Retirement, Pension Systems and Models of Pension Systems

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Abstract. This paper reviews and makes comparative assessment of models of pensions systems. Pension plans and systems, and the contemporary trends in their development are briefly introduced. Models of pension systems by three leading international organizations are reviewed, compared and commentated. The paper then puts forward recommendations in pension system design and reform.

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Key words: pension, pension system, retirement

Although the modern pension system has only come into existence after the Second World War and pension provisions have only become an increasingly compelling topic in the last decade, research on pensions as a social and economic issue in society can be dated back to 1889. In that year, the world's oldest economics journal in the English language, *Quarterly Journal of Economics*, published a research article on the German act on pension insurance for workmen, in the form of notes and memoranda. The journal published another article on old age pensions in England in 1892, also in its notes and memoranda section. In 1897, one year after the inception of the world's first sociology journal, *American Journal of Sociology*, Monroe (1897) addressed issues in labor pensions and insurance. Pension systems around the world at the time, including the US, England, Germany, New South Wales, were introduced and deliberated by Hoffman (1908), addressing specifically the pensions for the aged poor. Baldwin (1910) grouped the various plans of old age pensions, insurance, or annuities at the time under six main types. They were universal non-contributory pension schemes, partial non-contributory schemes, compulsory contributory insurance with state subsidy, voluntary contributory insurance with state subsidy, annuity schemes under public administration, and voluntary insurance under private management. These constitute an embryonic form of a multi-pillar or multi-tier approach to pension system design, adopted in the three models of pension systems studied in this paper.

The last decades have witnessed steady increases in human longevity, which should be welcomed. Nevertheless, the increased longevity has led to ageing populations, and seemingly created a shortfall in pension provisions. Various additional funds to supplement the state pension and occupational pension schemes have been proposed. Given this development trend, a number of organizations have advocated a multi-pillar approach to pension provisions, including the World Bank, the International Labour Organization (ILR) and the Geneva Association. Models of pension systems proposed by these organizations share similarities in some respects; they differ in some other respects. This paper compares and assesses the three models of pension systems.

The paper is organized as follows. The next section introduces briefly retirement systems and retirement related issues, and the development trends in pension provisions. Then the paper proceeds to present and review models of pension systems that provide a conceptual framework with which the design of new pension systems and the reform of the existing can be considered. Comparative assessment is made between these three models. The last section concludes this study with recommendations in pension system design and reform.

Retirement systems, pension plans and development trends

Retirement is the period of a person's life during which he or she is no longer working, or the commencement of that period. Retirement systems fall into a larger category, called social security. Social security is a comprehensive social welfare program of benefits, providing workers and their dependents with retirement income, disability income and other payments by utilizing the social security tax. It is established by statute that insures individuals against interruption or loss of earning power. The term is also referred to as income maintenance and social insurance (Rejda 2011). Asher (1998) has identified the main function of a social security system as to provide to a substantial proportion of retirees a socially adequate level of replacement rate with a high degree of sustainability which a person can expect to have available after retirement. This replacement rate refers to the proportion of the last drawn salary or other similar benchmark. He has added that for a middle income earner, a replacement rate of around 75 percent is considered adequate for financial security.

Related terms are retirement plans and pension plans. A retirement plan is also referred to as retirement scheme as it is commonly used. A retirement plan is a plan for setting aside money to be spent after retirement. It is seen as a long term financial contract or promise to secure income for workers in their old age. Retirement plans are commonly known as pension plans or schemes. Mitchell and Fields (1996) suggest that the term pension corresponds to a benefit paid to an employee who retires from work after reaching a prescribed age. When the benefit paid is regular and periodical from the time the employee leaves his or her work until death, the pension benefit is called an annuity. Otherwise, if a single payment is made upon retirement, it is called a lump-sum benefit. Finally, a payment made to a worker who leaves the company before reaching retirement age is not a pension; it is severance payment. The definition of a pension is therefore a payment which is paid only after the beneficiary has retired. Retirement plans may be set up by employers, insurance companies, governments or other institutions such as employer associations or trade unions. Reforming any pension system in any country is not an easy task. The pressure of an ageing population means that the government needs to rebalance the retirement income provision in ensuring the adequacy and the sustainability of the system. It involves a long term policy under the situation of uncertainties. Meanwhile, the examples of good practices from other countries can benefit policy makers in seeking to reform their own pension systems accordingly.

DB and DC plans are two basic types of retirement schemes or pension plans (Rejda 2011; Baranoff 2004; Bodie *et al.* 1988; Davis 1995; World Bank 1994) according to the methods of determining benefits. The DC plan is a plan in which the contribution rate is fixed, but the retirement benefit is variable. Contribution rates are usually a predetermined fraction of an employee's salary. Employers and employees make periodic contributions into individual accounts for employees. A formula specifies the amount of money that needs to be contributed to the plan, but does not specify the benefit payouts. Although the contribution rate is known, the retirement benefit will vary depending on the worker's age, earnings, contribution rate, investment return and normal retirement age (Rejda 2011; Trieschmann *et al.* 2005). The DB plan contradicts the DC plan; the retirement benefit is known, but the contributions vary depending on the amount to fund the benefit. An actuary determines the plan to produce the desired benefit and specifies formulae for the cash benefits to be paid after retirement. It would take into account several factors such as years of service, level of wages and others (Rejda 2011). The employer has the obligation of being the sponsor. The retirement benefits would normally be an annuity type from the retirement age to the date of death. A DB plan can be a final salary pension scheme. For example, an employee would enjoy a monthly retirement benefit of 50 per cent of his last drawn salary or a worker aged 60 may be entitled to a retirement benefit at the normal high estimated five years of earnings. Davis (1995) has also classified pension funds according to DC and DB types. However, he stresses differentiating them according to the distribution of risk between the member and the sponsor. Some plans combine the characteristics of DB and DC, often known as "hybrid" plans. Examples include the "cash balance" plan (Bodie and Davis 2000; Rejda 2011; Baranoff 2004). In a cash balance plan, each employee has an individual account that accumulates interest, and if they leave a company, they are allowed to take that amount with them. Additionally, Treischman *et al.* (2005) claim that the cash balance plan is chosen because the traditional DB plan structure is difficult to be understood by employees since they cannot see the dollar value of their accounts. A variation of this design is the "floor" plan (Bodie and Davis 2000), which is a DC plan with a guaranteed minimum retirement annuity determined by a DB formula.

Many countries, particularly in Western Europe, have long histories of major social insurance systems that provide DB pensions based on pay-as-you-go financing models. Some other countries partake DC plans that are either managed by the government like the cases of Malaysia and Singapore, or privately managed but closely regulated by the state, for example in Chile and Argentina (Ross 2000). Over the last two decades, DC plans have been growing rapidly while the number of DB plans has dwindled considerably (Kapoor *et al.* 2001). Costo (2006) has noted a development trend in retirement coverage in the US. While the features of retirement plans changed in tandem with the declining participation from 1992 to 2005, participation in DC plans eclipsed that in DB plans. Participation in DB plans was slightly lower that participation in DC plans in 1992-93: 32 per cent of all private-industry workers participated in a DB plan, while 35 per cent participated in a DC plan. By 2005, participation in DB plans dropped to approximately half of the participation in DC plans. A report of the Expert Commission on Pensions (2008) has revealed similar patterns in Ontario, Canada. An important shift in plan design has been the growth of DC plans. About 8 per cent of active members belonged to DC and composite plans in 1985 and the figure grew to 18 per cent by 2005. While this represents a significant movement from DB to DC plans, it is far less dramatic than the movement that occurred during this period in the US and the UK[1]. Thus, DB plans continue to dominate the Ontario occupational pension landscape. Clark and Monk (2007) argue that, for many, DB schemes have hobbled the financial wellbeing of plan sponsors and even whole sectors of industry. This is one of the main reasons that private DB pensions are in decline in many Western economies. Given these developments trends, Arza and Johnson (2005) argue that the worldwide developments in public pension policies are not based on single-tier or single pillar models. Many retirement systems are in the balance between private and public administration, flat rate and earnings-related benefits, universal, employment-based and means-tested access.

Models of pension systems

Various retirement and pension systems have been established in countries around the world. Models of pension systems are utilized to guide the design of a new pension system and the reform of an existing pension system. They also provide a framework with which emerging issues in retirement systems can be assessed. A number of organizations have advocated a multi-pillar approach to pension provisions, including the World Bank, the International Labour Organization (ILR), the Geneva Association and the International Monetary Fund (IMF). The year 2012 marked the 25th anniversary of the Four Pillars Programme of the Geneva Association (Ostaszewski 2012). The program is based on the three pillars of the Swiss system, plus a fourth pillar referring to partial employment (Giarini 2012). It is generally accepted that a multi-tier or multi-pillar approach be adopted in pension system design and reforms, though differences remain between the two dominant international organizations involved in pension policy, the ILO and the World Bank. In the following, we present briefly the multi-tier model of the ILO and the multi-pillar model of the

[1] Sarfati and Ghellab (2012) report that "fewer than 10 per cent of those in the private sector are now members of a DB scheme as against about 35 per cent in 1997" in the UK.

Work Bank, together with an introduction to the Four Pillars Programme of the Geneva Association.

World Bank multi-pillar model

The World Bank multi-pillar approach stresses diversification and efficiency. It advocates a kind of investment portfolio approach: the optimization of expected returns in relation to risks through diversification of the elements in the system. The elements in the World Bank's pension system are its five pillars; each of them "both addresses and is characterized by its own particular type of risks" (Holzmann and Hinz 2005, p42). There will be diversification gains if "the factors affecting each pillar are not perfectly correlated and, in some cases, have minimal or even negative association" (Holzmann and Hinz 2005, p43).

The World Bank proposed a three-pillar pension system in 1994 in its research report titled *Averting the Old-Age Crisis* (World Bank 1994), which established key principles and concepts. Since then, the World Bank's attention has increasingly focused on refining system designs to adapt these principles to widely varying conditions and better address the needs of diverse populations to manage the risks in old age. The conceptual framework for the Bank's pension work is presented in its 2005 research report titled *Old Age Income Support in the 21st Century: An International Perspective on Pension Systems and Reform* (Holzmann and Hinz 2005), and is further discussed in Holzmann *et al.* (2008). With this conceptual framework, the original concept of a specific three-pillar structure has been extended to include two additional pillars: a basic (zero) pillar and a nonfinancial (fourth) pillar.

The suggested multi-pillar pension system in the new conceptual framework is composed of some combination of five basic elements: a) a non-contributory or "zero pillar" that provides a minimal level of protection; b) a "first-pillar" contributory system that is linked to varying degrees to earnings and seeks to replace some portion of income; c) a mandatory "second pillar" that is essentially an individual savings account but can be constructed in a variety of ways; d) voluntary "third-pillar" arrangements that can take many forms but are essentially flexible and discretionary in nature; and e) informal intra-family or intergenerational sources of both financial and nonfinancial support to the elderly, including access to health care and housing. Details of the five pillars, according to the World Bank (2008), are as follows:

- A non-contributory "zero pillar" to deal explicitly with the poverty alleviation objective in order to provide all of the elderly with a minimal level of protection. However, it is stated that the viability of the "zero pillar" depends upon the availability of budgetary resources and the design of complementary elements of the pension system;
- A mandatory "first pillar" with contributions linked to varying degrees to earnings with the objective of replacing some portion of lifetime pre-retirement income. It is typically financed on a pay-as-you-go basis;
- A mandatory "second pillar" that is typically an individual savings account, such as a defined contribution plan, with a wide set of design options including active or passive investment management, choice parameters for selecting investments and investment managers, and options for the withdrawal phase;
- A voluntary "third pillar" taking many forms but is essentially flexible and discretionary in nature. Third pillars compensate for rigidities in the design of other systems but include similar risks as second pillars; and
- A non-financial "fourth pillar" which includes access to informal support, such as family support; other formal social programs, such as health care and/or housing; and other individual financial and non-financial assets, such as home ownership and reverse mortgages where available.

ILO multi-tier model

The ILO's multi-tier model design and structure are detailed in a book *Social Security Pensions – Development and Reform* (Gillion *et al.* 2000). The ILO's guiding principles of pension development and reform include all-encompassing coverage, compulsory affiliation, solidarity, and equality of treatment. Thus, the benefit structure of pension schemes can be thought to achieve these five general objectives: the extension of coverage to all members of the population; protection against poverty in old age, during disability or on death of the wage earner for all members of the population; provision of an income, in replacement of earnings lost as a result of voluntary or involuntary retirement for all those who have contributed; adjustment of this income to take account of inflation and, at least to some extent, of the general rise in living standards; creation of an environment for the development of additional voluntary provisions for retirement income.

The ILO's principles entail resilient anti-poverty and equality elements. As such, a bottom anti-poverty tier is the first tier in its pension system design. In contrast, the three-pillar pension system proposed by the World Bank in 1994 starts with a pay-as-you-go first pillar, which is a second tier in the ILO's pension system design. Nevertheless, the World Bank added a non-contributory zero pillar to deal explicitly with the poverty alleviation objective in its five-pillar system proposed in 2005.

According to Gillion *et al.* (2000), the multi-tier model design would comprise a number of tiers:

- A bottom anti-poverty tier, means tested, and financed from general revenues, which would provide income support for those without other means;
- A second pay-as-you-go defined benefit tier, mandatory and publicly managed, which would provide a moderate replacement rate (say around 40 or 50 per cent of lifetime average earnings) for all those who had contributed to it, and which would be fully indexed;
- A third tier which would be defined contribution based, mandatory up to a determined ceiling, possibly managed by private pension agencies, and which would provide a pension by means of annuities;
- A fourth tier which would be defined contribution based, voluntary, without ceiling and also managed by private pension agencies.

Geneva Association Four-Pillars Programme

The Four Pillars Programme has now been renamed the Life and Pensions Programme. Through this program, the Geneva Association advocates the consolidation of the sources of pension financing by encouraging complementary development of the second and third pillars and, more generally, the modernization of social security through greater integration of private insurance. In particular, the program aims to promote the idea of a "fourth pillar" – the continued employment of retirees, mostly part-time, to supplement resources from the first three pillars of pension financing, that is, income from part-time work after retirement.

According to the Geneva Association (2012a), the concept of the Four Pillars owes its origin to the fact that, in most countries, the funding of pensions is based on three pillars, and that there is a future need for a flexible extension of work-life, mainly on a part-time basis, in order to supplement income from the three existing pillars. The three existing pillars are: a) the first pillar – the compulsory, pay-as-you-go, state pension; b) the second pillar – the supplementary occupational pension that is often funded-based; c) the third pillar – individual savings including personal pension and assets and life insurance. The reorganization of end-of-career and the new age-management strategy, in which gradual retirement is destined to play a key role, lead to the establishment of this fourth pillar. The Geneva Association believes that the thinking behind the Fourth Pillar concept should now be extended to employment as a whole as generalised part-time work is destined to become the key to reconstructing our welfare society in the new millennium. The Association has also advocated the adaptation of the first pillar, the strengthening of the second pillar and the further development of third pillar resources.

Summarising the Conference Celebrating the 25th Anniversary of the Four Pillars Programme, the *Life and Pensions Newsletter* (Geneva Association 2012b) concluded that we have arrived at a global economic and political situation that presents a historical challenge to global retirement systems. The specific challenges to the four pillars have been found to be:

- In the first pillar, public finance of most nations is in such dire shape that some countries are actually contemplating reducing retirement benefits as a part of austerity measures;
- In the second pillar, employers have greatly reduced their commitment to guaranteeing pension benefits, and existing private pension plans are greatly underfunded, as a result of record low interest rates and turmoil in global equity markets;
- In the third pillar, private insurance firms are struggling with low rates of return, and unexpectedly high costs of previously offered guarantees; and
- In the fourth pillar, unemployment levels are at historical highs, with some developed nations seeing unemployment above 20 per cent for the first time since the Great Depression.

Thus, all four pillars for pension systems have been dramatically weakened by the recent economic events globally. These challenges apply to the ILO and the World Bank' tiers and pillars similarly. Nevertheless, pensions and retirement systems possess the long-term nature. While recognising the challenges, current low investment returns should not be used as an excuse for reducing future pension provisions that have many years to come. This is particularly significant for the second pillar pensions of the World Bank and the Geneva Association models, and the third tier pensions of the ILO model.

Comparative assessment and commentary remarks

Let us summarize the similarities and differences in pension model design between the World Bank, the ILO and the Geneva Association. The ILO advocated anti-poverty provisions, so its first tier in a pension system is the bottom anti-poverty tier. The World Bank followed the ILO's lead in pension system design by introducing a new pillar in 2005 to address poverty alleviation. Since there was a first pillar pay-as-you-go pension already in its previously proposed three-pillar model, the World Bank named this new pillar "zero pillar". While the World Bank expanded its pension model from both bottom side down and top side up, the Geneva Association did so for the upper side only. That is, there is no anti-poverty provision in the Geneva Association model. Likewise, the ILO has not extended its pension tiers upwards yet – it has stopped at the voluntary tier – equivalent to the third pillar with the World Bank and the Geneva Association's models. While both the World Bank and the Geneva Association expanded their models upwards, they proposed different fourth pillars. The Geneva Association is proud of its Four-Pillars Programme, in particular, the promotion of its fourth pillar – the continued employment of retirees, mostly part-time, to supplement resources from the first three pillars of pension financing. The continued employment of retirees is perceived by the Geneva Association as the most appropriate means to address the inadequacies in the traditional three-pillar pension system. In contrast, the World Bank resorts to family support, health care, and home ownership to supplement the other pillars in its pension model.

The multi-pillar approach of the World Bank follows closely portfolio theory for financial market investment, paying much attention to diversification to reduce and manage the risks of aging, which is claimed to deliver retirement income more effectively and efficiently. The rationale, as Holzmann and Hinz (2005) assert, is that the factors affecting each pillar are not perfectly correlated and, in some cases, have minimal or even negative association. Working with the conceptual framework, risks associated with each of the three original pillars are assessed by the World Bank (2008). The mandatory first pillar addresses the risks of individual myopia, low earnings, and inappropriate planning horizons due to the uncertainty of life expectancies, and the lack or risks of financial markets. It is also subject to demographic and political risks. The mandatory second pillar can subject the participants to financial and agency risks as a result of private asset management, the risk of high transaction and administrative costs, and longevity risks. The voluntary third-pillar compensates for rigidities in the design of other systems but includes similar risks as second pillars. However, with this three-pillar structure, the first pillar offers a promised basic pension, the second pillar delivers the primary source of retirement income, and the third pillar is supplementary. There is hardly a role for diversification in such a portfolio of pensions, as perceived in stock market investment. Given its nature, the first pillar involves no diversification. As "the third-pillar includes similar risks as second pillars", there is little diversification between them. The new conceptual framework for a five-pillar pension system (World Bank 2008) recognized the inadequacies in the original three-pillar system. Two new pillars were proposed accordingly. The World Bank did not deliberate on the risks associated with these two new pillars though. As the zero pillar is designed for poverty alleviation to provide all of the elderly with a minimal level of protection, it does not seem to involve risks. However, it is indicated that zero pillar social pensions would be available when "fiscal conditions permitting" (World Bank 2008). Therefore, the proposed zero pillar pensions are highly likely to be subject to political, social and budgetary risks. Likewise, there are great uncertainties in access to informal support and other formal social programs in the fourth pillar. The associated risks are also positively, sometimes highly positively, correlated with the risks in the second and third pillars. Consequently, the fourth pillar contributes little, if any, to the diversification of the pension portfolio. Therefore, its function is mainly to provide additional supplementary retirement income to the lower pillars, which is most likely to be inversely proportionate to the need.

In contrast, the ILO and the Geneva Association address the bottom tier/pillar and the top pillar differently. A bottom anti-poverty tier of the ILO is proposed to be means tested and financed from general revenues, which would provide income support for those without other means. It is not subject to budgetary constraints and is designed to be independent of fiscal conditions and immune to budgetary risks. On the other hand, instead of resorting to informal support and other formal social programs in the fourth and top pillar, the Geneva Association advocates the continued employment of retirees to supplement resources from the first three pillars of pension financing. This takes the form of part-time work and flexible employment after retirement. Recent experience tells us that, while overall unemployment is up during recessions, flexible forms of employment and part-time work are on the rise. If workers are more willing to be involved in part-time flexible work than those in the formal labour force, then the continued employment of retirees would not only alleviate shortfalls in pension provision, but also help boost the economy out of recession sooner. Moreover, the Geneva Association believes that "the thinking behind the Fourth Pillar concept should now be extended to employment as a whole as generalized part-time work is destined to become the key to reconstructing our welfare society in the new millennium" (Geneva Association 2012a). This is particularly crucial, as the continued employment of retirees, without reforms in formal employment, is subject to a range of institutional, legislative, social and personal rigidities or constraints.

The fourth pillar of the World Bank or the Geneva Association is either of little help or unfeasible currently nonetheless. Informal support, such as family support, is habitually embedded in a nation's culture, tradition and custom. There is rigidity in informal support - It is rigidly unviable to alter the patterns in informal support in a nation. The other fourth pillar elements in the World Bank model have the similar characteristics as informal support, deeply rooted in a country's institutions and governance structure. Fourth pillar elements of the World Bank do supplement retirement income in certain countries. But where/when they do, they are supplementing retirement income already, they can't supplement retirement income once more. Where/when they are not available, the cultural and institutional rigidities indicate that they won't become available easily without transforming the culture and reforming the institutions. Likewise, the fourth pillar of the Geneva Association won't be easily implemented without reforming and transforming the entire employment system, formal and informal. This is further complicated by increasing/increased retirement ages and the corresponding legislative changes.

Conclusions

We have reviewed and made comparative assessment of the three models of pension systems by three leading international organizations, the World Bank, the ILO and the Geneva Association, in this paper. Our comparative assessment has summarized the similarities and differences in pension model design between them, which help further research in this field with policy implications.

The consensus is that there is a need to supplement current dominant pension provision pillars, be it state pensions or occupational pensions, in the type of DB or DC. These would be the second and third pillars of the World Bank model and the second and third tiers of the ILO. With regard to the Geneva Association model, these are primarily its first pillar, while involving its second pillar. There are a number of differences though. Firstly, the World Bank followed the ILO by adding an anti-poverty pillar – the "zero" pillar, which differentiates the Geneva Association model. Secondly, Both the World Bank and the Geneva Association expanded their models upwards to bring in a fourth pillar, while the ILO did not. Thirdly, although the World Bank and the Geneva Association added a fourth pillar to their models, they proposed different fourth pillars – the former resorting to family support, health care, and home ownership and the latter focusing on a flexible extension of work-life or the continued employment of retirees.

It is concluded that the ILO has rightly not proposed yet a tier beyond the voluntary tier. The fourth pillar of the World Bank that puts emphasis on family support, or the fourth pillar of the Geneva Association that advocates continued employment of retirees, is either of little help or unfeasible currently. The last decades not only experienced demographic changes but also witnessed social changes around the world. A particular social change is the weakening of the extended family system used to be rooted in some developing countries' culture and custom, which has been traditionally non-existent in the west. Against this backdrop, the role of the World Bank's fourth pillar has already been diminishing at the time of its embarking on the world stage. It can't supplement the other pillars but some of its elements have to be supplemented. Likewise, with world-wide trends in increasing retirement age, the role of the Geneva Association's fourth pillar is insignificant for the time being. But the Geneva Association rightly pointed out the future need for a flexible extension of work-life, which should be seriously studied with regard to its feasibility and implementations.

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