Pension Reform in China:
Issues, Options and Recommendations

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February 2010

Abstract

The Government of China has set as a central development objective that coverage of the pension system (and of social policy more broadly) should extend to the entire population, and that such policy should be implemented quickly.

This paper builds on our 2005 report which focussed mainly on the urban pension system. The central recommendations of that report included (a) developing a nationwide system for the basic pension and (b) retaining the principle of individual accounts but implemented as notional accounts rather than fully-funded accounts or empty accounts. This paper endorses those recommendations and some proposed changes in details for strengthening the contributory system and argues in addition for (c) slowly expanding coverage of the mandatory contributory system with a primary focus on large firms, independent of their location (that is, large rural firms as well as urban ones). The case for (d) a phased increase in the retirement age is also presented.

This paper also argues that changes in labour markets and family structures mean that, by themselves, contributory systems face increasing problems of coverage even in developed economies. To extend coverage, therefore, the paper argues (e) that the contributory system should be supported by a citizen's pension, that is, a nationwide system of tax-financed non-contributory pensions, awarded on the basis of age and residence to everyone except those with a significant pension from the mandatory system. Such a pension exists in a range of countries including Australia, Canada, Chile the Netherlands and New Zealand. Fiscal sustainability is achieved by balancing the level of benefit and the earliest eligibility age. The paper argues that a citizen's pension in China would be a valuable complement to the contributory pension, but is not a substitute for maintaining and extending both the contributory basic pension and individual accounts in order to have both good poverty relief and good consumption smoothing,

The resulting system has five elements: the citizen's pension; the mandatory basic pension; mandatory notional individual accounts; voluntary funded pensions; and the Dibao, which provides individually-targeted assistance, with levels that would take account of the citizen's pension.

The strategy is based on the following principles: the system should provide coverage as fully as is fiscally and administratively feasible; benefits should be designed to have a national structure (separate systems for urban and rural sectors is not a good base for the long run); and the system should fit the economy and society in China today, be compatible with longer-term economic and social developments, and support the development of a modern economy.

Keywords: China, social security, non-contributory pension, citizen's pension,

JEL Code: H55, J32, G23

Acknowledgements

This report was prepared as part of the China Economic Research and Advisory Programme (CERAP) and builds on our 2005 report, Social Security Reform in China: Issues and Options, written together with Mukul Asher, Edwin Lim, and James Mirrlees. As with that report we have relied on information and insight from counterparts in China, Professor Wang Yanzhong in particular for this report. We are grateful to Mukul Asher, Edwin Lim, Ian Porter and Lawrence Thompson for valuable comments, to Pian Shu for research support, to participants in a seminar in Beijing, and to Salvador Valdes for up-to-date analysis of the system in Chile. Financial support was provided by the Beijing Cairncross Foundation.

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Part One: Principles of Pension Design

Part Two: Options for Reform

1. Introduction

Part One, Principles of Pension Design, presents a background of theoretical pension analysis and lessons from experiences in other countries, drawing on Barr and Diamond 2008, 2009 and 2010. Part Two presents options and recommendations to improve the pension situation in China in the short and long runs. Central to our approach is a plan to develop unified pension coverage for all the elderly. We recommend that policy should no longer restrict the mandatory contributory system to the urban sector, thereby leaving out the rural sector; instead, policy should focus on the distinction between large and small employers, sometimes referred to as the formal and informal sectors, based particularly on attention to the size of firms. Thus we recommend that extension of the current contributory system should start by focusing on larger firms wherever they are located. With this approach, the process of slowly extending the contributory system throughout China will eventually result in a single unified contributory system that covers everyone. Section 7 discusses both this approach to extending the contributory pension and the case for introducing a non-contributory pension to be paid to all elderly people in China, thus ensuring coverage for all the elderly by at least part of the pension system. Details of design of a non-contributory pension are presented in Section .2 The following sections address the urban contributory pension system and administration for both non-contributory and contributory pensions. The planned pilots for voluntary pensions in rural areas are discussed in sections 8.2 and 16.2. There is also some discussion of pensions for public employees and of voluntary pensions.

Part One: Principles of Pension Design

2. Core Objectives

For individuals and government, a pension system has the core objectives of consumption smoothing, insurance, income redistribution and poverty relief.

CONSUMPTION SMOOTHING. Retirement pensions allow a person to transfer consumption from his productive middle years to his older years in retirement, so that he has money to spend even when he is no longer working and earning.[1]

INSURANCE. A person does not know how long he will live. Thus pension systems provide insurance in the form of annuities, i.e. weekly or monthly payments to the individual for the rest of his life. Such annuities are a form of risk pooling, enabling people to insure against the risk of outliving their pension savings. Pension systems can also protect spouses and young children if a worker dies before retirement.

INCOME REDISTRIBUTION. Pension systems can redistribute incomes on a lifetime basis, for instance, by paying low earners pensions which are a higher percentage of their previous earnings (i.e. a higher replacement rate – see Glossary). Since life-long earnings are uncertain from the perspective of an individual, such a system provides insurance against low earnings by providing a higher replacement rate when earnings have been low and a lower replacement rate when they have been high. This redistribution can be useful across different levels of earnings in a single region and across regions with different average earnings.

Pension systems can also redistribute income across generations, for instance by imposing a higher contribution rate on the present generation, thereby allowing future generations to have higher pensions or to pay lower contributions. Similarly, providing pensions in excess of what past contributions can finance is a way of redistributing to current retirees from future (or current) taxpayers.

POVERTY RELIEF. A general system of poverty relief for the entire population may lessen the incentive to work and a country may not be able to afford benefits that provide complete poverty relief. The elderly, however, are not expected to provide much labour, and are, therefore, a particular target for programmes to reduce poverty – programmes that would work less well across all age groups. Such programmes can target all the elderly or can be focused on those who have contributed to the pension system. Many countries have both types of programme. Enhancing pensions for low earners avoids savings disincentives that come from minimum incomes based on an income test.

[1] Throughout the report we use the masculine pronoun to refer to an individual and his pension, but it is recognised that the pensioner may equally well be a woman.

3. Criteria for Pension Design

How should pensions be organised to achieve these objectives? Economic theory and international experience indicate that there are many different structures that can combine to address all the objectives. Box 1 sets out a central conclusion – that there is no single best pension system for all countries. That being the case, it is particularly important to be clear about the criteria for good pension design, discussed in this section.

A second central conclusion is that in considering how pension design affects the labour market, economic growth and income distribution, analysis needs to embrace the entire pension system and its effects over time. It can lead to mistaken analysis to consider one portion of the system (pooled or individual) in isolation.

Thirdly, and deeply rooted in modern economic theory, the analysis of pensions should be set out in the context of second-best analysis. Section 2.1 sets out the arguments, as a precursor to discussion in subsequent sections of labour-market efficiency, savings and economic growth, redistribution and risk sharing, gender and family, and the capacity to evolve.

Box 1 No single best pension system for all countries

Pensions have multiple objectives, notably the achievement of consumption smoothing, insurance, poverty relief and redistribution.

The pursuit of these objectives faces a series of constraints:

- Fiscal capacity: stronger fiscal capacity makes it easier for the system to find additional revenues for a pension system.
- Institutional capacity: stronger institutional capacity makes feasible a wider range of options for pension design.
- The empirical value of behavioural parameters, such as the responsiveness of labour supply to the design of the pension system, and the effect of pensions on private saving.
- The shape of the pre-transfer income distribution: a heavier lower tail of the income distribution increases the need for poverty relief.

There is no single best system for all countries for several reasons:

- Policy makers will attach different relative weights to the objectives, including views about the importance of poverty relief and about how risks should be shared within and across generations.
- The pattern of constraints, including the value of key parameters, will differ across countries.
- Political processes, which vary across countries, affect what is politically feasible, given the range of alternatives that are economically and administratively feasible.
- History provides a set of institutions which influence the value and politics of change.

In sum, if the objectives differ and the constraints differ the optimum is likely to differ. Thus:

- Different countries have different structures for addressing the multiple goals, as illustrated in section 3.

- Though no country's system is perfect, we find a number of different structures that work pretty well.

3.1 Economic theory: Second-best analysis

Simple theory assumes that individuals make optimal choices and that labour markets, savings institutions, and insurance markets exist and function ideally. Formulating policy within that first-best framework is analytically simple, but a bad guide to pension design in a world with limited policy tools and major market imperfections, as discussed in Boxes 2 and 3.

Box 2 Deviations from first-best

In the theory of saving in a first-best world the individual is assumed to make choices about saving, borrowing, portfolio choice and annuitisation that maximize his or her lifetime utility from a complete array of competitively-priced market options. In those circumstances, consumer choice and competitive markets maximize welfare, given lump sum redistribution. Pensions, however, face a number of serious deviations from such a theoretical world.

Imperfect information. Optimal use of markets requires people to understand the uncertainties they face and the options that markets offer. In fact, individuals are imperfectly informed in several ways:

- Some individuals have a poor sense of the risks and uncertainties they face, for example about future benefits from defined-benefit and defined-contribution plans.
- Many individuals do not understand basic concepts in finance: Orszag and Stiglitz (2001, p. 37) quote the chairman of the U.S. Securities and Exchange Commission as stating that over 50 percent of Americans did not know the difference between a stock and a bond (see glossary). The problem also has distributional implications, as information poverty and financial poverty are highly correlated.
- Defined-benefit plans are complex, and typically incompletely understood. With corporate plans, labour mobility, changes to the plan and financial problems of the firm have implications for pensions that can be hard to see. Complexity is often a problem with public systems as well.
- Information processing problems arise when the problem is too complex for many agents, even when they are provided with the necessary information. Such problems are more likely where the time horizon is long, the outcome involves complex probabilities, or the details are inherently complex, all of which characterize most pension products. Advice can be expensive and inadequate.

For these and other reasons, poor decisions give a justification for compulsion, and the simple assumption of rational utility maximization is not a good basis for pension policy design.

Incomplete markets. Actual markets are limited in their ability to provide competitively-priced products that match the needs and wants of even a well-informed consumer. In the case of retirement income, the market for indexed contracts is thin. Asymmetric information in insurance markets makes perfect insurance impossible; and when insurance is provided through employment, labour market decisions may be distorted. Insurance firms must cope with potential consumers with different risks and so different costs, and may design products in response to poor consumer decision making. The problem of adverse selection can be eased by making insurance mandatory. Generally, marketing insurance products is highly costly; thus government provision of a uniform product may have much lower cost.

Progressive taxation is a further deviation from first-best. In comparing defined-contribution and defined-benefit plans, it is not possible to say that one approach dominates the other if labour market distortions are present:

> "With a progressive annual income tax and age-earnings profiles that are generally increasing in real terms, the marginal income tax rate is rising with age, on average. Thus, a well-designed DB system may well have better labour market outcomes since the overall tax burden, income tax plus net tax from social security, will vary less over the life-cycle. That is, income taxes are lower on the young and net social security taxes are higher. Therefore, without a detailed calculation, one cannot reach an efficiency conclusion." (Diamond 2002, p. 57).

All these deviations from first-best call into question the simple model of market choice and competition. Some resulting problems with the exercise of consumer choice are taken up in Box 3.

Box 3 Do consumers choose well? Lessons from behavioural economics

A recent and growing literature on behavioural economics documents poor choices that come from poor decision making.

Many people do not save enough voluntarily to maximize lifetime utility, and few buy annuities voluntarily despite their considerable value. People may fail to choose, or delay doing so:

- *Procrastination:* People delay saving, do not save, or do not save enough. People agree that they should save more for retirement but postpone the action itself.
- *Avoiding explicit choice:* With rational choice, it should make no difference whether individuals face an opt-in or an opt-out provision; in practice, automatic enrolment leads to much higher participation. Participation rates in employer 401(k) plans in the United States differ sharply depending on whether or not enrolment was automatic with an opt-out.
- *Immobilization:* Complexity and conflicting information can lead to passive behaviour. A larger range of 401(k) options can result in less participation. A large fraction of new workers in Sweden, able to choose from over 700 mutual funds, make no choice at all.

In addition, when people do choose, their choices may make little sense:

- *Short-term gratification:* Many people retire at the earliest age permitted, which may be too early for their own good or that of their spouses. In the United States a much larger spike in retirements occurs at age 62 than seems sensible given that the increase in pension for later retirement is roughly actuarially fair for the average worker.
- *Framing:* Choices are influenced by how they are presented, even at the simplest level. As Loewenstein and Ubel (2008, p. 1806) note: "people who learn first about the risks of a treatment followed by its benefits make different choices than people who first learn about its benefits and then its risks. Decision aid developers have no choice but to present information in one order or another, but unfortunately the order they choose will almost inevitably affect people's decisions."
- *Familiarity:* Another poor but common choice is to invest heavily in the stock of one's own employer; if the firm goes bankrupt, employees invested in the firm lose both their wage income and much of their capital accumulation, as happened to many employees of Enron. Such behaviour shows a failure to understand the benefits of diversifying risk.
- *Excessive trading*: many people appear to trade too much, on average worsening their position on the risk-return frontier while also incurring trading costs. Some try to time the market, moving between classes of assets in a way that increases risk relative to expected return, and indeed seems to lower the expected return on average as well.

Recent experimental evidence supports a tendency in some circumstances for people to have a higher discount rate in the short run (that is, a tendency to instant gratification) and a lower one in the medium term. The problem is that when the future arrives, it becomes the present; hence short-term gratification continues, and can result in time-inconsistency.

These findings suggest a number of implications for policy design in employer and public plans:

- Keep choices simple, for example by offering only a small number of clearly differentiated funds.
- Use automatic enrolment, thus turning inertia to the individual's advantage: once automatically enrolled, most people will stay with the plan.
- Design a good default option: an arrangement based on automatic enrolment plus worker choice of plans requires a default option for workers who do not make a choice. The existence and design of the default option are important.
- In voluntary plans a further option is to allow people to commit now to (reversible) action in the future, thus making use of procrastination to assist policy. People are happy to promise to save more in the future, as in the "Save More Tomorrow" plan of Thaler and Benartzi (2004).

For the reasons set out in Boxes 2 and 3, progress in helping consumers to make better decisions has been limited even in developed countries. People often fail to make choices that maximize their long-term well-being or that of their families, and often make no explicit choice at all—a common result where excessive choice or excessive complexity becomes overwhelming. In contrast with simple theory, offering people a restricted set of choices can at times improve outcomes; it is also critical to design good defaults for people who make no explicit choice.

Alongside problems in choosing among pension products, consumers also face problems in choosing the timing of retirement. If pension benefits bear an actuarial relationship to a person's expected duration of retirement, longer lives and retirement at an unchanged earliest possible age (a common occurrence) inescapably aggravate elderly poverty. The concern that some people are retiring too early for their own good and that of their spouses matters for choice of an earliest entitlement age and increases the importance of careful design of the incentives to work beyond the earliest entitlement age.

In addition to problems with individual choice, analysis needs to take account of the other deviations from first-best set out in Box 2, notably incomplete markets and taxation.

Framing the argument in second-best terms starts from the multiple objectives of pension systems, which cannot all be achieved fully at the same time. Thus policy has to optimize—not minimize or maximize—across a range of objectives, seeking the best balance among consumption smoothing, poverty relief, and insurance, a balance that will depend in each society on the weights given to those and other objectives.

3.2 Labour-market efficiency

SECOND-BEST ANALYSIS. The previous analysis explains why achieving the multiple objectives of a pension system will inevitably involve distortion of the labour market. It is not possible to have a modern economy without such distortions. The real issue is to balance distortions with other goals, not to pretend that there is a way to accomplish multiple goals without distortions.

Thus consideration of pension systems must be in terms of second-best analysis. One should not, however, design pensions in ways that create large distortions which contribute little, if anything, to the achievement of policy goals.

LABOUR MOBILITY. Labour mobility is essential for an efficient labour market – expanding firms need to be able to hire workers, and if there are new job opportunities it makes it more appropriate for less profitable firms to decrease employment. Productivity is enhanced if workers are able easily to move to more productive jobs. To avoid unduly discouraging mobility, pensions should be portable in the face of at least four types of movement by a worker: from one firm to another, from one geographical area to another, from the state to the private sector (employment and self-employment), and from the uncovered (rural) to the covered (urban) sector. Such portability is achieved most readily when the system has a uniform underlying structure across the covered population, both across localities and across sectors, although parameters can vary.

PROBLEMS WITH FINAL-SALARY PENSIONS. There should not be heavy reliance on final wages in determining a person's pension. Such systems are very difficult (in practice, impossible) to organise in a way that permits efficient labour mobility. Moreover, they are subject to manipulation (e.g. raising final wages and so benefits excessively), tend to give higher benefits to better-paid workers, since they are likely to have more rapidly rising earnings trajectories, and impose considerable risk on workers insofar as final earnings are uncertain.

PENSION AGE AND UNEMPLOYMENT. Policy makers often think that a policy of allowing early retirement will ease unemployment or, analogously, that raising the retirement age will aggravate unemployment. That a view is widely held does not make it right. Box 4 explains why the argument is mistaken.

Box 4 Unfounded worries: Earlier retirement and unemployment

Early retirement. If the number of jobs in an economy were fixed, inducing an older worker to retire would provide a job to some other worker, in which case early retirement could ease unemployment. That view is generally mistaken since the number of jobs in an economy is not fixed. From a long historical perspective, developed countries have seen a large decrease in the average retirement age, with no parallel decline in unemployment rates. Empirical evidence for a number of developed countries over a 10-year period shows no systematic pattern whereby countries which encourage early retirement have lower unemployment. There is no reason to think that the basic insight is different in developing countries.

It is wrong for several reasons to think in terms of a fixed number of jobs. First, additional workers, by exerting downward pressure on wages and by making it easier for firms to find suitable workers, encourage the creation of new jobs. Thus the number of jobs is variable, and is influenced by the number of workers. Second, taking a pension early frequently does not remove workers from the labour force, since some workers continue to work elsewhere while receiving a pension from a previous employer. Third, the large pool of rural workers is potentially a much greater source of unemployment. Any attempt to reduce urban unemployment by encouraging early retirement may be dwarfed by migration.

Thus it is mistaken to encourage early retirement or to mandate retirement, both of which are long term, as palliative responses to unemployment which is generally short term. Better to focus on unemployment benefits and on incentives which encourage long-run growth than to distort the labour market in the vain hope that retirement will have a large impact on unemployment. Similarly, disability benefits should be awarded on the basis of disability, not as a response to unemployment.

Raising the retirement age. The corollary to the previous argument is that slowly raising the retirement age in China will not have a significant effect on unemployment.

THE INCIDENCE OF PENSION CONTRIBUTIONS. In a market economy, it is inappropriate to attach too much importance to whether pension contributions are paid by the employer or the worker, because mandatory social security contributions or payroll taxes imposed on employers have the effect of reducing the wages they offer workers, i.e. they pass on the cost of contributions. (A distinction between the cost to the employer and to the employee remains in the short run, since it takes time for wages to adjust to effective labour demand and supply.) If there is a mandatory minimum wage, however, the employer may not be able to lower the wage enough to pass so much of the contribution costs on to the employee, so there remains some distinction between employer and employee contributions.

3.3 Finance and funding

Alongside their effects on labour markets, pension systems also affect the broader economy. Excessive public pension spending may contribute to high tax rates, putting growth at risk. In contrast, pension systems may reduce systemic uncertainty in the economy and increase social stability – a particularly important effect during times of rapid change.

An important feature of pension design is the degree of funding, i.e. whether contributions are used for current pension payments (Pay As You Go – PAYG), or to accumulate assets from which pensions in the future are paid (funding). The degree to which contributions are used to accumulate assets for the pension system can affect the level of national savings and thus the rate of growth. Indeed, it is through the mechanism of increasing national savings that increased funding is viewed as possibly raising economic welfare. Whether increased funding will actually improve welfare depends on the conditions in a particular country, and in particular to the answers – which differ from country to country – to the questions in Box 5.

FUNDING THAT INCREASES NATIONAL SAVING. There are two elements to consider when thinking about using contributions for funding. First, the impact of an increase in funding on national savings is not straightforward and can be anything from close to zero to large, depending on the reaction of private savers and of the rest of the government budget. Private savers may save less on their own account if contributions are being taken from them, meaning there is little impact on national savings, or they may continue to save on their own account as well, increasing national savings. Government may spend more in areas other than pensions, resulting in little or no increase in national savings. Second, while having assets is more advantageous than not having assets, saving more to accumulate more assets may be more or less advantageous to an economy than consuming more, saving less, and accumulating fewer assets. That is, it is not the assets in funded accounts, but the process of accumulating them that is critical for national savings. Focus on the method of generating assets makes it clear that the right way to pose the question of whether to increase funding in order to increase economic growth, is to ask whether it makes sense for an economy to raise contributions or reduce benefits now in order to have lower contributions or higher benefits in the future. Increased funding through lower benefits or higher contributions necessarily redistributes incomes across generations. Thus, there can be no universal answer about whether funding raises welfare. Each country has to examine the question in the context of its own circumstances and priorities, reflecting its current saving rate and its anticipated growth in earnings.

FUNDING THROUGH BONDS. The discussion above focused on funding with a view to increasing savings. An alternative is to transfer contributions to the government to use in paying benefits, while simultaneously placing into workers' accounts a matching value of newly issued government debt. The effect on national savings of the latter policy is similar to that of a PAYG system. However, conventional PAYG systems are based on the payment of future pensions out of future contributions, whereas placement of newly issued bonds by the government into the individual accounts calls for payments, at least in part, out of future tax revenues. Though their immediate effect on saving is similar, the policies may differ over time in their impacts on future benefit levels, contribution rates, general government revenues, and the interest rates on government bonds. With bond funding, the level of benefits depends on the interest rate earned on the bonds; with a defined-benefit system, the level of benefits depends on the formula determining benefits. Thus it is important to distinguish between funding whose purpose is to increase savings and funding based on placement of newly issued bonds, which does not increase savings.

EFFECTS ON CAPITAL MARKETS. A separate argument for funding is that it may improve the efficiency with which savings are channelled into their investment use. This is more likely in countries with developing financial institutions if increased investment encourages better reform of regulatory and supervisory capacity to improve the functioning of capital markets. However, greater recourse to capital markets with poor regulation and insufficient improvement can increase the risk and lower the return to investment.

EFFECTS ON THE INTERGENERATIONAL DISTRIBUTION OF INCOME. The choice between funding and PAYG also has important distributional effects. These are discussed in section 2.3.

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The choice between PAYG and funding has raised considerable controversy. This section has discussed the key analytical questions that a country should answer, summarised in Box 5. Box 6 sets out some lamentably frequent analytical errors.

Box 5 When are funded pensions desirable?

In assessing whether, and to what extent, a move to funded pensions might increase welfare, policy makers should ask two sets of questions.

Is a move toward funding welfare improving?

(a) Does it increase output

- By increasing savings in a country that is short of saving, and/or
- By strengthening capital markets, improving the efficiency with which savings are channelled into investment

(b) Does it have desirable intergenerational redistributive effects?

Can a move towards funding be implemented cost-effectively? Are economic conditions and institutional capacity such that a country can implement plans that are

- Safe and
- Administratively cheap?

Box 6 Common analytical errors

Analytical errors are common. This box summarises only the most obvious and most frequent.

Improper use of first-best analysis. An error under this head is to argue that consumer choice of pension provider in a competitive market will raise individual welfare and lower administrative charges. Such an argument ignores the serious problems set out in Boxes 2 and 3.

Tunnel vision. An example of considering one objective in isolation is to favour a defined contribution pension as avoiding labour market distortions, which it does by shifting income redistribution (and its distortions) to a different portion of the pension system. Proper analysis needs to consider the system as a whole.

Improper use of steady-state analysis. Some analysts compare the long-run return on assets with the long-run return in a PAYG system, which, as is well known to economists, is the rate of growth of covered earnings. Since long-run rates of return are expected to exceed rates of growth this is sometimes presented as a pure gain. But it is wrong to analyse policy by considering only the long run, not including the short-run costs and benefits associated with going from one long run to a different one. Counting future benefits and underplaying current costs makes policies that benefit the future appear more valuable than they really are. Focusing on the rate-of-return comparison is telling only half the story: it ignores differences in risk as between PAYG and funding; it ignores differences in administrative costs; most particularly, it ignores intergenerational distributional effects.

Ignoring distributional effects. The point is most obvious if policymakers are establishing a pension system in a brand new country. If they introduce a PAYG system, the first generation of retirees receives a pension, but returns to subsequent generations are lower; if policymakers, instead, introduce full funding, later generations benefit from higher returns, but the first generation does not receive a pension. The same argument applies in a country that already has a PAYG system: a decision to move toward funding redistributes from the current generation to future generations. Thus *any choice between PAYG and funding is inescapably also a choice about the intergenerational distribution of income*. Different choices are, of course, possible, but it is a fundamental error to ignore distributional effects or to present the gain to pensioners in later generations from a move to funding as a Pareto improvement (i.e. an unambiguous improvement – see glossary), since it comes at the expense of the first generation.

3.4 Redistribution and risk sharing

Good pension design is mindful of the way pensions can have major implications both for the way pensions do (or do not) redistribute within a generation or across generations, and in the way that different pension designs share risks differently.

REDISTRIBUTION WITHIN A GENERATION. While income redistribution is an objective in most pension systems, such systems can also have unintentional distributional implications, some of which may be undesirable. In pension systems which cover only a small proportion of workers (i.e. with small coverage), for example, the use of general tax revenues to meet financial gaps transfers income from the much larger population of taxpayers to the smaller group of covered workers. Some countries have used separate benefit formulas for white- and blue-collar workers which redistribute from lower-paid blue-collar workers to higher-paid white-collar workers by having more generous benefits relative to contributions for the white-collar workers.[2]

REDISTRIBUTION ACROSS GENERATIONS. As discussed earlier, pensions may increase national savings, which redistributes income across cohorts. To amplify, a move towards funding that increases saving today means that consumption falls today, meaning lower spendable income for workers, or lower pensions, or both. If the extra saving leads to higher growth rates the result is higher consumption for future workers and pensioners. Thus, as discussed in Box 6, a decision to move towards funding, if it increases saving, necessarily redistributes from the current generation to future generations.

RISK SHARING. Separate from their redistributive effects, different pension systems share risks differently. It is useful to recognise the different underlying philosophies of risk sharing in different systems. It is also important to recognize that there are multiple sources of risk.

We start with two polar extremes of fully funded systems.

Pure funded defined-contribution (DC) plans (also known as funded individual accounts) (see glossary): in such plans, individual workers set aside a given fraction of their earnings to buy financial assets, which are accumulated until retirement. At that point the retiree can buy an annuity or start to make a series of withdrawals. Fluctuations in the cumulative return on assets during a person's working life fall on the individual account holder by affecting the amount available to finance retirement. If the worker buys an annuity at retirement, he or she also faces the risk in the pricing of annuities, reflecting projections of mortality projections and the return on assets from this point forward. But once the annuity is purchased, further fluctuations in asset returns and mortality outcomes compared with the projections used in pricing the annuity are borne by the insurance company. As the insurance company adapts to the realizations of returns and mortality, it may in turn adjust insurance pricing, compensation of its workers, and returns to its shareholders. If the worker does not buy an annuity he or she faces the mortality and return risks in retirement. That is, the risks of different outcomes up to retirement fall on the individual retiree, since benefits adjust to what is in a worker's individual account at the time he retires.

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[2] It is also noted that groups with different life expectancies will benefit differentially from a system that collects contributions from those who are working and pays benefits for the lifetime of the retired worker.

Annuitisation shifts risks after retirement to insurers, but still leaves the risk of the pricing of annuities on retirees at the start of their retirement (or when they purchase annuities).

Pure funded mandatory defined-benefit (DB) plans (see glossary): in such plans the risk is borne through adjustments in contributions and therefore by the workers during their working lives. In order to sustain full funding so as to deliver the promised benefits, contributions need to be adjusted as returns vary and as mortality projections change. Since (a) there is a single fund for all benefits and (b) changes in contributions are normally uniform across workers, there is a collective dimension in that adjustment at any time depends on the full array of workers who share in the provision of aggregate contributions. A plan need not be fully funded at all times – fluctuations in the degree of funding are a device for shifting risks intertemporally, and thus across workers born in different years as well. The fund may purchase annuities, shifting risks to insurance companies. A plan may have a sponsor who absorbs some risk – a corporate employer or the government relying on taxes beyond simply contributions. The former shifts risks to current and future workers at the firm, its current and future shareholders, and/or its current customers, if the company responds to a pension deficit by raising its prices. If the government is the sponsor, the risks are shifted to current and future taxpayers.

Thus one element in the distinction between DB and DC plans is the focus on adjusting contributions or adjusting benefits. In practice, governments and corporations commonly adjust both, so that plans need not be "pure." Second is the collective aspect of having a single fund rather than individual accounts. This opens up opportunities for risk sharing within the DB context, although governments could redistribute across individual DC accounts and can provide insurance on the rate of return, financed from outside the pension system.

It is important that corporate pensions remain close to fully funded since corporations can fail, leaving workers with less than had been in the plan documents or leaving it to government to insure the workers. While occasionally governments go bankrupt as well, in countries with sound economies and functioning governments, this risk is not significant, so that governments can manage systems that are well designed but less than fully funded. The extreme version of this has no funding, though that is not standard: most plans have a buffer fund for short run fluctuations, and some government plans have significant funding.

We turn now to systems that are less than fully funded.

A pure PAYG DB system financed by social security contributions: in such plans there are no assets and so the risk of different rates of return does not matter. Instead the risk to the income of the plan comes from fluctuations in the earnings of covered workers for the given contribution rate. The risks are shared by current workers; if the fund can run a deficit, the risks can be shared also with future workers. This is similar to the sharing of risks in a pure fully-funded DB: with the greater reliance on contributions there is greater concern about fluctuations in covered earnings. There remains the risk of the evolution of mortality rates – if people live longer the cost of paying a given level of benefits will increase. In practice, plans are not "pure", and if benefits are adjusted some of the risk falls also on pensioners.

A system financed by general tax revenues: in such systems, for example, a non-contributory pension, the risks are shared by all taxpayers, and hence across generations (since future taxes as well as current taxes can change as debt varies). The same is true in a social insurance arrangement in which part of the costs of paying benefits is financed by transfers from general government revenues.

In practice, countries frequently adjust both contributions and benefits, thus sharing risks between workers and pensioners.

A central question for policy-makers is how risks should be shared, a question with both efficiency and equity implications. As with redistribution, different answers are possible, but it is a major error to ignore the question.

3.5 Gender and family

Another decision with major ramifications is the way benefits are structured in relation to the family. Specifically, should the basic pension be awarded on an individual or family basis? Pension systems could focus primarily on workers, leaving the bulk of arrangements between the worker and his family to individual discretion, or they could focus on the family by mandating protection, primarily for the surviving spouse (predominantly widows) and sometimes for young children as well. A focus on the family can be achieved without any redistribution across families, for example, by mandating that retirement benefits be paid as joint-life annuities (see glossary); but it can also involve some redistribution (for example, by favouring one-earner couples over two-earner couples and single workers in the benefit formula).

Different pension arrangements also have differential effects by gender. A non-contributory pension will favour women more than a contributory pension, since women typically have more fragmented employment histories; a system that requires joint-life annuities will tend to benefit women, since women tend to have a longer life expectancy than men, so that there are more widows than widowers.

3.6 Capacity to evolve

A desirable characteristic of a pension system is that it has the capacity to evolve in a straightforward way as incomes rise, reforms proceed and administrative capacity grows. This principle is particularly relevant to China, where there is rapid and widespread change, including the movements from rural to urban and from state to private sectors, a rapid change in the age structure, and major reforms in labour markets and financial markets.

4. Pension Systems around the World

This section briefly outlines the wide range of choices facing policy-makers. An implication of the discussion in Box 1 is that countries have successfully implemented pension systems using very different mixes of structures. In addition, choices widen with economic and institutional capacity.

Pension systems, worldwide, include one or more of the following elements, in different degrees of importance and size.

NON-CONTRIBUTORY PENSIONS, MINIMUM-INCOME AND MINIMUM-PENSION GUARANTEES. In many ways the simplest option is a tax-financed pension available to everyone beyond a given age, as in the Netherlands and New Zealand, commonly referred to as a citizen's pension. As a variant, a tax-financed citizen's pension can be affluence tested, that is, given to everyone except the best-off, as in Australia, Canada, Chile (since July 2008) and South Africa. Since non-contributory pensions figure prominently in the discussion in Part Two, Box 7 summarises international experience with this type of arrangement.

Alternatively, there can be a guaranteed minimum income available to all poor elderly people on the basis of an income test, as in many countries. The test might look only at income from mandatory pensions, or at total income, or at income and assets. A country can combine a minimum-income guarantee with a higher minimum-pension guarantee, as formerly in Chile.

A non-contributory pension that is tested against the benefit from a contributory pension is mathematically equivalent to a guaranteed minimum pension that is similarly phased out against the contributory pension. The choice of vocabulary is likely to affect the politics of the design of details and may affect the perceptions of workers.

Box 7 Noncontributory pensions[3]

High-income countries. The bedrock of the system in New Zealand is a noncontributory universal pension (New Zealand Superannuation) paid from general taxation to all persons over 65 who pass a residency test,[4] and included in a person's taxable income. The pension is 72.5 percent of the net average wage for a married couple, more per person for singles (varying with living arrangements) and less if one of the couple is under 65.

Like New Zealand, Australia, Canada (Box 8) and the Netherlands also have a noncontributory pension, financed from general revenue. In Australia and Canada, the benefit is subject not to an income test, designed to restrict benefits to the poor, but to an affluence test, which has the more limited purpose of clawing back benefits from the rich.

Middle-income countries. Chile (Box 9) legislated a new noncontributory pension in 2008 to supplement the individual accounts that were started in 1981. The pension is affluence-tested – when mature the benefit will go to roughly 60 percent of the elderly population. South Africa also has a noncontributory pension, the State Old Age Grant. The case is interesting in that it reaches effectively not only urban pensioners but also the rural elderly and is well targeted. The last point should not be surprising, since old age is a good indicator of potential poverty.

The pension, paid to men at age 65 and women at 60, is financed from general revenue with no contribution conditions. The benefit—around half of average household income—is high relative to the very low incomes of most nonwhites in South Africa, but low relative to the

[3] For further discussion of noncontributory pensions, see Willmore (2007). On Australia, see Borowski (2005) and, for gender aspects Jefferson and Preston (2005).
[4] The pension is payable at age 65 to all New Zealanders living in the country, subject to ten years' residency since the age of 20 and not less than five years' residency since the age of 50.

incomes of the better off. Originally introduced as poverty relief for whites during the 1930s, the plan was gradually expanded to cover all race groups. Research findings suggest that it is highly effective both in terms of social policy and in the way the plan is implemented:

> ‘The South Africa social pension is an example of a transfer plan where eligibility is determined by age. In spite of the simplicity of the targeting indicator, the pension is effective in reaching the poorest households and those with children.… The South African authorities have overcome the difficulties of making cash transfers to even remote rural areas, and of checking eligibility among even illiterate pensioners.’ (Case and Deaton 1998, p. 1359).

The administration of the system is consolidated under the South African Social Security Agency. In most urban areas, people receive the pension through bank accounts or post offices. In rural areas government has outsourced delivery to the private sector, organized at the provincial level. The system at its best is effective and innovative. In some areas vehicles fitted with cash dispensers go to predesignated places at preordained times. Pensioners enter their ID number (or fingerprint), and their pension is paid out. Notionally there is a government official on hand to provide help, but this facility is patchy.

Problems remain, however, including the potential for private sector contractors to make excessive profits; attacks on vehicles; and the disincentive to banks to move into rural areas, since the system carries out what would otherwise be one of their major functions. Not least for these reasons, there has been a significant new shift to placing the cash machines inside supermarkets. Thus the cash-dispensing function of the banks is now available, as is the savings function (since pensioners do not have to withdraw the whole monthly benefit at one time), but not the other functions of banks.

Low-income countries. A number of low-income countries have noncontributory pensions (sometimes called social pensions), including Bolivia, Botswana, Namibia, and Nepal. Total spending is typically small (below 1 percent of GDP in Botswana, Namibia, and Nepal), and the benefit is also generally small (Willmore 2007, Table 2).

Pensions of this sort have the great potential advantage of extending coverage to people with limited contributions records, especially women, and workers in the informal sector. In assessing their desirability and feasibility in a particular country, policymakers need to consider a range of factors:

- How well could the pension be targeted? The cost-effectiveness of a noncontributory universal pension depends on the accuracy of age as a targeting device. In principle, the more poor people a country has, the greater the importance of poverty relief and the better targeted a noncontributory pension will be. The extent to which age *alone* is a good indicator, however, will vary from country to country (see Kakwani and Subbarao 2007), depending, for example, on the extent to which old people live alone or as part of an extended family.
- Is administrative capacity sufficient? Even a simple pension has administrative requirements. The government must be able to establish people’s ages and to guard against multiple claims by one person and claims by relatives on behalf of a pensioner who has died.
- Is the cost of delivery low enough relative to the size of pension being considered? Table 1 shows administrative costs of non-contributory pensions in a number of countries.

Where a government has the necessary implementation capacity, policymakers have a range of options to contain costs:

- The level of the pension can be kept low (for example, it is only 10 percent of GDP per capita in Botswana and Nepal).
- The age at which the pension is first paid can be set high (in Nepal only 1.1 percent of the population are older than the qualifying age).
- If administrative capacity permits, a further option is to pay a smaller pension to the younger old (for example, those aged 65 to 75) and a larger one to the older old (those 75 and over).

Table 1 Administrative costs of citizen's pensions

	Number of beneficiaries	Beneficiaries as percent of population	Cost as percent of transfers	Cost per beneficiary (US$)
Botswana 1999	71,000	4.1	4.5	15
Kosovo 2006	130,000	6.5	1.5	9
Mauritius 1999	109,000	9.3	2.5	17
Namibia 1999	82,000	4.4	15.0	51
New Zealand 2005/6	488,000	11.9	0.5	48

Source: Sluchynsky (2009, Table 14.1)

DEFINED-BENEFIT PLANS. In a national DB plan, a worker receives a pension based on his history of covered wages and his age at the time he first receives benefits. The pension may be based on the worker's wages in his final few years of work, or on a longer period, up to his entire career. There may be a taxpayer subsidy from general revenues. Most national DB plans are primarily PAYG, with pensions paid out of current revenues with little or no funding, but some have partial funding, well in excess of a minimum reserve, through a build-up of assets held in a trust fund. Some partially funded DB systems hold only government debt. Others hold diversified portfolios (diversified both across assets and across countries). These portfolios can be managed either by government agencies or by private firms hired to handle investment transactions or even to make investment decisions.

FUNDED DEFINED-CONTRIBUTION PLANS. With funded individual accounts, pensions are paid from a fund built over the years from members' contributions. The contribution rate is fixed, so that a person's pension is an annuity whose size is determined by the size of his lifetime pension accumulation, life expectancy and the rate of interest. Countries with DC systems can use publicly organised investment (as in Singapore) or private, regulated financial intermediaries (as in Chile).

NOTIONAL DEFINED-CONTRIBUTION (NDC) SYSTEMS. A fairly recent innovation internationally, pure NDC systems (sometimes also called non-financial defined-contribution systems) are hybrid individual account systems, with elements both of DC and DB. They are conceptually similar to pure DC pensions in that risks are shared by making all adjustments on the benefits side. But they are similar to DB pensions in that they are not fully funded and may be entirely

PAYG and determine benefits using formulas in place of market rates of return and mortality projections. NDC systems parallel DC pensions in the approach to pension design:

- Each worker pays a contribution of *x*% of his earnings, which is credited to a notional individual account. The contribution rate can be different for workers of different ages and can be changed from time to time;
- The cumulative contents of the account are credited periodically with a notional interest rate, specified by the government in advance, and chosen to reflect what can be afforded;
- At retirement, the value of the person's notional accumulation is converted into an annuity, based on rules for measuring life expectancy and the rules in force for adjusting benefits in payment (for example, for inflation) and using the notional interest rate as the discount rate;
- The account balance is for record keeping only, because the plan does not own matching funds invested in the financial market. This explains the term 'notional'.

It is important to be clear about the nature of such plans. The central analytical point is the distinction between two concepts:

- A benefit is *actuarial* if the expected present value of a person's stream of benefits over his expected remaining lifetime, based on market interest rates and projected life expectancy, is equal to his pension accumulation at the time the pension starts.
- A benefit is *funded* if is paid from an accumulated fund.

A pure defined-contribution pension is both actuarial and funded. A pure NDC system pays a benefit that is quasi-actuarial, but the plan will not be fully funded and may be entirely PAYG. Since there are formulas instead of market interest rates and market-based projections of life expectancy, we refer to them as quasi-actuarial. Despite being developed only recently, NDC pensions have been included as part of the pension system in a number of countries, including Sweden (Box 10), Italy, Latvia, and Poland.

ADJUSTING BENEFITS AFTER RETIREMENT. Once a person has retired, pensions based on a nominal annuity are vulnerable to inflation. A major question, therefore, is whether pensions are protected against inflation, and by what mechanism. Countries vary: some index benefits to prices, others to wages, and others to a weighted average of the two.

PUBLIC EMPLOYEE PENSIONS. Pension systems set up by government for public employees are widespread. Most are defined benefit systems, although some have been defined contribution or have offered defined contributions as an option. Some public employees are included in the national mandatory system, with the public employee pension being supplementary, as is done for employees of large corporations. Other countries exempt some or all public employees from the mandatory national system.

VOLUNTARY PENSIONS. These are separate from mandatory arrangements, and arise in two ways. An employer may establish a pension fund which is voluntary to the employer, in that it is not mandated by government, although a worker may not have a choice if he joins a firm with a pension that is mandatory for the firm's employees. For workers covered by the mandatory national system, such voluntary pensions (the 'enterprise annuities' in China fall into this category) can be thought of as supplementary. In addition, in many countries, workers can choose to make contributions to a voluntary individual plan. Voluntary pensions of both types typically receive favoured treatment for the purposes of income tax.

Countries vary widely in the size of their mandatory systems, and hence in the amount of room for voluntary arrangements. This can be seen in the variation in the rates of mandatory pension contributions, for example, 12.4% of earnings in the USA, 18.5% in Sweden, 19.3% in Germany, and 32.7% in Italy.[5] This naturally results in different average replacement rates.

These various pension elements vary in design and are assembled in very different ways and with different relative sizes across countries, as illustrated by the examples in Box 8, 9 and 10.

Box 8 The pension system in Canada

The public pension system in Canada has two elements: the Old Age Security program is designed primarily to provide poverty relief, the Canada Pension Plan primarily to provide consumption smoothing.

The Old Age Security (OAS) program provides a flat-rate OAS pension (included in taxable income) to those over age 65 meeting the residence requirement and an additional income-tested Guaranteed Income Supplement (GIS) for low-income OAS pensioners.[6] The full OAS benefit goes to those with 40 years of residence, with partial benefits proportional to years of residence. Both OAS and the GIS are financed from general taxation .The OAS benefit is subject to an affluence test, based on total income. About 5 per cent of Canadians face some clawback (i.e. 95 per cent receive the full benefit), and about 2 per cent receive no OAS benefit at all.

The Canada Pension Plan (CPP) is a partially-funded defined benefit pension. Benefits can be claimed after age 65 independent of stopping work and between 60 and 65 for those stopping work (i.e., with sufficiently low earnings). Workers and employers each make an equal contribution, based on earnings between a minimum and maximum. The CPP also provides insurance in the form of disability and survivors' benefits, and there is a lump-sum death benefit.

CPP is partially funded with the aim of ensuring that its finances are robust over a 75-year period. CPP funds are invested by the CPP Investment Board, whose remit is to pursue the highest return compatible with avoiding undue risk. The Board is autonomous, and invests the funds in financial markets. The Board is accountable to the public and reports its investment results (see www.cppib.ca).

Official figures report a poverty rate among people aged 65 or more of 4.8 per cent in 2007.

[5] Italy also has mandatory severance pay.

[6] The residence requirement for OAS is 10 years since the age of 18 for pensioners living in Canada, and 20 years for a person who wishes to receive an OAS pension while living outside Canada. The GIS is paid only to pensioners resident in Canada.

Box 9 The pension system in Chile

Chile has a system with funded individual accounts that are mandatory for formal workers, together with an affluence tested citizen's pension. For the privately managed, highly-regulated defined-contribution individual accounts, employees are mandated to contribute 10 percent of covered earnings, plus contributions for disability and survivor insurance and fees for providers. Workers may take their pensions as inflation-indexed annuities (purchased from highly-regulated insurance companies) or as phased withdrawals from the individual accounts. Notwithstanding the intentions of policymakers and the ease of entry, private pension provision became highly concentrated, making clear the limitations of competition even in a medium-sized economy like Chile.

The individual accounts provide consumption smoothing, supported by various institutions to assist poverty relief. Until 2008, a minimum pension guarantee, financed from general revenue, was available for those who had contributed to the mandatory system for at least twenty years; in addition, a means-tested pension, also financed by general revenue, paid a benefit at about half the level of the minimum guarantee. Beginning in 2008, the minimum guarantee and the means-tested pension are being phased out and replaced by a noncontributory basic pension.

Thus the post-1981 system in Chile gave heavy weight to consumption smoothing, with some insurance through voluntary annuitisation and with limited weight to poverty relief. The problems of the system were well-documented, including pensioner poverty, incomplete coverage, gender equity issues, and high administrative charges and fiscal costs, all of them contributory elements in the decision to introduce a citizen's pension in 2008.

Box 10 The pension system in Sweden

The pension system in Sweden comprises three elements: a partially funded system of NDC accounts (Inkomstpension), a generous Guarantee pension (tested against the NDC pension) that keeps all the elderly out of poverty, and a system of funded individual accounts, the Premium Pension. Approximately 43 percent of Sweden's retirees receive some guarantee benefit. There is also a housing allowance and further means tested benefits for the poor. The guarantee provides that a person who reaches retirement after forty years' residence in Sweden is eligible for a full minimum benefit. For fewer years of residence the benefit is reduced proportionately. In addition, credits are given during working life, both to the NDC pension and to the Premium Pension, for periods when a person is out of the labour force looking after young children or collecting unemployment or sickness benefits.

The system has an 18.5 percent contribution rate, of which 16 percentage points are for the NDC element and the remaining 2.5 percent for fully funded individual accounts. The NDC element uses a notional interest rate equal to the rate of growth of average wages. However, if at any time the calculated financial balance of the system is unsatisfactory, that rate is lowered automatically; no legislative action is required. Each worker receives an annual statement with information about the notional and funded account balances and projections of future benefits.

Benefits may first be claimed at age 61, and this age is not scheduled to change; in practice, however, most people first claim benefits at age 65 (in contrast with the United States, where many people claim benefit at the earliest eligibility age).[7] The initial benefit is set by a quasi-actuarial calculation based on the mortality of the worker's birth cohort, the age at which he or she first takes

[7] In Sweden in 2006, 7 percent of participants first took a pension at age 61, 4 percent at 62, 4 percent at 63, 4 percent at 64, 75 percent at 65, 4 percent at 66, and 1 percent at 67, by which age almost everyone was drawing a pension (although without necessarily stopping work). Those not working at earlier ages than 65 are typically on disability benefits.

benefits, and the anticipated rate of increase in benefits. Benefits increase each year after retirement based on the difference between the notional interest rate (normally the rate of wage growth) and the anticipated annual increase of 1.6 percent.

The 2.5 percent of payroll going to the funded individual accounts is collected by the government and distributed to participating mutual funds. The number of funds is large, 785 at the end of 2007. Individuals may choose the funds in which to invest, up to a maximum of five, with a default fund for the large number of workers who do not make a choice. As discussed in section 7.3, in recent years about 90 percent of new workers made no choice and hence entered the default fund. Funds must be approved by the government and must accept the charges established by a centrally set formula. On retirement a worker's accumulated assets must be used to purchase an annuity (individual or joint-life) provided by the government. Deposits may be transferred between spouses or registered partners (subject to a 14 percent reduction for anticipated longer lives of recipients).

Sweden addresses the problem of administrative costs through a central clearinghouse, whereby the administration and maintenance of individual accounts is centralized. Contributions to the NDC pension and individual accounts are collected together, and the funds are then channelled wholesale to individual accounts; thus fund managers do not know their individual contributors. The average annual charge (net) is 0.73 percent of assets, equivalent to a charge ratio of about 14 percent.[8] Although this central management of funds is similar to that in the U.S. Thrift Savings Plan (Box 14), the cost is much higher, though the two sets of institutions are not fully comparable since the latter severely restricts the choice of funds, and deals only with a single employer, the federal government. The system shows that, even in a developed country, fully funded individual accounts can be expensive, and that many workers show no interest in having a wide choice of investments.

5. Lessons from International Experience

The main conclusion to be drawn from experience worldwide is that there is a wide range of pension designs, with no single, dominant arrangement. Systems function reasonably well in countries that have made very diverse choices since there are many ways to design good systems.[9] This section discusses some of the central lessons.

5.1 Implementation matters

Specifically, the scale of mandatory pensions and the complexity of their design must respect the constraints of financial capacity and technical capacity

FINANCIAL CAPACITY. Consumption by pensioners is at the expense of consumption by workers, spending on investment, etc. From a macroeconomic perspective, therefore, pensions are in part a device for dividing output between workers and pensioners. Clearly the amount that is spent on pensions must be compatible with a country's financial capacity.

[8] Fees for the individual accounts in 2005 included an administrative fee charged to all accounts of 0.3 percent of assets; an average fund fee (including the default fund) of 0.43 percent of assets after a rebate (the average rebate is 0.37 percent of assets); and an average fund fee for the default fund of 0.16 percent of assets after rebate. Thus, on average the total fee is 73 basis points, which, as Table 7.1 shows, reduces accumulations over a forty-year career by roughly 14 percent.

[9] Many countries need to adapt their systems to take account of changing demography. That countries have been slow to adapt does not undercut our view that many systems have functioned reasonably well.

TECHNICAL CAPACITY: PAYG SYSTEMS. Mandatory pensions managed by the government require significant public-sector capacity. Government must be able to collect contributions effectively, to maintain records over the years for workers who will be mobile both geographically and across firms, to make actuarial calculations to adjust benefit levels for the age at which they start, and to pay pensions in an accurate and timely way. Government needs to project future contributions and benefits in order to adapt the system slowly, and with significant lead times, to evolving financial capacity. Separately, pensions require effective coordination between central, provincial and local levels of government, if all three are to have a role in supporting the elderly. Since a PAYG system commonly has partial funding, there is a need for portfolio management if the portfolio is not limited to holding government debt. This capacity is readily available provided that there is adequate auditing and supervision.

TECHNICAL CAPACITY: FUNDED INDIVIDUAL ACCOUNTS. Additional technical capacity is needed for fully funded individual accounts, particularly in arranging for workers to select portfolios, as well as investing funds. Also important is the process of educating workers – both about what they have accrued at the time and what they can expect to have at retirement, and about how to think about the choices they can make. In an economy with vast numbers of workers with no experience in making such financial decisions, it is critical to provide education on the implications of different choices. All these steps have costs that vary with design and with the quality of services provided. Those costs have to be set alongside the benefits from individual choice, noting that, for the reasons set out in Boxes 2 and 3 it is mistaken to design pensions assuming well-informed consumer choice and good individual decision making.

It is worth noting that, notwithstanding Poland's considerable institutional capacity and heavy emphasis, during the reform process, on the importance of building an adequate administrative infrastructure, the reforms there almost collapsed because the system was initially unable to keep track of people's contributions. The roots of the problem were delayed implementation of the new computer system, initial compliance problems and administrative inefficiency. The situation has been rectified.

5.2 Government matters

Both mandatory and voluntary pension systems depend critically on effective government.

The central role of government in running a mandatory system was discussed above. It is a fundamental error to suppose that voluntary pensions organised by the private sector relieve government of responsibility for pensions. Private pensions depend critically on government to set rules and to enforce them. Government must be able to enforce compliance with contribution conditions, to protect asset accumulations, to maintain the macroeconomic stability which is essential for long-term private accumulations, and to ensure effective regulation and supervision of financial markets – markets that do not function well without significant government regulation and supervision – including the insurance and annuities markets. Such regulation is vital to protect individuals in areas too complex for them to protect themselves. It requires tightly drawn-up procedures *and* a body of people with the capacity and will to enforce those procedures. More generally, private markets function best when government, in its legislative role, has put in place clear good rules (avoiding bad ones) and where enforcement is even-handed, non-corrupt, prompt and predictable.

Similar requirements hold for mandatory pensions that rely on private providers. Chile offers an illustration. Its system is sometimes described as relying on unfettered markets rather than government. This is a misreading. Though the individual accounts are handled by private firms specialised in such work, those firms are tightly regulated by an agency set up specifically for this purpose. Regulations, which have evolved over time, restrict portfolios, the structure of charges to workers, and the process of competition between firms. Annuitised pay-outs are made by private insurance companies that are also tightly regulated on their investment portfolios and on the process of selling annuities. And Chile has devoted considerable resources to improving the regulation of the financial markets through which these firms invest.[10]

5.3 Pensions policy must take account of transactions costs

Funded individual accounts, where there is a choice of the provider of investment services or a choice of the individual portfolio directly from the market, have significant transactions costs. Individual accounts with a government-selected portfolio or limited set of alternative investments can have lower transactions costs, but can easily have a poor rate of return if the government selects investments poorly or in pursuit of some goal other than the accumulation of assets for the provision of retirement income.

The high administrative costs of funded individual accounts with wide choice are largely a fixed overhead per account together with a large fixed cost to set up the network. The charges by private providers of accounts of mutual funds do not typically match the pattern of costs and cover costs in attracting customers as well as profits. Administrative costs erode the rate of return on pension accumulations, and the problem is particularly acute for smaller accumulations, i.e. those of people with lower earnings and, even more so, in countries where most people have low earnings. The past 10 years have seen increasing awareness both of the existence of these costs and of their significant size. For example, a charge of 1% of the balance in an account per year would reduce the balance at the end of a 40-year career by roughly 20% because of the reduction in the net compound interest. In Chile, between 12 and 13% of contributions are currently used for administrative charges and returns to private firms (excluding the premia for disability insurance), although the charges were higher earlier. This does not include the additional costs associated with paying benefits, whether annuitised or not. In its first formulation, administrative costs in the privatised element of the UK system were on track to use roughly one-third of what would otherwise have been available for benefits. Sweden designed a system with centralised purchase of mutual funds for workers in the aggregate and rules limiting charges by mutual funds, but it still has charges that would reduce balances at the end of a career by 14%. The situation is even more costly in Latin American countries that have followed Chile’s lead, except in Bolivia, where investment managers’ fees were set by bidding, but there are concerns about the quality of services provided.

[10] It should be noted that the Chilean economy also underwent other reforms that contributed to the outcome of its overall growth, so that it is wrong to attribute Chilean success solely to the pension reform.

Centralised investment by a government agency can avoid high transactions costs. This can be through individual accounts, as in Singapore, or with a diversified portfolio for a DB system, as has been the case in Sweden for years and as recently adopted in Canada and Switzerland. Funding for DB pensions has a long history in state and local governments in the USA. The history of the quality of investment is very mixed. Some countries have done poorly with centralised investment. With recent focus on the incentives and transparency of the process of such investment, some countries have seen returns comparable to those of private investors. Good quality investment is more likely with full and transparent accounting of the operations of agencies doing the investment, including a clear and explicit remit, independent non-political management, and detailed, audited accounts that are published regularly. However, it is difficult to put in place a system that can ensure good quality investment, particularly where there is limited experience with such investment.

5.4 Funded individual accounts may or may not assist capital markets

It is sometimes argued that introducing funded individual accounts will facilitate the development of capital markets. This may be the case, but not always or necessarily.

For funded individual accounts to function properly, contributions to the accounts should be used to buy assets. Purchasing assets is best done in financial markets and/or through financial intermediaries, such as banks and insurance companies. Thus two central questions are whether existing capital markets and financial intermediaries do a good job of providing the services needed for funded accounts; and whether funded accounts, by increasing the demand for market and intermediary services, improve the functioning of both.

In two polar cases the answer is simple. In some countries, the existing financial infrastructure is too weak to risk the pensions of a large number of workers by mandating funded individual accounts. While, in some developed countries, financial capacity is sufficiently well developed that further improvements as a consequence of such a mandate are unlikely. Between the two extremes is a range of country capacities where there is the potential to improve capital markets but also the risk that, without enough improvement, workers will not get good returns on their contributions, or the government will have to bear the cost of bailing out the pension system.

The risk is easy to comprehend – the performance of inadequate markets can range from low returns to large-scale embezzlement. Moreover, inadequate markets have much higher administrative costs than better developed ones. It should be noted that poor markets not only hurt pensioners but can also imply a worse allocation of investment than would occur with less formal ways of channelling savings to investment.

The possibility of gain is also easy to comprehend, since better-functioning capital markets increase economic efficiency and so economic growth. What is critical to the possibility of gain is a sustained effort to improve the regulation of markets and the functioning of the economy generally. In Chile, where individual accounts have helped with the development of the capital markets, they served as an additional source of political pressure to put in place better regulation. That is, while additional demand helps to some degree with the development of the market, the primary benefit comes on the political side – on the greater importance of market regulation, and so a greater ability to legislate and implement a better regulatory regime.

Of other countries which have put in place individual accounts on the Chilean model, only Peru has experienced significant improvement in its capital markets, although there has not been much time for many of the Chilean imitators to see such developments. One reason for a limited impact of individual accounts on markets is that retirement savings call for a buy-and-hold investment strategy, rather than investments with shorter time horizons. Thus, while Chile has had an increase in the extent of capitalisation of its economy – in the ratio of stock and bond market value to GDP – there has not been a matching increase in liquidity in the market, measured in terms of the volume of transactions relative to the degree of capitalisation.

One lesson from Chile's experience is that creating funded individual accounts can enhance growth if it is coordinated with improvements in financial and insurance markets – it is not essential that these markets are in a fully satisfactory condition before a country embarks on such a system. However, to avoid a fiasco (a possibility made real by some Latin American countries), there are basic conditions that must be met before starting such accounts. Thus, the issue of whether to use funded individual accounts to help develop capital markets, or to consider mandatory funding only when those markets are further developed and regulated, requires careful consideration, in terms of detailed country specifics, of the potential gains and risks.

In some circumstances it may be better to develop capital markets by encouraging voluntary pensions, thus providing a market test for later introduction of a mandate. That is, voluntary pension accounts can also stimulate market development, particularly where the economy is large enough that economies of scale can be achieved on the basis of voluntary investments. The experience of Brazil and South Africa with employer pensions supports this view.

Beyond the impact on capital markets, in many countries pension funds have played an important role as long-term strategic shareholders in overseeing the performance of companies by monitoring firms, exercising shareholder voting rights, and being represented on the boards of some companies. Moreover, pension funds can contribute to improving corporate governance generally by lending more weight to reform, including better legislation and better regulation.

5.5 How can pensions be provided to parts of the population with limited labour market participation and without employers (the self-employed)

Even countries with very high pension coverage of employed workers have concerns about those with incomplete histories, primarily women and informal workers who may have very incomplete histories of employment. Countries generally have difficulty extending pension systems that were created for employees of established firms to these latter groups. One solution is to provide a pension to the entire population above some age, with the benefit the same for everyone with lifetime residence in the country (and pro-rated for those spending some time abroad). Without any restrictions, if the benefit level is high enough to reduce elderly poverty significantly, such a program may cost more than a country wants to pay. In addition, the need to raise revenue to finance the pension will add to the distortions in the labour market from the overall tax system. Thus countries often limit the size of such payments, trading off distortions from the limitation of payments against the distortions from raising more revenues. Such a tradeoff is organized in a number of ways in different countries. The pension can be subject to income tax, which, with a progressive income tax, provides relatively more to people with lower incomes. The pension can be reduced based on other income of the recipient, or just his or her other pension income. And the formula for reducing pension payments relative to other income can phase the benefit out quickly, concentrating benefits on the lowest income levels, or phase it out slowly, focusing on avoiding payment to the best-off, rather than on providing benefits only to the poorest. These different choices can make sense in different circumstances, depending on the age distribution of the population, fiscal capacity and country goals.

Part Two: Options for Reform

6. Pension structure

Currently, China has a contributory pension system for urban workers, which has two parts – a basic pension and individual accounts. There is a separate pension system for government employees. There are voluntary pensions. The Dibao system provides resources to some of the poor elderly. The State Council has decided to start pilots to develop rural pensions. And individuals can save for their own retirement. We briefly review the current status of these elements before discussing ways of expanding coverage by extending the contributory system and by starting a national non-contributory pension.

6.1 The contributory system for urban workers

As part of its far-reaching reform of the overall economy, China initiated fundamental reforms of the social security system, moving from the old enterprise-based system toward a mandatory system consistent with the needs of a modern economy. A major accomplishment is the establishment of the three-part system – the basic pension, individual accounts, and voluntary pensions – which provide a good basis for continued pension reform. The basic pension plays a key role in providing higher replacement rates for lower earners – important for reducing poverty and providing insurance. In China, earnings are rising rapidly and the distribution of those earnings is widening. Thus an individual account element, linking pensions to earnings, becomes increasingly important for replacement rates after retirement. And both parts provide longevity insurance by paying benefits on an annuitised basis. The combination of social pool and individual accounts thus provides some poverty relief, insurance and consumption smoothing.

Voluntary pensions outside the mandatory system, including enterprise annuity plans, individual savings, and other pension plans organised by industries or localities, are an essential complement to the social pool and individual accounts. People have different needs, tastes and jobs. Voluntary pensions offer a mechanism for translating those preferences into outcomes. With the degree of uniformity that must be a part of a national mandatory system, voluntary pensions, both enterprise and individual based, can accommodate the wide differences that exist in a country as large and diverse as China. Indeed, a uniform national system in China would be most valuable when it coexists with a sizeable voluntary pension system. Voluntary pensions can also have an important role in supporting capital-market development and regulatory expertise, thereby enhancing the long-run role of the private sector in providing pensions. People also save for retirement directly, not necessarily using the pension mechanism. From many perspectives – not just retirement – it is important that safe investment opportunities with a decent rate of return be widely available.

6.2 Agenda for strengthening the system

The three elements of the present reformed system complement and strengthen one another and together can serve as part of the structure for China's pension system in the coming decades. In the course of implementing this pension system, however, problems have emerged with the mandatory system, with voluntary pensions, with pensions for public employees, and with pensions for rural workers. Also it is possible that higher rates of return on safe savings opportunities would encourage greater accumulations and so help to support the elderly.

THE MANDATORY CONTRIBUTORY SYSTEM. At a strategic level, three areas stand out: coverage, system deficits, and problems with individual accounts.

Coverage. The system faces several challenges.

- Organisation in practice remains highly fragmented;
- The enforcement of mandated contributions is uneven;
- Coverage in urban areas is incomplete, with contributions from employers and workers outside the state-owned-enterprise (SOE) sector still very limited;
- The contributory system largely omits migrant workers and workers in rural areas.

Section 7 considers the path to extending coverage of the contributory system and the role of a non-contributory system in providing coverage.

System deficits. Pensions in most areas run a deficit: pension spending exceeds the ability to collect contributions and the intended use of some contributions for funded individual accounts. Future deficits are also anticipated, given current rules and the anticipated rise in the dependency ratio (the ratio of retirees to workers).

Individual accounts. A move from PAYG towards funding has inescapable up-front cash-flow costs, because it is necessary to find a way simultaneously to finance the pensions of the current retired generations on a PAYG basis and to pay contributions into the funded individual accounts of current workers. The deficit just described makes it difficult to meet these transition costs, resulting in so-called 'empty individual accounts', empty because local governments often used the contributions of workers to their individual accounts to finance benefits in payment. Moreover, a system for organising individual account investments in financial markets has not been developed and those individual accounts that are funded are able to invest only in low-return bank deposits and government bonds.

Sections 9 through 14 analyze basic pensions and individual accounts in more detail.

PENSIONS FOR PUBLIC EMPLOYEES. While employees of large firms in the urban private sector are covered by the system described above, those in public employment have different systems, without contributions by workers and with benefits based on a short period of earnings at the end of a career. While it is common around the world for pensions for public employees to be based on a short period of earnings, this is a bad design in terms of fairness to different workers, risk in pension determination and incentives. Currently there are experiments to include public employees who are not government employees (for example, teachers) in the mandatory urban system. With the likelihood of increased mobility into and out of government employment as the Chinese economy evolves, the need to change pension arrangements in order to have well-designed labour mobility incentives will become more important. This is discussed in Section 15.

PENSIONS FOR RURAL WORKERS. Hitherto, though there has been some provision of income to the very poor in rural areas, some pension systems organised by rural employers, and some experiments under way, there has been no broad pension system covering rural workers generally.[11] Such lack of coverage fails to take full advantage of the ability of pension systems to improve human welfare through the economy. In August, 2009, the State Council promulgated pension pilots for rural areas. Paralleling the urban pension, there is a basic pension and individual accounts, with the individual accounts voluntary and the basic benefit conditional on a suitable history of contributions to the individual accounts. As a call for pilots, not all the details are spelled out as far as we know. For those under 45, 15 years of contributions are required for receiving the basic pension. Fewer years are required for those between 45 and 60; and for those over 60 (the starting age for benefits) the system calls for contributions by their eligible children as the basis on which their parents will be awarded the basic pension. The initial level of the basic pension is to be 55 Yuan per month (the level being determined by the central government). The pilot is currently planned to cover about 10 per cent of rural areas, with the aim of full coverage of rural areas by 2020.

We applaud the drive to extend coverage in rural areas. As discussed in section 8, however, we pose two strategic questions about the system:

- Should the basic pension should be conditional on contributions, or simply available as a citizen's pension?
- Should such pensions be for rural areas only, or throughout the economy?

The discussion of voluntary pensions in section 16 includes some questions about the design of the individual account portion of the planned pilots.

VOLUNTARY PENSIONS. As stated above, the pension pilots planned for rural areas include voluntary individual accounts. For younger workers, contributions to these accounts are a condition for receiving the basic pension that is also part of the pilot, and may also be a condition for their parents to receive the non-contributory pension. In addition to discussion of the conditionality of the basic benefit in section 8, we raise some issues about the design of the voluntary individual accounts in Section 16, along with a discussion of further development of the legal structure and the regulation and supervision of voluntary pensions generally and of the asset markets in which they invest.

Section 7 begins the detailed discussion of pensions by examining options for extending coverage throughout China. Section 8 discusses design of a citizen's pension.

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[11] The existing rural Old-age insurance system was first implemented at the national level in 1992. It is organized by village or rural enterprises and invested mainly in bonds and savings accounts. It allows contributions to an individual account between age 20 and 60 and a start of an annuity at age 60. Monthly contribution levels range from 2 to 20 yuan. The fund in an account (including interest) is inheritable in the event of death before age 60. According to the government's website, "by the end of 2003, … 54.28 million people had underwritten the old-age insurance program, which had accumulated a fund running to 25.9 billion yuan, with 1.98 million farmers drawing old-age pension." But with the contribution levels so low, and the subsidy from employer or government usually very low or nonexistent, the benefit level is very low.

7. Extending Coverage: Contributory and Non-contributory Pensions

Pension systems facilitate consumption smoothing. They are also part of the set of institutions that together provide poverty relief for the elderly and insurance and redistribution based on lifetime considerations, with payments made when elderly. Around the world, these institutions always have multiple layers in recognition of the diverse positions and diverse histories among the elderly. As a typical structure we have the following layers.

One layer is focused on helping those in the worst financial positions, whatever their history of employment. The provision of some level of support, sometimes in cash, often supplemented with goods in kind (food, medical care, housing), is focused on the poorest by being income tested, or even more stringently, income and assets tested. That is, the benefit only goes to those with the lowest incomes, or the lowest income people who also have little in the way of assets. In Dibao, China has such a system and should strengthen it for the elderly, recognizing that it can be more generous to the elderly than younger people since such generosity is not a comparable disincentive to work as with younger people, since so many of the elderly would not be able to earn significantly.

A second layer is a mandatory contributory pension system. The extent to which the contributory pension helps with pension goals depends, inter alia, on the extent to which it reaches the elderly, i.e., the extent of coverage. Coverage in China should include all three groups of workers:

- Established urban workers, the number of whom has been increasing both through migration and because of reclassification of former rural areas as urban;
- Migrant workers, estimated at about 200 million, who vary in terms of length of stay in urban areas, employment status, and whether or not a worker's family is with him;
- Rural workers, including workers in agriculture and other economic activities.

Since the problem of having adequate resources in old age is universal, it is desirable to have a pension system that covers as much of the elderly population as is fiscally and administratively feasible. Currently, coverage of the mandatory contributory pension system is incomplete in two ways: it is patchy for urban workers, particularly for workers in the private sector and self-employed workers; and coverage does not extend to migrant workers or the rural elderly. Putting into place a system that covers all three groups has become a major priority.

Problems with coverage in mandatory contributory systems are present in many countries. Incomplete coverage is widespread in developing countries with limited institutional capacity, a large informal sector, or both. For example, in Chile, the funded individual account system receives deposits from less than two-thirds of the working population in a typical month. The system does not mandate participation by those in the informal sector. In contributory systems, the benefit level of a worker depends on the worker's history of making contributions. To monitor progress in coverage, it would be helpful to gather data on contribution densities (i.e. the number of contributions divided by the theoretical maximum), showing the extent of expansion of the mandate to contribute, and compliance with that mandate.

In any country with large numbers of self-employed workers and very small employers, it would be administratively challenging to extend a mandatory contributory system successfully to all such workers. We refer to such workers as informal workers and refer to the informal sector as meaning firms with few workers and self-employed individuals. In contrast, workers in the formal sector have labour contracts and pay taxes and social security contributions. Moreover, many of the informal workers are sufficiently poor that provision for consumption in their old age comes better from public provision than from forcing them to contribute at a time when their earnings are very low.

Administratively, more advanced countries do succeed in achieving wide coverage in the mandatory contributory system among the self-employed. However, that coverage is marked by under-reporting of incomes and so eventual replacement rates that are low. Moreover, even with wide coverage there remains an issue of adequate replacement rates in recognition of fragmented careers. In 2005 in the UK – notwithstanding a mature system and good capacity to enforce contributions – only about 85 percent of recent male retirees and 30 percent of women retirees were entitled to a full basic state pension, which requires at least 40 years of contributions.

Before turning to details of pension design, we look at approaches to extending coverage. Section 7.1 considers the current mandatory contributory pension, asking whether the approach in the near term to extending coverage should be carried forward using the current urban-rural distinction with the implied focus on the urban area, or whether the approach should be to extend coverage to large firms wherever located, with extension to small firms and the self-employed, left as a future agenda. Section 7.2 then turns to a non-contributory (citizen's) pension as a way of filling gaps that are likely to last for a long time, whatever the sequencing of extending the coverage of the contributory system. Some countries have a non-contributory pension as a third layer of income provision for the elderly.

7.1 Coverage of contributory pensions

Given widespread difficulty of extending coverage of a mandatory contributory pension to the informal sector (a difficulty that we expect will be present in China for a long time), our first principle for extending coverage is that in the current state of the Chinese economy and of administrative structure, it would not be good policy in the short run to attempt to extend the current mandatory contributory system for urban workers to the entire labour force, or even to the entire urban labour force. This reflects both administrative difficulties and the need to be careful when imposing the mandatory contribution rate since it might impede competitiveness and growth, particularly for small private firms.

Our second principle is that the distinction between urban and rural firms is not a good basis for pension policy: the basis for extending coverage in the near term should be the ability to administer pensions and the ability of firms – wherever located – to implement mandatory coverage cost-effectively. A key factor in collecting taxes and pension contributions is the presence of activities that generate evidence of the detailed functioning of the firm. Wide use of the banking system, particularly for paying workers, and the presence of detailed accounting as part of a firm's management make it easier for the authorities to ensure compliance. While the behaviour of the firm in these dimensions is what helps enforcement, the size of the firm, in terms of the number of employees is a good proxy for the ability of the authorities to monitor the firm and of the firms to comply. That is, it should be possible to extend the system to the largest firms, whether located in urban or rural areas, with coverage for small firms and the self-employed left for the future.

Thus, we use the terms formal and informal to distinguish primarily between employers with significant numbers of employees and those with few employees or self-employment. How large an employer in China needs to be for the employer to be reliably subjected to a mandate is not something we can identify, leaving the question to those with better understanding of administrative structures. In addition some smaller employers might be viewed as in the formal sector because of the special nature of their positions. For example, a highly-paid provider of professional services to the government or to firms in the formal sector might be readily included in the formal sector, as his revenues are readily tracked and his costs are limited outside his own labour costs.

Given the key role of employers in both administering and enforcing mandatory contributions and the higher average earnings in the formal than the informal sector worldwide, our approach drops the limitation to the urban sector of the mandatory contributory pension and suggests that instead of extending the urban pension system to smaller firms and the self-employed in the urban sector, expansion of the current system should focus on including sufficiently large employers, independent of where they are located. Thus an early target for extending coverage would include workers in the rural areas that satisfy the "formal" definition, i.e., workers in large scale township and village enterprises, and large scale dairy and other agricultural enterprises. This focus on size of firm, rather than sector, has been common in the development of social security systems in richer countries. Indeed, the self-employed are still not covered in the mandatory pension system in Germany. Coverage has typically unfolded over an extended period, as Table 2 illustrates for the USA. As China's rural areas modernize, more and more rural activities would move into the formal sectors and workers in these activities would thus be included in the mandatory pension. This process needs to be done carefully to limit the extent to which the impact might impede competitiveness and growth.

Table 2 Some coverage provisions in the USA, by year enacted

	PROVISION
1935	All workers in commerce and industry (except railroads) under age 65.
1946	Railroad and Social Security earnings combined to determine eligibility for and amount of survivors benefits.
1950	Regularly employed farm and domestic workers. Nonfarm self-employed (except members of professional groups).
	Employees (other than members of the clergy) of nonprofit organizations. Elective by employer and employee
1954	Farm self-employed. Professional self-employed except lawyers, dentists, physicians, and members of other medical groups. Additional regularly employed farm and domestic workers. Homeworkers.

1956	Members of the uniformed services on active duty or on active duty for training. Remainder of professional self-employed except physicians (taxable years ending after 1955). Farm landlords who materially participate in farm operations.
1965	Interns. Self-employed physicians.
1983	Federal employees newly hired after December 31, 1983.
	Members of Congress, the president, the vice president, sitting federal judges, and most executive-level political appointees of the federal government.
	Employees of nonprofit organizations.
1987	Members of uniformed services reserve components on inactive duty training. Irregularly employed farm workers (if employer's annual expenditures for farm labor is at least $2,500).

Source: US Social Security, *Annual Statistical Supplement*, 2008, Table 2.A1.

1. The restriction to the urban sector (omitting the rural sector) should be dropped for the mandatory contributory pension.

- *Expansion of coverage should be focused on large firms (referred to as the formal sector) wherever they are located, and should be implemented slowly and carefully.*
- *Eventually this should be extended to small firms and the self-employed (referred to as the informal sector), but this is a more demanding task and one that in the short run may not be the best use of administrative capacity.*

Thus we recommend that the process of slowly expanding coverage of the mandatory contributory pension system focus on firms of adequate size, without distinction as to location. Following this approach to mandatory contributory pension coverage is supportive of geographic labour mobility, as the contributory pension system would similarly cover alternative similar jobs. Pursuit of extension first to those employed by sizable firms and only later to small firms and the self employed creates a track such that eventually everyone will be covered by a single national contributory pension system.

It is good policy to avoid different systems for different categories of workers: there are likely to be borderline issues over the appropriate classification for a particular worker; mobile workers may move across categories, some workers may be in more than one category and some in none; and the categories may change or become irrelevant over time, so that the system does not readily adapt to economic and social change.

It would be good to clarify coverage in order to avoid the following specific problems in China:

- There are ambiguities over whether or not a worker is covered by the urban system depending on the details of his labour contract (e.g. whether the contract is for at least a year) – with no geographical consistency over the relationship between coverage and type of labour contract;

- The treatment of migrants in the urban pension system is not consistent across localities;
- There are ambiguities with respect to TVEs, which may be owned by rural governments but operate facilities in urban areas;
- Localities are reclassified from time to time.

Given the rules that will apply for determining mandatory coverage, some employers and some workers will have an effective choice between the formal and informal sectors. Firms can chose whether to employ more people or to use market transactions to acquire what might otherwise have been produced in-house with more employees. Workers can choose whether to seek formal employment or stay with a small employer or in self-employment. Thus it is important to have the net cost (contributions less the value of future benefits) of mandatory participation in the contributory system not be too large. In part, we address this in the discussion of the sharing of the legacy costs of the urban pension system in section 13. It is also important for consideration of the links between the contributory pension and the non-contributory pension we recommend below.

7.2 Coverage of non-contributory (citizen's) pensions

With any approach to expanding mandatory coverage that moves slowly and sequentially, a large part of the working population will be without mandatory contributory pension coverage for an extended period. In response to this need, a feasible step in the near term is to implement a national non-contributory pension system, which we refer to as a citizen's pension. Just as there are advantages in having the mandatory contributory pension depend only on job characteristics (employment in the formal sector), not individual characteristics, so too it is advantageous to have a national citizen's system, rather than separate systems for urban, rural and migrant workers. This does not require that the system be the same for everyone. Indeed, the level of benefit should vary with the cost of living. To the extent that a local authority wants to use local resources to boost the benefit level in light of local living standards, that too seems an appropriate avenue of variation. And, the level of an individual's citizen's benefit should be lower the higher the contributory pension the person receives, so that someone with a high contributory pension receives little or no citizen's pension. Also, by being informed about who receives a citizen's pension, the administrators of the Dibao system could set the level of Dibao benefits in light of citizen's pension benefits, which would be part of a family's income.

Even in the long run there are advantages to a non-contributory system, which indeed exists in a number of advanced countries, some of which have wide coverage of their contributory systems. Recognizing that gaps in contributions are unavoidable in a modern economy, non-contributory tax-financed pensions, as discussed in Box 7, are used, in Australia, Canada, New Zealand, and the Netherlands. In intermediate countries we note its introduction in Chile in 2008, following a report by a council appointed by President Bachelet that identified a number of strategic shortcomings of the pension system, particularly its inadequate provision of poverty relief and its impact on women. And we note the State Old Age Grant in South Africa, which illustrates how a non-contributory pension can work in a developing country and, moreover, can extend to the rural population.

A CITIZEN'S PENSION, awarded at a flat rate to anyone who meets age and residence tests, avoids the administrative problems of attempting to extend contributory-pension coverage to the informal sector. Such a system covers everyone, including formal- and informal-sector workers, urban and rural, employed and self-employed workers, and people outside the labour force. By implication, it recognizes caring responsibilities: someone who cares for young children or an elderly relative and hence has no paid work is nevertheless entitled to a citizen's pension.

FINANCE. The benefit would be financed from general revenues. Some source of revenue, new or existing, might be earmarked for this purpose. In Chile, for example, the non-contributory pension introduced in 2008 is financed from a Pension Reserve Fund whose receipts, established in law, are a fraction of GDP from general government revenues. While earmarking would get in the way of an ideal optimization of government financing, in practice earmarking is often seen as a useful method of preserving a suitable balance between particular classes of spending and suitable revenue sources. In particular, earmarking offers benefits with a long time horizon some protection from short-term budgetary considerations. Being non-contributory, one needs to be sensitive to the distributional implications of using general revenues when considering the size of the benefits.

2. The government should introduce a nationwide citizen's pension, financed out of general revenue or an earmarked source, payable on the basis of age and residence, and reduced in respect of benefits a person receives from the mandatory pension system.

Section 8 discusses options for design of a citizen's pension, including its interaction with Dibao, the two parts of the mandatory contributory pension system (basic pension and individual accounts), and voluntary pensions. The discussion also touches upon the interaction with pensions for public employees.

7.3 Continuation of the Basic Pension

With the introduction of a citizen's pension, it is appropriate to ask whether the Basic pension, which is also aimed at helping low earners, should be continued. Here we make the case for continuation.

WHY THIS SYSTEM? The proposed system comprises (a) a non-contributory pension to which every elderly person is potentially eligible, (b) a mandatory contributory basic pension, (c) mandatory individual accounts, and (d) voluntary pensions. That structure is unusual in that it includes both (a) and (b). A typical pattern with a non-contributory pension is to have individual accounts or some other form of earnings-related pension (Canada, the Netherlands). Alternatively some countries without a non-contributory pension have a contributory basic pension plus an earnings-related pension (UK) or redistribute to lower earners within a single earnings-related pension (the USA). The system with both (a) and (b) is chosen because it fits China's circumstances and builds on an existing institution.

In particular, countries like the Netherlands and New Zealand have no institutional divide between urban and rural workers, relatively little informal activity, and income disparities much smaller than those in China. In such countries it makes sense to have a non-contributory pension as the only flat-rate element in the system. In China, however, pension arrangements need to accommodate wide disparities of income and considerable informal activity, and to cover very different groups of workers (urban, migrant, rural) without creating different pension systems for each group. In the arrangements suggested here, the non-contributory pension will initially benefit mainly rural and migrant workers, with some benefit also for urban workers with low earnings or an incomplete contributions record. The cost of this is to be borne by taxpayers. In contrast the basic pension benefits those in the contributory system with low pensions at the expense of those in the contributory system with high pensions. Thus the two patterns of redistribution are not duplicative but address two quite different issues.

New Zealand has only voluntary individual accounts, although it introduced auto-enrolment in 2007. China, however, should preserve its mandatory individual accounts since it is unlikely that that there will be sufficient revenues available for a citizen's pension that provides an adequate replacement rate for a large fraction of the population. Pensions have a consumption smoothing role as well as a poverty relief role, and individual accounts are an important part of an adequate pension.

With this system, some degree of coverage is complete and done without a categorical system. And the arrangements can evolve over time. At some future date, when the structure of the Chinese economy is more like that of the rich countries, government could consider whether to keep both the non-contributory pension and the basic pension, or to merge the two.

ADVANTAGES. These arrangements have important advantages:

- The non-contributory pension achieves the government's objective of extending coverage in urban areas and extending poverty relief to migrant workers and the rural elderly. A person's eligibility for the non-contributory pension depends only on age, residence and pension income (if any) from the mandatory system. The pension covers formal and informal, urban, migrant and rural, employed and self-employed, and people and outside the labour force; and it covers workers who are mobile as between these different types of labour-market activity.
- The process of extending the mandatory system would address those most easily reached by a contributory pension – workers in large firms wherever they are located. Thus the system accommodates the evolution of the Chinese economy and society so that eventually there is a single pension system with all parts covering everyone.
- The arrangements avoid the economic and administrative problems of income testing. An income test is less necessary for older people since the amount of labour they provide is not a primary issue for policy, making it possible to offer income support to the elderly on less restrictive terms than to the rest of the population. In addition, the affluence test, limiting the citizen's pension to those with low or no contributory pension, is based on a source of income that is readily measurable, since the authorities have information both on a person's contributions to the mandatory system and on the pension benefit he is receiving from the mandatory system. Reliance just on mandatory pension income avoids discouraging individual savings and voluntary pensions.
- Administrative demands are kept as small as possible, since the system requires information only on age, residence and pension income from the mandatory system.

8. The Design of a Citizen’s Pension

Several issues arise in the design of a citizen’s pension, including the determinants of the level of benefit, eligibility rules, offsets against other income, and the way the benefit is implemented.

An obvious question about such a system is its cost. Policy makers have three instruments to ensure that the pension is affordable: the level at which the benefit is paid; the age at which it is first paid; and whether the benefit is awarded in full to everyone who meets the age and residence test, or whether someone with sufficient other income gets less or no non-contributory pension. A system that pays a small monthly benefit starting at a very old age will be cheap. A targeted monthly pension can be made compatible with a given fiscal envelope by choosing the age at which pension will start. Long-run sustainability can be assisted by adjusting the size of the pension along with the age of eligibility, preferably including some automatic adjustments.

8.1 Design of a citizen’s pension

The system would have the following shape.

THE SIZE OF THE FULL CITIZEN’S PENSION. The full pension should be large enough to make a significant contribution to poverty relief, and to justify the administrative costs of delivering it. To contain fiscal costs, in order to provide a sufficiently high benefit, a later starting age may be required. As examples, the AOW in the Netherlands has a benefit equal to 70 percent of the net minimum wage. New Zealand sets its benefit equal to 72.5 percent of the net average wage for a married couple, more per person for singles (depending on living arrangements) and less if one member of the couple is under age 65.

To provide similar living standards across China, the level of benefit should vary with the cost of living where the beneficiary is in residence. If a region chooses, it could supplement the benefit from its own resources to also reflect local living standards.

3. The level of the citizen’s benefit should be set so that, as far as possible, its real value is constant across localities and should be based on the locality of residence of the recipient. Supplementation by local government should be allowed out of local government revenues.

Over time the citizen’s pension could be indexed to increase in line with prices or earnings or a weighted average of the two. In part the choice should depend on whether concerns about poverty relate to absolute levels of consumption or relative levels of consumption. Price indexing will keep the real purchasing power steady over time. Earnings indexing will keep step with average earnings, although the location of the benefit in the earnings distribution (e. g. some percentage of the median earnings) will shift around as the shape of the earnings distribution changes. In part, the choice should reflect coordination with the indexing of contributory pensions. Since earnings are expected to grow more rapidly than prices, the choice also affects the trend in cost.

In the Netherlands, the non-contributory AOW is indexed to contractual wages (which differ from earned wages by excluding the effects of promotions and job changes, the difference being roughly ½ percent per year). New Zealand Superannuation is adjusted legislatively when wages increase, so that it stays between 65 and 72.5 per cent of average ordinary time earnings after tax. In South Africa, the pension has been increased annually to keep pace with inflation. As discussed below, in section 12, indexing the non-contributory benefit in the same way that contributory benefits in payment are indexed seems appropriate.

Another element that can be used to affect trend costs is to relate the benefit to the dependency ratio for the non-contributory pension – the number of people above the age of eligibility relative to the number between age 21 and the age for eligibility. This may be particularly relevant in the near term in light of the rapid aging in China. Germany uses a dependency ratio (defined as the number of pensioners divided by the sum of numbers of employed and unemployed), referred to as a sustainability factor, in the determination of the level of the mandatory contributory pension benefit. (See Börsch-Supan et al, 2003). Of course the adaptation to available resources can be done with alternative mixes of benefit level and age of eligibility.

The absolute and relative sizes of the different elements of the pension system require more detailed study. In the absence of such a study, we recommend that the current relative sizes of the basic pension and individual accounts should be broadly maintained. The size of the citizen's pension will depend, inter alia, on fiscal considerations, for which reason we envisage that, at least initially, the citizen's pension would be smaller than the full basic pension.

Alongside these issues of design, it is necessary to be aware of the size of the transfers from governments to individuals, raising concerns about possible corruption. One manifestation would be if officials paid pensions lower than the mandated amount; a partial defence is to publicise the level of the citizen's pension in each area so that each pensioner knows his entitlement. A more difficult problem is where officials claim pensions for fictitious (or dead) people; here the defence is effective auditing and enforcement, perhaps with random, unannounced audits of localities with heavy (and heavily-publicised) penalties.

AGE CONDITION FOR ELIGIBILITY. As noted above, having a higher age for eligibility is a way of financing larger individual benefits for a given budget. The age for eligibility might well match that in the contributory system; it could match the current age, or be set now for a target to match a future age for eligibility for the contributory pension if that will increase, as we recommend below. Thus the age of 65 for men and women is particularly suggested. The balance between the monthly non-contributory pension and the age at which it is first paid clearly needs further study, since a later starting age might be necessary to finance a sufficiently large benefit to make the pension worthwhile. This depends on the level of resources devoted to this use.

Over the long run, given the likely increase in healthy life expectancy, the age of eligibility should change automatically along with a measure of healthy life expectancy, although not necessarily in strict proportion. Above, in recognition of the rapid aging of the population in the near term, we mentioned the option of lowering the trend in costs by relating the benefit to the dependency ratio (the number of people above the age of eligibility relative to the number between age 21 and the age for eligibility). Similarly, the age of eligibility might be automatically increased based on the dependency rate. That is, to contain costs in the medium term one can respond to changes in the dependency rate by adjusting both the level of benefits and the age of eligibility.

4. The level of the citizen's benefit should be indexed for prices and/or wages in the same way as the contributory pension. It might be adjusted for the dependency rate as well. The age of eligibility should be indexed for healthy life expectancy and perhaps for the dependency rate as well.

RESIDENCY CONDITIONS FOR ELIGIBILITY AND BENEFIT LEVELS. The non-contributory pension covers everyone who meets an age and residence test. The residence test is that the person should have lived in China for a sufficient period of years. Residence tests can be stringent (in the Netherlands, 50 years for a *full* non-contributory pension) or more relaxed (in New Zealand, 10 years since the age of 20 and not less than 5 years since the age of 50). Matching these approaches, the benefit in the Netherlands is proportional to the years of residence while the New Zealand benefit does not vary with length of residence among those eligible. In both countries, the level depends on living arrangements, being higher for a single person living alone. Thus the question for China is whether to reduce the benefit level for older people who have spent time abroad, for example, as students or workers. Plausibly many such people would not have as large a financial need in old age, so this appears to be a good option.

ADJUSTING THE FULL PENSION TO REFLECT OTHER INCOME. As a matter of principle, the non-contributory pension, like all pension income, should be included in the base for personal income tax, which is the case in both the Netherlands and New Zealand. In present circumstances this may be largely theoretical, but the principle of including pension benefits in taxable income is part of the foundation of a system that can evolve over time. Starting without taxation because pensions are small for those paying income taxes may be difficult to reverse once pensions and income taxation are widespread. This error was done in the US when Social Security benefits were first paid and took a long time and a Social Security financing crisis to correct.

Should the size of the pension be related to a person's income? There are several options:

- Universal: a flat-rate pension on the basis of age and residence and nothing else as, for example, in New Zealand and the Netherlands. This approach has the advantage of simplicity, but for a given level of benefit and given retirement age is the most expensive. It seems appropriate to subject this benefit to the income tax.
- Tested: If one wants to reduce or eliminate the pensions going to some group, this can be based on different measures of their ability to handle a lower level of the non-contributory pension.

If testing is chosen, two further issues are the measure of income against which the testing is done and the testing level of such income, and so the (possibly implicit) fractions of potential recipients actually getting a full citizen's benefit or a positive reduced benefit.

Testing can be done against total income or against pension income from the mandatory contributory system. Testing can be done to limit benefits to the poorest elderly or to block benefits from the best-off elderly. Thus very different fractions of the elderly receiving a benefit are possible designs.

- Income-tested against total income: the purpose is to limit eligibility so that only the poorest receive the pension as, for example, with the income-tested pension credit in the UK. This option is the cheapest, but income-testing (a) can create stigma for recipients and (b) creates disincentives against saving (albeit quantitatively unimportant for low earners). In addition, (c) measuring income is administratively demanding and costly even in advanced countries and (d) is largely impossible in countries with a large grey economy and significant own-production.
- Income-tested against mandatory pension income: the purpose is to limit eligibility so that only those with very low pension income receive the pension as, for example, with the Guarantee pension in Sweden. This option is much easier to administer – indeed the same agency can deliver both the contributory and non-contributory pensions and so readily adjust the net payment. While far from a perfect measure this is likely to do a reasonable job of targeting the lowest group in incomes. Consideration of only mandatory pension income avoids discouraging voluntary pensions and private savings. Given their current structure, public employee pensions should be part of an income test. Co-ordinated pensions administration of this sort, however, requires significant work on administrative structures, a task whose complexity should not be under-estimated.
- Affluence tested: the purpose here is not to limit benefits to the poor, but to exclude the best off as, for example, in Australia, Canada or Chile. The test can be against total income, pension income or a combination. An affluence test can be more or less stringent. The aim in Chile is to restrict benefit to elderly people in the bottom 60 per cent of income recipients; in Canada 95 per cent of older people get the full flat-rate benefit, and only 2 per cent are entirely screened out. This approach avoids stigma and with reliance on pension income treats more similarly those with some (but not high) pensions and those outside the mandatory system who may be equally well off. Reliance on pension income is easier to administer. Again, public employee pensions should be part of an income or affluence test.

Out of this array of alternatives, we suggest that the non-contributory pension be affluence tested against benefits from the mandatory pension system, but not against other income. We recommend that this testing be done against the total mandatory pension income – adding up the basic pension and the income from the individual account, although it could be done with different offset rates against benefits from the basic pension and individual accounts. One argument is that individuals who benefit relatively more from the basic pension should have a somewhat larger offset rate since they have benefited from the redistribution inherent in that part of the system. A counter-argument is that the offset affects the incentive to be in the informal sector rather than the formal sector. This incentive is likely to be far more important for low earners than for high earners. Low earners will receive a larger fraction of their contributory benefit from the basic pension, relative to those with higher earnings. In light of these two contrasting arguments, the simplest approach is to do an offset against the total contributory pension income level (measured as of the age of eligibility for the citizen's pension, as explained below) in excess of an exempt amount. Perhaps the exempt amount might be related to the size of the non-contributory pension. This might help with understanding and perceptions. For example, if the exempt amount is set equal to the non-contributory benefit, a worker could more readily learn that total pension income would double before any of the non-contributory pension was withdrawn in respect of the contributory pension. An important consideration in designing the offset is to make sure that it starts high enough to limit the disincentive to move from the informal to the formal sector.

If the affluence testing were done against actual pension income, rather than against the person's pension entitlement assuming he or she took it at the citizen's eligibility age pension, there would be an incentive to claim benefits earlier if possible since, if there is an actuarial reduction for an earlier start to benefits (as there should be), the benefit level would be lower, and for those with pension levels that are not too large, a lower contributory benefit used in testing would imply a larger net non-contributory benefit. This would be particularly an issue for those starting their contributory benefits before the start of the non-contributory benefit, if that is possible. To encourage later claiming, and so more annuity insurance, we recommend that the testing be against the level of pension income a person would have if he or she claimed at the eligibility age for the citizen's pension. The testing would only happen if the benefit was in payment status. Thus a delay in claiming the contributory benefit (to receive a larger benefit later) could result in a period without pension income to offset the non-contributory benefit. Thus the non-contributory pension would be reduced by *x* Yuan for every 1,000 Yuan of pension from the mandatory system above some minimum exempt level. The offset rate (*x*/1000) and the minimum exempt amount could be chosen to achieve a given fraction of these pension recipients who receive a positive non-contributory benefit.

Since government employees are outside the contributory system and have a generous pension financed by the government, they should not have more access to the non-contributory pension than private workers with comparable mandatory pension benefits.

5. The level of an individual's citizen's benefit should be reduced through an affluence test based on total mandatory contributory pension income, calculated as if taken at the eligibility age for the citizen's pension. The exempt amount for affluence testing should be related to the level of the citizen's benefit. Public employees outside the mandatory system should have their non-contributory benefits reduced similarly.

Should the affluence test apply separately to the mandatory pension of each individual in a couple, or to a couple's joint pension – should a woman with no contributions record get a non-contributory pension if her husband has a large pension from the mandatory system? Again, this element may not be very relevant at the moment, but will become increasingly so over time, so should be addressed now.

DIBAO AND THE NON-CONTRIBUTORY PENSION. For some, their needs will exceed the level of non-contributory benefit available. This is particularly an issue if an older age is chosen in order to have a higher benefit. Thus there will continue to be a need for the elderly to have access to an institution like Dibao which income tests needs based on total income. Naturally the Dibao administrator would be aware of the non-contributory pension and would adjust the Dibao level accordingly.

VOLUNTARY PENSIONS AND THE NON-CONTRIBUTORY PENSION. Including voluntary pensions in the income measure for affluence testing the citizen's pension would unduly discourage voluntary pensions, and so the affluence testing relates only to the mandatory pension. This is the approach taken by Sweden with its Guaranteed Pension.

8.2 Comparison of rural pilot with the citizen's pension presented above

As noted earlier, the State Council has proposed a set of pilots of a rural pension. While a welcome recognition of the need to strengthen poverty relief in rural areas, the pilots should include a citizen's pension. It would strengthen poverty relief and widen coverage if the rural pension:

- applied nationally, not just to rural areas,
- is non-contributory, awarded on the basis of age and residence, rather than conditioned on 15 years of contributions to voluntary individual accounts, and
- is phased in as quickly as possible, which is a less demanding task administratively with a non-contributory than a contributory system.

If some of the pilots were citizen's pensions, the additional administrative cost of the link with individual accounts and any incompleteness of coverage could be assessed. Moreover, as discussed in section 16.2, we question the cost and value of the voluntary individual accounts in the near term, as well as some of the details.

INDIVIDUAL ACCOUNTS IN THE PROPOSED NON-CONTRIBUTORY RURAL PENSION. All rural residents over 16 years old (excluding students) who are not covered by the basic pension for urban workers can voluntarily join the new rural pension plan. The plan has a basic benefit and individual accounts. The minimum contribution to an individual account is 100 Yuan per year. Those making larger contributions will receive larger benefits, although the description we have seen has not specified the extent of increase with larger contributions. Local governments are required to subsidise individual contributions by 30 Yuan per person per year and to make contributions for those who find it difficult to pay, such as the disabled. Village collectives and others can add to individual contributions. The deposits will earn interest at the one-year deposit interest rate of RMB for financial institutions as announced by the People's Bank of China. Benefits are available starting at age 60. Matching the rules in the urban worker's individual accounts, monthly benefits equal the account accumulation divided by 139. Trust funds will hold the accumulated values. The description we have seen did not include guidelines for portfolio choice. This section considers the link between these accounts and the Basic benefit; Section 16 considers the design of these individual accounts separate from consideration of their link to the basic benefit, including consideration of portfolio choice.

BASIC BENEFITS IN THE PROPOSED RURAL PENSION. Initially, the basic benefit level is to be 55 Yuan per person per month, with local governments allowed to increase the benefit at their own expense. The cost of the 55 Yuan benefit is to be paid fully by the central government for central and western regions and one-half in the eastern region. Local governments can increase this amount. The benefit is available to eligible rural persons over age 60.

CONTRAST BETWEEN THE BASIC BENEFITS IN THE PROPOSED RURAL PENSION AND THE CITIZEN'S PENSION IN SECTION 8.1. There are differences in benefit design and differences in eligibility.

- The proposed Citizen's pension is for all the elderly, not just the rural elderly. While China could extend a rural citizen's pension to the entire country in the future, there are many needy urban elderly who could benefit now, so it is not clear why there is this fragmentation, instead of including urban elderly currently. As argued in section 7, a national system covering all workers is better suited to a mobile labour force, now and in the future.
- China needs to increase the retirement age generally, as discussed in section 14. The age of eligibility for a citizen's pension should be closer to the level that the mandatory pension should reach before too long. In addition, the age should be scheduled to increase slowly over time, as life expectancies are likely to continue increasing. Also we argued for recognizing the tradeoff between the level of benefit that is affordable, on the one hand, and the age of eligibility, on the other. A larger benefit for older people seems useful, particularly if the benefit needs to be reduced in order to finance an extension of coverage to all households.
- Conditioning the basic benefit on contributions to the voluntary pension (15 years of contributions for those under age 45) is likely to result in considerably less coverage over time than without that condition. To see the relevance of this point we consider one aspect of Chilean experience.

CHILE'S CHANGE FROM A GUARANTEED MINIMUM PENSION TO AN AFFLUENCE TESTED CITIZEN'S PENSION. Chile's initial pension design in 1981 included a minimum pension. A worker who had contributed to an individual account for at least 20 years was entitled to this minimum pension if his individual account could not finance this much. While the individual account (and so the minimum guarantee) was mandatory only for workers in the formal sector, the self-employed could make voluntary contributions. With at least 20 years of voluntary contributions, they, too, would be eligible for the minimum benefit. The minimum voluntary contribution to count for a year toward the 20 year minimum was linked to the minimum wage, but pro-rated for someone working only part time. Thus a small voluntary contribution for part-time work, by qualifying the worker for the minimum pension, could result in a very significant increase in the worker's annuity. Despite this subsidy, only about 4 per cent of self-employed workers made voluntary contributions. Moreover many workers, particularly women, had years of contributions but not 20 years. The system was thought to be insufficiently successful in addressing poverty and gender concerns.

We fear that a 15 year voluntary contribution condition in China may have similar effects.

- Many workers, particularly women, may find the contribution too onerous, or their attention to the future too limited, to make sufficient contributions.
- Presumably an older parent with more than one child needs contributions from only one child to receive the basic benefit; thus other children may not contribute, putting at risk their own later benefits.
- The requirement that benefits for the current elderly are conditional on contributions by their children to individual accounts is likely to bear most heavily on the poorest who need the pension most, since their children may well be unable to afford contributions.

Alongside these issues relating to coverage, are concerns about additional administrative requirements for tracking the individual accounts in order to provide the basic benefit (as well as the individual account benefit). Indeed, since the cost of administering these accounts is largely a fixed cost per account, it is important to judge the cost relative to the value of contributions when considering the value of the link to basic benefits. With a contribution of 100 Yuan per year, ignoring the interest rate and any matching fund, a minimal contribution to an individual account would finance a benefit of 1500/139 = 10.8 Yuan per month, or 129.5 Yuan per year (ignoring the fact that life expectancy is longer than inherent in this benefit determination). The small size of the pension makes it relevant to monitor the administrative costs of such low contributions, rather than making more use of general revenues. The pilots will cast some light on the chosen size of contributions.

This section has considered the proposed pilot relative to a citizen's pension once both systems are mature – that is, the way the systems would apply to younger workers today. The condition that older people get the pension only if their eligible children make contributions may generate hardship since it may be particularly the poorest elderly who have limited contact with their children who might not get benefits.

9. Options for the Basic Pension

In addition to introducing a citizen's pension, it is important to improve both the basic pension and the individual accounts. Some issues arise in both, while others require separate attention. Individual accounts are discussed in section 10. Here we consider the base for contributions (and so for benefits) and the treatment of mobile workers who contribute in more than one location. Administration is discussed in section 11, the adjustment of benefits in payment in section 12, and the eligibility age in section 14.

WHAT CONTRIBUTIONS BASE? There are both administrative and economic advantages if the contributions base for both contributory pensions and the tax base for personal income tax are all the same. It is important to align the incentives facing the income-tax authorities and the pensions administration, to avoid a situation where the tax authorities concentrate on total collections at the expense of accurately tracking the contributions of each individual worker – a vital element in the pension system. The problem is minimised when the tax authorities and pension authorities both need broadly similar information on individuals.

Contributions are currently based on the standard wage. This encourages workers and employers to move to forms of compensation not included in standard wage measurement. Contributions based on the standard wage are also regressive (i.e. bear proportionately more heavily on lower earners). The contributions base should, therefore, be changed to an earnings measure that approximates total compensation and is used for both pension contributions and the income tax. Such an approach improves consumption smoothing, since earnings are a better measure of consumption opportunities than the current contributions base.

Similarly, the calculation of basic pension benefits from the social pool, which depends both on individual earnings and on average local earnings, should use the same definition as for determining contributions. The use of the same definition limits attempts to manipulate reported earnings to raise benefits without raising contributions and treats those with different earnings levels more fairly. Thus benefits should vary with location, but within a formula set by a national authority. At present, benefits should remain at approximately their current level, until there is determination of the details of the overall reform and a review of the working of the reformed system.

6. The contributions base for both the basic pension and the individual accounts should be changed to match a definition of earnings to be used in determining income-tax liability, with the contribution rate adjusted so that total contributions are broadly unaffected by the change. Similarly, the calculation of basic benefits should use the same definition of earnings as for determining contributions, with the formula adjusted so that basic benefits remain at approximately their current level overall. Benefits should vary with location, but within a formula set by a national authority.

Though income tax does not yet have very wide reach, coverage both of income tax and the mandatory pension system will increase over time, so that aligning definitions is a useful start to the development of both sets of institutions. It is also important to have the benefits in the basic pension reflect labour-market mobility: over time the number of covered workers and their mobility will both increase, so that covered workers will be increasingly likely to have significant numbers of years of employment in different areas. It is also important to include recognition that different people retire at different ages.

7. A worker who has been covered in two different regions should receive basic benefits from both regions, thereby reflecting earnings over the entire period of covered work. There should be no minimum contribution period for receiving a pension (although a very small monthly benefit might be paid as a lump sum to save on administration). The basic pension should be adjusted on an actuarial basis for the age at which it starts.

This approach strengthens the link between contributions and benefits for mobile workers and limits opportunities to manipulate benefit levels. In principle there are two ways to implement portability: either each worker has a single contributions record that moves around with him; or a mobile worker has a contributions record in each locality where he has worked, and collects pro rata benefits from several localities. Given geographic variation in the parameters that determine pension benefits (e. g. local average wages) combining records in different locations in a satisfactory way is a complex problem. Eventually, when pension determination is more uniform, the first approach may become more desirable. Whatever approach is taken, pension rights should not be limited in a way that encourages workers to cash out their accumulations.

10. Options for Individual Accounts

Pension systems should provide consumption smoothing for all but the best off in a population, whose income, and likely wealth, make smoothing less relevant. Thus it is important to have a system where people with higher earnings and higher contributions also receive higher benefits. There are different ways of structuring an earnings-related benefit system. A system of individual accounts, where the contributions of each worker are accumulated over time and then made part of the (actuarial or quasi-actuarial) basis for determining benefits is one way of doing so. Such an individual account system may include actual funding that is attributed to each account, but need not. For example, Sweden has two systems of individual accounts in parallel. In one system, the Premium pension, workers choose the assets that are held in their names in their accounts. The realized market returns on these assets determine how the account of a worker grows (or shrinks), along with the additional contributions. The other system, the Inkomstpension does not have assets attributed to individual workers. Rather the contributions of each worker are accumulated using a rate that is set by legislation to reflect what the system can afford to pay in benefits. The system does have a buffer stock of assets, but these are centrally held as backing for the entire system not attributed to the individual accounts separately. Thus the Premium pension is fully-funded with the assets chosen by individual workers and attributed to individual accounts, while the Inkomstpension, a variant of Notional Defined Contribution accounts (see glossary), is partially funded with the assets chosen by the pension authorities and attributed to the system as a whole. Of the 18.5 percent contribution rate, 16 per cent goes to the Inkomstpension and 2.5 per cent to the Premium pension. Other countries illustrate this range of options, including fully funded accounts in Chile and a number of other Latin American countries and notional accounts in Italy and a number of eastern European countries. And like Sweden, Poland has both types of account. As the range of countries indicates, there are several genuine options; which is best depends on country circumstances, as discussed in more detail below.

China introduced individual accounts as part of the pension reforms in 1997, with an expectation of full funding. However funding has not occurred in line with the standard model. There are no institutions for workers to select individual portfolios nor to make direct investments in different assets. The need to pay current benefits has not left enough resources to purchase assets as originally designed, seriously undermining the credibility of the new system. Since full-scale funding with individual portfolios is not a viable option in the near term, what is needed is to reform the accounts into a credible, transparent system with the flexibility to evolve in whichever direction makes sense in the future. We address the near-term task in section 10.1 and consider eventual funding in section 10.2. We recommend that China set up the existing individual accounts as notional defined contribution accounts (along the lines of Sweden's Inkomstpension); this approach allows for eventual evolution into a mix of funded and notional accounts (as with the two accounts in Sweden), or eventually possibly only a funded account. As in Sweden, there should be a fund backing the accounts in general, but not attributed to specific individual accounts. The immediate task is to make the current accounts function better given the current level of funding.

10.1 The immediate task

For the reasons set out more fully in section 10.2, we argue that in China's current economic and social circumstances, fully funded individual accounts are not appropriate in the short run. We therefore recommend improving the functioning of the accounts along the lines of a notional defined contribution structure.

If individual accounts are to deliver security in old age for today's workers, it is necessary to have (a) a proper system of accounting, so that each worker knows the size of his or her accumulation (and an estimate of what monthly benefit might become available), and (b) explicit legislated rules for determining the rate of return attributed to the values in the accounts. At the moment, neither is the case. Currently, accounts are managed in a way that is non-transparent and varies widely, and the mix of assets varies unsystematically; in the case of 'empty' accounts the entity that borrows the money from the account varies, and the nature of the financial asset that replaces what was in the accumulation varies, being some sort of government bond; the rate of return on those bonds is whatever the borrower says it is; and in many cases that rate of return is not explicit. It is not a problem if a fund manager chooses to buy government bonds in competitive markets, but that is not what happens with the 'empty' accounts.

The pressing short run problem is to get the individual accounts to function well. Specifically, policy should:

- Introduce transparent accounting of workers' accumulations, and build strong administrative systems so that all contributions to individual accounts are recorded and data is easily accessible.
- Ensure that the rules that determine the rate of return on pension accumulations are explicit. Contributors should be advised of the annual rates of returns to their funds.
- Take steps to boost confidence in the system. Give assurance that these are not 'empty' accounts but obligations of the government/pension authorities. One way to strengthen confidence is through transparency in the form of an annual statement to each member of his or her accumulation and the likely replacement rate from the basic pension and individual accounts.

The next three recommendations suggest how to achieve these tasks.

8. Future accumulations in individual accounts should be organized on a notional defined contribution (NDC) basis, such accounts to be partially funded through a centralized fund. Individual accounts should be credited for contributions since the start of individual accounts in 1998, including interest.

We regard this approach as better-suited to China today both in terms of its fit to current economic and social conditions and in terms of what is feasible over a 5-10 year horizon. As described in section 3, NDC pensions are a relatively recent innovation, used internationally by countries seeking to retain the usefulness of a defined contributions approach without the necessity of full funding. Each worker has an account in which is recorded the total of his cumulative contributions over the years, which are credited each year by the pensions authority with an interest rate defined by law. That is, the recorded accumulation increases each year by the amount of the contributions during the year plus the product of the notional interest rate and the level of the accumulation at the end of the previous year. At retirement, each worker receives a pension based quasi-actuarially on his accumulation. As with the basic benefit, there is no need for a minimum contribution period for benefit eligibility. Box 11 discusses some worries about NDC pensions that are misplaced.

The argument that China has NDC accounts already is mistaken. China does not have NDC pensions but empty accounts. The two constructs are different – the former has no clear rule about what interest rate should be attributed to accounts. Such rules are important both to give assurance that benefits will be paid and to provide horizontal equity by avoiding arbitrary differences in interest rates by locality. An NDC system is organized to have fiscal sustainability, thereby giving workers more confidence in the system. With greater confidence, workers may feel less need to accumulate as large precautionary savings. As a general proposition, clear rules, for example for the determination of increases in pensions that are already in payment, add to confidence in the system as well as helping workers and retirees to plan for a future that should appear less uncertain.

Another mistaken argument is the suggestion that there should be no mandatory membership of individual accounts; the resulting problem is that the replacement rate would be too low given the worldwide presence of significant fractions of workers who do not save adequately for retirement and the low fiscally feasible levels of the citizen's pension.

Box 11 Unfounded worries about hybrid individual accounts (NDC pensions)

Some worries about NDC pensions are misplaced.

NDC pensions are unreliable. NDC plans are an accepted option internationally, and exist in countries such as Sweden, Italy, Latvia and Poland. The earliest implementation was in Sweden in 1998. The system has functioned satisfactorily although, as a system with considerable partial funding, the sharp drop in asset values worldwide has caused some controversy over the specific rules for adjusting benefits in payment (rules that we think could be readily improved). This has resulted in proposals to modify the benefit adjustment rules, but without any push to abandon the basic NDC approach. While there is risk in the level of benefits an individual worker will receive, such risk exists in any pension system and is more significant with funded individual accounts, since the worker must bear the full implications of a drop in asset values, as has happened with the global economic crisis. Moreover, as discussed in sections 4.1 and 4.2, funded individual accounts require considerable private-sector capacity *and* considerable government capacity, not least the ability to regulate financial markets effectively. Inadequate technical capacity increases the risk borne by workers, since investment can be very expensive, poorly executed, and embezzled. Recent experience in many countries, even the most advanced, shows the stresses faced by funded pensions. The bottom line is that all pension arrangements are highly dependent on effective government. If that condition holds, NDC plans are a sensible option where they fit a country's circumstances.

NDC pensions abandon the concept of individual accounts. As discussed in section 3 (see also the glossary) it is important to distinguish the separate concepts of *funding* (which relates to the way benefits are financed) and *actuarial* (which concerns the relation between a person's contributions and the benefits he receives based on market rates of return). A pure NDC plan has benefits that are quasi-actuarial but not fully funded. The approach is the same as with funded accounts, only the notional interest rate does not generally equal the actual rate of return on assets. Thus it does not vary in the same way as market returns. As with funded individual accounts, a person's pension benefit is strictly proportional to his total accumulated contributions, explicitly retaining the principle of individual accounts.

Secondly, using an NDC structure recognises current reality. Because of 'empty accounts', a worker has an individual account but it contains an accumulation not of financial assets but of promissory notes from government. The terms of such promissory notes can be vague and vary unsystematically across individuals and localities, violating horizontal equity and creating uncertainty, both of which risk undermining political support for the reforms. Using an NDC structure allows government to address these issues systematically, continuing to maintain a record of each worker's individual account and attributing to it each year an interest rate. It can therefore be argued that an NDC arrangement, far from undermining the present strategy, improves it.

NDC pensions lose the ability of funded arrangements to address population ageing. There are many reasons for arguing that the savings rate in China today is larger than optimal, so that limited pension accumulation rather than full funding better suits conditions in China today. NDC systems can be partially funded through a central fund as a method of spreading legacy costs or of increasing savings. Indeed, that is the case in Sweden. And as in Sweden, a country can have both notional accounts and funded accounts. Thus funded accounts could be added to notional accounts by redirecting some of the contributions into the funded accounts. A larger move to funded individual accounts (as opposed just to funding) could transfer some of the central fund assets into individual accounts. While this can be readily done if there is no worker choice about the portfolio of assets, allowing worker choice is expensive and technically demanding. Indeed, it is our judgment that such an institution is beyond the current capacity in China. As argued in section 10.2, the desirability of savings may change, so that at some time in the future more funding may be desirable, the capacity to do so with individual portfolio choice may be present, and such choice may be desirable. NDC arrangements are compatible both (*a*) with the principle of individual accounts and (*b*) with a future move to funding should that be decided by a future government.

In addition, the claim that funding is a helpful response to demographic change should not be overstated. It is true that with funded arrangements each worker builds up a pile of money to pay for his pension. But pensioners are not interested in money but in consumption (i.e. the objective of consumption smoothing). Thus what matters is that when a large generation of workers retires, national output is sufficient to meet the claims of workers and pensioners. If output does not grow enough, the returns on the accounts may be very low (including sharply negative) and efforts of pensioners to spend their accumulated savings will generate inflationary pressures; as a result, pensioners do not get the consumption they anticipated.

9. The notional interest rate in the NDC system should be equal to the growth rate of national average earnings of covered workers, using the same definition of earnings as for the determination of the contributions base.

An important element in the design of an NDC system is the definition of the notional rate of interest with which accounts are credited. There are two commonly used definitions: the increase in average wages per worker (*W*), or the increase in total earnings (*WL*, where *L* is the number of workers). Particularly in a country like China, where coverage will grow rapidly and in uneven spurts, the former index, *W*, seems a better choice. This would roughly preserve replacement rates across cohorts, apart from the adjustment for life expectancy. While one could consider having different notional interest rates in different provinces, based for example on average wage growth province by province, it seems better to use a single national index. The underlying idea of NDC is to mimic funded DC. With funding, access to the national capital market gives workers in different regions access to the same investment opportunities and so the same choice of (risky) interest rates. Secondly, different rates would complicate dealing with labour mobility, as notional funds would have to be moved when workers do, but notional funds have different economic values when the notional interest rates are different. And third, the use of a single financing pool results in a single relationship between benefits and contributions in step with the financing process.

There is no guarantee that a particularly structured NDC system will be sustainable over the long run. This depends on the way coverage expands, which will help for a while, but may create difficulties later, once coverage is complete and the growth of the labour force slows and possibly reverses. A government can deal with this on an ad hoc basis as projections of the system reveal long-run difficulties with considerable lead time. Alternatively, one could put in place an automatic mechanism for lowering expenditures relative to revenues when projections of the system are not promising. Sweden has such a system, an automatic balancing mechanism, often referred to as a brake. When a calculation reflective of assets (both buffer stocks and projected tax revenues) and liabilities shows an imbalance, the system lowers the notional interest rate. In Sweden the notional interest rate plays two roles – one is the crediting of accounts being accumulated. The second is determining initial benefits and adjusting benefits in payment, where benefits in payment grow by the notional rate (the growth of average earnings) less 1.6 percent (reflective of an anticipated long-run growth of real earnings). The Swedish approach is unsatisfactory for two reasons. One is that the indexing of benefits as growth minus anticipated growth (as opposed to a combination of wage and price growth) appears to put a great deal of risk on retirees as wages fluctuate, yet retirees are less able to bear risk than current workers, who are future retirees. Second, having the brake make the same adjustment in the increase in benefits in payment and in the interest rate for accumulation toward future benefits puts too much of the risk of long-run imbalance on current retirees. Indeed, with the global financial crisis, the brake was triggered in Sweden, generating sizable declines in benefits and anticipated benefits and considerable political reaction. Thus if one has a brake, one should concentrate the responses primarily on long-run reactions. To date there has not been much research on alternative ways to design a brake. In the absence of such research, it would be premature for China to consider installing one.

10. The determination of benefits from individual accounts should be based on quasi-actuarial principles, using the mortality table for the cohort to which a retiree belongs and the notional interest rate.

This option is intended to put individual accounts on to a sound actuarial footing, so that the expected cost of benefits for a cohort (in present discounted value – PDV) equals the cohort's notional accumulation at retirement. This parallels the way that the assets in funded accounts are used to purchase annuities at market prices. This is important for adapting the system to increasing life expectancy. Without adjustment for longer retirements, funding that is adequate with shorter lives becomes inadequate for longer lives. It is also important for preserving labour-market incentives for older workers – larger benefits become available for working longer.

The present system is not actuarial.

- If the fraction, 1/139, is intended to finance all of the *expected* benefit, with an interest rate that matches the growth rate of benefits in payment, this is tantamount to assuming that the average duration of retirement is 11.6 years, which is shorter than actual retirement. Moreover, the system does not adapt to changing demographic circumstances.
- The benefit paid is independent of the age at which it starts. Thus the system gives inefficient incentives as regards a person's retirement decisions.

- If a person dies before exhausting his accumulation, the remainder is inheritable; and if a person outlives his accumulation, the taxpayer continues to pay the pension.

In important respects the system resembles the minimum pension guarantee in Chile, in that the benefit to which a person is entitled on the basis of an actuarial calculation is supplemented from taxation. We regard this approach as inefficient. Benefits should move to an actuarial basis as administrative capacity allows.

Since it is relevant for individual accounts we reiterate recommendation 6: *The contributions base for both the basic pension and the individual accounts should be changed to match a definition of earnings to be used in determining income-tax liability, with the contribution rate adjusted so that total contributions are broadly unaffected by the change.*

The basic pension and individual accounts are designed on different principles since their primary purposes differ – the basic pension being a device mainly for poverty relief, individual accounts more for consumption smoothing. Because of these proper differences in design, it is not necessarily a problem that the relative sizes of the two benefits will vary across successive cohorts if the earliest age for claiming benefits does not change. The basic pension is a defined-benefit pension with no adjustment for life expectancy, so the initial benefit for successive cohorts keeps pace with average wages. If life expectancy remained constant, the initial benefits from the NDC individual accounts would also keep pace with average wages. But we expect that mortality rates will decline and so, if pensionable age remains constant, the benefit from individual accounts will grow more slowly than average wages across successive cohorts. One way to keep the basic pension and individual accounts in rough balance is to increase the age at which benefits can first be claimed. The increase would not affect the basic benefit level, but would increase the NDC benefit which is set quasi-actuarially. The resulting balance is only rough, since the notional interest rate for the individual account is likely to change over time in a way not matched by changes in the calculated basic benefit. There is no reason for exact balance, since the concern about redistribution within the mandatory system will evolve over time, and so will the distribution of earnings among covered workers.

In recommendation 4, we suggest that the age of eligibility for the citizen's pension should be indexed in some form to healthy life expectancy. Since we also recommend that the eligibility ages for the three sources of pensions should be the same, the indexing formula can help preserve the balance between basic and individual account benefits.

10.2 When do fully funded individual accounts make sense?

Section 10.1 noted that the current cash flow needs of the payment of benefits do not leave enough resources to purchase assets as originally designed. Thus funding today is not an option. As we review the circumstances where funding might be attractive, we will see that those conditions do not apply today. Thus fully funded individual accounts are not well-suited to China today. This section discusses the circumstances in which such accounts could become appropriate in the future.

As discussed in Box 5, funding is desirable if it leads (*a*) to increased national saving in a country with a shortage of savings, (*b*) to improved allocation of saving to productive investment, and/or (*c*) to desired intergenerational redistribution. In addition, arrangement of funding (*d*) needs to be available on a cost-effective basis. These aspects are discussed as a series of question that can be thought of as a checklist for policy makers.

IS AN INCREASE IN SAVING THE RIGHT OBJECTIVE? China has high savings – the level of investment is not restricted by inadequate savings. In the following questions we examine other aspects of the possible effects of more savings to help identify when more savings may be a good objective. At some point in the future increased national savings may become attractive as consumption levels are higher, savings rates are lower and the growth of consumption lower.

WILL FUNDING INCREASE SAVING? At a time when more savings would be good there is the question of whether funding will increase savings. Other things equal, the accumulation of real assets in individual accounts requires an increase either in contributions or in government subsidy. As discussed in section 3.3, these policies may or may not increase national savings, depending on the extent to which such increases are offset by a reduction of personal savings elsewhere, or by an increase in government borrowing. Thus a key to whether funding increases savings is not whether there are assets in accounts but how the acquisition of assets is financed. Depending on the design of policy, national savings may be significantly increased or not.

WILL FUNDING IMPROVE THE EFFECTIVENESS OF CAPITAL MARKETS? Economic growth depends on the quality of the allocation of saving to different investments. Improving that allocation is a major objective of reform of capital markets and the banking system. Having funded accounts may or may not improve the allocation. As discussed in section 3.3, funding can improve allocation if the funding activities of individual accounts strengthen the functioning of capital markets or of financial intermediaries. There is evidence that the move to funded pensions strengthened capital markets in Chile, which used a budget surplus to introduce funded individual accounts, which had a long-standing market system and a system of administration that was strong for the country's level of development, and which strengthened its market supervision in tandem with the introduction of individual accounts – the pension reform added political will to strengthen regulation. In China at present, by contrast, financial markets are at an early stage of development. Reforms of the banking system have only been initiated, interest rates are still not determined by the market, effective regulation is only being established, and credit-rating agencies – necessary for risky products – are not yet in existence. With the current very high saving rates, there is already a largely unsatisfied demand for long-term and relatively risk-free investment vehicles, and the constraints to further deepening of financial markets are mainly in effective intermediation and regulation. In the short run, funding individual accounts is likely to result in low returns or high risks. At a given saving rate, funded individual accounts, by taking more money from workers, cut down direct lending and own investment by these workers, which would be possibly more efficient uses of savings at present.

Reform of the financial sector is desirable for reasons much broader than pension design. At some point, funding individual accounts may well contribute to further improvements in the financial sector, particularly if it strengthens the pressure for improved regulation and greater reliance on market forces. Strengthening this pressure is the primary role of mandatory accounts, since there is already considerable potential demand and adequate savings. A mandatory state-run pension system, however, should not be the pilot for major innovations, given the state of financial markets in China today. This would put at risk the retirement incomes of a large population of workers, and mistakes would set back reforms of the pension system as well as financial markets. Moreover, financial-sector reforms and development can be pursued through voluntary pension arrangements including those created for public employees to stimulate these changes and to serve as a check on their adequacy. As explained in section 16, voluntary pensions should be funded. Although they are still limited compared to the mandatory system, in an economy as large as China their absolute size is substantial and can have a significant impact on financial markets.

WILL MANDATORY FUNDING HAVE DESIRABLE INTERGENERATIONAL REDISTRIBUTIVE EFFECTS? Different ways of organising pensions distribute benefits and costs differently across generations. A decision to increase funding will benefit a future generation of workers who, other things being equal, can pay lower contributions. The question is when there is a good reason to impose a larger contribution (because of the move to funding) on today's workers in China so that, other things equal, future workers can pay a lower contribution. Today's workers are relatively poor and subject to considerable economic uncertainty, while growth rates are high, so that workers in future generations are likely to be much better off. Imposing higher contribution rates on today's workers in order to have lower contribution rates or higher pensions for future workers does not seem a reasonable objective for China today, although that could change if economic growth slows down as the economy matures.

ARE MANDATORY INDIVIDUAL FUNDED ACCOUNTS AVAILABLE AT A REASONBALE COST? As discussed in sections 5.1 and 5.2, there are considerable hurdles to successful implementation of mandatory funded accounts with individually chosen portfolios. The requirements are stringent and do not seem now to be in place in China. In contrast, centralised investment with no worker choice is administratively less demanding; so is investment of assets for a defined benefit system. However, there is natural concern as to how large an investment pool there should be in the early stages for a country with limited experience in centralised investment. Investment for individual defined contribution accounts puts the risk on workers owning the accounts, unless the government chooses to bail out poor investment. With centralized investment for a defined-benefit system, poor returns are necessarily addressed with consideration of a wide range of responses. In the future as the administrative capacity of the financial sector grows, low-cost accounts covering many people, many of them with small accumulations may offer accounts at a reasonable cost.

IN SUM. Funding of individual accounts with marketed securities and deposits in China's present circumstances is not desirable. Further pilots with funding should not be a priority over the next five-year period. This is not a recommendation against the possibility of funded individual accounts in the future. At some point, China may wish to raise the saving rate, the financial system may be able to provide individual accounts with improved allocation relative to that available elsewhere, redistribution from that generation to future generations may be considered desirable, pension fund administration and private investment managers may have the capacity to cope with the heavy demands of funded individual accounts, and regulatory capacity may have been established. It is therefore important that the individual accounts of today are designed so as to allow a smooth transition to funding. The NDC approach discussed in section 10.1 does that. Once there is accurate maintenance of administrative records of the NDC accounts for workers and the ability to collect contributions and use them to acquire assets in a reasonable time, it would be simple to have funded accounts without portfolio choice by workers – it would just be crediting accounts according to different rules about the interest rate, while holding assets to match. Administrative structures in contact with workers, reporting about their accounts, would be a starting point for the process of allowing some choice of portfolios. In other words, one can go from notional accounts to funded accounts in a series of steps.

By the end of the next five-year period, China should aim to have a system of individual accounts similar to the Inkomstpension in Sweden, known internationally as NDC. Implementing individual accounts through partially centrally funded NDC arrangements has significant advantages in China's current circumstances.

- It offers consumption smoothing to today's workers in a similar way to funded DC plans, and thus maintains individual accounts as a central part of the pension system.
- Because no additional fund is built up the arrangement does not require today's (poorer) workers to make larger contributions so that future (richer) generations of workers can make smaller contributions, thus avoiding unsatisfactory intergenerational redistribution.
- It does not require the considerable private-sector financial and administrative capacity of funded plans with individual choice, since the plan is run by the public authorities.
- It is less risky for workers, since the rate of return avoids the short-run volatility of assets in the capital market. This is particularly important at a time when banking and financial-market institutions are still developing and given current global economic uncertainty.
- The arrangement is a basis for a future move to full funding, or both funded and notional defined contribution accounts should a future government decide that that suits China's then economic and social circumstances. For example, Sweden's 18.5% contribution rate is divided, 16% going to the NDC system and 2.5% to fully funded accounts.

11. Overall Structure and Management of the System

To address some of the problems that have emerged since the 1997 reforms, particularly the fragmentation of the system, the government should consider the following options regarding the overall management of the contributory system for urban workers. In addition, we address ways of handling the citizen's pension.

11.1 National Pensions Administration

11. There should be a single set of regulations on mandatory contributory pensions, preferably in the form of legislation that is enforceable. There should be another set of regulations on voluntary pensions.

While the rules on contributions and benefits in the mandatory contributory pension system should be set centrally by formula, they should include room for regional variation in basic benefit levels. Local variation is essential in a country with great disparities both in price levels and living standards, but that variation must be compatible with a national system, both to maintain equity in how regions share in a national pool and because a unified national system is essential to the portability of pension rights and hence to labour mobility. Interpretation and enforcement of the pension law should be the responsibility of a central ministry. The 1993 directive for separate bodies setting policy and administering the pension fund should be implemented. The draft Social Security Law, which provides a general framework for such a pensions administration should be translated into legislation, with detailed follow up work as necessary.

12. There should be a single national trust fund to receive all contributory pension revenues, for both the basic pension and the individual accounts (a single national pool).

If there were funded individual accounts, then placing particular assets particular accounts determines the allocation of ownership (and so benefits) and risk bearing (as benefits depend on realized rates of return on these specific assets). With a system along the lines of NDC, with only a centralized fund dedicated to paying for future benefits, the basic logic is different. The funds of the system as a whole (future contributions and future benefits) are available to adapt to the evolution of demography and economics. While one could consider separate trust funds for the two portions of the contributory system, there is little reason to duplicate the management task. The division of the contributions between a part for the basic pension and a part for an individual account system that does not hold assets for individuals is arbitrary. The commitment to the future is a commitment involving the entire system – resources can always be shifted between two separate trust funds as needed to provide for benefits. For example, in the US, there are separate trust funds for the Social Security old age program and its disability program, each drawing on separate portions of the payroll tax. But Congress views them as a single trust fund (and it is regularly reported to the public as such). When one of them gets small relative to obligations, funds are simply moved between them, as is appropriate since they both cover the same population in terms of both contributions and eventual benefits.

In considering the details of how a national pool would operate, it will be necessary to have transition rules for provinces that have significant funded accumulations. That is, some of provincial accumulations might be left with the provinces for top-up benefits, rather than being added to the national pool. A purpose of the pool is to have richer provinces share in providing benefits to poorer provinces. Thus provinces that have set aside more than is necessary for that purpose should be allowed to keep the surplus

Unified administration and finance of the mandatory contributory pension system has core requirements. An essential element is a national database with information on each worker's account. While the basic pension is based on years of service and earnings history, which may include different locations, with the NDC approach to the individual accounts, the individual account benefit is based on the history of contributions, which depend on earnings. Thus the information requirements of the two systems overlap and the data should be collected and preserved together. Having national uniformity is important both to foster a national labour market and because that is the only way to control the pension spending of localities (which could otherwise pay pensions at whatever level they wanted out of a national pool). Second, there needs to be a single system of record keeping and standard software. Such software needs to be constructed in such a way that localities cannot customise it with local variations, other than those allowed in the central rules. (Experience in other countries shows that excessive customisation is a likely outcome unless strictly prevented.) These administrative arrangements all need to be mandatory for localities. Maintaining a contributions record for each individual worker is a major task. It is necessary to identify each individual, and to keep track of that person's identity over time and location and to attribute to each worker all of his earnings levels and contributions. Note that records need to be kept for 40 years for many workers and, increasingly, workers will hold jobs in multiple locations around the country. The National Pensions Administration should be part of the central government and funded from the central government budget. The pensions administration should administer both the basic pension and individual accounts. Administrative needs should be given significant weight, with a realistic time frame for implementation.

A National Pensions Administration which receives all pension revenues and delivers pensions is the simplest way to achieve national pooling, which is preferable to provincial pooling in terms of budget constraint. Pooling lies at the core of the redistributive and risk-sharing element of pensions. Given the size and diversity of China, national pooling of the mandatory pension plans is particularly important. This should not preclude local initiatives with voluntary pensions.

Administration of the citizen's pension can build on different institutions in the short run and the long run. In the long run, the task of the administrators of the citizen's pension, like the task of the administrators of the contributory pension, is to deliver pension accurately and in a timely fashion. As the coverage of the contributory pension spreads, the population covered by the two systems will become more and more similar. Once there is wide coverage by the contributory system, the administrators of that system are the natural administrators of the citizen's pension. We recommend combining these two elements in the long run rather than combining the citizen's pension and Dibao for two reasons. First, the citizen's pension will go to the entire population, while Dibao addresses only the poor. While relevant population for receiving benefits from the citizen's pension and from the contributory pension will get more and more similar over time, the reverse is the case for the citizen's pension and Dibao. The greater the coverage of the contributory pension, the fewer people will need benefits from Dibao. Second, the task of the Dibao administration is to measure the needs of the poorest in order to provide support to those who need it the most. The task of the citizen's pension administration is just to determine eligibility and then deliver the appropriate benefit. Thus the central tasks are different.

Currently, the contributory pension benefit is not paid throughout the country, while Dibao offices are widespread. Thus, in the near term, it may be appropriate to use the Dibao facility for distributing the citizen's pension. But, in the long-run, we suggest combining the two pension delivery tasks into a single administrative structure. This would also simplify the affluence testing of the benefit against the mandatory pension. The Dibao administration would then continue as it does now.

13. There should be a single administration with a nationwide responsibility for recordkeeping and benefit payment for both the basic pension and the individual accounts. In the long run, it should also administer the citizen's pension.

14. The central authority should create an institution for projecting the financial position of mandatory pensions. Moreover, an institution should be financed to carry out ongoing research on pensions.

Pension systems operate over long periods, so that projections of future spending are essential for mid-course adjustments to ensure that contributions and projected benefits are broadly in balance. Mid-course adjustments are necessary so that benefits can be changed with significant lead time to give workers time to adjust before retiring. Understanding how the pension system is working in practice, and not just in some simple theory, is critical for improving it, particularly in a country undergoing large changes, as is China. Keeping abreast of developments in both theory and foreign experience is also valuable.

Recommendations 11-14 all concern the development of a national system. A series of impediments do not argue against the principle but suggest realism about the time scale for implementation.

- Rules about coverage and benefits can be ambiguous. There is a series of directives from the State Council, which different officials may interpret differently, and from which some may deviate. The announced employer tax rate varies between and within provinces; and unreduced retirement benefits are sometimes awarded at earlier ages than the directives provide.
- There are adverse financial incentives. If in some places, pooling is national or provincial but access to retirement benefits determined by lower levels of government, financial risk is transferred to higher levels of government, an incentive structure which higher-level officials do not relish.
- There are potential political problems. A national system will disadvantage the richer (and presumably more powerful) regions to benefit the poorer regions.

Thus moving to a true national system involves a major power shift away from local officials and a geographic redistribution of costs and benefits. Both for such political reasons and because of institutional capacity constraints, national systems in many countries started as sub-national systems; and in some countries (medical insurance in Germany, for example) de facto national systems remain de jure subnational.

11.2 Dedicated funding and revenue sources

15. The contributory pension system should continue to be financially separate from the state budget, and these pensions should be financed from dedicated revenue sources.

Workers rely on future retirement benefits and should be protected from large shocks to pension expectations at short notice. People who have already retired have no ability to adjust pensions, and so are less able to bear risk than workers, who can adjust earnings. Thus legislated changes to the system should be made infrequently, with considerable lead time and with effects spread widely over cohorts. The more the finance of pensions is kept separate from the rest of the government budget, the less likely is inappropriate adjustment of pensions – either too frequent or too much influenced by short-run fiscal matters other than pension costs and revenues.

Furthermore, it would be good political practice to set the rest of the budget without including changes in benefits or contributions as a major part of that discussion.

An approach with a dedicated revenue source will not balance revenues and expenditures exactly year by year. There will, therefore, be a need to keep track of surplus revenues, since they were raised for pensions and should be used for pensions. Surplus revenues could be transferred to the National Social Security Fund (NSSF), while deficits could be financed by the earnings of the assets of the Fund or, if necessary, by the assets themselves. The NSSF would thus function as a social security reserve fund. A dedicated revenue stream and separate administration might also help to depoliticise pension projections and improve public discussion of and understanding about options for reform. This may result in a greater understanding of the need to link benefits to contributions and may raise public confidence in the future receipt of pensions, making workers less resistant to making contributions.

16. Pension contributions should be collected by the tax authority, with the revenue delivered promptly to the pensions administration. Enforcement of compliance should rest with the income-tax authority. It is important to avoid using a period of surplus revenues from the expansion of coverage to set benefits at a level that is not sustainable.

WHO COLLECTS CONTRIBUTIONS? This is a problem area. Initially all pension contributions were collected by the Ministry of Labour and Social Security. However, after the Asian financial crisis many enterprises were unable to pay contributions. As a response, the State Council issued Regulations on the Collection and Management of the Social Security Fund, which stipulated that contributions for the main social insurance benefits could be collected by the Ministry of Labour and Social Security and by the tax authorities. Since then each of these agencies has collected half of the contributions. Notwithstanding an inter-ministerial meeting to discuss possible reform, this situation remains.

This dual system is suboptimal in terms both of accuracy of collection and administrative cost. Unification of the collection function should be an early reform. As argued below, the same definition of income should be used both for personal income tax and social insurance contributions, so that the most cost-effective way to collect contributions is alongside the personal income tax. However, since pensions present the separate and demanding administrative tasks outlined above, it is right that the tax authorities, having made the collection, then pass the revenues promptly to the pensions administration. This division of labour, with collection by the tax authorities and record keeping and payment of benefits by the social security authorities, occurs in many countries, including the UK and USA. The reconciliation process, as part of auditing, can be done on behalf of both systems by either ministry.[12]

MEASURING INCOME. A third set of issues concerns the ability of the tax authorities to measure income and to collect tax. Though the tax authorities in China have the technical capacity required for collecting tax (though it will be necessary to ensure that they have adequate resources), problems continue with assessing income accurately. Evidence suggests that lower

[12] In the UK, where student-loan repayments are collected alongside income tax, the student-loans administration also contributes to the process of reconciliation, and hence assists with enforcement.

earners are more heavily taxed than higher earners because the latter are more adept at hiding income. Clearly this is an area on which work is necessary.

11.3 Review of replacement rates and contribution and benefit levels

Over the coming years, major changes will emerge in the finances of the pension system, particularly when necessary reforms to make the system sustainable are implemented and coverage is extended to all formal-sector workers. Similarly, the balance between the basic pension and individual accounts might be reviewed in light of the non-contributory pension. If the latter pension is small enough so that little of it goes to workers in the contributory system because of the affluence test, there is no basis for change from this source. If the non-contributory pension becomes large relative to the basic pension, some rethinking may be warranted. Until the major reforms have been decided and long-term financial projections are available, it would be prudent to keep the basic parameters of the contributory system – replacement rate, contribution rate and benefit levels – unchanged. Frequent changes would be disruptive and mistakes would be made. In a number of areas, however, immediate consideration could be given to options for improvement.

The relevant replacement rates for a mandatory system are those of the system as a whole, i.e. the basic pension and individual accounts together with the net amount of the non-contributory pension. The balance between the two contributory elements should reflect how replacement rates should vary with earnings levels. Both of these issues need interpretation in light of the non-contributory pension. The overall target replacement rates should reflect a balance among the competing needs of affordability, adequacy, coverage and the ages at which benefits start.

The present method of calculating the pensions available from the individual accounts – monthly pensions calculated as 1/139 of the accumulated fund functions as a phased withdrawal with the longevity tail financed outside the individual account system. In contrast, if the expected cost were to be financed within the system, there would need to be an actuarially accurate pension calculation, which would yield a much smaller monthly benefit than comes from the current calculation. Moreover, with automatic adjustment to preserve an actuarial calculation, increasing life expectancy after retirement would result in a lower monthly benefit for new retirees and so would not unbalance the finances of the system. Without actuarially accurate benefit calculations, the individual accounts do not preserve financial balance.

Once selection of further reforms is complete and cost and revenue projections are in place, the government should consider the trade-off between the level of the basic pension and the contribution rates for the basic pension and individual accounts.

11.4 Public information

17. A priority task for the national pensions administration is to inform the public of changes in the pension system, once they have been decided. There should also be a start to a process of informing workers of their accumulations from contributions and their anticipated pensions to assist in their choices about consumption and financial planning.

It is common in advanced countries for workers to receive annual statements about their pensions. This gives the opportunity to see and request correction for errors in reporting. By reporting both pension benefits already accrued and a projection of what pensions might be with continued work and alternative retirement ages, such statements help people plan for retirement.

11.5 Extending coverage of the existing contributory pension system

18. The basic pension and individual accounts should be extended in the near term to all urban and rural workers employed by sufficiently large firms, that is, formal-sector workers.

As discussed in section 7.1, extending coverage to all large firms will make additional demands on administrative capacity. In addition, a sudden imposition of a large contribution rate on earnings can disrupt even large businesses. For both reasons, coverage needs to be extended carefully. Extending coverage to non-SOE workers will significantly improve the finances of the pension system, since non-SOE workers are much younger. This will be the case particularly if coverage includes new arrivals in urban areas, who will disproportionately be young workers. Thus growing migration to urban areas mutes the effects of demographic change on the budget. The mirror image is that ageing will be even stronger in rural areas. To include all formal employment within the system coverage should be based on the nature of the employer, not the location.

12. Adjusting Benefits after Retirement

Discussion thus far has focused on the initial level of benefits, i.e. the pension a worker receives at the time he or she first becomes a pensioner. A separate issue is how those benefits should vary over time.

12.1 Indexing the basic pension and benefits from individual accounts

In developed countries, benefits after retirement are sometimes indexed to inflation rates, sometimes to changes in average wage rates, and sometimes to a weighted average of the two. The indexing rules are set in legislation, not set on a discretionary basis year by year. Clear rules are important to help workers understand and trust the pension system, and to protect what should be a slow-moving, reliable system from the vagaries of the annual budget process. While the budgetary flexibility of annual benefit increase determination seems attractive from a budgeting perspective, it goes against the central role of a predictable source of income in retirement that is at the heart of fulfilling the role of a pension system. From a given starting point, if benefits grow more rapidly, the pension system becomes more expensive; if they grow less rapidly than earnings, retirees fall increasingly behind the average living standard of workers as they age. Any pension system needs to strike a balance between the twin goals of affordability and adequacy. But another way to consider the growth of benefits is to recognise that for a given PDV of costs, there is a trade-off between the initial level of benefits and the growth of benefits after retirement. For a given PDV of costs, the more rapid the growth of benefits, the lower needs to be the initial replacement rate. Depending on views about the initial replacement rate, the relationship between pensions and average contemporaneous wages, and available finance, different countries can reasonably make different choices.

19. Basic pensions in payment should be indexed by a formula which applies nationwide (though with local parameter values). Individual account pensions in payment should be indexed by the same formula, which applies nationwide. That formula should be a proper weighted average of indices of price change and wage change. That is, the weights should add to one, unlike in the current directive. The weights should reflect a balance between the competing needs of affordability and adequacy. The citizen's benefit should probably use the same index.

The real value of pensions should not vary erratically with the level of inflation, since inflation rates can vary significantly across years, even nearby ones. If pensions are fully indexed for price inflation, their real purchasing power is preserved. If pensions are indexed for the growth of nominal wages, then, insofar as wages keep up with inflation, pensions are adjusted for inflation. While wages keep up with inflation over the long run, they often fail to do so in the short run. Thus indexing to wages involves risk in the real purchasing power of benefits. Fully indexing to wages puts risk on retirees similar to that on workers, although retirees are likely to be more risk averse on average since they have fewer opportunities to adjust their incomes. Some risk-sharing between workers and retirees over the impact of inflation on wages seems appropriate, but not too much. A smoothing mechanism may be appropriate to limit short-run fluctuations in the purchasing power of benefits. Either of price indexing or wage indexing, or a proper weighted average of the two, is reasonable, given different objectives. Some smoothing can be considered if done in a manner consistent with proper indexing.

It is important to index for inflation in a properly weighted way. Currently, the increase in benefits in China is supposed to be somewhere between 40 and 60% of nominal wage growth. In addition to lacking the clear rules that are valuable in their own right, relating increases in benefit to a fraction of the increase in nominal wages makes the real value of benefits erratic. An example illustrates the problem. Workers can have 5% real wage growth with 5% nominal wage growth and zero inflation, or with 10% wage growth and 5% inflation. If nominal benefits increase at one-half the rate of nominal wage growth, these two circumstances produce very different outcomes. With zero inflation, nominal and real pensions grow by 2.5% (half of 5%), half the growth in real wages. With 5% inflation, nominal pensions grow by 5% (half of 10%), which, with 5% inflation, means no growth in real benefits. Thus real benefits do not grow at one-half the rate of real wages. Higher inflation can make this more severe. With 15% wage growth and 10% inflation, benefits grow at 7.5% – a *decrease* in real benefits of 2.5%. Proper indexing avoids this erratic response to inflation.

This system can be changed without altering long-run projected costs. One way to do so is to set benefit growth as a proper weighted average (weights adding to one) of wage growth and price growth, with the weights chosen to keep expected costs at the same level as projected under the current rule. Alternatively, the government might decide that the weights should be chosen to protect the ratio between the increase in real benefits and the increase in real wages. The latter approach might require a one-time change in the initial benefit level if any change in projected costs is to be avoided. Alternatively the change in costs could be absorbed as part of the overall reform. For given rules determining initial benefits, the greater the weight on wages, and so the smaller the weight on prices, the more rapidly benefits will grow after retirement and so the more costly the pension.

12.2 Indexing the citizen's pension

Consideration of indexing contributory benefits in payment naturally raises the question of how the citizen's benefit should be indexed. First let us note a fundamental difference between the two indexing problems. Initial benefits with the two contributory pensions are set by the rules at the time benefits start. Initial basic pensions depend on wages in the region. Initial pensions from individual accounts depend on the size of a person's accumulation, on the discount rate specified by law, and on the projected life expectancy of the cohort. Since accumulations are based on earnings, they will be higher for later cohorts because earnings grow over time. Someone starting a year later will have an initial benefit determined by the benefit formula a year later. Thus there is no necessary coordination between the increase in benefit from year t to year t+1 for someone who retired in year t and the difference in benefits between someone who retired in year t and someone similar who retired in year t+1. That is, the growth of benefits in payment and the growth of initial benefits across cohorts have no necessary connection. As noted above, life expectancy at retirement affects the initial NDC benefits a person receives. Subsequent changes in life expectancy affect the initial benefits of the next cohort but do not affect benefits in payment.

In contrast, in any particular year the citizen's pension benefit is uniform – it is the same for people of different ages in that year (apart from geographical differences in the cost of living). Thus the growth in pensions in payment is the same as the growth across cohorts in a pensioner's initial benefit. Unless initial contributory benefits and contributory benefits in payment grow in the same way, it is not possible for a uniform citizen's benefit to grow at the same rate as both of them. Either a pensioner will have a shifting relationship between contributory and non-contributory benefits or successive cohorts of new retirees (new pensioners) will experience different relative values of their initial contributory and non-contributory benefit.

One could complicate the structure by having age-varying citizen's benefits, but we do not recommend that complicating detail.[13] As noted above, we think that having the same indexing for all three benefits is appropriate. We note that the initial individual account benefit is adjusted for life expectancy as part of an actuarial calculation, but this is not the case for the basic pension. Thus their relative sizes may change over time, depending on what happens to the earliest age of eligibility for benefits. We have suggested the possibility of adjusting the citizen's benefit for the dependency rate, introducing another source of different growth patterns. Our recommendation comes from a primary focus on the ongoing experience of retirees and recognition that the relative sizes of the different pensions can be reviewed and possibly adjusted by legislation from time to time. Once the level of the basic pension varies with the age at which the benefit starts, the initial level could be adjusted for the life expectancy of the retiree's birth cohort. Some reform proposals in the US include adjusting the initial benefit a person receives in the light of the life expectancy of his or her cohort, even though US Social Security is a defined benefit pension.

[13] In recognition of increasing financial problems for some older retirees, analysts in some countries have called for an extra benefit increase, beyond normal indexing, when passing some age, such as 85.

Over time, as coverage for the contributory pension grows, the population receiving a contributory pension will increasingly resemble the population receiving a citizen's pension. Since the populations would be very different in the near term, we do not see a good reason for trying to preserve the relative sizes of the contributory and non-contributory pension. Eventually, with good data on the needs of the retired population, the relationship among pensions could be revisited.

We discussed the way benefits are indexed, but not the interaction between indexation, on the one hand, and differences in life expectancy, on the other. In most countries women live longer than men and earn less than men; however, within each gender, on average those with higher earnings live longer than those with lower earnings. This combination of patterns does not lead to a simple way that benefits should be adapted to the differences in life expectancy, and we have not incorporated this issue in our recommendations.

13. Funding from Assets

The pensions of workers who retired before 1998, and the accrued pension entitlement of current workers for employment prior to 1998 represented China's 'legacy obligations' at the time of the 1998 reform. These legacy obligations were not only built up under the old pension arrangements, but also under a different economic system. Current pensioners and those who will retire shortly devoted most of their lives to building up the state sector. In return, it was expected that SOEs or other state entities would provide for those workers in old age. Indeed, the pension was considered a 'lifetime wage', and so the replacement rate was close to 100%. In the past, this was provided from the current income of SOEs, but now the liability has been removed from these firms, to ensure a level playing field as they compete in a market economy. It is therefore necessary to use other resources to finance the legacy obligations.

Currently, some resources are coming from general revenues as fiscal subsidies to cover deficits (54 billion Yuan in 2003 according to the White Paper issued by MOLSS). Without alternative actions, the rest of these inherited legacy obligations would be borne by current and future workers in the form of lower benefits than could otherwise be financed by their contributions. In an ongoing defined benefit system, legacy obligations change year by year.

In recognition of the legacy obligations, the government decided in 2003 to transfer some of its shares in SOEs, particularly those that were being listed on stock markets and those not listed but already organised as joint stock companies, to the National Social Security Fund (NSSF).[14] In June 2009, *Regulation on Transferring Part of the State-owned Share to National Social Security Fund in Domestic Equity Market*, issued jointly by the Ministry of Finance, the National Assets Committee, the Equities Inspection Committee, and the Council of National Social Security Fund, was approved by State Council. According to the regulation, state-owned or partially state-owned companies which sold shares after the structural reform in 2005, or plan to do so in future, must transfer State-owned equities equivalent to 10 percent of their initial public offerings (IPOs) to the NSSF. The rest of shares are held by a sectoral holding company, or the State Asset Management Commission. The IPO shares – shares sold to the public,

[14] We distinguish between a transfer of assets to social security based on historic considerations from the issue discussed above of providing government debt in response to worker contributions.

including foreign shareholders, through listing in China, Hong Kong, NY, etc. – are the extent of privatization of SOEs in China.

20. Given the extent of legacy obligations, continuing transfer of state shares to the NSSF offers two potential advantages. Shifting the dividend flow from current beneficiaries to the pension system reduces the level of fiscal subsidies required from the Budget and improves pension system financial balance. Adding the NSSF as a long-term shareholder could contribute to improved corporate governance of the SOEs and thus to the overall reform in China.

The quality of corporate governance is a key ingredient in economic efficiency and economic growth. Good quality governance needs good legislation, good oversight by regulatory authorities and good oversight and exercise of voting rights by share owners. The transfer of shares can give the NSSF the opportunity to function as a long-term strategic owner of significant shares of these companies. As a major shareholder, the NSSF would have a major interest in protecting shareholder rights, including the right to a reasonable level of dividends. This interest could be pursued by monitoring firms, exercising shareholder voting rights, and being represented on the boards of some companies. In many countries pension funds have played an important role as a long-term strategic shareholder in overseeing the performance of companies and in improving corporate governance generally. Moreover, the interest of the NSSF in corporate governance would lend more weight to the process of enterprise reform, aiming at better legislation and better regulation, just as in Chile the investment of mandatory worker accounts in the stock market assisted the reform process by contributing to efforts to improve the regulation of the stock market. As the State Asset Management Bureau (SAMB) will continue to own substantial shares in SOEs even after the transfer of some shares to the NSSF, the ownership roles of SAMB and NSSF, with their different perspectives, can complement and reinforce each other.

With the underdeveloped state of capital markets in China today and with the goal of having long-term investors, the NSSF should hold the shares over the longer term, relying on the dividends from the shares to help finance pension obligations. Worldwide experience with investment in diversified portfolios of assets by government agencies makes it clear that good-quality investment is far more likely with full and transparent accounting of the operations of such government agencies. Thus, for the transfer of shares to accomplish the fiscal and governance goals, it is important that the NSSF has a clear and explicit remit, independent non-political management, and detailed, credibly audited accounts that are published regularly. Such an approach to these shares may help to prevent the loss of state assets in the process of reform as happened in countries such as Russia.

In addition to the potential gains in corporate governance, the transfer of shares helps with the financing of pensions. As an alternative (or additional) aid to financing, the government could transfer some government bonds to NSSF to finance legacy obligations.[15] That is, the

[15] Any bonds transferred should be indexed for inflation, and consideration should be given to making indexed bonds available to insurance companies (as backing for indexed annuities) and possibly to the public. Issuing more government bonds (in contrast with having a legacy obligation) may increase the interest rate at which the government borrows. That is, implicit pension debt and explicit government debt are not perfect substitutes.

extent to which bonds transferred to the pension system affects how much of the legacy obligations are paid by covered workers and how much by taxpayers generally.

Without this transfer – or to the extent that such a transfer is incomplete and not sufficient for full funding of legacy obligations – the burden of the obligations from the old system fall on current and future workers and thus contribute to low compliance, particularly among those outside the sector who are currently being added to the pension system. On the other hand, removing a revenue flow from the government or requiring additional interest payments is likely to result in higher taxes than would otherwise be the case, an alternative source of compliance and efficiency issues.

How large should the trust fund be? The larger the fund, the lower the contributions necessary to finance a given level of pensions (improving the deal for younger workers and for those included as coverage expands), or the higher the level of pensions that can be financed from given contributions (improving the deal for pensioners and so the future deal for workers). Decisions about the size of the fund and the mix between SOE shares and bonds clearly have major efficiency, equity and political ramifications.

Given the preceding argument it is highly significant that in June 2009, the Regulation on Transferring Part of the State-owned Share to the National Social Security Fund in Domestic Equity Market was issued jointly by the Ministry of Finance, the National Assets Committee, the Equities Inspection Committee, and the Council of the National Social Security Fund. The regulation was approved by the State Council. It stipulates that state-owned or partially state-owned companies which sold shares after the structural reform in 2005 or which do so in future must transfer to the NSSF equities equivalent to 10 per cent of their initial public offerings (IPOs). As the holdings of the CSSF build up, the idea is that it can increasingly carry out supervision of state owned enterprises.

14. Retirement Age

Policy directions for retirement age start from the following facts.

- Given that pension provision involves the reduction of consumption during working life in order to have a reasonable level of consumption during retirement, there is a necessary connection between the adequacy of monthly pension benefits, their cost, and the retirement age. If cost is regarded as excessive, policy-makers can act to increase the retirement age, to reduce monthly pensions, or both.
- People are living longer. This is a wonderful thing, but implies that if people continue to retire at a given age, the cost of providing a given monthly pension will rise.
- Leisure is a superior good. As countries get richer, people generally choose to consume more leisure through a shorter working week, longer holidays, and earlier retirement. Thus the average age at which a working population retires depends to a large extent on the level of per-capita income in the country.

In China, the mandatory retirement age for SOE workers (60 for men, 50 or 55 for women) derives from an earlier time when life expectancy was shorter. Actual retirement age is even lower because early retirement has increased sharply – a predictable outcome of the prevailing incentive structure. Workers face incentives to retire early, particularly those who work for failing enterprises with wage arrears, and even more since many productive workers will be able to find a new job while continuing to receive a pension. Enterprises going through hard times encourage early retirement in order to shift the burden of compensation to the pension authorities. In contrast, the average age at which a worker first receives a social security retirement pension in the USA is 63.7 (men) and 63.6 (women) (2002 data).

Longer life expectancy and large-scale early retirement together result in a long period of retirement. Table 3 shows life expectancy at age 60 in China, Japan and the USA. In China, the combination of lengthy retirement and the one-child policy creates a dependency ratio that has risen dramatically, from 1:13 in 1980 to 1:3 in 2002, and is projected to reach 1:2 in 2030. The combined effect on pension finance of reduced working years and increased years receiving pension, because of early retirement and rising life expectancy, is obvious and should be addressed.

Table 3 Life expectancy at age 60, China, Japan and USA, 2005-2010

Country	Men	Women
China	18	21
Japan	22	28
USA	21	25

Source: United Nations Statistics Division, (http://unstats.un.org/unsd/demographic/products/indwm/tab3a.htm)

A number of countries have increased the earliest age at which benefits can be claimed and/or the age for full benefits. For example, in the US, 1982 legislation increased the age for full benefits in stages with delays and slow phasing. The age was 65 in 1982, is now 66 and will reach 67 in 2022. In the UK, recent legislation phases in an increase in state pensionable age, which will rise from 65 to 66 in 2024, and thereafter by one year each decade (thought there is talk about accelerating the process). Japan is slowly increasing the official age for benefits from 60 to 65. Also many countries that had different retirement ages for men and women have legislated increases in the ages for women to match that for men, although not all that harmonized have done so in this way.   .

14.1 Retirement age and unemployment

Many people in China are concerned that raising the retirement age would increase unemployment. This is based on the belief that if workers stay in their jobs longer there are fewer job opportunities for new entrants to the labour force. Apart from temporary, short-run effects, that view is erroneous in a market economy, where it is incorrect to think about the labour market in terms of a fixed number of jobs. As discussed in Box 4, the number of jobs in the economy is responsive to the availability of labour. Moreover, many workers receiving pensions are still working, although with a different employer than before, or in self-employment. In the context of urban unemployment in China, there is the additional factor that job availability invites mobility from rural to urban areas. While it is possible that there may be some weak, short-run relationship between retiring additional older workers and employing some of the new entrants to the labour force, there is no long-run relationship, as labour demand responds to labour supply.

Although the labour market is not yet working efficiently in China today, the pension system needs to be set up for the long run. Thus the retirement age needs to be raised and there should not be permanent encouragement or mandate of early retirement. Indeed, many other countries have come to the conclusion that the government should not establish a mandatory retirement age at all; if worker and employer both wish it, a person should be able to continue working.

Box 12 discusses some concerns about proposals to raise the retirement age and Box 13 sets out principles for how any such policy should be implemented.

Box 12 Unfounded worries about raising the retirement age

Raising the retirement age will increase unemployment. This topic was discussed in Box 4. The central point is that job creation is dynamic – an increase in the number of workers, through greater availability of workers and downward pressure on wages, will increase the number of jobs. Conversely, attempting to decrease the number of workers through a pension policy that encourages early retirement does not help with unemployment on an ongoing basis. Internationally, there is no correlation between a country's retirement age and unemployment – countries with a higher retirement age do not have higher unemployment rates.

There may, however, be short-run effects, until labour markets have adjusted. Thus a policy to raise retirement age should move the age smoothly and should be timed to avoid periods of serious recessions and, if needed, be accompanied by parallel policies to mitigate any short-run impact on employment.

Raising the retirement age will create large individual losses. Clearly an announcement that retirement age will increase from 60 to 65 with immediate effect and with no compensating increase in monthly pension would create a large shock to people in their late 50s. Such a policy would be economically harmful, creating a large and irreversible disturbance to long-run plans for consumption smoothing, and undermining the long-run credibility of the pension system; and it would be politically inept. For precisely those reasons, no sensible person has ever suggested that policy, and recommendation 20 very deliberately argues for a phased increase. Box 13 sets out principles for implementing a phased increase.

Box 13 Principles for adjusting pensionable age

An increase in pension age should be based on three principles.

- The rules should relate to date of birth, not to the date of retirement; otherwise there will be a wave of retirements just before any reduction in the generosity of benefits goes into effect. Such an incentive to retire is inefficient. Mere consideration of raising the retirement age may trigger inefficient retirements in fear that the age will change for those not yet retired.
- Changes should be made annually, to avoid large changes in benefit levels across nearby cohorts. Large changes are inequitable and politically difficult, since benefits could differ significantly

between people born in successive years, sometimes only days apart. The combination of large changes and rules determined by date of retirement would exacerbate the inefficient incentive to early retirement.

- As far as is sensible, rules for changing benefits should be explicit. The case for explicit rules for adjusting benefit levels as life expectancy changes is clear, since the cost of benefits depends primarily on life expectancy. Automatic adjustment with explicit rules leads to greater predictability and decreased political pressure. Automatic adjustments may function better if based on actual mortality outcomes rather than projections. Nevertheless, as with the indexation of income tax brackets, there always remains the option of legislation to change whatever the automatic rules produce

The case for an explicit rule automatically adjusting the earliest eligibility age is weaker than the case for periodic re-evaluation, since the choice does not depend only on life expectancy but also on such factors as the growth of real income and the distribution of earnings opportunities.

The increase in women's pensionable age in the UK, announced in 1991, illustrates all three of the above principles. The key date is April 6, 1950. For women born before that date, the state pensionable age will continue to be 60. The pensionable age for a woman born on May 6, 1950 (one month after the key date) will be 60 years and one month, which will occur in 2010, 19 years after the legislation, for a woman born on June 6, 1950, 60 years and two months, and so on. For women born on or after April 6, 1955, the pensionable age will be 65.

14.2 Determining benefit eligibility

With individual accounts, whether funded or notional, benefits should be determined on an approximately actuarial basis from the accumulation in the account. Thus there needs to be a minimum age for claiming a benefit (referred to as 'the earliest age of entitlement') but no other age that plays a significant role in determining benefits. Similarly, the level of the basic pension should vary with the age at which the benefit starts in a roughly actuarial way, and there needs to be an earliest age at which the basic retirement benefit can be drawn.

21. The eligibility age for both the basic pension and individual account pension should be slowly increased to 65 for both men and women. Early access to pensions should not be used as a substitute for unemployment benefits. There should not be a mandatory retirement age on a national basis, only on the basis of firms and jobs, as selected by the firms and workers (and regulation where public safety is at issue).

The method of managing change is important. Nobody close to retirement should face a sharp increase in his working years. There should be no large 'steps' in the earliest entitlement age, such that person A must work much longer than person B, even though A is only slightly younger than B. Third, the changes should be rules based, rather than discretionary, and the rules should relate to date of birth, not date of retirement.

With a rising eligibility age for retirement pensions, there will be increased applications for disability benefits. It is important that disability be judged with care, so that disability applications do not become an alternative route, readily available, to early retirement benefits. Even if this is not a problem in China today, given ease of access to early retirement, it is important to be vigilant when early access to pensions is tightened (in Mexico 6 out of 10 pensioners are disability pensioners). A problem in Europe has been that governments have been lax in evaluating disability applications.

Once the eligibility age of 65 has been reached, it would be good to have automatic indexing of the eligibility age. We think eligibility for all three pensions should rise in step. As noted in recommendation 4, we suggested for the citizen's pension: *The age of eligibility should be indexed for healthy life expectancy and perhaps for the dependency rate as well.*

22. Any worker who continues in employment beyond the pension eligibility age should either start receiving contributory benefits while working or should receive a larger contributory benefit when stopping work, based on actuarial principles.

A sensible relationship between benefits and the age at which they start is needed for good labour-market incentives – to avoid both over-encouragement and over-discouragement of different retirement ages. One can calculate the change in the expected lifetime value of a pension as a consequence of continuing work for another year. The incentive to continue working is strongly influenced by this change, particularly when the lifetime value of benefits decreases. Neither the individual account nor the basic pension have an adjustment rule for the age at which benefits start, much less an adjustment rule that changes over time as remaining life expectancy changes. Yet such adjustments are common in pension systems. Canada, Chile and Sweden, discussed in Boxes 8-10, all have adjustments in their contributory pensions for the age at which benefits start.

We note that the mandatory pension system in Germany is based on a points system. For each year of earnings, a worker receives points equal to the ratio of the worker's earnings in that year to average covered earnings in the country. At retirement, the worker's points are added up. The sum is then adjusted for the age at which the benefit starts. The benefit in any year equals the adjusted number of points times the value of a point. The rules determining point values look both at average net earnings in the economy and the dependency ratio of the system. In mathematical terms, the sum of a worker's points is equal to the number of years of service multiplied by the average number of points a worker has accumulated during the years of service. Unlike the German system, the basic pension has a redistributive element from averaging the worker's own earnings with the average earnings in the region where the work occurred. The redistributive component is akin to redistributing points from higher earners to lower earners. Earlier, Germany did not adjust the number of points for the age at which benefits started. But that was changed as part of reform in 1992, a change we think would be appropriate for China as well.

23. The age for eligibility for the citizen's pension is usefully set at the eligibility age for the contributory benefit, but may be set higher (to afford larger benefits out of the available budget).

Setting eligibility for the citizen's benefit earlier than that for the contributory benefit would not be good targeting since many people will still be working. Setting it later than the eligibility age for contributory benefit encourages continued work, although there is some concern about workers needing to continue beyond the contributory benefit eligibility age because they are waiting to finance retirement from the sum of different pensions.

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24. Voluntary pensions can be received at a younger age than the earliest entitlement age for basic and individual account pensions.

The sharp constraints on the age at which *mandatory* pensions can be paid do not apply to voluntary arrangements. As discussed below in section 16, a central purpose of voluntary pensions is to allow for differences in people's preferences and to extend the options of industries with jobs that have harsh working conditions, etc.

15 Options for Public Employee Pensions

Pensions for public employees, both civil servants and those working in the public provision of services, such as teachers, are generous worldwide. Mostly, the pension systems are defined benefit, basing benefits on a short period of earnings at the end of a career. For example the system for US federal employees relies on three years of earnings. This is also the most common structure for employees of the individual states in the US. Strikingly the UK has recently instituted a consumer-price indexed career earnings pension for civil servants, (called Nuvos), while still maintaining the final pay plans for other public employees. Analyses of pensions for public employees frequently consider whether the pension plans, which are typically more generous than is common in the private sector, offset lower pay in the public sector or, instead, further increase the extent that compensation of public employees is higher than that of comparable private employees. Frequently the latter is seen to be the case. Analysts also frequently lament the low level of funding for these defined benefit pensions, and attribute their generosity to a political process that puts the cost of the generous pensions into the future by inadequate funding. Beyond these two issues there has been only a little analysis of the implications of pension design for the pattern of relative compensation of public employees with different earnings histories and for the incentives for retirement and for movement in and out of public employment. The studies that do exist find the typical pattern of incentives unsatisfactory as inducing behaviour more strongly for pension reasons than would be appropriate for overall labour market efficiency.

Pensions for public employees in China are based on earnings at the end of work. Pensions that rely on earnings in only a few years shortly before retirement are a poor design – encouraging manipulation, including promotions that are based on gaming the system rather than having the best match between workers and jobs. And such pensions have poor incentives for moves between public and private employment and retirement. In moving away from this poor design, it would be good to include public employees in the mandatory contributory pension system. That, too, matters with labour mobility between public and private employment.

China has initiated experiments of incorporating public employees who are not government employees in the mandatory contributory system. We think this is a move in the right direction.

25. The decision to include the employees of public-sector units in the mandatory system and the voluntary system should be implemented. The same should be done for government employees.

This decision is being pursued for public employees who are not government employees (for example, teachers). It is important that this be extended to government employees as well. This does not require a reduction in government employee pensions, since their participation in the national system can be supplemented by a government-provided pension, just as private firms are encouraged to supplement the mandatory pension. The supplemental pension should be a fully funded DC pension as part of the regime for voluntary pensions generally. Including all public employees in the mandatory system would make eventual labour mobility between public and private employment straightforward.

If China develops a (voluntary) defined-contribution pension system for public employees to supplement the mandatory system, it is important to choose a good design. With such a large number of public employees, such a pension system can have extremely low costs if done well. The prime example of such a system is the Thrift Savings Plan for employees of the federal government in the US (Box 14). This system has a very limited set of alternative mutual funds from which workers can choose. The individual record keeping is separated from the management of the portfolios. The actual funds are handled by private firms after competitive bidding for handling the investments. In addition workers are limited in the frequency with which they can engage in transactions, selling some funds and purchasing others. These elements – limited choice, limited opportunity to trade, and competitive bidding have resulted in very low costs, much lower than those available in the private voluntary market in the US or available in mandatory funded individual account plans in Sweden, Chile, or other Latin American countries. The approach also helps most people to deal with the behavioural issues discussed in Box 3.

Box 14 The U.S. Thrift Savings Plan

The U.S. government established the Thrift Savings Plan for federal civil servants (see www.tsp.gov) in 1986. The plan offers participants a very limited choice of portfolios. Initially there were three: a stock market index fund, a fund holding bonds issued by private firms, and a fund holding government bonds. In 2007 workers could choose from six funds, including a life cycle option. A government agency keeps centralized records of individual portfolios. Fund management is on a wholesale basis. Investment in private sector assets is handled by private financial firms, which bid for the opportunity (and which manage the same portfolios in the voluntary private market).

As a result, administrative costs are astonishingly low: as little as 6 basis points annually, or 60¢ per $1,000 of account balance. By 2007 the program had grown to include 3.8 million participants and held assets of $225 billion. The commission appointed by President George W. Bush to propose reforms for Social Security recommended that it adopt the same approach, which should be of wide interest also to other countries considering reform, in particular to developing countries where institutional capacity is limited. The United Kingdom is introducing a similar plan.

It is easy to underestimate the importance of holding down costs. An administrative fee of one percent of assets under management does not sound like much. But in the course of a 40-year career, workers investments are in the account for roughly 20 years on average. One can calculate the drop in the value of assets at retirement as a consequence of annual management fees. In the case of a one percent per year charge, this is nearly 20 percent. Such large costs should be avoided. The limitations on investment choices also avoid some of the worst mistakes that inexperienced investors may make.

If China sets up a system along the broad outlines of the Thrift Savings Plan, the plan could also play a role in encouraging regulation in asset markets. In addition it could play a role in giving workers access to a low-cost well-run investment opportunity. This might be a way in which provincial governments organize a defined contribution system for their workers, consistent with avoiding discouraging mobility. This might just apply to public employees or might be a way in which provinces could have a mandatory funded account along with the notional account. And it could be a vehicle for individual retirement savings. This would greatly enhance private retirement savings opportunities.

16. Options for Voluntary Pensions

Voluntary retirement plans play an important role in complementing mandatory pensions in many countries. This applies as well in China. Such plans allow individuals to exercise different preferences about the time path of consumption and different degrees of risk aversion; they allow firms to respond to worker preferences, and enable industries where people work in harsh conditions, or where working life is short for other reasons, to provide for earlier retirement; they accommodate regional and private initiatives, and promote innovation, particularly in financial markets. Such responsiveness is of central importance in a country as large, diversified and rapidly changing as China. Discussion of voluntary pensions generally is followed by consideration of the pilots for voluntary rural pensions.

16.1 Voluntary pensions

26. Regulation and supervision need to be enhanced to safeguard voluntary pension arrangements by individuals and firms, and organisationally simplified so there is a single regulatory authority overseeing any given firm or individual retirement account. Government should put in place a clear set of rules, with regulatory oversight for voluntary pensions, including individual pensions, employer-provided pensions and those organised by regional governments. Enhanced regulation is also needed for any insurance companies that provide benefits on an annuitised basis.

Voluntary retirement plans may be enterprise-based (i.e. group plans), or based on individual retirement accounts (IRAs) with approved institutions. In China, both types of voluntary retirement plans are likely to develop, and should be encouraged, although the timing of their introduction should take full account of the necessity for effective regulation and supervision, and should be designed to avoid imposing excessive administrative burdens on employers. A start has been made on the regulation of enterprise-based plans with the issue of the ‘Trial Measures on Enterprise Annuities’. Similar regulations will be needed for other types of voluntary pensions.

The administrative fees for a pension can vary greatly with administrative structure, whether individual or group. High fees for pension administration are a recurring issue in many countries. Care should be taken to encourage lower cost systems in order to provide higher benefits for given contributions.

27. Supplementary voluntary pensions should be fully funded DC pensions, with income tax treatment clarified and set on a consistent basis.

There are many options available for the design of voluntary pensions. Should they be funded? Should they be designed as DC or DB? Should they be organised at the level of the individual, or of the firm, or of the industry? The history of voluntary corporate pensions in developed countries illustrates different approaches. Some have been DB and some DC. While DC pensions are naturally fully funded, there have been varying degrees of funding of corporate DB pensions over time, across countries, and across firms within countries.

Much of this history has been unsatisfactory, leading to significant legislated changes. In the absence of a government guarantee, when a firm with an incompletely funded DB pension gets into financial trouble, the workers and retirees lose much, and possibly all, of the pension they were expecting. The same outcome can occur where a pension plan is organised for an industry rather than a single firm. Countries have found this highly unsatisfactory, leading to two types of legislation – requirements for funding and government-provided guarantees, the latter financed in part by charges to the pension plans that are being given guarantees.

While these safeguards can address the worst outcomes in a less-then-fully funded voluntary system, a major remaining difficulty is how to regulate the contributions of corporations so as to keep pension plans adequately funded. Fluctuations in asset values generate fluctuations in the degree of funding. When asset values fall by a large amount, firms need to increase their contribution rates if they are to restore adequate funding rapidly. But this demand on a firm's revenues comes precisely at a time when it is very likely to be experiencing low profitability – low profitability and declines in asset values are highly correlated. In a country with a well-developed DB system, the combination of a guarantee and a funding requirement may be the natural way to preserve the system while addressing the worst problems. In a country with few or no existing voluntary pension plans, there seems no reason to go down a route that is known to be difficult to maintain. Thus, even though all of the risk of fluctuations in asset values fall on workers with a defined contribution plan, we think that all voluntary supplemental pensions which receive tax-favoured treatment should be DC. This approach should not rule out the use of insurance companies to provide annuitised benefits.

While this places financial-market risk on the workers, it is a better approach than trying to move the risk to the corporate sponsors and the government. First, the attempt to move risk may not succeed, leaving workers with risks they did not anticipate, rather than ones they should have anticipated and can be educated about. Second, the difficulties in regulation may result in unsatisfactory incentives for investment decisions. Third, in a country where the mandatory system is primarily unfunded, having a funded voluntary system gives the workers diversity in the risks they are bearing, since fluctuations in the contribution base for a mandatory system and fluctuations in the returns to assets, while correlated, are not perfectly correlated. Thus, combining a primarily unfunded mandatory system with a fully funded DC voluntary system provides some diversity for workers covered in the voluntary system. Being voluntary, this diversity, while not as thorough as with a funded portion of the mandatory system, avoids the difficulties that arise from increasing mandatory contribution rates, which would be necessary in a system seeking to build funded accounts while simultaneously financing existing pension liabilities. In light of the difficulty inherent in portfolio choice, some of which were mentioned in Box 3, there should be worker education, limits on worker portfolio choice, and good design of defaults for workers not making choices.

The tax treatment of voluntary pensions should match that of mandatory pensions up to a ceiling. One common feature of accounts dedicated for retirement is to make them tax-favoured compared to other savings, with one accepted measure being referred to as EET tax treatment: pensions contributions should be from pre-tax income (exempt from tax, E); the earnings of pension accumulations should be tax free (exempt from tax, E); and the pension, when paid, should be treated as taxable (T) income on the same basis as earnings.[16] Since those with higher incomes generally make greater use of voluntary pensions, limiting the extent of their use is important for preserving progressivity in the income tax system. That is, any tax-favouring should be limited so that high earners do not get undue tax advantage from very large pension contributions. This calls for an earnings-related set of limits on the percentage of earnings that one can put into a tax-favoured account, with the limit zero for earnings above some level. Further progressive elements can be introduced if the government provides matching contributions for low earners with voluntary pension contributions.

16.2 Rural voluntary pensions in the pilot

As noted above, all rural residents over 16 years old (excluding students) who are not covered in the basic pension for urban workers can join the new rural pension plan voluntarily. The plan has a basic benefit and individual accounts. The minimum contribution to an individual account is 100 Yuan per year. Annual individual contributions can be at multiples of 100 up to 500 Yuan, with localities allowed to have additional levels which can adjust over time as per capita net income rises. Local governments are to subsidize the individual contributions by at least 30 Yuan. Village cooperatives can add to this, as can others. Local government is to make contributions for those who find it difficult to pay, such as the disabled. Transfers by local governments are feasible in richer provinces but pose potential problems for poorer local governments in western China.

The deposits will earn interest at the one-year deposit interest rate of RMB for financial institutions as announced by the People's Bank of China. Benefits are available starting at age 60. Matching the rules in the urban worker's individual accounts, monthly benefits equal the account accumulation divided by 139. Trust funds will hold the accumulated values. The portfolio choice guidelines for the trust funds were not specified in the description we have seen.

In Section 8.2 we set out the advantages of a citizen's pension rather than a basic benefit linked to voluntary contributions in terms of better coverage and lower administrative costs. Here, we discuss the voluntary contributions under the assumption that they are not linked to

[16] Use of the funds without penalty might be allowed for particular expenditures (for example, first house purchase, medical expenses) or in the case of hardship.

basic benefits. Indeed, some of the pilots might have individual accounts that are not linked to see how alternative administrative arrangements might work. In particular, accounts could be managed through the banks and other financial intermediaries (as are IRAs in the US) or through a government agency. Some of the comments would hold equally well if they are linked, and we will identify some differences below. If we think of these as stand-alone voluntary accounts (ignoring the link with basic benefits) we have the following comments.

- There should be a calculation of annual administrative costs relative to the deposits – very small accounts may not warrant bearing the administrative costs, which are largely a fixed cost per account. This is particularly an issue if a new government agency is created to handle these accounts. If they are handled through existing institutions, such as the banks, then the higher cost relative to an ordinary savings account could be evaluated and is likely to be small.
- A voluntary account should allow an earlier retirement age than do mandatory accounts since one role of voluntary accounts is to bridge a gap between an individual's sensible individual retirement age and an appropriate economy-wide earliest entitlement age for a basic pension or a mandatory contributory pension. However, if eligibility for the basic pension is linked to eligibility to the individual account, then the retirement age of 60 is too low, as was discussed in Section 14. In addition, with whatever age is chosen, there should be an advance plan for that age to increase over time.
- The factor of 1/139 does not reflect actuarial principles and is not set to change over time as life expectancy increases, making the system more expensive. While this can be considered part of the subsidy to encourage use of these accounts, it has the property of being a larger and larger subsidy as life expectancy at retirement age grows across cohorts. Insofar as such encouragement is warranted, the subsidization is probably better done through matching deposits at the time of deposit.
- Consistent with actuarial principles: if a worker dies during working years, his accumulation can be inherited. Once a worker retires and starts benefits, the pension can be considered to be annuitised and there is no need to allow inheritance of a remaining balance in the event of an early death, although it is common for voluntary annuities to include a minimum guaranteed period of payments, which would go to heirs in the event of death before the end of the guarantee period. Such an approach is perceived to be more attractive by many workers and so helps to attract voluntary contributions. Workers could be given a choice between benefits with and without a guarantee period, with those choosing no guarantee receiving a higher monthly benefit. Without such a design, (a) benefits from individual accounts are not based on an accurate actuarial calculation and (b) not annuitised at the time of the retirement, since the government is not collecting the remaining amount from those who die early.
- If the deposits are held in a bank account, the return on bank deposits covers the accumulation, although the cost of an annuity that is larger than actuarially fair would need to be financed.
- If the deposits are invested in a different portfolio than bank deposits, it is important to recognize the inevitable risk associated with a mismatch between assets and liabilities.

Guidelines need to be established to limit the extent of risk, since general revenues would be needed to make up for shortfalls in the event of low returns on the pension portfolio.

- It is not clear that the rural poor would be better off with a retirement accumulation, rather than a more general savings account that could be tapped for other purposes, for example medical expenses. Only when incomes are sufficiently high can money be segregated for separate uses without too much inefficiency in spending. While tax-favoured retirement savings in some programs do allow earlier withdrawals when certain (hardship) conditions are met, such a process adds to administrative costs. Perhaps it is better simply to subsidize savings that are held for at least some minimum period, or with a subsidy rate that depends on the length of holding (for example, additional matching amounts as the deposit stays in the account). The simplest way to do that would be to pay a higher interest rate, with the rate financed from general revenues.

As to the link between individual contributions and basic benefits, this link would serve as an incentive to make deposits. Since such deposits may or may not be the best use of the resources of the poorest workers, this incentive may not be appropriate. Moreover, if they do not make sufficient deposits, then they will not get the basic pension, in contrast with the workings of a citizen's pension.

17 Concluding Remarks

With a complete listing of the recommendations in the annex, we only review some critical recommended steps, distinguishing between what should be done in the near term and what should be set as a long-term goal. The critical steps fall into two categories – getting existing institutions to function better, and making a start on a needed new institution.

IMPROVING THE CONSISTENCY OF THE CONTRIBUTORY SYSTEM. Many elements in the present system were approved at different times, producing internal inconsistencies. As a result, localities have interpreted the rules in different ways. A consistent set of rules applied nationally (with locally varying parameters) is an urgent priority, both to foster the labour mobility that is essential in an efficient economy, and to provide horizontal equity, which is desirable for its own sake as well as strengthening confidence in, and hence continuing political support for, the pension system.

The administrative progress necessary to bring this about is considerable. NDC pensions, like other earnings-related pensions, require robust databases to be maintained over many years. Moving to a single centralised data base is a process with great risk of errors and needs to be done in a way that errors can be corrected. In a large country, the presence of a centralized data base does not obviate the need for regional offices to deal with issues, including errors in record keeping.

STRENGTHENING THE FUNCTIONING OF INDIVIDUAL ACCOUNTS. A pressing short run problem is to get the individual accounts to function well. Specifically, policy should:

- Introduce transparent accounting of workers' accumulations, and build strong administrative systems so that all contributions to individual accounts are recorded and data is easily accessible.
- Ensure that the rules that determine the rate of return on pension accumulations are explicit. Contributors should be advised of the annual rates of returns to their funds.
- Take steps to boost confidence in the system. Give assurance that these are not 'empty' accounts but obligations of the government/pension authorities that satisfy legislated rules.

The best way to address these goals is to reform the individual accounts into partially funded notional defined contribution individual accounts. On this basis, the administrative tasks of nationwide recordkeeping for both individual accounts and the basic pension are overlapping and best approached by a national pensions administration and by developing software to be used nationwide.

EXPANDING COVERAGE. Coverage of the mandatory system is limited to the urban areas, and even there it is very incomplete. Expanding coverage is and should be a slow process, sensitive to the impact on firms of the cash flow for contributions. We recommend a redirection of the process of expanding coverage of the mandatory contributory system

- Drop the restriction to the urban sector for the purpose of the contributory pension.
- Instead of focusing resources on extending the urban pension system to smaller firms and the self-employed in the urban sector, expansion of the current system would focus on including sufficiently large employers, independent of where they are located.
- Extend the mandatory system to public employees.

The process of extending coverage of the contributory system is necessarily and advisedly slow. The ability of a mandatory system to apply to very small firms and the self-employed is very limited worldwide. Thus, to address the issue of coverage, the report recommends a non-contributory pension, a tax-financed citizen's pension to which in principle the entire elderly population is eligible. The near term goal is to start on a process that can deliver such a pension nationwide, and payments should be able to start within the course of the 12th Five-Year Plan.

A rural pension system is not a substitute for a national system. As argued in section 7, the needs of an efficient economy with mobile labour suggests that pension arrangements in China should evolve towards a national system that covers all workers. For the reasons set out in sections 8.2 and 16.2, it is therefore desirable that the proposed rural pension should (a) not be conditional on contributions by children for the current elderly, (b) not be conditional on a minimum number of years of contributions for younger people, and (c) should include urban and migrant elderly.

THE RESULTING STRATEGY is intended to provide a pension for everyone, to address problems in the existing system, and to integrate the two. This system can be thought of as a broad shallow lake (the citizen's pension), with some deep places (pension incomes from the mandatory and voluntary systems). The effect of the lake is to ensure that all older people have at least some income – all land is covered in water.

FUTURE EVOLUTION OF THE PENSION SYSTEM. This strategy is coherent and fits the economy and society in China today.

- Some elements are directly relevant to the next five-year plan:
    - Putting into place a consistent set of rules for a nationwide system;
    - Creating an administrative structure to deliver a citizen's pension, and beginning to deliver such a pension;
    - Reforming 'empty accounts' as an explicit system of NDC individual accounts covered by legislation. Work to strengthen administration so that it can support a national framework;
    - Extending the mandatory urban mandatory system to large firms in rural areas and to public employees;
    - Improving the regulation of voluntary pensions and of the asset markets in which they invest.
- The strategy is compatible with longer-term economic and social developments:
    - It starts on a process that covers all workers in all sectors and localities, avoiding the problems of categorical systems (e.g. ill-defined borderlines, people that fall into none of the categories, a person's category changing over time, some categories becoming obsolete, etc.). This arrangement supports efficient labour mobility.
    - It is compatible with a move to funding the individual accounts in the mandatory contributory system at a future date if that becomes worthwhile.
    - More generally, the strategy is compatible with moving towards a high-income country.

Glossary

Actuarial benefits. A stream of benefits in which the expected *present discounted value* of benefits equals the annuitant's accumulation at the time the benefits start. For a given accumulation, the size of the periodic benefit (for example, monthly) therefore depends on the person's remaining life expectancy and the rate of return on assets available to the pension provider over the period during which benefits will be paid. A pension is fully actuarial if the discount rate and mortality table are based on market principles. A pension system that follows this approach in broad outline, but without precise use of projected life expectancy and market interest rates, is referred to as quasi-actuarial.

Affluence test. A measure of eligibility for benefits that is designed to screen out only the best off. It thus differs from an *income test,* which screens out all except the poor.

Annuity. An arrangement that pays benefits (for example, annual or monthly) as long as a person is alive. A *single-life* annuity pays an income for the life of one person. A *joint-life* annuity (also called a joint-and-survivor annuity) pays a regular income to two people until both have died. The size of the monthly payment typically depends on whether one or both are still alive, and may depend on which of the two is still alive. The payments can be from a defined benefit system, or from a defined contribution system when an individual exchanges his or her pension accumulation for an annual or monthly benefit, or from a purchase using some other lump sum. This allows the individual to insure against the risk of outliving his or her pension savings. With an immediate annuity, payments begin immediately; with a deferred annuity, payments are delayed until some point after the date of purchase. Different forms of annuities adjust payments over time on different bases.

Bonds. Financial securities that constitute a loan from the purchaser (the bondholder) to the seller. Bonds normally specify a date on which the bondholder will be repaid (the redemption or maturity date) and a periodic interest payment stated in dollars (or other currency unit). Contrast with *Stocks*.

Compliance. Non-compliance arises where a person does not make contributions that are legally required.

Consumption smoothing. Behaviour that allows a household to maintain its desired level of consumption over time despite variations in income. Pensions assist consumption smoothing by allowing individuals to redistribute their resources over their lifetime, by saving in their earning years so as to consume more in retirement.

Coverage. The proportion of the employed population contributing to the pension system at a given time. This is distinct from the set of people with covered earnings records or individual accounts in that it omits workers who have contributed in the past and acquired at least some rights. Coverage can be incomplete because of non-compliance or because a person is currently working at a job that is not covered by the pension system and does not make voluntary contributions (if that option is available). The most commonly used measure of coverage is the share of the economically active population contributing to the pension system at any time.

Defined-benefit pensions. An arrangement that bases a person's pension benefit on his or her pensionable earnings history and perhaps upon length of service, and does not depend on the value of assets accumulated in the person's name. The formula may be based on the worker's final wage and length of service, or on wages over a longer period, for example, the worker's full career. A fully-funded pure defined-benefit plan adjusts funds to meet anticipated obligations, and so the risk of varying rates of return to pension assets falls on the sponsor, that is, the employer or the government. A defined benefit plan need not be fully funded.

Defined-contribution pensions. An arrangement that bases a person's pension benefit on the value of assets accumulated toward his or her pension. The accumulated funds can be used to purchase an *annuity*, or to finance a series of withdrawals, or can be taken as a single lump sum. If annuitised the level of benefit depends on the price of an annuity. Thus, a pure defined-contribution plan adjusts obligations to match available funds, and so the individual faces the risk that the portfolio might perform poorly.

Dependency ratio. The term is used in two different ways. The *age dependency ratio* is the ratio of people beyond some specified age (for example, 65) to people of working age (for example, 16 to 64). The *system dependency ratio* is the ratio of people receiving pensions to the number of active contributors.

Equities. See *Stocks*.

Funded pensions. A pension paid from an accumulated fund built up over a period of years out of contributions by or on behalf of its members and the returns on the assets purchased with those contributions.

Income test. A way of determining benefit eligibility that awards benefits only to individuals or families with low incomes; that is, benefit is withdrawn as income rises. See also *affluence test.*

Individual accounts. See *Defined-contribution pensions* and *Notional defined-contribution (NDC) pensions*.

Noncontributory universal pension. A public pension paid at a flat rate, usually on the basis of a record of residence rather than on the basis of contributions, and sometimes restricted to citizen's (hence sometimes referred to as a *Citizen's pension*). Such a pension may or may not be subject to an *Affluence test*. Contrast with *contributory basic pension***.**

Notional defined-contribution (NDC) pensions. A pension financed through *Social insurance* contributions, where benefits bear a quasi-actuarial relationship to lifetime pension contributions.

Pay-as-you-go (PAYG) pensions. Pure PAYG pensions are paid out of current revenue (usually by the state, from tax revenue) rather than out of an accumulated fund. A pension system may also have some assets and so be partially funded.

Present discounted value. The capital value today of a stream of income received over some future period calculated on the basis of a specified discount rate.

Public employees pension system. a pension system set up by the government for public employees.

Public pension. We use this term to refer to a government-run pension system (also called a state pension system) that is open to all workers. This is different from a pension system set up by the government for public employees.

. *Replacement rate*. The replacement rate is the ratio of the monthly income a pensioner receives to the income he or she received while working (both net of taxes and transfers). Thus defined, the replacement rate is a measure of the effectiveness of consumption smoothing. The term is also used to mean the ratio of the average pension to the average wage, in which case it is a measure of the pension system's impact on relative income levels. A *survivor replacement rate* is the ratio of the benefit going to a widow or widower compared with what was received by the couple when both were alive.

Retirees and pensioners. For some purposes it is necessary to distinguish two separate events: stopping work, and receiving a pension. We use the term "retiree" for someone who has stopped work, and "pensioner" for someone who is receiving pension benefits. A retiree will usually also be a pensioner, although not necessarily: for example, a person may choose to retire early and live off his or her savings until reaching pensionable age. Similarly, a pensioner may have retired, or he or she may be receiving a pension while continuing to work. When there is no ambiguity, we use the terms interchangeably.

Social insurance. A set of arrangements, modelled on private insurance, under which individuals receive public benefits in respect of (for example) unemployment or retirement, often without any test of means or need, on the basis of previous (usually compulsory) contributions.

Social security. The term is used with different meanings. In the United States, social security refers to government retirement and disability benefits only, in the United Kingdom to all cash benefits provided by the government, and in mainland Europe to all cash benefits and health care. This paper uses the term in the sense of publicly-provided pension benefits.

Shares. See *Stocks*.

State pension system. The term "state" has different meanings. It can refer to a national government (for example, the federal government in the United States) or to subnational government (state governments in the United States). We therefore avoid the term where possible. Where used, the term "state" describes a national government and refers to a general system, not just one for government employees.

Stocks (also called equities or shares). Financial securities that represent ownership of a fraction of a corporation. A corporation sells stock as a means of financing its investment and may pay a dividend, for example quarterly or twice a year, to stockholders. If the corporation flourishes, the value of its stock rises, resulting in a capital gain to stockholders. If it goes bankrupt, the value of its stock is based on whatever value remains in the corporation after its creditors have been paid. Thus stocks represent a title to ownership, in contrast with *Bonds*, which are a form of loan.

Voluntary pensions. Pensions can be voluntary in two different ways. They can be voluntary for an individual worker, or a firm may voluntarily introduce an employer plan, membership of which may be compulsory for its workers.

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Annex: List of Recommendations Discussed in the Text

1. The restriction to the urban sector (omitting the rural sector) should be dropped for the mandatory contributory pension.

- Expansion of coverage should be focused on large firms (referred to as the formal sector) wherever they are located, and should be implemented slowly and carefully.
- Eventually this should be extended to small firms and the self-employed (referred to as the informal sector), but this is a more demanding task and one that in the short run may not be the best use of administrative capacity.

2. The government should introduce a nationwide citizen's pension, financed out of general revenue or an earmarked source, payable on the basis of age and residence, and reduced in respect of benefits a person receives from the mandatory pension system.

3. The level of the citizen's benefit should be set so that, as far as possible, its real value is constant across localities and should be based on the locality of residence of the recipient. Supplementation by local government should be allowed out of local government revenues.

4. The level of the citizen's benefit should be indexed for prices and/or wages in the same way as the contributory pension. It might be adjusted for the dependency rate as well. The age of eligibility should be indexed for healthy life expectancy and perhaps for the dependency rate as well.

5. The level of an individual's citizen's benefit should be reduced through an affluence test based on total mandatory contributory pension income, calculated as if taken at the eligibility age for the citizen's pension. The exempt amount for affluence testing should be related to the level of the citizen's benefit. Public employees outside the mandatory system should have their non-contributory benefits reduced similarly.

6. The contributions base for both the basic pension and the individual accounts should be changed to match a definition of earnings to be used in determining income-tax liability, with the contribution rate adjusted so that total contributions are broadly unaffected by the change. Similarly, the calculation of basic benefits should use the same definition of earnings as for determining contributions, with the formula adjusted so that basic benefits remain at approximately their current level overall. Benefits should vary with location, but within a formula set by a national authority.

7. A worker who has been covered in two different regions should receive basic benefits from both regions, thereby reflecting earnings over the entire period of covered work. There should be no minimum contribution period for receiving a pension (although a very small monthly benefit might be paid as a lump sum to save on administration). The basic pension should be adjusted on an actuarial basis for the age at which it starts.

8. Future accumulations in individual accounts should be organized on a notional defined contribution (NDC) basis, such accounts to be partially funded through a centralized fund.

Individual accounts should be credited for contributions since the start of individual accounts in 1998, including interest.

9. The notional interest rate in the NDC system should be equal to the growth rate of national average earnings of covered workers, using the same definition of earnings as for the determination of the contributions base.

10. The determination of benefits from individual accounts should be based on quasi-actuarial principles, using the mortality table for the cohort to which a retiree belongs and the notional interest rate.

11. There should be a single set of regulations on mandatory contributory pensions, preferably in the form of legislation that is enforceable. There should be another set of regulations on voluntary pensions.

12. There should be a single national trust fund to receive all contributory pension revenues, for both the basic pension and the individual accounts (a single national pool).

13. There should be a single administration with a nationwide responsibility for recordkeeping and benefit payment for both the basic pension and the individual accounts. In the long run, it should also administer the citizen's pension.

14. The central authority should create an institution for projecting the financial position of mandatory pensions. Moreover, an institution should be financed to carry out ongoing research on pensions.

15. The contributory pension system should continue to be financially separate from the state budget, and these pensions should be financed from dedicated revenue sources.

16. Pension contributions should be collected by the tax authority, with the revenue delivered promptly to the pensions administration. Enforcement of compliance should rest with the income-tax authority. It is important to avoid using a period of surplus revenues from the expansion of coverage to set benefits at a level that is not sustainable.

17. A priority task for the national pensions administration is to inform the public of changes in the pension system, once they have been decided. There should also be a start to a process of informing workers of their accumulations from contributions and their anticipated pensions to assist in their choices about consumption and financial planning.

18. The basic pension and individual accounts should be extended in the near term to all urban and rural workers employed by sufficiently large firms, that is, formal-sector workers.

19. Basic pensions in payment should be indexed by a formula which applies nationwide (though with local parameter values). Individual account pensions in payment should be indexed by the same formula, which applies nationwide. That formula should be a proper weighted average of indices of price change and wage change. That is, the weights should add to one, unlike in the

current directive. The weights should reflect a balance between the competing needs of affordability and adequacy. The citizen's benefit should probably use the same index.

20. Given the extent of legacy obligations, continuing transfer of state shares to the NSSF offers two potential advantages. Shifting the dividend flow from current beneficiaries to the pension system reduces the level of fiscal subsidies required from the Budget and improves pension system financial balance. Adding the NSSF as a long-term shareholder could contribute to improved corporate governance of the SOEs and thus to the overall reform in China.

21. The eligibility age for both the basic pension and individual account pension should be slowly increased to 65 for both men and women. Early access to pensions should not be used as a substitute for unemployment benefits. There should not be a mandatory retirement age on a national basis, only on the basis of firms and jobs, as selected by the firms and workers (and regulation where public safety is at issue).

22. Any worker who continues in employment beyond the pension eligibility age should either start receiving contributory benefits while working or should receive a larger contributory benefit when stopping work, based on actuarial principles.

23. The age for eligibility for the citizen's pension is usefully set at the eligibility age for the contributory benefit, but may be set higher (to afford larger benefits out of the available budget).

24. Voluntary pensions can be received at a younger age than the earliest entitlement age for basic and individual account pensions.

25. The decision to include the employees of public-sector units in the mandatory system and the voluntary system should be implemented. The same should be done for government employees.

26. Regulation and supervision need to be enhanced to safeguard voluntary pension arrangements by individuals and firms, and organisationally simplified so there is a single regulatory authority overseeing any given firm or individual retirement account. Government should put in place a clear set of rules, with regulatory oversight for voluntary pensions, including individual pensions, employer-provided pensions and those organised by regional governments. Enhanced regulation is also needed for any insurance companies that provide benefits on an annuitised basis.

27. Supplementary voluntary pensions should be fully funded DC pensions, with income tax treatment clarified and set on a consistent basis.