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International Conference of Social Security Actuaries and Statisticians

Ottawa, Canada, 16-18 September 2009

Optimal financing and self-adjusting mechanisms for sustainable retirement systems

The social stabilisation of pensions in times of crises and
beyond: A critical review of three decades of pension reform
and their outcomes

Anne Drouin

Chief

International Financial and Actuarial Service

Michael Cichon

Director

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Introduction

Social expenditure on public pensions was equivalent to 7% of GDP on average in OECD countries in 2005 as it accounted for the biggest group of social transfers in Organisation for Economic Co-operation and Development (OECD) where 21% of GDP was spent on average in 2005 for all public social transfers.² Our attention focuses on the related national public pension system reforms that have been taking place in nearly all countries of the world since the 1980's.

Numerous reforms have been modelled on the Chilean model introduced in 1981 to exclusively delivering fully funded mandatory retirement savings schemes (MRS) as the primary source of income replacement in old-age. In the context of what the OECD referred as the “the new pension orthodoxy”³, some international organisations such as the World Bank have been the main promoter of such radical reforms that were initially following the defined contribution approach (DC) and later another paradigmatic reform adaptation of the non-financial (notional) defined contribution systems (NDC), such as the one adopted in Sweden in the late 1990's. Concrete MRS reform designs vary by country as they refer to the first or second-tier components of the larger system.⁴ Other countries have followed public pension parametric reforms that arrived at relatively similar outcomes, but without the

¹ This paper contains material that was already published in previous ILO publications, notably Cichon et al.: *Financing Social protection* (2004) as well as other material written by Krzysztof Hagemeyer, John Woodall and Michael Cichon of the ILO's Social Security Department.

² OECD (2009): “OECD Factbook 2009”, OECD, Paris, pp. 222-223.

³ OECD, Whiteford (2003), p. 9.

⁴ The World Bank referred to pillars in its prominent publication on *Averting the Old Age Crisis* of 1994.

transition costs, albeit often referred as “lacking innovation” by the proponents of radical measures.

This brief paper first recapitulates the main pension financing options and reviews the theoretical *pros* and *cons* of pension funding seeking for a logical synthesis. In the second part of the paper, a broad review of the historical experience of pension reforms since the 1980’s is presented as well as in the context of the recent financial and economic crisis. A proposal is then presented to enable the social and financial stabilizations of public pension reforms with a view to guarantee pension levels in times of crisis and beyond. The paper ends with an outline of the main principles of a pragmatic ILO pension policy stance. The present paper focuses primarily on contributory public pension arrangements.

1. A brief recapitulation of the pension financing debate

The main objective of a contributory pension system is to replace income in old-age. The aim of pension financing is to raise revenues in a manner that will cover pension costs over the time. The allocation of the costs represents the burden on employers and workers who contribute and somehow expect a fair allocation of the costs over time and across generations. This is the outcome of decisions taken by policymakers.

A rational selection of a financing system is based on the adoption of a set of contribution rates that will provide the lowest and a relatively stable set of contribution rates to the system so to guarantee its long-term financial viability on a self-financing basis. Public subsidies are discouraged as most contributory pension systems cover less 100% of the population. Under a defined benefit (DB) system, the contribution rate must be determined in a careful manner taking into account the national demographics and economic variables such as GDP growth, productivity changes, employment, interest rates, wage growth and prices. Public DB pensions are either financed on a pay-as-you-go (PAYG) basis, a partially funded basis or (rarely) a fully-funded basis. For DC systems, there is no pension guaranteed as the contribution rate is set and the focus on the income replacement objective is most of the times only arbitrarily set at the onset of reforms. The system is considered fully funded at any point in time.

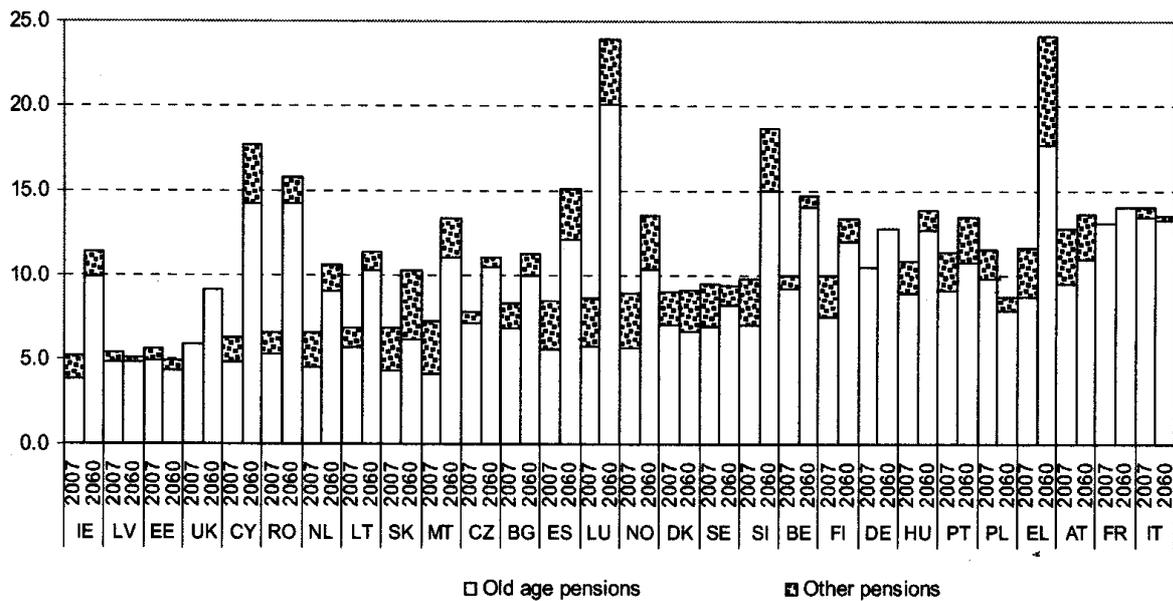
The arguments for and against the funding of pensions schemes are not the focus of this paper as they have been discussed in ample depth in numerous other papers and publications throughout the last two decades.⁵ Seeking for a logical synthesis, this section briefly sums up the conclusions that the ILO has drawn from the global debate before revisiting in the next section the outcomes of reforms that have taken place over last three decades. The main pros and cons of the different funding approaches can be summarized as follows:

- (1) **Ageing.** Reform pressures have mostly been based on the need to face demographic ageing and, for many developing countries, the need to develop national financial markets. It has been shown that ageing alone does not provide sufficient financial or economic reasons for replacing existing PAYG DB pension systems. Parametric reforms of some of the most efficient PAYG and partially funded schemes show that their overall expenditure is not projected to explode and can be kept at controlled levels, although following an inevitable increasing trend in view of ageing, as shown by the public pension projections of countries such as France and Germany in the EU for 2007 and 2060.⁶

⁵ For a thorough review of main arguments, see: Beattie, R. and W. McGillivray (1995): “A risky strategy: Reflections on the World Bank Report: averting the old age crisis”, *International Social Security Review*, Vol. 48, No. 3-4, pp. 5-22.

⁶ European Commission and Economic Policy Committee (2009): “2009 Ageing Report: economic and budgetary projections for the EU-27 Member States (2008-2060)”, EC, Brussels, p.82.

Gross old-age and other public pension expenditure in 2007 and 2060 (% of GDP)



Source: Ageing Working Group of the Economic Policy Committee, 2009.

- (2) The paradigmatic public pension reforms from DB to MRS schemes were often motivated by the desire to **reduce the net financial burden of the system** and the belief this could be achieved by moving from a PAYG or partially funded basis to a fully funded approach. MRS schemes individualize the investment risk as workers bear the risk that the prevailing conditions and economic climate at the time of their retirement will provide them with adequate income in old age. Actuarially speaking, MRS schemes are in "automatic financial equilibrium" at all times. As Nick Barr states the **investment risk** should be borne collectively through public guarantees such as a guaranteed minimum investment return and minimum pension and the availability of inflation-linked investment vehicles – issued by the state – to ensure a stable annuity in the payout period under MRS schemes.
- (3) Individual savings of MRS schemes may isolate the overall financing of the pension system more effectively against **poor social governance**.
- (4) DB pensions financed on a PAYG or partially-funded basis provide more **predictable benefit replacement rates** to individuals as benefits are less dependent on capital market performance and hence less vulnerable to bad financial governance. However, they can only guarantee a relative protection as the average level of pensions in absolute terms depends on the economic and demographic environment.
- (5) Paradigmatic reforms introducing MRS either under pure DC or NDC models have concentrated their analysis on stabilising or reducing benefit expenditure often **overlooking the benefit adequacy of older persons**. As a result the real value of average pensions has declined in most reforming countries.
- (6) According to the OECD, MRS schemes raise the prospect of increased **poverty** among elderly women due to their lower wage and shorter career profile.
- (7) Countries where MRS systems have been relying on private administration face significant low coverage of workers in the economy so that many cannot draw a pension when in old-age. Privately managed pension funds have difficulty in ensuring compliance to contribute so that many workers accumulate shorter periods of contributions so that some of them will not be eligible for a pension or their pension will ultimately be very low. Pure DC approaches are not addressing the rising high levels of **poverty** in old age and have been undertaking second rounds of reforms to introduce more state guarantees for the elderly.

- (8) On a macro-societal and macroeconomic basis DB and MRS schemes that are funded or not are both subject to demographic pressure and economic and investment risks.
- (9) The transition cost of switching from a PAYG DB scheme to an MRS scheme is substantial. It may be borne by the transition generation or pushed forward to a future one by borrowing throughout the transition period; in either case, the double-burden effect for at least one generation remains. In PAYG or partially funded DB schemes one or more early generations receive a windfall profit – that is provisions may allow at the onset that they receive more in pensions than they contribute under a temporary so-called “grandfather clause”, their pensions being paid by the next generation. This allows for a rapid tackling of old age poverty. That initial “debt” needs to be carried forward from generation to generation in future, each active generation paying for the consumption of the previous one. This becomes only a problem if it is assumed that society’s days are finite.
- (10) PAYG and partially funded DC schemes in relation to MRS funded schemes differ also by the actual allocation of the risk between the society and the individual. This allocation is a policy decision, one that is obviously not independent of income policies. If the overriding policy objective were relative income stability for the elderly, disabled persons and survivors, a society would maintain a DB scheme regardless of its overall cost. On the other hand, if the main policy objective is to maintain fiscal and financial stability to the greatest extent possible, then letting a financial market mechanism decide on the respective consumption shares of the elderly, disabled and survivors versus the active population would be the preferred option.
- (11) Ultimately, the total size of consumption depends on economic growth, which in turn depends on labour productivity and investments. There may be valid theoretical arguments to use the national pension system to create additional national savings in a particular historical situation, namely if these savings are used to invest in the long-term ability of the society to maintain a solid growth path. In the absence of other sources of investment, that may be the one way of investing in the long-term financial stability of the pension scheme.
- The effective effect of pension funding on domestic savings rates is generally inconclusive but the potential positive effects cannot be excluded under certain economic circumstances, for example in countries where the propensity to save is low and where the preconditions are met to attract large pools of funds towards urgently needed concentrated investments that will bring economic growth.
- There are however certain prerequisites before the introduction of an MRS scheme: realistic prospects must be projected for arriving at a well-developed financial markets providing investment vehicles suited with risk levels to serve as assets backing pension liabilities as well as the prospect of financial markets that can be deep enough to absorb the significant flow of funds coming from public pensions. In countries where these prospects are not carefully studied, the investments often end up in government papers. This has been the case in a number of countries where paradigmatic reforms have been implemented.
- In addition, the argument that PAYG DB schemes do not build domestic savings has overlooked that in many ways such systems provide income to pensioners who consume and foster economic development in the future.
- (12) Effective pension reforms appear to largely depend on effective governments taking rational pension financing decisions to meet their social responsibilities as agreed with representatives of society groups, namely social partners. It appears that a DB scheme meets this objective through a carefully determined level of collective partial funding that seeks to achieve a balance between:
- The need for the stabilisation of contribution rates over long periods and across generations;
 - The need for predictable income replacement levels that are underwritten by societies rather than by capital markets;

- The need for a means to achieve redistribution; and
- The need of the economy to mobilize resources without over-supplying national capital markets beyond their absorption capacity for non-risky assets and to avoid providing resources that could potentially lead to asset price bubbles and financial crisis such as the present one in 2009.

This is in line with the conclusions of the study by Plamondon and Latulippe in 2003 that showed that the optimal funding approach to a DB pension scheme follows the lines of a partially funded method.

2. An overview of public pension reforms since the early 1980's

2.1. From 1980 to 2007/08

The debate on the appropriate strategy to reform public pension systems dates back to the early 1980s when Chile reformed its social security pension scheme replacing the former costly and generous partially funded DB scheme by a mandatory DC scheme of the MRS type. While the ILO remained sceptical, the World Bank embraced the new model as a reference when advising other countries facing reforms.

Following the Chilean reform, 11 more countries in Latin America have introduced MRS tiers into their pension architecture. The first wave of such systemic paradigmatic reforms in Latin America was followed by post-1990 reforms in 14 countries in Central and Eastern Europe and Central Asia, which implemented multi-tier systems that were essentially scaled down versions of the Latin American reforms. Today, a number of countries are still considering moving into similar directions.

Simultaneously, but often overlooked, a substantial number of other countries adopted so-called parametric reforms of their pension systems that did not radically change the paradigm of old age income security. Among these countries were the Czech Republic, France, Germany, Slovenia and a number of other countries.

Past ILO technical advisory reports have found out over time that parametric pension reforms were the best outcome financially and socially in many countries, along with the introduction of other income replacement measures to ensure the full coverage of the population and adequate benefits.

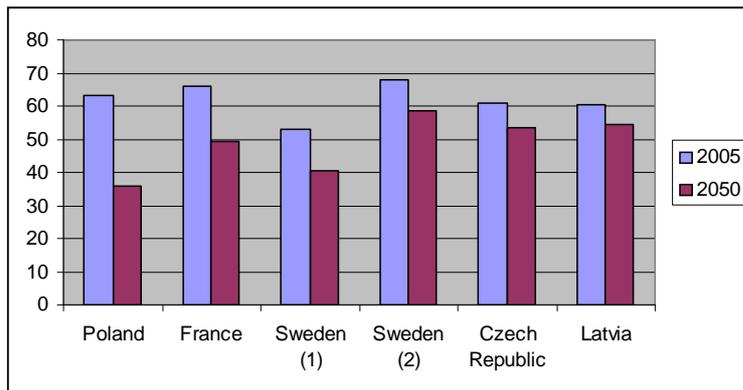
There were transparent and less transparent reasons justifying paradigmatic reforms that have been taking place since the 1980's. The main pressure in all reforming countries was the need to contain pension expenditure to face demographic ageing pressures. Other justifications which were often not clearly raised to the population's attention related to economic, commercial and political issues such as:

- (1) There was strong lobbying from the private insurance industry that saw new business opportunities in the emerging market economies. When the history of pension reforms in Europe is written this political consideration will be looked into closely.
- (2) Nobody ever demonstrated the full likely future net effects of the reforms on average individual pension levels. The high level of unpredictability of benefit amounts and of the expected levels of administrative charges in the privately-managed were not explicitly depicted. It is worth looking at the protective functions of pension schemes

in more detail. Turbulences on national labour markets – with respect to changing patterns of work sharing in an increasingly globalizing labour market – coupled with the global adjustment processes may lead to “broken” careers for many people that are dotted with spells of unemployment or periods of retraining. For these people pensions from the MRS pension schemes will in future fall the most. Resulting replacement rates may no longer meet even the minimum requirements of ILO Conventions – and that means, they no longer provide a guaranteed insurance against poverty in old age and disability.

- (3) While at first sight simple and clear in their earnings-related benefit design, such reforms were far less transparent with respect to their social outcomes. The general public understands more easily the earnings-related benefit link and that it will be committed to a set contribution rate that will lead to an ‘illustrative’ annuity in old-age – based on assumptions that are rarely understood in general. This was at the expense of short-sightedness and a lack of interest in the security of the income replacement function of the pension system. Governments could thus reduce pension expenditure without being entirely transparent about the resulting impact on individual pension levels. This is shown in the table below by average pension replacement rates that are projected to decrease by nearly 15 to 20 percentage-points in the long-term under NDC schemes such as the ones in Sweden and Poland.

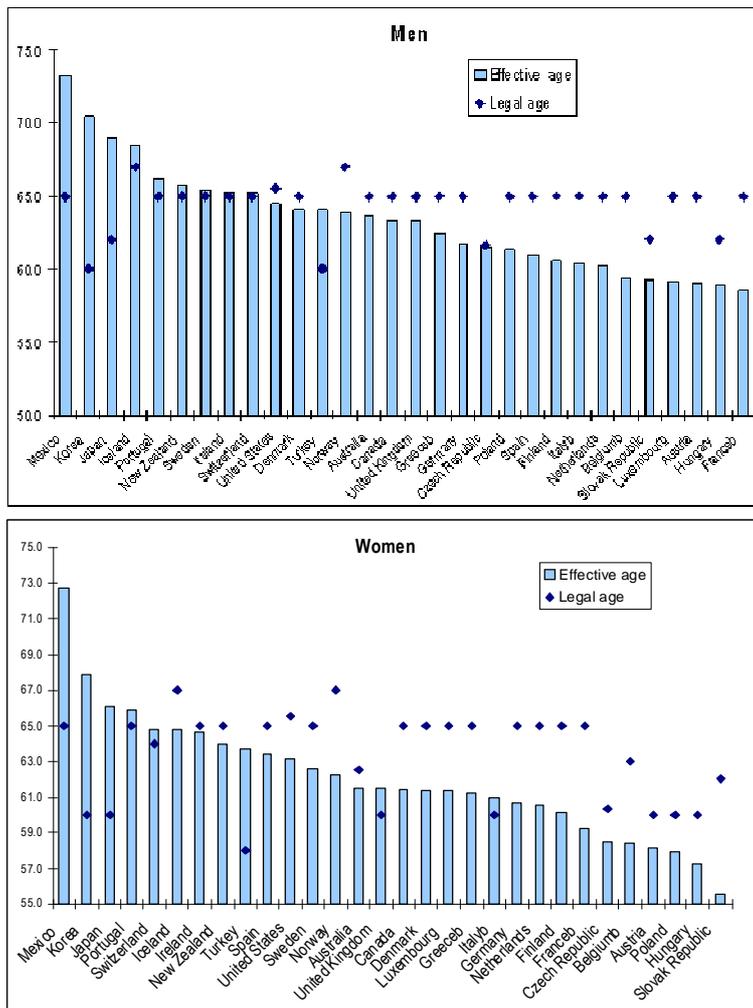
Projected lower replacement rates in the EU countries



Source: ILO calculations.

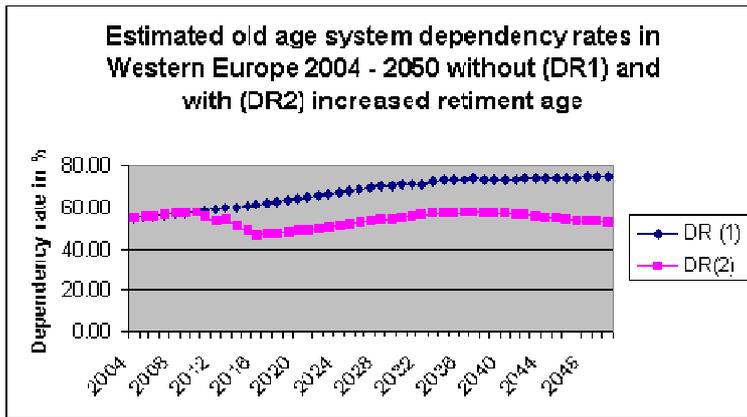
- (4) Elected governments needed to show themselves as taking swift political actions. They were not keen to face the politically sensitive parametric reforms to increase the legal retirement age and to reduce benefit generosity despite these having ultimately been more advantageous to the population than the result under paradigmatic reforms. The essential problems facing the previous existing DB PAYG systems were often due to benefit provisions that allowed people to retire at the same legal age despite evidence of increasing longevity and often due to eligibility to early retirement pensions that were unsustainable. Touching on those aspects was political dynamite and so paradigmatic reforms which could hide changes to such privileges were more appealing to politicians. This is shown by the continuing practice of effective retirements taking place at an earlier age than legally set as shown in the following graphs for men and women in selected countries.

Effective versus legal retirement ages in selected countries since 2000



Source: ILO calculations.

- (5) Nobody discussed the fundamental uncertainties that large-scale reliance on the capital market for pension financing could entail.
- (6) The transition costs caused by the changeover would have to be paid at some point in time by one or more generations of pensioners or insured persons through higher than otherwise necessary tax or contribution rates or lower than otherwise affordable pension levels.
- (7) The deep mistrust of citizens concerning government-owned and dominated systems facilitated a greater shift towards reliance on the private sector to deliver pensions. This was particularly accepted in countries that moved from military and communist governments towards democratic systems in Latin America and Central and Eastern Europe.
- (8) Proponents of paradigmatic reforms avoided showing that in most cases parametric reforms under sound assumptions could have consolidated national pension finances without a dramatic shift of the pension system design. As shown in the table below, increasing the legal and effective retirement age bring down the projected cost of pensions until 2050 in Western Europe.



Source: ILO calculations.

- (9) The consequences on the long-term financial situation of the public pension system and the overall fiscal social spending were not clearly discussed. Not many alternative reform scenarios with possible parametric changes in the public PAYG scheme were studied nor published.

Paradigmatic reforms in Latin America were summarized as having had some degree of fiscal and financial success with respect to containing expenditure. This is however an obvious consequence of introducing MRS tiers being in automatic financial equilibrium. MRS schemes pay out only what has been saved. This inevitably will bring expenditure down in the long run. However, low coverage and low compliance are the most important problems that haunt the systemic reform countries. Low compliance – as shown in the table below – either creates substantial long-term old age poverty or triggers renewed public expenditure for basic social assistance to compensate for low pension levels. Countries that resorted to parametric reforms, such as in the Czech Republic and Slovenia, managed to maintain the traditionally high population coverage and compliance.

Coverage of labour force in %

Country	Contributors	Contributors
	before reform	after reform (around 2002)
Chile	64	58
Bolivia	12	11
Mexico	37	30
Peru	31	11
Uruguay	73	60
Costa Rica	53	48

Source: ILO Social Security Inquiry database.

Most of the early reforms along the MRS lines have gone through a second round of adjustments to face arising poverty issues. The state now often provides for minimum guarantees either in the form of a minimum investment return or a minimum pension guarantee.

Minimum investment return guarantees have been introduced but in some countries they are so low that their impact is not so significant. Minimum pension guarantees have been more prevalent.

In addition, reforms have also in some cases aimed at introducing non-contributory social pensions providing means-tested benefits have also been introduced to face poverty for the

large proportion of old persons who cannot draw a pension from a contributory scheme, namely in developing countries where the informal sector is predominant. These public programmes are de facto indirectly and highly sensitive to the investment returns and the coverage enforcement of the private MRS pension systems. This is the case in Chile where the Government has invested significant efforts to develop the supervision and regulation of those private programmes to minimize and stabilize overall national public pension spending.

Benefit expenditure and contribution levels are not the only factors of concern when assessing public finances for different pension funding approaches. The tax deductibility of pension contributions and the taxation of pension revenues from public and private programmes play a key role as they raise more or less income to the state budget and affect net public pension expenditure. According to the OECD, countries like Denmark and Sweden can raise tax revenues per capita related to the benefit payout period of mandatory private pension plans amounting as much as 6.0 and 3.5 times the national average wage respectively. This is relatively high in comparison to the relatively lower tax revenues per capita raised in countries where private pension arrangements play a lesser role, e.g. in Germany.⁷

While the paradigmatic pension reforms are expected to reduce public pension expenditure in the long run, their direct and immediate effect, lasting however for a long time, is actually to sometimes increase the burden on public budgets. The paradigmatic reforms include the deviation of a certain share of pension contributions into private accounts. Logically these diverted funds are no longer available for the financing of actual pensions and acquired pension rights. Hence a major financing gap opens up due to the necessity to finance already acquired pension rights. The gap has to be covered by government out of tax revenue, or additional borrowing or borrowing from the individual savings accounts such as in China. The size of these so-called “transition costs” was certainly in all the countries a major criterion when deciding on the size of the “second” fully funded pillar. The Ministries of Finance in many reform countries accepted to cover the gap with fiscal resources. However, as soon as reforms started to be implemented and actual budget allocations had to be made, enthusiasm for financing the reform costs often faded away. Unfortunately paradigmatic reforms have often at their onset largely under-estimated the resulting burden of these net fiscal costs. The IMF states that “in general, we do not know much about the value of these off-balance sheet government items and, from a fiscal surveillance perspective, surveillance in this areas appears warranted”.⁸

2.2. Pensions in times of crisis

Governments around the world have acted swiftly and are trying to stabilise financial markets. Success is not certain yet. A rather urgent “next step” will be to address the parallel dangers to people’s social security and the viability of social security systems and their financing. In the serious economic recession the world is currently facing in 2009 all social security systems face immediate and/or ultimate financing problems. If the rate and average duration of unemployment increases, the result will be a further reduction in the future incomes from pension schemes – the vast majority – which link benefit amounts to contributions paid and ultimately lower pensions which will trigger a more extensive use of minimum pension and minimum investment return guarantees.

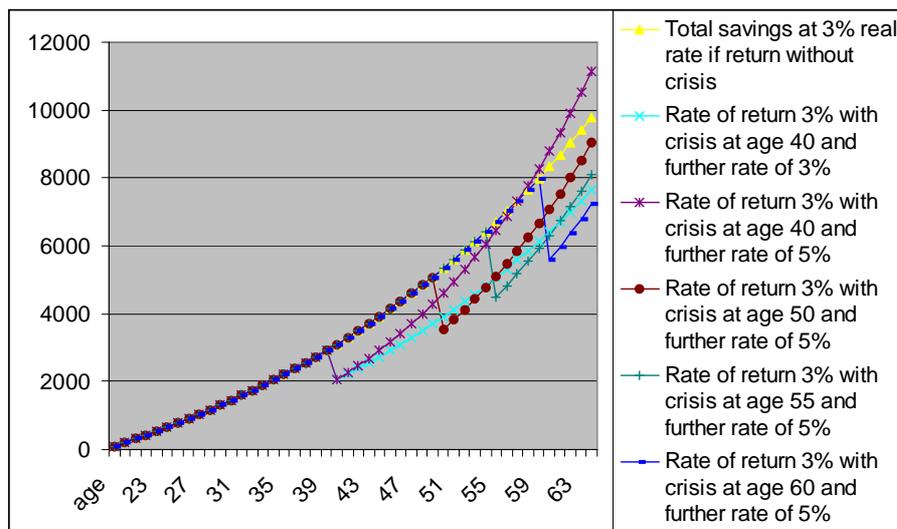
⁷ Whitehouse, E, A. D’Addio and A. Reilly (2009): “Investment Risk and Pensions: Impact on Individual retirement incomes and government budgets”, OECD Social, Employment and migration Working papers No. 87, Paris, p.34.

⁸ Impavido, G. and I. Tower (2009): “How the financial crisis affects pensions and insurance and why the impacts matters”, International Monetary Fund Working Paper WP/09/151, Washington DC, p.40.

The effect that these developments have on contributors and pensions is not straightforward. It will most likely affect people that will retire within the next months and years. In DB schemes, where pension amounts are calculated without regard to the level of reserves, the immediate impact will be less felt than for members of DC schemes where benefits guarantees are less effective by nature. However long-term contraction of employment and hence the number of contributors will also force governments to downward adjustments in DB schemes ultimately.

Contrary to MRS schemes of the DC type, DB pension reforms will likely be undertaken with a view to fairly share the burden equally between the beneficiaries. A major recession, say of a contraction of an economy by 10%, might lead to a commensurate contraction of employment and of the wage share of GDP and might force the government to pass benefit reductions of on average 10%. It can be assumed that the relative share of pensions at total consumption remains constant, even if the absolute level of consumption in the economy goes down. This could be accomplished by a reduction of benefit levels across the board or an asymmetric protection of minimum pension levels leading to slightly higher reduction for higher pensions. In fully funded DC pension schemes on the other hand pension entitlements in some pension funds might be lost completely. The situation is especially alarming for older workers close to retirement who will not have a sufficient period of time to recoup their losses as shown in the graph below.

Individual effect on accumulated funds following a sudden loss in pension assets, for different ages at the time of the sudden loss



Source: ILO calculations.

If the crisis turns into a long-term downward adjustment of asset prices, the outcome in MRS schemes will inevitably be lower benefits paid at retirement. Any prolonged suppression of interest rates and asset values will lead to serious difficulties by way of destabilized annuity rates (prices) and management of annuity reserve funds. The magnitude of the long-term effect will depend on the depth and the duration of the downturn of asset prices. If the present price reductions turn into permanent level adjustments then old age income will be reduced, if the downturn is short-lived (an unlikely situation at this stage) the effect will be transitional.

The present situation is rather bleak. The Chief of the US Congressional Budget Office had already announced in October 2008 that public and private pension funds in the State and local authorities DB plans in the USA had lost roughly 1 trillion USD, or about 10 % of their

total assets. These losses are smoothed as such schemes use a 5-year average market value to measure their assets. According to the IMF (referring to the Hewitt database), the funding ratio of such public sector pension plans went from 87% in 2007 to 65% in late 2008 and is projected to further decrease to 59% until the crisis ends to barely increase to 75% by 2013. Canadian public sector plans did not fare much better as their funding ratios decreased on average by 30% by end of 2008. The Public Investment Board, called the *Caisse de Dépôt*, in Quebec lost about 25% of its assets value by end of 2008. UK, Japanese and other schemes, including Chile have also incurred severe losses that will take in some cases decades of good returns to come back to pre-crisis asset values.⁹

While these losses may not be permanent and their effect can be smoothed over time so no single retiree bears the burden of this, they show the vulnerability of pension levels if such schemes were of a DC nature, notably for people that are close to retirement and whose savings portfolios might not recover during their remaining active life. Such people are likely to have to resort to minimum pensions in coming years. It is expected some cohorts of minimum pensioners will result regardless of their prior income status. This discredits the DC system and MRS types of pension schemes. The crisis has provided for a giant stress test of funded pension schemes. The result is that the MRS concept in its most prominent present forms has failed to achieve old age income security.

3. Policy outcomes: Or what should be done?

Immediate actions are needed to protect the pensions of people close to retirement under MRS schemes. This can be done by various temporary measures such as by way of authorising pension schemes to reduce the level of capitalisation for a transitional period, i.e. allowing them to go into temporary actuarial deficit with a view to allowing them to recoup their financial assets in future to allow them higher pension annuitization.

In the long run pension systems should focus on two types of measures: financial and social stabilisations. Tacit public consensus seems to have been underlying most of the recent pension reform debates as adopted measures were implicitly or explicitly triggered by the perceived or real need for financial stabilization through stable and constant contribution rates or by keeping the large share of pension expenditure to GDP or total government expenditure constant under tax-financed schemes.

The following sections present a limited number of policy options for such financial stabilization of pension schemes – which are assumed to be in social stabilization by definition – and for the social stabilization of DC funded schemes – which are by definition in financial stabilization.

The overarching question that we cannot really address here in sufficient detail is a much more relevant and fundamental one, and that is: Is the financial stabilisation of one sub-system of social security, i.e. pensions, a reasonable policy objective in the first place? Is it reasonable that if societies age – which is to a large extent a result of deliberate behavioural change or policy changes – that the structural composition of social budgets remain unchanged? In other words, the later question may be raised as to whether it is not a much more reasonable policy objective to maintain a certain level of overall social expenditure and allow structural shifts within that envelop? A reasonable answer appears to be “yes”. The present paper postulates that a controlled increase in pension expenditure is acceptable if that is triggered by the necessary social safeguarding of benefit levels.

⁹ Impavido et al (2009).

3.1. Financial stabilization of public pension schemes

All PAYG schemes are complying with the basic formula:

$$(1) CR_t * AW_t * CONS_t = AP_t * PENS_t$$

Where,

CR_t :	contribution rate in any given period t
AW_t :	average wage in any given period t
$CONS_t$:	number of active contributors in any given period t
$PENS_t$:	number of pensioners in any given period t
AP_t :	average pension in any given period t.

This can be conveniently re-written as solving for the required contribution rate in a given period t:

$$(2) CR_t = (AP_t / AW_t) * (PENS_t / CONS_t)$$

Formula (2) can be interpreted as the PAYG contribution rate being the product of the *financial ratio* (the average pension to the average wage in a given period t) and the *demographic ratio* (the ratio of the number of pensioners to the number of contributors in a given period t).

An emerging financial dis-equilibrium or de-stabilisation would be signaled in the “pure” PAYG world by increasing necessary contribution rates from actually charged contribution rates. All automatic stabilisation mechanism have to work on one or both of these two ratios.

A standard DB PAYG or partially funded pension scheme has at least three policy variables that can be used to react to that situation: the rules determining the individual pension level, the pension age and the contribution rate. The pure NDC scheme gives up one or two of those variables, i.e. the pension level and with some limitation the pension age, but leaves intact the contribution rates – even if not always admitted – to accommodate financial pressures that results from other factors than longevity. A balanced NDC scheme changes that situation. For example, the Swedish system gives up one more policy variables but set the contribution rate at a fixed level. Hence, if we assume that the demographic ratio is outside of the control of the policy makers, as the number of contributors is determined by the economy and the size of the cohorts in active age and the number of the pensioners is determined by peoples’ retirement preferences (with some limitation through the setting of a minimum retirement age), then logically the schemes can only be kept in financial balance if one of the previously locked in variable is to be released, i.e. if the financial ratio can be modified. With exception of the ceiling on contributors’ earnings the average wage can also not be influenced by policy decision thus – in principle – the only policy instrument that can be used in an NDC scheme to maintain the financial equilibrium to bring a deviating scheme back into equilibrium is to modify the level of pensions. In the prevailing situation in Europe that will mean in most cases to reduce the level of pensions. Safeguards need to be introduced under PAYG or partially funded schemes that avoid the risk that pensioners will in future bear the full burden of financial stabilisation.

3.2. Social stabilization of public pension schemes

Social stabilisation would imply that pension levels are not allowed to fall beyond a certain minimum benchmark. The only globally accepted legal instrument defining such benchmarks

is the ILO social security convention no.102 of 1952 on minimum standards for social security which has been ratified by a number of countries around the world. Article 65 of the ILO Convention¹⁰² defines the state responsibility to ensure a minimum income replacement rate of 40% of the wage of an average industrial worker (“the total previous earnings”) after 30 years of service. It is suggested to use this benchmark for the minimum replacement rate for the social stabilisation objective of a pension scheme. This means that no pension reform either of a DB or DC scheme type should lead to replacement rates lower than that of the standard case foreseen in C.102, or a minimum accrual rate of 1.33% for each year of services.

For national pension systems consisting of several tiers of DB and DC types, each scheme component should achieve the fraction of the replacement rate that reflects its share of the total contributions paid into the system. For example, in the case of the Slovak pension system, where contributions income have been split on a 50:50 basis between the public DB scheme and the private DC schemes, each of the scheme components would have to achieve a replacement rate of 20% of previous insurable earnings for a 30-year career, or an accrual rate 0.67% per year of cumulated service. If the performance of the funded scheme is as good as it is claimed by its proponents then these targets should easily be met. Governments can require pension funds to mutually reinsure against the risk of failing to meet the basic benchmarks in a similar way as private occupational pension schemes are already reinsured as found in Germany and under the Pension Benefit Corporation in the USA.¹⁰ The box below outlines in broad terms the mathematical idea behind the concept.

In addition, some financial stabilisation measures such as the increase of retirement age may actually protect pension levels implicitly. However, most automatic stabilisation mechanisms neglect the need to define an explicit “bottom line” of benefit levels or do not sufficiently analyse the interactions within the overall pension apparatus including non-contributory benefits and other indirect government liabilities.

Box

A DB-equivalent replacement rate guarantee for DC schemes

In broad terms, a DB guarantee for a DC scheme could essentially be defined in a given country by the following:

1. The General average premium (GAP¹¹) for a pension scheme with an benefit accrual rate of 1.33 % per year of service is calculated at a defined point in time. The calculation of the GAP may be revised over time for new generations of contributors.
2. It is assumed that if a DB scheme charges a contribution rate at the age of entry of an insured person into the systems equivalent to a fraction or a multiple of the GAP the benefit accrual rate is adjusted so that the scheme provides for the same fraction or multiple of the benefit accrual rate of 1.33 percent.
3. At the retirement age or whenever a person moves savings scheme, e.g. in year n , the scheme has to provide a present value (or the above fraction thereof) for the total number of cumulated insurance years t (starting from 0) of contributions that is equal to

$$(3) \sum_{t=0}^n CR_t * W_t * (1+i)^{n-t} = \sum_{t=0}^n 0.0133 * e_{x,n} * W_t * (1+w)^{n-t}$$

Where,

W_t : wages

CR_t : contribution rate

¹⁰ Such pension benefit guarantee schemes result in a de facto public liability in the event where private pension schemes fail.

¹¹ The GAP at a given point in time is determined as the present value of future benefit expenditure minus the available reserve fund and divided by the present value of future insurable earnings.

- $E_{x,n}$: life expectancy at age x in year n
 N : time of retirement
 i : rate of inflation (constant)
 w : rate of wage increase (constant)

For simplicity, the future interest rate after the time of retirement n is assumed constant and equal to wage increase.

4. It results that if a scheme only achieves a rate of return of equal to wage growth, then the contribution rate is determined as follows:

$$(4) CR = e_{x,n} * 0.0133$$

In practical term this would mean, for example, that a DC scheme that faces an average wage increase of 4%, a life expectancy at retirement of 15 years after 40 years of contribution and charges a contribution rate of 15% of insurable earnings, it would have to achieve an average rate of return of 5.1%. In the event where the contribution rate is arbitrarily set at 10% then it would have to earn an average rate of return of 6.75 % on the invested contribution revenues. If it were to charge a contribution rate of 20% it would only have to achieve a real rate of return equal to the rate of increase of wages. And so on.

4. An ILO policy position

The present section outlines the generic ILO policy position before describing the technical specification of a possible social stabilizing mechanism that can be applied in general terms to paradigmatic and parametric pension reforms.

As the time has come for a systematic overhaul of global pension policies, the ILO has a range of tools through which to address these needs, notably the social security standards as appearing in the international labour conventions built up over many decades. These specify the way in which social security systems should provide minimum guarantees. It has never been more timely than now to refresh, to promote and to review how those principles continue to apply to both PAYG and fully funded MRS pension schemes of the DC and NDC types. They can be legislated by any government. Most likely they will not lead to major real expenditure, but in any case they will cost a fraction of what the present bailout of the financial system could cost us.

The main concern remains the emerging uncertainty and the risk of poverty. A pragmatic stance focuses on the mandate of the ILO to provide a framework enabling states and social partners to safeguard social outcomes rather than to argue about process and methods of pension reforms. The clear consequence is that there is no claim to harbour an ILO pension reform model. The ILO however promotes the following ten basic guarantees of national social pension schemes:

- (1) **Universal coverage:** Everybody should have a right to affordable retirement through pension systems providing at least a minimum level of income protection in old age and disability to all residents;
- (2) **Benefits as a right:** Entitlements to pension benefits should be exactly specified as predictable rights of residents and/or contributors;
- (3) **Protection against poverty:** Pension systems should provide a reliable minimum benefit guarantee that effectively protects people against poverty;
- (4) **Income security:** Those with lower than average incomes should not have a total of pensions from different sources which is lower than 40 percent of their pre-retirement incomes if contributions have been paid for at least 30 years (this reflects the minimum requirements set by ILO Convention No. 102);

- (5) **Actuarial equivalence of contributions and pension levels:** A minimum replacement rate for all contributors adequately reflecting the level of the contributions paid should be guaranteed;
- (6) **Guarantee of a minimum rate of return on savings:** The real value of contributions paid into savings schemes should be protected;
- (7) **Gender fairness:** Benefit provisions should be gender-neutral and gender-fair for working parents;
- (8) **Sound financing:** Schemes should be financed in such a way as to avoid uncertainty about their long-term viability;
- (9) **Fiscal responsibility:** Pension schemes should not crowd out the fiscal space for other social benefits in the context of limited overall national social budgets; and
- (10) **State responsibility:** The state should remain the ultimate guarantor of the right to affordable retirement and access to adequate pensions.

Systems that can create these guarantees are encouraged and supported. There is no strong view on the exact architecture of national pension systems as long as they provide the 10 social outcomes mentioned above. As outlined above there may be innovative ways to combine the DB principle with the DC approach.

Many of the paradigmatic public pension reforms that have been enacted over the last three decades have failed the above litmus test of social sustainability and will require serious repair to provide a minimum level of income security for the elderly and disabled. Otherwise poverty will continue and social stability will be threatened. Recent developments have clearly shown that income and consumption security for the people who can no longer earn income on the labour market has to be underwritten by societies – and not by unpredictable financial capital markets.

In order to provide reliable old-age income security, societies have to both establish financial stabilisation mechanisms that keep the expenditure on pensions in societally acceptable orders of magnitude coupled with social stabilization measures. If a modest social stabilisation mechanism as it is suggested in the present paper triggers a modest increase in social expenditure that cannot be compensated by publicly accepted and fair increases of retirement ages that is a price that all societies have to pay due to ageing pressure.

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