

A Review of Pension System Reform: An In-Depth Analysis on Related Theories

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ABSTRACT

The literature on pension reform is increasingly growing examining different aspects of pension matters including but not limited to the nature, types of classifications, effects, challenges and prospects of pension reforms. The importance of pension reforms is credited to its potential to guarantee a sustainable pension scheme that provides with a decent life to pensioners and their dependents. This research gives a detailed analysis on pension reform theories such as economic theory, multi-pillar model by the World Bank, theory of utility and preferences and life cycle theories. It further discusses the three retirement decision models: two-thirds retirement decision model, the option value retirement decision model and one-year retirement decision model used in explaining various decisions relating to retirement and also the forms of retirement benefits payments. Finally, it discusses the four approaches by which pension reforms can be analyzed.

Key words: pension reform, retirement decisions, pensioner benefits, pension system

INTRODUCTION

Pension reforms are key to place proper economic incentives so that they improve compliance with obligations, reduce labor market distortions, increase savings and accelerate financial market development (Idowu, 2006). A pension reform despite the original high cost should be considered as an investment which will yield returns of investment (Imhanlahimi and Idolor, 2011). In addition, an adequate pension reform can allow the pensioner to continue being a useful member of his/her community. Further to this, a pension reform is of importance since it has been proved that it leads to structural reform, for instance in the Least Developed Countries (LDCs) with establishment of new structures that remove the burden of pension administration from the governments.

Another reason for pursuing a pension reform is how pension reform can guarantee the financial durability of the pension system (Imhanlahimi and Idolor, 2011). A synthesis of the literature and theories explored suggest that there is the issue of acceptance of a particular pension scheme to the workforce for the sustainability of the scheme. Once that is achieved, certain key features of a good pension design include as Fornero (2013) summarizes it: good diversification of risks (i.e. a mixed pension provision, partly public and PAYGO and partly private and funded), Good correlation, at the individual level, between contributions and benefits to enhance the “saving” role of a pension scheme, direct correlation of benefits to the age of retirement (actuarial principle), no “implicit taxation” of pension wealth with the postponement of retirement, uniformity of rules, with limited and transparent exceptions, a balanced combination of mandates and choices (responsibilities) and financial literacy

LITERATURE REVIEW

Pension Reform Theories:

This section addresses on the following: economic theory and its implications for policymaking, the multi-pillar model by the World Bank, the theory of utility and preference and life cycle theories of pension.

Economic Theory and Implications for policy

Focusing on economic principles, it is possible according to Barr and Diamond (2009; 2010) to frame policy design for pension reform based on certain conclusions. First, the analysis and design should consider the pension system as a whole. Pension design affects the labor market, economic growth, the distribution of risk, and the distribution of income, including effects by gender and generation. It is significant not to design one part of the system, since there can be no gain from an actuarial second-tier pension drawing on the need to relief poverty in the first-tier Barr and Diamond (2010). The analysis should focus on the combined effect of the system as a whole which can be pursued by simultaneously considering the parts of the pension system Barr and Diamond (2010).

Secondly, the economic crisis has provided with some key lessons that should drive pension reform. The most important is perhaps before embarking in the design of a reform to explicitly ask how risk should be shared. In pure funded individual accounts, all of the risks fall on the worker, which is unbearable for some people. One proposition would be to distribute the risk by buttressing individual accounts with a tax-financed noncontributory pension.

As a country's economic and administrative capacity grows, there are pension system options available. In general, it is important to remember that pension systems have multiple objectives; different pension systems

share risks differently, both across people and over time; there is no single best pension system; pensions should be analyzed in a second-best context, that is, taking account of market imperfections and other distortions; and a move to funding may or may not be the right policy (Barr and Diamond, 2010).

Multi-Pillar Pension Model

There exist two perspectives in regards to policy debate on pension reforms: The Anglo America perspective and the more “old school” European welfarist perspective (Baroni, 2007). In this subsection, the focus is not the Multi-pillar approach or Model introduced by the World Bank which falls within the Anglo-American perspective. The latter perspective emphasizes on the normative approach that private funded supplementary pension arrangements should dominate over public provision. The underlying rationale behind the Anglo-American approach is an obvious critique of PAYG systems (Baroni, 2007). Minns (2001) provides with a useful summary of the core-shared claims of proponents of the Anglo-American model:

1. Pay As You Go (PAYG) are undermined by demographic changes, i.e. increasing dependency ratios.
2. The present value of state pension benefits to be paid between now and 2030 exceed the present value of expected contributions by two or three times the present value of GDP for most OECD countries, hence taxation will have to increase.
3. State expenditure on pensions is high, at 12-15 percent of GDP in most European countries.
4. The State is unreliable in keeping its promises, while crowding out private savings for retirement.
5. The private sector appears better at creating and using savings for increasing investments and thus the growth required for increasing pension claims.

The Anglo-American approach essentially strongly suggests moving away from a redistributive emphasis and encouraging insurance and personal savings instead to address the aging challenge. The proposition is therefore that the explicit focus of future social security systems should be in savings and work, mainly by shifting from defined benefits to defined contributions systems (Baroni, 2007).

The objective of the Multi-pillar policy framework based on the above understanding of the Anglo-American approach entails a shift towards a more general reform to a country’s pension system as a whole (i.e. involving a strategy to reform simultaneously its public, private and occupational systems). This is important to this research as such a move is more likely to take place in developing countries such as India, which are building a system from scratch (Baroni, 2007).

According to Baroni (2007) crucial elements in a pension reform include as shown in Figure 3, the Degree of Actuarial Fairness, Benefit Type and Degree of Private Funding.

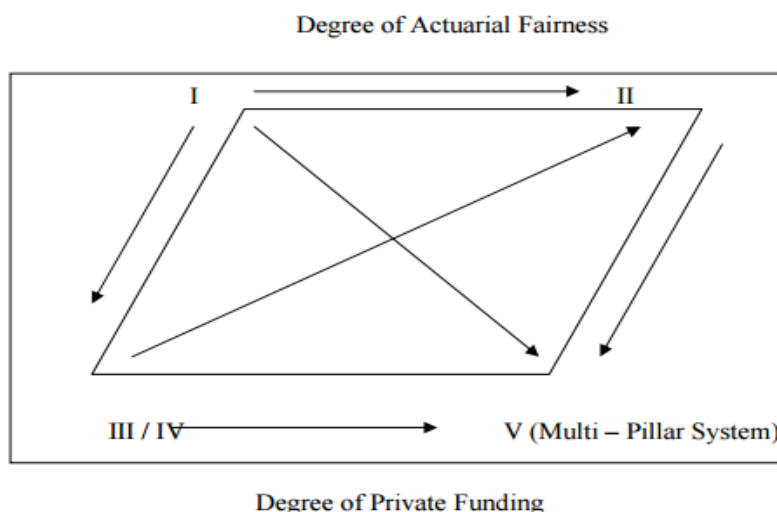


Figure 1: Types of Pension Reforms in the Policy debate. Source: Baroni, 2007.

Source: Baroni, E. 2007

A Multi-pillar system (i.e. something which includes both a Type I, or a Type II, and a Type IV system) focuses on what is perceived as the most crucial topic in the policy debate which is the extent of funding and whether funding should be the best financing mechanism for the public system (Baroni, 2007). The Multi Pillar approach, is considered as a structural approach to pension reform which is in contrast to other strategies like parametric

approaches to reform where unfunded pension systems are “corrected” through policies changing some of their existing parameters, e.g. raising the retirement age, reducing the value of the benefit offered. However, the focus here is on the Multi-pillar approach to reform since, despite the strong influence from the funding perspective, it allows for a combination of both structural and parametric approaches to reform.

Following this line of thinking, in terms of the graph that captures key reform alternatives in the policy debates (Figure 2.2) proposed by Baroni (2007), the Multi-pillar model essentially would entail a shift from any pension system type to a system of type IV. If the country does not hold a pension system, type IV could function as a blueprint for setting up the “optimal” system. The Multi-pillar model is made of three parallel “pillars”: namely a small mandatory, publicly managed (unfunded) defined benefit PAYG scheme (first tier), a substantial mandatory privately managed (funded) defined contribution scheme (second tier), and a voluntary private funded scheme (third tier). The World Bank has added a new “zero tier” in its 2005 report, aimed to work as a non-contributory minimum pension for the very poor and those with no working history. Still, this latest addition should be considered an integral part of the public “first tier” (Baroni, 2007).

Various organizations have proposed what each of the three tiers as proposed by the multi pillar model should be composed of. The three tier propositions of the OECD as applied by the European Union (EU), World Bank and the International Labour Organization (ILO) are as described in Table 2.1 below.

Table 1 The three tier propositions of the OECD as applied by the European Union (EU), World Bank and the International Labour Organization (ILO).

	Organisation for Economic Co-operation and Development (the EU)	The World Bank	International Labour Organization(ILO)
1ST pillar	Publicly managed pension scheme with defined benefits and PAYG finance, usually a payroll tax.	A relatively small (means tested, minimum pension guarantee or flat benefit), publicly managed, PAYG, defined benefit pillar.	A minimum anti-poverty pension, universally available but means tested, financed possibly directly from general revenues and indexed
2ND pillar	Privately managed pension which are provided as part of an employment contract.	A privately managed (personal savings plan or occupational plan), mandatory, regulated fully funded, defined contribution, pillar.	A mandatory public PAYG social insurance pension which would provide a reasonable replacement rate. It would be fully indexed against inflation. In addition, it would be subject to a ceiling.
3RD Pillar	Personal pension plan in the form of saving and annuity schemes.	Voluntary, individual account (personal savings plan or occupational plan), privately managed.	A fully funded contribution scheme, perhaps privately managed, which would supplement the public scheme. This would include occupational as well as individual schemes. Their operation would need to be closely monitored and regulated.

Adapted From: World Bank (1994); Gillion (1999) & Yermo (2002)

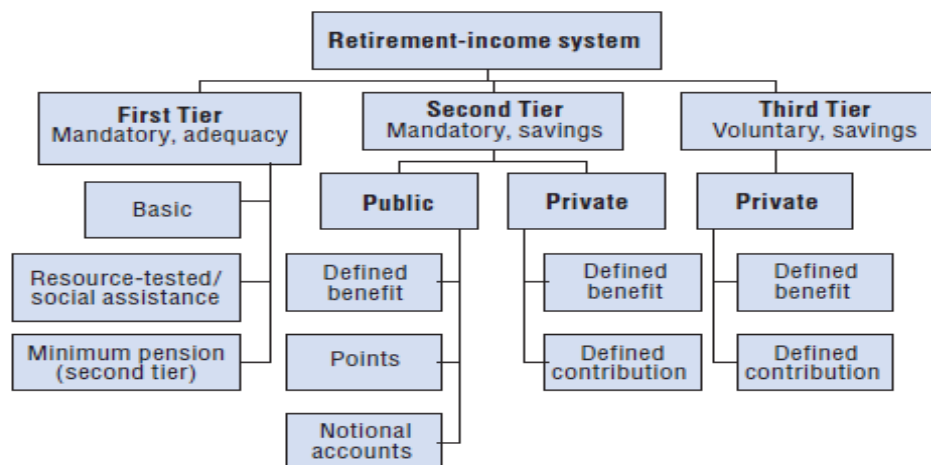


Figure 2: Taxonomy: Different types of retirement-income provision (OECD , 2015).

Source: OECD 2015

1ST Pillar Propositions:

Under the 1st pillar, the OECD proposes that the pillar should be composed of a pension scheme that is publicly managed and is based on the Defined Benefit framework. The DB public pension system according to the OECD should be under the PAYG framework with a designated payroll tax used to meet the pension liabilities and obligation when they fall due. The payroll tax revenue established by the government used to pay the pension benefits under the tier 1 (Yermo, 2002). The World Bank on the other hand proposes that Tier 1 should be composed of a relatively small pension mean tested pension scheme with a flat rate benefit.

The first pillar is also based on the Defined benefit framework similar to the OECD proposition but the main difference under the World Bank framework is that the 1st pillar is constituted of a relatively smaller pension scheme as opposed to the large public scheme under the OECD framework (World Bank, 1994). The International Labor Organization (ILO) on the other hand takes a slightly different approach for the 1st Tier in the pension system. The ILO proposes that the 1st pillar should be composed of a pension that is geared towards poverty alleviation for the retired. The ILO proposed that the minimum anti-poverty geared pension should be available to all in the population. The pension benefit in under this 1st pillar should not be just a flat rate but a flat rate that has been mean tested to ensure equitability.

The ILO proposes that the anti-poverty pension benefit should not be financed from a particular payroll tax revenue set up by the government but rather from the general revenue that has been generated by the government. From the first pillar, we can see that the difference in the three proposals is in terms of the size of the pension scheme, the funding mechanism and the benefit payment framework.

2ND Pillar Propositions:

Under the second Pillar the OECD proposes that the Pillar should be constituted of employer provided privately managed pension schemes. Under the second pillar OECD proposes that there should be well-structured privately managed employer pension schemes that are provided by the employers as part of the employment package. Under the OECD proposal the both the employer and the employee should make contributions to the pension fund at an agreed rate. The contributions in the privately managed pension scheme are based on the employee's earnings and the funds are managed by a private pension investment fund selected by the employer.

Under the World Bank proposal, the second pillar should be composed of a privately managed pension scheme that is a form of personal retirement saving. The pension schemes under the second pillar can also be a form of occupational retirement plan. Under the World Bank proposal, the membership in the second pillar should be made mandatory for all the employed and the other willing unemployed persons. The World Bank proposed that the pension schemes in the second pillar also need to be fully funded and based on the Defined Contributions framework.

The ILO on the other hand proposes that the second pillar should be composed of a PAYG social based insurance pension that will ensure that the retired get a reasonable rate for their employment income when they retire. The ILO proposed that the pension scheme should have full indexation and this will ensure that all the inflationary effects are factored into the pension benefits calculations. The ILO proposed that the pension benefit that is paid should have both a lower and an upper ceiling whereby the pension benefits are payable up to a defined maximum amount.

3RD Pillar Propositions:

Under the OECD proposition the 3rd pillar should be composed of personal pension schemes. Under the third pillar the personal pension plans is composed of two major components that include the personal savings schemes and the annuity based personal plans that allow the individuals to earn annuity payments on retirement. The personal savings can also be withdrawn before retirement by the contributors for various reasons. The savings under the savings pension plans enable contributions towards savings for various purpose that include retirement savings, purchase of asset and other future expenditures.

The World Bank proposes that the third pillar should be composed of personal saving plans that have the following features; the schemes should be voluntary in nature thereby allowing the contributors to contribute any amount that they wish to contribute and there is segregation of the contributions into individual accounts. The schemes are also privately managed by privately owned pension management companies and there is much more flexibility in the pension management.

The ILO proposes that the third pillar should be composed of fully funded pension schemes that are privately managed. The privately managed schemes perform the role of complementing the public schemes and include both the individual and the occupational based pension schemes. ILO also notes that though the schemes are privately managed there should be close monitoring and regulations for the scheme to avoid fraud and to protect the member's rights.

Theory of utility and preference.

The theory of utility and preference acknowledges how it is not always possible to sustain all data needed in monetary terms for developing alternative decision-making. In this sense, some decisions can be taken partly on subjective valuation. In such a perspective, a high risk, untested decision is not assured since it does not enjoy consumer or user or beneficiary acceptance (Imhanlahimi and Idolor, 2011). Nevertheless, preference should be given to the high-risk decision in which utility, determined as inherent quality or value, is more assured to be constantly occurring rather than the low risk decision where utility is not assured.

Life Cycle Theory

The theory of Life Cycle relates to consumption pattern and saving decision of the individual and is mainly based on Modigliani and Brumberg cited in Idowu (2006). Consumption according to this model is a function that a person undertakes through a lifetime of wealth whether it is financial, real assets and expected value of future income. The pattern of income does not affect the pattern of consumption according to this theory except in the exception of pension reform plan (Imhanlahimi and Idolor, 2011). In this case, the pension reform plan can influence the wealth of a future pensioner. The theory suggests that pension reform can affect saving rate of the participant in a pension plan by affecting the average wealth gained.

The latter results from the fact that a sustainable pension plan lead to great financial resources for further investment earnings that could lead to a significant redistribution of income, and therefore increased wealth to pension contributors. In effect, the previous can encourage increased or sustainable saving propensity (Imhanlahimi and Idolor, 2011). Conclusively, it can be said that the pension reform can potentially change or affect the life cycle. It should be noted though that this theory can be influenced by economic depression such as economic recession and management.

OTHER PENSION REFORM MODELS:

Retirement Decision Models

There exist three retirement decision models that can be used to explain the various decisions relating to retirement. The three models that we will look at include; Two-thirds retirement model, Option-value model and One-year retirement model (MacDonald & Cairns, 2010).

(a) Two thirds retirement Decision model:

The two-thirds model proposes that a member who has subscribed to a direct contribution scheme retires once the balance that is in their DC account is such that it can be able to replace at least two thirds of the current income that they are earning. The pension that is to be purchased by the member is calculated by dividing the accumulated pension wealth by a computed life annuity factor. The pension that is purchasable by the individual at a time (t) is calculated by multiplying the pension wealth that the individual has accumulated up to that particular time by a predetermined life annuity factor. The replacement ratio is computed using the following formula below as adopted from (MacDonald & Cairns, 2010).

$$RR(t) = \frac{PW(t)/\bar{a}_x(t)}{Y(t)}$$

Where:

t : current time;

x : member's current age at time t ;

$\bar{a}_x(t)$: the annuity factor at time t for an individual aged x (see Appendix B for formula);

$PW(t)$: the worker's accumulated DC pension wealth at time t ; and

$Y(t)$: the worker's earnings at time t .

The plan member retires as soon as the replacement ratio exceeds two-thirds; that is:

$$\text{Retirement Age} = \min \{ x : RR(t) \geq \frac{2}{3} \}.$$

Source: (MacDonald & Cairns, 2010).

From the above model, we can conclude that the retirement age is determined by the wealth stock and the increase in the wealth stock beyond the normal growth level may promote the workers to retire early. If a worker's wealth portfolio experiences super normal growth the worker may opt to retire if the wealth stock surpasses the 2/3 rd. criteria as defined by the two-thirds retirement Decision model (MacDonald & Cairns, 2010).

(b) The Option Value Retirement Decision Model:

The option value model is a two-option comparison model that looks at two options when making pension retirement decision. The model proposes that there are two options that an individual with a DC pension looks at when making a decision of whether to retire or not. The first option is the choosing to continue working and the other option is the decision taken to retire from employment. Under this theory the worker uses intuition to decide which of the two option is more valuable.

The worker under this model retires when it's more valuable for them to retire. Some of the assumptions of the Option value model include; the retirement decision is evaluated each year by the workers with the pension plans to take into account new information that has become available over the past year. The individual who is considering retirement analyzes all the possibilities relating to the pension when making the decision to retire or not to retire. Some of the factors that the retirement decision is based on include; the current accumulated wealth stock, the current employment earnings, risk aversion related to the stability of their income levels, leisure desire of the employed individual and the annuitization prices available in the market.

(c) One Year Retirement Decision Model:

The One Year retirement decision model and the option are similar in a way but the One-year retirement model only considers the benefits that are due to the worker over the next additional year. Under the one-year retirement model the retirement decision is made every year to take into account new information affecting the retirement decision that has become available. The decision whether to retire or not is made based on the analysis of the cost and benefits of both remaining in employment and retirement. This model only considers the one-year horizon when evaluating the future cost and benefits of remaining in employment of retiring.

FORMS OF RETIREMENT BENEFITS PAYMENTS.

There exist three main form of retirement benefit payment that can be used to pay pension benefits on retirement (Antolin, Pugh, & Stewart, 2008). The three forms of retirement payments include; Lump sum payment, Programmed withdrawals and life annuity benefit payment.

(a) Lump sum Payment.

Under the lump sum retirement benefit payment method, the retiree is paid the entire accumulated amount of the pension capital. The retirement benefit under this method is paid on attainment of the pensionable age or on the maturity of a retirement benefit plan that was set up as a savings retirement plan. Example of countries that have

adopted the lump sum retirement benefit include; India, Hong Kong, Philippines and Thailand.

(b) Programmed Withdrawals.

Programmed Withdrawals retirement benefit payment entails the drawdown of the retirement benefit capital in a form of fixed or variable payments. The fixed and variable payments are drawn from the accumulated retirement benefit capital plus any extra return earned later by the retirement fund capital. Programmed withdrawal retirement benefit payment does not involve any longevity guarantees and are simple to calculate compared to the complex calculations involved in annuity retirement benefit payments. One common form of programmed retirement benefit payment is the annuity certain whereby the retirement benefit capital plus the interest earned is paid over a fixed period of time and the payments per each period are equal.

(c) Life annuity.

Life Annuity retirement benefit payment entails payment of the retirement capital through a stream of payments to the retiree as long as the retiree lives. The life annuity payments may also have additional guarantees whereby the benefits are paid to the surviving spouse even after the death of the retiree. The main advantage of the life annuity retirement benefit payment method is the fact that the benefits are fixed and are paid to the retiree for the remainder of their life after retirement.

CONCLUSION

According to the literature and in particular Baroni's research (2007) and Karam, et al. (2010), pension reform can be analyzed from four approaches:

A theoretical side: Using statistics to derive the 'costs of negative population growth on different pension system designs and how different reforms can affect the cost rates as well as delivering the objectives set by these pension systems.

A policy side: The focus here is on either reforming current pension systems based on empirically grounded beliefs such as the one relating to system funding to correct shortcoming associated with pension arrangements by shifting risks to individuals.

Microsimulation modeling: This approach could provide a solution to the debate of the previous latter approaches by offering a methodology to assess the flaws and virtues of different reform proposals grounded in quantitative empirical analysis and computational power. More specifically, a microsimulation model can be used first to simulate income distribution under a given pension system (named static microsimulation); secondly to simulate future public and/or private pension accumulation and dissimulation over life cycle under a given pension scheme; and third to simulate effects of reforms to this given system on (life-cycle) income distribution and costs. Dynamim microsimulation is a tool for analyzing non-linear pension systems by simulating individual trajectories of heterogeneous economic agents over their life course.

In the essence of these microsimulation models lies the ability to reproduce the demographic and economic composition of society, from the bottom up. Essentially the output is on entire distributions of key individual variables such as disposable income for the years to come although obviously, these distributions will be affected by underlying conditions such as demographic trends, or institutional rules which affect people's transitions and behaviors. Dynamic microsimulation models are therefore valuable and have often been applied to pension analysis (e.g. Dupont, Hagnere', Touze', 2003; Flood, 2003, Curry, 1996) since they can provide with insights on the long-term impacts of pension reform apart from aggregate costs and financial sustainability, on individual pensioners' welfare, future income and intra as well as inter-personal redistribution. In addition, these sorts of models allow to determine whether effects observed are caused by demographic or institutional changes, and finally compare also across systems and populations. It is therefore meaningful to employ microsimulation modelling to specific country contexts and reforms.

GIMF's Structure Model analysis: Drawing on research conducted by Karam, et al. (2010) an another interesting Model to consider as a framework for analyzing and evaluating the short and long run effects of planned pension policy actions that could inform this research is GIMF, a dynamic stochastic general equilibrium model used inside the International Monetary Fund. Underlying the GIMF's structure are key issues to analyze the positive effects of achieving fiscal sustainability in regards to aging and at the same time examine the normative aspects of adjusting public policies to changes in demographics.

Karam, et al. (2010) cohort that the multi-country structure of GIMF allows to consider the impact of public pension reforms on investment decisions and an analysis of global interdependence and spillover effects. The GIMF makes use of an interwoven mixture of non-Ricardian features with a number of nominal and real adjustment costs to emphasize the potential interaction role of fiscal and monetary policies. The model comprises of three groups of agents and sectors: households, firms, and the government (Karam, et al. 2010).

ACKNOWLEDGMENT

The authors would like to thank anonymous reviewers for their valuable comments. We are grateful to the financial support provided by the major project of the National Social Science of China (no.12BGL110). We wish to thank The School of Management, Jiangsu University for their valuable support. We are also very thankful to PhD scholar Miss Tehzeeb Mustafa and Mr.Numair Nisar for their valuable suggestions.

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