ACTUARIAL COLLOQUIUM PARIS 2020

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Paris, May 11th-14th 2020

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Stochastic forecasts in pension accounting for the company's own balance sheet as well as profit and loss account positions

Author(s): Ljudmila Bertschi (Member of Swiss Chamber of pension fund experts), Urs Barmettler (ETHZ), Mario Triulzi (ETHZ), Lionel Candaux (University of Lausanne / Swiss Chamber of pension fund experts (SKPE))

Abstract: Under IFRS and US GAAP accounting standards, employers must disclose the gap between their plan assets and liabilities on the company's own balance sheet as well as the corresponding impact on the company's profit and loss (P&L) account. The pension liabilities depend on a discount rate based on the corporate bond yield of a pension fund specific liability duration. Swiss corporate bond yields were very volatile during the year 2019 and substantially decreased to their historical lows. In August 2019 discount rates based on corporate bond yields were negative for all typical pension fund liability durations (17-20 years). To support companies in planning for the financial year-end and preparing budgets for the next years, it is worth estimating positions of the company's own balance sheet as well as P&L account over the next 2-3 years using a stochastic term-structure model to set up the pension fund specific discount rate. Our approach implements the nested stochastic modelling for pension fund liabilities based on a stochastic affine term-structure model (for the yield curve). The distribution of the company's own balance sheet as well as P&L account positions over the next 2-3 years on a quarterly basis will help companies prepare their budgets in advance.

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Trends in Pension Fund Environmental, Social and Governance ("ESG") Risks Disclosure Around the World

Author(s): Paul Meins (Acturial Consultant), Tim Furlan (Russell Investments), Phili^Shier (Society of Actuaries in Ireland)

Abstract: The paper will summarize the main features and trends in pension fund ESG risks disclosure around the world available to regulators, members and the public. It would include reference to statutory requirements, general practice and voluntary disclosures in relation to pension fund accounts and other documents made available to members such as benefit/fund statements. It will include all types of pensions scheme including defined benefit and defined contribution, and multi-employer structures. It will be based on a global survey of practices in countries including the main locations for occupational pension funds. There will be reference to disclosures relating to climate change and other environmental risks, and social risks including child labour and safety. There will be particular reference to the take-up of the recommendations of the FSB Taskforce on Climate-Related Financial Disclosures. Gouvernance will be considered in relation to the stewardship policies adopted in managing investments. We will include a reference to environmental litigation affecting pension funds. There will be comment on the impact of these trends on the work of actuaries.

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A Probability of Ruin Approach to Optimize Pension Fund Investment

Author(s): Abraham Hernández-Pacheco (Vitalis), Agnieszka Bergel (ISEG, Universidade de Lisboa/VITALIS)

Abstract: Pension funds' assets around the World total almost $30 Trillion USD or roughly 1/3 of Global GDP. Of these, around $10T cover Defined Benefit Plans. Asset allocation of these funds vary widely amongst and within countries and mostly everywhere bonds do not offer returns anymore. Asset allocation is decided by sponsors through a mix of quantitative and qualitative methods as well as other considerations such as legal restrictions. Within the quantitative methods, the most commonly used are Total Return Optimization, Asset-Liability. Management and Value at Risk approaches. Most of these methods tend to give an important consideration to short-term volatility in detriment to long-term returns. Furthermore, considerations on risks such as funding level, demography and longevity are usually taken outside the asset allocation model. In this paper, we present an alternative methodology which considers the long-term effects of returns vs volatility, along with funding levels, funding policy, demography and longevity, estimating the portfolio's probability of ruin for different combinations of asset allocation. This is achieved using Copulas to model the interdependency of the different variables (interest rates, market returns, longevity and inflation) and simulation techniques to find the optimal asset allocation by minimizing the ruin probability. The model can also incorporate legal and other prudent restrictions. The paper shows not only the model, but an application to real data and a comparison of results to other approaches such as ALM and Total Return models.

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Retirement ages by socio-economic classes

Author(s): Séverine Arnold (Université de Lausanne), Anca Jijiie (Université de Lausanne)

Abstract: Most first pillar systems do not consider that mortality differs across socio-economic classes when computing the pension amount that is due to an individual. As a result, the lower social economic classes have a disadvantage, when compared to the actuarially fair pensions, while higher classes experience a gain. We tackle this problem by proposing a methodology allowing to define the optimal retirement age for each socio-economic category. Two types of schemes financed on a pay as you go basis are analysed for this purpose: a Defined Benefit scheme and a National Defined Contribution scheme. We firstly implement a framework that utilises utility functions. In this way, we determine what would be the optimal retirement age from the point of view of the individual, for each class. However, depending on the risk aversion coefficients and individual time preference factors, the results differ significantly. Since there is no consensus in the existing literature on what values these parameters should take, this approach is not desirable for choosing retirement ages or for implementing it in practice. Therefore, we seek to provide an alternative. We propose looking into the actuarially fair pensions, instead of using the utility functions. In other words, we look for the retirement age that will allow the accumulated value, at age w (the last age with survivors), of the pensions received under each system to be close in value to the accumulated amount should the actuarially fair pension be paid. As a result, individuals from lower socio-economic classes should benefit from a lower retirement age than individuals from higher classes, as the former have a lower life expectancy than the latter.

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In the South African Context, does increasing Member Choice and Flexibility add real value to Employees?

Author(s): Michelle Acton (Old Mutual), Andrew Davison (Old Mutual)

Abstract: In South Africa, employees are increasingly demanding flexibility in relation to their employee benefits (including retirement benefits). As a result, many South African retirement funds extend choice to members - these choices might include:

- contribution rates,
- salary definition to be used (which may be lower than the actual salary),
- investment portfolio,
- whether to withdraw savings when changing jobs and
- the annuity product to convert savings to a pension in retirement.

Our paper will provide a brief overview of the South African retirement system and will consider the choices available to members within defined contribution schemes and the impact on their retirement outcomes. We present results from an analysis conducted on a number of employers within a large commercial umbrella fund, to evaluate the effectiveness of the retirement fund in delivering sound retirement outcomes for members. Our observations from this analysis indicate that more choice leads to a wider dispersion of outcomes within the membership of a particular employer implying that many members get "left behind". The results will show that offering member choice in relation to benefits requires schemes to structure the benefit design to ensure that the "default" position (i.e. for members who make no choice) targets a suitable expected outcome, and that any choices offered would only enhance that position. Choices that detract from a suitable retirement outcome should not be available. Any choices need to be accompanied by sufficient information and education as to the impact on retirement outcomes. We will also focus on the impact of current legislation around preservation and annuitisation and how it is detracting from retirement outcomes giving rise to a need for urgent reform.

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Vers un système de retraite progressive dont les fonctionnalités permettent d’élargir les libertés de choix individuels sans pour autant mettre en danger la protection sociale

Author(s): Olivier de La Bourdonnaye (Pwc), Catherine Plessis (BEI)

Abstract: Les individus ne sont pas égaux devant le travail, la vieillesse, la maladie et la mort. Ils tentent généralement de tirer parti d'un système d'assurance en profitant de la retraite le plus tôt possible. En France les départs précoces résultent aussi d'un marché où les emplois disponibles ne sont pas adaptés à des seniors qui font face à des premiers soucis de santé. Le gestionnaire d'assurance vieillesse tente de dissuader un tel comportement en imposant un âge minimum assorti de pénalités non actuariellement neutres. Le gestionnaire d'assurance maladie envisage des mesures coercitives pour enrayer l'augmentation du coût des indemnités journalières. Dans le contexte du projet de futur régime unifié de retraite par points du gouvernement Philippe, on teste un système de retraite progressive dont les fonctionnalités permettent d'élargir les libertés de choix individuels sans pour autant mettre en danger la protection sociale. Ce système de retraite progressive cible la population des personnes qui pourraient rester en emploi plus longtemps à condition de travailler un peu moins intensément sans toutefois trop perdre de pouvoir d'achat. Notre modèle est calibré sur un régime de retraite de type Arrco-Agirc pour une carrière standard et un taux de remplacement de 50%. Puis on introduit la possibilité de percevoir par anticipation une fraction de pension tout en continuant à travailler à temps partiel d'au moins 80% et à cotiser. On calibre le modèle de sorte qu'avec un départ à la retraite plus tardif et un montant de pension similaire, l'opération soit actuariellement neutre.

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Solvency II and its application to social insurances

Author(s): Carlos Contreras Cruz (Universidad Nacional Autónoma de México, Conferencia Interamericana de Seguridad Social), Daniel Alejandra González-Ramirez (Universidad Nacional Autónoma de México, Conferencia Interamericana de Seguridad Social)

Abstract: After the crisis of 2009, regulators noted the necessity to address some weaknesses in the operation of insurance market. Solvency II was developed focused on this kind of insurance that are characterized by private capital, capitalist partners, etcetera. However, the social insurance shares some characteristics of private insurance whereby, some principles of Solvency II could be applied, avoiding financial sustainability crisis. Decision committees, transparency and the use of optimal quantitative methods are just some examples of principles that had been used in the past, would have avoided problems and radical reforms in Latin America and other social insurances around the world. This paper explained how a modified Solvency II should be useful for social insurers, independently of the own regulation.

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A new pension system in Brazil? An evaluation of the fiscal and distributive impacts of the 2019 pension reform proposal

Author(s): Luís Eduardo Afonso (University of Sao Paulo), João Vinícius de Franca Carvalho (University of Sao Paulo)

Abstract: In 2019 the Brazilian government proposed a very comprehensive pension reform in Brazil, the Constitutional Amendment 6. Based on this fact, in this paper we calculate the fiscal and distributive impacts on the General Social Security Regime (RGPS). This is done using a microsimulation actuarial model that calculates contributions, old-age and survivors' benefits over a period of 30 years. The approval of the reform would reduce expenses from BRL 13.42 trillion (USD 3.34 trillion) to BRL 10.59 trillion (USD 2.64 trillion) in the three decades analyzed. Net pension liabilities would fall from BRL 5.99 trillion (USD 1.49 trillion) to BRL 3.43 trillion (USD 0.85 trillion). The Replacement Rates would drop from 73.99% to 67.65%. The Required Contribution Rates would reduce from 42.70% to 32.87%. The Internal Rates of Return would have a reduction of 2.37% to -1.00%. The Average Old-Age Duration would fall from 19.45 to 16.46 years. These results provide strong evidence that the reform contains the right measures, but it is insufficient in the long run.

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Digitalization of Pension System in Mexico: Benefits and Implications

Author(s): Juan Carmona (Universidad de Mexico), Jocelyn Griseld Alba Aellano (Scotiabank Mexico)

Abstract: The establishment and development of technologies as support tools in social security terms provide a way that would improve to 30% of the Mexican population increase the amount of their voluntary contributions and many others would accede into the pension system, furthermore, it would increase the replacement rate in retirement pensions in Mexico. Within the pension scheme, these tools facilitate supervision, promotion and dissemination by the regulator, in addition, will work as a channel with the savers to encourage them to get involved with their retirement savings extending options with the objective of attend their concerns. Moreover, the tools proposed in this work, reduce the public expenditure and relies financial inclusion. The data are obtained from pension system local regulator and the national statistical institute with mixed results for savers.

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Challenges and Solutions for the Integration of Personalized Health in Healthcare Systems : A literature Review

Author(s): Veronika Kalouguina (UNIL), Joël Wagner (UNIL)

Abstract: The scope and ambitions of biomedical institutions worldwide currently working towards the realization of Personalized Health (PH) require recognizing the potentially profound impact on regulatory standards and on the economic functioning of healthcare. Against this background, it is important for researchers and policymakers to know about the challenges for healthcare. The present paper aims to study the literature related to the consequences of PH on health prevention, health insurance and care systems. Using a PRISMA protocol search, we conduct two search iterations in Web of Science and analyze publications dealing with insurance (419 papers) and prevention (286 papers) in the field of PH. After a detailed reading, our analysis demonstrates that PH requires addressing three challenges. The key issues that we highlight are about (1) the payer system and coverage of PH (tests, drugs); (2) value- and cost-efficency-oriented definition of reimbursement thresholds; (3) the usage of PH as a preventive tool. In the meantime, we provide several solutions to these concerns; we present (a) risk sharing contracts that are able to deal with the emerging coverage challenges, (b) criteria which could constitute future reimbursement thresholds and (c) examples of successful implementations of PH into healthcare systems. Our findings are relevant for policymakers and health insurance companies for defining guidelines for the health care schemes of the future.

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Between Individual equity and collective solidarity : a new proposal of public pension scheme

Author(s): Pierre Devolder (Catholic University of Louvain), Keivan Diakite (Catholic University of Louvain)

Abstract: In many countries, traditional Defined Benefit (DB) public pension schemes are under pressure for financial reasons but also because of design challenges. Indeed, the aging issue put into difficulty the combination DB and Pay as you go (PAYG), as usually used in social security plans. At the same time, the structure of these classical pension schemes are no more adapted to new flexibilities of the job market such as individual decision in terms of retirement age of variety of career paths. In order to combine the basic collective solidarity inherent to social security and these new forms of individual freedom and responsibility, we propose in the context of the reform of the Belgian first pillar, a new design for public pension schemes based on non-funded individual pension accounts. This technique can be seen as an intermediate approach between classical DB plans and NDC notional accounts, using inter-generational risk sharing of the aging cost and automatic adjustment mechanisms. A comparison will be given between this system and other mechanisms such as DB, NDC or point systems.

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Financial sustainability of the French pay-as-you-go scheme: An optimal reserve level

Author(s): Mathieu Nogues (TDTE), Marie Del Carmen Boado-Penas (Institute for Financial and Actuarial Mathematics (IFAM), University of Liverpool)

Abstract: The decline in fertility rates, the increase in longevity and the current forecasts for the ageing of the baby-boom generation all point to a substantial increase in the age dependency ratio, and this will raise serious concerns for the sustainability of Pay-As-You-Go (PAYG) pension systems. This is a worldwide problem, and consequently, many countries have already carried out some parametric reform, or even structural reforms, of their pension systems. In France, the government is in the process of reforming the state pension system. The aim of this paper is twofold. First, using nonlinear optimization, it designs optimal strategies involving variables such as the contribution rate, age of retirement and indexation on pensions to guarantee the financial sustainability of the French pension system. Second, we calculate the optimal level of the reserve fund that guarantees the financial equilibrium of the system under different scenarios.

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Deferred Public Pension and Longevity Risk for a Household in Retirement

Author(s): Norio Hibiki (Keio University), Masahiro Shibahara (Keio University)

Abstract: In recent years, managing longevity risk, the risk of outliving one's wealth, is a very important issue for a household in retirement. Hibiki and Oya (2015) show that this risk can be hedged by combining private life pension and public pension. However, private life pension is expensive due to high expense loading. Kenjoh et al. (2017) describe qualitatively the advantage of deferred public pension and thus we could hedge appropriately this risk with deferral receipt of public pension and private term pension to compensate income during the period before receiving public pension. To the best of our knowledge, there are no studies that evaluate quantitatively the advantage of deferred public pension for hedging longevity risk in Japan. In this paper, we evaluate it by optimization model and suggest strategies retired households can choose.

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Pension Reform and Innovation in Canada

Author(s): Robert L. Brown (Retired)

Abstract:

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Measuring adequacy and facing longevity risk in social security

Author(s): Raffaello Marcelloni (INAIL)

Abstract: Labour markets are undergoing major transformations mostly due to ageing population. Actuaries can play a fundamental role to ensure that social security systems continue to meet their objectives of adequacy of benefits and financing constraints. Adequacy of benefits and financial sustainability are two sides of the same matter and must be jointly considered. In the medium to long term, unsustainable pension systems may not be able to guarantee enough level of the benefits. At the same time, the financial sustainability, pursued through a compression of the benefits, may be not socially sustainable. Although it seems hard to define uniquely the Adequacy of Pensions, we can certainly state that the main objective of a system is to provide an adequate income during retirement. To measure adequacy we can consider the so-called Pension Wealth indicator (PW). PW is the ratio between the actual value, on pensionable age, of all the pension payments that are expected to be paid (generally for the entire life) and the last salary received. PW is highly related to the future mortality trends and its study may give useful information to face the longevity risk. PW can be thought as the lump-sum needed to buy an annuity giving the same cash flow as that of the old age pension. The PW is generally referred to old age pensioners, but the aim of this study is to present a redefinition of PW with reference to specific vulnerable workers: the Italian injured worker broken down by accidents and occupational diseases and by impairment level. In this sense, the indicator will also include the pension income coming from the Workers Compensation system. The old age generic PW will be compared with the injured worker's PWs.

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Towards an IAA-ILO-ISSA joint project on Workers’ Compensation Systems

Author(s): Raffaello Marcelloni (INAIL)

Abstract: A workers' protection system is a specific sector of Social Security with its own features, due to the specificity of the phenomenon which is the object of its activity: accidents at work. In such a system the actuaries play an essential role, since the long-term nature of the benefits provided (the benefits can be paid for decades following an accident) requires an adequate scientific approach. Since April 2017 it has been established within the International Actuarial Association (IAA) and with the participation of both the International Social Security Association (AISS) and the International Labour Organization (ILO), the "Working Group Compensation“ (WGC), with the task of collecting information currently available on workers' protection systems at an international level, and the goal of highlighting the strengths and weaknesses of these schemes, with particular reference to developing countries. The present work illustrates the activities carried out by the WGC starting from the submission of a questionnaire on workers' protection systems which was prepared by the WGC members, representing IAA, ISSA and ILO as well as representing countries such as USA, South Africa, Japan and Lithuania. The survey concerned the nature of the subjects who manage these schemes, the funding systems adopted and the benefits provided. Currently the group is examining the results of the questionnaire and gathering further information through a search for scientific material at relevant official sources such as ISSA, ILO and others. The final objective of the WGC is to produce a final document of all the activities carried out, to be made available to the international actuarial community and to the other stakeholders.

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The Impact of Migration on Finnish Pension System Sustainability: Scenario Calculations

Author(s): Tuija Nopola (Finnish Centre for Pensions)

Abstract: The Finnish population is ageing rapidly. The bulk of pensions currently in payment are paid for by people in employment. If population trends continue at the current rate, there is a pressure to increase the pension contribution rate. A young age structure of migrants to Finland and considerably high birth rates of some migrant groups reduce the old-age dependency ratio. A younger age structure lowers the ratio of pension expenditure and pension contributions to wages. The magnitude of the effect depends on migrants' and their descendants' employment rates. This study uses scenario calculations to assess the impact of migration on pension expenditure and pension contributions. Migrants are classified into three groups based on their birth country: high, medium and low employment outcome. Based on historical data, it is assumed that the length of time spent in the country correlates positively with employment outcome. Second-generation immigrants are also assumed to have a better employment outcome than their parents. An increase in net immigration will ease the upward pressure on pension contribution rates the more the larger the share of additional immigration from high employment outcome groups. In the longer term the effect will be less dependent on the immigrant group.

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Managing sustainability and facing “longevity risk” in the Italian workers’ compensation system”

Author(s): Daniela Martini (INAIL)

Abstract: Over the last years, labor markets are quickly changing due to ageing population, technological innovations and arising of new professions. In this evolving context, how can the social security system manage "longevity risk"? Which are the variables that most affect the level of mortality? This study focuses on disabled people, with regard to workers insured by Inail (National Institute for insurance against accidents at work), who suffered an accident at work or contracted an occupational disease and receive a life annuity. The results show that, in last decades, there was a general improvement of disabled' life expectancy as for Italian population, but for some groups of disabled it is not true. For example, we cannot expect any survival improvement for ill people with most serious diseases, such as all forms of cancer (including those related with asbestos). The variables that most affect the mortality of disabled are duration (years from the starting date of annuity to valuation date), severity of impairment (class of degree), type of event (accident or occupational disease) and disabled’s profession or sector of economic activity (industry, agriculture, services). In such a complex framework, it is essential to keep the longevity risk under control to ensure the sustainability of a social security pension system.

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An experience-based lifetime retirement income product

Author(s): Brnic Van Wyk (Q Super)

Abstract: This presentation will focus on the global pension crisis and potential mitigating policy responses, in particular, a new retirement incarne product that will pool the experience of individual defined contribution (DC) savers. Going forward individual DC funding will dominate retirement income provision globally. It means ail risks (including inflation, investment, longevity) fall to individuals, who are least equipped to manage these. In retirement specifically, idiosyncratic longevity risk can only be managed through some form of pooling, which can be insured or tontine-like. QSuper is developing a new innovative retirement income product that will provide lifetime income to DC savers on a pure experience basis, together with money-back return of nominal capital. Income will be adjusted based on investment, mortality, expenses and longevity experience. No capital or balance sheet is required and the retirement income pool will always be 100% solvent. This product will be combined with a traditional drawdown account and social security benefits. A key objective of the presentation is to engage with international thought leaders and practitioners prior to the product launch later in 2020 for their reaction and technical feedback.

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Fake News VS Hard Facts on Social Security Funding, Sustainability and Adequacy

Author(s): Alejandro Bonilla Garcia (Association of Former International Civil Servants for Development (Greycells))

Abstract: From time to time a new generation gets interested, for diverse reasons, on compulsory, social security pension schemes. Every “new” diagnosis of “old” issues is rediscovered, and news are broken to the “new” “public, “clients” and “right-holders”. Communication techniques and social media are so influential that it is very difficult, for the common of mortals, to distinguish between the fake news and the hard facts. What are real public’s, clients’ and right-holders’ choices and what are not? Are policy makers, decision makers and actuaries offering a fair share of options? Is there a need for a perception change on all sides? What should the future look like?

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Desirable pension system design in a changing society

Author(s): Satoshi Nomura (Mitsubishi UFJ Trust and Banking)

Abstract: In August 2019, actuarial valuations of the public pension were announced in Japan for the first time in five years, and public attention about the pension benefits and living expenses after retirement has increased. In the financial verification results of the public pension, multiple assumptions covering a range of scenarios are adopted, and the future outlook of the pension benefit level is shown for each. However, even if the economic assumption is the most optimistic, in 25 years, the future income replacement ratio is expected to decrease by less than 20% compared to the current income replacement ratio. While the public pension benefits are expected to shrink, the amount needed after retirement has risen due to rapid improvements in longevity. There is a projection that 50% of children born in Japan in 2007 will live up to 107 years old. In this presentation, firstly, we will show the current state of Japanese public and corporate pensions. Secondly, we will analyze what factors/parameters need to be considered for the design of corporate pension plans from the viewpoint of securing individual income after retirement, facing changes in employment conditions, negative interest rates, and longevity. Thirdly, we will mention the adequacy and sustainability of pension benefit structure by introducing some examples based on our experiences as corporate pension consultants.

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Desirable Retirement Benefit System in Japan - from viewpoint of societal changes

Author(s): Yuki Tabuchi (Resona Bank Ltd)

Abstract: In Japan, life-time employment has long been the mainstream, but due to the recent diversification of work styles, job changes have become active, and retirement benefit plans that are suitable for the mobility of employment are required. Public pension benefits are expected to decrease significantly due to the progression of declining birthrate and aging exceeding expectations, and the importance of retirement benefit plans to supplement public pension benefits is increasing. Now, in Japan, there are overwhelmingly more companies that have a lump-sum severance payments than companies that have a private pension. However, funds can't be transferred between the lump-sum severance payments system and other systems. In the United States, IRA, which can be joined regardless of how you work, makes it easier to integrate funds when you change jobs and contribute to securing income after retirement. In this presentation, it is proposed the introduction of an individual retirement account that enables to accept funds from any retirement benefit plan, referring to the desirable benefit level and paying attention to the arrangement of tax systems. And this is the system that equips automatic enrollment and financial incentives for achieving high and uniformly distributed levels of coverage which is mentioned in OECD working paper (Antolin et al.,2012). This presentation also refers to the ideal combination of public pensions, retirement benefits, self-help efforts and working incomes to ensure a stable income for the elderly in progressing longevity.

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Current Situation and Future Issues of Corporate Pension in Japan

Author(s): Kenji Kusakabe (The Institute of Actuaries of Japan)

Abstract: FY 2019 Financial Verification of the public pension, which was released in August 2019, shows that the adequacy of future benefits could be ensured if the amendments based on "Option Trial" are implemented on the premise of economic growth and labor participation. From the perspective of retirement income, “Work Longer” and private pension are very important as well as the public pension. In recent years, the work environment for women and elderly has been improved, but corporate pension plan’s coverage has declined particularly in small and medium-sized companies. In response to this, the government has been promoting the development of individual-type DC (“iDeCo”), but the coverage is not sufficient. The retirement income of the working generation is increasingly dependent on public pensions. This paper proposes the establishment of "Auto Bridged Pension" as a measure to solve the problem of retirement income and analyzes its effect.

The main schemes are as follows:

・It applies to all workers, and companies collect monthly premiums.

・The premiums are consolidated into the single DB and invested for one year. It will be transferred automatically to iDeCo at the end of each year.

・It is possible to withdraw from the DB before transferring.

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How pension plan decision makers approach intergenerational equity in occupational defined benefit plans

Author(s): Claudia Gagné (Université de Montréal)

Abstract: While intergenerational equity has been an important consideration in the management of social security programs, this issue has received comparatively little attention in the occupational pension sphere until about ten years ago. The recent context of low interest rates, reduced returns on assets combined with more mature plans and increases in longevity led stakeholders to pay more attention to intergenerational equity in all types of pension plans. As occupational pensions become more and more subject to risk-sharing elements (e.g. conditional indexation, target benefits, collective DC designs), the resulting benefits may become less similar across different generations. While it is generally accepted that stakeholders should take into account intergenerational equity in decision-making, few of them seem to agree on how to define the concept and how to measure it. Presented is the synthesis of a consultation conducted with relevant decision makers (practitioners, regulators, policy makers, trustees and academics) highlighting different approaches to intergenerational equity and how it is taken into account in plan design, management and regulation. Also discussed is the risk that, when important transfers between generations are perceived in a defined benefit plan, members disengage and opt out to move to less collective plan.

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Understanding the challenges of ageing : Meeting the needs of the elderly

Author(s): Yosuke Fujisawa (Swiss Re)

Abstract: It is estimated by 2025, about 500 million people in Asia will be aged 65 and for Japan this is estimated to be 36.4 million people. With the ageing population growing faster than ever, especially in Japan, many are seeking new and innovative ways to address these unmet elderly needs. Currently, the Ministry of Health, Labour and Welfare (MHLW) sets DB and DC experts committee to address the issues, such as changing job market and employment of the aged. In this session Yosuke Fujisawa, as a member of the committee, will take us on a journey to envision the expectation and needs of the elderly. So, we can understand how to best apply the actuarial skills in the design of DB and DC plans to meet the needs of the elderly. Then, drawing from his actuarial experience, he will dive into analyzing some of the in market DB and DC plans and provide more insights on how we can better manage new and emerging longevity risks.

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What income do I really need to retire on? A cross country analysis

Author(s): Peter Devlin (Deloitte)

Abstract: The Pensions and Lifetime Saving Association (PLSA) in the UK has just released an interesting report on the target incomes that need to be “aimed” for by pre-retirement savers (citizens) in order to have a post-retirement income that is judged as “minimum”, “moderate” or “comfortable”. This is a good way of providing citizens of the information they need to plan. My paper would look at how the three benchmarks lie in relation to median earnings, expected state pensions, auto enrollment pensions etc. and thus see how plausible the consequent requirements to save are. The idea would be to see how realistic the goals and the means to get there are (i.e. is the moderate goal realistic given the ability of the median earner to save?). Furthermore the paper would look at what the equivalent income levels would be for certain European countries (currently Germany, France, Italy and Poland) to judge how the idea would work in these countries as citizens are expected to save for their own retirement in each of these countries as well.

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Actuarial Practice Experience in Social Security Reform and Crisis Management

Author(s): Eduardo Melinsky (Universidad de Buenos Aires)

Abstract: Many countries in Latin America are experiencing large social trouble and budget crisis on account the pension program, independently of the consideration of Defined Benefits or Defined Contributions. After the past 35 years of SS reforms in pension, different countries have performed and modified their initial reforms, but social tensions and budget crisis related to pension systems persist. The Actuary has an important role in these areas, not only as the traditional actuarial valuation, but also considering strategic planning and participation in working groups to give a diagnosis, analyze different courses of actions, to communicate this and to help finding practical solutions. The idea is to share real experiences in many countries (like Argentina, Bolivia, Costa Rica, Chile, El Salvador, Honduras. Mexico, Paraguay, Peru, Republica Dominicana) and discuss what should contain actuarial reports following professionalism standards like IAA-ISAP, including guidelines form ILO, IASS, and IOPS.

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Do people make rational decisions about their future pensions? Lithuanian example

Author(s): Evaldas Valeisa (InsurTech solutions)

Abstract: There was a PAYGO pension system (Pillar I) in Lithuania until 2003 when a pension reform was implemented. As a result, a funded pension was introduced (Pillar II). Pillar II was supposed to partially substitute Pillar I since it was funded from a part of social security tax and respectively rights to Pillar I pension were reduced for the participants proportionally to the amount of social security tax being diverted to Pillar II funds. A vast majority of working population chose participating in the pension Pillar II though the participation was voluntary. There were created pension projection calculators to promote the participation in the Pillar II that relied heavily on the following assumptions: investment return, demographic trends, proportion of social security tax paid to Pillar II, etc. Obviously real-life experience was far from the assumptions. After 15 years from the pension reform politicians decided to make a reform again and opened an opportunity window for 6 months (first half of 2019) for Pillar II participants for deciding continuing participation in Pillar II or returning accumulated assets in Pillar II to Social Security Fund and getting social security pension reinstated. It was truly an arbitrage situation if participants would have been able to evaluate the alternatives. Unfortunately, public was left in the dark making decisions based on emotions. The problem was that this time there were no official calculators that would have helped participants making an informed decision and politicians themselves did not understand the financial consequences of their decision. Lithuanian Actuarial Society developed an appropriate calculator to help the public making a rational decision and analyzed the results. Has it helped? Only 45000 participants out of 1.3 million decided to return their assets to Social Security Fund. The paper analyses the consequences of the individual decisions of participants as well as the impact of the political decision to the public finances. It also discusses the problem of emotional decisions versus based on actuarial analyses. Another important aspect touched is the conflict of interests between individual and society's interests.

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The great pension debate : finding common ground

Author(s): Robert L. Brown (Retired)

Abstract:

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Reassessment of the design and costs of a non-contributory pension pillar in Mexico

Author(s): Luis-Mario Hernandez-Acevedo (Universidad Anahuac Mexico)

Abstract: Adequacy of retirement income in Mexico remains a challenge. In order to mitigate poverty at the old age, the Mexican government in last two decades has implemented a non-contributory pension pillar, which in its short life has been modified a number of times, including at the start of the last three presidencies. Those changes were initially designed to make the new pension scheme implementable; however later changes sometimes have sought to tighten and others to loose the eligibility criteria for the recipients. In this work we analyze the fiscal costs of three relevant variants of a non-contributory pillar. The first is a truly universal, the second is a means-tested and the final is a means-tested that, a la Chilean style, rewards longer formal employment and workers savings' effort, at the same time that guarantees a minimum income for the elder with a progressive subsidy design. Finally, some scenario analysis are developed in order to assess the sensitivity of the fiscal costs of the latter scheme which is the preferred scheme.

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Intergenerational Fairness as a solution to pension deficits

Author(s): Jean-Francois Gavanou (Tquarter Finance)

Abstract: Most pension funds in Europe (IORPs) are expected to close the year 2019 with significant pension deficits, notably as a result of the prolonged low long-term interest rates environment maintained by central banks to support the economy. This is likely to result in pension correction measures of various forms (increase in contributions. benefit cuts...) to be taken by the governing bodies of these pension funds which might impact differently the various generations of members. At the same time, the European Union is calling through Article 7 of the IORP II Directive (2016 / 2341) for a more accurate consideration of generational equity issues in the management of IORPs which "shall, where relevant, have regard to the aim of having an equitable spread of risks and benefits between generations in their activities". This paper is looking to illustrate the magnitude of such generational equity issues on an illustrative simplified IORP example and suggest actuarial indicators to satisfy the new generational equity requirements set by the Directive and solve pension deficits in a fair manner for all generations of members.

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Asset allocation and draw down strategies for defined contribution plans

Author(s): Paul Sweeting (Hassana Investment Company/University of Kent)

Abstract: The rising cost of defined benefit pension provision, increased worker mobility and decreased employer paternalism have all led to an expansion of the use of defined contribution plans. The end point of the accumulation phase has typically been annuity purchase or a cash lump sum. However, these funds are increasingly used to generate an income in retirement. This poses two key challenges. The first is how to calculate the amount of income to draw down each year in retirement, and the second is how to determine the appropriate asset allocation, both in the accumulation and the decumulation phases. In this paper, I describe an approach that addresses both of these issues, giving an algorithm for the asset allocation in the accumulation and decumulation phases, and the draw down amounts that can be taken each year.

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Public Sector Pensions as Sovereign Wealth Funds – Features, Challenges and Solutions

Author(s): Paul Sweeting (Hassana Investment Company/University of Kent)

Abstract: A growing number of country-level public sector pension plans have attempted to move from an unfunded to a funded status. This raises a number of issues. First, it is difficult to maintain an actuarially fair contribution rate if the state is not contributing directly. Second, the asset allocation should be considered in the context of the state's broader economy, including its cost of debt and the opportunity cost of pre-funding pensions. Third, state pension benefits can be changed in a way that private sector benefits generally cannot. The purpose of this paper is to examine these issues, using the range of funded country-level public sector pension plans as examples, and to develop some high-level principles for the development of funded country-level public-sector plans.

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Does the world know the poor state of Employment Injury Insurance? Major efforts required to reach SDG's

Author(s): Anne Drouin (International Labour Office (ILO))

Abstract: The ILO and WHO estimate there are 2.8 million fatal accidents and over 300 million non-fatal injuries at work every year. No one knows however the scale of those victims who are effectively covered and receiving compensation, medical care and rehabilitation for their return-to-work. This situation iso f great concern as the right to workers' compensation had in the past been the basis to major social contract - such as the Great New Deal in the USA in early 1900s that celebrated the agreement to no-fault workers' compensation. The Sustainable Development Goal 1.3.1 on social protection and SDG 8.7 on occupational risks call on renewed efforts to set up effective employment injury insurance EII systems.There are as many national practices as there are countries around the world. A majority of enterprises are left to rely on their own or thru limited and costly private insurance carriers. The prevalence of national employment injury insurance schemes is still very limited and often facing competing private arrangements and political pressure to allow opting out. As the new forms of work emerge, namely through platform workers, lawmakers are looking to new ways to ensure all workers are effectively protected. The paper will deliver a review of ILO recent international statistics on EII and Workers Compensation and an analysis of best country practices.

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Technological transition and its potential impacts on social security programs

Author(s): Assia Billig (OSFI-BSIF)

Abstract: In recent years, changes in the labour market have been observed by different experts. These changes can be attributed to multiple factors. One of the factors that played a role in this change is technological transition and, in particular, the digitalization and automation. The emergence of new technologies creates a global digital infrastructure which already started to have impacts on labour market. These changes result in the evolution in the demand of skills and, generally, are expected to increase productivity. However, these changes may have negative impacts on employment and wages of people with certain sets of skills. The result of such impacts will be felt by social security programs that assist people at different life stages (e.g. during working life and at retirement). The paper discusses potential impacts from the point of view of social security protection.

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Modélisation prospective du risque Incapacité : proposition d’une approche combinant modèle bi-dimensionnel et algorithmes d’apprentissage

Author(s): Fatoumata Ndoye (Fixage)

Abstract: Le coût du risque arrêt de travail augmente depuis un certain nombre d’années. Cette hausse est notamment expliquée par les risques psychosociaux. Cet article modélise le taux de prescription d’arrêts de travail grâce à un modèle dont les fondamentaux sont identiques à celui du modèle de LEE CARTER. Ce modèle prend en compte trois composantes : l’année, la tranche d’âge atteint et l’origine de la prescription de l’arrêt de travail. Les algorithmes d’intelligence artificielle permettront d’objectiver la corrélation entre les composantes et le nombre de paramètres à estimer. La première partie de l’article consiste en une analyse des risques incapacité/invalidité. Nous parlerons des tendances nationales constatées sur ce risque depuis une dizaine d’années. Dans la deuxième partie de l’article, nous décrivons le modèle utilisé, dont l’estimation des paramètres sera faite en utilisant les algorithmes de Machine Learning et les données nationales. L’utilisation des résultats de nos modèles dans l’estimation, le pilotage et le suivi du risque arrêt de travail (dans un cadre ORSA en particulier et la détermination des actions de prévention) est étudiée dans la troisième et dernière partie.

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A Reverse Mortgage or An Annuity Product? Analysis on Money's Worth Ratio Considering the Value of Living

Author(s): Jun-Hee An (Tilburg School of Economics and Management)

Abstract: Le coût du risque arrêt de travail augmente depuis un certain nombre d’années. Cette hausse est notamment expliquée par les risques psychosociaux. Cet article modélise le taux de prescription d’arrêts de travail grâce à un modèle dont les fondamentaux sont identiques à celui du modèle de LEE CARTER. Ce modèle prend en compte trois composantes : l’année, la tranche d’âge atteint et l’origine de la prescription de l’arrêt de travail. Les algorithmes d’intelligence artificielle permettront d’objectiver la corrélation entre les composantes et le nombre de paramètres à estimer. La première partie de l’article consiste en une analyse des risques incapacité/invalidité. Nous parlerons des tendances nationales constatées sur ce risque depuis une dizaine d’années. Dans la deuxième partie de l’article, nous décrivons le modèle utilisé, dont l’estimation des paramètres sera faite en utilisant les algorithmes de Machine Learning et les données nationales. L’utilisation des résultats de nos modèles dans l’estimation, le pilotage et le suivi du risque arrêt de travail (dans un cadre ORSA en particulier et la détermination des actions de prévention) est étudiée dans la troisième et dernière partie.

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