obtain the correct measure of compensation to an item that measures the employer's implicit borrowing from the pension plan. This borrowing will include both a principle component (the unpaid portion of current service cost) and an interest component (the unpaid portion of the interest accruing on past borrowings.)

A third difference between private plan accounting and the SNA is that the private plans can smooth the plan's investment income, but national accounts use actual investment income excluding holding gains. The actual investment income on plan assets will generally not equal the smoothed (and perhaps optimistic) expected returns on assets that are to be reported in business accounts. However, a reasonable option for national accounts would be to include an estimate of expected holding gains on plan assets in their measure of property income, which would bring them closer to the approach of private pension plan accounting.

2 COMMENTS ON "ESTIMATING PENSION LIABILITIES IN THE EUROPEAN UNION: THE FREIBURG MODEL" BY MATTHIAS HEIDLER, CHRISTOPH MÜLLER AND OLAF WEDDIGE

With this paper, the focus changes from pensions provided by the employer to social security (special pension schemes for government employees are also included for countries where they exist). This paper accomplishes the impressive task of estimating *accrued-to-date liabilities* (ADL) of the social security retirement benefit schemes of 19 EU countries. The Freiburg model makes these estimates by simulating the future evolution of each scheme's current benefit payments based on detailed age-sex breakdowns of the current population. For their base case, the authors assume productivity growth of 1.5 percent per year and use a real rate of interest of 3 percent.

The Freiburg model is intended as an approximation that avoids the type of data-intensive detailed calculations that would done by a pension actuary, so the accuracy of the approximation is an important question. Comparisons of the estimates of the ADL (expressed as a percent of GDP) with estimates made by the statistical agencies of Finland and Spain show that the Freiburg model estimates are not far off in these two cases. The Freiburg model is about 10 percent below a comparable estimate from Statistics Finland and about 15 percent below an estimate from INE in Spain, but a difference in assumptions concerning the real wage growth rate appears to account for about 5 percentage points of that gap in the latter case. Thus, the limited empirical evidence at our disposal suggests that the approximations from the Freiburg model are pretty good. One the other hand, the fact that both errors of approximation are negative raises a question about whether the Freiburg model may have a tendency to produce estimates that are a bit low.

The results presented in this paper show that the differences between countries in ratios of the ADL to GDP are remarkably large, ranging from 91.2 percent for the UK to over 300 percent for France and Poland excluding government employee pensions, or about 360 percent for both of these countries if those pensions are included. There are four reasons for the differences in the ADLs: differences in initial level of benefits as a percent of GDP, differences in projected growth of the retirement age population, differences in indexation, and differences in pension reforms. The initial level of benefits relative to GDP is the most important of these.

The ADL is related to another concept used in the generational accounting literature, the closed group liability. The main difference between these concepts lies how the projected value of the benefits that an employee will have accrued at the end of the career is adjusted to account for the part of the career remains to be completed. The closed group liability concept subtracts the present value of the contributions to be made in the future part of the career. The ADL concept in this paper instead assumes that the fraction of the projected length of the career that has already been completed equals the fraction of the projected benefits that have already been accrued. The closed group liability seems to be a better concept for analyzing the effects of social security reforms because the effect of

reforms that change the relationship between lifetime contributions and lifetime benefits will be understated by the ADL. At least for the social security schemes of Italy and the US, the closed group liability has become negative at plausible rates of interest for the youngest employees as a result of social security reforms, but their ADL remains positive.[2]

In the past in the US, the average closed group liability at the start of the career was close to zero or positive, so combining the older and younger cohorts that are presently of working age may give a closed group liability for the entire working age population that is not too different from an ADL. The estimate of the closed group liability in the 2009 Trustees Report amounts to 129.5 percent of 2008 GDP based on a long run real interest rate assumption of 2.9 percent and a productivity assumption of 1.7 percent. Social security benefits in the US (including disability insurance benefits) have the same ratio to GDP as state retirement benefits in the UK. Other factors (such as growth of the older population and indexation procedures) are, of course, different, but the effects of these differences may not be too great for a comparison with the US to be interesting. The sensitivity analysis for the Freiburg model implies the assumptions used by the US social security trustees would have raised the Freiburg model estimate of the ratio of the ADL to GDP in the UK to somewhere between 95 and 100 percent of GDP, leaving it roughly 30 percentage points below the closed group liability ratio from the US social security trustees report. Differences in circumstances between the US and the UK may well account for this entire gap, but it is also possible that the Freiburg model estimate for the UK is again a bit on the low side.[3]

An alternative to the closed group liability that is closer to the ADL is the "maximum transition cost" that is calculated by office of the chief actuary of the US social security system.[4] They define this concept as "the cost of meeting the accrued benefit obligations of the old form while continuing the Social Security program in a completely different form, with all payroll taxes for work after the valuation date credited to the new benefit form." It equals the value of accrued benefit obligations less the amount of assets accumulated in the social security trust fund. In 2008 it exceeded the closed group liability by about 16.6 percent of GDP.

I have three suggestions of additional measures that would be useful. First, supplementing the estimates of the ADL with estimates of the closed group

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2   Mazzaferro and Toso (*Review of Income and Wealth,* Sept. 2009, p. 788) discuss the Italian case. The social security trustees report at http://www.ssa.gov/OACT/TR/2009/tr09.pdf provides estimates for the US.
3   The paper classifies the indexation procedures used in the UK as a factor holding down the relative cost of their state retirement pensions, but the UK has recently switched from indexation based on price inflation to indexation based on wage inflation. Rising productivity should cause wages to rise more than prices, so the indexation scheme now used in the UK does not seem to be below average in generosity to retirees. Even the past indexation practice was based on a measure of price inflation that tended to rise faster than the harmonized CPI.
4   See Alice Wade, Jason Schultz and Steve Goss, Unfunded Obligation and Transition Cost for the OASDI Program, Actuarial Note No. 2009.1, August 2009. Accessed at: http://www.ssa.gov/OACT/NOTES/ran1/an2009-1.pdf.

liability for those presently in the social security scheme would be interesting, because it would show the size of the financing gap that has to be filled by assets currently on hand, contributions from future participants in the scheme, or subsidies from general revenues. Second, current year GDP is a flow, but the present value of accrued benefits is a stock. Rather than comparing the ADL to GDP, a more meaningful comparison might be to the present value of future GDP over the same years as are included in the ADL calculation. Third, it would be useful to see a ratio of the ADL to the projected present value of future compensation of employees covered by the social security scheme. The closed group liability for the US social security scheme in 2008 is estimated to be 1.4 percent of the present value of future GDP and 4.2 percent of the present value of future payroll (or 1.2 and 3.7 percent, respectively, after subtracting assets on hand).

3   COMMENTS ON "WORK ON PENSIONS BY THE EPC WORKING GROUP ON AGEING" BY MICHEL ENGLERT

This paper reports on a project by the Aging Working Group (AWG) of the Economic Policy Committee to compile estimates for administrative purposes of effects of population aging on public finances sustainability for 27 EU member countries. The results are discussed in a recent joint report the Economic Policy Committee and the European Commission. The projections of age-related public expenditures cover five items: pensions, health care, long-term care, education and unemployment benefits. (Effects of aging on education and unemployment benefits expenses are negative.) Although it appears from this list that the AWG may have overlooked disability insurance, it was included in the pension component of the study. In other words, the term "pensions" in this paper comprises all the components of what I call "social security" in my paper in this conference volume plus what I call "government employee pensions."

The concept of implicit liabilities used by the AWG is not the same as the implicit pension liabilities to be shown in national accounts. The AWG looked broadly at the financing of total public expenditures using total public revenues without taking into account the specific financing sources of public pension schemes. This means that they included pension schemes that have their owned dedicated source of funding but that are indirectly financed by the general government budget or rely on the general government budget as the financing source of last resort. Furthermore, in their report the implicit liabilities are estimated without making a distinction between accrued rights at the starting point and future rights. For the purpose of measuring sustainability of public sector finances, what matter is the gap between the present value of projected future government outlays and the present value of projected future government revenues.

Each country prepared its own estimates using common methodological framework and assumptions based on literature review, the contributions of experts or Eurostat's demographic projections. This muddies the interpretation and reduces the reliability of the results, but I have no doubt that their general message is correct. The overall cost for EU governments of aging amounts

to about 4.7 percent of GDP, including an effect of 2.4 percent of GDP from pensions, an effect of 2.6 percent of GDP from health care and long term care, and a small negative effect from education and unemployment benefits. However, there are enormous differences between countries. These differences show that large challenges await some countries with much higher aging expenses than this overall average, but they also show that some countries have succeeded in making reforms to mitigate the costs of population aging. For example, public pension expenses as a percent of GDP are expected to fall in Italy despite a rise in the proportion of its population over 65.

Even though the concepts in the AWG report are not the same as those used in national accounts, it should be of great interest to national income accounts. Should they occur, large discrepancies between national accounts estimates for pensions and the administrative estimates may indicate a problem that needs to be investigated. For these reasons, I would have liked to have seen results for all the countries, or at least the same 19 countries that have Freiburg model estimates, included in the tables of results in this paper. It would be interesting to compare patterns of projected public pension spending in this paper with the predictions of the Freiburg model. Furthermore, the importance of implicit liabilities for health care expenses in this report suggests that these expenses are a good topic for future research on additions to the information included in national accounts.

SESSION III

PANEL DISCUSSION ON THE USE OF PENSION DATA FOR POLICY-MAKING

INTRODUCTION

Session III is organised as a panel discussion on the use of pension data for policy-making. Chaired by Ad van Riet (ECB), contributions are provided by Heikki Oksanen (European Commission, DG for Economic and Financial Affairs), Bernd Raffelhüschen (Freiburg University) and Karsten Wendorff (Deutsche Bundesbank, Chairperson of the ESCB Working Group on Public Finance).

All panellists stress the usefulness of pension entitlement data as estimated on an accrued-to-date basis. Heikki Oksanen refers in his presentation on using pension data for policy to different issues. He indicates the benefits and limitations of this new recording of pension entitlements, saying that some clarifications for using general government deficit and debt data for fiscal surveillance might become necessary, but this can be seen as normal business. New pension data will improve data quality and international comparability. He also refers to a statement from the EU Economic and Financial Committee (EFC) welcoming the cooperation between statisticians, analysts and forecasters by clearly indicating that accrued-to-date measures are useful for economic analysis; but are not per se sustainability indicators as applied in the context of the SGP. On the work ahead, close cooperation between actuaries and statisticians is needed as well as between statisticians and economists making projections and pension reform scenarios.

Bernd Raffelhüschen's paper on the use of pension data for policy making is based on estimations of accrued-to-date pension entitlements for various EU countries carried out for the ECB with the Freiburg pension model. The estimations are based on a rather highly aggregated pension model: Its strengths are its generic character which allows the results to be compared across countries and the fact that it also includes sensitivity analyses of the impact of various measures related to pension reforms. The paper however expands upon the accrued to date pension entitlement approach, moving to an open system by also including the impact of pension contributions. The results are presented for one pension scheme, the social security pension scheme in Germany, by using the accrued-to-date data as a starting point of the analysis. Finally, he uses the concept of open system net liabilities as a measure for the sustainability assessment.

Karsten Wendorff states in his paper that transparent and comparable calculations are required in the area of pension scheme data. This means that a black box should be avoided in terms of model specifications, data and underlying model assumptions. Furthermore, the importance of sensitivity analyses is stressed. The paper also outlines that it might be difficult to find robust EU-wide criteria for the distinction between the core and non-core recording of pension entitlements: However, consistency should be ensured over time. In summary, the work on the estimation of pension entitlements is appreciated as it is useful for policy-making and the analysis of the impact of pension reforms. However, extreme prudence is warranted in the context of international fiscal rules. If the data become a political target (Maastricht criteria), there is a considerable risk of creative accounting and political pressure, which may ultimately lead to a loss in the data's explanatory power, its credibility and that of the fiscal rule itself.

USING PENSION DATA FOR POLICY MAKING – THE CASE OF THE GERMAN PENSION REFORMS

BERND RAFFELHÜSCHEN, CHRISTOPH MÜLLER AND OLAF WEDDIGE[1]

I   INTRODUCTION

In the field of pension policy, data regarding the future development of public pension schemes plays a decisive role. It allows policy makers to realise the implications of certain pension reforms and shows them how the demographic shift in most industrialised countries will influence the future situation of a pension scheme.

The accrued-to-date liabilities (ADL) of a public pension scheme represent an important indicator for the entitlements of private households earned up to a certain point in time. The ADL of a pension scheme are equal to the present value of a capital stock necessary to satisfy the claims accrued-to-date of private households. In that way, policy makers get an idea of the fiscal consequences of a pension scheme's termination. There are many other areas of application for ADL;[2] however, they do not serve as an indicator for fiscal sustainability.

For this reason we will introduce a further indicator for the future development of pension schemes in this paper: open-system net liabilities (OSNL) show if the pension scheme in question can be continued under current rules and settings or if its rules have to be adjusted in order to ensure future fiscal balance. We will apply the indicator of OSNL exemplarily to evaluate the reform process of the German statutory pension scheme in recent years. The paper proceeds as follows:

In chapter 2 we supply a definition for the different types of liabilities. Furthermore, we describe the method and input data necessary to calculate the OSNL of a pension scheme. The outcomes of our calculations are presented in chapter 3. The paper finishes with a short conclusion.

2   ASSESSING FISCAL SUSTAINABILITY – METHOD AND DATA

In the course of the current revision of the 1993 SNA, accrued-to-date liabilities (ADL) of social security pension schemes will be recorded in National Accounts. Against this background the ECB/Eurostat workshop on pensions focused on the calculation and use of these pension entitlements. It has been outlined inter alia that such figures provide valuable information regarding the timing of accumulation of ADL, the impact of pension reforms and explanation of national savings. Pension entitlements, however, are not representing an indicator to evaluate the

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1   Freiburg University.
2   See for example Weddige (2009).

Table I Definition of liabilities		
Time horizon	**Gross liabilities (including expenditures)**	**Net liabilities (including expenditures & revenues)**
Infinite ⬇	Accrued-to-date liabilities (ADL)	
	Open-system gross liabilities (OSGL)	Open-system net liabilities (OSNL)

fiscal sustainability of pension systems. The following passages will outline how this aim can be achieved by a simple extension of the approach to calculate ADL. First of all the concept of ADL will be defined to illustrate the differences to a fiscal sustainability indicator. Thereafter, the method and data to model a sustainability indicator on the basis of the ADL calculations will be described.

ADL consist of the actual pension payments and the present value of pensions to be paid in the future on the basis of accrued rights. Table 1 makes clear that the concept of ADL has a relatively limited perspective in comparison to other forms of liabilities. In contrast to open-system liabilities future pension rights earned by current and future workers are not included.

Furthermore, revenues are not taken into consideration when applying the ADL approach. By focusing on expenditures only, no statement regarding the sustainability can be made. In other words it is not analyzed to which extent future pensions can be covered by future contributions.

Only two further steps are required to calculate the sustainability of pension systems on the basis of the ADL approach.[3] In a first step the time horizon needs to be extended. While the ADL represent the cost of terminating a PAYG pension scheme, a longer perspective is naturally been taken when assessing sustainability. Therefore, pension entitlements which will be accrued in the future should also be taken into account. Of course, the level of ADL is not connected with any good or bad financial situation of the respective pension system since any financial burden could be balanced by sufficiently high contributions. Therefore, in a second step not only expenditures but also future contributions have to be considered when evaluating fiscal sustainability. As a result one arrives at the OSNL – a valuable indicator to assess fiscal sustainability. It is worth noticing that the instrument to measure this figure is generational accounting. Considering the future demographic development, generational accounting shows which effects a prolongation of a given policy will have on the tax and transfer payments of living and future generations.[4]

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3 For an overview on our methodology to measure ADL see Heidler et al. (2009).
4 For a detailed description of generational accounting see Auerbach et al. (1994) or Raffelhüschen (1999).

Chart 1 Age-specific payments and contributions of the German statutory pension scheme

x-axis: age in 2006
y-axis: in euro

— contributions
····· pension payments
--- federal subsidy
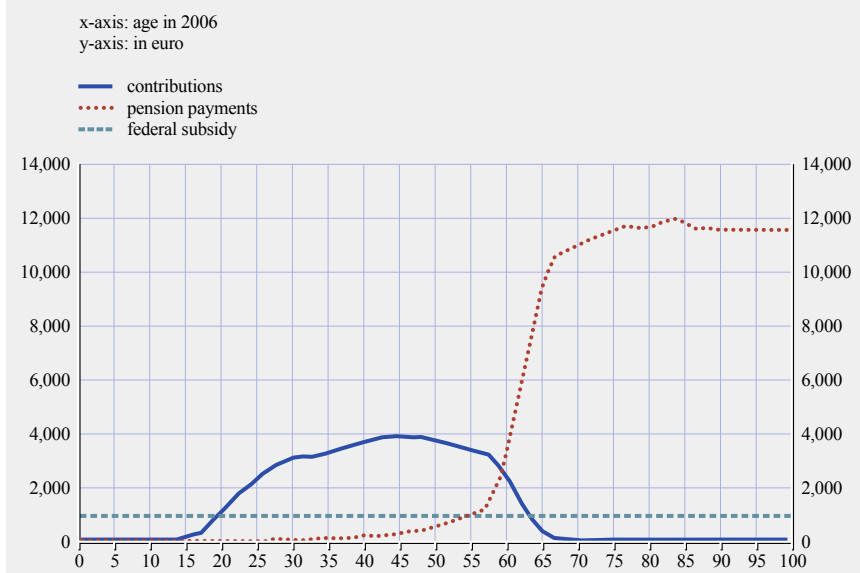
Source: Own calculations based on Deutsche Rentenversicherung (2007).

The OSNL approach is based on the same data as the ADL approach: 1) age specific pension expenditure profiles and 2) demographic population projections. In addition, 3) age specific contribution profiles are needed to assess also the revenue side of the respective pension system. Chart 1 illustrates the age-specific payments and contributions for the example of the German statutory pension scheme. It shows the typical picture: While on average contributions are paid at the age of 25 to 60, pension payments are received at the age of 60 and older. Moreover, federal subsidies should not be neglected when analyzing pension systems. Since in the German statutory pension scheme this subsidy cannot be clearly assigned to specific age groups, it is evenly distributed to all cohorts.

Of course, Chart 1 on its own does not provide any information about fiscal sustainability. However, when weighting the age-specific profiles with the respective cohort sizes, one can draw conclusions about the short and long term financial condition of the respective pension scheme. Cohort sizes are taken from population projections which include future age-specific population structures. Chart 2 illustrates the population structure in Germany for 2006, 2020 and 2050.

At first sight it becomes obvious that the German statutory pension scheme – as most European pension systems – will be faced by the challenge of a double aging process. On one hand life expectancy is assumed to rise considerably in the coming decades;[5] on the other hand fertility is expected to stay on its low

5   According to Europop2008 life expectancy of a male (female) born in 2006 will increase from 77.2 (82.4) to 83.6 (88.0) years until 2050. See Eurostat (2009).

Chart 2 **Population structure Germany 2006**

x-axis: Cohort Members (in 1,000)
y-axis: age

— 2006
····· 2020
--- 2050
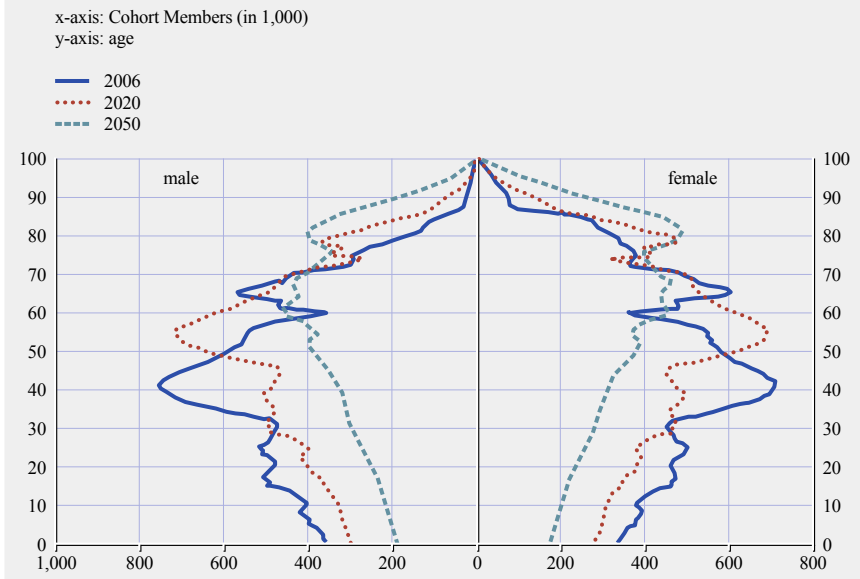
Source: Own calculations based on Eurostat (2009).

present level.[6] As a result, the German population pyramid´s appearance will considerably change in the years to come (see Chart 2). In simple terms, this development will lead to a decreasing number of contributors paying for more and more pensioners. The question to which extent the German statutory pension scheme will be prepared to tackle this demographic challenge will be assessed in the following chapter. The German example shall illustrate how policy making can be evaluated and advised applying the indicator of OSNL.

3   THE EVALUATION OF THE PENSION REFORM PROCESS IN GERMANY

We will start by confronting the ADL of the German statutory pension scheme with its OSNL. Chart 3 illustrates our calculations.

As can be seen, the ADL account for nearly half of the open-system gross liabilities (OSGL). The ADL symbolize that part of the OSGL which contributors have been earned up to the base year. The residual part of the OSGL represents the present value of all entitlements which will be earned by present and future contributors after the base year. On the right side of our image we displayed the assets of the German statutory pension scheme. These consist of future contributions and federal subsidies and sum up to a present value of 535 per cent

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6   The fertility rate in Germany amounted to a level of about 1.3 in the last years. See Eurostat (2009).

(in percent of GDP 2006)

y-axis: text illegible

Source: Own calculations.

of German GDP in 2006. The OSNL are now derived by subtracting the assets from the liabilities of the pension scheme. In the case of the German statutory pension scheme, the ONSL amount to a value of 87.6 per cent of GDP. In other words, the sum of all future deficits discounted to the base year equates to ONSL of 87.6 per cent.

In this context it has to be emphasized that the outcome presented above is the result of numerous reforms of the German statutory pension scheme in recent years. In the following part we will briefly sketch out the major reform steps. Furthermore, we will demonstrate the impact of each reform step on the OSNL of the pension scheme.

Beginning with the situation prior to any pension reform (status quo of 2001), the ONSL show a value of more than twice the German GDP of 2006.[7] The so-called Riester reform in 2001 introduced a new pension formula which changed the net wage indexation to the development of gross wages net of pension contributions (both public and private). This reform step reduced the OSNL by

7   Our analysis does not simulate a situation where none of the pension reforms has ever come into force. This is not possible due to the fact that the past impacts of the reforms are implicitly included in the budget of the base year. For this reason, we rather picture a scenario where all pension reforms are abolished in the base year 2006.

Chart 4 **Open-system net liabilities (OSNL) of the German statutory pension scheme**

(in percent of GDP 2006)

y-axis: open-system net liabilities
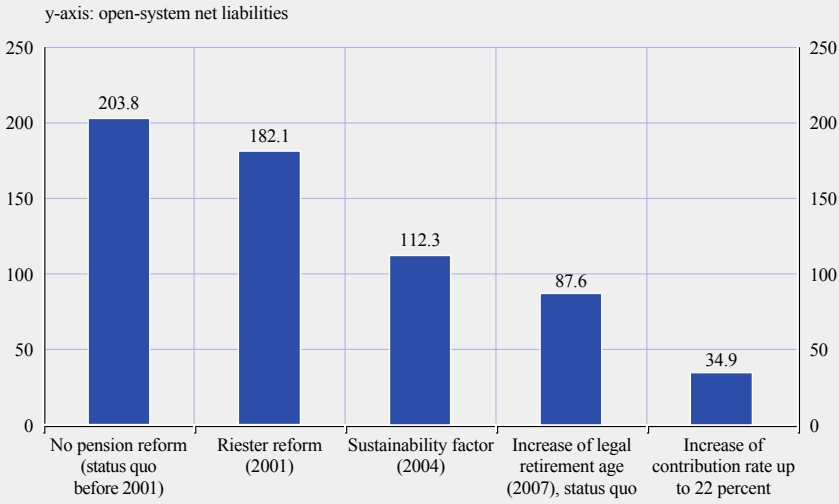
Source: Own calculations.

nearly 22 percentage points of GDP in 2006. The biggest cutback took place in 2004 when the sustainability factor was implemented in the pension formula. This factor connects the pension level to the development of the ratio of retirees to contributors. It reduced the OSNL by some 70 percentage points of GDP. The last major pension reform in 2007 consisted of the gradual increase of the legal retirement age from 65 to 67, starting in 2011. This reform lessened the OSNL by another 25 percentage points; hence the current status quo amounts to about 88 per cent of GDP. In other words, the sustainability gap of the German pension scheme has been more than halved thanks to numerous pension reform acts since 2001.

It is worth mentioning that the Riester reform from 2001 contains a passage regarding the future development of the contribution rate. Due to this legislation, the German government is supposed to take action in case the contribution rate will exceed a level of 20 per cent until the year 2020 and accordingly 22 per cent until the year 2030. Many pension experts regard this as a paradigm change from a defined benefit (DB) to a defined contribution (DC) scheme.

Our calculations always include the current status quo; hence, we act on the assumption of a constant pension formula and a constant contribution rate (19.5 per cent in 2006). However, Chart 4 shows how the outcome for the OSNL reacts if we assume that the contribution rate linearly increases to 20 per cent in 2020 and 22 per cent in 2030. In this case the pension scheme converges even more to a sustainable situation with OSNL amounting to about 35 per cent of GDP only.

y-axis: text illegible

—— no pension reform (status quo before 2001)
····· Riester reform (2001)
– – – sustainability factor (2004)
—— increase of legal retirement age (2007), status quo
····· increase of contribution rate up to 22 percent in 2030
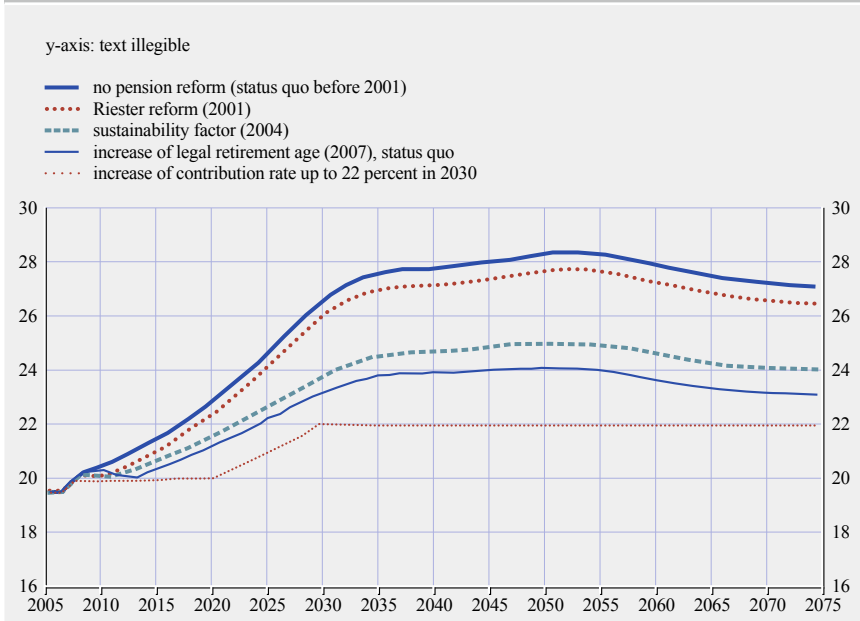
Source: Own calculations.

What do we learn from the presentation of OSNL under various reform steps?
It has been shown that the calculation of OSNL – one could also call it the
sustainability gap of a pension scheme – represents a helpful instrument to assess
the impact of certain reform steps in terms of their fiscal sustainability. In this
way, ONSL can be a useful tool for policy-makers who are willing to prepare
their pension schemes for future challenges. Politicians are given an indicator for
the extent to which a pension reform reduces the burden for future generations.

As mentioned before, one of our main assumptions is a constant continuation
of current fiscal policy. In the case of the pension sector, this inter alia implies
constant contribution rates.[8] We now change this assumption by illustrating what
will happen if policy makers immediately adjust the contribution rate in case of
an unbalanced budget. Put differently, we calculate endogenous contribution rates
which in every period ensure fiscal balance. By doing so, it can be demonstrated
how future contributors will be burdened if deficits are financed by contribution
boosts instead of taxes. Chart 5 illustrates the course of these contribution rates:

As shown above, the initial scenario (status quo 2001) implies a development of
contribution rates up to a value of more than 28 per cent in 2045. The Riester reform
slowed down this development by approximately 0.5 percentage points. Again, the

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8   This is certainly not a realistic scenario since in a non-balanced situation contribution rates
    are often subject to change. However, please note that generational accounting is not a
    forecasting tool. It is rather supposed to unfold hidden debts and shows the consequences of
    what will happen if policy makers do not react.

biggest decrease can be traced back to the introduction of the sustainability factor which induced a decline of the sustainable contribution rate by more than two per cent. The increase of the legal retirement age as the last major pension reform further reduced the necessary contribution rate to a value of about 24 per cent from 2035 on. For illustrative purposes, the development of the contribution rate to 20 per cent in 2020 and accordingly 2030 per cent has been included. Overall the results have shown that the recent pension reform process in Germany considerably lowered the burden for future contribution payers.

4   CONCLUSION

This paper aims to introduce an indicator which assesses the fiscal sustainability of a public pension scheme. The open-system net liabilities (OSNL) point out if the settings of a public pension scheme have to be adjusted in order to guarantee future fiscal balance or if no action has to be taken by policy makers against the background of the demographic shifts in industrialised countries.

We demonstrated that the OSNL can be a useful indicator to accompany the reform process of a pension scheme. It is not only possible to assess the consequences of a pension act *ex post* but also *ex ante*. In that way different proposals for pension reforms can be examined in regard to their impact on fiscal sustainability before they are actually enacted. In our paper we described the development of the German pension reform process and the corresponding consequences of each reform step on the ONSL of the pension scheme. As a result of the reform process, the German statutory pension scheme can be regarded as close to sustainable.

Besides the German example, rather distinct reform measures have been taken in member states of the European Union to prepare for the demographic challenges. While some countries such as France modified the pension indexation rules or – like the UK – chose to increase the legal retirement age, other states such as Italy implemented notional defined contribution (NDC) systems.[9] Future research could assess these different reform strategies in Europe using the indicator of OSNL.

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USING PENSION DATA FOR POLICY[1]

BY HEIKKI OKSANEN[2]

I   INTRODUCTION

I want to thank the organisers of this workshop for giving me an opportunity to comment on the progress made in revising the national accounting rules for measuring assets and liabilities of pension schemes, as initiated under the auspices of the United Nations Statistical Commission and followed by the work in the Eurostat/ECB Contact Group. Statistics are not produced for their own sake but to provide governments and private sector agents with data for assessing the state of the world and designing responses to various challenges. I will make my comments primarily from the point of view of shaping policies for sound public finances.

The main novelty in the revised national accounting rules will be to record the pension liabilities of general government, taking the *accrued-to-date liability concept* as the appropriate definition, with the aim of estimating this important category of government liabilities and the corresponding assets of the household sector.

This innovation will have major implications for analysis and thus potentially for policy design. There are two main reasons for this: (1) the pension liabilities of governments so defined dwarf conventionally defined public debt in most countries, and (2) these liabilities are in most cases *implicit,* meaning that their amount is not directly measurable but only estimates can be provided, with the consequence that different assumptions can be made and therefore different results can be presented, both on justifiable non-partisan grounds and, potentially, with the aim of steering policies in one or other direction serving specific interests.

However, dealing with non-definitive data is not exceptional. All statistics, not least national accounts, are only estimates, and the conceptual and practical issues involved with public pensions do not bring to the table problems that are qualitatively new, although we might have here an issue that has quantitative implications of a new and huge order of magnitude.

Due to their quantitative importance the new data on public pension liabilities may have drastic implications for monitoring fiscal developments and designing policies to comply with the EU Treaty principle of sound public finances. This is obviously the main issue here, although public pension liabilities are in various ways very significant for private sector agents too. We should also recognise

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that any given set of statistical data almost invariably has many users and many potential purposes. Therefore, the advisability of producing such data should probably not depend only on one sphere of application.

The state of preparations for the revised SNA and ESA is currently that *Accrued-to-date pension liabilities* will be part of the new national accounts balance sheets. For private sector employers these will be included in the core accounts, while for government, as far as social security pensions are concerned, they will be recorded in the new supplementary accounts. The treatment of the liabilities of governments vis-à-vis their own employees is still somewhat open, as the solution will depend on drawing the borderline between these and general social security pensions.

As terminology is not yet fully established, *Accrued-to-date pension entitlements* or *Pension entitlements* are here called, for simplicity, *Implicit Pension Liabilities* (IPL), being fully aware that there are alternative definitions of pension liabilities – we will leave the issue aside here.

We will recapitulate in Section 2 some statements made by the EU committees in charge of preparing policies for public finances. Sections 3 and 4 will, respectively, discuss the two arms of the Stability and Growth Pact (SGP), namely the Excessive Deficit Procedure (EDP) and the longer-term issues related to the sustainability of public finances and pension reforms. Section 5 comments on the work ahead and the division of labour between the statisticians and the pension actuaries and economists, and Section 6 draws some conclusions.

2   STATEMENTS BY THE EU COMMITTEES

The EU committees in charge of economic and fiscal developments in the EU commented last year on the plans to include public pension liabilities in the national accounts. The Economic Policy Committee (EPC) stated:

"All indications are that the application of the 2008 SNA rules in Europe (through a revised ESA, with reduced flexibility compared with the updated SNA) will not result in significant changes to general government deficit and debt data used for the purposes of the Excessive Deficit Procedure". It also said: *"Presentation of a broad range of statistical information on pension schemes will allow better international comparability; provide useful information regarding the timing of accumulation of pension entitlements and the impact of pension reforms"* (EPC document of 26/8/2008).

The Economic and Financial Committee stated:

"On pension schemes, the EFC welcomes the work of the Eurostat/ECB Task Force to improve the treatment of pensions in the national accounts. The EFC stresses the importance of an ongoing close cooperation between national accountants, statisticians, and experts preparing pensions projections, notably

in the context of the work of the EPC Working Group on Ageing Populations and Sustainability... The EFC underlines that the accrued-to-date measures of pension entitlements are not sustainability indicators. Yet, they will be useful for economic analysis, notably they will provide useful information regarding the timing of accumulation of pension entitlements and the impact of pension reforms. Furthermore, the EFC believes that it is desirable to associate to this exercise the expertise of agencies responsible for public pension schemes" (EFC Statistics document of 25/10/2008).

We can detect a certain ambivalence in these statements. On the one hand, there clearly is some concern that the new data might confuse the Excessive Deficit Procedure (EDP), which is unquestionably the backbone of the fiscal policy rules at EU level. On the other hand, the new data is seen as a useful addition to data for analysing pension policies, which obviously affect public expenditure and thereby fiscal balances in the future, being essentially part of the assessment under the so-called preventive arm of the Stability and Growth Pact (SGP). We will now look in turn into these two dimensions of public finances.

3   EXCESSIVE DEFICIT PROCEDURE (EDP)

The EDP as included in the Maastricht Treaty in 1991 (Treaty establishing the European Community, TEC, which came into force in 2009 and is only slightly modified by the Reform Treaty under ratification in 2009) clearly concerns explicit public debt and deficit under current accounting standards. Its original purpose was to identify gross errors in public finances (Article 104 TEC), and to help comply with the principle of sound public finances (Article 4 TEC). It can be said that the purpose of the EDP was to safeguard against irresponsible policies and to prevent excessive borrowing by any Member State from the common pool to finance fiscal deficits.

To this end it is normally sufficient to look at deficit and debt ceilings as stipulated in the Treaty and under current accounting standards, as they are sufficient to identify gross errors (even though the 3% ceiling is not equally hard for every country).

One potential issue is a situation where there is significant privatisation of the public pension system by creating a mandatory fully funded second pillar providing pensions on the basis of defined contributions – the rule whereby the risk relating to the return on the accumulating assets falls on the employees. As a share of the pension contributions is shifted to the second pillar that is classified in the private sector (due to the risk allocation) and as expenditure from the public pillar falls only gradually over a long period, the 3% ceiling for public deficit may be breached. Note that this problem arises even though assets are correspondingly accumulating in the second pillar.

However, this problem could be dealt with by adding, for the purposes of the EDP, the surplus in the mandatory second pillar to the government budget balance, and deducting the second pillar assets from gross public debt. Note that even though

the underlying question here is swapping implicit debt for explicit public debt, this remedy does not necessarily require explicit use of the new IPL data.

Another potential issue is the possible inclusion of IPL related to government employees in the core accounts (the criteria for which are still an open question). This would increase public debt in many cases by 40-60% of GDP, and the corresponding (policy-neutral) effect on the measured government deficit would be 2% of GDP. If it were decided to use such newly defined deficit and debt figures for the EDP, the reference values defined in the Protocol on EDP (3% of GDP for deficit and 60% for public debt) would obviously need to be reviewed, or it should be specifically stipulated that for the purposes of the EDP the old definitions of deficit and debt are used.

Thus, both of these problems could be dealt with – if needed and wanted – by a change to the Protocol on the EDP (by a unanimous Council decision), introducing specific provisions for EDP deficit and debt in this Protocol, and possibly in related documents.

This means that the necessary clarifications could be seen as normal business for specifying what data should be used for each policy-making purpose. Seen in this way, the EDP and the SNA/ESA revision for IPL can live in peace.

4   THE SGP PREVENTIVE ARM, LONG-TERM SUSTAINABILITY, INTERGENERATIONAL EQUITY, PENSION REFORMS

The Committees have rightly stated that an estimate of implicit pension liabilities is not a sustainability indicator. We know that one reason for emphasising this simple fact stems from the need to say that an IPL as large as even 200-300% of GDP, thus a multiple of explicit public debt in most countries, does not necessarily on its own indicate a problem of sustainability of public finances. This is true, and it is confirmed also by the fact that public finances in EU Member States have not collapsed even though the magnitude of IPL is of that order.

It has also been said that when a pure PAYG pension system is established, IPL does not immediately indicate a problem of sustainability. This is also true, but it is only valid for the IPL for the first year or years; a projection for its future value (under various alternative assumptions) would measure the increasing burden (as would also a projection of expenditure) and provide a useful indicator of the possibly looming problem of sustainability.

Let's be clear that no single variable alone is a sustainability indicator. An estimate of the IPL for now gives the starting point for a more comprehensive analysis. It would contain additional information compared to the data on current pension expenditure and a projection for aggregate pension expenditure as it contains the information on the rights accrued up until today.

The IPL for today would also provide a basis for a *projection* for the IPL. Note, however, that it would not be produced by statistical offices, as it is not their task to make economic forecasts, but should be produced by pension actuaries and economists. Such a projection would always contain more information than a projection for aggregate pension expenditure (or open system pension liabilities) as it contains the information on when the rights are accrued and not only when the pensions are paid out. This, combined with policy rules on the revenue side of the public pension system, would give a useful and necessary basis for looking at issues of who is paying for what, i.e. the question of intergenerational equity could be tackled.

Other arguments for looking at the IPL estimates are as follows:

Implicit and explicit government debt are similar in the sense that both have come about because some groups of beneficiaries of public money cum tax payers have in the past received from the government something more than they paid in (note: this is true for net public debt and excludes borrowing for public investment). Consequently, they are similar also in the sense that current and future generations need to bear the burden of both. The IPL estimate also gives future pensions the same dimension (stock at a given point in time) as for explicit public debt.

It should also be recognised that for many reasons explicit and implicit public debt are not perfect substitutes (normally, one is traded, the other is not). But again, this is not a reason to ignore implicit debt.

Looking at future pensions accrued to date in terms of their present value (=IPL) is useful as this figure gives a basis for looking into its *change* from now onwards. This change can, under population ageing and modest pension reforms, easily be 60-100 percentage points of GDP over 30-50 years, i.e. the same order of magnitude as the current stock of explicit debt in many countries. This induced increased burden is as real as a corresponding increase in explicit public debt: taxes need to be increased or other public expenditures reduced at some stage.

Thus, this set of data helps to spell out the essential question as to when taxes should be increased and for whom. The answer leads to the question of *prefunding* for the projected increase in IPL (or part of it), to keep the total debt burden "tolerable" (in various respects that require assessing public finances at large in the context of macroeconomic developments). "Prefunding" means reduction of explicit public debt, net of assets held by the public sector. This is one essential part of the policy recommendations given by EU finance ministers meeting within the ECOFIN Council.

All this concerns "sustainability of public finances" broadly defined. Understanding the issue requires estimates for IPL for today and the future (under alternative assumptions).

Some people are critical of estimating IPL because it is not backed by explicit well-defined commitments (e.g. indexation assumption) and it is therefore hard

to measure. They may also worry that official publication of IPL estimates may give them an explicit character and thereby make it politically more difficult to renege on (presumed and claimed) pension rights.

This is certainly true and an essential part of the problem. However, the differing views on accrued pension rights do not vanish by avoiding making estimates of their magnitude. It is a political assessment whether the pension problem can be tackled more easily with or without more comprehensive data. In this context publication policy can be refined. Publication of IPL estimates can be accompanied by a statement that figures are based on current policies and no legal rights can be derived from the figures. Also, publishing additional projections based on alternative assumptions would give baseline figures a less definitive character.

5   THE WORK AHEAD AND THE DIVISION OF LABOUR

There are many reasons for moving ahead in producing IPL estimates and publishing them in the national accounts. IPL gives data on *"timing of accumulation of pension entitlements and the impact of pension reforms"* as stated by the EFC. Note that here "timing" refers to different generations and cohorts, i.e. IPL gives benchmark data on balancing costs and benefits for each generation (or cohort) expressed as a stock of discounted values.

As governments require businesses to recognise and report their pension obligations it can be asked why the governments themselves should not comply with the same requirements. One can say that there is a difference, as businesses need to generate the required financing from their revenues, while governments have the powers to levy taxes on households and businesses. However, this difference is not necessarily so big, as someone has to bear the burden of pensions anyway. Estimating the IPL can be interesting regardless of who will finally pay for future pensions.

The public and private sectors are linked to each other in many other ways too. Neutrality in comparing the cost of labour in the public vs. the private sector would seem to require that the cost of pension rights accrued as part of the employment contract should be recorded in the same way in all sectors so that a fair comparison can be made of the relative merits in producing services. The imputed pension cost component is part of the cost of labour data for the government sector in the current national accounting rules, but looking more carefully into the estimation methods when producing IPL estimates for government under the new more coherent accounting rules will allow the data on the cost of labour to be refined.

Producing IPL estimates should be seen as producing data on the (recent) past: IPL is a stock at a given date in the past, although it is the capital value of a projected flow in future – this is, however, not unusual for statistics, as every financial stock is related to a flow in future. Thus, the IPL estimates for today should be produced by statisticians with the help of pension actuaries.

Based on these estimates, pension economists and other experts should produce alternative projections for IPL in future to illustrate the effects of possible reforms. These alternative scenarios should also give projections for other key variables (pension expenditure, pension contributions and other taxes collected, assets held by pension schemes, etc.).

6   CONCLUSION

We know that without reforms the public pension systems are heading for crisis. IPL estimates for revised national accounts will greatly help in designing the necessary reforms and experts will have an important role to play in supporting the political processes.

Statisticians and pension actuaries should be highly praised for producing new data on pensions, including the estimated present values for accrued-to-date public pension liabilities.

Thank you for your attention.

THE USE OF PENSION DATA FOR POLICY MAKING

BY KARSTEN WENDORFF[1]

I   INTRODUCTION

Obviously, given their professional background, the participants in the panel discussion on "The use of pension data for policy making" take three different views on and approaches to the topic under consideration. While I am not a distinguished expert on pension data I will take the perspective of a central bank's fiscal expert. Therefore, working for the Deutsche Bundesbank and the ESCB Working Group on Public Finance, I will examine the issue with both a national and an international eye. As a central banker, I am particularly concerned with aspects regarding fiscal sustainability and reliable and binding fiscal rules.

The five main messages I want to convey are as follows:

1. Demographic change will undoubtedly be one of the most important fiscal challenges in the future.

2. Pension data is very important for supporting the respective policy decisions and countering the (implicit) debt illusion in the policy process.

3. In contrast to many other statistics, pension data depends particularly on assumptions and the results may be subject to (public) controversy. This may present a challenge for the credibility of the data and the producers.

4. The transparency of the underlying data input and the models used as well as data availability for analysts, researchers and the general public are very important.

5. Beware of policy makers: If the data becomes a political target (e.g. in the context of the Maastricht criteria), there is a considerable risk of creative accounting and political pressure, which may ultimately lead to a loss in the data's explanatory power, its credibility and that of the fiscal rule itself.

2   TYPOLOGY OF FRAMEWORKS FOR FISCAL ANALYSIS, FISCAL POLICIES AND FISCAL RULES

In general, several frameworks can be distinguished in the context of fiscal rules and the underlying statistical or analytical bases. They differ, inter alia, with regard to their complexity and their need for relying on assumptions to compile the data.

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1 *Deutsche Bundesbank Chairperson of the ESCB Working Group on Public Finance.* The views expressed in this contribution are those of the author and do not necessarily reflect the views of Deutsche Bundesbank or the WGPF.

A very common basis for national fiscal rules and national budgetary legislation are often *cash or budgetary statistics*. They primarily record cash flows and new borrowing. The respective statistical recording is not necessarily internationally harmonised. It is not very complex from the producers' perspective or from a methodological point of view.

National accounts data are (more or less) internationally harmonised (SNA 1993, ESA 1995). They form the core of the European fiscal rules, namely the EU Treaty and the Stability and Growth Pact. The methodology, the "legislation" and the recording are significantly more complex than in the case of the cash statistics. Additional assessment and interpretation by the statistics producers are necessary and the statistical recording is sometimes controversial – as can be observed currently, for example, in the context of the statistical treatment of the public support of financial markets.

In addition to national accounts data, the consideration of *transitory influences on public finances from a medium-term perspective* is an important supplementary aspect of fiscal analysis and the fiscal rules in the EU. Therefore, in a further step, the national accounts data (both budgetary outcome and projection) are adjusted for specific temporary measures and effects as well as for cyclical influences. The methodologies can be very comprehensive and demanding with regard to the data input and model complexity. There are a wide variety of definitions and methodologies which lead, in some cases, to important differences in the results depending on the underlying assumptions and conceptions. However, fiscal surveillance in the EU is based on an agreed methodology which is systematically applied by the EU Commission.

Longer-term influences on public finances and other important aspects such as implicit liabilities are additionally reflected in a broader fiscal assessment and, in some cases, are included in "softer" budgetary rules. One example are the calculations by the Working Group on Ageing, which are expected to be included in the assessment of national medium-term objectives (MTO) in the context of the preventive arm of the Stability and Growth Pact. Other examples include the new pension data, which are the main focus of this Workshop, or results calculated within "Generational Accounting" frameworks. Usually, the consideration of longer-term influences requires relatively complex models based on numerous and important assumptions. As a result, the outcomes can differ considerably and are often controversial. Achieving an international comparison and a harmonised approach is particularly challenging, not least because the national institutional setting is often very complex and varies widely.

All in all, it can be concluded that the increase in scope of the statistical frameworks and the fiscal rules is combined with an increase in complexity and the need for assumptions. The results may become less harmonised, particularly in an international environment, and increasingly controversial in public discussions.

3   SEVERAL DOUBLE POLES OF PENSION DATA

With regard to pension data in general as well as their design and use, several double poles can be identified.

The information can reflect an *individual or a collective* perspective. The former refers to pension data of an individual and, in particular, to individual's claims against the pension system. The latter refers to aggregated data, e.g. to all participants of a system or to the entire population of a country.

The aggregated framework can be *partial or comprehensive*. It can include, for example, civil servants or the entire population. It may be based on cash statistics, national accounts or generational accounting. The focus can be restricted to public expenditure or also include the revenue side, by considering taxes paid by pensioners.

Moreover, a *national or an international* perspective can be taken. While the national approach may be relatively complex, taking many peculiarities of the system under consideration into account, an international comparison will require more harmonisation, common assumptions and less complexity.

Not least, the intended use of the data is an important aspect. In the context of *academic analysis and research*, complex models and frameworks with various assumptions and sensitivity analysis may be suitable. In the context of *rules and policy*, the frameworks may need to be designed to be more straightforward and simple. The goals of the actors involved are mixed and are not solely focused on increasing academic knowledge. Specific interest groups may play important roles and communication with the general public becomes an important issue. In the context of rules, the potential "creative accounting" tendencies of the various players have to be considered.

All in all, the various pension data sets have their own merits. There is no "one size fits all" data set.

4   THE IMPORTANCE OF PENSION DATA FOR POLICY MAKING AND ANALYSIS

Countries in the EU are facing ageing societies, and the share of old-aged persons in the population will increase considerably in the future. This is an important challenge, not least for fiscal policy analysis and fiscal policy making.

In this context, accrued pension data is of particular relevance as it sheds light on developments which are not reflected in cash flows and are therefore "invisible" in most cases in the budgetary process, which is the main focus of policy makers. Awareness of these "implicit" liabilities is being raised among politicians and

voters. The pension data thus works against the "squared fiscal illusion",[2] because the burden on future generations is made transparent and, (backdoor) shifting of the burden is made more difficult. Increasing transparency regarding pension liabilities and their consequences for future generations may lead to reforms or at least discourage attempts to draw them back. Pension reforms may become less unpopular. Transparency may also result in changes in the behaviour of private agents if they recognise, for example, that cuts in implicit liabilities of the state (via reforms of the pension system) will, at the same time, lead to a reduction in their own "implicit" private assets.[3] Private decision making would therefore be based on more rational grounds.

5   TRANSPARENCY AND CAREFUL TREATMENT, ASSESSMENT AND INCLUSION OF NEW PENSION DATA IN POLICY FRAMEWORK IS OF THE UTMOST IMPORTANCE

While pension data is very important for analysis and policy making, its limitations should be borne in mind. For example, the new pension data discussed in this Workshop only partly reflects the aspects of the ageing-related burden and, as stressed by Heikki Oksanen, it is not a sustainability indicator. Due to its nature, it relies relatively strongly on assumptions and the specific methods for its compilation. As a result, international comparability may be limited. Not least, it should not be ignored that implicit liabilities have a different character to explicit liabilities; "defaulting" on implicit liabilities is much easier. The debtor sets the rules and the government can, for example, raise the retirement age or cut the size of individual pensions. Moreover, the government can decide on higher taxation on pensions which, incidentally, would not show up in the new pension data set either.

Against this background, transparency regarding the calculation of the pension data and the underlying (individual national) models is of utmost importance. This concerns, inter alia, the underlying assumptions, national peculiarities and national calculations. The core data and model should be made available for analysis and cross checking and should not be kept in a black box. The "black box issue" is, in my view, also an aspect that affects the calculations of the Working Group on Ageing, which are not explained and published in detail. Full transparency, however, is an important feature for the reliability of any data. It should be a precondition for the use in international comparisons and inclusion in fiscal rules.

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2   "Fiscal illusion" usually describes a situation in which, in the public perception, debt financing seems to be "costless", although the burden is (merely) shifted to future generations. Implicit pension liabilities are labelled here as a "squared fiscal illusion" because, in addition to the "debt illusion", the burden does even not show up in the debt data.

3   The comparably high saving ratio in Germany in the past few years may have partly resulted from the fact that the statutory pension bubble burst. After it had become obvious that the statutory pay as you go system would not be as generous in the future as people had estimated (perceived wealth decreased considerably – the pension illusion evaporated) savings increased to partly compensate for these losses. However, the pension claims may currently be underestimated as trust in the functioning of the pension system seems to be particularly low.

6   BEWARE OF POLICY MAKERS AND INCLUSION IN FISCAL RULES

Particular attention is warranted when statistical data becomes the basis for official fiscal targets or is included in fiscal rules. Inclusion in the policy process, use by policy makers and the potential binding character with regard to concrete fiscal policy decisions risk changing the character of the data – they may lose their "innocence". Therefore, not only will the new data have an impact on the policy makers, the policy makers will also have an impact on the data. Indeed, this is very important in the case of pension data, because the scope for shaping (or even manipulating) the data is relatively large in this context, where several assumptions are needed and the models for the calculations are very complex.

All in all, I would strongly advise against including the new pension data in the core European fiscal rules. This would require a very clear-cut ruling with regard to the calculations – no choices which may otherwise open the floor for strategic behaviour. Moreover, guaranteeing equal treatment in an international environment would be very difficult, but absolutely necessary. I would expect high pressure with regard to creative accounting, which would put the data set and its credibility under enormous stress.

In this context, it is important that the criteria for the distinction between reporting in the core and non-core national accounts should ensure consistency over time. Figures used in the excessive deficit procedure, at least, should be immune to ad-hoc wishes to change the assignment from one year to the next. For example, a country may initially choose to keep a system in the non-core accounts (as it may be at first considered not sufficiently funded), but later on (as the result of an interim accumulation of funds) shift it to the core account when the pensions are paid out and the corresponding reduction in pension claims is not recorded as expenditure (i.e. not above the line) but as redemption of government's pension liabilities. If such choices were possible, this would offer the opportunity to strategically minimise the statistical recording of deficits over time in the national accounts, which should clearly be hindered by the institutional setting.

7   CONCLUDING REMARKS

In conclusion, I very much appreciate the efforts in the statistical domain to calculate and present the new set of pension data. However, the inclusion in national accounts is challenging and the calculations complex. Therefore, a careful approach and communication should be warranted, and transparency with regard to the underlying models and assumptions is of major importance. Extreme prudence is needed regarding inclusion of the new data in international fiscal rules and I, personally, would be sceptical in that respect. The data may influence the behaviour of fiscal policy makers but one should also not underestimate the feedback from the policy process to the statistics.

SESSION IV

COUNTRY EXPERIENCES IN COMPILING PENSION ENTITLEMENTS PART I

INTRODUCTION

In Session IV, Lourdes Prado Ureña (Instituto Nacional de Estadística) reports on estimating social security pension entitlements in Spain. In her introduction she describes the two major government schemes in Spain, social security, with 21 million active members and 8 million pensioners and the government employer pension scheme, mainly for civil servants, with 950,000 active members and 500,000 pensioners. In the second part of the paper the modelling for the estimation of pension entitlements is described in terms of model, model assumptions and model outcome. It describes how a working group was set up in Spain in 2006 comprising the Banco de España, the Audit Office, the Ministry of Labour and Social Affairs, the Social Security Treasury, the Ministry of Finance and the Statistical Office (INE). Based on its work, the Ministry of Labour and Social Affairs carried out a pilot exercise, making first estimations of social security pension entitlements in 2007 and the Ministry of Finance made estimates for the government employer pension scheme in 2008. Preliminary results show pension entitlements under social security pension schemes of around 240% of GDP in 2005 to 2007.

Tom Dominique (Inspection Générale de la Sécurité Sociale) reports on the experience in compiling pension entitlements in Luxembourg. He explains that various old age related schemes are in place in Luxembourg: the general pension scheme which is compulsory for all employees, special pension schemes for civil servants, local authorities and public institutions and smaller schemes like supplementary schemes, private pension plans and schemes with a minimum guaranteed income. It is important to mention that the model used to compile accrued-to-date pension entitlements is identical to the model for the pension expenditure projections carried out by the AWG, insofar as the data input, the model specification and assumptions are identical. For the accrued-to-date pension entitlements, estimates show figures of 55-60% for government employer pension schemes and of about 300% for social security pension schemes. In conclusion he states that to ensure consistency it is necessary to keep the approach rather simple and apply the available methodology due to limited human resources.

Paula Koisinen- Jokiniemi (Statistics Finland) presents the main features of the social security pension scheme in Finland. She describes the Finnish pension system in brief, explains the results received for the supplementary table and compares these results with the data of the national model. The Finnish public pension system is made up of two statutory pension schemes (first pillar) and the small voluntary pension insurance sector (second and third pillar). The two statutory schemes are closely linked to each other. They are a combination of a pre-funded system and a pay-as-you-go system. The pension assets of these schemes made up about two thirds of GDP in 2007. As a result of the test exercise it was concluded that the statutory pension schemes are classified as social security pension schemes. Depending on the valuation methods (ABO or PBO) applied in the text exercise the entitlements of the two statutory schemes represent between 235% and 295% of GDP. The 5% discount rate used in the national model is in line with the rate used in the framework of the original Freiburg exercise. The national model deviates from

the models used by the AWG and also by Freiburg University. Nevertheless, the results derived for the national model are in between the estimates made by the Freiburg model using an ABO and a PBO valuation method.

Joe Wilkinson (Statistics Canada) outlines the pension satellite account in Canada. He explains how pensions are shown in the national balance sheet, presents preliminary estimates of the pension satellite account and reports on the research agenda. There has clearly been a steady upward trend in employer sponsored pensions. Unfunded pension entitlements are recognised in the core accounts. According to preliminary estimates of the pension satellite account total pension assets exceed $2 trillion CDN in 2007. There is an increasing share of employer sponsored and individual registered plans relative to social security. Compared with most European countries social security pension entitlements are rather negligible.

Ana Almeida (Banco de Portugal) discusses these four papers of Session 4. As the discussant of this session she provides detailed comments on the contributions, highlighting the importance of starting by compiling statistical data on social security for policymakers. On the Spanish experience, the organisational procedure (via a working group) was stressed as well as the development of a national model that accommodates some assumptions from the Spanish Social Security scheme. Some questions on the interpretation of the model were raised. On Luxembourg's participation, the main point addressed was the need for statistical consistency in the national model across different institutions and data sources and the importance of detailed methodology and assumptions in national models. The Finnish experience presents the results of the national model which differ from the Freiburg results. Hence, questions regarding the assumptions and methodology used in the national model were raised. Finally, on the Canadian experience the provision of long time series was highlighted for its usefulness for analytical purposes. Some questions were raised on the interpretation of the results, the methodology and the sources used for compilation.

ESTIMATING SOCIAL SECURITY PENSION ENTITLEMENTS IN SPAIN

BY LOURDES PRADO UREÑA

I   INTRODUCTION

The Eurostat/ECB Task Force on the statistical measurement of the assets and liabilities of pension schemes in general government developed its activity between mid 2006 (mandate agreed in CMFB meeting in June) and early 2008 (Final report presented in CMFB meeting in January).

The Task Force met six times during this period. The main tasks carried out were:

i) The design and the description of a supplementary table on pension schemes in social insurance to be part of the pension section in the updated SNA.

ii) The specification and definition of concepts related to the institutional units involved and to the stocks, transactions and other flows shown in the table.

iii) The selection and assessment of criteria to distinguish between defined-benefit government-sponsored employer pension schemes to be recorded in the core accounts or only in the table.

iv) The stock-taking of the features of all government-sponsored employer pension schemes and social security pension schemes in the EU Member States based on a questionnaire.

v) The alternative estimation of pension entitlements by using national models and generic models as provided by consultants of the Research Centre for Generational Contracts of the Freiburg University and of the World Bank.

vi) The presentation of the Task Force work to the CMFB in January 2008 and to the Eurostat Working Groups on National Accounts and Financial Accounts. The EPC – via the CMFB – and its Ageing Working Group has also been informed about the outcome of the Task Force. Finally, a Workshop on Pensions is to be held in Frankfurt in April 2009.

As a member of the Task Force, Spain has taken active part in the above mentioned tasks. In particular, a specific methodology was developed for the calculations of the supplementary table.

A working group made of different institutions involved in Spanish National Accounts and pensions was set up (see section 4). The first step was to estimate the stock of pension entitlements at the beginning and the end of each year (opening and closing lines of the supplementary table). Once this was achieved,

both stocks had to be reconciled using a set of different flows which constitute the rows of the table.

Efforts were stepped up and during 2007 a sound methodology was established for Social Security Schemes calculations firstly and for Government Employer Pension Scheme's later. This methodology has been used for the calculations of years 2005, 2006 and 2007.

The present document tries to describe the methodology followed for the estimation of Social Security pension entitlements in Spain. It is focused in Social Security calculations, as it covers a much larger group than the Government Employer pension scheme and both methods are quite similar. Anyway, a couple of lines about the estimations for the Government Employer pension scheme will be included to try to illustrate briefly its main aspects.

The document starts analysing the similarity between both schemes in Spain, as this issue was widely discussed during the different meetings of the TF. Due to this similarity, the Government Employer pension scheme is placed just in the supplementary table and not in the core accounts. In a second part, the text tackles directly the methodology mentioned in the previous paragraph.

It is worth mentioning that the concepts, definitions and methodology related to pensions are rather complex. Thus, the document tries to describe the process followed trying to keep the terminology as simple and clear as possible but without loosing its essence.

2 PENSION SCHEMES SPONSORED BY GENERAL GOVERNMENT IN SPAIN

In Spain there are two main schemes sponsored by General Government:
– The Social Security pension scheme (column H of the supplementary table).
– The Government Employer pension scheme (column G of the supplementary table).

The compromise adopted at the beginning of the Task Force was made of six principles. One of them was to keep Social Security schemes out of the core accounts; they would just be reflected in the supplementary table. For other schemes such as those Government Employer sponsored, the floor was open. The Task Force agreed on a set of criteria that would decide on these last schemes. One of these criterion was to include them in the core/non-core accounts according to their proximity to Social Security schemes.

Therefore, the similarity of this two schemes has been one of the most important points of the Task Force, as it determines the obligation of a scheme to form part of the core accounts or on the other hand, the option of appearing just in the supplementary table. This is the reason why the section Social Security versus Government Employer pension scheme has been included as part of the document.

In the case of Spain, both schemes are almost the same. Population is obliged by law to participate and duplicity cannot exist. This means that whenever pension entitlements have been accumulated for both schemes, just one of them has to be chosen.

Both schemes are extremely close in terms of risk exposure (borne by the Government in both cases), legal framework, funding (both are unfunded) and ability of General Government to change the benefit formula (in both cases the Government has the discretion to change unilaterally the benefit formula at any point in time and thereby partially default on its pension obligations). Therefore, the modelling for estimating pension entitlements in both schemes is rather similar.

On the other hand, Social Security covers a larger group by far. It is responsible for 95% of the population, whereas the Government Employer pension scheme covers the 5%. This second scheme covers mainly civil servants (from Central Government, the Army, Justice and Law Courts, Public Universities related to the State, etc.). It also covers those civil servants that used to work for the Central Government and are currently working for the State Government after powers have been transferred (equation, health). Finally it also includes another group integrated by Ex Presidents, Vice Presidents, Ministers and others. Social Security covers some civil servants as well (those from the State Government and Local Government), but it is mainly integrated by all kind of employees (those with a contract, grants or in a training period), self-employed people, students and partners in cooperatives.

The next step is to describe the modelling of these schemes. The methodology for Social Security will be explained in detail. Due to the similarity of the two schemes, the modelling for Government Employer pension schemes will be briefly commented, and its main features will be outlined.

3   MODELLING FOR THE ESTIMATION OF FUTURE PENSION ENTITLEMENTS IN SOCIAL SECURITY

BACKGROUND

In 2006, after the first meeting of the Task Force, a working group was set up in Spain in order to fulfil the pension requirements and carry out the modelling for the estimation of pension entitlements. This group was leaded by the INE and integrated by the following institutions:
– Spanish Central Bank (Banco de España);
– Audit Office of the Ministry of Finance (IGAE);
– Ministry of Labour and Social Affairs;
– Social Security Treasury;
– Ministry of Finance;
– Statistical Office (INE).

Two delegates, one from the Central Bank and another from the INE attended the TF meetings.

The working group met several times in the period 2006-2008, in parallel and after the TF meetings. It discussed widely about the estimation of pension entitlements and agreed on some guidelines about the modelling and assumptions to be used.

During 2007, the Ministry of Labour and Social Affairs carried out a pilot exercise; the first estimations of Social Security pension entitlements. Two experts were hired expressly for this task and worked closely to an expert from the Ministry. Following these steps, in 2008, the Ministry of Finance made the estimations for the Government Employer pension scheme. Once the estimations were ready, the flows that reconcile the stock of pensions entitlements at the beginning and the end of each period were completed. This way, Spain was able to provide data for columns G and H of the supplementary table for the first time.

MODEL

For the time being, the estimations have already been carried out for years 2005, 2006 and 2007.

It is important to underline that this calculations are related exclusively to contributory pensions. Non-contributory pensions are kept out of the modelling despite they exist in the framework of Social Security (in Spain they account for 2.7% of the total).

We talk about contributory pensions when benefits are related to contributions paid in the past. In this group the following pensions have been considered:

– Retirement pension;
– Disability allowance;
– Widow's pension;
– Orphan's pension.

On the other hand, we refer to non-contributory pensions when benefits are provided to people even if they have made no contributions at all.

In line with the Freiburg Model, the individuals considered are divided into two groups: current pensioners and current workers (active population, individuals who already pay contributions but have not generated a pension yet). Those included in the latter have not generated a pension yet, thus the estimations relate to the pension that they will generate in the future provided that the law does not change and that those who worked in the reference year will continue to do so until they generate the pension. Anyway the estimated amount for this second group does not refer to the total pension to be generated, but to that part that matches with the contributions already paid. In the Spanish system there is no direct correspondence between the contributions paid and the pension that will be generated, therefore the percentage of the future pension that correspond to

the contributions paid has been imputed using the Unit Credit Method that will be mentioned later.

As individuals have been classified in two groups, the total pension entitlements will be the sum of the entitlements calculated for each group.

Future pension entitlements = Already existing pensions+ Future pensions of active population

In both cases, the procedure to calculate the pension entitlements is similar. Pension entitlements are obtained starting off from some preliminary data and applying actuarial techniques taking into account a bundle of assumptions. This assumptions make reference to the discount rate, revaluations, life expectancy and others and will be described later in the document. Whereas this assumptions and the actuarial techniques keep mainly the same for both groups, the starting up information varies considerably from one group to the other. The case of current pensioners is rather simple, whereas the calculations for the active population become more complicated. Lets describe how to obtain these preliminary data for each case.

Already existing pensions

For already existing pensions the starting point is the figure obtained by multiplying the average amount of contributory pensions (which exist the 31st of December of each year and classified by type of pension, sex and year of birth of the pensioner) by the number of pensions. It is important to point out that future entitlements of pensions have been calculated using the life expectancy of the holder and not until year 2050 (as done in other models).

Future pensions of active population

On the other hand, for future pensions of active population, the starting point should be the pensions generated by the whole active population (individuals who have paid contributions at any time of the year considered) classified by age and sex. This calculation entails difficulties, as the active population is such a huge group that it is impossible to go case by case. Therefore, it was agreed to use a sample of working lives and estimate the pension to be generated by each individual in the sample. The pensions that would be generated by the whole active population will then be obtained using grossing-up factors by age and sex.

As the process above is rather complex it is worth describing both the sample and the technical aspects of the procedure itself in detail. The sample of working lives constitutes a representative sample of all the people related to Social Security in a given year. It is a set of anonymous microdata obtained from different registers: Social Security, Electoral Registers/Census and Tax Agency. It refers to approximately 1 million people, which represent 4% of the population. It is updated every year, the sampling used is random simple with no stratification and the grossing up factor used is 25.

For each individual in the sample it is necessary to establish two pieces of information in the reference year:

– The number of days paying contributions to Social Security
– The average contribution's base (salaries)

With this information a simulation process is carried out, using stochastic methods and a set of assumptions, to obtain the type, date and amount of the pension that will be generated by each individual in the sample. Some of the assumptions used in the simulation process have been the following:
– The assumptions used for future salaries are in line with the PBO method. Thus, a rate of 1.8% annual increase in real terms over the working life has been considered.
– The frequency of death, invalidity and retirement is estimated by age and gender and it is assumed to remain constant in the future.
– The Unit Credit Method is used to impute for each individual in the sample the percentage of future pension that corresponds to the contributions paid in the reference year. The value of the future pension is multiplied by a coefficient obtained as the quotient of the time the individual has paid contributions and the total expected working life of the individual.

ASSUMPTIONS

Once preliminary data for already existing pensions and future pensions of active population have been calculated, the assumptions applied are the same for both groups.

Assumptions can be divided into two groups: those related to the benefits guaranteed and those related to the financial and demographic variables used for the valuation.

Assumptions related to the benefits
– Retirement: It has been assumed that there are no retirement pensioners under the age of 50. Thus, those under this age are considered as if they were 50.
– Disability: It is supposed that disability pensioners under 16 do not exist. Thus, the cases under this age are treated as if they were 16.
– Widowhood: It is supposed that widowhood pensioners under 16 do not exist. Thus, the cases under this age are treated as if they were 16.
– Orphanage: It has been assumed that orphans ranging from cero to 21 years old are included in this group and they receive the pension until they go over this age.

Assumptions related to the valuation
– The demographic tables used have been provided by the INE (men, women and total population) and Social Security Records (invalidity pensioners).
– Assumptions related to the discount rate, salary increase and inflation (revaluations) have been provided by the Ministry of Finance and are in line with those use in the Ageing Working Group (AWG).
– The discount rate considered is 3% in real terms. The inflation rate has been assumed to be 2%.
– The salary increase considered has been 1.8% in real terms.

– The PBO method has been followed.
– The age difference between married couples considered is 3 years.
– The marriage rate of pensioners is 92%.
– Instalments are made in 12 payments.
– The reversion in case of widowhood is considered to be 60% of the retirement pension.
– In this model, estimations have been calculated using the life expectancy of the holder and not until year 2050.

OUTCOME

The estimations made for Social Security pension entitlements account for approximately 2.4 times GDP in each of the three years (2005, 2006 and 2007).

In parallel, the same estimations carried out for the Government Employer pension scheme, mean approximately 20% of GDP also for the three mentioned years. Adding up both results the ratio of future pension entitlements in Spain will be 2.6 times GDP per year.

4 MODELLING FOR THE ESTIMATION OF FUTURE PENSION ENTITLEMENTS IN THE GOVERNMENT EMPLOYER PENSION SCHEME

Following the steps of the Social Security scheme, the Directorate for staff expenditure and public pensions of the Ministry of Finance developed the estimations for the Government Employer pension scheme. In Spain, this scheme is called Clases Pasivas.

As both models are quite similar and the methodology for Social Security has been described in detail, for Clases Pasivas the document will just underline its main features.

Actuarial projections of public pensions consist of a demographic projection and a financial projection. In both cases three different projections should be considered:
– Projection of current active contributors and pensions derived;
– Projection of new generations of active contributors that will occur in the future and pensions derived (not considered in this study);
– Projection of current pensioners and the way the disappear progressively.

As in the previous scheme, the first projection (current active contributors) is the most relevant for the calculation of future pension entitlements.

The assessment of pension entitlements in the *Régimen de Clases Pasivas* has been done according to the PBO method.

The demographic tables used have been a combination of those considered most appropriate by the experience of Clases Pasivas and a collection of Swiss tables for pensioners. The following tables have been used:
– Mortality and survival tables for pensioners for the period 1997-1998;
– For active population, Swiss tables EVK-95 (Eidgenossische Versicherung Kasse 95). INE tables for 2004-2005 have been used also.

The discount rate used has been 3% in real terms and the revaluation rate 2%.

Based on the own experience, the incapacity rate chosen has been the same that was used in the Social Security modelling, corrected with different factors for civil servants and military personnel. For biometrical survival functions, the Swiss EVK-80 tables have been used adding some corrections for the average number of children for civil servants and military personnel.

The modelling used is based in different actuarial projections of the ILO, ranging from a first version of J-P. Tullen to the current ILOPENS model.

The basic model starts from the formulas of J-P. Picard and J-P. Tullen with some variations as:
– the use of average ages of spouses and children instead of age distribution matrixes;
– the use of average estimated pensions instead of theoretical percentages for attributing pensions;
– values of actuarial income for life have been used for current pensions, for pensions derived and for active workers' pensions.

EXPERIENCES IN COMPILING PENSION ENTITLEMENTS IN LUXEMBOURG

TOM DOMINIQUE [1]

I CONTEXT

The paper illustrates the methodology applied to the Luxembourg old age related schemes in order to compute implicit liabilities as defined by the European Central Bank/Eurostat Task Force of the Committee on Monetary, Financial and Balance of Payments Statistics [2] (CMFP). Special emphasizes is given on consistency matters regarding the computation of the pension entitlements with common available data and applied methodology in other fields of social protection and social budgeting.

A first section gives an overview of old age social protection schemes in Luxembourg. A second section explains the methodology used to compute implicit liabilities. A third section provides the modelling results and a final section presents concluding remarks.

2 OLD AGE RELATED SCHEMES

In Luxembourg several instruments are into place to ensure that elder people continue to receive an income.[3]

THE GENERAL PENSION SCHEME OF THE PRIVATE SECTOR

The general pension scheme is a mandatory scheme and each person having a gainful occupation in the private sector has to be affiliated to the general pension scheme. It can be characterised as a defined benefit scheme, the pension being based on a formula linked to members' wages or salaries and the length of employment. It is a contributory scheme where both the employers and the members have to pay into the scheme.

Apart from civil servants and other statutory employees of general government and two public companies (post/telecom and national railways) with statutory special schemes, all those who are covered by pension insurance in Luxembourg

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2 Final Report of the Eurostat/ECB Task Force on the statistical measurement of the assets and liabilities of pension schemes in general government to the CMFB, 2008. http://www.cmfb.org/pdf/TF%20on%20Pensions%20-%20Final%20report.pdf
3 National strategy reports: adequate and sustainable pension systems – Luxembourg, IGSS, 2005. http://ec.europa.eu/employment_social/spsi/docs/social_protection/2005/lu_en.pdf

belong to the general pension scheme. Those people who belong to a pension scheme by virtue of working for an international body are not subject to the national scheme.

The general pension scheme in Luxembourg comprises invalidity, retirement and surviving dependants' pensions. The length of time an individual earns rights to the pension benefit is formed by two types of service periods: periods during which contributions are paid (gainful occupation, periods of compensation benefits or voluntary contributions) and additional periods (mainly related to apprenticeship, educational training or child education) for which no contributions are paid. The entire service period is referred to as "total career length" (TCL) whereas the part of the career length related to contributions is referred to as "effective career length" (ECL).

The old age pension formula consists of several components: a flat rate component, an accrual rate component, a staggered accrual rate increase and an "end of the year allowance". Flat rate related benefits are based on the total career length and are not affected by earnings. After 40 years of membership, they are equal to 23.5% of a reference amount (RA). The reference amount corresponds to 100% of the legal social minimum income from work. Flat rate benefits are reduced by 1/40 for every year of difference between 40 and the total career length. The number of years taken into account cannot exceed 40. Accrual rate related benefits (income based) are exclusively associated to the effective career length and are equal to one twelfth of 1.85% of the sum of all income from work (TIC), adjusted to price and wage evolution. Staggered accrual rate increases depend on the age and the contribution history of the beneficiary, beginning at the age of 55 with a contribution history of 38 years. Each additional unit (one per year of age and one per year of contribution) raises the accrual rate by 0.01 up to a maximum limit of 2.05. The "end of the year allowance" (EA) represents an additional flat rate component. This allowance is reduced by 1/40 for every year of difference between 40 and the total career length. The number of years taken into account cannot exceed 40.

The monthly pension formula becomes:

$$P = (0.235 \times RA + EA/12) \times \min[1, TCL/40] +$$
$$\{0.00185 + 0.0001 \times (age - 55 + \max[38, ECL] - 38\} \times TIC/12$$

Every beneficiary is entitled to an old age pension at the age of 65, provided he has an effective career length of at least 10 years. A beneficiary is entitled to an early old age pension at the age of 60 if he has a total career length of at least 40 years. An early old age pension at the age of 57 years is granted to beneficiaries with an effective career length of at least 40 years.

Invalidity pensions are calculated in the same way as old age pensions. In order to ensure that recipients of invalidity pensions receive an adequate income, however, the period taken into account for the income based enhancement is extended to the age of 55 (special income based enhancement), the amount of the enhancement being derived from a notional salary corresponding to the average of the monthly salaries on which actual contributions have been paid.

(percentages)

- income based
- flat rate
- minimum
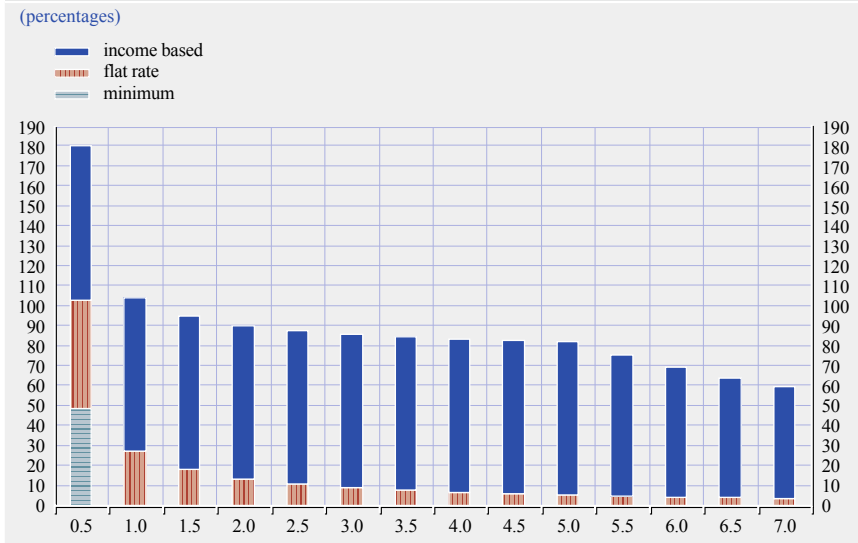
1) Current and prospective theoretical pension replacement rates: Report by the Indicators Sub-Group (ISG) of the Social Protection Committee (SPC), European Commission, 2006. http://ec.europa.eu/employment_social/spsi/docs/social_protection/isg_repl_rates_en.pdf

The period on which the flat rate enhancement is based is notionally extended to the recipient's 65th birthday (special flat rate enhancement).

The surviving spouse's pension comprises three quarters of the income based enhancement, including any incremental or special enhancement, the entire flat-rate enhancement, including any special enhancement, and the entire end of year allowance to which the insured was or would have been entitled. Abatement provisions apply if the surviving spouse's total income exceeds a fixed ceiling.

The surviving child's pension comprises one quarter of the income based enhancement, including any incremental or special enhancement, one third of the flat-rate enhancement, including any special enhancement, and one third of the end-of-year allowance.

The general pension scheme guarantees its members a minimum personal pension equal to 90% of the reference amount provided that they have belonged to the scheme for at least 40 years (total career length). It is reduced by one fortieth of the amount of the personal pension for each missing year, down to an eligibility threshold of 20 years.

SPECIAL PENSION SCHEMES FOR CIVIL SERVANTS AND STATUTORY EMPLOYEES

Special schemes comprise the civil servants and other statutory employees of central government, local government, social security funds and two public non

financial companies (post/telecom and national railways) that differ from the general scheme as defined in the Social Insurance Code. Non statutory employees of general government however are included in the general pension scheme.

Special schemes have two distinct pension regimes: the original regime, now known as the transitional special pension scheme, which has undergone numerous amendments, and the new special pension scheme, which, apart from a few specific procedural and funding features, essentially corresponds to the general pension scheme.

In the transitional scheme for civil servants and persons treated as such who were in post on 31 December 1998 or had been appointed by that date, the features of the old scheme have been preserved. In other words, the pension is calculated on the basis of the final salary earned by the public servant (gross replacement rate equal to 83.33%). For years of service after 1 January 1999, the reference replacement rate is lowered in stages from 83.33% to 72%. However, public servants who have completed a full service career of 35 or 40 years when they become eligible for early retirement at the age of 55 or 60 can enhance the value of their pension by 2.31% of their pensionable pay for each year of service beyond that age. In this way, they can obtain, at the age of 60 or 65 as appropriate, a pension corresponding to the maximum pension available under the old scheme.

Applying to civil servants and other statutory employees who entered the public service after 31 December 1998, the new scheme retains the status of a special scheme, but it is based on the same principles as the general pension scheme, with the exception of the income ceiling for the assessment of contributions.

INDEXATION OF PENSIONS

Pensions are automatically adjusted to price evolution each time prices increase by more than 2.5%. In addition, pensions are adjusted every two years to the real wage evolution. Whereas price indexation is automatic, the decision on indexing pensions to wage evolution is the responsibility of government and has to be approved by the parliament.

3   MODEL APPROACH

MODEL DESCRIPTION

A data-processing tool (SOBULUX, Social budget simulating software for Luxembourg) was implemented by the General inspectorate of social security (Inspection Générale de la Sécurité Sociale, IGSS) in order to perform long term financial projections of receipts and expenditures of the pension system. SOBULUX is a cohort-based standard simulation model, based on previous International Labour Organisation (ILO) macro projections.[4] The model covers

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4 *Évaluation actuarielle et financière du régime général d'assurance pension du Grand-Duché de Luxembourg*, BIT, 2001. http://www.ilo.org/public/english/protection/socsec/tc/luxemb/lureport.htm

the general pension scheme of the private sector and the special statutory pension schemes. A detailed description of the model structure is given on the web site of the national statistical institute.[5]

Basic dimensions of the model are age, sex and origin. Additional dimensions allow differentiating employment status (blue collar, white collar or civil servants) and pension type (disability, old age, early old age or survivor pension). In order to take account of peculiarities of the Luxembourg labour market (high proportion of migrant and cross border workers), the instrument was designed to include dimension of residency.

Pension expenditure is calculated on the basis of average pension (differentiated by sex, age, origin, employment status and pension type). New pensions to be granted are computed on the basis of the available career elements and the pension formula. The model applies a specific module to compute the acquisition of pension accruals. Cohort career elements (aggregate life time salary and aggregate compulsory insurance periods) are established from data available in the IGSS Data Warehouse for the reference year (2002). The model is calibrated in order to reproduce observed figures over the period 2003-2007.

Survivor pension are computed in several steps. In a first step the number of eligible survivors is computed on the basis of known information of married couples. In a second step, survivor age is determined by applying an average age difference between married partners. In a last step the average survivor pension is computed on the basis of legal dispositions.

Pension entitlements are computed on an accrued to date pension liabilities basis. Only the current values of entitlements, arising from the already accrued pension rights, are compiled. Ex-post pension entitlements rely on a number of assumptions which are taken in line with the Economic Policy Committee agreed common set of assumptions and methodologies on long term old age expenditure projections (see section below).

The model applies the accumulated benefit obligation approach so that it does not need to introduce assumptions on future evolution of individual wages over the life cycle in regard of expected promotions and other nominal wage growth factors. Pension elements are determined on the basis of actually known wage histories of the scheme members and pension benefits are adjusted to the global wage growth in the economy.

COVERAGE OF OLD AGE PROVISION

Pension projections include pension provisions from the general pension scheme of the private sector and from special statutory schemes. Expenditure items include all types of old age benefit granted by the schemes, including disability and

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5 The Luxembourg pension model – Pension projection exercise: Peer review on pension models and results, IGSS, 2005. http://www.statec.public.lu/fr/agenda/2009/20090220/modele/LuxPension_IGSS/01Luxembourgpensionmodel.pdf

survivor pensions for people aged less than 65. In addition, projections do include minimum pension provision guaranteed in the context the pension schemes.

The high level of pension provision from public pensions leaves only a limited need for supplementary schemes. In addition, until now, no detailed information is available not on occupational (0.6% GDP as provisions) pension schemes, nor on individual private pensions (0.2% of GDP as provisions). For both reasons supplementary pensions are excluded from the projections. Social assistance expenditure to people in retirement age (0.055% of GDP in 2007) is not included in the projections.

The coverage of the pension projection model is close to 100%. A detailed list of the schemes include in the projection, based on the standardized classification framework of the European System of integrated Social PROtection Statistics [6] (ESSPROS), is given in the table below. Qualitative information on the schemes is available at the European Commission web site.[7]

In the context of the possible criteria for core or non-core recording as outlined in the report to the CMFB, all schemes are unfunded general government pension schemes and only recorded in the supplementary table as foreseen in the international compromise on the treatment of pension schemes in the updated System of National Accounts (SNA). Scheme 3 is classified as social security pension scheme (column I of the questionnaire on the statistical measurement of the assets and liabilities of pension schemes in general government of EU countries by the contact group on the statistical measurement of the assets and liabilities of pension schemes in general government) whereas

Table I	Classification of pension schemes applying Esspros methodology
Scheme 3	Pension scheme (Assurance pension)
Scheme 17	Special pension scheme – civil servants and assimilated employees of central government (Pensions statutaires – Administration centrale)
Scheme 18	Special pension scheme – civil servants and assimilated employees of local government (Pensions statutaires – Administrations locales)
Scheme 19	Special pension scheme – civil servants and assimilated employees of social security funds (Pensions statutaires – Administrations de Sécurité Sociale)
Scheme 20	Special pension scheme – civile servants and statutary employees of 2 public corporations, i.e. the public postage and telecommunication company and the national railway company (Pensions statutaires – Sociétés publiques)

6   ESSPROS manual, European Commission, 2008 http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-07-027/EN/KS-RA-07-027-EN.PDF
7   EUROSTAT – ESSPROS database, qualitative information by scheme http://circa.europa.eu/Public/irc/dsis/esspros/info/data/esspros_public_data/Qualitative/base_qualitative.htm

schemes 17 to 20 are classified as defined benefit schemes for general government employees classified in general government (column H in the questionnaire).

The model does not make a distinction between the special pension schemes 17, 18, 19 and 20 and for the purpose of the projection these schemes are grouped to an overarching special scheme so that some minor classification differences arise in comparison to the classification in the SNA. Scheme 18 is classified as social security pension scheme in the SNA as it is organised by a pension fund classified in social security and financed mostly by employer's actual social contributions. Scheme 20 is classified in the sector of public non financial companies in the SNA as the correspondent companies are classified in the sector of public non financial companies.

ECONOMIC POLICY COMMITTEE AGREED COMMON SET OF ASSUMPTIONS AND METHODOLOGIES ON LONG TERM OLD AGE EXPENDITURE

In 2006, the ECOFIN Council gave a mandate to the Economic Policy Committee (EPC) to update and further deepen its common exercise of age related expenditure projections. The work has been carried out by the EPC Working Group on Ageing Populations (AWG) gathering experts from 27 Member States and Norway and the European Commission (represented by the Directorate-General for Economic and Financial Affairs). The starting point is the population projection EUROPOP2008, produced by Eurostat. In a next step, the EPC agreed a common set of assumptions and methodologies to make projections for exogenous macroeconomic assumptions: the labour force (participation, employment and unemployment rates), labour productivity and the real interest rate. GDP is calculated combining these assumptions. On this basis of these common assumptions, Member States run the projections for pensions using their own national models. A peer review process validated the national pension model on the compliance with agreed assumptions and methodology. A report on the EPC projection procedure is available on the European Commission web site.[8]

Pension entitlements in the case of Luxembourg are computed using the same projection method as used in the context of the EPC projections so that assumptions and methodology applied in EPC and CMPF computations are compliant.

COMPLIANCE OF THE MODEL WITH AWG COMMON ASSUMPTIONS

A constant policy scenario is strictly applied. Indexation of pension is fully aligned to price and wage evolutions.

Fertility rate, life expectancy and migration are in line with EUROPOP2008 base scenario (AWG baseline).

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8   The 2009 Ageing report: Underlying assumptions and projection methodologies, European Commission, 2008. http://ec.europa.eu/economy_finance/publications/publication13782_en.pdf

Chart 2 **Absolute number of new members of the general pension scheme as a function of residency over the period 1960-2004**

non resident
resident
resident national
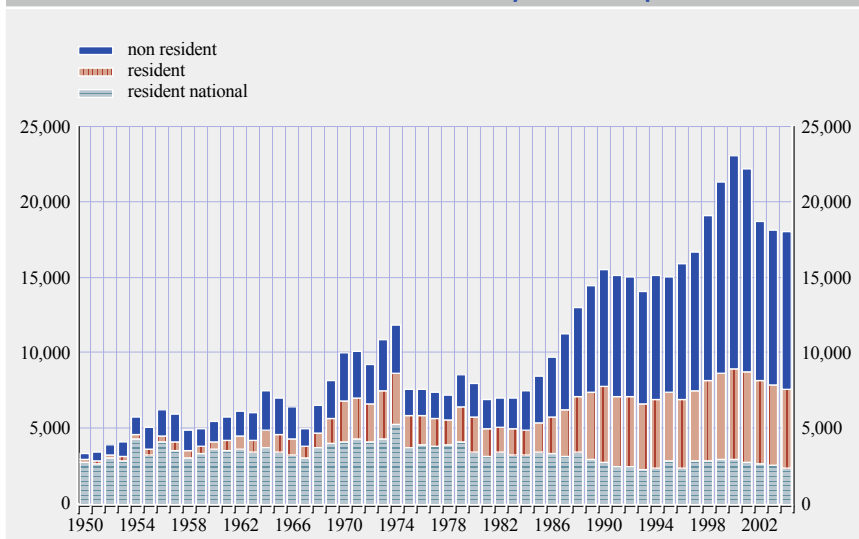
Source: IGSS.

Labour force participation rates are computed by applying entry probabilities to inactive population or exit probabilities to active population. In the long run it is assumed that exit probabilities of the various socio-economic agents converge to those currently observed for the resident male white collar workers by the year 2060. Exit probabilities are calibrated in order to proxy the AWG assumptions on labour force participation rates.

AWG employment growth assumptions are used for the projections. Due to the specific situation of the composition of the labour market characterised by a high participation of non resident labour force, labour supply cannot be proxied by applying participation rates to resident population.

The approach used by the Commission to compute cross border employment growth is based on a comprehensive approach. It focuses on the peculiarity specific to Luxembourg – that of a huge number of cross border workers – rather than on the 'top-down' approach to make GDP projections – first fixing GDP on the demand side and subsequently 'filling the gap' with the required labour input externally – in order to exclusively address the Luxembourg-specific situation. The Commission methodology involves the following steps:

– Cross border workers are proxied by the difference between the total number of persons employed according to the National accounts and the total number of employed persons according to the Labour force survey.

– The ratio of cross border workers to total employment ('foreigner ratio') has risen over time, but the growth rate of this ratio has been on a downward trend over time.

– A regression function of the growth rate of the foreigner ratio, using a constant and a linear time-trend as explanatory variables (over the full period available: 1983-2007) is estimated.

– The trend (slope) was extrapolated linearly from 2008 onwards and hence the foreigner ratio was allowed to increase until the growth rate would turn negative; at this point, we fixed the foreigner ratio (at about 0.5).

– This would result in an excess growth of cross border workers (over the growth of domestic employment) until 2018 and from then onwards, both cross border workers and resident workers evolve at the same pace.

Standard exit probabilities as observed for residents are applied to non resident pension scheme members. In addition, global life expectancy as for residents is applied to cross border workers.

The total number of civil servants is supposed to increase at the rate of 0.5% per year. Due to the fact that civil servants schemes apply the same pension formula as the general pension scheme from 1999 onwards, the relative share of civil servants within the employed does not have a major impact on pension expenditure in the medium and long run.

Age specific earning profiles are used to compute total economic wage levels. AWG labour productivity assumptions are applied to model real wage growth.

Chart 3 Historical and projected number of contributors to the pension system by residency between 1980 and 2060
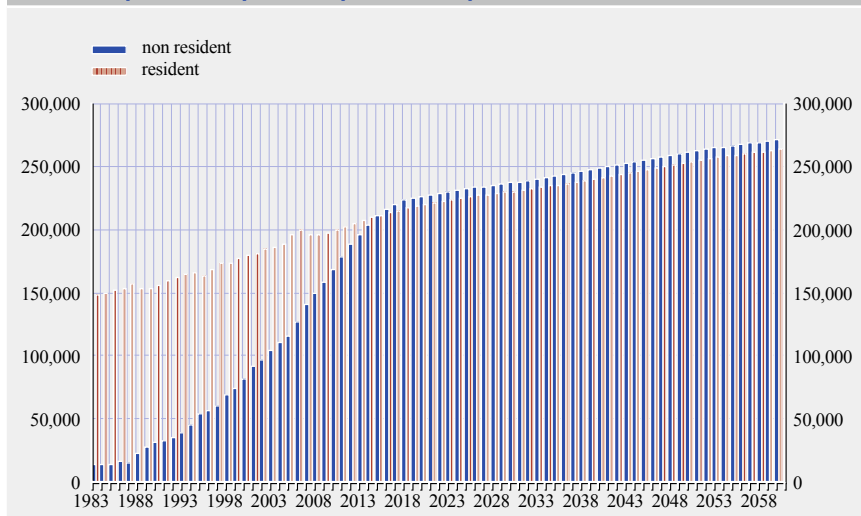
Source: IGSS.

COMPARISON OF MAIN INPUT DATA FOR THE MODEL WITH AVAILABLE DATA SOURCES

The statistical Data Warehouse (DWH) implemented by the IGSS centralizes all relevant statistical data in the framework of social protection in an exploitable form. During the past years the IGSS put huge resources in developing the DWH project. Systematic identification procedures concerning administrative data sources at the level of social security institutions and rigorous documentation of procedures on transformation and migration of administrative data from the operational files to the statistical data files in the DWH are now available. Before being integrated in the DWH, raw individual data is checked on quality consistency. In addition, a harmonization procedure is applied in order to ensure a correct and comprehensible labelling of variables.

Today, the DWH constitutes the starting point of different research projects and is used to analyze the joint effects of direct redistribution policies by social transfers and indirect impacts of taxation and contributions on the disposable income of a household or an individual. In particular, the DWH represents the reference database for generating the input data for the pension projections in the context of the SOBULUX model. In addition, the DWH includes all relevant data for establishing national and international statistics on social protection.

CONTRIBUTORS TO THE PENSION SYSTEM

The present section compares the number of contributors to the pension system as used in the model to available data in the DWH for the month of December and in the SNA for the last quarter[9] over the period 2005-2007.

Table 2	Ratio of the number of contributors to the pension system as used in the model to available data in the DWH for the month of December and in the SNA for last quarter	
(percentage)		
	DWH	**SNA**
2005	100.6	102.2
2006	101.5	102.9
2007	99.2	100.7

The number of contributors to the pension system is close to the number of contributors as registered in the DWH. Differences are mainly due to the fact that model contributors are projected over the period 2005 to 2007, using 2002 data as base year. In general the model computes slightly more scheme contributors as are reported in the SNA. Reasons for this small discrepancy are multiple. Model reference data is based on December whereas SNA figures refer to the last

9 EUROSTAT – SNA database http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/database

quarter. In addition pension system contributors include individuals which are not considered as employed in the SNA (e.g. unemployed, preretirement, …).

EMPLOYEE AND EMPLOYER CONTRIBUTIONS

In the context of the pension entitlement computation exercise, model aggregate figures to be reported in the supplementary table as foreseen in the international compromise on the treatment of pension schemes are calibrated to SNA figures[10] whereas in the context of the AWG projection exercise aggregate figures are calibrated to ESSPROS data.[11]

Table 3	Ratio of employee and employer contributions in the SNA to figures reported in ESSPROS
(percentage)	
	SNA
2005	100.2
2006	100.5
2007	100.4

The comparison of employee and employer contributions in both datasets shows that differences in contribution recording are insignificant over the period 2005-2007.

SYSTEM BENEFITS

The pension model computes pension benefits on the basis of the observed figures for the reference year 2002. The present section compares the computed benefits by the model to available data in ESSPROS-Pension beneficiaries' module[12] and the DWH over the period 2005-2007.

Table 4 Ratio of the number of benefits computed by the model			
(percentages)			
	ESSPROS no doublecount	**ESSPROS doublecount**	**DWH**
2005	107.7	102.1	101.5
2006	108.5	101.9	102.2
2007	108.1	101.5	101.8

The model overestimates to some minor extent the number of benefits in comparison to the data available in the DWH and in ESSPROS. It has though to be reminded that the model computes pension benefits and not pension

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10 Portail des statistiques du Luxembourg – Comptes nationaux http://www.statistiques.public. lu/stat/ReportFolders/ReportFolder.aspx?IF_Language=fra&MainTheme=4&FldrName=2
11 EUROSTAT – ESSPROS database, Receipts http://circa.europa.eu/Public/irc/dsis/esspros/ info/data/esspros_public_data/publication/receipts.htm
12 EUROSTAT – ESSPROS database, Pension beneficiaries' module http://circa.europa.eu/ Public/irc/dsis/esspros/info/data/esspros_public_data/PB/pension_beneficiaries.htm

beneficiaries, so that the model dos not separate double counting of beneficiaries with benefits from several pension schemes.

SYSTEM EXPENDITURE

As in the case of pension system receipts, model aggregate expenditure figures are calibrated to the SNA in the CMFP projection exercise whereas in the context of the EPC projections aggregate figures are adjusted to ESSPROS[13] data.

Table 5 Ratio of system expenditure in the SNA to figures reported in ESSPROS	
(percentages)	
	SNA
2005	98.6
2006	98.8
2007	99.0

As for the comparison regarding the receipts of the pension system, differences on benefit expenditures are insignificant between figures reported in both databases.

PROJECTION RESULTS

Model results show that the actual pension entitlements (accrued to date pension liabilities) are close to 300% of GDP over the period 2005 to 2007.

Table 6 Projected pension entitlements[1]						
(percentage of GDP)						
	2005		2006		2007	
Column	H	I	H	I	H	I
Pension entitlements	60.8	307.4	56.8	296.7	55.4	299.4

1) Column H: Defined benefit schemes for general government employees classified in general government; Column I: Social security pension schemes.

Pension entitlements computed in the context of the CMFP are not an indicator of long-term sustainability of pension systems or of public finance. Pension liabilities give an indication on the cost of closing the pension system but the figures give no indication on the sustainability of the pension system because they do not include projections, neither on new contributors, nor on expected total individual pension expenditure at the moment of retirement. For this purpose an open system approach, as it is applied in the context of long term old age expenditure projections of the EPC, has to be considered.

13 EUROSTAT – ESSPROS database, Expenditureshttp://circa.europa.eu/Public/irc/dsis/esspros/info/data/esspros_public_data/publication/expenditure.htm

EPC based methodology expenditure projections expect the development of total social security pensions spending to GDP to increase sharply between 2007 and 2060.[14] By 2060 pension expenditure will be around 24% of GDP.

Table 7 Projected gross pension spending							
(percentages of GDP)							
	2000	2007	2020	2030	2040	2050	2060
Social security pensions	9.1	8.7	9.9	14.2	18.4	22.1	23.9
Old-age and early pensions	5.6	5.8	7.0	10.9	14.9	18.3	20.1
Other pensions	3.5	2.9	2.9	3.3	3.6	3.8	3.9

Both concepts, accrued to date liabilities and total pension expenditure, do not provide a complete picture on the sustainability of the pension system as actual assets and assumed future receipts of the system are not considered. The total expenditure approach although has the advantage of isolating future pressure on pension scheme by providing a quantified estimate of annual financial burdens to be expected over the projection period.

In Luxembourg, the pressure on public pension spending comes from changes in dependency ratio of the pension system. Over the projection period the number of

14 2009 Ageing Report: Economic and budgetary projections for the EU-27 Member States (2008-2060), European Commission, 2009 http://ec.europa.eu/economy_finance/publications/publication14992_en.pdf

Chart 4 Annual pension benefit expenditure accrued to the years 2005-2007 and annual total benefit expenditure over the period 2007-2060

(as percentage of GDP)
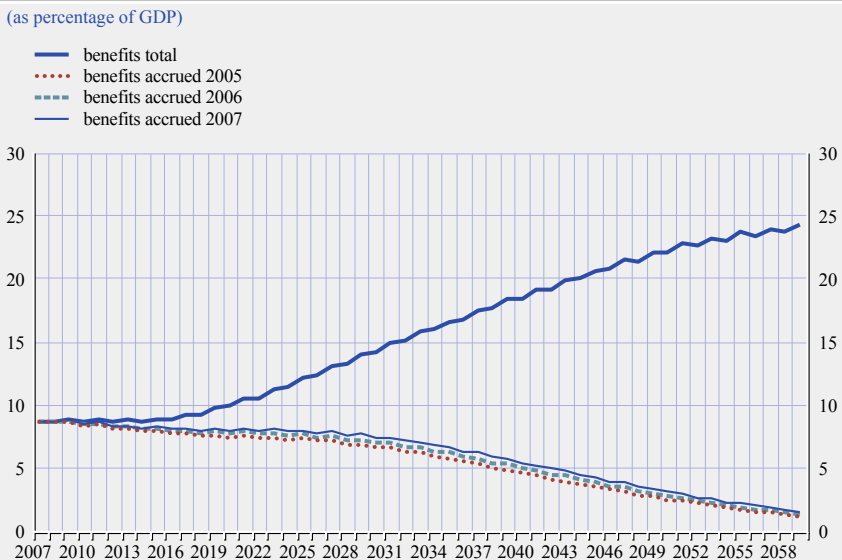
Source:

contributors per pensioner is sharply decreasing so that less and less contributors have to support more and more pensioners. In addition, due to the fact that the average compulsory contribution period is supposed to increase for all socio-economic agents due to complete careers of migrant and cross border in the long run and increasing participation rates of resident females, the benefit ratio is supposed to amplify in the long run.

4.   CONCLUDING REMARKS

The method applied in the case of Luxembourg for computing pension entitlements is fully compliant to old age related benefit projections by the EPC. A single model is used to compile total expenditure figures as well as accrued to date liabilities for the pension system, based on equivalent input datasets, assumptions and methodology. In this way full consistency is ensured in the calculation of projected pension elements within the two different concepts. The methodology is in line with existing frameworks already developed and applied in other fields, especially regarding ESSPROS statistics and the Open Method of Coordination[15] (OMC).

A close collaboration in the context of pension expenditure projections for Luxembourg between national public authorities (national statistical institute STATEC, Ministry of Finance, Ministry of Social Security) ensures an adequate application of concepts at the national level. This strategic approach allows a comprehensive communication of the results, without running the risk of publishing divergent figures and distinct statements.

Accrued to date liabilities and total benefit expenditures are crucially depending on projection models. In order to avoid misinterpretation and to endorse the projection results, it should be made certain that statistics in the area of old age related expenditure projections produced by public authorities at national and international level are based on the similar principals, identical assumptions and harmonized methodologies.

15 A renewed commitment to social Europe: Reinforcing the Open Method of Coordination for Social Protection and Social Inclusion http://eur-lex.europa.eu/LexUriServ/LexUriServ. do?uri=COM:2008:0418:FIN:EN:PDF

THE SOCIAL SECURITY PENSION SCHEME IN FINLAND

BY PAULA KOISTINEN-JOKINIEMI [1]

This is a background document to the Finnish presentation given in the ECB/ Eurostat Workshop on Pensions in Frankfurt, 30 April 2009.

The main focus of the presentation is to summarise the first experiences of Statistics Finland in exploiting the new Supplementary Table on pension schemes outlined for the updated SNA93 and the revised ESA95. Our comments concentrate mainly on the technical implementation of the Table without trying to explain the background of the Finnish pension entitlement estimates.

1   FINNISH PENSION SYSTEM IN BRIEF

The Finnish public pension system is made up of two statutory pension schemes: the national pension scheme guaranteeing a minimum pension to all residents, and the employment-based, earnings-related pension scheme which is an insurance against loss of salaried income. Payments in statutory pensions amounted to approximately 11 per cent of GDP in 2008, of which the employment based earnings-related pensions accounted for around four fifths and the basic national pensions for the rest, though the role of the latter is diminishing.

Voluntary pension insurance has so far played a minor role in Finland due to the relatively high net replacement ratio of public pensions, the lack of pension ceilings and the full coverage of the statutory systems. The share of the voluntary pension provision of the total pension expenditure is only around five per cent.

In pension terminology pensions are generally divided into three categories, which are referred to as 'pillars'. In Finland there are two complementary first-pillar pension schemes: the national pension scheme, and the earnings-related pension scheme. Both of these are statutory schemes, which makes them both part of the country's social security system. This situation is unique in Europe, as most of the earnings-related pension schemes in other European Union countries belong to the second pillar.

The two statutory pension schemes are closely linked together, with the amount of national pension depending on the size of the earnings-related pension benefits. Increases in the earnings-related pension reduce the national pension by 50 per cent. If the earnings-related pension is above a specified level, the national pension is not paid at all.

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1   Statistics Finland.

The statutory earnings-related pension scheme covers all gainfully employed persons. It comprises different acts for private sector employees, seamen, farmers and entrepreneurs, as well as separate acts for central and local governments, the Finnish Evangelical-Lutheran Church and for some other public institutions. In the 2005 reform the pensions benefits under the different acts – both private and public – were harmonised to a large extent and the benefit and accrual rules are nowadays identical (even if their financing arrangements differ), so that the system can be considered as a collective social security system as a whole. Despite the nature of the system, the administration is decentralised and the pensions are managed by several pension institutions (private pension companies, pension funds and pension foundations, public institutions).

The financing arrangements vary from pure pay-as-you-go (PAYG) schemes to partly funding schemes, but as a general rule the financing of earnings-related pensions is a combination of a pre-funding and a pay-as-you-go system based on insurance contributions from both employers and employees. The pre-funding schemes cover approximately one quarter of corresponding pension outlays, and the rest is financed through the PAYG system.

Despite the pre-funding system in pensions, Finland's earnings-related pension scheme is entirely of defined-benefit type. The pre-funding is collective in the sense that it has no effect on the size of the pension. The sole purpose of the pre-funding is to cut the peak of pension contributions in the coming years. The financial position in the earnings-related pension schemes is fairly good; the system is running on surpluses. The annual surplus has in recent years been some three per cent in relation to GDP. The market value of the pension assets make up about two thirds of GDP (in 2007).

For more information (pension acts etc.), see the website of the Finnish Centre for Pensions at: www.etk.fi

2   SUPPLEMENTARY TABLE ON PENSIONS: FINNISH TEST EXERCISE

The following chapter of the document refers to the draft Supplementary Table on pension schemes, as included in the report of the Eurostat/ECB Contact Group on pensions to the CMFB meeting in February 2009.[2] The Table has been outlined for the updated SNA93 and the revised ESA95.

Among other countries, Finland took part into the test exercise organised by the Eurostat/ECB Contact Group on pensions in order to estimate the benchmark pension entitlements based on the pension model and on harmonised model assumptions as specified by the Research Center for Generational Contracts of the University of Freiburg. For Finnish part the exercise was assisted by Statistics Finland with the help of experts of the Finnish Centre for Pensions. The Finnish

2   Report of the Eurostat/ECB Contact Group on the statistical measurement of the assets and liabilities of pensions schemes in general government to the CMFB meeting, 5-6 February 2009

estimations were made for the years 2006 and 2007. The required input data were mainly obtained from the employment and pension registers of the Finnish Centre for Pensions covering all relevant schemes (including civil servant schemes).

The old-age, disability, unemployment, part-time, old-age and survivors' pensions form an integrated part of the pension benefits/entitlements based on Finnish pension laws, so they were also covered by the benchmark estimates. During the exercise there was some debate on whether the national pensions should also be included in the entitlements due to the close linkage between the Finnish earnings-related pension and the national pension (as noted above). However, we concluded that the national pensions should be excluded because of two arguments. First, because no social contributions are payable in the national pension scheme, it can be seen more as a social assistance and not as a social insurance scheme. In the second place, our understanding is that because there is no proper annual pension accrual in the national pension scheme, no reasonable pension entitlement could be compiled either.

The Freiburg University's country studies in the framework of the new Supplementary Table were introduced in the CMFB February report, Finnish social security pension entitlements being shown as total (pages 87-89). Since then the Finnish version of the Supplementary Table has been further elaborated by the experts of Statistics Finland to show the split between private and public pension schemes. This split was done by making use of the separate pension entitlement estimates for the private and public schemes compiled by the Freiburg University. The table was then completed using the same patterns and totals as in the initial Freiburg calculations. To compile the so called 'Household social contribution supplement' the initial assumed five per cent discount/interest rate (in real terms) was also used – the rate being higher than in many other countries' benchmark compilations.

The completed version of the Finnish Supplementary Table for 2007 is shown in table 1 of the Finnish presentation in the Workshop.

SOME CLASSIFICATION ISSUES

At the moment all Finnish statutory earnings-related schemes – both private and public – are classified as social security schemes in ESA95 National Accounts. Our conclusion was that in the new Supplementary Table on pensions they should be shown under column 'Social security pension schemes' (column H). The public sector employer schemes (schemes for government employees) should also be reported under the same category based on the following arguments.

As noted in the previous chapter, the Finnish public sector employer schemes are very close to the nature of social security, and the statutory pension system as a whole can be seen as applicable to the population at large. From the ESA95 point of view this supports the recording of the public sector employer schemes together with other social security schemes in the Supplementary Table.

From the standpoint of users of statistics this is probably not so obvious. On the contrary, there is clearly a need to have separate data on the public sector's own employer entitlements, even if the public schemes were classified as social security schemes in the statistics. Of course the split to private and public sector entitlements can be added for national purposes – as we have done in the test table – but we think that this kind of information should be clearly available for all users in the forthcoming Supplementary Table.

INTERPRETATION OF THE RESULTS

The representation of the annual change of pension entitlement in the Supplementary Table partly differs from the Finnish national representation. In the reports of the Finnish Centre for Pensions this change is normally comprised of three factors: annual pension accrual, annual pension benefits and a certain interest component. In the Supplementary Table the annual pension accrual is replaced by annual social contributions, and a special row called 'Other (actuarial) increase of pension entitlements' (Item 3 in case of social security scheme) is used to 'match' the change in the pension entitlement. However, in the Finnish system the employer's or employee's actual contributions are not relevant to the annual pension accrual, whereby the interpretation of the information in the Supplementary Table may be somewhat challenging to the users.[3]

The outlined Table contains a separate 'non-core' column for those public sector employer schemes that are not social security schemes (column G). The corresponding 'matching' item in column G is 'Employer imputed contributions' (Item 2.2). This item will also be shown in the 'core' national accounts but there is some concern of whether it should be recorded using the same valuation as in the Supplementary Table.

We think that there are strong reasons for not using the same valuation in the 'core' accounts. In practice the 'Employer imputed contributions' (as well as Item 3) will probably be compiled as a residual item in the Table whereby it may significantly vary from one year to another. If the same valuation were to be used also in the 'core' national accounts, this imputed item would have quite a significant and volatile impact on GDP.

3   LONG-TERM PLANNING MODEL OF THE FINNISH CENTRE FOR PENSIONS

National estimates of pension entitlements are compiled by the Finnish Centre for Pensions (FCP) and included in their public reports. The estimates are produced with the long-term planning model developed by the Centre to meet the

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3   In Finnish earnings-related schemes the pension accrues based on a certain accrual rate, whilst the confirmed annual contribution rate may vary below or above the annual pension accrual. After the 2005 pension reform, the pension accrues also during some earnings-related social benefit periods when no contributions are payable (such as parenthood allowance, earnings-related unemployment benefits or periods of childhood and study).

planning and forecasting needs of the Finnish pension system. It is an actuarial projection model by nature and there is only little economic theory built in to the model. The model simulates the operation of the pension scheme studying each pension act separately. The existing pension legislation and other stipulations are normally assumed to remain unchanged until the end of the projection period. The projections are based on an average technique by age and gender.

The core assumptions of the latest projection published by FCP are:[4]
1. Population according to 2007 forecast by Statistics Finland
2. Employment rate + 3 percentage points by 2050
3. Effective retirement age + 2.4 years from current level by 2050
4. Actual growth in earnings level 1.75% per year
5. Actual growth of return on pension assets 4.0% per year

The interest rate as such is not critical in the model, but deciding factor is the estimated actual rate of return of the pension assets. As regards the assumptions, the employment rate and the effective retirement age are near the Aging Working Group (AWG) assumptions for Finland. The others slightly differ from those used in the AWG or Freiburg benchmark estimates.

In order to compare the national pension entitlement estimates to the benchmark compilations based on the 'Freiburg' model, a test compilation was carried out by the experts of the Finnish Centre for Pensions using their national long-term projection model but changing the discount rate to 3 per cent and the growth in earnings level to 1.5 per cent, as in the Freiburg exercise. The pension entitlements were compiled separately for the private and public schemes for the years 2006 and 2007. The first results of this test compilation, as well as the 'Freiburg' benchmark estimates are shown in Tables 3 and 4 of the Finnish presentation in the Workshop.

The very first results indicate that the national (FCP) estimates for the total pension entitlement, as well as for the private schemes fall in the middle of the results based on the two 'Freiburg' methods (ABO and PBO) in both years. For example in 2007, the share of total pension entitlement of GDP was 268 per cent using the national model, while the ABO-method resulted in 235 per cent and the PBO-method in 295 per cent. Concerning the public sector schemes, in both years the national estimate was very close to the estimate based on the ABO-method. One presumption about the latter is that perhaps the model does not completely reflect the fact that the accruals of the public pension schemes were better in the history until they started to be harmonised with the private ones, starting from the year 1995. Unfortunately there has not yet been any further investigation of the results to be able to confirm this or to comment on the results any further.

However, we consider the results of this comparison as very encouraging, taking into account the deviating model, as well as somewhat differing assumptions. In that sense they can serve as a good starting point to the future work to develop the statistical measurement of pension liabilities in Finnish national accounts.

4   Statutory pensions in Finland. Long-term projections, Finnish Centre for Pensions, Reports 2008:1.

THE PENSION SATELLITE ACCOUNT IN CANADA

BY JOE WILKINSON, STATISTICS CANADA

I   BACKGROUND

Demographic projections for Canada are characterized by an aging population. This demographic trend has generated interest regarding the impact of this trend on the economy, particularly the funding of pensions. To better understand the impact of pension stocks and flows on both economic behaviour and on the economy as a whole, both currently, and in future years, a satellite account for pensions has been constructed. This account was first envisioned by national accountants in Canada in the mid-1990s. This note summarizes progress on this initiative. The note first describes the pension system in Canada. It then moves to articulate the need for a pension satellite account. This is followed by an explanation of how pensions are treated in the Canadian System of National Accounts (CSNA). Finally the structure and data sources used in creating the Pension Satellite Account (PSA) are discussed.

2   THE PENSION SYSTEM IN CANADA

In Canada there is a range of savings vehicles and social programs designed to provide funds to retired or aged citizens – including individual plans, employer-sponsored plans and social security schemes. Individual schemes are tax-sheltered saving plans that are designed to encourage citizens to accumulate assets earmarked for use as primary or secondary sources of retirement funds. Employer-sponsored plans cover a variety of arrangements, including retirement defined-benefit and defined-contribution plans in both the public and private sectors. Social security encompasses both employee/employer funded government-sponsored saving plans and non-saving plans where disbursements are financed out of current tax revenue.

Employer sponsored schemes hold a large proportion of assets.

For the most part, the pension system as it exists today is a function of post-war developments in the economy. In Canada, the union movements of the 1950s saw the establishment of large employer sponsored defined benefit plans. In the 1960s a large pay-as-you-go plan managed by the federal government was

Table I Distribution of pension assets by type of scheme	
	Percentage of pension assets (2007)
Employer Sponsored Plans	58
Individual Savings Plans	35
Social Security	7

established to provide a pension plan for employees across the labour market. In the 1970s provisions were made in the income tax legislation to create individual tax sheltered pension savings vehicles. As the large employer sponsored pensions began to accumulate vast pools of funds, and legal issues arose as to "ownership" of the funds, pension legislation was introduced to regulate large pension plans (some time in the late 1970s and early 1980s). The legislation involved regulation on nomination of trustees, required levels of funding and actuarial evaluation. Subsequently, large pension plans previously in place changed structurally as a result of the legislative environment – including migration of many previously "unfunded" plans to a fully funded status. Finally, a pure social security program has existed throughout the last 50 years funded out of general tax revenues. While the "old age security" program is universal, there is a "claw back" provision in the income tax system above certain income thresholds and an income supplement for lower income individuals.

EMPLOYER-SPONSORED PENSION PLANS (ESPP)

Employer-sponsored pension plans are typically group plans, and, to a very large extent, are funded based on the invested assets criterion. As noted above, these cover both public and private sector plans.

Employer-sponsored plans in Canada are established by either employers or unions to provide retirement income to employees. These plans are registered with the federal tax department and usually a regulatory authority. Autonomous trusteed pension plans, representing employees in both the private and public sectors, hold the majority of the assets in these plans in Canada.[1]

The large defined benefit plans fall under legislation requiring that the fund be managed by an independent trustee and that actuarial evaluations are done regularly. If the pension is sponsored by the employer, actuarial surpluses are generally run down by contribution holidays for the employer while deficits are made up by large lump sum contributions to the plan. All contributions by employees are income tax deductible and no tax accrues on the pension plan investment income or capital gains. The tax accrues only when pension benefits are paid.

Defined benefit plans hold a significantly larger share of the assets of Canadian employer sponsored plans than their share of employees who are members of all pension plans in Canada. The defined benefit plans are actuarially evaluated and surpluses (over-funded plans) or deficits (under-funded plans) are identified and recorded. Recently the valuations of these plans, impacted by stock market fluctuations, have registered significant deficits. In order to restore these plans to sound financial positions, employer's additional/special contributions (which are fall under government regulation) have increased dramatically in some cases. These special contributions have notable impact on corporate cash reserves and, as a result, there has been a significant migration by employers towards defined

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1   Insurance companies' contracts account for the bulk of the remainder.

contribution plans in recent years.[2] Conversely, defined contribution plans hold a smaller share of the assets of Canadian employer sponsored plans relative to their share of employees who participate in Canadian pension plans.[3]

GOVERNMENT UNFUNDED-EMPLOYER-SPONSORED PLANS

SNA93 considers unfunded plans as those with no invested assets and are typically viewed as *pay-as-you-go* (PAYG) plans. Such plans may or may not record liabilities, but if they do SNA93 recommends that these (and the corresponding household sector assets) be treated as a memo item. CSNA goes beyond SNA93 in this regard, and has opted for one general approach for all employer-sponsored plans. The basic justification for this approach is that the obligations of the employers are the same under funded and unfunded plans, and that the economic behaviour of households is largely invariant to whether their employer-sponsored plans are funded or unfunded.

Legislation permits unfunded pension plans only in the government sector in Canada. These plans are viewed as non-autonomous, and cover the federal government as well as certain provincial government administrations.[4] Non-autonomous government plans record a pension liability (typically, at both accumulated and actuarial value) and, book interest on these liabilities. As a result, the term "unfunded" may not be the best way to describe these plans. Over time, a number of government plans have been converted from unfunded non-autonomous plans to funded autonomous plans.

INDIVIDUAL RETIREMENT PLANS

There are a number of different vehicles for retirement saving by individuals in Canada, but by far the most important is the registered retirement savings plan. Based on a percentage of their earned income in a year, Canadians are allotted an amount up to which they can contribute into their registered retirement savings plan in the subsequent year. These allotted contributions are linked to the large employer-sponsored plans such that the total allotment includes those contribution made to the large employer-sponsored funds and these individuals have less "room" to contribute to individual savings plans than those who do not participate in larger registered schemes. This contribution reduces their taxable income in the subsequent year and contributors receive a refund of tax based on the size of the contribution and their marginal tax rate. Taxpayers who do not make this contribution can carry forward their allotment to subsequent years. In 2007, 31% of eligible tax filers made contributions. Withdrawals from these plans are taxable.

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2   This way employers can avoid the risk related to actuarial evaluations of their employer-sponsored pension plans.
3   Policy analysts within the Canadian government have identified the migration towards these plans as a significant risk to the financial preparedness of Canadians for retirement if the level of funding of these plans remains at their current levels.
4   Except for one province, these plans are all defined-benefit schemes.

Contributions to individual savings plans relative to employee contributions to employer sponsored plans have increased dramatically over the past 10 years. These gains have been impacted by the substantial effects caused by the migration of employers to defined contribution plans where contributions are smaller. Increased payments to individual plans by Canada's aging population have also paid a role.

SOCIAL SECURITY

Canada and Quebec Pension Plans

The Canada Pension Plan (CPP) and the Quebec Pension Plan (QPP) are government-sponsored pension plans, and comprise one component of social security in Canada. Employers and employees contribute to these plans, initiated in the late 1960's as a social policy initiative. CPP and QPP are defined benefit plans in nature; however, employers do not bear risks related to the availability of funds for withdrawals under these plans. These government-established plans are based on a relationship between the workforce and the government, and the intention is to provide workers and their families with limited retirement earnings as well as some protection against disability and death.

Since the late 1990's, when concern was expressed about declining balances in these funds, contribution rates have been increased and more funds have been set aside in these funds which operate at arm's length from government consolidated accounts. As a result of this, and combined with increased investments in marketable securities and real estate, a significant reserve has been built up. However, these funds still do not provide for the benefits and administration of the account in its entirety and certain components of these plans continue to operate on a pay as you go basis.

Old Age Security

Old age security is the second component to social security programs in Canada. Unlike the CPP and QPP programs described above, it has no connection to employment. There are no contributions made into the plan and no reserves set aside, and benefits payments are charged to federal government expenditure. In this sense it is a pure PAYG plan. Payments under this program begin after pensioners reach the age of 65 and the program is meant to guarantee a minimal level of income.

3   THE NEED FOR A PENSION SATELLITE ACCOUNT

A satellite account is an extension of the core System of National Accounts (SNA). It is based on the accounting principles and the established framework of the SNA, thereby aiding analysis. A significant amount of pension information is currently embedded in the core SNA sector accounts; however, only a limited amount of this information is visible in these accounts. The goal of the PSA project is to articulate pension details within the accounts and present them using the structure of the SNA. In addition, the PSA includes estimates for missing pension detail such as items which are implicit with SNA aggregates.

The need for the PSA arises out of the fact that within the current structure of the SNA it is very difficult to answer the range of policy related topics surrounding the aging of the Canadian population. These topics include, but are not limited to the following:

PERSONAL SAVING AND WEALTH EVOLUTION

The personal saving rate has been declining over the last few decades in Canada. Up to 1990, the decline was considered a return to a normal level, after having peaked at over 20% in 1981. Thereafter, the decline, which continued through the 1990s and into the current decade, has generated more interest. Despite the downward trend in personal saving since 1990, household wealth has continued to accumulate by essentially replacing saving out of current income with capital gains (price appreciation of assets). Pension saving has also been growing, taking up a sharply increasing share of the downward trending personal saving. Concurrently, pension wealth has been a significant contributor to the growth in household net worth. What remains to be understood is the impact of the increasing pension payments/withdrawals, going forward in time, on household financial positions.

FORECASTING THE ECONOMY

Personal expenditure accounts for about 60% of GDP. The ability to estimate its future growth is essential for central banks, policy-makers and analysts. As population ages, there are increasing sources of funds from other than income arising from production and transfers. Pension benefit payments and individual retirement saving plan withdrawals – dis-saving – will soon be key variables to any forecasts of personal expenditure. The PSA indicates that the propensity to spend is quite high out of retirement dis-saving.

PROJECTING TAX REVENUE

There is already a gap between reported SNA income and income taxes paid, largely because realized capital gains are excluded from SNA income, which is of concern to some analysts. Increasingly, taxes will be generated out of pension benefit payments and individual retirement plan withdrawals. The need to project tax revenues from pension dis-saving for fiscal planning purposes is clear, and the federal finance department has expressed interest in this detail of the PSA.

IMPACT ON CAPITAL MARKETS

The accumulated investments in Employee Sponsored Pension Plans (ESPP), social security and individual saving plans are a significant part of economy-wide assets. As assets in these funds grew sharply beginning in the late 1980s and continuing into the 1990s, they have had a substantial influence on capital markets – with respect to both growth and fluctuations. However, as these funds are drawn down by retirees over the years to come, the impact on these markets and on the economy is unclear. The PSA will be able to shed some light on the impact of these trends on the economy.

SUSTAINABILITY ISSUES

This is the fundamental question of: Is there enough accumulated pension saving – by type, by composition – to meet the needs of increasing number of baby-boomer retirees over the next several years? If not, there are clear implications for the standard of living and likely also for government fiscal balances. Notably, there is a need to understand the age-income class distributions of this accumulated pension saving in order to fully address this issue. (Can we say) The actuarial requirements of this analysis go beyond the structure of the SNA but could be contained within (or based on) a satellite account structure of the PSA.

PENSION SYSTEM RISKS

There is a series of risks associated with the pension system that feedback on the sustainability question. The overall burden of pension saving has gradually shifted from government to employers and to individuals. For defined-benefit ESPP, there are financial risks for employers associated with fluctuating values for invested pension assets. A market correction implies increased business costs as any subsequent actuarial deficits must be eliminated. Clearly, significant market corrections, risky investments or sustained poor returns on pension investments can translate into an overall cost to the economy.

Partly to counteract these vulnerabilities, employers have been moving away from defined benefit schemes in favour of defined contribution schemes. This is a disadvantage for employees covered by these plans, as known benefit streams provide income security.

A further risk to households' future income security relates to the significant amounts invested in individual retirement saving plans. Increasingly, these investments have shifted from fixed income into equities. If returns are not adequate or capital loses are registered, future incomes can be eroded. With the significant amount of funds invested in pensions, it could be argued that the financial position of households is considerably more sensitive to market risk (both asset price and interest rate fluctuations) now than it was years ago, with potential impacts on the economy.

The PSA will help access this level of risk.

4   PENSION TREATMENT WITHIN THE CANADIAN SYSTEM OF NATIONAL ACCOUNTS

The CSNA has two basic architectures: The production-oriented industry-based architecture of the detailed input output tables and the current monthly measures of output by industry; and, the sector-based accounts designed to articulate economic behaviour. This latter set of accounts includes the quarterly measures of income arising and final expenditure on GDP and the underlying and detailed sequence of sector accounts. The sector accounts include: the income and outlay account; the capital account, the financial account and the balance sheet account

(including the other changes in assets). The PSA is an articulation and extension of the stock-flow dimension to the sector accounts.

It is useful to clarify two features of the CSNA treatment of pensions that are different from a number of other countries. First, all household pension plans have a similar treatment with respect to their impact on personal saving and wealth. Whether a government ESPP is funded or unfunded (no invested assets), it is treated as a household sector asset, with corresponding saving flows. This treatment is used because the asset is recognized as a liability by the government (or the funding sector?). Second, Canada has a treatment for all ESPP that does not require the D8[5] adjustment described in SNA93 to bring personal saving and personal disposable income into line. Essentially, the incomes and outlay of pension funds are consolidated in the household sector.[6]

One challenge in the Canadian System of National Accounts (CSNA) has been to provide a consistent treatment of saving, net lending and net worth of the institutional sectors over time as the pension saving system evolved. While most of the changes in the pension system over time have either represented incentives to save for retirement or brought about mandatory participation in a pension saving plan, some of the changes have been regulatory in nature. These latter changes were intended to protect previous and future investments and not alter saving behaviour. In these cases, it has been difficult to determine the most appropriate treatment in the CSNA with respect to the SNA standard and international comparability.

INDIVIDUAL PLANS

In the CSNA, contributions to individual plans are made out of current gross income, usually originating from wages and salaries. Contributions are not explicitly recorded in the system as part of current outlays,[7] so that they are implicitly included in estimates of personal saving. Investment income, earned in the current period from these plans, also contributes to personal saving. This reconciles well with the *Financial Account*, where contributions and income earned are included in financial asset investment flows of households. Withdrawals (after tax) that are spent are also only a *Financial Account* item as they are not included in current income, and are a source of funds for expenditure. Withdrawals that are used as a source of funds for personal consumption expenditure are recorded as expenditure and thus serve to reduce personal saving in that period (i.e., represent dis-saving). Total withdrawals are taxable and as a

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5   See SNA 93 section 9.16.
6   These are treated as a form of collective investment schemes. Employee contributions are in wages and salaries and employee contributions in supplementary labour income; investment income of the pension funds (excluding gains and losses are in household investment income; benefit payments to pensioners are part of dis-saving in the financial account, such that the net flows in the financial account reflect the major items contributions plus investment income less withdrawals.
7   In contrast, individual saving plan contributions are typically treated as current outlays in the Statistics Canada (?) household income and expenditure survey.

result, create an incongruity between taxes paid and national accounts' income.[8] Household *Balance Sheet Account* estimates include both the accumulated net inflows (contributions less withdrawals plus investment income) as well as the capital gains on the investments. (and therefore provide a more complete picture of personal saving)

EMPLOYER-SPONSORED PLANS

Tax-deductible employee contributions to employer-sponsored plans are implicit, but are included in wages and salaries.[9] Employer contributions are treated as a labour cost and included in supplementary labour income of households. Autonomous pension plans are treated as collective investment schemes that are consolidated in the current account items of household sector. As a consequence, total contributions remain in the personal sector and investment income booked on the assets is counted in household income, and both are reflected in personal saving.[10] Withdrawals, while taxable,[11] are not treated as income but rather as financial flows that are mirrored in personal saving. In the *Financial* and *Balance Sheet Accounts*, the net asset flows and positions are included in a net pension asset of households. The autonomous funds themselves are included in the financial institutions' sectors, where the invested assets' detail is articulated. The net liability of the autonomous plans is the corresponding net pension asset of households.[12] Household *Balance Sheet Account* estimates include both the accumulated net inflows (contributions less withdrawals plus investment income) as well as the capital gains on the investments.

For defined-benefit plans, actuarial deficits are recorded as liabilities of employers.[13] Special employer contributions to eradicate actuarial deficits are not expensed by business. Rather they are adjustments to an off-balance sheet account. However, these are currently treated as supplementary labour income of households, and a business expense must be imputed (and corporate surplus lowered) when these expenses are incurred.[14] Employer actuarial deficit liabilities are treated as "other liabilities" of businesses and as "other assets" of households;

8   Since the SNA treatment of income and tax policy are not always the same, income arising from production does not always tie in fully with tax payments/receipt flows. This is a similar issue as the SNA treatment of taxable capital gains.
9   Not all employer-sponsored plans require employee contributions.
10   This avoids the SNA93 *D8 adjustment* that is required for saving rate analysis as well as for continuity of household income-saving with the *Financial Account* and *Balance Sheet Account*.
11   Like with withdrawals on individual plans (discussed above) this also drive a bit of a wedge between taxes paid and national accounts' income as there are taxes on the withdrawals which are not included in current SNA income.
12   This is seen by some as an anomaly. However, it must be understood that income arising from production does not tie in fully with tax payments/receipt flows. Of course, this is the similar issue for some as with the SNA treatment of taxable capital gains.
13   Actuarial surpluses are treated as "other assets" of employers, and are eliminated by taking contribution holidays.
14   This is not the case for actuarial surpluses, where employers take contribution holidays by reducing their regular contributions. The current CSNA treatment for actuarial deficits and surpluses is reasonably consistent.

these are subsequently allocated to pension asset of households, when the actual funds are disbursed to the autonomous plans.[15]

The federal government unfunded employer-sponsored pension plan has been running a surplus for some time. The treatment in this case is different that in funded autonomous plans. Essentially, there is no contribution holiday booked, but the surplus is reduced in each period by way of a special adjustment. This special adjustment (i.e., the repatriation of the surplus) is treated as a capital transfer from households to government. This approach has a certain amount of appeal. (explain pros (and cons) of this approach).

SOCIAL SECURITY

For the CPP and QPP, employee contributions are reflected in wages and salaries and employer contributions in supplementary labour income of households. However, these do not figure into personal saving as both employee and employer contributions are remitted to government as part of current transfers to government from households. Investment income on the plans is part of government revenue, and the plans contribute to overall government saving and surplus/deficit. Benefit payments are treated as part of current transfers from government to households. Financial transactions and positions related to plan assets are articulated in the government sector *Financial Account* and *Balance Sheet Accounts*, respectively.

For the Old Age Security plan, benefit payments are treated as current transfers from government to households. There are no other explicit entries.

5   STRUCTURE OF THE PENSION SATELLITE ACCOUNT

While pension flows and stocks are fully accounted for within the CSNA, they are not fully articulated. This detail is at the heart of the pension satellite account. The Pension Satellite Account explicitly identifies how pension monies are treated in the CSNA; and expands the CSNA database to add specific detail on certain types of retirement saving instruments.

Many aspects of pension schemes are incorporated in the framework of the PSA, such as:
– wealth change;
– contributions;
– investment income and withdrawals;
– realized and unrealized gains and losses.

The PSA is an integrated conventional stock-flow matrix framework with data on both a book and market value basis.

15 Employer actuarial surplus assets actually decrease household sector "other assets".

Table 2 Basic structure of the Pension Satellite Account (condensed version)					
	Opening wealth position	Inflows: contributions, Investment-income	Outlays: Withdrawals, Administration-cost	Other changes: Capital gains/losses	Closing wealth position
Individual saving plans					
Employer-sponsored saving plans					
Social security plans					

The PSA begins with an opening wealth position for a given pension regime. It then quantifies the inflows, outflows and other changes in value due to capital gains or losses to arrive at a closing wealth position.

The PSA examines the whole universe of the pension system in Canada. It reflects the diverse structure of retirement schemes such as private and public employer-sponsored plans, individual savings plans and social security schemes. These schemes generally all have institutional investors-investments dimensions to them, with the net assets of pension wealth and saving belonging in the personal sector while also representing both investments and liabilities in the other sectors of the economy.

Data for the PSA comes from a variety of sources such as:

Pension Plan Survey Data
• The Pension Plans in Canada program is an annual census of all registered pension plans (RPPs) in Canada. Information is collected on pension plan characteristics such as; the plan type (e.g. defined benefit vs defined contribution), number of members, the terms and conditions of membership, contributions made by and on behalf of members and the jurisdiction of the plan. The program is based on regulatory information compiled and standardized from provincial and federal pension supervisory authorities, in a cooperative arrangement with Statistics Canada.

• Trusteed Pension Fund surveys gather financial information on trusteed pension funds representing about 40% of all registered pension plans in Canada and covering about 70% of its members. The surveys measure the investment mix of assets over time (book and market value), rates of return and sources of income and expenditure. The Trusteed program includes a quarterly survey of the largest funds (representing 85% of fund assets) and a biennial Census.

Household Survey Data
- The Survey of Financial Security is a household survey that collects information on the assets and debts of families and individuals in Canada. The survey provides information on the Canadian wealth distribution, including a wealth value of employer pension plans, individual retirement savings plans (RRSPs, RRIFs) and all other asset and debt instruments in the context of overall net worth at the family level.

Tax Data
- Contributions to individual savings plans are generally tax deductible and reduce the taxable income of the contributor. As a result, contributions can be aggregated from tax sources and an annual total can be calculated. Similarly, withdrawals from tax sheltered individual savings plans are subject to tax and become part of taxable income in the year of withdrawal. These withdrawals are aggregated to tabulate total annual withdrawals from plans.

Government public accounts and other administrative data
- Reporting for social security programs such as old age security and the Canada and Quebec Pension Plans are part of the regular reporting for Government through the Public Accounts. In addition, aspects of these programs represent transfers within the CSNA and these series are followed closely. The unfunded pension liabilities of government bodies are disclosed in the Public Accounts.

Surveys of financial institutions (insurance, banks and other financial intermediaries)
- Some details of pension related assets of the household sector are available from the survey sources for various financial institutions. For example, tax sheltered deposit liabilities are reported by the financial institutions as a detailed component of their overall deposit liabilities. These deposits represent part of the assets of household's individual savings plans.

Other sources
- Various associations of financial intermediaries as well as private sector data providers present components of the data used in the PSA.

- Some degree of modelling and derived data.

6   SUMMARY

The System of National Accounts provides the opportunity to present pension-related flows in a coherent framework. The PSA will provide the tools required to better analyze household consumption behaviour in light of a significant shift in the source of funds from current income to dis-saving taking the form of pension benefits or withdrawals from other pension assets such as individual savings plans. It will allow a deeper understanding of personal wealth and its distribution.

The PSA covers the entire universe of retirement regimes in Canada which includes government sponsored social security plans, employer sponsored pension plans and voluntary individual retirement saving plans. For each of these three pillars of the Canadian pension system, the PSA provides an articulation of the stocks and flows as related to the sector accounts (i.e. the income and outlay accounts, the capital account, the financial account and the balance sheet). Total assets of the pension programs account for about $2.1 trillion at year end 2007.

DISCUSSION ON SESSION IV

BY ANA ALMEIDA [1]

1   INTRODUCTION

In the context of the revision of the European System of National and Regional Accounts 1995 (ESA95), the compilation of pension entitlements entails a specific and growing interest as European countries face serious challenges due to Social Security deficits. The importance of these issues becomes visible in the revised ESA with the inclusion of a new chapter - chapter XVII - dedicated entirely to the recording of pension schemes. The creation of a new Supplementary Table, to be compiled on a mandatory basis, is one of the most relevant changes within the framework of the ESA95 revision. This table, which aims to record all the transactions and other economic flows, pretends to have a full coverage of pension schemes data included as social insurance.

In order to accommodate Supplementary Table proceedings and modelling pension entitlements, European and also some non-European countries were invited to give their contributions in a conference organized jointly by the ECB and Eurostat: *ECB / Eurostat workshop on pensions*, which took place on 29th – 30th April 2009.

Banco de Portugal [2] was invited as a discussant in the 4th Session of the conference: "*Country experiences in compiling pension entitlements*". The session aimed to discuss and point out the main concerns, difficulties and improvements that can be made in order to harmonize and make more effective the compilation of pension entitlements. Four countries, with very different experiences, gave their contributions during this session: Spain, Luxembourg, Finland and Canada.

This paper designs the main features and discussion issues prepared by *Banco de Portugal* in the referred workshop on pensions, reflecting the experiences of the participant countries mentioned above. It is organized as follows: section two provides an overview of the Social Security's current issues. In section three, some aspects of country experiences in the compilation of pension entitlements data are summarized and discussed. Further general issues / final remarks and future developments of recording pension entitlements are presented in section four.

2   SOCIAL SECURITY – AN OVERVIEW

Social Security has been an active area of economic and statistics research in the last years, due to the highly concern on the financial sustainability of the

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2   Ana Almeida.

system. The ageing of population and the corresponding demographic changes are the main causes to this issue. In fact, the increase of life expectancy and the downward trend in fertility rates lead to changes of the population structure in such a way that older people outnumber younger ones. This situation creates intergenerational imbalances with increasing costs for caring for the older generations and consequently Social Security growing expenditures. The following chart plots age dependency ratio and clearly indicates the expected increase number of people aged beyond 65 years, from 25 per cent of the working age population (from 15 to 64 years old) in 2008 to 50 per cent in 2060.

The change in demographic trend jointly with the immigration phenomena turns out to be a problem to the European countries, as public expenditure on pension schemes increases. This situation pressures active workers, through the increase in contributions, especially when they belong to a pay-as-you-go system, the most common Social Security scheme in Europe.

Under this situation, policy makers have to be aware of the problems that may arise. It becomes urgent to ensure long term fiscal sustainability to avoid uncertainty and the risks associated under this scenario. In order to guarantee future benefits to active workers during their retirement period and to ensure reasonable living standards, many countries made some reforms in their Social Security regimes.

The main implemented reforms can be summarized by the following vectors: increase of pension benefits to workers that remain working beyond the retirement age (as in Spain); penalties to early retirements, with an actuarial reduction of pension benefits when the retirement is earlier than the standard legal age (as in Finland); and, finally, the increase of the second and third pillars (privately managed pensions and voluntary schemes) (as in Luxembourg and Canada).

Old age dependency ratio

((EU – 27) percentage)

$$\text{old age dependency ratio} = \frac{+65}{(15-64)}$$
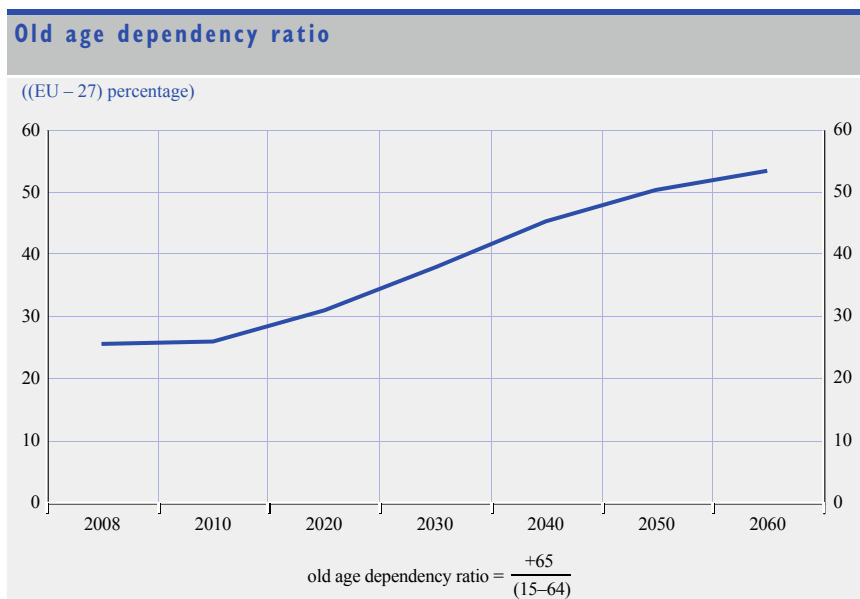
Source: Eurostat EUROPOP2008.

Statistical data can provide several contributions by shedding some light on the specific areas of Social Security where policy makers may intervene. If at a micro level, accounting practice recognizes pension liabilities of employers and pension funds, national accounts should also be important to raise, at a macro level, the main specific areas where Social Security problems exist and which can be improved. The possibility of making realistic economic projections will also become more effective with a good compilation procedure of the statistical data. Finally, statistical data have other important advantages like, for instance, allowing for cross section analysis. This is the case of the Supplementary Table, as it provides the basis for compiling comparable stock and flow data of all pension entitlements from a debtor/creditor point of view across countries.

3   COUNTRY EXPERIENCES

3.1   SPAIN

Statistics Spain[3] described the Spanish experience on the subject, in the paper *"Estimating Social Security Pension Entitlements in Spain"*.

As we can infer from this presentation, Spain is an example of a country that made some efforts to prepare the measurement of pension entitlements under the Supplementary Table. There are three interesting aspects in the presentation that we would like to focus on.

The organizational procedure, with the creation of a working group composed by the national institutions concerned and the definition of the responsibilities for the compilation, is clearly a good starting point to this exercise. Another main aspect of the Spanish Social Security system is the existence of two parallel pension schemes sponsored by General government: the Social Security and the Government employer pension schemes. A third important and interesting feature from this presentation is the development of a national model that accommodates specific assumptions of the Spanish Social Security scheme. In fact, this model can be used as a benchmark for future comparisons with the model from the University of Freiburg.

Some issues can, however, raise a deeper discussion on the presentation made by this country.

One question that can be brought up deals with the interpretation of the "total amount of contributions" estimated by the national model. As it was mentioned before there exists a breakdown between Social Security and the General government employer pension schemes but, apparently, no distinction in the final estimates is done. How can we split pension entitlements between these two regimes?

The description of the national model would also gain with the identification of certain assumptions. It would be very useful to have a better clarification of the

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3   Lourdes Prado.

sources of data and on the methodology definition and sample criteria used in the estimation of future pensions of active population.

A final remark concerns the interpretation and comparison between the national model estimates and the University of Freiburg model. Pension entitlements under the Freiburg model represent 204 per cent and 207 per cent of GDP in 2006 and 2007, respectively (according to the Contact Group on Pensions Report, CMFB, 2009), whereas, in the national model, pensions entitlements are 240 per cent and 242 per cent of the GDP in the same years. Can we interpret these differences solely due to the different wage growth rate assumptions, or are there any other reasons that explain these differences?

3.2   LUXEMBOURG

Luxembourg's participation was made by *Inspection Générale de la Sécurité Sociale*[4] through the paper "*Experiences in compiling pension entitlements in Luxembourg: 'Ensuring consistency'*", which focuses the main concerns that arise from the compilation of pension entitlements data in Luxembourg. The main aspect addressed by Luxembourg relates to the consistency that needs to be ensured in national data among different institutions and data sources. Other difficulties mentioned by this country rely on the heterogeneous definitions of benefit schemes and Social Security regimes across countries. An additional issue is also referred by Luxembourg: the problems that are raised by the existence of different data sources.

The presentation provides the estimates of a national model that was developed by Luxembourg. However, we are not able to compare them with the estimates provided by the Freiburg model, as this country did not compile data for the fulfilment of the Supplementary Table.

The first issue we would like to bring up into the discussion is the importance of having a more detailed methodology and assumptions used in the national model. This could facilitate the interpretation of the estimations, for example, the motion of pension entitlements in percentage of GDP and replacement rate, both decreasing until 2007.

The chart "Entitlements and expenditure" deserves also, in our opinion, a better clarification, namely the path of differences between "percentage of GDP all" and "percentage of GDP by years".

Finally, difficulties stressed by Luxembourg concerning the statistical consistency and harmonization to be ensured across countries that experience different and complex structures of pension schemes and retirement regimes, motivate also a discussion on this topic. It would be useful to have the participant's opinion on how this process could be improved.

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4   Tom Dominique.

The paper *"The social security pension scheme in Finland"* presented by Statistics Finland[5] provides a very good overview of the Finnish pension system. One of the main features of this system is the fact that it is a three-pillar pension regime. It includes two statutory pension schemes (first pillar) and voluntary pension insurance (second and third pillars). An explanation for this classification should be given since, according to the multi-pillar approach (World Bank), the second pillar is mandatory and not voluntary as it is stated in the paper.

The paper presents the results of the compilation of the Supplementary Table for Finland. This output, calculated with the University of Freiburg methodology, is compared with the results of the national model estimated by the Finnish Centre for Pensions. The total amount of pension entitlements computed by this institution (268 per cent of GDP in 2007) is higher than the amount computed in the Supplementary Table via the accumulated benefit obligations (ABO) approach (235 per cent) but lower as compared with the projected benefit obligations (PBO) approach (295 per cent). The analysis of these differences should be investigated. Attention should be given to the possible factors behind the different results: different databases, different assumptions?

In the Supplementary Table, the method for computing the item "Household social contribution supplements" should be explained. In principle, according to the methodology defined by the CMFB task force on the Statistical Measurement of the Assets and Liabilities of Pension Schemes in General Government, it should be equal to the start of year pension entitlements times the discount rate. In this case, a discount rate of 5 per cent was apparently used, which is different from the hypothesis of 3 per cent discount rate of the Freiburg model.

Some doubts were raised about the significance of the item "Other (actuarial) increase of pension entitlements". In our view, this item can be seen in two different (non- mutually exclusive) ways:

(i) This amount could mean that the social insurance scheme is under or over financed if the values are positive or negative, respectively. This conclusion may have important economic policy implications.

(ii) The existence of important amounts in this item of the Supplementary Table may indicate there are shortfalls in the model due to, e.g., wrong estimation procedures and or assumptions.

In the paper, a doubt is also raised in relation to the inclusion of "Employer imputed social contributions" in the core and non-core accounts. In this respect,

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5   Paula Koistinen-Jokiniemi.

our interpretation is that this item should be included both in the core and non-core accounts but with different values:

(i) "In cases where pension entitlements of schemes for government employees are not recorded in the core accounts, by convention the employers' imputed contributions are calculated as equal to the difference between current benefits payable and actual contributions payable (by both employees and government as employer)." (ESA Rev § 4.10).

(ii) In the Supplementary Table, "Employer imputed social contributions" is a balancing item to match the differences between the change in entitlements and the transactions (equivalent to item 3. for Social security).

3.4   CANADA

The paper *"The pension satellite account in Canada"* presented by Statistics Canada[6] is a good example of estimating pension entitlements in national accounts through a satellite account. The provision of a long time series allows for a deeper analysis of results and for a better interpretation of the data, which is useful for analytical purposes.

One of the most striking features of the information presented for the Canadian pension system is the level and stability of the unfunded pension plans liabilities as compared with the average European reality. In Canada this amounts to 15 per cent of GDP while in Europe it ranges between 200 and 300 per cent of GDP.

Some issues can be raised by the analysis of the data shown in the presentation. The most relevant are the fact that changes in the Social Security strategy resulted in the accumulation of assets after 2000 and the upward trend in "Other individual registered saving plans" after 2002. Both issues could be further discussed.

Additionally, some details on the methodology and sources used for the compilation of data (e.g. transactions and other flows) could be given. In particular, the main assumptions used in the estimates of the pension satellite account (discount rate, wage increases (ABO/PBO), GDP growth) could be explained.

Finally, valuation issues and data gaps for individual registered savings plans are mentioned. A description of these issues and of the solutions found would be of great interest.

4   CONCLUSIONS

The subject of estimating pension entitlements is still in an initial phase, thus still being subject to future discussion and, therefore, many issues are somewhat grey areas. We suggest then several issues to further reflect on.

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6   Joe Wilkinson.

The quantitative work of the models, even though concerning ex-post observations ("accrued-to-date liabilities") relies on future assumptions of variables such as the discount rate, demographic projections, etc. To which extent these assumptions used within the national accounts framework are coordinated with the bodies responsible for the sustainability analysis, such as the Working Group on Ageing?

These assumptions, which are used to estimate pension entitlements across countries, like GDP growth and discount rates, are sometimes harmonized between countries. Is this a reasonable hypothesis? Does "one fit all"? Could these estimations be improved in order to take into account specific national differences, incorporating country-specific assumptions?

Since there may exist practical difficulties to separating concepts other than pensions (e.g. health related), shouldn't these future benefits be also recorded as General government liabilities? So far, they are potential, but they are as well clearly a responsibility of governments towards their citizens.

Most European countries face challenges due to the migration phenomenon. The existence of strong migration flows to Europe changes the demography of these countries. Migration means a younger population and, therefore, an increase of Social Security sustainability. Should the assumptions used to estimate pension entitlements (e.g., demographic assumptions) be modified? Do these assumptions take into account migration trends?

The publication of consistent and comparable data for pension entitlements will clearly show differences across countries. These differences are already evident in the results obtained through the University of Freiburg methodology. What could be the reaction of financial markets to these results? What could be the reaction of policy makers under these results?

Several organizational issues must still be debated, e.g., the responsibility for the compilation of these aggregates, the publication policy, etc.

The process of revising ESA is still ongoing. In particular, the new ESA will include a specific chapter on pensions. The current version of this chapter proposes that all government sponsored unfunded employer defined benefit schemes are recorded only on the noncore accounts. This leads us to the following practical suggestions:

(i) An operational definition of "unfunded" should be given, especially when schemes have reserves with large assets (introduction of a threshold?)

(ii) How to define a government sponsored scheme? A clear definition of sponsor should be provided.

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SESSION V

COUNTRY EXPERIENCES IN COMPILING PENSION ENTITLEMENTS
PART II

INTRODUCTION

In Session V, Marshall Reinsdorf considers actuarial measures of defined benefit (DB) pension plan wealth and income of US Households. The author describes in detail the organisation of the US pension system. The National Income and Product Accounts (NIPAs) provide a full picture of the operations of defined contribution (DC) pension plans, in which the level of benefits depends on the balance in the DC plan account. However, in DB pension plans, the level of benefits is determined by a formula that typically takes into account the length of service and some measure of final or average pay, so that the appropriate wealth concept is be the expected net present value of the benefit entitlements. The author discusses two alternative calculations: the "cash accounting approach", which records household income as being equal to the contributions from the employer to the DB pension plan plus the returns on plan assets, and the "accrual approach", which records household income when rights to DB pension benefits are accrued. The advantage of the latter is the reduction in volatility of the measure of household income. The estimates are presented using ABO for the private plans and the PBO approach for the government plans in relation to the benefit formula.

Janusz Jablonowski (Narodowy Bank Polski) considers pension entitlements under social insurance schemes in Poland. The author starts with a detailed definition of the structure and main features of the pension system in Poland, composed of the Social Insurance Fund (FUS), which was reformed in 1999, the Pension and Disability Fund for farmers (FER), the State budget pensions and the private pension schemes. The second part of the papers focuses on modelling issues. The Central Bank of Poland has used the PROST model and the Freiburg model. Thus, the author compares the results of the Freiburg model with the models from the Ageing Working Group. The differences are mainly explained by differences in the type of system covered (closed system versus open system), the outcomes of projections (accrued-to-date liabilities versus revenues) and the values for wage growth (fixed at 1.5% versus varying across the Member States).

Albert Braakmann and Jens Grütz (Destatis) present their results on the pension entitlements of civil servants in Germany, which amounted to 44% of GDP if compiled on an actuarial basis. Regarding the idea of higher frequency data, the authors say that the calculation of labour costs of civil servants on an actuarial basis is not feasible with quarterly data. The calculations are strongly dependent on the assumptions made. The authors stress that the supplementary table provides a rather complete picture of pension insurance by showing the effect on the entitlements of changes in the actuarial assumptions or pension reforms. The assumptions regarding the discount rate and the wage growth rate should be harmonised, according to the authors. A detailed documentation of the procedures and parameters used in the compilation of the supplementary table is also recommended. Nevertheless, the supplementary table does not substitute for the comprehensive analysis of old-age insurance systems like the open system liabilities.

The three papers of Session V are discussed by *Dominique Durant* (Banque de France). In relation to the first paper, the discussant makes a very didactic and useful simulation by summarising the information on US household wealth and income from the BD plans in a partial supplementary table. With regard to the Polish experience, the discussant makes an attempt to use the aggregated Freiburg model with the AWG assumption in order to estimate pension entitlements in line with the sustainability work of the European Commission while avoiding the building of a costly model for social security. Finally, in connection with the German experience, the discussant attempts to build up a semi-aggregated (by group) model for the civil servant scheme, which is part of social security.

ACTUARIAL MEASURES OF DEFINED BENEFIT PENSION PLAN

WEALTH AND INCOME OF US HOUSEHOLDS[1]

BY MARSHALL REINSDORF[2]

In the US National Income and Product Accounts (NIPAs) pension plan assets are classified as belonging to persons. This makes employers' contributions to pension plans and the interest and dividends earned on the plans' assets part of personal income. Benefit payments to retirees and contributions made by employees to pension funds have no effect on the NIPA measures of personal income and saving because they are regarded as financial transactions, i.e. a change the form in which households hold their wealth. For this reason, benefits and employee contributions are reported in addendum section rather than the main section of the NIPA table that provides details on pension plan operations, table 6.11.

The current NIPA treatment provides a full picture of the operations of the pension plans that are structured as defined contribution (DC) plans. These plans can be regarded as analogous to bank accounts owned by the plan participants, as the level of benefits in retirement depends on the balance in the DC plan account. In contrast, in a defined benefit (DB) pension plan, the level of benefits is determined by a formula that typically considers length of service and some measure of final or average pay. If the assets of the plan are insufficient to pay the promised benefits, the employer who sponsors the plan must cover the shortfall by making additional contributions. This obligation of the employer represents an additional source of pension wealth for the participants in an underfunded plan besides the assets of the plan. Thus, for DB plans, the wealth concept that is appropriate for many important questions is the expected present value of the benefits to which the plan participants are entitled. The measure of investment income must then be the theoretical amount of interest accruing on this actuarial wealth, and the measure of pension-related compensation must be the expected present value of the benefits that the plan participants earn through service to the employer over the year, less any contributions that employees themselves make to fund those benefits.

Recording as income of households the amounts that a DB pension plan receives from employer contributions and returns on assets may be termed the "cash accounting approach" (though it is not cash accounting in a literal sense, as contributions that are declared but not yet disbursed are still counted). The alternative "accrual approach" records household income when entitlements to

pension benefits are accrued. One of the important advantages of the accrual approach is a reduction in volatility of the measure of household income. Employers sometimes make no contribution or a reduced contribution for a period of several years, but then make a large "catch up" contribution to bring the gap between the plan's assets and its accrued benefit liability back into the acceptable range. Such lumpy behavior of employer contributions can cause sharp swings in the cash accounting measure of households' income from DB plans, particularly if the analysis is done at the state level rather than at the national level.

I   POSSIBLE APPROACHES TO MEASURING BENEFIT ACCRUALS

Though the accrual approach avoids the timing distortions in the recording of pension income that arise under the cash accounting approach when employers skip contributions and then catch up later, the accrual approach has its own disadvantage. We do not need to make assumptions to measure transactions that have actually occurred. In contrast, the accrual approach is sensitive to assumptions about interest rates, mortality rates, separation rates and retirement ages used to calculate the expected present value of benefits and decisions about how to account for effects of future pay increases and future years of service.

Dependence on assumptions creates an inherent source of imprecision that is not present in cash accounting estimates. Furthermore, actuarial estimates made by different plans are likely to use different assumptions, so if we add them up to get a national total in the same way that we add up employer's actual contributions to pension plans, we will be combining estimates based on inconsistent assumptions. Indeed, the totals in this paper of households' accrued pension income or pension wealth generally do not incorporate adjustments for differences in assumptions across plans or over time, except for an adjustment of reported actuarial values for differences in the assumed rate of interest.

If the assumptions used in the actuarial calculations are exactly realized and if plan features and other key variables never change, annual contributions that are equal to the actuarial measure of participants' income will make the assets held by the plan match the actuarial value of the participants' wealth and exactly fund the benefits due. Yet despite the theoretical correspondence between cash and accrual accounting measures of pension wealth and income under ideal circumstances, they are unlikely to coincide in practice.

Actuarial estimates for employees who are not going to retire in the current year also depend on the decision about how to treat future pay increases. The "accrued benefit obligation" (ABO) approach considers only the present value of the benefits earned to date, meaning the benefits that would be due if the employee were to separate from the employer or otherwise lose the opportunity to accrue benefits under the plan. For a typical DB plan with a benefits formula based on years of service multiplied by a measure of average or final pay, the ABO measure of benefits earned during the plan year includes both

the effects of an extra year of service and the effects of the salary increase received during the plan year.[3]

An advantage of the ABO approach is that the benefits to which the employee has legally become entitled is a concept that fits the usual definition of a liability well. Yet a scenario in which the employee ceases to accrue benefits under the plan seems to be of questionable relevance if the probability of such an event occurring is remote. If there is little chance that the plan will be subject to a termination or freeze or that the employee will separate from the employer in mid-career, an approach that spreads the build-up of pension wealth over the career more smoothly may correspond better to the incentives that are perceived by plan sponsors and participants than benefits accrued-to-date, whose growth typically accelerates rapidly near the end of the career. To do this, the estimates must reflect the pension benefits that the employee would receive at the projected retirement date taking into account projected future pay increases.

Several methods exist for spreading the accretion of the pension wealth that is the employee is ultimately expected to enjoy, or "projected benefit obligation" (PBO), over the course of the career. In the financial statements of private business, the projected unit credit (PUC) method is generally used for the estimates of pension expenses that are labeled as "PBO". This method resembles the ABO approach except in the way that it adjusts for expected future pay increases. Assuming that the benefit formula is some percent of final pay for each year worked, the PUC valuation of the current service cost (i.e. benefits that employees have accrued in the current year) will be based not on the current pay level but on the projected level of pay in the final year of the career. In contrast, current service cost under the ABO approach will include the effect of any raise received during the current year on the value of benefits accrued in past years. (See the example in the appendix.)

A few state and local government pension plans also use the PUC method in their actuarial reports, but most of these plans instead use the level percent of pay version of the "entry age normal" method (Novy-Marx and Rauh, 2009). The entry age normal method attributes the value of the projected benefit obligation to service in any year in proportion to the fraction of the total projected earnings over the course of the career that come from that year. This yields estimates of the employer's "normal cost" for service in each year that are a constant percent of pay, as shown in the example in the appendix. Although to avoid confusion, the term "PBO" ought to be reserved for the project unit credit method, the entry age normal method also uses the projected benefits at the time of retirement as the basis for its estimates.

Assuming that pay rises over the course of the career, both the projected unit credit and the entry age normal method give higher estimates of pension plan income in the early and middle years of the career than does the ABO approach. Because they reflect anticipated future salary growth in their valuation of the

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3   If the salary increase component were omitted, the cumulative total at the time of retirement of benefits earned and interest on the current liability would fall short of the current liability at the time of retirement.

pension benefits earned in the current year, they tend to yield smoother, more uniform profiles of pension plan income over a typical career. Indeed, the objective of the entry age normal method is to maximize smoothness.

A rationale for smoothing comes from the option value model of pension earnings proposed by Lazear and Moore (1988) and used by Stock and Wise (1990) and Lumsdaine, Stock and Wise (1990.) In the option value model, an employee's pension wealth includes both the ABO entitlement and the value of the option to raise the present value of future benefits via future service. To induce an employee to retire early and accept pension benefits whose present value equals the ABO, an employer will generally have to offer a "buy-out" that compensates the employee first, for foregone future pay net of the opportunity cost of the employee's time and second, for the foregone opportunity to earn higher pension benefits. If the ABO valuation of the pension entitlement is too low because it ignores the option value to increase the pension by future employment, a reasonable alternative is simply to let the present value of the projected pension benefits build up in some smooth fashion over the course of the career.

To measure wealth and income from private sector pension plans, I use an ABO approach. For private sector plans, loss of the opportunity to earn further benefits due to a plan freeze or plan modification (such as a conversion to a cash balance plan) must be regarded as a realistic possibility. In 2006, about 900,000 employees were in private plans that had been frozen. Employees in the private sector can also lose the opportunity to earn additional benefits from a bankruptcy, or even an acquisition, of the plan sponsor.[4] Finally, changing jobs is likely to mean changing employers for employees of small or medium size businesses (though some private industries have multi-employer plans).

In contrast, changes to government pension plan provisions that affect current participants are unusual, and the risk of losing the opportunity to earn future benefits is generally small for most government employees. An approach that spreads the build-up of the projected pension wealth at retirement in over the career is therefore a reasonable alternative for government plans.

The use of different approaches for private sector and government sector plans is also convenient because, whereas ABO information is more available in a usable form for private plans, PBO information is more available for government plans. Most government plans make actuarial estimates of their benefit liability with a level percent of pay formula, where the percent is chosen so that contributions equal to the percent of pay over the course of the career will fully fund the liability for pension benefits at the time of retirement.

Nevertheless, reporting ABO approach estimates for government plans would also have some advantages. Obligations that are explicit and that cannot be escaped fit the usual definition of a liability more precisely than a concept that includes

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4   As discussed below, in the event of bankruptcy of the plan sponsor, benefits worth approximately the ABO level of pension wealth are covered by insurance from the Pension Benefit Guarantee Corporation.

obligations that are expected to arise from future events if pay raises continue their historical pattern and no changes are made to the plan's features. And even though state and local governments have rarely made changes that affect those already enrolled in a plan, proposals to do so have at least been considered by governments not in financial distress, and would likely be implemented by a government that was in financial distress.[5] Presenting ABO estimates for state and local DB plans would allow them to be compared with private DB plans on a uniform basis. Finally, a practical consequence of the use of a PBO is that more of employee's growth in pension wealth will be attributed to imputed interest income on their already-accrued pension wealth and less will be attributed to current service cost. In the 2008 SNA, the employer's imputed contributions include only the current service cost, so the use of the PBO approach is likely to result in comparatively low estimates of the compensation component of pension income. Imputed contributions may even tend to be negative under the PBO approach, and for mature plans the estimates from the ABO approach are likely to be, on average, nearer to actual contributions.

2   ORGANIZATION OF THE US PENSION SYSTEM

Both DB and DC pension plans play key roles in financing retirement for US households, but in the private sector, newly established plans are almost invariably DC plans. Even at older firms with DB plans, these plans may be closed to new hires. As a result, a significant fraction of private sector DB plans have matured, in the sense of having reached the point where contributions no longer exceed benefit payouts to retired participants. Nevertheless, the number of private sector DB plans in existence is declining very slowly and remains above 40,000.

The US also has over 2500 DB pension plans for employees of state and local governments. DB plans remain predominate in the state and local government sector, though some state and local government employees also have access to a supplementary DC plan or have just a DC plan. Finally, Federal government agencies and Federal government enterprises (such as the Post Office and the Tennessee Valley Authority) sponsor about 40 DB plans for their employees. The Federal government also makes DC plans available to its employees, and for civilian Federal employees hired after 1984, employer contributions to the DC plan help to compensate for a reduction in the generosity of the DB plan.

Besides DB and DC pension plans, many US households have self-funded retirement accounts (such as IRAs, or "individual retirement arrangements") and almost everyone is covered by social security. Social security is a government social insurance program rather than a pension plan because entitlements to benefits do not arise from an explicit or implicit contract with an employer. The classification of social security as a social insurance program in the NIPAs means

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5   For example, although the government of Virginia is not in financial distress, a recent report to the Virginia House of Delegates included a proposal that state employees should start contributing 2 percent of their pay to their pension plan. At the other extreme, a bankruptcy judge has recently ruled that union contracts requiring the city of Vallejo in California to preserve its current pension plans are subject to modification by the bankruptcy court.

that household income from social security is measured by benefit payments. Neither social security nor the self-funded retirement accounts will be discussed in this paper, but the presence of social security has influenced the design of the pension plans that are the focus of this paper.

3   ESTIMATES FOR PRIVATE DB PENSION PLANS

To estimate households' income and wealth from private DB plans, I obtained data sets from the Pension Benefit Guarantee Corporation (PBGC) of IRS Form 5500 tax returns for the years from 2000 to 2006. These tax returns report actuarial estimates of benefit expenses for DB plans, and they also report contributions, benefits and investment income. The PBGC constructs data sets covering virtually all of the information on the Form 5500 for DB plans. The Department of Labor also constructs data sets covering Form 5500, but those data sets omit the actuarial information. The PBGC classifies returns into years based on the starting date of the period that they cover, so that plans whose fiscal year starts before December 31, 2006 are included in the 2006 data set. In contrast, the Pension Bulletins published by the Labor Department classify returns into years based on ending dates. In this paper I use the PBGC's plan year definition, which causes my figures for employer contributions to differ significantly from the Labor Department figures in some years. The number of returns filed each year ranges from 43,000 to 46,000.

The Form 5500 data sets are supposed to contain a census of private DB plans, except for a small number of plans whose benefits are provided through group annuities purchased from life insurers. Nevertheless, estimating national totals is not simply a matter of adding up the relevant variables on pension plan assets, income, actuarial liability, and benefits accrued. Comparisons across years of ending and beginning assets, numbers of plan participants, and plan identification numbers imply that significant numbers of plans are missing from the data sets for 2000 to 2002. Using overlapping estimates of ending and beginning assets adjusted for revisions to previously reported values, I estimate that about 15 percent of plans are missing in 2000, falling to 8.7 in 2001 and 5.6 in 2002. Furthermore, screening for erroneous data entries by comparing variables that are supposed to agree (such as ending balances from one year and beginning balances from the following year) or at least be in the same range, reveals many data entry mistakes. Finally, values are often missing for key variables, particularly for smaller plans, which do not have to provide complete information. To fill in missing value and to replace erroneous values that I could not correct, I use predicted values from regression models. For example, the various measures of plans' actuarial liability reported on the actuarial information schedule of Form 5500 are generally highly correlated with each other, so if the current liability or the benefits accrued through service is missing, related actuarial variables can often be used to predict the missing value. Even if all of the actuarial variables are missing, reasonably good predictions can still be constructed using counts of active and retired participants and benefit levels.

A baseline for comparison with the actuarial measures of pensions is a cash accounting approach that uses private pension plan assets to measure pension

wealth of households. The income to households from employer contributions recorded under this approach is quite variable, rising from about $33 billion in 2000 to about $100 billion in 2002-3 (table 1.) Large holding gains during the bull market that lasted from 1995 to early 2000 left many plans overfunded, allowing their sponsors to take contribution holidays in 2000 and 2001. Holding losses followed in 2000-2002 with the bursting of the dot-com bubble, obliging employers to increase contributions to restore funding levels. Yet despite the increase in contributions, the holding losses left the plans with $400 billion less in assets at the end of 2002 than the $2 trillion they had at the beginning of 2000. These losses were then reversed by a four year string of holding gains, leaving the plans with $2.5 trillion in assets at the end of 2006.

Saving by the plans played almost no role in their growth of assets. Plan saving was close to zero from 2002 to 2006 because benefits net of employee contributions were high and rising, reaching $150 billion in 2006.[6] The high benefit payments and lack of saving reflect the maturing of these plans as their participants increasingly move into the retirement phase of the life cycle.

Actuarial measures of private DB pension plan income of households are more stable than the cash accounting measures. The actuarial value of benefits earned rises smoothly from around $67 billion in 2000 to about $79 billion in 2006 (table 2), with an average level over the seven years of $73.5 billion, close to the $79 .6 average of the employer contributions. On the other hand, the imputed interest cost of the actuarial current liability of the plans is, on average, almost twice as high as the actual investment income shown in table 1. The actuarial liability of the plans is lower than their assets in 2000 and 2001, and only 10 to 25 percent higher in later years, so the main reason why the imputed interest on this liability is higher than the actual investment income from the plan assets is that the assumed interest rate is higher than the realized rate of return on assets excluding holding gains. The low level of actual investment income reflects the reliance of the plans on holding gains as a source of funding for benefits, so by including the imputed interest in household income we are, in effect, including expecting holding gains in income. This makes the actuarial measures of household income and saving in table 2 higher than the cash accounting measures in table 1. Table 2 also shows that estimates of plan actuarial liabilities are sensitive to assumptions about interest rates and other factors.

4   FEDERAL GOVERNMENT PROGRAMS FOR PRIVATE SECTOR RETIREES

Although the US generally eschews a Bismarkian approach to pensions, the Federal government does have two programs that provide pension benefits to

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6   The benefits in table 1 include lump sums paid at retirement to retirees in lieu of benefits during retirement or to life insurers for annuity contracts to provide benefits during retirement. Furthermore, investment income on life insurance reserves for group annuity contracts purchased by employers or DB plans are excluded from the investment income shown in table 1. The Labor Department's *Private Pension Plan Bulletin* for 2005 estimates the value of the group annuity contracts at 10 to 15 percent of the total for plan assets.

private sector retirees. These programs are easily overlooked, as they are classified as social protection provided by government in the US national accounts and they are comparatively small. Nevertheless, they are important to include if one wishes to have a complete picture of DB pension benefits in the US.

A   THE PBGC

Terminated plans that enter into trusteeship with the PBGC because they are unable to pay promised benefits cease to be included in the Form 5500 data sets, but the rights of their participants to benefits do not vanish. The PBGC insures the benefits that have been accrued in private DB plans up to a statutory maximum (currently $4500 per month for a 65 year old without survivor's benefits, or $4050 with a survivor annuity). The insurance coverage is financed with premiums paid by the plans. Besides the premium income, the assets of terminated plans are used by the PBGC to pay promised benefits. In 2008, for example, plans that were terminated had an average funding ratio of 59 percent (PBGC 2008 Annual Report, p. 13.) In 2007, the PBGC disbursed $4.3 billion in benefits and assistance to multiemployer plans, which are typically assisted rather than terminated (table 3.) Insurance bridges the gap between a terminated plan's assets and its accrued benefit obligation, so of this amount, only $2.6 billion is included in the government social benefits portion of personal income in the NIPAs.

Under a cash accounting approach to measuring pension plans, the households' pension wealth is lost when plan assets are appropriated by the PBGC. In contrast, under an accrual accounting approach, only a tiny change in pension wealth due to forfeited benefits over the maximum and revisions to certain assumptions should be recorded when a plan is terminated. (In a termination situation, appropriate assumptions about things like when participants will file for benefits are different from the appropriate assumptions for calculating the ABO of an ongoing plan.)

The PBGC's estimate of the present value future benefits from trusteed plans rises from under $10 billion in 2000 to $65.1 billion in 2007 (table 2, line 13, or table 3, line 5.) Yet this rapid rise is partly a reflection of a decline in the assumed interest rate from 7 percent to 5.3 percent. Measured at the 2008 interest rate assumption of 6.6 percent, the present value of future benefits fell to $56.6 billion. On the other hand, the PBGC's estimate of the interest cost of its benefit liability, which represents interest income to households under the accrual accounting approach, rose to $3.4 billion in 2008 from $3.3 billion in the previous year. To provide additional background on the operations of the PBGC, table 3 also shows its investment income. This investment income could be seen as income that would have been included in household income had the pension plan that owned the underlying assets not failed.

B   THE RAILROAD RETIREMENT BOARD

The second Federal government program that provides pensions to private sector employees covers the railroad industry. The Railroad Retirement Board receives payroll taxes levied on wages and salaries in the railroad industry and

pays benefits to railroad retirees and their survivors. Railroad employees neither pay social security taxes nor receive social security benefits, but Tier I of the railroad retirement pension is integrated with social security and has equivalent taxes and benefits. Tier II of railroad retirement provides additional benefits similar to those of a DB pension plan. In the NIPAs, personal income from both Tier I and Tier II is recorded when benefits are disbursed, just as occurs with social security.[7]

In 2007, the benefits paid by the Tier II retirement account amounted to about $4 billion. The payroll tax receipts were $2.6 billion dollars, of which about $2 billion were paid by the employers, with the balance paid by employees. The payroll taxes are flat or falling over the years from 2000 because the combined employer and employee tax rate declined from 21 percent in 2000 to 16 percent in 2008. This rate is automatically adjusted to maintain a balance between plan assets and the current expenses for benefits and administration.

I do not yet have actuarial estimates for Tier II of railroad retirement (but in any event the amounts involved are relatively small.) A reasonable estimate of the plan sponsor's normal cost would be some fraction of the employer's payroll tax, and a reasonable estimate of present value of future benefits would be substantially larger than the plan assets. An actuarial valuation report from December 2004 estimates a liability for future benefits and administrative expenses under Tier II for current and former employees of $49 billion, approximately $47.5 billion of which appears to be for future benefits (US Railroad Retirement Board Twenty-Third Actuarial Valuation of the Assets and Liabilities under the Railroad Retirement Acts as of December 31, 2004.) Assets on hand were $27.3 billion, implying an unfunded accrued liability for benefits of about $20 billion. Nevertheless, projections of the required payroll tax rate in future years are relatively stable, suggesting that the payroll tax rate already is at least high enough to cover the interest on the unfunded accrued liability. (Railroad employment is falling, a trend that has continued since the late 1940s, so if the tax rate were only sufficient to cover current service costs, a substantial tax rate increase would eventually be needed as the unfunded benefit liability became large relative to the payroll base.) Indeed, the employer's Tier II payroll tax rate, which was 13.1 percent in 2004 and 12.1 percent in 2007, is substantially higher than the 2004 Report's estimate of employer's normal cost, which was 6 percent of payroll.

5 STATE AND LOCAL GOVERNMENT PLANS

DB pension plans are an important component of the compensation of the employees of most state and local governments and, unlike private DB plans, they are not in decline. Indeed, a DB pension is the only source of monthly retirement benefits that retirees from some of these governments receive, because some state and local governments have opted not to participate in social security.

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[7] The Flow of Funds Accounts of the Federal Reserve Board treat Tier II like other DB pension plans, however.

For almost all private sector employees and for Federal government civilian employees hired after 1984 social security is a key source of financial resources during retirement, so much larger contributions to the pension plan are needed if the participants are not covered by social security. State and local government plans also tend to escalate their benefit payments based on a measure of inflation, which increases the amount of contributions that they need. On the other hand, to reduce the cost to the employer, many of these plans require the employees themselves to make a portion of these contributions.

State and local government plans remain less important than private plans in terms of total numbers of participants, with just over 14 million active participants in 2006, compared to around 20 million active participants in private DB plans (table 5.) They are also less important when measured by employer contributions, with $67.8 billion in 2006 compared with $87.9 billion for private plans. Nevertheless, the cash accounting measure of the income that they generate for households is about the same as for the private DB plans, rising from $141 to $161 billion in 2004-2006, compared to a rise from $149 to $155 billion for the private plans. One reason for this is the higher investment income of state and local plans.

State and local plans have higher investment income than private plans because they have more assets, $3.1 trillion at the end of 2006, for example, compared with $2.5 trillion for private plans. The assets of state and local government plans reflect the fact that their total contributions, including employee contributions, are generally higher than total contributions to private DB plans, and they had lower holding losses in the bear market of 2000-2002. Also, around 55 percent of their participants are still in their working years, compared to around 45 percent for the private plans. State and local government plans therefore have a higher average saving level (around $22 billion per year over 2000-2006, compared with a negative average for the private plans) and smaller net benefit disbursements (an average of $100.6 billion per year compared with $134.2 billion for private plans.)

Lenze (2009) uses a BEA data set covering 124 plans or plan families to make actuarial estimates of household income and wealth from state and local government pension plans. (Due to the high right skew of the plan size distribution, this data set captures most of national total for the measures of interest.) The Census Bureau collects cash accounting data on state and local government pension plans, but not actuarial data. BEA has therefore collected actuarial information directly from the financial reports of the larger state and local plans and from a sample of smaller plans.

Most state and local government plans calculate the actuarial value of benefits earned with a PBO approach using a level percent of pay formula. One of the key objectives that funding schemes for pension plans seek to achieve is avoidance of rapid increases in costs, such as those that occur under a pay-as-you-go scheme when the covered population ages. The level-percent-of-pay approach goes furthest in accomplishing the cost-smoothing objective, because over an employee's career the benefit cost grows at the rate of growth of the salary. In contrast, assuming a final pay benefit formula, the growth rate of ABO benefits accrued is usually greater than or equal to the sum of the salary growth rate,

the interest rate, and the average mortality rate of active participants, so sharp increases in costs as employees near the end of their career can cause overall pension costs for an aging workforce to rise quickly. In the early and middle years of the career, the PBO approach used by state and local government plans gives much higher cost estimates than the ABO approach, a relationship that is reversed in the final few years.

Despite the tendency of the PBO approach to frontload pension costs, the PBO measure of benefits earned net of employee contributions, labelled "employer's normal cost" in table 6, is lower than the employer contributions in 2003-2006. In 2006, for example, it is about $52 billion, compared to cash contributions of $68 billion. The plans' estimates of employer's normal costs are held down by the high rates of interest that they assume (which average about 8 percent) when discounting the future benefit payments. At these rates, the interest on the actuarial liability ($262 billion in 2006) is much greater than the actual investment income ($93 billion in 2006 according to table 5), and even after combining holding gains and investment income, the realized returns on average fall short of the actuarial interest cost. (Average realized gains are $180 billion over 2000-2006, while the average interest cost of the actuarial liability is $219 billion.) As a result of the accumulated interest costs at the assumed rates, the plans' PBO actuarial liability exceeds their assets by $179 billion in 2006.

Switching to an ABO approach and adjusting the interest rate assumptions to 6 percent raises the measure of benefits earned in 2006 from $52 billion to $71 billion (table 7).[8] Thus, the positive effect on the estimate of benefits earned of reducing the interest rate assumption dominates the negative effect of changing to the ABO approach. On the other hand, for total household income and for household wealth, the effect of changing to the ABO approach is greater than the effect of changing the interest rate assumption. Factoring in the reduced interest cost of the plans' accrued liability, overall household income in 2006 falls from $313.6 billion under the PBO approach with an average discount rate near 8 percent to $242.9 billion under the ABO approach with a 6 percent discount rate. On an ABO basis, the plans' funded ratio rises from 92 percent in 2002 to 102.6 percent in 2006, while on a PBO basis their funded ratio is just 84 in 2002, rising to around 95 percent in 2006.

Lenze (2009) also considers the effect of further reducing the interest rate assumption to the risk-free rate on a 20 year Treasury bond. In 2006, this rate is 4.9 percent, which raises the estimate of benefits earned to nearly $80 billion (table 8.) The plans' surplus of assets over the accrued liability of 12.6 percent of payroll in 2006 at the 6 percent rate used in table 7 becomes a deficit of 24.3 percent of payroll, about the same as the 28.7 percent of payroll seen in table 4 under the PBO approach.

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8 To change the interest rate assumption, Lenze (2009) uses the formula that the PBGC uses to find the effects of changing the interest rate on plans' termination liability. The PBGC's termination liability formula multiplies the liability for retired participants, by $\exp(-0.0538(i*-i))$, where i* is the desired rate and i is the rate used by the plan. For active and separated participants, the adjustment factor is $\exp(-0.1502(i*-i))$.

6   FEDERAL GOVERNMENT PENSION PLANS

DB pension plans for Federal government employees have less than one-third the number of active participants as state and local government plans, and about a fifth as many as private DB plans. Nonetheless, these plans have much larger saving than the state and local government plans, and in 2006, they had almost the same employer contributions as the private plans, about $91 billion (table 9.) In other words, under the cash accounting approach, in 2006 DB plan-related compensation for a group of 4 million Federal employees is as large as it is for a group of 20 million private sector employees.

Why might this be? Plan freezes, and high income and holding gains from investments help to reduce required contribution levels in the private sector. Moreover, military plans have very early retirement dates and they, along with the pre-1983 Federal civilian plan, have relatively high benefits because their participants do not receive social security. Yet differences in investment returns and average benefit levels explain only a fraction of the gap in average contributions per active participant. (The Federal net benefits total about $100 billion in 2006, compared to about $150 billion for private benefits.) The other reason is that the Federal plans are deliberately building asset levels in order to make up for past underfunding via employer contributions that exceed the employer's normal cost. Around half of the Federal employer contributions are designated as "catch up" contributions. The Federal plans are therefore an example of the potential for distortions in the timing of measured pension-related compensation under the cash accounting approach.

Despite the rapid growth in Federal plans' assets since the catch up contributions began, in 2007 their assets remained under $1 trillion, far less than their benefit liability of $2.6 trillion (table 10.) Thus, whereas state and local government plans and private sector plans have funding ratios of over 90 percent, the assets of Federal plans amount to only about 40 percent of their actuarial liability. The Federal plans are disadvantaged in this comparison, however, by their assumptions of low rates of interest together with a PBO approach that includes projected inflation in pay and benefits.[9]

Even using their conservative approach to actuarial measurement, the normal cost for Federal plans is only about $40 billion in 2007, less than half the level of benefits accrued or normal cost for the private or the state and local government plans. Even after adding in the interest cost of the accrued benefit liability, the actuarial measure of the household income generated by Federal DB pension plans is much lower than for the private sector or for state and local governments. Thus the cash accounting and accrual accounting approaches give very different pictures of the relative amounts of pension-related compensation that Federal government employees receive.

9   The low rates of interest are a reflection of the fact that these plans invest almost entirely in Treasury securities, which yield low rates of interest. Thus, in a strict sense, the plans are almost entirely unfunded, as Treasury securities are a liability of the employer.

7   ESTIMATES OF TOTAL HOUSEHOLD INCOME AND WEALTH UNDER THE TWO APPROACHES

Combining the employer contributions and investment income of private, state and local government and Federal plans, the cash accounting measure of DB pension plan income received by US households ranges from 4.5 percent of disposable person income (DPI) in 2001 (a year when contributions had not yet responded to the holding losses of the dot-com stock market crash) to 4.9 percent in 2002-2003 (table 11).The accrual accounting measures of benefits earned and interest accruing on the benefit liability reported by the plans yield much higher estimates of household pension plan income, however. These estimates range from 7.3 percent of DPI in 2006 to 7.6 percent in 2001 and 2002. Adopting the actuarial approach to measure DB pension income would therefore add about 2 percentage points to the estimate of the personal saving rate.

The gap between the actuarial and cash accounting measures of pension-related income is entirely due to the excess of the theoretical interest on the actuarial liability over the investment income that is actually generated by the plan assets – indeed, the actuarial value of benefits earned is lower than the employer contributions. One reason for this is that the private and state and local pension plans rely on expected holding gains to help fund benefits. On the assumption that investment income plus expected holding gains produce a 7 percent return on assets, including expected holding gains on plan assets in the cash accounting measure of investment income would close about two-thirds of the gap between it and the interest on the actuarial liability. The shortfall in investment income also reflects the fact that the plans' assets are smaller than the plans' actuarial liability for benefits by amounts that range between 15 and 25 percent of DPI. Thus, US households appear wealthier and thriftier when their pension plan wealth and saving are measured on an accrual basis.

Table I Household wealth and income from private defined benefit plans: cash accounting approach

		2000	2001	2002	2003
1	Opening balance	2,011.7 [1]	1,918.4	1,755.0	1,657.6
2	Household income	96.1	106.6	148.9	149.3
3	Employer contributions	32.8	48.6	99.8	100.4
4	Investment income from plan assets	63.3	58.0	49.1	48.9
5	Plan administrative expenses	7.3	7.2	6.9	7.4
6	Net benefits	117.4	123.8	133.7	134.8
7	Household saving (2–5–6)	-28.6	-24.5	8.3	7.1
8	Holding gains/losses on plan assets	-74.1	-139.4	-130.9	277.2
9	Net transfers, and other sources of difference between plans' reported beginning-of-year and end-of-year assets [2]	-0.5	-0.8	-6.6	-2.1
10	Reported end-of-year assets (1+7+8+9)	1,908.5	1,753.8	1,625.9	1,939.7
11	Other changes in value of assets [3]	9.9	1.3	31.7	5.0
12	Change in wealth (7+8+9+11)	-93.3	-163.4	-97.4	287.1
Addendum					
13	Active participants (millions)	22.4	22.4	22.2	21.6
14	Total participants (millions)	41.7	42.1	42.9	42.8
15	Employer contributions, National Income and Product Accounts (Table 6.11d, 2008 revision)	34.3	36.0	91.9	100.1
16	Disposable personal income	7,194.0	7,486.8	7,830.1	8,162.5

		2004	2005	2006
1	Opening balance	1,944.7	2,105.8	2,224.9
2	Household income	148.9	149.5	154.5
3	Employer contributions	95.1	92.4	87.9
4	Investment income from plan assets	53.8	57.1	66.6
5	Plan administrative expenses	8.3	8.6	9.4
6	Net benefits	141.1	138.8	149.6
7	Household saving (2–5–6)	-0.5	2.2	-4.5
8	Holding gains/losses on plan assets	167.3	126.5	230.6
9	Net transfers, and other sources of difference between plans' reported beginning-of-year and end-of-year assets [2]	10.3	-7.0	32.1
10	Reported end-of-year assets (1+7+8+9)	2,121.8	2,227.4	2,483.1
11	Other changes in value of assets [3]	-16.0	-2.5	N.A.
12	Change in wealth (7+8+9+11)	161.1	119.1	258.2

Table 1 Household wealth and income from private defined benefit plans: cash accounting approach (cont'd)

(billions of current year dollars)

Addendum

13	Active participants (millions)	21.0	20.4 [4]	19.9 [5]
14	Total participants (millions)	42.7	42.5	42.2
15	Employer contributions, National Income and Product Accounts (Table 6.11d, 2008 revision)	92.8	89.7	93.3
16	Disposable personal income	8,680.9	9,062.0	9,640.7

1) Totals for 2000, 2001 and 2002 include imputations for missing observations. The reported totals have been adjusted up by 15.7 percent, 9.2 percent, and 5.3 percent in 2000, 2001 and 2002, respectively.

2) Consists of data discrepancies as measured by comparing opening and closing balance sheets reported by the plans to the income and holding gains reported by the plans.

3) Difference between reported assets at year end and the assets that the tax returns for the following year show as present at the beginning of that year, after adjustments for missing tax returns.

4) Includes 0.7 million participants in frozen plans. (Frozen plans cannot be identified before 2005).

5) Includes 0.9 million participants in frozen plans.

Table 2

Table 2 Household wealth and income from private defined benefit plans: ABO accrual accounting approach

(billions of current year dollars)

		2000	2001	2002	2003
1	Opening ABO current liability, at interest rates used by plans	1,761.1 [1)]	1,852.2	1,932.8	2,080.7
2	Effect of changing to 6 percent interest rate	12.9	-7.6	21.6	-9.3
3	Opening ABO current liability, at 6 percent rate	1,773.9	1,844.6	1,954.4	2,071.3
4	Benefits accrued (compensation of employees)	66.6	70.5	76.1	75.3
5	Interest cost of current liability, at 6 percent rate	106.4	110.7	117.3	124.3
6	Employee contributions	0.8	0.7	1.1	0.9
7	Household income, ABO approach (4+5–6)	172.3	180.5	192.3	198.7
8	Net benefits paid	117.4	123.8	133.7	134.8
9	Household saving, at 6 percent rate (7–8)	54.8	56.7	58.6	63.9
10	Other factors [2)]	15.8	53.1	58.3	-4.3
11	Change in current liability, at 6 percent rate (9+10)	70.7	109.8	116.9	59.5
12	Effect of changing interest rate assumptions	20.5	-29.2	30.9	-74.0
13	Change in current liability, at rates used by plans (11+12)	91.2	80.6	147.8	-14.5
Addendum					
14	Present value of future benefits payable by the PBGC for terminated single employer plans [3)]	9.4	12.7	21.7	38.9
15	Interest cost of PBGC liability for future benefits of single employer plans [4)]	0.7	0.8	1.1	1.8
16	Household income, actuarial approach, at rates used by plans	173.1	181.2	193.3	199.6
17	Household saving, actuarial approach, at rates used by plans	55.7	57.4	59.6	64.7
18	Assets as percent of current liability, at rates used by plans	114.2	103.6	90.8	79.7
19	Assets as percent of current liability, 6 percent rate	113.4	104.0	89.8	80.0
20	Assets as percent of current liability, excluding plans w. missing values, at rates used by plans	116.3	103.9	92.8	81.4

(billions of current year dollars)

		2004	2005	2006
1	Opening ABO current liability, at interest rates used by plans	2,066.2	2,278.7	2,343.5
2	Effect of Changing to 6 percent interest rate	64.7	3.3	-58.9
3	Opening ABO current liability, at 6 percent rate	2,130.9	2,282.0	2,284.6
4	Benefits accrued (compensation of employees)	71.3	75.3	79.3
5	Interest cost of current liability, at 6 percent rate	127.9	136.9	137.1
6	Employee contributions	0.8	1.0	0.9
7	Household income, ABO approach (4+5−6)	198.4	211.3	215.4
8	Net benefits paid	141.1	138.8	149.6
9	Household saving, at 6 percent rate (7−8)	57.3	72.5	65.9
10	Other factors [2]	93.9	-69.9	N.A.
11	Change in current liability, at 6 percent rate (9+10)	151.1	2.6	N.A.
12	Effect of changing interest rate assumptions	61.4	62.2	N.A.
13	Change in current liability, at rates used by plans (11+12)	212.6	64.8	N.A.
Addendum				
14	Present value of future benefits payable by the PBGC for terminated single employer plans [3]	43.3	57.3	63.9
15	Interest cost of PBGC liability for future benefits of single employer plans [4]	1.9	2.6	3.2
16	Household income, actuarial approach, at rates used by plans	199.2	212.3	216.4
17	Household saving, actuarial approach, at rates used by plans	58.1	73.5	66.8
18	Assets as percent of current liability, at rates used by plans	94.1	92.4	94.9
19	Assets as percent of current liability, 6 percent rate	91.3	92.3	97.4
20	Assets as percent of current liability, excluding plans w. missing values, at rates used by plans	96.3	96.4	93.8

1) Totals for 2000, 2001 and 2002 include imputations for missing observations. The reported totals have been adjusted up by 15.7 percent, 9.2 percent, and 5.3 percent in 2000, 2001 and 2002, respectively.
2) Includes effects of experience, changes in assumptions other than the interest rate, and plan amendments.
3) As of end of PBGC fiscal year.
4) Assumes 5 percent interest rate.

Table 3 **Benefit disbursements and entitlements from the pension benefit guarantee corporation**

(billions of current year dollars)

	2000	2001	2002	2003	2004
Income or expense					
1 Total benefits and assistance to plans	1.0	1.2	1.9	2.5	3.0
2 Government social benefits, NIPAs	0.9	1.1	1.7	2.3	2.4
3 Investment income from assets	0.9	0.9	1.0	1.0	1.0
4 Interest cost of PBGC liability for future benefits of single employer plans	0.7	0.8	1.1	1.8	1.9
5 Administrative expenses	0.2	0.2	0.2	0.2	0.3
PBGC's benefit liability and assets					
5 Present value of future benefits, trusteed plans	9.4	12.7	21.7	38.9	43.3
6 Including net cost of probable terminations	10.6	13.5	28.6	44.6	60.8
7 Net assets, before benefit liability	20.3	21.2	25.0	33.4	37.5
8 PBGC net position (7–6)	9.7	7.7	-3.6	-11.2	-23.3
9 Total participants receiving benefits (millions)	0.23	0.27	0.34	0.46	0.52
10 Interest rate assumption (for first 20 years)	7.00	6.70	5.70	4.40	4.80

	2005	2006	2007	2008
Income or expense				
1 Total benefits and assistance to plans	3.7	4.2	4.3	4.4
2 Government social benefits, NIPAs	2.6	2.5	2.6	N.A.
3 Investment income from assets	1.4	1.9	2.2	2.3
4 Interest cost of PBGC liability for future benefits of single employer plans	2.6	3.2	3.3	3.4
5 Administrative expenses	0.3	0.3	0.4	0.4
PBGC's benefit liability and assets				
5 Present value of future benefits, trusteed plans	57.3	63.9	65.1	56.6
6 Including net cost of probable terminations	69.7	69.1	69.2	60.0
7 Net assets, before benefit liability	47.0	51.0	56.1	49.3
8 PBGC net position (7–6)	-22.8	-18.1	-13.1	-10.7
9 Total participants receiving benefits (millions)	0.68	0.61	0.63	0.64
10 Interest rate assumption (for first 20 years)	5.20	4.85	5.31	6.60

Table 4 Railroad retirement taxes and benefits excluding social security equivalent portions

(billions of current year dollars)

	2000	2001	2002	2003
Receipts from payroll taxes [1]	2.93	2.82	2.74	2.65
Employer portion of payroll taxes	2.25	2.16	2.09	1.97
Investment income and transfers from national RR investment trust	1.30	2.03	1.88	0.59
Benefits	2.96	2.97	3.24	3.50
Net of employee portion of payroll tax	2.28	2.31	2.59	2.82
Railroad retirement account balance	17.03	18.91	18.64	0.50
National RR investment trust balance	0.00	0.00	1.42	23.02
Beneficiaries (millions)	0.76	0.74	0.72	0.70

	2004	2005	2006	2007
Receipts from payroll taxes [1]	2.61	2.61	2.67	2.64
Employer portion of payroll taxes	1.90	1.93	1.98	1.99
Investment income and transfers from National RR investment trust	1.58	0.82	0.97	1.41
Benefits	3.60	3.68	3.81	4.07
Net of employee portion of payroll tax	2.89	3.00	2.12	3.43
Railroad retirement account balance	0.63	0.59	0.48	0.62
National RR investment trust balance	25.02	27.64	29.33	32.63
Beneficiaries (millions)	0.68	0.66	0.64	0.64

1) In 2007 employer's tax rate for non-social security portion of railroad pension was about 12 percent and the employee's tax rate was about 4 percent.

(billions of current year dollars)

		2000	2001	2002	2003
1	Household income	122.6	109.5	110.6	128.6
2	Employer contributions	39.5	38.8	42.1	53.1
3	Investment income from plan assets	83.1	70.6	68.5	75.5
4	Plan administrative expenses	6.0	7.5	7.6	7.6
5	Benefits, net of employee contributions	74.7	82.6	91.7	101.1
6	Benefits and withdrawals	100.4	109.6	119.6	130.5
7	Employee contributions	25.7	27.0	27.9	29.4
8	Household saving (1−4−5)	42.0	19.3	11.3	19.8
9	Holding gains/losses on plan assets	61.8	-77.9	-69.6	113.6
10	Net transfers and OCVA	22.0	53.2	47.4	24.7
11	Change in assets (8+9+10)	125.8	-5.3	-10.9	158.1
12	Closing assets	2,163.1	2,157.8	2,146.9	2,305.0
	Addendum				
13	Active participants (millions)	13.5	13.8	14.1	14.1
14	Total participants (millions)	22.4	23.2	23.9	24.3
15	Employer contributions,Table 6.11d, National Income and Product Accounts (2008 revision)	39.6	38.8	41.8	56.1
16	Benefits,Table 6.11d, NIPAs	100.3	109.6	120.6	131.9
17	Employee contributions,Table 6.11d, NIPAs	25.8	27.1	28.6	30.1
18	MEMO: Disposable personal income	7,194.0	7,486.8	7,830.1	8,162.5

		2004	2005	2006
1	Household income	141.0	147.8	161.2
2	Employer contributions	59.8	60.9	67.8
3	Investment income from plan assets	81.3	86.9	93.4
4	Plan administrative expenses	9.0	10.0	12.5
5	Benefits, net of employee contributions	109.3	117.4	127.5
6	Benefits and withdrawals	140.1	149.0	160.5
7	Employee contributions	30.8	31.6	33.0
8	Household saving (1−4−5)	22.7	20.4	21.2
9	Holding gains/losses on plan assets	201.8	187.7	288.0
10	Net transfers and OCVA	29.2	-9.9	50.7
11	Change in assets (8+9+10)	253.8	198.2	359.9
12	Closing assets	2,558.8	2,757.0	3,116.9
	Addendum			
13	Active participants (millions)	14.1	14.2	14.4
14	Total participants (millions)	24.8	25.4	26.1
15	Employer contributions,Table 6.11d, National Income and Product Accounts (2008 revision)	55.4	61.9	65.3
16	Benefits,Table 6.11d, NIPAs	140.6	149.7	161.6
17	Employee contributions,Table 6.11d, NIPAs	31.1	32.3	34.0
18	MEMO: Disposable personal income	8,680.9	9,062.0	9,640.7

Table 6 Household wealth and income from state and local government defined benefit plans: PBO approach

(billions of current year dollars)

		2000	2001	2002	2003
1	Employer's normal cost for benefits (net of administrative expense)	41.0	43.9	46.1	46.9
2	Imputed interest on actuarial liability	178.3	192.3	205.7	218.3
3	Actuarial income of households (1+2)	219.3	236.2	251.8	265.2
4	Benefits net of employee contributions	74.7	82.6	91.7	101.1
5	Actuarial saving of households (3–4)	144.6	153.6	160.1	164.1
6	Actuarial liability of plans	2,218.1	2,393.3	2,560.7	2,730.6
7	Assets of plans (market value)	2,163.1	2,157.8	2,146.9	2,305.0
8	Unfunded actuarial liability	55.0	235.5	413.8	425.6
9	Funded ratio (percent)	97.5	90.2	83.8	84.4
Addendum					
10	Covered payroll	493.6	521.6	542.7	556.9
11	Unfunded actuarial liability as a percent of payroll	11.1	45.2	76.3	76.4
12	Employer's normal cost per active participant (dollars)	3,034	3171	3,276	3,334
13	Employer's normal cost as a percent of payroll	8.3	8.4	8.5	8.4
14	Investment rate of return assumption (percent)	8.04	8.04	8.03	7.99

		2004	2005	2006
1	Employer's normal cost for benefits (net of administrative expense)	47.4	49.0	51.7
2	Imputed interest on actuarial liability	231.2	245.7	261.9
3	Actuarial income of households (1+2)	278.6	294.7	313.6
4	Benefits net of employee contributions	109.3	117.4	127.5
5	Actuarial saving of households (3–4)	169.2	177.3	186.2
6	Actuarial liability of plans	2,902.4	3,088.3	3,296.3
7	Assets of plans (market value)	2,558.8	2,757.0	3,116.9
8	Unfunded actuarial liability	343.6	331.2	179.3
9	Funded ratio (percent)	88.2	89.3	94.6
Addendum				
10	Covered payroll	573.3	596.0	625.7
11	Unfunded actuarial liability as a percent of payroll	59.9	55.6	28.7
12	Employer's normal cost per active participant (dollars)	3,362	3,440	3,582
13	Employer's normal cost as a percent of payroll	8.3	8.2	8.3
14	Investment rate of return assumption (percent)	7.96	7.95	7.95

Table 7 **Household wealth and income from state and local government defined benefit plans: ABO approach with interest rate of 6 percent**

(billions of current year dollars)

		2000	2001	2002	2003
1	Benefit accruals (net of employee contributions and administrative expenses)	58.3	62.3	64.9	65.7
2	Imputed interest on accrued liability	120.5	130.6	140.1	149.7
3	Accrued income of households (1+2)	174.2	187.0	199.1	209.5
4	Benefits net of employee contributions	74.7	82.6	91.7	101.1
5	Equals: Accrued saving in DB pension plans	99.6	104.4	107.4	108.3
6	Accrued liability	2,008.3	2,177.1	2,335.0	2,495.0
7	Assets (market value)	2,163.1	2,157.8	2,146.9	2,305.0
8	Unfunded actuarial liability	-154.8	19.3	188.0	190.0
9	Funded ratio (%)	107.7	99.1	92.0	92.4
Addendum					
10	Covered payroll	493.6	521.6	542.7	556.9
11	Unfunded actuarial liability as a percentage of payroll	-31.4	3.7	34.7	34.1
12	Benefit accruals per active participant (dollars)	4,313	4,500	4,615	4,665
13	Benefit accruals as a percent of payroll	11.8	11.9	12.0	11.8

		2005	2006	2007
1	Benefit accruals (net of employee contributions and administrative expenses)	65.8	67.6	71.2
2	Imputed interest on accrued liability	159.6	170.8	182.3
3	Accrued income of households (1+2)	218.1	230.3	242.9
4	Benefits net of employee contributions	109.3	117.4	127.5
5	Equals: Accrued saving in DB pension plans	108.8	112.8	115.4
6	Accrued liability	2,660.1	2,846.8	3,038.1
7	Assets (market value)	2,558.8	2,757.0	3,116.9
8	Unfunded actuarial liability	101.3	89.8	-78.8
9	Funded ratio (%)	96.2	96.9	102.6
Addendum				
10	Covered payroll	573.3	596.0	625.7
11	Unfunded actuarial liability as a percentage of payroll	17.7	15.1	-12.6
12	Benefit accruals per active participant (dollars)	4,664	4,743	4,928
13	Benefit accruals as a percent of payroll	11.5	11.3	11.4

Table 8 Household wealth and income from state and local government defined benefit plans: ABO approach with 20 year treasury bond interest rate

(billions of current year dollars)

		2000	2001	2002	2003
1	Benefit accruals (net of employee contributions and administrative expenses)	58.8	64.9	74.8	76.3
2	Imputed interest on accrued liability	112.8	130.0	126.0	138.3
4	Accrued income of households (1+2)	167.0	189.0	194.9	208.7
5	Benefits net of employee contributions	74.7	82.6	91.7	101.1
6	Household saving in DB pension plans	92.4	106.4	103.2	107.5
7	Accrued liability	2,021.9	2,238.2	2,567.1	2,749.1
8	Assets (market value)	2,163.1	2,157.8	2,146.9	2,305.0
9	Unfunded actuarial liability	-141.3	80.4	420.1	444.0
10	Funded ratio (%)	107.0	96.4	83.6	83.9
Addendum					
11	Covered payroll	493.6	521.6	542.7	556.9
12	Unfunded actuarial liability as a percent of payroll	-28.6	15.4	77.4	79.7
13	Benefit accruals per active member (dollars)	4,348.0	4,687.0	5,320.0	5,420.0
14	Benefit accruals as a percent of payroll	11.9	12.4	13.8	13.7
15	Investment rate of return assumption (%)	5.6	5.8	4.9	5.0

		2004	2005	2006
1	Benefit accruals (net of employee contributions and administrative expenses)	77.2	79.9	79.7
2	Imputed interest on accrued liability	145.2	146.0	159.5
4	Accrued income of households (1+2)	215.1	217.8	228.6
5	Benefits net of employee contributions	109.3	117.4	127.5
6	Household saving in DB pension plans	105.9	100.3	101.2
7	Accrued liability	2,951.7	3,173.8	3,269.1
8	Assets (market value)	2,558.8	2,757.0	3,116.9
9	Unfunded actuarial liability	392.9	416.8	152.2
10	Funded ratio (%)	86.7	86.9	95.3
Addendum				
11	Covered payroll	573.3	596.0	625.7
12	Unfunded actuarial liability as a percent of payroll	68.5	69.9	24.3
13	Benefit accruals per active member (dollars)	5,475.0	5,607.0	5,518.0
14	Benefit accruals as a percent of payroll	13.5	13.4	12.7
15	Investment rate of return assumption (%)	4.9	4.6	4.9

Table 9

Table 9 Household income and wealth from federal government defined benefit plans: cash accounting approach

(billions of current year dollars)

		2000	2001	2002	2003
1	Household income	114.6	117.8	121.4	118.6
2	Employer contributions	66.6	68.6	72.2	70.4
3	Investment income from plan assets	48.1	49.2	49.1	48.2
4	Plan administrative expenses	0.1	0.1	0.1	0.1
5	Benefits, net of employee contributions	75.2	78.9	81.3	83.1
6	Benefits and withdrawals	79.9	83.6	85.9	87.8
7	Employee contributions	4.8	4.7	4.6	4.6
8	Household saving (1–5–6)	39.3	38.8	40.0	35.3
Addendum					
9	Assets, end of calendar year	691.4	751.0	789.0	826.2
10	Active participants (millions)	4.1	4.1	4.1	4.1
11	Total participants (millions)	8.6	8.6	8.7	8.7

		2004	2005	2006	2007
1	Household income	128.3	134.7	139.1	147.4
2	Employer contributions	81.3	85.1	91.2	98.0
3	Investment income from plan assets	47.0	49.6	47.9	49.4
4	Plan administrative expenses	0.1	0.1	0.1	0.1
5	Benefits, net of employee contributions	87.2	92.4	98.3	104.1
6	Benefits and withdrawals	91.8	96.8	102.7	108.3
7	Employee contributions	4.6	4.5	4.4	4.2
8	Household saving (1–5–6)	41.0	42.2	40.9	43.2
Addendum					
9	Assets, end of calendar year	868.2	895.4	931.9	965.6
10	Active participants (millions)	4.2	4.1	4.1	4.1
11	Total participants (millions)	8.7	8.7	8.7	8.7

Note: Change in assets differs from saving because assets are measured at the end of the calendar year, while saving is measured for fiscal years that end in September.

(billions of current year dollars)

		2000	2001	2002	2003	2004
1	Normal cost for benefits, net of employee contributions	29.3	33.0	37.1	33.9	33.7
2	Imputed interest on actuarial liability	113.3	116.7	116.9	114.8	118.4
3	Actuarial income of households (1+2)	142.6	149.7	154.0	148.7	152.1
4	Benefits, net of employee contributions	75.2	78.9	81.3	83.1	87.2
5	Actuarial saving of households (3–4)	67.5	70.8	72.7	65.5	64.9
6	Actuarial liability of plans	1,762.3	1,821.2	1,859.8	1,929.4	2,067.9
7	Assets of plans (end of calendar year)	691.4	751.0	789.0	826.2	868.2
8	Unfunded actuarial liability	1,070.9	1,070.2	1,070.8	1,103.2	1,199.7
9	Funded ratio (%)	39.2	41.2	42.4	42.8	42.0
10	Average normal cost per active employee	8,352	9,231	10,201	9,322	9,229
11	Normal cost as percent of NIPA total compensation	14.6	15.5	15.5	12.9	11.8
12	Actuarial saving less cash accounting saving	28.1	32.0	32.7	30.2	23.9
Assumptions for actuarial estimates: civilian plans						
13	Interest rate	7.00	6.75	6.75	6.25	6.25
14	Inflation rate	4.00	3.75	3.75	3.25	3.25
15	Projected salary increase rate	4.25	4.25	4.25	4.00	4.00
Assumptions for actuarial estimates: military plans						
16	Interest rate	6.25	6.25	6.25	6.25	6.25
17	Inflation rate	3.00	3.50	3.00	3.00	3.00
18	Projected salary increase rate	3.50	3.50	3.50	3.75	3.75

		2005	2006	2007	2008
1	Normal cost for benefits, net of employee contributions	37.1	38.0	40.9	42.0
2	Imputed interest on actuarial liability	126.9	133.0	139.6	145.6
3	Actuarial income of households (1+2)	164.0	171.0	180.5	187.6
4	Benefits, net of employee contributions	92.4	98.3	104.1	109.0
5	Actuarial saving of households (3–4)	71.7	72.7	76.4	78.6
6	Actuarial liability of plans	2,169.2	2,316.1	2,415.1	2,608.9
7	Assets of plans (end of calendar year)	895.4	931.9	965.6	1,029.7
8	Unfunded actuarial liability	1,273.8	1,384.2	1,449.5	1,579.2
9	Funded ratio (%)	41.3	40.2	40.0	39.5
10	Average normal cost per active employee	10,100	10,324	11,043	11,074
11	Normal cost as percent of NIPA total compensation	12.1	11.8	11.9	11.4
12	Actuarial saving less cash accounting saving	29.4	32.1	33.2	N.A.
Assumptions for actuarial estimates: civilian plans					
13	Interest rate	6.25	6.25	6.25	6.25
14	Inflation rate	3.25	3.50	3.50	3.50
15	Projected salary increase rate	4.00	4.25	4.25	4.25
Assumptions for actuarial estimates: military plans					
16	Interest rate	6.25	6.00	6.00	5.75
17	Inflation rate	3.00	3.00	3.00	3.00
18	Projected salary increase rate	3.75	3.75	3.75	3.75

Table 11 **Comparison of cash accounting and actuarial measures of pension income and wealth of US households**

(percents of disposable personal income)

		2000	2001	2002	2003
1	Household income, cash accounting approach	4.6	4.5	4.9	4.9
2	Household income, actuarial approach	7.4	7.6	7.6	7.5
3	Compensation, cash accounting approach	1.9	2.1	2.7	2.7
4	Compensation, actuarial approach	1.9	2.0	2.0	1.9
5	Interest & dividend income, cash accounting	2.7	2.4	2.1	2.1
6	Interest income, actuarial approach	5.5	5.6	5.6	5.6
7	Household saving, cash accounting approach	0.7	0.4	0.8	0.8
8	Household saving, actuarial approach	2.7	2.8	2.8	2.8
9	Household pension wealth, cash accounting	66.2	62.3	58.3	62.1
10	Household pension wealth, actuarial approach	81.4	82.5	83.6	83.2

		2004	2005	2006
1	Household income, cash accounting approach	4.8	4.8	4.7
2	Household income, actuarial approach	7.2	7.4	7.3
3	Compensation, cash accounting approach	2.7	2.6	2.6
4	Compensation, actuarial approach	1.8	1.8	1.8
5	Interest & dividend income, cash accounting	2.1	2.1	2.2
6	Interest income, actuarial approach	5.5	5.6	5.5
7	Household saving, cash accounting approach	0.7	0.7	0.6
8	Household saving, actuarial approach	2.7	2.9	2.8
9	Household pension wealth, cash accounting	63.9	64.9	67.8
10	Household pension wealth, actuarial approach	84.3	84.8	83.5

An Illustration of the ABO Approach, the Projected Unit Credit Method and the Entry Age Normal Method

A simple hypothetical pension plan illustrates some of the differences between three possible ways of calculating pension benefit liabilities. These are the accrued benefit obligation (ABO) approach, and the projected unit credit (PUC) method, which is often labeled the projected benefit obligation (PBO) approach in corporate financial reports, and the constant percent of pay version of the entry age normal (EAN) method (which is also sometimes called a PBO approach).

Participants in the pension plan work for 3 years, retire in the 4th year, and die in the 5th year. Their salary grows 5 percent per period from a starting level of $25,000. Vesting is immediate, there are no breaks in service, and there is no early retirement. The accrued retirement benefit equals 10 percent of salary times the number of periods worked times final salary. The interest rate is 15 percent.

Table A follows a single participant through the career and retirement. It shows that the PUC and EAN measures of the future benefit liability are higher than the ABO liability except at retirement, when all measures are equal. The PUC and EAN service cost measures are higher than the ABO one at first, but are much lower in the last year of the career. As a result, based on averages over the entire career, the largest measure of service cost is the ABO one.

Table I Illustration of different approaches to measuring benefit liability and service cost for a single employee

	Assumptions			Liability for future benefits		
Age	Salary	Benefits paid	Accrued benefits	ABO	Projected unit credit	Entry age normal
1	25,000	0	0	0	0	…
2	26,250	0	2,500	1,890	2,084	2,276
3	27,563	0	5,250	4,565	4,793	5,008
4	0	8,269	8,269	8,269	8,269	8,269
5	0	0	0	0	0	0

Service cost			Service cost as a percentage of salary		
ABO	Projected unit credit	Entry age normal	ABO	Projected unit credit	Entry age normal
1,644	1,812	1,979	6.58	7.25	7.92
2,079	2,084	2,078	7.92	7.94	7.92
2,625	2,397	2,182	9.52	8.70	7.92
0	0	0	N.A.	N.A.	N.A.
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Table B follows a plan that starts with 10 newly hired participants, and adds 10 new hires in each of the next two years. Hiring then ceases. As the workforce ages, the ABO measure of service cost rises faster than the PUC measure. The EAN measure using the level percent of pay version of the entry age normal method does not rise at all. If the distribution of ages in the workforce is uniform, the ABO measure of service cost is higher than the PUC and EAN ones, so on the whole the ABO approach tends to attribute the growth of pension wealth more to compensation in the form of imputed contributions (and the other methods tend to it attribute it more to property income in the form of imputed interest earned on the plan's benefit liability).

Table 2 Illustration of different approaches to measuring benefit liability and service cost for the plan from inception to termination

(dollar amounts in thousands)

	Assumptions			Future benefit liability		
Year	Payroll	Benefits paid	Accrued benefits	ABO	Projected unit credit	Entry age normal
1	250	0	0	0	0	…
2	513	0	25	18.9	20.8	22.8
3	788	0	78	64.6	68.8	72.8
4	788	83	160	147.2	151.5	155.5
5	788	83	160	147.2	151.5	155.5
6	538	83	160	147.2	151.5	155.5
7	276	83	135	128.3	130.6	132.8
8	0	83	83	82.7	82.7	82.7

Service cost			Service costs as a percentage of payroll			No. of participants	
ABO	Projected unit credit	Entry age normal	ABO	Projected unit credit	Entry age normal	Active	Retired
16.4	18.1	19.8	6.6	7.3	7.9	10	0
37.2	39.0	40.6	7.3	7.6	7.9	20	0
63.5	62.9	62.4	8.1	8.0	7.9	30	0
63.5	62.9	62.4	8.1	8.0	7.9	30	10
63.5	62.9	62.4	8.1	8.0	7.9	30	10
47.0	44.8	42.6	8.7	8.3	7.9	20	10
26.3	24.0	21.8	9.5	8.7	7.9	10	10
0	0	0	N.A.	N.A.	N.A.	0	10

GENERAL GOVERNMENT PENSION LIABILITIES IN POLAND

BY JANUSZ JABLONOWSKI [1]

I STRUCTURE AND MAIN FEATURES OF THE PENSION SYSTEM IN POLAND:

A SOCIAL INSURANCE FUND – FUS

The standard retirement age for women is 60, and for men 65. There is a possibility to retire earlier, at age 55 and 60 respectively, when certain conditions are met.

During the pension reform from 1999, an individual notional account was created for each member born after 1969, and also for those members who have decided to enter to the new system, and were born between 1949 and 1969. For the latter group the virtual amount of contributions were assigned to the account to reflect the up-to-date amount of collected contributions. Persons born before 1949 stayed in the old PAYG system, where the pension depends on 10 years of all contributory periods chosen by the scheme member.

In the new system pension entitlement is based on total amount of indexed notional contributions collected on members' individual accounts. There is no minimum insurance period that is required to receive the old-age pension. **The amount of pension is calculated just before the retirement by dividing the total amount of indexed contributions, collected during contributory period on individual account, by life expectancy expressed in months, published by the National Statistical Institute.** In addition to this part paid from "new" FUS, the other one, coming from funded mandatory pension schemes (so called OFE) is added. The first, very few payments of the new pensions, consisting of both above mentioned parts starts in 2009.

Life expectancy tables are unified for both genders – so there are no separate life expectancy tables for women and men.

Pension entitlements are indexed on basis of CPI plus 20% of real increase in salaries on annual basis.

There is a ceiling for maximum amount of annual contributions – once the amount of gross income (which is the basis for calculation of the contributions) reaches the amount equal to 30 times average annual salary in the economy (or 250% of monthly average salary), the contributions are not collected until the end of the year. This "ceiling" mechanism was to promote other forms of private pension schemes.

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1   Narodowy Bank Polski.

Chart I Flows of pension and disability contributions in FUS

(percentages up to date for 2009)

Employer		+		Employee	
pensions	9.76	12.22		2.46 +	7.30
disability	4.50	6.00		1.50	

Compensation from the state budget for "contributions ceiling" and outflow of contributions to OFE →

Notional DC fund (FUS)

7.30

DC funded scheme (OFE) ←

7.30
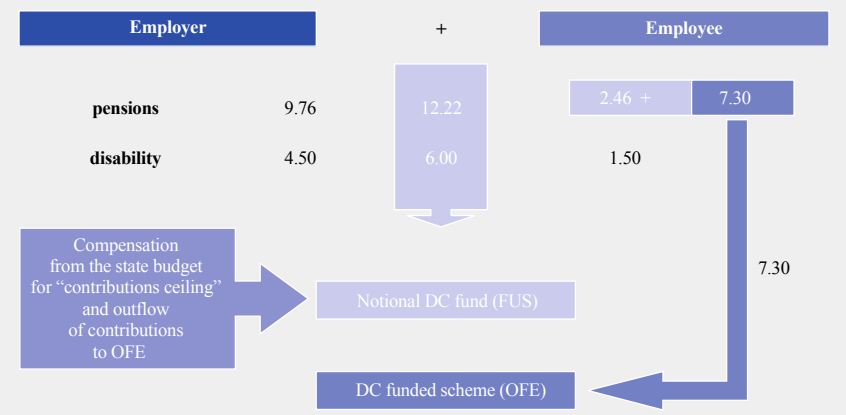
Source:

The FUS is an unfunded system – there are almost no assets, but only small annual book reserves for uncollected amounts of contributions.

To prevent possible future liquidity constraints in FUS pension payments, resulting from unexpected losses, a buffer fund (Demographic Reserve Fund) was created. Up to now its assets are not very significant, since they amounted to PLN 3,5bln in 2007, which stands for less than 5% of the annual FUS pension expenditures.

In case of default of the FUS, the state budget guarantees the payment of social benefits.

Additionally, to cover the losses resulting from the outflow of part of contribution to the open pension funds the state budget supports FUS with significant transfers.

In Polish pension system there are no separate rules for civil servants.

B   PENSION AND DISABILITY FUND – FER (FARMERS)

The standard retirement age is the same as in the FUS system: women retire at age of 60, men retire at age of 65, with possibility to retire earlier, at age of 55 and 60 respectively.

Pensions depend on the length of contributory period, independently from amounts of collected contributions.

Contributions are much lower than in the FUS system, and are paid quarterly, calculated as 30% of basic pension for farmers (equivalent of around 30€/q).

This is an unfunded defined benefit scheme, where the amount of pension depends on the sum of contributory and non-contributory periods.

Low amounts of contributions are sufficient to cover only 8% of FER pension and disability expenditures. The remaining 92% of expenditures are paid from state budget transfers.

C STATE BUDGET PENSIONS

Benefits paid from the state budget.

Two groups of beneficiaries:
– Judges and prosecutors,
– Professional soldiers, police, officers of Government Protection Bureau, Internal Security Agency, Intelligence Agency, Central Anti-corruption Bureau, Polish Border Guard, custom duties services, prison services, firemen.

No pension & disability contributions.

Pension amount reflects the final salary (e.g. last 3 soldier's pays before the retirement) – usually they are higher than average pensions from the FUS.

Pension can not exceed 75% of the last salary.

Possible retirement with pension limited to 40% of the last salary, but already after 15 years of duty, regardless of age (e.g. possible 38 year old pensioners!).

Pension entitlements indexed on common basis of CPI plus 20% of real increase in salaries.

Chart 2 Average monthly number of pensioners in general government schemes

(2007; in thousands)

state budget
245

FER
1,189

FUS
4,599
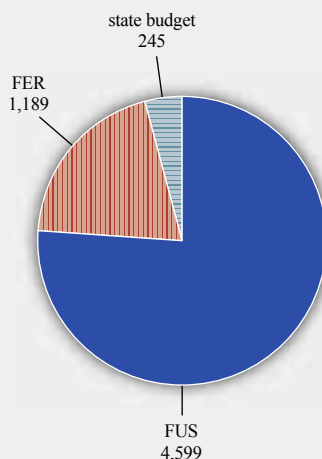
Source:

Mandatory funded pension schemes (OFE)

Employee pension programmes (PPE) created by individual employers:
– Employee pension fund,
– Agreement on contributing employee contributions to an investment fund by the employer,
– Group investment employee life insurance agreement conducted with an insurance company in the term of a group life insurance linked to capital investment funds.

Individual Pension Accounts (IKE) provided by banks, insurance companies, investment funds societies and brokerage businesses.

2   THE MODELING ISSUES

A   UP-TO-DATE EXPERIENCES

PROST: the ECB offered the NBP a training course in 2007 on PROST, a model developed by the World Bank, which simulates the effect of the pension reform. Results obtained with use of that model were very difficult to interpret because after modeling of the reform from 1999 it was uneasy to adjust the model parameters in such a way, that the projected data suited the actual data between 1999 and 2007. Due to large number of errors in outcomes the model is not in use anymore.

Freiburg model: actually the only model which was capable to project more predictable levels of pension liabilities for Poland. The initial results obtained in 2007 were promising, though too volatile. Further fine-tuning of assumptions and additional data were required to achieve more stable outcomes.

B   CURRENT DEVELOPMENTS

In the 2008 update of pension liabilities calculations only the Freiburg model was used for Poland. Because the simulations of very long term forecasts of pension liabilities, covering around 50 years in the future were prepared for the very first time for Poland in 2007, there was still high degree of uncertainty if currently available data and modeling solutions were matching all necessary components, which properly reflected the economic reality of the Polish pension system. The only reliable model, which could serve as a benchmark for the Freiburg model, the AWG model from ZUS,[2] could not be adjusted to project the methodologically similar outcomes. Therefore, after two years of efforts there were still unanswered questions: 1) whether the pension liabilities projected by the Freiburg model were reliable and, 2) whether to build own, country specific and expensive model to simulate the up-to-date liabilities of the pension system or rely on existing general model of Freiburg University? In 2009 the idea

2   Social Insurance Institution – a central government independent body that manages FUS, part of social security funds subsector in ESA95.

arose to adjust the Freiburg model to adapt its output to pension expenditures prepared by the AWG in the 2009 Ageing Report.[3] The table below sums up the differences and similarities between two types of simulations:

Table I	Comparison between AWG model and Freiburg model	
	Freiburg	**AWG**
Type of the system covered	Closed (no entrance for new workers)	Open (entrance for new workers allowed)
Outcome	Accrued-to-date liabilities	Revenues and expenditures
Coverage of the systems	General government	General government
Coverage of types of benefits	Gross pension benefits, early retirement, disability, survivors	Gross pension benefits, early retirement, disability, survivors
Wage growth	Fixed (real) 1,5%	Varying (real)
Demographics	EUROPOP	EUROPOP
Time horizon	2007 – Infinity (?)	2007-2060
Currency	Euro/National	Euro

Source: European Commission for each MS.

As it can be seen in the table above, there are few, but important, differences between these two types of simulations:

1. Type of the system covered:
   – AWG: for each next year of the forecast (t+1, t+2, … , t+n) allows the entrance of new workers, who are for the first time starting their carriers, to increase the total number of employees in the model, which can be called "open" system.
   – Freiburg model: as in other similar types of calculations of the up-to-date liabilities, the number of employees/contributors is fixed and the system is "closed" for the entrance of the new ones.

2. The outcomes of projections:
   – AWG: pension systems expenditures, prepared with use of many country specific models, individually by each MS.
   – Freiburg model: accrued-to-date liabilities, either ABO or PBO[4], one model with country specific adjustments.

3. Wage growth:
   – AWG: different, individual rates for each MS. For EU27 the growth for whole period of the projection was stable and close to 1.7% in real terms.

3   http://ec.europa.eu/economy_finance/publications/publication14992_en.pdf
4   ABO = Accrued Benefit Obligation; PBO = Projected Benefit Obligation or Projected Unit Credit Method

The growth rate for Poland was much higher especially until 2030, which can be followed on Chart 4.

– Freiburg model: for all countries participating in the "benchmark" exercise supervised by the ECB/Eurostat, the flat 1.5% growth rate in real terms was used for better comparability between countries.

For Poland the pension expenditure projections for FUS presented in 2009 Ageing Report, were prepared with use of the country specific model developed in the Social Insurance Office (ZUS). For the practical reasons, and during current stage of analyses, it was possible only to adjust the outcome of the Freiburg model to AWG–related model, in practice to obtain open system expenditures with use of the Freiburg model, rather than accrued-to-date liabilities with use of ZUS model, which would probably require very deep and time-consuming reconstruction of the ZUS model.

C   OUTCOMES OF THE EXERCISE

On the Chart 3 there are two curves presenting diverging open system expenditures of FUS in the time horizon until 2060.

When analyzing the 3 major differences between two models listed above, one can easily spot that two first have been made consistent, but there's a remaining difference in terms of wage growth assumptions. The chart below presents difference between Freiburg model flat 1,5% real growth rate and varying across AWG projection real wage growth rate for Poland.

Chart 3 Open system expenditures with different wage growth rate assumptions, PLN mln

Legend:
- AWG 2009
- Freiburg 2009
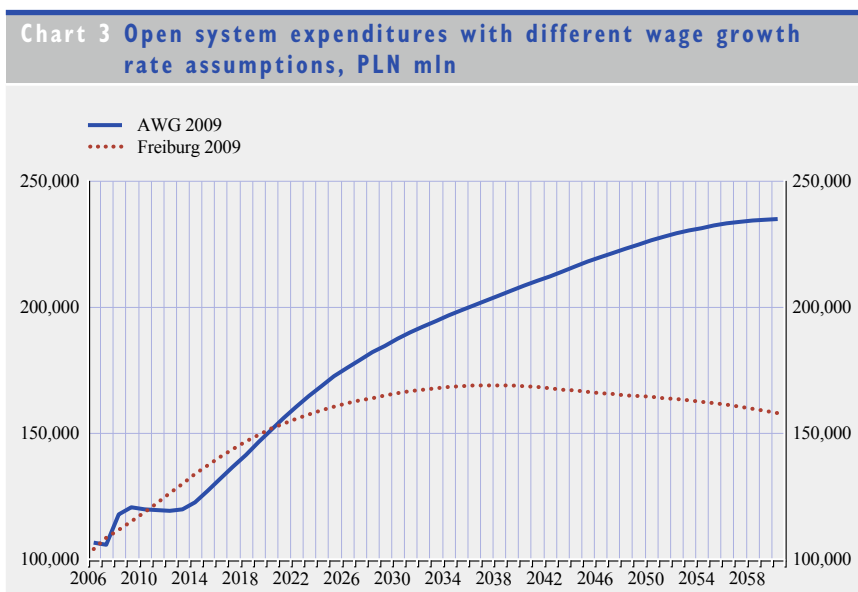
Source:

Chart 4 Comparison between Freiburg model and AWG wage growth assumptions for Poland

─── real wage growth AWG
···· real wage growth Freiburg

Source:

After replacing the flat 1,5% rate model used in the Freiburg model with the one used in the AWG projections (Chart 4), the convergence between open system expenditures projected by two models became more apparent, as it can be seen on the Chart 5:

Chart 5 Open system expenditures with the unified wage growth rate assumptions

(PLN million)

─── AWG 2009
···· Freiburg wage growth from AWG
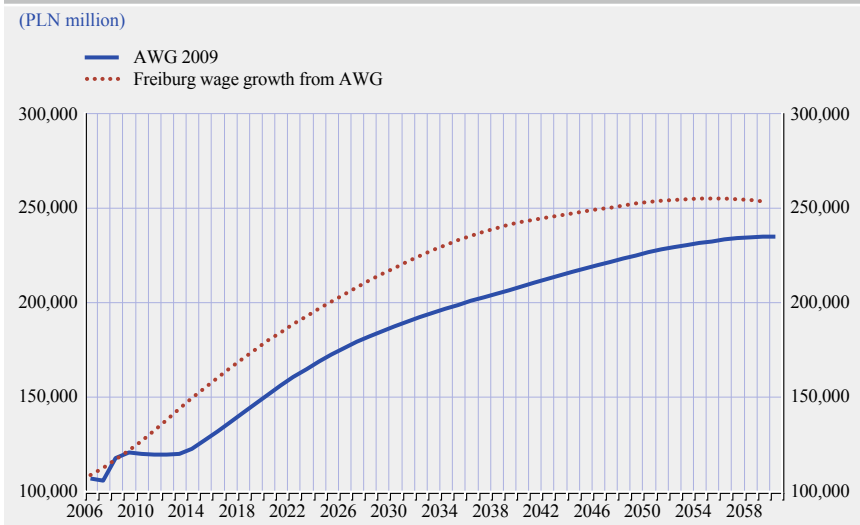
Source:

3   CONCLUSIONS

The sharp rise in open system expenditures observed between Chart 3 and 5, resulting in significant increase in pension entitlements, was the effect of simple replacement of the wage growth rates. When comparing wage growth rate curves from Chart 4 a following conclusion can be suggested: significant and quick accumulation of pension contributions in the first 2 decades of the projection, coming from fast growing wages (despite contributions' ceiling), caused significant increase in pension entitlements starting from 2nd decade until the end of projection. That might mean the significant sensitivity of the pension entitlements forecasts on wage growth progress in countries, which experience fast economic development, and are converging slowly towards EU27 average 1,7% wage growth rate assumed in 2009 Ageing Report.

After obtaining more consistent paths of open system expenditures, the checking of levels of pension liabilities of the closed system with new, higher wage growth assumptions followed. With 1,5% real wage growth the level of pension liabilities measured with a PBO method and 3,0% real discount rate amounted to 330% of GDP in 2007. After switching to varying wage growth used in AWG projections the level of pension liabilities in 2007 increased to 382% of GDP.

To check the plausibility of the projection the additional switch was proposed: having open pension system expenditures from AWG, it is possible, though not maybe in all cases, to close the system for entrance of newcomers and let survive the existing cohorts, then calculate the annual stocks on the basis of projected flows (i.e. closed system expenditures), and then discount the stocks with the given discount rate to obtain present value of expected payments. So far, the project has not started yet.

PENSION ENTITLEMENTS OF CIVIL SERVANTS IN GERMANY – LEVEL AND THEIR CHANGE OVER TIME

BY ALBERT BRAAKMANN, JENS GRÜTZ AND THORSTEN HAUG,[1]

I   INTRODUCTION

Foreseeable demographic changes in the future put the issue of old-age insurance in the spotlight of public interest. At the European level as well, sustainability is an important matter. Particularly since the Stability and Growth Pact came into effect, the development of the deficit and debt of general government are attentively observed. In response to the growing information requirements, concepts for a new, comparable and more comprehensive presentation of old-age insurance in National Accounts are being developed. This paper presents first results for the pension entitlements of Federal civil servants in Germany.

2   PENSION ENTITLEMENTS AND THEIR INFLUENCE ON LABOUR COSTS

To allow for international comparisons, the amount of pension entitlements is often put into relation to the gross domestic product (GDP). The question if a single value, like pension entitlements as share of GDP, can be interpreted as an indicator for a sustainable development is not paramount here. This article rather focuses on the development of labour costs and how the level of labour costs is influenced through the method of calculation of the pension entitlements and its underlying parameters. The calculation method will only be described as extensive as necessary for the understanding. A detailed description of the methods can be found in our publications on the pension entitlements of the statutory pension insurance[2] and on those of the civil servants.[3] The calculation of pension entitlements is a new field of activity for national accountants in Germany. All results are preliminary and are based on the 2005 pension report of the Federal Government.[4] The data basis used for the report (and

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1   Federal Statistical Office, Wiesbaden (Germany). The views expressed in this paper are the views of the authors and do not necessarily reflect the views of the Federal Statistical Office.

2   cf. Albert Braakmann, Jens Grütz, Thorsten Haug: Das Renten- und Pensionsvermögen in den Volkswirt-schaftlichen Gesamtrechnungen. Methodik und erste Ergebnisse. Wirtschaft und Statistik 12/2007, Wiesbaden.

3   cf. Albert Braakmann, Jens Grütz, Thorsten Haug: Civil servant pensions in National Accounts. Methodology and preliminary results. Paper prepared for the 30th General Conference of the International Association for Research in Income and Wealth. Portoroz, Slovenia, 2008.

4   Dritter Versorgungsbericht der Bundesregierung, Berlin 25.05.2005; http://www.bpb.de/files/OSOGI5.pdf

our calculations) is the statistics of active civil servants and pensioners for 2003. Mortality rates are derived from the pension report. All calculations have been carried out using the Projected Benefit Obligation (PBO) Method. Future (universal) pay rises and expected promotions are incorporated into the calculations under this method. Promotions are simulated based on current data. The level of pay rises is consistent with the assumptions of the Federal Government in the reports of the statutory pension insurance[5] of the respective years. The discount rate of the base calculations equals the return of Federal bonds with a duration of 15 years.

3   RECORDING OF PENSION ENTITLEMENTS IN THE REVISED SNA

The newly introduced supplementary table on pension schemes in the SNA 2008 addresses an important purpose. It provides comparable information on pension entitlements for all systems of old-age insurance in a comprehensible form. Problems like the transfer of pension entitlements from systems booked within the core system to systems outside of the core systems do not occur. Furthermore the structure of the supplementary table presents the transition from the opening balance to the closing balance through inclusion of social contributions, social benefits, revaluations and other changes in volume.

The entitlements of the civil servants (including soldiers) in Germany amount to 950.63 billions EUR[6] at the end of 2003, equal to 44 per cent of GDP. The following simulations are restricted to include Federal civil servants for ease of calculation. The pension entitlements of this group of civil servants totals to 57.62 billions € at the 1st of January 2003. With the acquisition of entitlements through another year of service and capital income (household social contribution supplements) the pension entitlements grew, whereas pension benefits paid and revaluations reduced the pension entitlements (revaluations were negative due to a slight increase in the discount rate, and decrease in wage expectations). At the end of 2003 the pension entitlements reached a level of 58.90 billions €, which is a net increase of 1.28 billions €, or 2.2%.

The change in pension entitlements[7] corresponds to the development of labour costs and therefore equals employer social contributions.[8] If this figure is set in relation to the salaries and wages paid, an implicit contribution rate can be calculated for the civil servants pension scheme. Table 1 shows an increase in pension entitlements

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5   [Rentenversicherungsbericht 2003]: „Bericht der Bundesregierung über die gesetzliche Rentenversicherung, insbesondere über die Entwicklung der Einnahmen und Ausgaben, der Schwankungsreserve sowie des jeweils erforderlichen Beitragssatzes in den künftigen 15 Kalenderjahren gemäß §154 SGB VI (Rentenversicherungs-bericht 2003)", Bundestagsdrucksache 15/2144, 04.12.2003.
6   Not including the entitlements of the few civil servants in the so called indirect government service (mainly social insurance carriers).
7   In the context of occupational pension schemes the term used is 'current service cost'. This economically significant factor, that represents the increase in claims for another year of service, is determined as a residual in our calculations.
8   If the employees provide own contributions, those have to be deducted from employers social contributions.

Table I	Supplementary table 2003 for federal civil servants (excluding soldiers)	
(EUR millions)		
1	Pension entitlements 01/01/2003	57,621
2.1-2.3	+ Increase in pension entitlements due to social contributions	1,345
2.4	+ Household social contributions supplements	2,881
4	- Reduction in pension entitlements due to payment of pensions	-2,025
7-9	+/- Revaluations	-926
10	Pension entitlements 31/12/2003	58,896

for civil servants of 1.35 bn in 2003. If related to paid remuneration, the implicit contribution rate can be determined to be at a level of 33.9%.

For comparison: for public service employees, who are no civil servants, old-age insurance contributions of 19.5% for the statutory pension insurance and 8.45% for the supplementary old-age insurance for government employees have been set aside. In total, contribution payments amount to just fewer than 28%, up to the assessment ceiling. Under the conditions of the model framework, expenditures for public service employees are somewhat lower than those for civil servants.[9]

4 THE INFLUENCE OF MODEL ASSUMPTIONS ON THE LEVEL OF PENSION ENTITLEMENTS

The level of pension entitlements and the level of the implicit contribution rate are determined to a large extent by the parameters of the calculation. The most important factor is the discount rate. Chart 1 displays the interrelation of discount rate and contribution rate. It clearly illustrates that the shift of the discount rate from 4% to 6% reduces the contribution rate almost by half. At a discount rate of 4.86% (interest rate of 2003 for Federal government bonds with a duration of 15 years) one obtains the aforementioned contribution rate of 33.9%. A completely different situation is represented by the contribution rate calculated at the same discount rate for civil servants of German Railways, which reaches a level of 80%. This shows that additional factors may have a significant impact on the results. In this case the age structure of the civil servants differs significantly. Whereas the civil servants and judges are on average 42 years old, the civil servants of German railways show a mean age of 47 years. This substantial difference is due to the privatization in 1994, which ceased the recruitment of new civil servants in the railway sector, resulting in a steady increase of the average age of the remaining active civil servants. Since older civil servants redeem their entitlements earlier than young ones, the present value of their entitlements is larger, resulting in a comparatively high contribution rate of 80%.

9 A complete comparison of the labour costs of civil servants and workers is not feasible in the framework of this article. For this purpose, further factors, such as the lower gross wages of civil servants or the more extensive financial support in case of illness would have to be considered.

(percentages)

y-axis: contribution rate (left-hand scale); discount rate (right-hand scale)
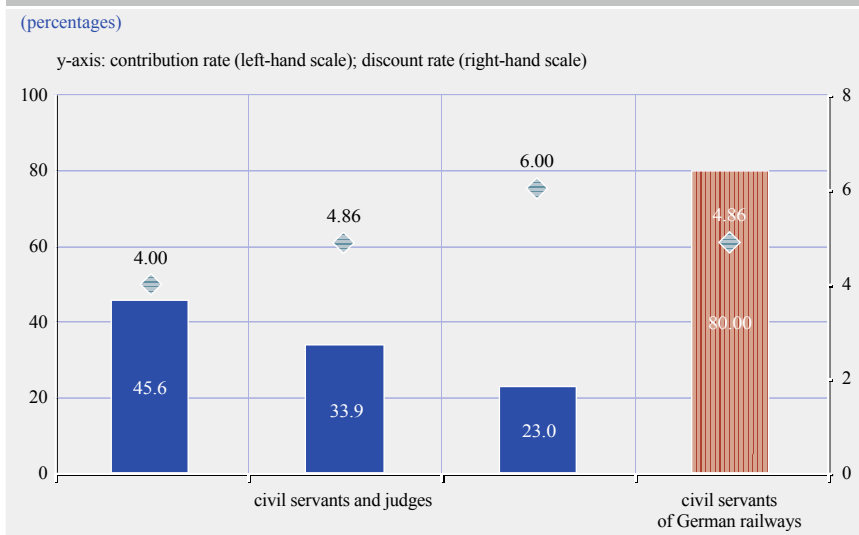
Source:

The considerable variation in results shows that the assumptions of the actuarial calculations have to be carefully determined and documented. Within the Eurostat/ ECB Task Force on the statistical measurement of the assets and liabilities of pension schemes in general government (Task Force), a framework for the most important parameters has been agreed upon.[10] The Task Force proposal, and the implementation of the parameters in Germany are shown in Table 2.

A fundamental decision is made with choosing the PBO-method. It requires far-reaching assumptions about future economic growth, yet provides information which fulfils best the requirements set by national accounting. Whereas for

10 Eurostat/ECB Task Force on the statistical measurement of the assets and liabilities of pension schemes in general government: Final Report, p. 41 ff, Luxembourg, 2008.

Table 2 Economic assumptions regarding calculation of pension entitlements

		Task Force proposal	**Germany, implementation**
Discount rate		Government bonds at end of period date	Moving average of government bonds, past seven years
Maturity		Matching duration of pension payment	Use of average maturity of 15 years according to BilMoG
Demography		According to Eurostat's EUROPOP projections	According to projections derived from national statistics
Wage	Growth	According to the projections of the Ageing Working Group	According to the projections of the Annual Pension Report
	Valuation	Projected Benefit Obligation (PBO)	

instance under the ABO-method (accumulated benefit obligation) a pension reform that changes indexation rules from wage indexation to price indexation does not change pension entitlements, a valuation using PBO results in lower pension entitlements facing the same reform. The higher informational value of PBO results improves international comparability of the calculations, though at the cost of requiring more assumptions. This fair-value accounting is consistent with the International Accounting Standards (IAS) and the accounting law reform in Germany. In income tax law however, Germany continues to use ABO-valuation, possibly for fiscal reasons. Thus, pay raises can only be considered while determining fiscally relevant pension entitlements if they are unquestionable. Even pay raises that are highly likely but not finalized cannot be considered here. In the framework of the supplementary table, Germany calculates pension entitlements according to the fair value principle (PBO). These are not comparable with the figure currently published in the core accounts under D.8, the change in occupational pension entitlements, which is determined according to the ABO-method.

In the Task Force it was discussed to use exclusively the economic assumptions of the European Commissions Report on Ageing[11] for most of the model parameters described above. For several reasons, however, one should deviate from this proposal. The EC Report on Ageing is only updated in multiannual periods. In Germany however, annually updated projections of the Federal Government are available which are used of the report on the statutory pension insurance. In using these assumptions, consistency can be guaranteed between the national report on the statutory pension insurance and the international supplementary table. Similar reasoning applies to the assumptions on mortality. The Europop mortality tables provides a sound data basis, the use of national figures however assures coherence in the framework of various national model calculations. This is especially important, if, in the course of the model calculations, repercussions of population- or labour market developments have to be considered.

With the Accounting Law Modernisation Act (BilMoG) the assessment of pension entitlements in Germany was simplified to some extent. According to IAS (and BilMoG) a discount rate has to be used with a duration matching the duration of each pension entitlement. BilMoG though allows as well the use of a discount rate based on a 15-year duration. This period of time reflects the long-term nature of pension liabilities, offers a comprehensible basis for the calculation of pension entitlements and was therefore implemented into our model. The second simplification based on BilMoG regulation included in our model refers to the way the discount rate is derived from the return of the underlying asset. As agreed upon in the Task Force, the return of Federal bonds is used. According to IAS, the cut-off date value at the end of the year is to be used. In German national accounts, however, BilMoG prescribes the use of the moving average of the last seven years. Hence, a wild fluctuation in results, as can be seen in Chart 2, is avoided.

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11 The impact of ageing on public expenditure: projections for the EU25 Member States on pensions, health care, long-term care, education and unemployment transfers (2004-2050), Economic Policy Committee and the European Commission (DG ECFIN), http://europa.eu.int/comm/economy_finance/epc/epc_publications_en.htm

Chart 2 Development of interest rates in Germany

(percentages)

y-axis: interest rate

──── end of year interest rate
••••• seven-year moving average of interest rate
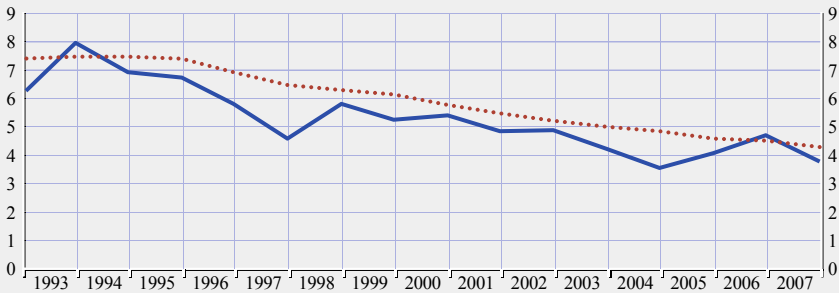
Source:

A persistent change in inflation expectations will realize in the model only with a certain delay, on the other hand one can assume that the counterpart to the discount rate, the assumptions on expected wage increases will be adjusted with a time lag as well. Since the level of pension entitlements is determined by the interest rate-wage growth rate spread, a smoothed average wage makes a good benchmark for the calculation of pension entitlements in practice. The unsmoothed interest rate-wage growth rate spread is problematic from a statistical view. A frequent use of the end of period interest rate will lead to significant fluctuations in the interest rate-wage growth rate spread, since this differential comprises one variable volatile for the short term – the market interest rate, and one variable that is stable in the long term – the productivity growth and accordingly the expected wage increases. The significance of the interest rate-wage growth rate spread for the calculation of pension entitlements is shown in Chart 3.

Chart 3 Development of pension entitlements – base 2003 due to changes in the interest rate–wage growth rate spread

y-axis: entitlements in m euro (left-hand scale); rate in percent (right-hand scale)

▄▄▄ pension entitlements of retired civil servants
▥▥▥ pension entitlements of active civil servants
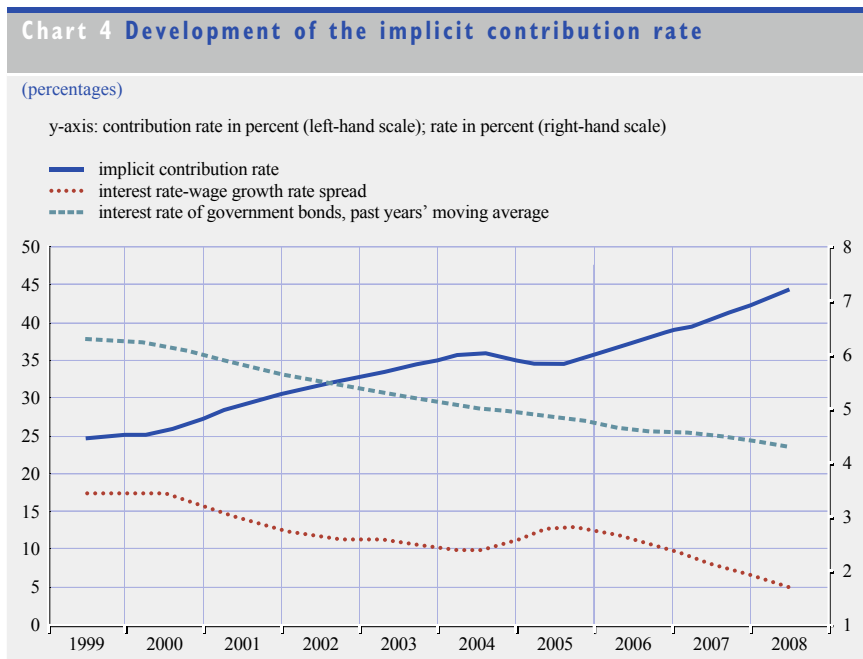▄ ▄ ▄ interest rate-wage growth rate spread
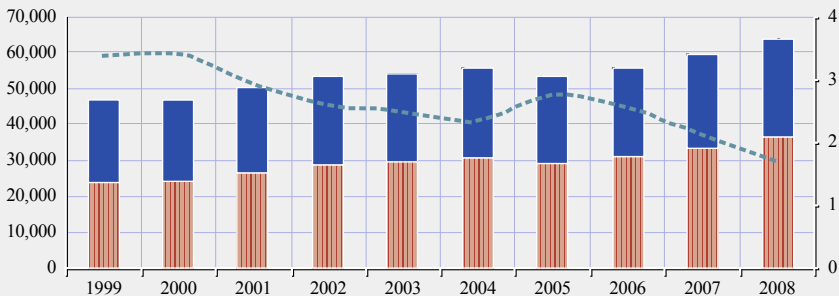
Source:

The graph depicts a synthetic time series of pension entitlements from 1999 to 2008. The calculations are based on the same base data for the civil servants and their entitlements from the year 2003, while the parameters interest rate and wage growth vary. Wage growth rates are taken from the Federal government's report on the statutory pension insurance of the respective year, while the interest rate are determined as the seven-year moving average of Federal bonds with a duration of 15 years. The difference in level of pension entitlements therefore is solely caused by the variation of the assumptions. An actual increase or decrease of entitlements does not happen in this model calculation.

The interest rate–wage growth rate spread started at a level of around 3 percentage points at the beginning of the decade and decreased to around 2 percentage points at present. As expected, the decreased interest rate–wage growth rate spread results in higher pension entitlements. Chart 4 displays the connectivity of the interest rate- wage growth rate spread with the implicit contribution rate. Corresponding to the decreasing interest rate–wage growth rate spread, the implicit contribution rate (and with it labour costs) increases. It starts at a moderate level of 25% in 1999 and reaches 45% in 2008. What's more, the elasticity of pension entitlements varies with the level of the interest rate–wage growth rate spread. The lower the interest rate–wage growth rate spread, the lower is the relative change in pension entitlements for a given change in the spread.

Our analysis of the time series of pension entitlement and labour costs was based on a steady number of civil servants. The strong increase in pension entitlements and of the implicit contribution rate show that they cannot be easily interpreted

Chart 4 Development of the implicit contribution rate

(percentages)

y-axis: contribution rate in percent (left-hand scale); rate in percent (right-hand scale)

—— implicit contribution rate
···· interest rate-wage growth rate spread
----- interest rate of government bonds, past years' moving average

Source:

as sustainability indicators. The supplementary table as a whole provides an important source of information. With its help, it can be observed how changes on actuarial assumptions, pension reforms or changes in the personnel structure affect the level of pension entitlements. The supplementary table has to be complemented by a compulsory appendix, as usual for annual reports. It should contain all necessary actuarial information, to guarantee the comparability of the different calculations.

5   EFFECTS ON GDP

ESA 1995 prescribes to determine imputed social contributions for civil servants pensions on the basis of actuarial calculations. In case these are to complex or time-consuming, or lack necessary data to be derived, ESA 1995 suggests to use pensions paid as a proxy. This fallback procedure is only considered to be applicable as long as the ratio of active civil servants to pensioners remains stable. Otherwise labour costs would be clearly underestimated if more civil servants would be hired than leaving, or significantly overestimated if many civil servants retire in a short period of time. ESA 1995 proposes the wage share method under such circumstances that is a ratio of implicit social contributions is applied to the current sum of wages paid. With this method, not only labour costs are determined, the absolute level of the GDP is affected as well, as far as the added value of the public sector is calculated using the input method.

Table 3 shows how current calculations using the wage share method as well as actuarial calculations would influence the level of GDP. In our current calculation of labour costs and value added in non-market shares of the public sector, a surcharge rate of 26.9% is used. This surcharge rate only varies if the contribution rate for the statutory pension insurance is changed. GDP amounts to € 2,492 billions at the current rate. If the implicit contribution rate for the year 2003 (37.9%[12]) is used instead of that, then GDP increases by 0.2 percent to € 2,496 billions. If the much lower interest rate- wage growth rate spread of the year 2008, with a corresponding

12 This figure includes pensioners' healthcare allowance; the contribution rate of the original calculation (33.9%) only includes direct pension payments.

Table 3 Methodical changes – Effects on GDP			
Calculation of the compensation of employees using…	**…the current method**	**…an implicit contribution rate**	
		2003	**2008**
Surcharge/contribution rate (including pensioners healthcare allowance)	26.9	37.9	50.0
Share of compensation of employees of GDP in percent	3.85	4.01	4.35
Gross domestic product (in € billions)	2,492	2,496	2,504
Relative change in GDP	-	+0.2	+0.5

contribution rate of 50% is used, GDP would rise by 0.5 percent and reach a level of € 2,504 billions. These results show that the move to actuarially calculated contribution rates affects the level of nominal GDP and its rate of change. This effect however is rather limited to nominal GDP. If price-adjusted GDP is used, the change in labour costs will normally not affect the level and growth rate of the GDP, since the change in labour costs is a price effect. Therefore, business cycle analyses are not affected. If however nominal gross national income is employed, such as in the core of the gross national income own resources to finance the EU-budget, the effect can be quite significant.

6   CONCLUSIONS

If compiled on an actuarial basis, the pension entitlements of civil servants in Germany in 2003 amounted to a level of 44 percent of GDP. The level of pension entitlements and labour costs is strongly influenced by the assumptions made. A more complete picture of the systems of old-age insurance is provided by the supplementary table, which shows the effect of changes in the actuarial assumptions or of pension reforms on the level of entitlements. The supplementary table however does not replace a comprehensive analysis of systems of old-age insurance, e.g. based on open system liabilities.

The assumptions of the different member-states have to reflect the specific national circumstances yet accommodate the usual international accounting standards. Uniform assumptions for all EU or EMU member states do not guarantee comparable results, since they may not apply for some member states. Comparability can be better achieved if data from national data bases can be included as well. Model parameters with a very big influence, e.g. the discount rate, could however follow a coordinated approach. A detailed documentation of the procedures and parameters used, shown in the appendix to the supplementary table, could possibly be an alternative to uniform assumptions to improve transparency and traceability.

Calculation of labour costs of civil servants and other public service employees on an actuarial basis is not feasible for quarterly data. As a comparable method, the wage share method is considered as appropriate. The level of the surcharge rate can be determined using actuarial calculations from the supplementary table. It is questionable however, if the calculation of the imputed social contributions could be conducted on the base of pensions paid, since the development of pension payments can differ from the development of the remuneration of active civil servants for several reasons. One should also consider if the labour costs of civil servants could be determined with a comparable method, both in the core system and the supplementary table.

Separate calculations for comparatively small groups of civil servants, like the civil servants of German railways, are not considered meaningful. In national accounts, only one contribution rate should be calculated for a scheme. The entitlements of civil servants of different levels of the public sector should be calculated using uniform methods and assumptions.

The actuarial calculation of pension entitlements affects nominal GDP by changing imputed social contributions, even at steady numbers of employees. Therefore, the crucial assumptions discount rate and wage growth rate should be harmonized. The assumptions on the wage growth rate are determined for a long-term horizon. Hence, the discount rate should be transformed to reflect long-term expectations as well. For this, the smoothened seven-year average is considered appropriate.

DISCUSSION ON SESSION V

BY DOMINIQUE DURANT[1]

This written presentation of the session is based on large extracts from the presented papers plus some remarks from the discussant.

I   THREE DIFFERENT COUNTRY EXPERIENCES AND THREE DIFFERENT ESTIMATION WORKS:

I.I   ESTIMATING PENSION WEALTH AND INCOME OF US HOUSEHOLDS

Marshall Reinsdorf, U.S. Bureau of Economic Analysis

Table I	Household Wealth and Income from Private Defined Benefit Plans – ABO Accrual Accounting Approach			
(billions of current year dollars)				
		2000	**2001**	**2002**	**2003**
1	Opening ABO current liability, at interest rates used by plans	1,761.1[1)]	1,852.2	1,932.8	2,080.7
2	Effect of changing to 6 percent interest rate	12.9	-7.6	21.6	-9.3
3	Opening ABO current liability, at 6 percent rate	1,773.9	1,844.6	1,954.4	2,071.3
4	Benefits accrued (compensation of employees)	66.6	70.5	76.1	75.3
5	Interest cost of current liability, at 6 percent rate	106.4	110.7	117.3	124.3
6	Employee contributions	0.8	0.7	1.1	0.9
7	Household income, ABO approach (4+5–6)	172.3	180.5	192.3	198.7
8	Net benefits paid	117.4	123.8	133.7	134.8
9	Household saving, at 6 percent rate (7–8)	54.8	56.7	58.6	63.9
10	Other factors[2)]	15.8	53.1	58.3	-4.3
11	Change in current liability, at 6 percent rate (9+10)	70.7	109.8	116.9	59.5
12	Effect of changing interest rate assumptions	20.5	-29.2	30.9	-74.0
13	Change in current liability, at rates used by plans (11+12)	91.2	80.6	147.8	-14.5

Table 1 Household Wealth and Income from Private Defined Benefit Plans – ABO Accrual Accounting Approach (Contd')

(billions of current year dollars)

		2004	2005	2006
1	Opening ABO current liability, at interest rates used by plans	2066.2	2278.7	2343.5
2	Effect of changing to 6 percent interest rate	64.7	3.3	-58.9
3	Opening ABO current liability, at 6 percent rate	2130.9	2282.0	2284.6
4	Benefits accrued (compensation of employees)	71.3	75.3	79.3
5	Interest cost of current liability, at 6 percent rate	127.9	136.9	137.1
6	Employee contributions	0.8	1.0	0.9
7	Household income, ABO approach (4+5–6)	198.4	211.3	215.4
8	Net benefits paid	141.1	138.8	149.6
9	Household saving, at 6 percent rate (7–8)	57.3	72.5	65.9
10	Other factors[2]	93.9	-69.9	NA
11	Change in current liability, at 6 percent rate (9+10)	151.1	2.6	NA
12	Effect of changing interest rate assumptions	61.4	62.2	NA
13	Change in current liability, at rates used by plans (11+12)	212.6	64.8	NA

Analysing and compiling accounting reports from about 45,000 private employer define benefit schemes, from 125 government sponsored schemes, and thus using cash accounting information to build actuarial estimates for contributions and pension entitlements with several scenarios for discount rate and valuation methods (cash accounting, actuarial accounting with ABO or PBO).

Table 2 Household Wealth and Income from State and Local Government – Defined Benefit Plans: PBO Approach

(billions of current year dollars)

		2000	2001	2002	2003
1	Employer's normal cost for benefits (net of administrative expense)	41.0	43.9	46.1	46.9
2	Imputed interest on actuarial liability	178.3	192.3	205.7	218.3
3	Actuarial income of households (1+2)	219.3	236.2	251.8	265.2
4	Benefits net of employee contributions	74.7	82.6	91.7	101.1
5	Actuarial saving of households (3–4)	144.6	153.6	160.1	164.1
6	Actuarial liability of plans	2,218.1	2,393.3	2,560.7	2,730.6
7	Assets of plans (market value)	2,163.1	2,157.8	2,146.9	2,305.0
8	Unfunded actuarial liability	55.0	235.5	413.8	425.6
9	Funded ratio (percent)	97.5	90.2	83.8	84.4

		2004	2005	2006
1	Employer's normal cost for benefits (net of administrative expense)	47.4	49.0	51.7
2	Imputed interest on actuarial liability	231.2	245.7	261.9
3	Actuarial income of households (1+2)	278.6	294.7	313.6
4	Benefits net of employee contributions	109.3	117.4	127.5
5	Actuarial saving of households (3–4)	169.2	177.3	186.2
6	Actuarial liability of plans	2,902.4	3,088.3	3,296.3
7	Assets of plans (market value)	2,558.8	2,757.0	3,116.9
8	Unfunded actuarial liability	343.6	331.2	179.3
9	Funded ratio (percent)	88.2	89.3	94.6

**Table 3 Household Wealth and Income from Federal Government –
Defined Benefit Plans: PBO Approach**

(billions of current year dollars)

		2000	2001	2002	2003	2004
1	Normal cost for benefits, net of employee contributions	29.3	33.0	37.1	33.9	33.7
2	Imputed interest on actuarial liability	113.3	116.7	116.9	114.8	118.4
3	Actuarial income of households (1+2)	142.6	149.7	154.0	148.7	152.1
4	Benefits, net of employee contributions	75.2	78.9	81.3	83.1	87.2
5	Actuarial saving of households (3–4)	67.5	70.8	72.7	65.5	64.9
6	Actuarial liability of plans	1,762.3	1,821.2	1,859.8	1,929.4	2,067.9
7	Assets of plans (end of calendar year)	691.4	751.0	789.0	826.2	868.2
8	Unfunded actuarial liability	1,070.9	1,070.2	1,070.8	1,103.2	1,199.7
9	Funded ratio (%)	39.2	41.2	42.4	42.8	42.0
10	Average normal cost per active employee	8,352	9,231	10,201	9,322	9,229
11	Normal cost as percent of NIPA total compensation	14.6	15.5	15.5	12.9	11.8
12	Actuarial saving less cash accounting saving	28.1	32.0	32.7	30.2	23.9

		2005	2006	2007	2008
1	Normal cost for benefits, net of employee contributions	37.1	38.0	40.9	42.0
2	Imputed interest on actuarial liability	126.9	133.0	139.6	145.6
3	Actuarial income of households (1+2)	164.0	171.0	180.5	187.6
4	Benefits, net of employee contributions	92.4	98.3	104.1	109.0
5	Actuarial saving of households (3–4)	71.7	72.7	76.4	78.6
6	Actuarial liability of plans	2,169.2	2,316.1	2,415.1	2,608.9
7	Assets of plans (end of calendar year)	895.4	931.9	965.6	1,029.7
8	Unfunded actuarial liability	1,273.8	1,384.2	1,449.5	1,579.2
9	Funded ratio (%)	41.3	40.2	40.0	39.5
10	Average normal cost per active employee	10,100.0	10,324.0	11,043.0	11,074.0
11	Normal cost as percent of NIPA total compensation	12.1	11.8	11.9	11.4
12	Actuarial saving less cash accounting saving	29.4	32.1	33.2	N.A.

All may be summarised in a partial supplementary table:

Table 4			
	2005	**2006**	**2006**
	Non gal gvt DB scheme	**General government employer DB schemes**	
	ABO	**In core account – PBO**	
		Class. in fin. corp	**Class. in gl gvt**
Pension entitlements	2,329	3,088.3	2,169.2
Transactions			
Social contributions relating to pension schemes			
Employer actual social contributions	94.3	367.8	91.2
Employer imputed social contributions	60.8	123.6	106.1
Employee actual social contributions	1.68	33	4.4
Employee imputed social contributions/ property income	57.1	93.4	47.9
Self employed and non-employed social contributions			
Other (actuarial) accumulation of pension entitlements in social security pension schemes			
Pension benefits	142.48	160.5	102.7
Change in pension entitlements (rows 2+3−4)			
Changes in pension entitlements due to transfers of entitlements			
Other economic flows			
Revaluations	-69.9		
Other changes in volume		50.7	
	Schemes railroad	**Local gvts**	**Federal gvt**
Closing balance sheet			
Pension entitlements (rows 1+5+6+7+8)	2,284.6	3,296.3	2,316.1

PBGC is supposed to be out of employment related schemes.

I.2   PENSION ENTITLEMENTS OF SOCIAL INSURANCE SCHEMES IN POLAND

Janusz Jablonowski, Narodowy Bank Polski

An attempt to use the aggregated Freiburg model with AWG assumptions in order to estimate pension entitlements consistently with European commission work on sustainability while avoiding to build a costly model for social security.

Table 5 Freiburg model estimates

(2007; billion PLN)

		Sponsor	General Government	
			State budget pensions	Notional DC & farmers
		Type of the scheme	General government employee defined benefit schemes	Social security pension schemes
		Method of calculation	PBO	
	1	Pension entitlements	290	3,538
Σ 2.1 to 2.5	2	Increase in pension entitlements due to social contributions	27	178
	2.1	Employer actual social contributions		
	2.2	Employer imputed social contributions	12	
	2.3	Household actual social contributions		
	2.4	Household social contributions supplements	15	178
	3	Other (actuarial) increase in pension entitlements		-21
	4	Reduction in pension entitlements due to payment of pension liabilities	10	121
2+3−4	5	Change in pension entitlements due to social contributions and pension benefits	17	36
	6	Change in pension entitlements due to transfers of entitlements between schemes	0	0
	7	Changes in pension entitlements due to other transactions (e.g. arising from negotiated changes in scheme structure)	0	0
	8	Revaluations	0	0
	9	Other changes in the volume of assets	0	0
1+5+6 +7+8	10.1	Pension entitlements	306	3,574 (Σ 330% of GDP)
	10.2	Pension entitlements (in % of GDP)	26	304

Source: Freiburg.

Table 6

	Freiburg	**AWG**
Type of the system covered	Closed (no entrance for new workers)	Open (entrance for new workers allowed)
Outcome	Accrued-to-date liabilities	Revenues and expenditures
Coverage of the systems	General government	General government [1]
Coverage of types of benefits	Gross pension benefits, early retirement, disability, survivors.	Gross pension benefits, early retirement, disability, survivors.
Wage growth	Fixed (real) 1.5%	Varying (real), source: European Commission for each MS.
Demographics	EUROPOP	EUROPOP
Time horizon	2007-Infinity (?)	2007-2060
Currency	Euro/National	Euro

Is it possible to use the assumption of AWG for revenue and expenditures in the Freiburg model in order to obtain accrued to date liability? One major difference though: closed group/open group.

I.3 PENSION ENTITLEMENTS OF CIVIL SERVANTS IN GERMANY

Albert Braakmann and Jens Grütz, Destatis

Building a semi-aggregated (by group) model for the civil servant scheme, which is part of social security.

An effort to rely on a consistent methodology, to guarantee comparability with national models for private sector

Table 7

		Task Force proposal	**Germany, implementation**
Discount rate		Government bonds at end of period date	Moving average of government bonds, past seven years
Maturity		Matching duration of pension payment	Use of average maturity of 15 years according to BilMoG
Demography		According to Eurostat's EUROPOP projections	According to projections derived from national statistics
Wage	Growth	According to the projections of the Ageing Working Group	According to the projections of the Annual Pension Report
	Valuation	Projected Benefit Obligation (PBO)	

Leads to the calculation of imputed social contributions in the supplementary table

Supplementary table 2003 for federal civil servants (excluding soldiers)		€ millions
1	Pension entitlements 01/01/03	57,621
2.1-2.3	Increase in pension entitlements due to social contributions	1,345
2.4	+ household social contributions supplements	2,881
4	Reduction in pension entitlements due to payment of pensions	2,025
7-9	Revaluations	-926
10	Pension entitlements 31/12/03	58,896

Wages/salaries
+
Social contributions
─────────────
= Compensation of employees
↓
Implicit contribution rate

By the way, they have to take place in the same supplementary table and have faced some similar issues

2 ONE SUPPLEMENTARY TABLE FOR THREE DIFFERENT SITUATIONS

Table 9

Core/non-core national accounts	Core		
Sponsor	Non-general government		
			US 2005 Billion USD ABO
Scheme Position/transaction/other flow	Total	DC schemes	DB schemes and other non-DC schemes
Row number/column number	B	C	D
Number of active members (in million)			21.7
Numer of pensioners (in million)			
1 Pension entitlements			2,392.9
2 Social contributions relating to pension schemes			
Employer actual social contributions			96,8
Employer imputed social contributions			-19.3
Employee actual social contributions			1.7
Employee imputed social contributions/ property income			140.1
Self employed and non-employed social contributions			
3 Other (actuarial) accumulation of pension entitlements in social security pension schemes			
4 Pension benefits			146.7
5 Change in pension entitlements (rows 2+3−4)			
6 Changes in pension entitlements due to transfers of entitlements			
7 Revaluations			-69.9
8 Other changes in volume			
9 Pension entitlements (rows 1+5+6+7+8)			2,349.7

| | DC schemes | General government employer DB schemes | | Non-core | |
| | | US 2006 Billion USD PBO | US 2006 Billion USD PBO | Germany Federal civil servant 2003 € Billion PBO | Poland 2007 Billion PLN |
		O/w: Classified in financial corporations	O/w: Classified in general government		Social security pension schemes
	E	F	G	H (part of)	I
		14.4	4.1	2	15.7
				1.5	5.9
		3,088.3	2,169.2	57.6	
		67.8	91.2		
		-44.9	21.0	1.5	
		33	4.4		
		261.9	133.0	2.9	
		160.5	102.7	2.2	121
				-0.9	
		50.7			
		3,296.3	2,316.1	58.9	4,137

2.1 DISCOUNT RATE AND/OR WAGE GROWTH RATES ARE KEY PARAMETERS IN THE LEVEL OF PENSION LIABILITIES AND EXPENDITURES:

- *Accordingly, in American employer schemes, a higher discount rate increases the imputed property income and reduces the employer's contribution (employer normal cost). Does such a high discount rate (8% in US local Gvt plan) include a risk premium -if not holding gains- in the contribution supplement?*

"Despite the tendency of the PBO approach to frontload pension costs, the PBO measure of benefits earned net of employee contributions, labelled "employer's normal cost" in table 6, is lower than the employer contributions in 2003-2006. In 2006, for example, it is about $52 billion, compared to cash contributions of $68 billion. The plans' estimates of employer's normal cost are held down by the high rates of interest that they assume (which average about 8 percent) when discounting the future benefit payments. At these rates, the interest on the actuarial liability ($262 billion in 2006) is much greater than the actual investment income ($93 billion in 2006 according to table 5), and even after combining holding gains and investment income, the realized returns on average fall short of the actuarial interest cost."

	Table 10 Household Wealth and Income from State and Local Government DB Plans (US)							
	Cash accounting	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
1	**Household Income**	122.6	109.5	110.6	128.6	141.0	147.8	161.2
2	Employer contributions	39.5	38.8	42.1	53.1	59.8	60.9	67.8
3	Investment income from Plan Assets	83.1	70.6	68.5	75.5	81.3	86.9	93.4
	Accrual accounting (PBO)							
4	Employer's normal cost for benefits (net of administrative expense)	41.0	43.9	46.1	46.9	47.4	49.0	51.7
5	Imputed interest on actuarial liability	178.3	192.3	205.7	218.3	231.2	245.7	261.9
6	Actuarial income of households (1+2)	219.3	236.2	251.8	265.2	278.6	294.7	313.6

In the Polish benchmarking of Freiburg estimates on AWG estimates, the wage growth rate is the key parameter in the variation of future expenditures: the open system expenditure grow at the same pace when wage growth rates are the same... and same expenditures should lead to same pension entitlements.

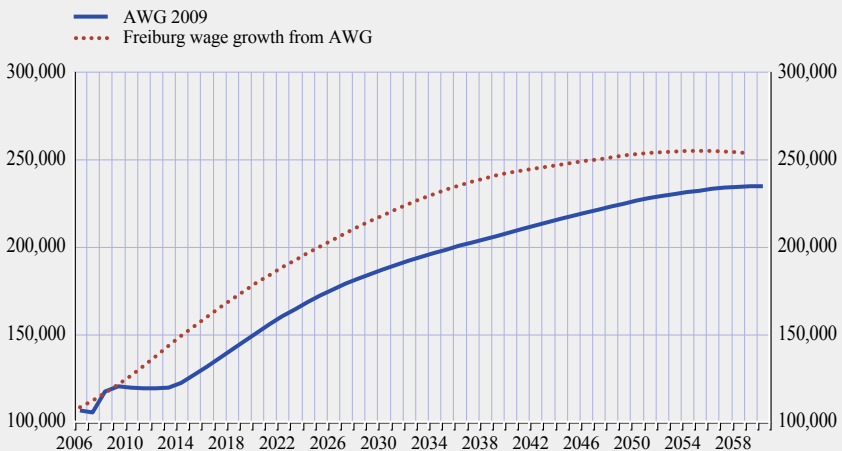**Chart 1 Open system expenditure with own real wage growth rate**
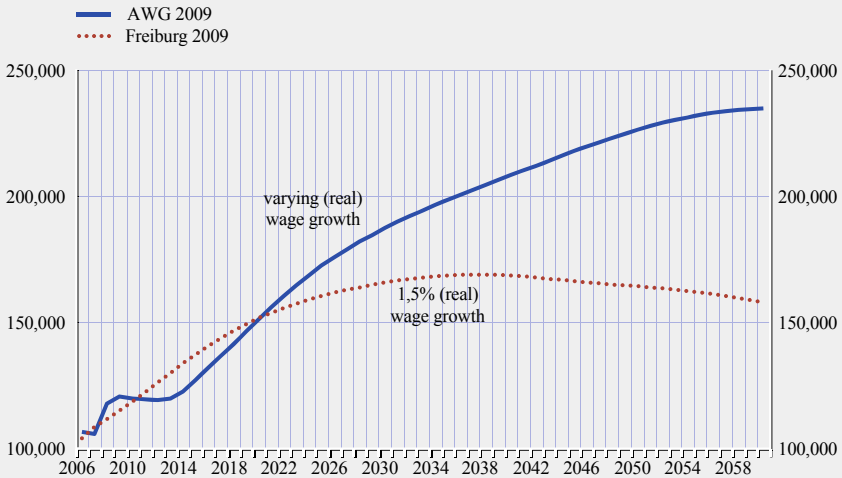
(in billion PLN)

Chart 2 Open system expenditure with common real wage growth rate
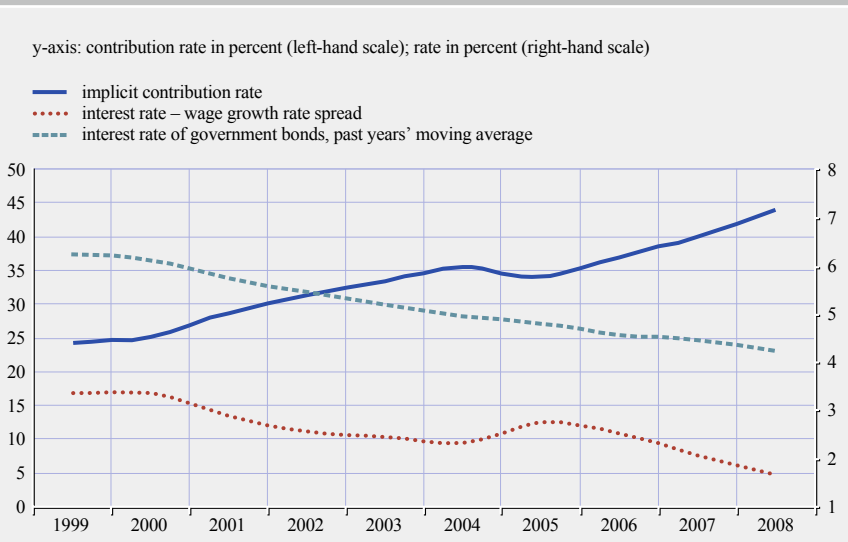
(in billion PLN)

Source:

"Using a 3% discount rate and the Freiburg model, pension liabilities for 2007 amount to 330% of GDP if estimated with a 1.5% real wage growth rate and 382% of GDP if estimated with the AWG varying wage growth rate."

"Possible calculation of the liabilities using discounted stocks of the AWG expenditures, if the system can be closed" in other words, is it possible to use AWG assumption for the indexation of already accrued entitlements and to exclude entitlements to new comers?
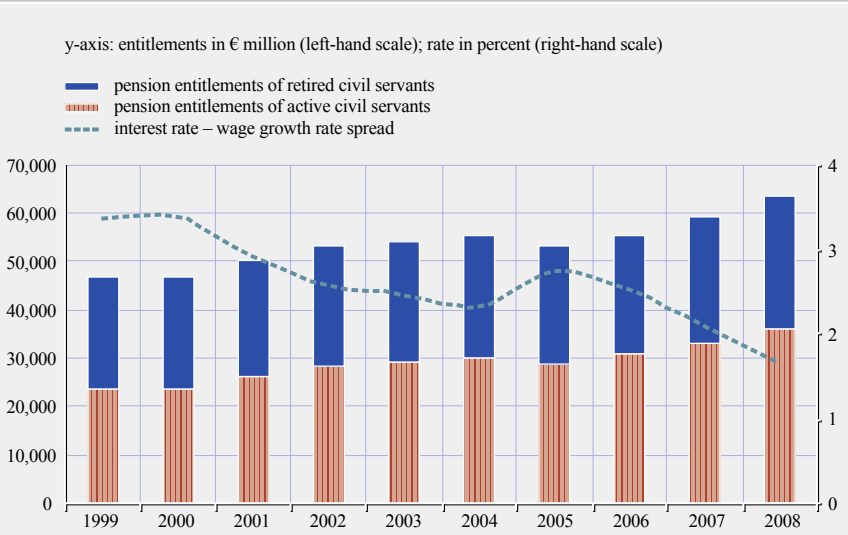
In the **German model for civil servant**, a lower discount rate-wage growth rate spread increases strongly the pension entitlements and the implicit contribution rate.

Chart 3 Development of the implicit contribution rate

y-axis: contribution rate in percent (left-hand scale); rate in percent (right-hand scale)

—— implicit contribution rate
······ interest rate – wage growth rate spread
----- interest rate of government bonds, past years' moving average

Source:

Chart 4 Development of pension entitlements – Base 2003 due to changes in interest rate – wage growth rate spread

y-axis: entitlements in € million (left-hand scale); rate in percent (right-hand scale)

■ pension entitlements of retired civil servants
▥ pension entitlements of active civil servants
----- interest rate – wage growth rate spread

Source:

- *In the three cases, an attempt for a minimum stability and homogeneity through schemes in the choice of the discount rate.*
- *Changing to a unique 6% for US estimates.*
- *7 years moving average 15 years Govt bond rate in Germany.*
- *3% real discount rate in Poland.*
- *Do high discount rates used by reporting agents (such as 8% in US local Gvt plan) and as a consequence by statisticians include a risk premium -if not holding gains- in the contribution supplement?*

2.2 ABO/PBO

- *In social security schemes, pensions are frequently indexed fully or partially on wage growth (Poland: 20% of real wage growth, Germany. PBO is recommended in new ESA when the benefit formula includes a factor for real wage increase before and after retirement.*
- *But, the choice between ABO and PBO may also depend on the probability to terminate the plan before the end of career:*

"For private sector plans, loss of the opportunity to earn further benefits due to a plan freeze or modification (such as a conversion to a cash balance plan) must be regarded as a realistic possibility. (In 2006, about 900,000 employees were in private plans that had been frozen.) Employees in the private sector can also lose the opportunity to earn additional benefits from a bankruptcy, or even an acquisition, of the plan sponsor.[2] Finally, changing jobs is likely to mean changing employers for employees of small or medium size businesses (though some private industries have multi-employer plans).

In contrast, changes to government pension plan provisions that affect current participants remain unusual, and the risk of losing the opportunity to earn future benefits is generally small for most government employees. A PBO approach, which spreads the build-up of the projected pension wealth at retirement in over the career, is therefore a reasonable alternative for government plans".

Nonetheless, international accounting standards for private companies recommend PBO accounting.

- *In the US, PBO is preferred by public schemes for its smoothing effect on employer's contributions.*

"Most state and local government plans calculate the actuarial value of benefits earned with a PBO approach using a level percent of pay formula. One of the key objectives that funding schemes for pension plans seek to achieve is avoidance of rapid increases in costs, such as those that occur under a pay-as-you-go scheme

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2 As discussed below, in the event of bankruptcy of the plan sponsor, benefits worth approximately the ABO level of pension wealth are covered by insurance from the Pension Benefit Guarantee Corporation.

when the covered population ages. The level-percent-of-pay approach goes furthest in accomplishing the cost-smoothing objective, because over an employee's career the benefit cost grows at the rate of growth of the salary. In contrast, assuming a final pay benefit formula, the growth rate of ABO benefits accrued is usually greater than or equal to the sum of the salary growth rate, the interest rate, and the average mortality rate of active participants, so sharp increases in costs as employees near the end of their career can cause overall pension costs for an aging workforce to rise quickly. In the early and middle years of the career, the PBO approach used by state and local government plans gives much higher cost estimates than the ABO approach, a relationship that is reversed in the final few years."

- *The ABO/PBO definition has to be clarified further:*
    - *In Germany, use of PBO changes the present value of future pensions owed to present retirees because the future pension depend on wage growth.*
    - *In US employer schemes, changes in ABO depend not only on wage growth but also on mortality rate and interest rate.*

2.3 FROM CASH ACCOUNTING TO ACTUARIAL ACCOUNTING

- Cash employer contributions are much more variable than actuarial employer contributions because they compensate for holding gains or losses on assets.

Table 11	Household Wealth and Income from Private Defined Benefit Plans (US)						
	Cash accounting	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
1	**Household income**	96.1	106.6	148.9	149.3	148.9	149.5	154.5
2	Employer contributions	32.8	48.6	99.8	100.4	95.1	92.4	87.9
3	Investment income from Plan Assets	63.3	58.0	49.1	48.9	53.8	57.1	66.6
	Accrual accounting (ABO)							
4	**Household income**	172.3	180.5	192.3	198.7	198.4	211.3	215.4
5	Benefits accrued (compensation of employees)	66.6	70.5	76.1	75.3	71.3	75.3	79.3
6	Interest cost of current liability, at 6 percent rate	106.4	110.7	117.3	124.3	127.9	136.9	137.1
7	Employee contributions	0.8	0.7	1.1	0.9	0.8	1.0	0.9

• *Actuarial accounting increases the households savings because it now relies on employer contributions instead on pensions.*

Table 12 Comparison of cash accounting and actuarial measures of pension income and wealth of US households							
(percents of disposable personal income)							
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
1 Household income, cash accounting approach	4.6	4.5	4.9	4.9	4.8	4.8	4.7
2 Household income, actuarial approach	7.4	7.6	7.6	7.5	7.2	7.4	7.3
4 Compensation, cash accounting approach	1.9	2.1	2.7	2.7	2.7	2.6	2.6
5 Compensation, actuarial approach	1.9	2.0	2.0	1.9	1.8	1.8	1.8
6 Interest & dividend income, cash accounting	2.7	2.4	2.1	2.1	2.1	2.1	2.2
7 Interest income, actuarial approach	5.5	5.6	5.6	5.6	5.5	5.6	5.5
8 Household saving, cash accounting approach	0.7	0.4	0.8	0.8	0.7	0.7	0.6
9 Household saving, actuarial approach	2.7	2.8	2.8	2.8	2.7	2.9	2.8
10 Household pension wealth, cash accounting	66.2	62.3	58 .3	62.1	63.9	64.9	67.8
11 Household pension wealth, actuarial approach	81.4	82.5	83.6	83.2	84.3	84.8	83.5

• Should new methods regarding German civil servants' labour costs be applied in core accounts….
  – ….The compensation of civil servants would be 0.5% of GDP higher due to a higher implicit employer contribution rate.
  – ….The GDP would consequently increase from 0.5% in 2008.

Table 13			
(percentages)			
Calculation of the compensation of employees using …	**… the current method**	**… an implicit contribution**	
		2003 rate	**2008**
Surcharge/contribution rate (including pensioners healthcare allowance)	26.9	37.9	50.0
Share of compensation of employees of GDP in percent	3.85	4.01	4.35
Gross domestic product (in € billion)	2,492	2,496	2,504
Relative change in GDP	-	+0.2	+0.5

- Only the amount of pension paid is the same in both cases:
  - It is the only observed data, others being subject to actuarial estimates.
  - It may be used as a benchmark to estimate pension entitlements: the Polish paper aims at using the planed expenditures of social security by AWG in order to estimate the present value of pension entitlement (but open group expenditures are higher than close group expenditures).

Thank you to the authors, which papers were so interesting to read and comment!

CONCLUSIONS

The concluding remarks and the follow-up of the Workshop were made by Werner Bier (ECB), Eduardo Barredo (Eurostat) and Reimund Mink. The main concluding remarks of the meeting were presented as two headings: messages of a technical nature and those with a policy dimension.

A) TECHNICAL CONCLUSIONS

1. Accrued-to-date data on pension entitlements are part of the national accounts balance sheets.

2. Actuarial estimations to be made transparent.

3. Sensitivity analyses may be presented on an expert level.

4. Ensuring consistency of inputs for projections of pension modellers.

5. Accrued-to-date entitlements are not sustainability indicators.

From the presentations and discussions it was clear that accrued-to-date data on pension entitlements are part of the national accounts balance sheets. This is a statistical concept which is useful for analysis (all pension schemes are included, so providing a comprehensive picture).

Turning to implementation needs, these actuarial estimations are to be made transparent. In this vein, the supplementary table (2008 SNA and revised ESA 95) will foster the transparency required for this purpose. It was made clear that these additional data have no impact on EDP debt.

Another point addressed was to increase the transparency of the model assumptions and of the sensitivity analyses, which may be presented on an expert level. The scope of the work is limited to pensions – no other types of ageing expenditure are under consideration.

A further finding to arise from the discussion is the need to ensure consistency of the input used for the projections of pension modellers. The harmonisation of national models would be desirable, given the different nature of the models in Europe.

Finally, it was made clear that the accrued-to-date entitlements are not sustainability indicators. However, estimates on accrued-to-date entitlements can be used as an input for sustainability indicators (expansion to open systems and generational accounting).

B) POLICY CONCLUSIONS

1. The future development of pension entitlements is politically a very sensitive subject.

2. A proper communication strategy is of the essence.

3. The supplementary table as part of the new ESA transmission programme:
   – Estimation of data on pension entitlements; and
   – Increase in data coverage (of countries, types of flow, types of pension scheme).

4. Joint Eurostat/ECB Contact Group on Pensions will continue to work (all EU countries are represented, together with Switzerland and Norway), and in close cooperation with the Ageing Working Group (AWG).

The first remark with policy implications is that the future developments in the estimation of pension entitlements are politically a very sensitive subject.

Another aspect emphasised in the concluding remarks is that a proper communication strategy is of the essence.

The third comment is reiteration of the fact that a supplementary table, as part of the new ESA transmission programme, will be of utmost importance in order to estimate data on pension entitlements on a systematic basis. The expected increase in data coverage (of countries, types of flow and types of pension scheme) will contribute to the quality of these estimates.

Finally, the joint Eurostat/ECB Contact Group on Pensions will continue to work on the development of the quantitative analysis to prepare the grounds for the revised ESA transmission programme (expected for 2014). The Contact Group is composed of all EU countries, together with Switzerland and Norway. Ideally, this work should be undertaken in close cooperation with the sustainability work undertaken by the AWG.

CHAIRPERSONS, PRESENTERS, PANELISTS, DISCUSSANTS AND ORGANISERS OF THE WORKSHOP

Ana Almeida has been appointed to Deputy Head of the Statistics Department of the *Banco de Portugal*. Previously she was the Head of the National Financial Accounts and Securities Statistics Division of the Statistics Department and also the representative of the *Banco de Portugal* in the Euro Area Accounts Working Group of the ECB and in the Financial Accounts Working Group of Eurostat. Formerly, she was the Head of the Risk Control Unit of the Pension Fund of the *Banco de Portugal*. More recently, she has also been the representative of the *Banco de Portugal* in the Eurostat/ECB Contact Group on Pensions, contributing actively to the provision of Portuguese data to the objective of compiling statistics on pensions at the European level according to the new ESA.

Eduardo Barredo is Head of Unit G1 (Business Statistics: coordination and registers) in Directorate G (Business statistics). Until recently he was the Head of Unit C5 in Directorate C (National Accounts) and Co-chair of the Eurostat/ECB Contact Group and Task Force on Pensions.

Werner Bier is Deputy Director General Statistics of the European Central Bank.

Albert Braakmann is head of division in the national accounts department of the German Federal Statistical Office. He is responsible for national income, general government data, external economic transactions but also in charge of the German contributions to the revision of the SNA-93 and the ESA-95. Previously he worked a couple of years in the national accounts directorate of Eurostat.

Robert Dippelsman has been appointed to Deputy Division Chief of the Government Finance Statistics Division of the IMF's Statistics Department. Previously he was involved in the review of the 1993 SNA and of the Balance of Payments Manual.

Thomas Dominique works at the Ministry of Social affairs / General inspectorate of social security (IGSS) – Division of statistics, actuarial studies and social programming, vice-head of division. In charge of the social programming on improving the efficiency of the legislation in the area of people affected by incapacity for work. Responsible for the socio-economic projections in the context of the financial sustainability of the pension system. Member of the Ageing working group of the Economic Policy Committee of the European Commission. Member of the Indicator sub-group of the Social Protection Committee of the European Commission.

Dominique Durant is currently head of the statistics on non-banking financial institutions division in the Banque de France. Dominique Durant was head of

the financial account division between 2005 and 2008. She joined the Banque de France in 1991 and operated in banking supervision (1994-1998) and in monetary and financial statistics (1998-2005). In her different managing positions in statistics, she regularly leaded or published several analysis based on national accounts and financial statistics, regarding especially households' investments and savings, households pensions' entitlements, indebtedness and profitability of non financial corporations, investments and financial situation of insurance corporations and investment funds. Her background is public administration and economics (Science Po Paris post-graduate diploma in 1989) as well as financial economics (Paris I-Sorbonne University Money Banking Finance Master in 1993). She also holds a Master in Linguistics (1985). Since 2002, she teaches the basics of monetary and financial economics in the public French School for statistics and economic management (ENSAE), that provides initial training to the future managers of the national statistics institute.

Michel Englert works as Senior Economist in the Federal Planning Bureau in Belgium (FPB); he is since 1995 head of the General Directorate of the FPB. He is head of the delegations of Belgium to the Working Group on Ageing of the Economic Policy Committee of the ECOFIN Council and to the Working Group on macroeconomic and structural policies of the OECD. He is invited professor in macroeconomics at the "Facultés Universitaires Catholiques de Mons", Belgium. He is specialized in macroeconomic forecasting and scenario analysis, fiscal policy and in building socio-demographic models for assessing the long-term financial prospects for the Social Security.

Jens Grütz works in the Department of National Accounts at the Federal Statistical Office of Germany. He was a member of the Eurostat/ECB Taskforce on Pensions and member of the "Group of estimators" of the German statutory pension insurance.

Thorsten Haug is a research assistant in the department of National Accounts at the Federal Statistical Office of Germany since 2006. He works mainly on the calculation of pension entitlements in the context of the current SNA revision.

Matthias Heidler worked as a research assistant at the Research Center for Generational Contracts (RCG) in Freiburg, Germany. His research interests include the field of pension policy and pension modeling. He was involved in the benchmark calculations of public pension entitlements for 19 EU member states carried out by the RCG.

Janusz Jabłonowski works as Chief Specialist in the Department of Statistics of the National Bank of Poland. He has coordinated the work over the preparation of the Supplementary Table in Poland for the Task Force on Pensions. He is also a country representative in the Working Group for Government Finance Statistics.

Steven Keuning is Director General Statistics of the European Central Bank.

Paula Koistinen-Jokiniemi works as Head of Financial Statistics Unit in the Statistics Finland.

Reimund Mink works as a Senior Adviser in the Directorate General Statistics of the European Central Bank. He was Co-chair of the Eurostat/ECB Task Force on Pension and is now Co-chair of the Contact Group on the same subject. He also contributed to the drafting of the new SNA chapter 17 on pensions, co-drafted the new ESA chapter 17 on pensions and drafted several ESA chapters on units and on financial sectors, financial transactions, flows and balance sheets.

Christoph Müller works as a research assistant at the Research Center for Generational Contracts (RCG) in Freiburg, Germany. His research interests include the field of pension policy and pension modeling. He was involved in the benchmark calculations of public pension entitlements for 19 EU member states carried out by the RCG.

Heikki Oksanen works as an Adviser in the Research Directorate of the Directorate-General for Economic and Financial Affairs of the European Commission since 1998. He has published several articles on population ageing, pension reforms and sustainability of public finances with special reference to intergenerational equity.

Lourdes Prado works as Technical Advisor in the Directorate of Economic Accounts and Employment at the Instituto Nacional de Estadística (Spain). She has coordinated the working group set up in Spain for the estimation of pension entitlements and the supplementary table on pension schemes. She has represented the INE in the Task Force on Pension.

Bernd Raffelhüschen is professor for economics at the University of Freiburg, Germany and at the University of Bergen, Norway. Furthermore, he is the director of the Research Center for Generational Contracts (RCG) in Freiburg which carried out the benchmark calculations of public pension entitlements for 19 EU member states on behalf of the ECB. His current research interests include social policy and the field of fiscal sustainability analysis. Beside his contribution to international research projects – e.g. on behalf of the European commission as well as various EU countries – he is working – e.g. as a member of the so called "Rürup Kommission" (a governmental advisory commission) – on questions of applied social policy.

Marshall Reinsdorf is chief of the national economic accounts analysis and research group at the US Bureau of Economic Analysis. Before joining BEA, he researched bank failures at the Federal Deposit Insurance Corporation and price measurement US Bureau of Labor Statistics. The author of numerous published papers on economic measurement topics, he has a Ph.D. in economics from the University of Maryland.

Ad van Riet is Head of Fiscal Policies Division in the Directorate General Economics of the European Central Bank.

Marta Rodríguez works as Senior Economist-Statistician in the Directorate General Statistics of the European Central Bank. She has coordinated the work of the Contact Group and the Task Force on Pensions, together with Eurostat, since 2006. She has been the Secretary of the ESCB Working Group on Government Finance Statistics since 2003.

Gabriele Semeraro works in the Department for Economic and Financial Statistics at the Banca d'Italia, as head of the Financial Accounts unit. He was member of several task forces studying problems of statistical recording related to pension entitlements and transfers. As a member of the Eurostat/ECB Task Force he was involved in preparing the corresponding drafts for the 2008 SNA and the new ESA chapter on pensions.

John Verrinder works with Eurostat. Recently he has been appointed to Head of Unit C5 in Directorate C (National and European Accounts). He was Secretary of the Eurostat/ECB Task Force on Pensions and is now Co-chair of the Eurostat/ECB Contact Group on the same subject. In these functions he contributed to the drafting of the new SNA chapter 17 dealing also with pensions and also co-drafted-the new ESA chapter 17 on pensions.

Gabe de Vries has worked with Statistics Netherlands and the Dutch association of Insurers on statistics on insurance and pensions. He now works as a consultant on projects concerning pensions, insurance and government with Eurostat, OECD, IMF and World Bank. He drafted the new ESA-chapter 16 on Insurance and contributed to the drafting of several ESA-chapters on financial transactions, distributive transactions and balance sheets. He is a member of the board of a company pension fund.

Olaf Weddige works as a research assistant at the Research Center for Generational Contracts (RCG) in Freiburg, Germany. His research interests include the field of pension policy and pension modeling. He was involved in the benchmark calculations of public pension entitlements for 19 EU member states carried out by the RCG.

John Walton has worked as a consultant of the Office for National Statistics as the UK Statistics Authority and of Eurostat on business statistics for insurance and pensions. He was a member of the OECD Task Forces on the treatment of non-life insurance and of FISIM in the national accounts. For nearly twenty years, John was a Trustee of a UK Defined Benefit employer pension fund and a member of the management board of this fund. As adviser to ONS, he was a member of the Eurostat/ECB Task Force on Pensions, giving advice as an outstanding expert on pensions. In this function and also before the creation of the Task Force, John contributed already to the discussion on how to improve the recording of pension schemes in the new statistical standards, including contributions to the discussions of the IMF EDG on pensions.

Karsten Wendorff works as Head of the Public Finance Division and Deputy Head of the Economics Department at the Deutsche Bundesbank. He is the chairperson of the ESCB Working Group on Public Finance.

Joe Wilkinson is an Assistant Director in the Income and Expenditure Accounts Division of the System of National Accounts Branch at Statistics Canada. He managed the development and implementation of the Pension Satellite Account in Canada. The data for the Pension Satellite Account was released on November 12, 2009. (http://www.statcan.gc.ca/daily-quotidien/091112/dq091112d-eng.htm) and the results are described in a paper "What does the Pension Satellite Account tell about Canada's pension system?" (http://www.statcan.gc.ca/daily-quotidien/091112/dq091112b-eng.htm).

PROGRAMME

Welcome and introduction by Steven Keuning (ECB)

Session I
Pension schemes in international statistical standards

Chairman:
Reimund Mink (ECB)

Pension schemes in the new ESA and in the 2008 SNA
John Verrinder (Eurostat)

Recording of defined benefit pension schemes in macroeconomic statistics
Robert Dippelsman (IMF)

Pension insurance:
John Walton

Discussant:
Gabriele Semeraro (Banca d'Italia)

Session II
Experience of accounting standard setters and pension modellers

Chairman:
Bernd Raffelhüschen (Freiburg University)

Accounting standards for pension schemes
Gabe de Vries (Sigma Statistical Consultancy)

Concepts of modelling pension entitlements
Christoph Müller and Olaf Weddige (Freiburg University)

Work on pensions by the EPC Working Group on Ageing
Michel Englert (Bureau fédéral du Plan in Belgium and Member of the Working Group on Ageing)

Discussant:
Marshall Reinsdorf (U.S. Bureau of Economic Analysis)

Session III
Panel discussion on the use of pension data for policy-making

Chairman:
Ad van Riet (ECB)

Discussants:
Bernd Raffelhüschen (Freiburg University), Heikki Oksanen (DG-ECFIN), and Karsten Wendorff (Chairperson of the ESCB Working Group on Public Finance)

THURSDAY, 30 APRIL 2009

Session IV
Country experiences in compiling pension entitlements Part I

Chairman:
Eduardo Barredo (Eurostat)

Estimating social security pension entitlements in Spain
Lourdes Prado Ureña (Instituto Nacional de Estadística)

Experiences in compiling pension entitlements for Luxembourg
Tom Dominique (Inspection Générale de la Sécurité Sociale)

The social security pension scheme in Finland
Paula Koistinen-Jokiniemi (Statistics Finland)

The pension satellite account in Canada
Joe Wilkinson (Statistics Canada)

Discussant:
Ana Margarida Almeida (Banco de Portugal)

Session V
Country experiences in compiling pension entitlements Part II

Chairman:
Werner Bier (ECB)

Estimating Pension Wealth and Income of US Households
Marshall Reinsdorf (U.S. Bureau of Economic Analysis)

Pension entitlements of social insurance schemes in Poland
Janusz Jablonowski (Narodowy Bank Polski)

Pension entitlements of civil servants in Germany
Albert Braakmann and Jens Grütz (Destatis)

Discussant:
Dominique Durant (Banque de France)

Conclusions and follow-up by Werner Bier (ECB)

GENERAL INFORMATION

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