RETIREMENT INCOME SYSTEMS FOR DIFFERENT ECONOMIC, DEMOGRAPHIC AND POLITICAL ENVIRONMENTS[1]

John Turner
ILO

1. *This paper was commissioned by the ILO as one of a series of papers on an Operational.*

TABLE OF CONTENTS

RETIREMENT INCOME SYSTEMS FOR DIFFERENT ECONOMIC, DEMOGRAPHIC AND POLITICAL ENVIRONMENTS

JOHN TURNER

1. Introduction

1. Three billion people around the world live on less than US$2 a day. These people primarily live in Africa and Asia. The poverty of these people should be a concern to the global community. They typically rely on family arrangements to provide income when they are unable to work due to disability or old age. A complex retirement income system would not be appropriate to meet their needs. Where possible a system that transfers income to them in old age from fellow citizens with higher income would be desirable.

2. The level of economic development, the population age structure and political factors affect the retirement income systems appropriate for different countries. As the economic, demographic and political situation in a country changes, changes in retirement income systems may also be required. Because of the interaction between social security old age systems and development, retirement income systems evolve over time.

3. Three factors are key in determining the retirement income system best suited for a country. First, the retirement income system best suited for a country depends on value judgments of the country's citizens concerning the goals of social security. It depends on prevailing attitudes in the country concerning the role of government in society. For example, the prevailing attitudes towards compulsion versus free choice, and towards individual responsibility versus collective responsibility are important in determining the structure of retirement income systems. The attitudes in society towards the responsibility of government concerning the needs of poor older people affects the structure of social security.

4. Second, the government's ability to manage a social security system is also important in determining the system best suited to a country. Many countries have had serious problems managing their social security systems. These problems have been caused by flaws in the design of systems, difficulties in collecting contributions, and inefficient management. The governance capabilities of countries limit the types of retirement income systems they can successfully operate. Governance capabilities tend to improve as countries develop.

5. Third, the relative efficiency of alternative arrangements to governmental-provided old age benefits affects the type and generosity of social security system that is best suited for a country. For providing retirement savings, the comparative advantage of capital market financing increases over time as capital markets develop. Reductions in the labour force growth rate and the rate of growth of wages also reduce the desirability of pay-as-you-go social security financing. These factors change as countries develop.

6. Pay-as-you-go financing is labour market based while financing through funding is capital market based. The two sources of financing are subject to different risks, suggesting that the optimal approach may be a complex system that incorporates both. Thus, while it is useful to compare the merits of defined benefit versus defined contribution plans and pay-as-you-go versus funded plans, the question is not which type of plan is best but rather how can the strengths and weaknesses of the different types of plans best be combined within a retirement income system.

7. Retirement income systems have become more complex as countries have developed and as countries have learned more about the structure and management of retirement income systems. The earliest government systems focused on means-tested assistance programs. They were followed by government-sponsored social insurance, which first developed about a century ago. In many countries, such as the Netherlands, Norway and Sweden, social security retirement income schemes initially only provided flat benefits, with an earnings related benefit added later. Over time, the number of countries with such systems has grown (Table 1). Employer-sponsored occupational pensions have grown greatly in importance during the second half of this century in OECD countries, while in most countries of the world their role is minimal. Increasing complexity in retirement income systems is desirable because it provides greater diversification against risks.

8. The reform of retirement income systems is being debated in countries around the world. What should be the roles of social security pension benefits, occupational pension benefits, individual account plans, private savings, pay-as-you-go schemes versus funded schemes, defined contribution versus defined benefit schemes, mandatory versus voluntary benefits, and means tested or income tested benefits? What should be the roles of work, family and charity in providing income at older ages? What economic, demographic, political, or institutional factors cause the answers to these questions to differ in different regions of the world?

9. Countries need to consider the structure of retirement income systems within the larger framework of social expenditures. A balance must be struck between the well-being of the elderly and the well-being of the nonelderly. In addition, in more developed countries a balance needs to be achieved between health care expenditures on the elderly and cash benefits.

2. Determinants of the structure of retirement income systems

10. Three factors are key in determining the structure of retirement income systems. Each involves a comparison of the government versus the private sector:

1. Attitudes or political philosophies towards the appropriate role of government versus the private sector and the responsibilities of individuals and families,

2. Governance capabilities of government--its capability to collect contributions, manage investments, and pay benefits versus the capability and cost of doing these functions in the local capital market with financial institutions,

3. Evaluated within a retirement income portfolio, the risks and expected rate of return of government provision of retirement benefits versus private sector provision of funded retirement benefits. These three factors are each discussed in term.

3. Political philosophies concerning the role of the state versus the private sector

11. The role of government in retirement income systems is affected by the prevailing political philosophy within a country as to state versus individual responsibility, and correspondingly, compulsion versus free choice. Competing political philosophies are based on different concepts as to how society can best meet human needs. They differ in their views as to the ability of individuals to meet their own needs.

12. One political philosophy can be characterized as laissez-faire--the state has no responsibility for the retirement income of the individual. Thus, the state should be not make retirement saving by individuals compulsory. Individuals should be free to make their own decisions, including their own mistakes, without the interference of a government bureaucrat. Individuals know best what is in their own interest. Bureaucrats, who tend to be more educated than the general population, tend to view their values as superior and impose their values on others. Besides, according to this viewpoint, bureaucrats are inefficient in managing programs because they are not subject to competition and the profit motive.

13. All individuals belong to families. The family has primary responsibility for its members. Beyond that, private charity has a role to play in caring for the needy. Governmental programs displace the rightful roles of individual responsibility, family and charity. While the laissez-faire philosophy has not been adopted by any country, elements of it frequently enter debates over the structure of retirement income systems.

14. Recognizing the important roles of individuals, families, charity and employers in providing retirement income security, social security policy makers generally accept that the state also has a role. While most decisions are best left to individuals, decisions concerning retirement savings are particularly difficult for individuals to make. They are difficult because of the long time frame involved, extending over a period of 20 or more years.

15. Within this consensus, people differ as to the proper role of state versus private responsibility. Some feel that the government should be restricted to mandating a minimum level of saving, regulating the voluntary part of the retirement income system, and providing a social safety net. This approach can be characterized as an individualistic approach. This approach favours retirement income provided through mandatory individual account plans managed in the private sector, with minimal income transfers through government programs. It places considerable responsibility on the individual. It mistrusts government, arguing that government mismanages programs and resources. Activities should be left as much as possible to the private sector, which is more efficient.

16. Opposing the individualistic viewpoint, adherents of the social insurance perspective argue that government should reduce the effects of risks facing individuals. It should make their lives more economically secure by providing social insurance (ILO 1984). This approach sees the fundamental purposes of social security as being to relieve poverty, to reduce income inequality from that determined by market forces, and to provide a guarantee of security against social and economic risks (OECD 1984). It views the market as producing a distribution of income that is socially unjust, being too unequal. Social insurance has an important role in achieving social justice by distributing more fairly the resources in society. It helps reduce social conflict and achieve social solidarity. The traditional social security programs in Europe, Japan, and North and South America are social insurance plans designed to provide income transfers between groups. The social insurance approach uses government to facilitate intergenerational transfers and transfers across income groups within a generation.

Table 1. The Number of Countries with Mandatory Old Age Security Programs Has Increased

Year	Number of countries
1940	33
1949	44
1958	58
1967	92
1977	114
1989	135
1993	155
1995	166

Source: US Social Security Administration (1995).

Table 2. Types of Mandatory Systems of Old Age Benefits in 1995

Type of system	Number of countries
Total countries (systems)	166 (201)
No social security system	6
Mandatory public savings	19
systems	5
Mandatory private savings	5
systems	25
Non contributory universal	18
system	133
Contributory means tested	
system	
Contributory falt benefit	
system	
Contributory earnings-related	
system	

Source: US Social Security Administration (1995).

17. The social insurance approach is the dominant approach worldwide (Table 2). Out of 166 countries in 1995, 6 countries (4 in Africa, 2 in Asia) did not have a mandatory program for providing old age benefits, 5 countries (all in Central and South America) had a mandatory private savings program, and 133 countries had traditional contributory defined benefit earnings-related programs.

18. Thailand has not had a government program providing old age benefits but is scheduled to have such a program in 1998. Bangladesh does not have a program providing old age benefits to all its citizens but does have such a program for public sector employees. In India and some other countries, employees of firms providing equivalent occupational plans may withdraw from the public sector plan.

3.1 Political Philosophies and Goals

19. The basic goal of social security is to reduce or prevent poverty among the elderly. To meet this goal requires a system that transfers income to low income elderly. Often when social security systems are first started, their primary focus is on this goal (Wheeler and Kearney 1996). One of the challenges in

designing social security systems is to develop a system that alleviates poverty but does not discourage work and savings by low income workers.

20. As social security systems have developed, they have adopted a more ambitious goal--an adequate retirement income for all elderly. This goal is sometimes expressed as the smoothing of lifetime consumption. Retirement income adequacy is measured by the replacement rate--the percentage of income while working that retirement income replaces. The target replacement rate should be higher for low income workers than for high income workers because the consumption of low income workers is a higher percentage of their income. One possible goal is to provide a replacement rate from all sources of retirement income such that workers with average and below average income are able to enjoy the same standard of living in retirement that they enjoyed while working.

21. Other goals include to ease economic transitions for countries making the transition from command to market economies. Defined benefit social security benefits can be an important aspect of the social safety net in those situations. Another goal is that old age benefits should be protected in real value against the effects of inflation during retirement. The old are vulnerable to inflation because they generally cannot reenter the labour market to maintain their consumption if the value of their retirement benefits erodes.

22. The social insurance approach argues for an expanded government role to alleviate economic risk through risk sharing. Social insurance can reduce the effects of risks workers and their families face by providing insurance unavailable in the market. There are at least two significant sources of risk to individuals that the market does not provide insurance against but that social security social insurance can be structured so that it does.

23. First, In every society, the circumstances of the family one is born into have a large effect on one's economic well being. The economic circumstances of one's birth family are in many countries the largest risk factor affecting individuals. Social security can insure against the economic risks associated with being born to a poor family by providing income transfers to retirees who have had low lifetime earnings. These transfers reduce the economic effects of risks in society, making everyone better off (Rawls 1971). If these risks decrease as countries develop, that would reduce the need for social insurance. Evidence indicates that in the United States a person's socioeconomic background has declined in importance in terms of its effect on the person's income as an adult (Urban Institute 1997).

24. In this perspective, upper income workers could have had the misfortune of being born into poor circumstances. They or their children may suffer economic misfortune. They receive an insurance benefit from a social security system that is of value to them even if they do not make a claim on the insurance.

25. Second, another form of insurance not available in the market is insurance against wage variability. Social insurance programs can be structured so at to reduce the effects of risks workers face that arise due to the variability in their wages. It does so through establishing a progressive benefit formula.

26. The social insurance form of social security attempts to redistribute income more fairly than the distribution resulting from market forces. In doing so, social security may contribute to social peace in society. A goal of social security is the promotion of social justice, with this goal leading to greater solidarity and less conflict in society.

27. Macroeconomic goals are secondary goals of social security. They are secondary goals not because their importance to society is secondary but because other policies and programs of government

are better suited to meeting these goals. Governments have other policy instruments, such as tax policy concerning saving and investment and policy concerning infrastructure development, that are better suited to encouraging growth. Nonetheless, an important goal of social security is to not discourage savings and growth. Related macroeconomic goals include full employment and labour market flexibility. Related microeconomic goals include lack of distortion of incentives in labour and capital markets.

4. Governance

28. Governments differ in their capability to manage a social security system. Some countries have relatively efficient, professional bureaucrats while other countries have corrupt or inefficient bureaucrats.

29. Among small countries, population size may be a factor in the availability of workers with the specialized skills needed to run a social security system. Small countries may not have actuaries, economists or lawyers trained in the social security field. They may not have the capability to regulate financial market investments. While most of the people in the world live in large countries, most of the countries of the world are small. Roughly half the countries in the world, more than 80 countries, in 1995 had populations of less than 2 million people. Thus, in small countries country size may play an important role in determining social security governance capabilities.

5. A portfolio approach to retirement income system design

30. When countries design social security systems, an important decision is whether retirement benefits should be unfunded, partially funded or fully funded. Traditional defined benefit social security plans are unfunded or partially funded while defined contribution plans are fully funded. However, the distinction between funding and pay-as-you-go is not necessarily one between defined benefit and defined contribution plans. A country wishing to have a funded social security system has the choice of having a funded defined benefit system or a funded defined contribution system.

31. An approach to analysing pay-as-you-go financing versus funding concerning their mandatory savings role compares the rates of return of the two financing methods.[2] Under simplifying assumptions, the internal rate of return to pay-as-you-go social security equals the growth rate of the labour force plus the wage growth rate.[3] Because declining population growth due to declining fertility generally accompanies growth in per capita income, a decline in the rate of return to social security appears to be an inevitable consequence of economic development.[4] Thus, it appears likely that as the population growth rate declines, the role of pay-as-you-go social security would decline relative to funded benefits. An implication often drawn is that when the implicit rate of return on social security falls below the market rate of return, social security participants would be better off had they invested in the market rather than participated in social security.

32. This analysis comparing the rates of return to funded and unfunded social security is incomplete. It does not consider social security as an asset in a portfolio of assets. In particular, evaluation of social

---

2 See Samuelson (1958) and Aaron (1996).

3 Among other things, this assumes that labor force participation rates, the social security coverage rate, payroll tax rate, and hours of work per worker are constant.

4 After an initial period, declining fertility is accompanied by increased female labor force participation, which increases the rate of growth of the labor force.

security as an "investment" should consider not only its rate of return but also its riskiness and the covariance of its return with other assets, both marketable and non-marketable, in the household portfolio.[5] Even with a low rate of return, social security may be a valuable part of a retirement income portfolio because of its low risk in many countries and the low or negative correlation of its rate of return with the rate of return on other assets.

33. The optimal role of pay-as-you-go benefits in retirement income varies across time and across countries. It varies as the risks and covariances of social security and capital market assets vary. Even well developed capital markets, however, have considerable risks. In the United States with its large, well developed and reasonably well regulated stock market, between 1950 and 1990 declines in the Standard & Poors 500 index of 10 percent or more occurred every year and a half on average and declines of 20 percent or more occurred on average every six and a half years (T. Rowe Price 1997).

34. Capital markets in many countries are not well regulated, do not trade many different stocks, and have relatively light trading in some stocks. The emerging stock markets are more volatile than the well developed stock markets (Richards 1996). In 1995 when the International Finance Corporation stock market price index for the United States increased 34 percent, 35 of the world's 78 national stock markets lost money (International Finance Corporation 1996).

6. Four tiers

35. The structure of retirement income systems is often characterized in terms of tiers. Analysts have typically characterized modern retirement income systems as having three tiers. They have differed, however, as to the criteria used for distinguishing the tiers. Sometimes the tiers are divided according to the provider of retirement income: government, employers, and families or individuals. Sometimes the tiers are divided according to their purpose: anti-poverty, income replacement, and supplementary (World Bank 1994). In this case, the government provides minimal anti-poverty benefits, the government or private sector provides mandatory funded benefits, and individuals and families provide supplemental benefits. The Canadian retirement income system has been characterized as having three tiers based on the type of funding: a general revenue funded anti-poverty tier, a largely unfunded social insurance defined benefit plan tier, and a voluntary funded occupational pension plan tier (Banting and Boadway 1996). The tier approach is often best understood not as an empirical statement about the way retirement income systems actually are but a statement about how they should be structured.

36. The best approach for advanced countries can be characterized as a four tier system. The four tiers stress the desirability of increasing complexity in retirement income systems as they develop to allow for greater diversification of retirement income risks. The number of tiers a country has in its retirement income system tends to increase as the country develops.

37. The first tier is a government-provided anti-poverty benefit. It provides a social safety net. It includes means tested and income tested benefits for low income elderly and flat benefits that are received based on years of residence. This tier is usually financed out of general government revenue.

38. The second tier is a mandatory unfunded defined benefit scheme or notional defined contribution scheme provided through the government social security system. This tier is the traditional pay-as-you-go social security system found in most countries. It provides social insurance for workers against some economic risks by spreading the effects of risks across the population.

---

[5] Bajtelsmit and Turner (1997).

39. The third tier is funded benefits. These could be provided by the government or by private sector entities. This tier could be combined with the second tier as a single partially funded plan. This tier could be mandatory or voluntary. When it is voluntary, the fourth tier can be distinguished from it as being composed of nonpension arrangements. While generally it is important to have a funded source of retirement income, it is not essential in all countries that the source be mandatory.

40. The fourth tier is voluntary and supplementary. It includes private savings, voluntary occupational pension schemes, voluntary individual pension accounts, labour earnings, support from family members, and charity. In some countries, savings in the form of housing is an important aspect of retirement savings in the fourth tier. Housing can be used both as an investment that is liquidated in retirement and as a source of services that are paid for before retirement.

41. Some analysts have treated occupational pensions as a separate tier of the retirement income system, and some analysts have treated earnings from work as a separate tier. In the framework used here, which focuses on the structure of government programs, both are included in the fourth tier, which is voluntary and private.

42. The tiers are distinguished by three factors: 1) whether they are anti-poverty benefits (tier 1) or general benefits (tiers 2, 3, 4); 2) whether they are unfunded (tiers 1, 2) or funded (tiers 3)[6]; and 3) whether they are mandatory (tiers 1, 2, and possibly 3) or voluntary (tier 4). The government manages the first and second tiers and may manage the third tier. The private sector, including employers and individuals, manages the fourth tier and may manage the third tier. It is expected that every country will have tiers 1, 2 and 4. For many countries, a funded tier may not be feasible. For other countries it may be feasible but should be voluntary. For some countries, with well developed capital markets or a poor ability to manage an unfunded system, a mandatory funded tier may be desirable.

7. Factors affecting the size of the four tiers

7.1 The relative size of the four tiers in different countries

43. Most countries have a small first tier of antipoverty benefits. A few countries, such as Canada, the United Kingdom, Japan, and Denmark also provide flat rate benefits, and they thus have a larger first tier. Pay-as-you-go (tier 2) schemes have been established in most countries of the world (Table 2). They do not require capital markets but only require the ability of government to collect contributions in labour markets.

44. A number of European countries have large second tiers. These include France, Germany and the countries of southern Europe--Greece, Italy, Spain, and Portugal. Large second tiers leave little room for the third and fourth tiers. Japan, Canada, the United States and the United Kingdom have much smaller second tiers and in comparison to other countries have relatively large fourth tiers. Even for these countries, the second tier is much larger than the fourth tier. An increasing number or countries have a mandatory funded tier. Countries with a mandatory funded tier (tier 3) include Indonesia, Malaysia, Singapore, Australia, Argentina, Chile, Mexico, Peru, Sweden, and Switzerland. They usually have a second tier that is larger. Chile and Australia, and countries with provident funds--including Singapore, Malaysia, and Indonesia-- are exceptions, with their dominant funded tier.

---

6 Tier 4 contains both funded and unfunded sources of retirement income.

45. In low income countries, the fourth tier is the largest. Most retirement income comes from support from family members. This tier in low income countries is the primary tier for the low income part of the population.

46. In developed countries, the fourth tier is relatively small. It is used by middle and upper income workers to supplement the benefits the mandatory tiers provide. In some countries, such as Canada, the United Kingdom, and the United States, voluntary funded occupational pensions play an important role in the retirement income system.

47. The structure of a retirement income system can be thought of at the micro or personal level. At the micro level, it is the percentage of retirement income the worker receives from different sources. The relative importance of the tiers within a country depends on the level of family income. In countries like India or Indonesia, the fourth tier is the largest tier for low income workers. In all OECD countries, the bottom 40 percent of the income distribution among retirees relies on the bottom two tiers almost exclusively (Rein and Turner 1997).

7.2 Issues Concerning the Structure of Tiers 2 and 3

48. Because the government's role occurs primarily in tiers 2 and 3, the issues relating to the size of those tiers are discussed first.

7.2.1 The role of the social security scheme

49. One of the most important design issue is how large should the role of the social security scheme be in the retirement income system? Should it provide generous benefits at all income levels or provide relatively flat benefits that are adequate for middle and lower income workers but require supplementation for upper income workers?

50. The generosity or adequacy of retirement benefits is often measured relative to the preretirement income of workers. The ratio of the retirement benefits of a worker to his or her preretirement income is called the replacement ratio. Because most workers wish to maintain their standard of living into retirement, the goal of the retirement income system for nonpoor workers is to provide a similar standard of living for retirees to what they enjoyed while working. The replacement rate workers need depends on the comparison of the costs of maintaining a similar standard of living while retired versus that while working. Thus, for example, it depends on the extent to which the individual is responsible for paying for his own medical care and on the difference in tax treatment between workers and retirees. It is generally thought that low income workers would need a replacement rate near 100 percent, but other workers would need a lower replacement rate. Middle income workers would need a replacement rate of 70 to 80 percent.

51. It not possible to know whether a given replacement rate provided by social security is too high or too low without knowing whether workers are eligible for retirement benefits from other sources. A given replacement rate may be adequate if universal health care coverage is available for retirees, but not if retirees must pay for health care or health care insurance coverage from their own budget.

52. The share of retirement benefit expenditures relative to GNP measures the overall size of the retirement income system. Retirement income benefits compete with other expenditures in terms of the

share they take of GNP. An overly generous retirement income system will account for too large a share of GNP and will crowd out other worthwhile expenditures.

53. Directly related to the issue of the generosity of the system is the level of the payroll tax rate for financing the system. For any given economic and demographic environment, the more generous is the level of benefits in a pay-as-you-go system, the higher is the level of the tax rate. The tax rate is also higher the higher is the ratio of retirees to workers.

54. The level of the tax rate is limited by the percentage of salary workers would need to save throughout their career in order to achieve an adequate retirement income. That percentage depends on the rate of return available in the financial market, the typical length of the working life and the typical length of the retirement period. If the tax rate is much higher than the rate that workers would need to save on their own, workers will pressure for a reform of the social security scheme.

7.2.2 Tier 2: Social Insurance

55. Government can insure against some risks that are not commercially insurable by providing social insurance. Inherent in social insurance is redistribution from workers who have had favourable outcomes and thus relatively high wages to those with unfavourable outcomes and low wages.

56. By moderating the risks that workers face in free market economies, social insurance social security systems help sustain support for market capitalism. Because of risk sharing across participants in a single national plan, a sense of national solidarity and a reduction in social conflict is encouraged. In well developed social insurance systems, essentially all members of society are connected in a risk sharing pool.

57. Social insurance social security systems provide a complex set of insurance against social risks. They enhance the lives of workers by reducing the risks they face. They insure against various risks resulting in low income. This is sometimes done by drop out years, where workers can drop out low earnings years when calculating their social security old age benefits. It is sometimes done by excluding low earnings from liability for payroll tax payments or by excluding low benefits from income taxation. It is sometimes done by providing higher benefits relative to earnings for low income beneficiaries.

58. A social insurance approach containing a pay-as-you-go or partially funded plan provides better risk diversification than an approach based solely on capital markets. The social security benefits provided by pay-as-you-go systems are not subject to capital market risks. The benefits individuals accumulate in pay-as-you-go social security systems have risks that have low correlation with capital market risks. Thus the inclusion of these benefits in the retirement income of individuals helps diversify their retirement income portfolios.

7.2.3 Tier 3: Reasons for a Mandatory Funded Tier

59. Should the funded tier be voluntary (tier 4) or mandatory (tier 3)? Countries have several possible reasons for privatizing part of their social security systems by having a mandatory funded tier. Some of the reasons commonly given for privatization, however, are controversial and may not be valid reasons. First, in many countries the current social security system relies on heavy subsides by the state because contributions are insufficient to finance current outlays. Second, some pay-as-you-go schemes distribute benefits inequitably. For example, since most Latin American countries rely heavily on indirect

taxation, the poor contribute disproportionately to the funding of benefits they probably will not receive (Lacey 1996). Third, some governments have poorly managed defined benefit systems and feel that defined contribution systems would be easier to manage, both politically as well as financially. Fourth, some countries see pension reform as a means of raising domestic savings, correcting economic distortions presumably caused by traditional pay-as-you-go schemes, and reducing contribution evasion. Fifth, demographic changes that are raising the old age dependency rate are making pay-as-you-go social security systems more expensive. Sixth, the declining growth rate of real wages has reduced the implicit rate of return on social security, making market rates of return relatively more attractive. Seventh some people favour privatization as a way of increasing the range of individual choice. Eighth, some analysts favour privatization as a way to reduce labour market distortions owing to a loose link between benefits and contributions.

60. Certain legal, economic, institutional, and personnel conditions may need to precede the development of a mandatory funded tier. Some countries, such as Canada, have had to pass constitutional amendments before their governments had the authority to undertake the development or reform of a social security system. Beyond that, five preconditions are essential for establishing a funded tier--(1) a well-defined set of property rights and (2) the legal environment to enforce them, (3) complemented by at least a rudimentary capital market. The existence of local expertise with (4) the ability to design and operate sophisticated insurance contracts and (5) regulate private providers are also essential initial conditions (Valdes-Prieto 1993). Each of these preconditions requires the development of institutions and the development of skilled technicians to operate them.

61. Without well-defined property rights, there can be no private sector. Without a competent enforcement mechanism to ensure property rights, individuals would not be able to claim funds designated in their names. Moreover, in instances where the government may want to compensate workers for past contributions into an existing system, a reliable property rights framework allows workers to claim accrued rights associated with the existing state schemes.

62. Rudimentary capital markets provide an opportunity for private sector investments. They also provide an incentive for private savings to accumulate, as does a liberalized economic environment characterized by minimal state interference in market operations.

7.2.4 Effects of a Mandatory Savings Plan on National Saving

63. Some analysts have argued that a pay-as-you-go defined benefit plan reduces national savings, while introducing a mandatory savings tier would raise national savings.

64. The goal of increased saving, however, might not be achieved by social security reform. First, even if social security reform increased savings, that increase would only occur during the initial build-up period. All retirement saving is eventually dissaved during retirement. Second, workers will offset mandatory savings by reducing savings in other forms in order to maintain their previous desired level of savings. The lower the contribution rate in the mandatory savings program the less likely it will increase national savings because the easier will it be for workers to offset it by reducing other savings. Recognizing that argument, a mandatory savings program would little affect savings of high income workers who have substantial savings against which they can offset the mandated savings. It might appear, though, that it would raise savings for lower income workers because their original savings were so low that they would not have much room for offset. However, workers may also increase their debt as a way of offsetting mandatory savings.

65. Rather than adding a mandatory savings plan to existing plans, a mandatory savings plan could replace an unfunded plan. In this case, the worker's retirement benefits would not be increased but the funding for them would increase. With this approach, workers would not have an incentive to offset the funding. Government savings, however, would likely decrease. Government social security revenues to pay current beneficiaries would decline or end but the benefit payment expense would continue.

7.2.5 Government Management of a Funded Tier

66. Government bureaucracies tend to be inefficient at managing programs. This inefficiency arises because they are not subject to competition and the profit motive. Experience has shown, however, that government bureaucracies can be more efficient at managing social security programs than private sector organizations. This occurs for several reasons. First, the private sector has advertising and marketing costs. Second, the private sector does not fully benefit from economies of scale, especially in small countries, as there are multiple small institutions managing social security funds. Further, the private sector may be too small for there to be a sufficient number of fund management firms for there to be a competitive market..

67. Having the government manage investments in the stock market stock raises several difficult issues. The volatility or risk of stocks is considerably greater than that of Treasury bills. Social security might be underfunded in any given year if the stock marked did not perform well. Another issue of concern with government management of social security stock investments is how to keep the management of the investments from becoming politicized. The government could use the financial power associated with its investments to reward or punish firms or industries. To prevent this from occurring, the financial management may need to be done by private sector firms. Even with private firm management, to prevent politicization of investment the investment policy may need to be a passive policy of investing in a broad market index, rather than picking individual stocks.

7.2.6 Defined Benefit Versus Defined Contribution Plans

68. While both defined benefit and defined contribution plans may have a role in a retirement income system, it is useful to compare their characteristics to determine their strengths and weaknesses. Defined benefit plans base benefits on a benefit formula. This benefit formula generally takes into account both earnings and years of service but may be based only on years of work or residency. A simple example is that benefits at age 62 equal years of service multiplied by the average of the highest three years of earnings multiplied by 1 percent.

69. A defined contribution plan is like a mutual fund account. Money is contributed to an account. Investment earnings are received on that account. At retirement, benefits are funded by the account balance. While either type of plan can be funded or unfunded, this section focuses on unfunded or partially funded defined benefit plans and fully funded defined contribution plans.

70. Defined contribution plans around the world differ considerably in their features. However, when defined contribution plans are a major part of the retirement income system their required contribution rate generally is in the range of from 10 percent to 15 percent. When they are voluntary, their maximum allowed contribution rate tends to be in the range of 17 to 20 percent (Table 3).

71. Defined benefit and defined contribution plans differ greatly in the amount and type of risks borne by participants. In defined contribution plans, the worker bears the investment risk, although most

government mandated defined contribution plans receive some form of government guarantee. Because the worker's benefit is tied to the rate of return on the assets in his account, a downturn in asset markets at the point of retirement may greatly reduce a worker's retirement income.

Table 3. Defined Contribution Plans in Selected Countries

Type of Plan Formula	Country	Name of Plan	Contribution
Mandatory, funded	Australia	Superannuation Guarantee Charge	15% by 2003
	Sweden	premium reserve account	2%
	Mexico	Administradoras de Fondos De Retiro	6.5%
	Chile	Administradoras de Fondos de Pensiones	10% required, 20% max
	Denmark	ATP	
	Switzerland		
Contracted out, funded	United Kingdom	Approved Personal Pension	4.6%
Mandatory unfunded	Sweden		16.5%
	Italy		33%
	France	ARRCO (employees)	14% min.
		AGIRC (employers)	
Voluntary, group	USA	401(k), profit sharing, money purchase	18% max.
	Canada	Registered Pension Plan	18% max C$13,500
	United Kingdom	Personal Pensions	17.5% max
Voluntary,	USA	Individual Retirement Account	$2000 max
individual	Canada	Registered Retirement Savings Plan	18% max C$13,500 max

Note: there are generally minimum and maximum limitations on the earnings to which the contribution rates apply. Maximum contribution rates in voluntary plans may be lower if the worker contributes to another plan. The maximum contribution rate in the United Kingdom for Personal Pensions is higher for workers age 40 and older.

72. In addition to financial market risk, the worker bears pension risk arising from variability in own earnings. For example, when a worker is laid off and suffers an extended period of lost earnings, that reduces his or her pension contributions and thus reduces future retirement benefits. It is not possible for workers to obtain insurance in private markets against risk due to fluctuations in their earnings. The risk arising from the worker's variability in earnings, however, is partially insured against in social insurance defined benefit plans. Most traditional defined benefit social security plans, such as in Japan, have drop out years in the benefit calculation, so that when a career worker suffers a period of reduced earnings, the

worker may be able to drop that year out of the benefit calculation. In some countries, such as Canada, there are also drop out years for periods of unemployment or for child bearing and rearing. Thus, a period of reduced earnings may have no effect on the worker's future retirement income through a defined benefit social security plan, while it directly reduces the worker's future retirement income in a defined contribution plan.

73. When the defined contribution plan balance is converted to an annuity at retirement, the worker bears interest rate risk on the calculation of the benefit amount. When the interest rate is high, the account balance produces a larger monthly benefit. Thus, in defined contribution plans, much risk is focused on the point of retirement, when the worker's adjustments to adverse outcomes are limited to continuing to work if possible.

74. In defined benefit plans, by contrast, the worker does not bear interest rate risk in the determination of one's monthly benefit. The benefit amount provided by the plan does not vary with fluctuations in the interest rate.

75. When the defined contribution plan is not converted into an annuity, the retiree bears life expectancy risk. This is the risk that the retiree outlives his or her resources. This risk is not present in defined benefit plans since they generally provide annuitized retirement benefits.

76. With a defined benefit social security plan, the government can legislate changes in the benefit formula that may adversely affect workers. Governments regularly modify their defined benefit social security plans to adjust to changing economic and demographic circumstances. In recent years, many countries have reduced the generosity of their defined benefit social security plans in response to the aging of the population and slowing economic growth. Typically, however, at least in the well-developed OECD countries, governments announce such changes long before they take effect, so that no current retirees and no workers near retirement age are adversely affected. Workers affected are sufficiently far from retirement that they can adjust their retirement plans to take into account the change in social security. Thus, the risk that workers will face changes in their social security retirement benefits for which they will have little advance warning is slight.

77. Pay-as-you-go defined benefit plans face demographic risk. If the fertility rate falls or life expectancy increases, the aged population will increase relative to the working age population. This change increases the political power of the aged, which limits the risk they face, but it also increases the cost of providing them benefits. For relatively small aged populations, the first effect dominates, but as the relative size of the aged population grows, the second effect eventually predominates. Thus, increases in the relative size of the elderly population may reduce their benefits through a pay-as-you-go social security system. This risk differs from financial market risks, however, because the effect can be anticipated years in advance since all the people reaching retirement age 50 years from now are already born.

78. Pay-as-you-go systems can be insulated from the effect of demographic changes by partial funding. Canada has adopted partial funding that will, according to actuarial projections, allow it to maintain a constant contribution rate that will be unaffected by demographic changes. After an initial transition period, the implicit rate of return that workers receive will also be insulated from demographic changes because both benefits and contribution rates will be unaffected by those changes.

79. While demographic changes affect unfunded defined benefit plans, they also affect funded defined contribution systems. A relatively large age group of retirees will depress the price of financial assets as they attempt to sell them to the working age group when they liquidate their pensions in

retirement. In addition, increases in life expectancy and reductions in retirement age reduce the monthly benefits provided by annuitized defined contribution plans because these benefits must be provided over a longer period.

80. Defined contribution systems pose political risks for governments. If financial markets perform poorly, there may be large claims on the government through its financing of minimum benefits or means tested benefits. In addition, a sharp and prolonged downturn in asset markets may cause political pressure to be put on the government to aid retirees and those near retirement. There may be implicit liabilities for the government if beneficiaries who relied on a defined contribution system that produced inadequate benefits may put political pressure on the government to indemnify their losses.

7.2.7 Should the Earnings-Related and Income Transfer Parts of Social Security Be Provided Through One Program or Two?

81. Social security experts disagree as to whether the redistributive aspect of social security should be combined with the earnings replacement benefit within a single program. Some analysts argue that the two functions should be separated into different programs. Doing so makes redistribution through social security more transparent and thus it is easier to assess whether they were desired by society. The redistributive portion of social security could be provided by a means tested benefit, a minimum benefit, or a flat benefit, while the earnings replacement benefit could be provided by an individual account program that involved no transfer payments across workers.

82. Individualistic systems that use a separate minimum benefit, flat benefit, or means tested benefit to alleviate poverty face political risks. Because political support is weaker for limited poverty programs than for general social insurance programs, limited programs may be more susceptible to short run changes due to political factors. Iceland in 1992 shifted from a universal flat rate benefit to a means tested benefit and thousands of pensioners had their benefits reduced or eliminated, without any transition measures for existing pensioners or those close to retirement (Beattie and McGillivray 1995). Entitlements under these systems do not enjoy the political protection afforded defined benefit social insurance systems.

8. A mixed system to diversify risks

83. The risk-return mix in a retirement income system may be optimized when workers participate at the same time in both unfunded defined benefit plans and funded defined contribution plans. When participating in both types of plans, the worker effectively has a defined contribution plan with a guaranteed minimum benefit. Countries can trade off the level of the minimum benefit against the size of the expected defined contribution benefit. Combining the two offers the downside protection of defined benefit plans, yet allows workers to invest in high expected return assets.

84. The greater the percentage of retirement benefits provided through a funded defined contribution plan, the greater is the uncertainty as to the benefit level the worker will receive at retirement. For this reason, recognizing the risk aversion of most workers, for countries that can provide defined benefit plans with low risk, a sizable portion of the retirement benefit should be provided through the defined benefit plan. However, the greater is the risk in the defined benefit plan, the lower would be the amount that should be provided through it relative to the role of a funded defined contribution plan. Thus, for countries that have been unable to manage defined benefit plans with minimal risk, the role of a defined contribution plan would be relatively greater.

85. A mixed system in which many workers have both unfunded defined benefit plans and funded defined contribution plans offers the most diversification against risks. Risks are reduced in a mixed system because unfunded plans and funded plans are subject to different risks that are not perfectly correlated. A pay-as-you-go social security system is subject to risks to the level of its contribution base of national wage earnings, but is not directly subject to financial market risk. By comparison, the situation is reversed for defined contribution plans, since they are subject to financial market risks but not to labour market risks.

8.1 Costs of Individual Accounts

86. The administrative costs of individual accounts may affect the structure of retirement income systems for low income workers. The costs of individual accounts are largely fixed costs, not varying with the size of the account. For example, the costs of providing an account statement and mailing it to a participant are the same for a $100 account and a $10,000 account. Because their costs are fixed costs per account, profit making institutions tend to charge fixed fees to manage individual accounts. This fact plays an important role in the structure of retirement income systems.

87. Administrative costs vary considerably across different types of retirement income plans. Data for the Netherlands shows that individual account plans are about 20 times as expensive to administer as are national social insurance plans (Table 4).

Table 4. Administrative Cost of Dutch Old Age Pensions (percentage of total contributions, 1993)

Type of Plan	Costs
Mandatory Social Insurance	1.2%
Firm based pension funds	4.4%
Private group pension insurance	7.2%
Private individual pension insurance	21.1%

Source: Aarts and De Jong (1997)

88. Fixed costs of accounts can be a large burden on workers with small accounts. Because of the fixed costs of accounts, it may be undesirable for low income workers with small accounts to be covered by multiple accounts through a multiple tier system.

89. The problem of fixed costs for small individual accounts can be managed several ways. First, subsidies for small accounts from large accounts can be mandated by requiring that fees be a fixed percentage of assets or contributions. A problem with this approach is that profit maximizing firms will prefer large accounts to small accounts when the fees are charged this way since large accounts will be more profitable. The firms may seek other ways to attract large account balances and discourage low income workers from participating in their fund. Second, workers below a threshold of earnings or hours can be excluded from mandatory contributions, as in Australia and Denmark. Workers working less than 10 hours a week are excluded in Denmark while workers earning below a threshold are excluded in Australia. Third, all workers can be given a flat government subsidy to their accounts, as in Mexico. Fourth, the government could give a targeted flat subsidy to the accounts of low income workers. Fifth, the government could run a clearinghouse for the collection of contributions, the allocation of contributions to fund managers, and the disbursement of benefits, as is done in the Thrift Savings Plan for

federal government workers in the United States. In this plan, the government mandates subsidisation of small accounts by charging a fixed percentage administrative fee relative to account balances.

90. Because of the fixed costs for managing financial accounts, it may be desirable for lower income workers to be covered by fewer tiers than upper income workers. In particular, it may be desirable to not extend mandatory funding to lower income workers.

8.2 Tier 1: Antipoverty means tested benefits

91. Means tested and income tested programs have several weaknesses. They motivate people with low income and low assets to reduce their economic resources in order to qualify for the programs. They discourage savings and work and encourage the elderly to transfer their resources to their children in order to qualify. Means tested programs usually have incentives that motivate people to cheat to obtain benefits. They stigmatize participants, making participation in them humiliating for people who qualify for benefits. They are intrusive, requiring people to divulge personal financial information. In some countries, many people who qualify for these programs do not apply for benefits because of the stigma, reducing the effectiveness of the programs in reaching the target population. Means testing greatly increases the administrative cost of a program.

92. Means tested benefits must be kept low. Otherwise they contain a strong disincentive to work and saving for too many workers or an incentive to work in the underground economy. Means tested programs tend to trap people in poverty by their disincentives to work. While they may be essential for caring for the very poor, such programs are best used when the poor are a relatively small part of society. Thus, they are ill suited for developing countries.

93. Means tested programs sometimes are based on the mistaken view that accurate targeting of benefits is possible only by awarding benefits on the basis of an income test. The poor can be identified in an alternative manner. They can be identified by poverty indicators--family or individual characteristics correlated with poverty. In some countries, good indicators are poor health or old age.

94. A flat benefit is by definition not related to individual earnings but generally tends to be increased with increases in average earnings. Thus, there is no relationship between the tax payments that fund it and the benefit received. The financing of this type of benefit leads to distortions caused by taxes, such as discouraging labour supply. A guaranteed minimum benefit encourages tax evasion by low income workers because it reduces the marginal benefit they receive based on their tax payments. By evading contributions, low income workers can qualify for a minimum benefit, which may about equal their benefit had they fully contributed. They may qualify for such a benefit through a minimum in the contributory scheme that they can receive with a minimal number of years of reported earnings. They may qualify for a minimum benefit through a noncontributory program that provides a universal minimum benefit.

8.3 Tier 4: The role of voluntary occupational pensions in the retirement income system

95. Private or occupational pensions are one part of the fourth tier of retirement income systems. Private pensions play an important role in the retirement income systems of about a dozen high income countries. Countries where private pensions play an important role include Japan, the United Kingdom, Canada, the United States, and the Netherlands. Even in these countries, however, their role is important only for people in the upper half of the income distribution. In all countries, the role of private pensions is

much smaller than that of social security. Because of problems facing pay-as-you-go social security systems, many countries are increasingly turning towards private pensions as a potential source of retirement income. That raises the question of whether private pensions can take on an expanded role in providing retirement income.

96. The role of occupational pensions in providing retirement income varies across countries due to differences in government policy and economic development.

97. *Government Policy*. An important determinant of the role of occupational pensions is the generosity of social security benefits. In planning their level of consumption over their lifetime, workers take into account their lifetime income. This determines a desired level of consumption in retirement, given lifetime income. In countries with generous social security systems, little room is left for occupational pensions. Because occupational pensions typically are more likely to be provided to higher income workers than lower income workers, the generosity of the social security system for higher income workers is particularly important in determining the role for occupational pensions. Italy, for example, has generous social security benefits for high income workers and it has a relatively small occupational pension system.

98. A second important way that government policy affects the size of the occupational pension system is through the income tax system. All countries with sizable occupational pension systems provide preferential income tax treatment for occupational pensions compared to other financial assets that can be used for saving for retirement. Typically, the tax preference takes the form of exempting pension contributions and pension asset income from taxation. Pensions are taxed only when the worker receives pension benefits. Some countries, such as the Bahamas, do not have a personal income tax system, and thus cannot use this policy tool to encourage occupational pension plans.

99. A third aspect of government policy that affects the role of occupational pensions is government regulation. Government regulations may either encourage or discourage workers to demand and employers to provide occupational pensions. Government regulations determine the allowable features of occupational pension plans. For example, they determine whether employees may receive a tax deduction for contributions or that only employers may receive a tax deduction. Government regulations determine whether all workers that work for an employer must be provided a pension, or whether the employer may establish a pension plan but cover only some of the workers in the firm.

100. To establish and carry out these government policies governing pensions requires development of a knowledgeable, capable, and honest governmental bureaucracy. When government bureaucrats can be bribed to ignore pension laws, a pension system is less likely to develop.

8.4 Effects of Occupational Pensions Having a Greater Role

101. A greater role for occupational pensions in the retirement income system may affect income distribution and poverty among the aged. Traditional social security programs tend to redistribute income towards lower income workers. Occupational pension plans do not. Thus, if occupational pension plans partially replace social security, the inequality of the income distribution may increase. If an increase in the role of occupational pension plans was associated with a general reduction in social security, low income workers would be worse off. Their social security benefits would be reduced while it would be unlikely that they would receive occupational pension benefits. This change, conversely, would benefit high income workers who would have lower social security benefits, but who would have disproportionately lower social security taxes.

9. Social security design around the world

102. The following sections consider issues of social security design in particular economic and demographic circumstances.

9.1 Social Security Design in Developing Countries

103. A characteristic of social security programs in developing countries is that they typically cover only a small portion of the population. Social security policy in these countries may be part of a policy to reduce fertility by reducing the need for large families. The preference for a large family, especially in rural areas, may be based on parental dependence on children for support in old age.

104. In developing countries, there often is a shortage of people knowledgeable in administering social security programs. This problem can be reduced by use of regional or international organizations that assist national social security systems.

105. In countries where much of the population is poor, a flat benefit, such as in Ireland, may be a desirable type of program. It would be simple to administer and would be targeted at the objective of reducing poverty. It would be redistributive, and it would not be subject to abuse by polically powerful elites. High tax rates and payroll contribution rates in the formal sector discourage labor force participation. Tax rates and contribution rates should be kept low in a low wage, labor surplus economy

9.2 Social Security Design During Periods of Severe Economic Decline

106. Some countries have experienced periods of severe economic decline. They have had high inflation, high unemployment, and a steep decline in real income. Such periods of decline have frequently been associated with the period of structural adjustment from a Communist planned economy to a market economy in Central and Eastern Europe but have occurred in other countries. During such periods, the social security systems of some countries have virtually collapsed. There has been widespread evasion of tax payments, even by the government for its own workers, and as a result benefits have not being paid for months.

107. In such periods, a temporary reform of the social security system may be required as a stopgap measure until the economy recovers. Such periods of economic distress force countries to examine what their benefits priorities are. One possible resolution is to legislate a temporary suspension of the benefit formula, which is not difficult administratively since benefits are not being paid regularly. In place of the normal benefit formula, benefits would be paid on a flat rate basis to all pensioners, with no accumulation of arrears. This temporary reform allows the social security system to play its primary role of preventing poverty and avoids the inequity of paying some pensioners full benefits while other pensioners receive nothing.

9.3 Social Security Reform in Eastern Europe, Central Europe, and Central Asia

108. Reform of social security in this region is an aspect of the transition towards market institutions. While a dominant public plan with high tax rates could function in a command economy, it is dysfunctional in a market economy that relies on incentives and compliance. There is also the need to provide social protection in a time of economic disruption. Economic structural reform necessitates social security as a social safety net to make the reform politically more palatable. These countries have the

advantages of a tradition and structure of high levels of formal sector employment, developed administrative structures, and a high level of education. They face the problem that social protection previously provided as part of the guarantee of full employment in state-owned enterprises must now be provided by institutions adapted to market economies.

10. Conclusions

109. There is no perfect social security system. All pension systems require good government and good management to function well. All systems must cope with macroeconomic uncertainties--inflation, unemployment, wage growth rate, changes in demographics, and changes in interest rates.

110. While a wide range of social security systems are capable of meeting the goals of society, the following general recommendations apply for most countries. There should be a poverty reduction program, an unfunded social insurance program, a funded program, and private savings. There should be compulsory participation in a unified national pay-as-you-go system without special treatment for favoured groups. If the funded program is mandatory, consideration needs to be given to the problem of fixed costs that are a relatively heavy burden for small accounts.

REFERENCES

AARON, Henry. 1996. "The Social Insurance Paradox." *Canadian Journal of Public Economics and Political Science* 32: 371-377.

AARTS, Leo J.M. and Philip DE JONG. (1997). "Private Provision of Disability Insurnce: How Does the Dutch Policy of Privatizing Disability Insurance Compare wht US Experiences in Workers. Compensation." Presented at the Fourth International Research Seminar on Issues in Social Security, Sigtuna, Sweden, June 14-17, 1997.

BAJTELSMIT, Vickie L. and John A. TURNER. 1997. "A Portfolio Model of Retirement Income Including Social Security." Colorado State University, unpublished

BANTING, Keith G. and Robin BOADWAY. 1996. "Reforming Retirement Income Policy: The Issues." In *Reform of Retirement Income Policy: International and Canadian Perspectives.* Kingston, Ontario: Quenn's University, pp. 1-26 Beattie, Roger and Warren McGillivray. 1995. "A Risky Strategy: Reflections on the World Bank Report *Averting the Old Age Crisis*. *International Social Security Review* 48: 5-22.

GLASSNER, Thomas Charles and Salvador VALDÉS-PRIETO. "Pension Reform in Small Developing Countries." Washington, DC: World Bank, June 1996.

INTERNATIONAL LABOUR ORGANIZATION. 1984. *Into the Twenty-First Century: The Development of Social Security.* Geneva Switzerland.

INTERNATIONAL FINANCE CORPORATION. 1996. *Emerging Stock Markets Factbook 1996*. Washington, DC: author.

LACEY, Robert. 1996. "Pension Reform in Latin America: Current and Future Challenges and the Role of the World Bank." *Economic Notes* 5, May.

RAWLS, John. 1971. *A Theory of Justice*. Belknap.

REIN, Martin and John Turner. 1997. "Work, Family, State and Market: Income at the Last Stages of the Working Career." Boston: MIT.

RICHARDS, Anthony J. 1996. "Volatility and Predictiability in National Stock Markets: How do Emerging and Mature Markets Differ?" Washington, DC, International Monetary Fund, April.

SAMUELSON, Paul A. 1958. "An Exact Consumption Loan Model of Interest With or Without the Social Contrivance of Money." *Journal of Political Economy* 66: 467-482.

THOMPSON, Lawrence H. 1994. "Advantages and Disadvantages of Different Social Welfare Strategies." *Social Security Bulletin* 57 (Fall): 3-11.

T. ROWE Price. 1997. Report. No. 55. Spring.

URBAN INSTITUTE. 1997. “The Declining Importance of Class: A Roundtable on Intergenerational Mobility.” Update 26 (August).

VALDES-PRIETO. 1993.

WHEELER, Peter M. and John R. KEARNEY. 1996. “Income Protection for the Aged in the 21st Century. A Framework to Help Inform the Debate.” Social Security Bulletin 59 (Summer): 3-19.