Social security pension reform in China

Martin Feldstein*

Department of Economics, Harvard University, and National Bureau of Economic Research,
1050 Massachusetts Avenue, Cambridge, MA 02138, USA

Abstract

China has legislated a mixed social security pension system with a defined benefit pay-as-you-go portion and an investment-based defined contribution portion. This paper analyzes the economics of these two types of systems in the Chinese context and calculates the advantage to China of using an investment-based portion. Several options for reform of the recently legislated system are considered. © 1999 Elsevier Science Inc. All rights reserved.

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1. Introduction

The reform of social security pensions is a critical issue for China—a key to enterprise reform, sound public finance, and the well-being of current and future retirees. China has already begun to develop an investment-based system of individual accounts for urban workers, especially those in state-owned enterprises. Looking to the future, China faces important issues both about improving the design and implementation of this system and about the transition from the existing unfunded system to the new arrangements.

* Corresponding author. Tel.: +001-617-868-3905.
E-mail address: msfeldst@nber.org (M. Feldstein)

This paper is based on a talk given at the June 1998 Beijing conference of the Chinese Economics Society. Although my original plan for this lecture was to discuss the social security reforms occurring around the world (based on the information in Feldstein, 1998), I decided instead to talk about the current policies in China and some of China’s options for the future. My decision is a risky one because I am certainly not a specialist on the Chinese economy. I recognize that some of my assumptions about the economy and about the current pension arrangements may be wrong, especially because those arrangements are changing rapidly and practice does not always correspond to the official rules. Several useful articles about the Chinese pension system are identified in the references to this paper (Freidman & Hausman, 1998; Hu, 1997; Hussain, 1994; Song & Chu, 1997).
2. Principles of social security pension design

A useful starting place for any academic discussion of pensions is the famous article by Samuelson (1958) in which he showed that in equilibrium, a completely unfunded pay-as-you-go (PAYGO) pension system has a positive real rate of return equal to the rate of growth of aggregate real wages, that is, to the sum of the growth rate of the population and the growth rate of productivity.\(^1\) Samuelson’s theoretical analysis assumed an economy with no capital stock and showed that in such a context a PAYGO pension is a desirable policy.

Actual economies do have capital stocks, and the marginal product of capital is greater than the growth rate of aggregate wages. This implies that a nation can buy retirement income with a funded pension system at a lower long-run cost than with a PAYGO system, that is, to provide the same level of benefits, the savings deposits in a funded system are less than the tax required in a PAYGO system.

There is nevertheless a political temptation in any country to adopt a PAYGO system because doing so permits giving a windfall benefit to current retirees and to those who will soon be retired, with the cost of that windfall deferred to future taxpayers. Many countries have succumbed to that temptation since Bismark introduced the first formal pension system in Germany in the nineteenth century. Further, countries with PAYGO systems have created new windfalls from time to time by increasing benefits and expanding coverage, thus maintaining the popularity and political support for the PAYGO system.

Now countries around the world with PAYGO systems are recognizing that there is no more scope for increased windfalls. They realize that the increasing longevity of populations everywhere means that tax rates will have to rise in the future just to maintain the current relation between retiree benefits and preretirement wages. As a result, we are seeing a shift from PAYGO to funded systems in a number of countries and the active consideration of such reforms in others.

China is already beginning the transition for workers in state-owned enterprises from its unique PAYGO system to a partially funded system based on individual accounts. To the extent that China succeeds in this shift from a PAYGO to a funded system, it will keep future taxes lower than they would otherwise be, will help to develop a more efficient capital market, and will facilitate both the management and privatization of the currently state-owned enterprises.

The choice between a PAYGO system and a funded system is only one of the two important aspects of designing a pension system. The second key characteristic is the choice between a defined-benefit and a defined-contribution system. In a defined-benefit program, retirees receive benefits based on a formula that typically involves the number of years of work and the past history of wages. In contrast, in a defined-contribution program, employees (or their employers or both) make contributions to individual accounts during working years.

\(^1\) A worker who “contributes” $1 to a PAYGO social security system at time zero can receive $\{(1 + n + g)^t\}$ after $t$ years if the rate of growth of aggregate wages is $w = n + g$, where $n$ is the rate of growth of population (and the labor force), and $g$ is the rate of growth of productivity (and therefore of wages per worker). Equivalently, the implicit rate of return in the PAYGO system is $w = n + g$, where $w$ is the rate of growth of aggregate wages.
The balances in these accounts earn a rate of return based on the assets in which those funds are invested. Retirees then receive an annuity based on the amount accumulated in their accounts.

It is of course possible to have a mixed system that combines defined benefits and defined contributions. In 1995 China adopted such a combined, two-tier system. Participants will receive a defined benefit financed by PAYGO taxes and also participate in a defined-contribution program to which employers and employees both contribute. I return below to discuss both aspects of this system.

It is also possible to have a conditional defined benefit system. In such a system, individuals have defined contribution accounts but are also guaranteed a minimum amount (a defined benefit). Any shortfall between the annuity provided by the defined contribution account and the guaranteed defined benefit amount is made up by the government.

Around the world, social security reforms now generally involve moving from PAYGO defined-benefit systems to funded (investment-based) defined-contribution systems, often with some form of conditional defined benefit guarantee. Other combinations are possible. A government-defined benefit plan can be financed by accumulating a centralized government fund that is invested in new capital. In yet another approach, some governments are introducing defined contribution plans with individual accounts that are nevertheless operated as a PAYGO system. Such unfunded, defined-contribution systems provide a notional rate of return, that is, an accounting rate of return without any real capital accumulation. Such notional, unfunded defined-contribution systems provide a lower rate of return than a funded system; to be sustainable, the promised return in such an unfunded system must not exceed the rate of growth of total wages.

3. Potential Chinese gain from an investment-based system

Before discussing the specific features of the current Chinese system, I use estimated Chinese figures to discuss the magnitude of the advantage of an investment-based system and the extent to which an investment-based system can reduce the long-term cost of providing a given level of retirement benefits.

Consider the following example of a PAYGO system. Assume that there are three workers per retiree. The benefits given to retirees are 60% of the average wage. That implies that the tax rate must be 20% of wages. What does it cost to provide the same 60% benefit with a funded system? That depends on the future growth of aggregate wages and the future productivity of capital investments.

The World Bank estimates that over the next several decades real aggregate wages as a whole in China will grow at approximately 7% or less per year (The World Bank, 1997). What the marginal product of capital will be in China in the future is not known. However, Chow (1993) estimated that the marginal product of industrial capital in China has been 17%, with a higher return on construction and a lower return on residential and retail capital. A conservative assumption is that in the future, the real marginal return on capital will be only 12%. A higher rate of return would make a funded system even more attractive.

What do these two numbers imply? In a PAYGO system, the tax “contributions” earn an implicit rate of return equal to the rate of growth of aggregate wages which, looking ahead in China, can be taken to be approximately 7%. Consider an individual who contributes to the
PAYGO system from age 25 to age 64 and then receives benefits from age 65 to 85. To simplify the calculation so that the nature of the result is transparent, assume that the contributions are all made at the midpoint of the working years (i.e., at age 45) and that the benefits are paid at the midpoint of the retirement years (i.e., at age 75). The funds are therefore earning a 7% implicit rate of return for the 30 years from age 45 to age 75 in the following sense: the cohort of workers who pay a 20% tax at age 45 can receive benefits at age 75 equal to \((1.07)^{30}\) per dollar that they paid at age 45 because the taxes collected by the same 20% tax rate at the time of their retirement are \((1.07)^{30}\) times as large as the dollars that they paid when they were 45 years old. At 7%, one dollar saved at age 45 grows to $7.60 at age 75. In these calculations, all amounts are of course measured in the same price level.

Compare this now with the effect of savings in a funded system. Although a PAYGO system simply transfers revenues from workers to retirees, in a funded system the revenues are used to increase the nation’s capital stock. If that additional capital earns a 12% rate of return, each dollar saved at age 45 grows to $30 at age 75, approximately four times as much as in a PAYGO system in an economy with a 7% growth rate of aggregate real wages.

This implies that the funded system can provide the same level of benefits with a savings rate equal to only one fourth of the rate of tax required in the PAYGO system. If the PAYGO system requires a tax equal to 20% of wages to provide a given level of benefits (e.g., benefits equal to 60% of concurrent wages), a funded system with a 12% rate of return on capital (in comparison with the 7% rate of growth of aggregate real wages) can provide the same benefits with savings equal to 5% of wages.

This calculation is about the long-run. What about the transition from a PAYGO system to a funded system? Critics of such a transition argue that it would require current employees to “pay double.” That seems to imply that if there is a tax equal to 20% of wages now, during the transition to a funded system the combination of the tax required to finance existing benefits and the savings required to fund future benefits would be double, or 40%.

Such a statement is wrong in two ways. Most important, the cost of funding future benefits is far less than the cost of the PAYGO system, a 5% savings rate in comparison with the 20% tax rate in the previous example. Thus the maximum additional cost to current employees would be the 5% required to fund their own future retirement annuities. Second, the PAYGO tax that starts at 20% would gradually decline over time during a transition as new retirees draw on their funded individual accounts as a source of retirement income.

As a result, a transition is feasible with only a very modest increase in the combined tax-plus-savings rate in the early years, and this combined burden would gradually decline and eventually become less than the initial PAYGO tax rate (see Feldstein & Samwick, 1997, 1998).

4. The current social security pension system in China

Since 1995, most municipalities and provinces in China have adopted a two-part plan for workers in state-owned enterprises. The first part of this plan states that retirees in the future will receive a defined benefit financed by a PAYGO system. More specifically, employees who have worked for 40 years are scheduled to receive benefits equal to 25% of the regional average wage, with a proportional reduction for those with shorter work histories in these state-owned enterprises. This benefit would be financed by a payroll tax that the authorities
estimate will equal 9% of wages. This implicitly assumes that there will be approximately three workers per retiree (literally 25 workers per 9 retirees).

The second part of the plan is a defined contribution system. Current employees and their enterprises contribute 10% of wages to individual accounts managed by municipal or provincial authorities. Government calculations imply that the resulting annuity benefits would replace approximately 35% of an individual’s final year of earnings.

The official guidelines for this plan specify that 80% of the accumulated funds are to be invested in government bonds and 20% in bank deposits. In practice, some funds are said to be diverted into investments in local projects in pursuit of higher yields. The real returns on government bonds and bank deposits have been very low and in some recent years have actually been negative.

As one considers this new plan, an important question is whether the funding of the defined contribution portion really represents new incremental capital. Or is it really just a notional PAYGO plan with no impact on national capital accumulation (as the World Bank implies in its 1997 report)?

This cannot be resolved by looking at the fact that the personal retirement accounts are invested primarily in government bonds. It depends on whether the bonds purchased for the personal retirement accounts would otherwise have been sold to the public (including the banks), thus crowding out other borrowing by enterprises.

If the existence of these defined-contribution accounts causes the government of China to run correspondingly larger budget deficits, then there is no increase in capital accumulation and the defined contribution accounts are purely notional investments like any other PAYGO system. This would be true because the government would then have to raise future taxes to pay interest (and possibly principal) on these additional government bonds.

Although this is a logical possibility, there is no reason to believe that the existence of these defined contribution accounts does cause (or will cause) the government of China to run larger budget deficits. If the inference is correct, the additional savings that is accumulated in these defined-contribution accounts represent increases in the nation’s capital stock. The individuals and financial institutions that would otherwise buy the government bonds purchased by the defined-contribution accounts will now buy other private market securities.

What is the rate of return earned on the incremental savings? If the assumption is correct that the defined contribution deposits represent increased national savings and are not offset by increases in the government’s budget deficit, the real rate of return on these incremental savings is the double digit marginal product of capital (assuming also that the imperfections and misallocations in the capital markets do not cause too much reduction in the effective rates of return.) This is true at the margin for changes in the defined contribution savings even if the government has a budget deficit and uses some of the defined-contribution funds to finance that deficit as long as the amount of deficit financing does not increase with increases in the amount of defined-contribution funds.

The fact that the defined contribution accounts are credited with much lower real rates of interest than the 12% marginal product of capital reflects an implicit tax that the government levies by requiring these defined-contribution balances to be invested in government bonds and bank deposits with low rates of interest, a tax which reached 100% in recent years when the real rate of interest was driven to zero.
As restrictions on investments are relaxed in the future, these defined contribution accounts will invest in nongovernment securities—that is, in enterprise stocks and bonds—and earn higher returns.

According to official Chinese projections, the 10% defined-contribution rate is expected to provide an annuity equal to 35% of the preretirement wage. With a 7% growth of real wages, this relation between the defined-contribution rate and the replacement rate implies that the accounts would be credited with a real rate of return of only approximately 4% on these invested funds. If the defined-contribution accounts actually earn a real return equal to the 12% marginal product of capital, the proposed crediting of a 4% real return is equivalent to an effective tax rate of approximately 65% on the defined-contribution return.2

If broadening the allowable set of investment options eventually allows the crediting of a higher rate of return, the same benefits can be financed with a lower contribution rate, or the same 10% contribution rate can be used to obtain a higher level of benefits. For example, doubling the return from 4% to 8% would permit cutting the contribution rate from 10% to 5% while simultaneously raising the replacement rate from 35% to 60%.

The promise of future social security pension benefits can induce households to decrease their own direct savings. The exact extent of this displacement is unclear but, a credible promise of benefits equal to more than 60% of preretirement wages substantially reduces an individual’s perceived need for other retirement income. Such a reduction in other savings can of course only occur if the individuals would otherwise have a high savings rate. As I understand the official Chinese statistics, households currently save a very large fraction of their incomes, an average of more than 25%. How that average is distributed among different kinds of employees and between urban and rural sections of the workforce is not known to the author. However with overall savings so high, it is natural to consider the possibility that the provision of social security causes a substantial reduction in other household savings. In the extreme, a funded, defined-contribution plan could displace an equal amount of existing savings, leaving no net change in national savings. Similarly, a promise of benefits in a PAYGO system could reduce private savings with no offsetting rise in government or pension savings, thus causing a net decease in national savings.

The key is that, regardless of the induced reduction in other savings, a funded plan still causes a higher national savings rate than an unfunded PAYGO plan. The PAYGO plan with the same benefits would displace an equal amount of household savings—but unlike a funded plan would have no pension savings with which to replace it.

5. Alternative options for the Chinese defined-benefit plan

In the first tier of China’s new social security pension system, the flat rate benefit is equal to 25% of the average regional wage for those who have worked the full 40 years.

2 Because the contribution rate in the individual account is fixed by law, the high tax rate on the return to that savings does not distort savings decisions. The tax is in effect a payroll tax rather than a capital income tax. It distorts work incentives rather than savings incentives. Whether this is a good way to collect such revenue in the Chinese context deserves careful examination.
The rationale for providing such a benefit in addition to the defined contribution annuity is clear: some individuals with low lifetime earnings would have unacceptably low retirement incomes if they had to depend only on the defined contribution plan. The uniform defined benefit part of the pension would raise the total pension income and guarantee that it is at least equal to 25% of the average wage in the region.

It is possible, however, to achieve this goal in a much more cost effective way by modifying this part of the pension system in either of two ways (or in both ways).

The first possible modification would be to substitute a funded system for the currently planned PAYGO financing. According to official calculations, the PAYGO financing is expected to require a 9% payroll tax on top of all of the others taxes and mandatory contributions. Substituting a funded plan—based on investments in existing government bonds or nongovernment enterprise securities—could cut the cost by a factor of three or four, from a 9% tax to just 3% or less. This would achieve a major reduction in the distortions caused by the Chinese tax system as a whole.

The second possible modification would be to focus or target the defined-benefit pension on those with unsatisfactorily low tier 2, defined-contribution pensions instead of giving the full defined-benefit payment to all retirees. Stated differently, this part of the overall pension could be a conditional defined benefit—filling the gap between the defined-contribution annuity and the level of retirement income that is regarded as acceptable. If such a reform has the effect of focusing these benefits on the lower income half of annuity recipients, the financing cost would be cut by more than 50%.

A targeted or conditional defined-benefit pension would not be a general means tested program but would focus on the shortfall associated with the defined-contribution plan. It would therefore not have adverse effects on work or other savings. The combined effect of both of these options would be to reduce the required tax from the projected 9% to less than 2% of earnings.

6. The transition path

China must provide benefits for the existing retirees and those who will soon retire as well as dealing with the long-term problem of future retirees.

The magnitude of the existing unfunded liabilities to current retirees and workers are particularly difficult to assess in the Chinese context. In the past, retirement benefits were paid by the worker’s enterprise without any explicit pension fund or accounting reserves. Often enterprises simply continued to pay the preretirement wage to workers when they reached retirement age and stopped working. These payments to retirees automatically reduced any surplus that the enterprise would otherwise have earned. If it led the firm to a net loss, that loss would be absorbed by the central government or as nonperforming bank loans. In effect, the past system of providing retirement income to employees of state enterprises was effectively a PAYGO system of defined benefits linked to the final wage and administered by the retiree’s lifetime workplace.

3 Recall the earlier numerical example that showed how a 20% PAYGO tax rate could be replaced by a 5% contribution rate to a funded system.
Now China is adjusting to the change in enterprise ownership and in lifetime work patterns. Even state-owned enterprises must face a more rigorous market test and are not supposed to incur losses. As part of this shift to a more market-based system, the enterprises’ current pension obligations have been transferred to municipal or provincial governments. Enterprises as a whole are still taxed to meet these inherited obligations, but the tax is no longer based on the specific retiree obligations of the particular enterprise.

Although such a shift of obligations from the enterprises to the government may help the transition to a more market-based system of corporate management and facilitate greater employee mobility, it is not a necessary concomitant of the move to market-based principles for corporate management and employment. In the United States, when companies have unfunded obligations for private pensions, this is reflected in lower share prices (reflecting lower future net earnings). If the unfunded pension obligations are so large that they imply losses in all future years and a negative present value of the company’s future earnings, the company is technically bankrupt. Shareholders have no residual value. Pensioners are then paid by a government insurance fund (the Pension Benefit Guarantee Corporation). This is of course the extreme case. Usually, unfunded pension obligations are not that large, leaving a positive stream of future earnings and therefore positive but diminished share values. In Germany and certain other European countries, there is no external funding of private pensions, and the unfunded company pension obligations are reflected in earnings and share values. China could in principle have followed this approach, leaving the unfunded obligations with the Chinese enterprises. In practice, however, this may be harder in present-day China than in the United States or Germany because it is harder to enforce a profitability test on state-owned enterprises that lack the discipline of share prices and experienced arms-length banks.

Even with the shift of pension obligations from enterprises to government agencies, there is much talk in China about ways to provide collateral for these obligations. Although explicit government bonds may be a useful way to guarantee a future income stream to the pension beneficiaries, the discussion is generally about providing some form of real capital as collateral. Suggestions include transferring to the pension fund an explicit claim on land rents or on the income generated by some other state-owned enterprises. I believe that the concern about collateralizing the existing pension obligations with a transfer of existing assets from the state is largely irrelevant. If the local or provincial government now owns an asset, there is no real difference between giving the associated income stream—for example, the rental income on land or existing housing—and giving a new government bond with the same stream of payments. Collateralizing the obligation of the government is largely irrelevant. This is particularly true if the obligations are regarded as ultimately the obligations of the central government that have been transferred to municipal and provincial governments for administrative reasons.

It would of course be different if designating some real asset as collateral causes it to be used differently, that is, if the collateral owner is not merely the passive recipient of an income stream but is able to manage the use of the asset to achieve greater output and profitability. To the extent that the pension reforms can be used to put assets into the hands of better managers with clearer motives and incentives, the result will be to improve the use of China’s resources.
However, even if shifting assets to entities responsible for pension benefits causes them to be better managed, such a shift is economically efficient only if it leads to the best use of those resources among all the politically feasible options. If it does not, it would increase national income more if China privatized the state assets or land or housing in the most efficient available way and then gave bonds to current employers, employees, or pension institutions to acknowledge the government’s future obligations. If the World Bank is correct in its assessment of the value of these obligations, the bonds could be amortized over a 40-year period by a tax of approximately 1.5% of gross domestic product.

7. Conclusions

China’s decision to develop a mixed system of defined-benefit and defined-contribution social security pensions is noteworthy. In doing so, it can provide protection for future retirees while strengthening national savings and expanding the market for enterprise securities. A greater emphasis on funded benefits and a shift from an unconditional defined-benefit system to a conditional defined-benefit guarantee would reduce the distortionary taxes and focus assistance on those in greatest need. The current system focuses on a limited fraction of the population, primarily urban workers in state-owned enterprises. But the experience gained in doing this and thinking about this population can provide the basis for a stronger national system that can eventually provide retirement security for the entire Chinese population.

References


