CHINA'S URBAN PENSION SYSTEM: REFORMS AND PROBLEMS

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Since the beginning of the Chinese economic reform in the early 1980s, China's urban pension system has undergone a series of reforms. The pre-reform system existed only in the state and urban collective sectors and was a pure PAYGO system within each enterprise. At the conclusion of the most recent round of pension reform since 1997, pension pools are expected to be elevated to provinces, all urban workers are expected to participate regardless of ownership, and individual accounts will be funded. We will show in this paper that the pension reform is largely motivated by the reform of state-owned enterprises (SOEs), but the pension reform is also limited to the demands of the SOE reform. As a result, the pension reform has failed to devise an incentive mechanism for participation and the pension system is plagued with widespread noncompliance and evasion, resulting in renewed financial crisis and high administrative costs.

This paper provides an overview of China's pension system reform and an analysis of the problems facing the current pension system. We begin by analyzing the interconnections between SOEs and pension reforms, and show that the pension system has been shaped by problems in SOEs, especially financial difficulties and the immobility of the labor force. Next, we discuss specifics of the current pension reform package initiated in recent years and show that while pension

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reforms so far have been successful in creating favorable conditions
for the transfer of labor away from ailing SOEs, the system has failed
to provide incentives for firms and workers to participate. We then
present an alternative scenario for pension reform that provides in-
dividual workers and firms with incentives to participate. We show
that with proper incentives, the required contribution rates will be
much lower than the current rates of contribution.

State-Owned Enterprises and Pension Reforms

The reform of China's pension system goes hand-in-hand with the
reform of SOEs. At the beginning of the economic reform in the early
1980s, China had an enterprise-based social security system in which
all pensioners received pensions directly from previous employers.
This arrangement had worked well before the economic reform
because there was little labor mobility and the government implicit-
ly assumed responsibility for all firms. As the reform gave firms
more financial autonomy, the firms were also made increasingly re-
sponsible for their own profits and losses; thus inequality in social
obligations among firms began to impact financial performance of
firms and the welfare of workers and pensioners. In the mid-1980s,
the government called for financial pooling across firms at the mu-
nicipal level.

Since the mid-1980s, competition on the product market intensi-
fied. SOEs increasingly faced competition from nonstate enterprises,
especially rural enterprises. Because of the large income difference
between urban and rural areas, rural enterprises enjoyed considerable
cost advantages. As a result, monopoly power of SOEs was quickly
eroded and financial difficulties emerged in many firms. However,
SOEs found themselves in great difficulty downsizing the work force
because of extremely strong resistance from workers. The resistance
is not only from the fact that unemployed workers must face the
uncertainty in the job market, but also and especially from the pros-
pect that unemployment meant losing future pension and other social
security benefits. Because changing employment often involved the
change of industry and pension pools, leaving the pool meant losing
all previously accumulated pension benefits promised for the future.
In addition, no other pension pools would be willing to provide new
employment to older workers because they would become net bur-
dens to their PAYGO pension system.

Lack of portability of pension benefits thus became a major stum-
bling block to the restructuring of SOEs. Unable to shed redundant

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workers, the government continued to inject resources into money-losing SOEs to keep them alive. In the meantime, making pension benefits portable became a prerequisite for the enterprise reform. Setting up individual accounts is one way to go because if an older worker carried along past contributions when shifting employment, the new pool would be more receptive to the worker. In 1995, a major step was taken by the State Council to deviate from the pure PAYGO system by establishing individual pension accounts (State Council 1995). Each pension pool would be comprised of two components: a PAYGO portion and a funded portion. The government also proposed gradual expansion of coverage to all urban workers regardless of firm ownership. However, it allowed great diversity in the choice of system design for local pension pools, which led to further fragmentation of pension programs.

Two major developments after 1995 have forced the government to speed up the inclusion of nonstate workers in the pension system and to unify standards. One development was the massive layoff of workers in 1996–97. In 1996 there were 8.2 million laid-off workers (SSB 1997); the number increased to 14.4 million in 1997 (CCER 2000). Fearing the loss of pension and other forms of social security, many laid-off workers struggled to cling to their original employers and refused to sever ties (CCER 1999). Among other things, the workers worry that they would lose social security benefits upon leaving the state sector. This concern is confirmed by a sample survey of furloughed workers in July 1999, which showed that 83 percent of all furloughed workers worried that cutting employment ties with original employers would mean losing pension and health insurance benefits (MOLSS 1999b). It thus became an urgent task to set up a pension program in the nonstate sector so that the social security clock for former state workers would continue after they shift to the nonstate sector.

In addition, a serious financial crisis began to surface in the government-sponsored pension programs. Between 1993 and 1998, while system participants grew by 15.5 percent, the number of retirees went up by 67.5 percent (Table 1). The system dependency ratio rose by 10 percentage points in merely 5 years, which led to a shrinking pension surplus and the emergence of a deficit in 1998. Many areas experienced payment delays and protests by pensioners. Moreover, many firms in financial difficulty found excuses for not paying pension premiums, and even firms capable of paying refused to pay.

Pension reforms since 1997 have aimed at solving these two issues by making pension benefits mobile and improving the financial balance of pension programs.

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TABLE 1
DEPENDENCY RATIO FOR CHINA'S URBAN PUBLIC PENSION SYSTEM

Year	System Workers (10,000 Persons)	System Retirees (10,000 Persons)	System Dependency Ratio (Retirees per Worker)
1993	7,336	1,628	0.22
1994	8,494	2,079	0.24
1995	8,738	2,241	0.26
1996	8,758	2,358	0.27
1997	8,671	2,533	0.29
1998	8,476	2,727	0.32
1999	9,502	2,984	0.31
2000	10,448	3,170	0.30
Growth 1993–98	15.5%	67.5%	10 percentage points

SOURCES: Ministry of Labor and Social Security (MOLSS) and State Statistical Bureau (SSB), *Statistical Report of Labor and Social Security*, various years. The reports can be found at www.molss.gov.cn/tongji/gb/.

Pension Reform: Options and the Choice of China

Financial crises in pension programs are not unique to China, but the causes are different and therefore remedies vary, too. In OECD countries, the trouble stems from the natural aging of the population and the early exit of the labor force; thus the reform has focused on shifting from the PAYGO system to an individual account system with advance funding (Fox and Palmer 2000). In transition economies of Europe and central Asia, the problem is mainly caused by the weakening of the government's ability to collect revenues to meet pension commitments and the shift of the labor force to the informal sector. Since the social welfare system has already covered the great majority of the population, the reform effort focuses on designing a pension system that provides incentive for participation (Fox and Palmer 2000). In China, the cause of the crisis is similar to that in former socialist countries, but because China started with only partial pension coverage, it has another option, which is to let the rest of the economy share the financial burden and continue to run the system as a de facto PAYGO system. Individual accounts are primarily used to smooth labor mobility across pension pools.

The Chinese approach can be summarized by two reform measures since 1997: consolidating pension pools and expanding pension coverage to private enterprises.

Consolidating Pension Pools

In 1997, the State Council issued *A Decision on Establishing a Unified Basic Pension System for Enterprise Workers,* requesting the consolidation of pension pools and the unification of the system across consolidated pools (State Council 1997). The level of pooling would be raised to the provincial level and public pillar pension benefits and contributions standardized across pension pools.

The consolidation of pension pools is expected to immediately alleviate financial difficulty in some local pools. In the pre-reform period, China followed the Soviet policy of building colossal enterprises in many counties or cities with the enterprise taking a large share of local population. When these enterprises fail and cannot make pension contributions, the entire local pension pool goes into crisis. Elevating the level of pooling within a province would make surplus local pools cross-subsidize deficit pools and increase the likelihood that pensioners in hard-hit areas get their pensions on time.

Consolidating pension pools is also expected to increase labor mobility. Merely establishing individual accounts in local pools does not guarantee labor mobility because transferring accounts across pension pools is very complicated. This is partly due to the existence of a large PAYGO pillar in each pension pool. Accepting a worker into the pool means entitling the worker to PAYGO pension benefits without the person contributing in years prior to joining the destination pool. The problem would be alleviated if the pool itself were enlarged to cover a bigger geographical area such as a province so that no transfer of account is necessary if workers move within the province.

The new system is stipulated to be comprised of three pillars: a defined benefit public pillar for redistribution, a mandatory funded defined contribution pillar for each worker, and a voluntary supplement pension pillar managed by each individual firm or private insurance company. The first pillar would be funded by a payroll tax of 13 percent that would come from pre-tax enterprise revenues, which would guarantee a replacement rate of 20 percent of the prevailing average wages at retirement with a minimum of 15 years of contribution.[1] The second pillar would be funded by a payroll tax of 11 percent and would come from contributions from both enterprises

[1]The payroll tax is based on a "contributory wage" that is set at 60 percent of the average local wage and capped at 300 percent.

and individual workers. At retirement (55 years on average, taking into account early retirement) the worker would receive a monthly pension equaling the account balance at retirement divided by 120. This calculation assumes a life expectancy of 70 years and a wage growth rate the same as the discount rate. Assuming that an individual contributes into his or her account for 35 years, then the funded pillar is expected to provide a replacement rate of 38.5 percent. Together, under these assumptions the two pillars are expected to provide a replacement rate of 58.5 percent (MOLSS 1998: 51).

Expanding Coverage

In January 1999, the State Council issued *Tentative Rules on the Payment of Social Security Dues,* designed to speed up the inclusion of nonstate enterprises and migrant workers into the pension pools (State Council 1999). By the end of 1997, only 53.8 percent of urban collectives and 32.0 percent of other enterprises participated in social pension programs, while the participation rate for SOEs was 93.9 percent (MOLSS 1999a: 2, 92). The State Council also demanded that the expansion of coverage be accomplished by the end of June 1999. The number of workers participating in the pool would increase by 26 million to reach 110 million, an increase of 31 percent (MOLSS 1999a: 5).

The urgency attached to the expansion reflected the degree of financial crisis the system was experiencing. If private sector workers were to be brought into the system, the financial crisis in the state pension programs would be immediately alleviated. This is because private firms have a much younger work force with far fewer retirees; thus their participation would immediately lower the dependency ratio. In addition, extending pension coverage to the nonstate sector gives workers an institutional guarantee that the pension promise will be kept after they shift to private sector employment, so that laid-off workers would be more willing to cut ties with the state sector.

Problems of Noncompliance and Evasion in the Current Pension System

The main problem in the current pension system is widespread noncompliance and evasion. This has taken several forms. For enterprises already in the pension system, the primary form is reporting less employment and a lower wage bill to the government in order to

TABLE 2

PARTICIPATION RATE FOR URBAN PENSION SYSTEM

Urban Employment (10,000 persons)	1998	1999	2000
Total	20,678	21,014	20,274
Government and nongovernment institutions	3,877	3,930[a]	3,801[a]
Business sector (A)	16,801	17,084[a]	16,473[a]
Actual participation (10,000 persons) (B)	8,476	9,502	10,448
Participation rate (B)/(A) (%)	50.4	55.6	63.4

[a]Projected assuming that the share of workers in government agencies and nongovernment institutions remained the same as in 1998.
SOURCES: SSB (1999: 229, 337); Table 1 (above); MOLSS and SSB (2001); SSB (2001: 118).

reduce pension contributions. According to the Ministry of Labor and Social Security, participating enterprises owed the system 30.2 billion yuan in social security payments by the end of 1998 (MOLSS 1999a: 73). The number rose to 38.3 billion by November 1999 (MOLSS et. al 1999) and reached 41.4 billion yuan by the end of June 2000 (MOLSS 2000).[2] As is recognized by the MOLSS, an important cause of massive deficit in the pension system in recent years is underreporting in employment and wages (Hu 2001).

For businesses traditionally excluded from the pension system (private firms and the self-employed), refusing to participate is the main form of noncompliance. These firms usually have a relatively young work force. According to official statistics of 1998, the pension programs covered 80.5 percent of workers in state-owned and urban collective enterprises while 98.5 percent of retirees were covered (calculated from MOLSS and SSB 1999). The evasion is more clearly seen by the slow pace of expanding coverage. According to the goal set by the State Council in January 1999, all workers in the urban business sector would be included in the system by the end of June 1999 (MOLSS 1999a: 5). However, by the end of 1999, the participation rate only expanded from 50.4 percent to 55.6 percent, and by the end of 2000 the rate reached only 63.4 percent (Table 2). The number of workers used in the calculation has not included the 50 million or so migrant workers who are also supposed to be included in the urban pension program.

[2]This was 20 percent of total pension expenditures in 2000.

The noncompliance and evasion occurred even though many coercive measures have been applied to enterprises. A circular jointly issued by MOLSS, the State Commission of Economy and Trade, and the Ministry of Finance in November 1999 ordered close monitoring of enterprises that had large overdue payments and required the signing of payment agreements (MOLSS et. al 1999). However, those measures were not effective. In November 2000, MOLSS, together with a number of other government agencies, summoned enterprise managers from 234 large firms that had failed to honor their agreements to Beijing for a two-day "training" session and publicized the event (MOLSS 2000). The session was called "Training lesson for major enterprises that owe social insurance contribution." At the end of the session, it was reported that the majority of enterprises signed new agreements to pay back the dues they owed.

The major reason behind the noncompliance and evasion is the lack of incentives for enterprises and individuals to participate in the system. Unlike the popular perception of China in the West, the government of China lacks enforcement capacity over enterprises. Tax evasion is pervasive and regulations are routinely ignored. Therefore, mandatory participation will not produce desired results unless incentives are provided.

The first disincentive is the large redistributive first pillar (with a 13 percent payroll tax). Most pension models in the world recognize the necessity of a public pillar. Its function is to guarantee a minimum pension for unlucky people who "due to factors beyond their control, will retire early with disabilities, die young and leave dependents, live longer than average and run out of resources, or earn very low lifetime incomes which are insufficient to support them both for their working and non-working lives" (James 1996: 2).

The second and the most important disincentive is the low rate of return on contributions to personal accounts. This problem is largely due to the fact that the contributions to personal accounts are not invested. Individual accounts are *notional accounts*—money paid into personal accounts is used to pay current pensioners and thus the accounts become accounting tools. In a system with notional accounts, the rates of return are determined administratively, and the government is always tempted to set low rates to reduce future pension obligations. When the rates of return are lower than the opportunity cost of the capital,[3] people would rather invest the money on

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[3]The rate of return for 1999 was set to equal the 3-month time deposit rate (MOLSS 1999a: 106), which was 1.98 percent.

their own instead of investing in pension accounts, and evasion and noncompliance will be inevitable.

With individual accounts becoming another tool for redistribution, required contributions to these accounts are regarded not as assets but as another form of tax. Thus, the current pension system is equivalent to a tax burden of 24 percent. For private enterprises, joining the system means adding a new and heavy tax. Naturally they will try to evade the tax by refusing to join, and if being forced to join will report smaller wage bills, report fewer workers, or simply go underground.

There is also reason to believe that the policy of consolidating pension pools in 1997 aggravated the problem of noncompliance and evasion. This is ironic because one of the rationales for consolidation is so that legislation could be enacted to deal with evasion and non-compliance.[4] But legislation requires a uniform and transparent set of obligations for enterprises and individuals, which is nearly impossible in the fragmented situation.

However, given the fact that pension pools are managed by local governments, and local governments have other objectives than safeguarding the financial health of local pension pools, removing the control of the pools by local governments may produce perverse incentives. Because pension funds are an important source of investment for the localities, local governments have an incentive to keep the money in their own locales. Removing such control rights will remove the incentive for local governments to collect pension contributions from enterprises.

The cross-subsidization built into the consolidation of pension pools also leads to disincentives. If surpluses will be taken away, then there is no incentive for a municipality to generate a surplus; if deficits will be paid for by other municipalities, then there is no incentive to keep the deficits down. If consolidating the pools becomes inevitable, a rational choice for the management of pools is to spend the entire surplus and even create deficits before turning the pension fund over to an upper level for management. There are many ways that the fund balances may be reduced. They include reducing collection efforts, approving early retirement, and increasing retirement benefits.

Early retirement presents a vivid example of discretionary behavior of local governments when facing distorted incentives. There have

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[4]The National People's Congress has the sole legislative authority to enact laws. Provincial governments can only promulgate local regulations.

been two waves of early retirement and both are linked to the socialization of pension pools (Xia 2001). The first wave occurred in the early 1990s after the State Council announced in 1991 (State Council 1991) that municipality pension pools within a province would be gradually merged. The second wave followed the decision to merge line-industry pension pools with local pools in 1998 (State Council 1998).

In sum, incentives are low for both enterprises and workers to contribute to the pension system because the required payroll tax is high, the system is redistributive, and individual accounts earn low returns. Incentives are much more crucial in present-day China than before because the government has much *less* control over the enterprises and budget constraints have been significantly hardened. Furthermore, the policy of consolidating pension pools introduces an element of redistribution across pension pools, which reduces the incentive of local governments to enforce collection and makes noncompliance and evasion much easier. Relaxing early retirement standards deepened the financial crisis of the pension system. Since 1997, the pension system has increasingly relied on fiscal subsidies. Between 1997 and 2000, subsidies doubled every year—from over 5 billion yuan in 1997 to over 10 billion in 1998, over 20 billion in 1999, and over 40 billion in 2000. The pension subsidies finally stabilized at over 40 billion yuan in 2001.[5] The unwillingness of municipal pools to merge with each other has strictly limited pooling at the provincial level. By 2000, only 5 provinces had achieved complete pooling, 17 provinces maintained a quasi-provincial pooling system with each municipality contributing a share of their revenue or surplus to provincial relief funds, and 8 provinces had no provincial pooling at all (Yang 2001).

The Alternative: An Incentive Compatible, Fully Funded Pension System

Our analyses above show that noncompliance and evasion are rooted in the lack of incentives for participation. Enterprises and individual workers do not have incentives to contribute because the system is redistributive and the returns are low in individual accounts. The reason why these disincentives exist is because the government

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[5]The above figures were provided by Lou Jiwei, deputy minister of finance, at the 4th CCER-NBER Symposium on the Chinese Economy, June 22–24, 2001, Beijing.

relies on current pension contributions to finance existing pension obligations rather than to find a better alternative. Consequently, a large PAYGO contribution is maintained and individual accounts become notional and earn a low administratively determined rate of return.

Pension obligations to existing pensioners and future pensioners who participated in the old PAYGO system, or implicit pension debt, is what any country shifting from a PAYGO toward a funded system needs to deal with. Other countries have used a mixture of instruments to finance the pension debt: bonds, higher taxes, lower spending, or transfers of public assets (World Bank 1997). If current pension contributions are used to finance the debt, incentives to participate will be reduced and evasion and noncompliance are inevitable. But if the pension debt is dealt with using the aforementioned mixed instruments, entire pension contributions can be put into individual accounts and the accounts will be fully funded. The funds can then be managed by professional fund managers and earn competitive rates of return. Because investments into individual accounts will earn no less than the risk-adjusted best alternative on the market, workers will have a strong incentive to contribute and make sure that their employers contribute to their accounts. In short, if all pension contributions are invested into funded personal accounts, then there will be no incentive for noncompliance or evasion. A prerequisite for this to happen is to fund pension debts independently of pension contributions.

China has a much smaller pension debt and a much greater financial capacity to finance the debt than most other transition countries (World Bank 1997). However, a political issue may discourage the government from using debt finance. Most SOEs are owned by subnational governments, but subnational governments do not have the power to issue debt. On the other hand, although the central government has the power to issue debt, fiscal resources are mostly controlled by local governments. Therefore, the central government is unlikely to be willing to issue debt for this purpose.

With the constraints placed on issuing long-term debt to pay for past pension debt, current revenues must be relied on. However, there is a concern that simultaneously funding pension debt while accumulating funds in personal accounts could double the contribution rate. That concern, which has led to notional accounts, is unfounded. As Feldstein and Samwick (1996) have shown, so long as the rate of return to investment is significantly higher than the growth rate of wages, the required contribution is far less than doubling the contribution under the PAYGO system.

TABLE 3

CALCULATION TABLE FOR REQUIRED CONTRIBUTION RATES TO
ACHIEVE A 60 PERCENT REPLACEMENT RATE IN A FUNDED
PENSION SYSTEM

Growth Rate of Wages (%)	Years of Contribution	Real Rate of Return (%)	Life Expectancy at Retirement	Contribution Rate (%)
5	35	4	15	23.44
5	35	6	15	14.81
5	35	8	15	9.17
4	35	4	15	19.82
4	35	6	15	12.30
4	35	8	15	7.48
5	40	4	15	20.98
5	40	6	15	12.64
5	40	8	15	7.39
4	40	4	15	17.34
4	40	6	15	10.20
4	40	8	15	5.83
5	40	4	10	15.30
5	40	6	10	9.58
5	40	8	10	5.79
4	40	4	10	12.65
4	40	6	10	7.73
4	40	8	10	4.57

NOTE: The pension system is assumed to be indexed for inflation.

To prove that point, we calculate the contribution rate required under a fully funded system to achieve the same replacement rate as under the current PAYGO system with a contribution rate of 24 percent. We then calculate the amount of tax needed to finance the transition to a fully funded system and show that the combined tax rate needed to fund both the individual accounts and the transition is much smaller than the current contribution rate.

We apply the standard actuarial calculation in Table 3 to determine the required contribution rates for a fully funded system that provides a replacement rate of 60 percent—an approximation to the projected replacement under the current system. The calculation is made under five sets of assumed parameters: growth rate of income (4 to 6 per-

TABLE 4

GROWTH RATE OF GDP AND WAGES IN URBAN CHINA, 1978–99

Time Interval	Retail Price Index (%)	Real GDP Growth Rate (%)	Nominal Wage (%)	Real Wage[a] (%)
1978–99	6.28	9.58	15.43	8.60
1985–99	7.65	9.46	16.49	8.21
1990–99	4.00	9.46	16.49	12.00

[a]Calculated using wages for workers in state-owned enterprises, urban collective enterprises, and other urban enterprises (i.e., excluding the self-employed).
SOURCE: *China Statistical Yearbook*, various years.

cent per annum), years of contribution (35 or 40 years), real rate of return on pension investment (4 to 8 percent), retirement age (55 or 60), and life expectancy (70 or 75 years).

Justifications for some of the key assumptions are as follows. The average growth rate of wages was 8.6 percent in the 20 years between 1978 and 1999 (Table 4). We assumed that the growth rate of wages would slow to 4 percent in the future. Information on rates of return to investment is unavailable for the economy. We rely on published statistics on the ratio of pretax profits to total assets for industrial enterprises (Table 5). The number is 11.61 percent between 1986 and 1999 for industrial SOEs. If a more recent period of 1991–99 is used, the ratio was 7.90 percent for SOEs and 8.50 percent for all industrial firms. Since it is well known that SOEs receive a disproportional amount of financial assistance from the banking sector and the government as a form of subsidy, these figures are likely to have underestimated the potential rates of return on investment in the economy. If pension funds are invested free of political interference, 6 percent should be a conservative assumption of the expected rate of return. Of course, the management of pension funds matters tremendously. There is empirical evidence that private management offers higher rates of return than public management (James 1996).

The last column in Table 3 shows the required contribution rates (as a percentage of wages) under various assumptions. As can be seen, the most significant factor in the calculation is the rate of return on pension investment, as is emphasized in Feldstein (1998). With a 4 percent income growth rate, 35 years of contributions (which implies a retirement age of 55 for a person who starts working at age 20), and a 6 percent real rate of return, a contribution rate of 12.3 percent of wages would achieve a replacement rate of 60 percent. However, if the rate of return is increased to 8 percent, the contribution rate is

TABLE 5

Ratio of Pretax Profits to Total Assets
(Percent)

Year	State-Owned Industrial Enterprises (1986–95)	All Enterprises (1991–97)
1986	20.70	—
1987	20.30	—
1988	20.60	—
1989	17.20	—
1990	12.40	—
1991	11.80	11.88
1992	9.70	9.89
1993	9.68	10.33
1994	9.77	10.21
1995	8.01	8.29
1996	6.54	7.11
1997	6.27	6.92
1998	4.50	5.07
1999	5.07	6.58
1986–99	11.61%	—
1991–99	7.9%	8.5

Source: *China Statistical Yearbook*, various years.

lowered to 7.5 percent. The contribution rate is also sensitive to assumptions about retirement age. If the retirement age is raised to 60 years, under the assumptions of a 4 percent income growth rate and a 6 percent rate of return, the contribution rate can be reduced by 2.7 percentage points, or by 22.0 percent. If life expectancy is raised to 75 years, then under the assumptions of a retirement age of 60 years, a 4 percent income growth rate, and 6 percent rate of return, the contribution rate required will be 10.2 percent of wages, which is far lower than the current contribution rate of 24 percent.

We now turn to the financing of pension debt. We first assume that the pension debt is paid in the form of a compensatory pension. This means that retirees will be paid according to the old system; and for workers who participated in the old system, past contributions are recognized through a transitional pension payment plan. The compensatory pension plan extends the payment period to until the last person in the old system dies. The period can be made shorter by giving workers recognition bonds that are redeemable at retirement,

TABLE 6

TAX RATES REQUIRED FOR PAYING OFF IMPLICIT PENSION
DEBT IN 50 YEARS

Pension Debt as % of 1998 GDP	Annual GDP Growth Rate (%)	Required Tax Rate as % of GDP	Urban Employment Growth Rate (%)	Required Tax Rate as % of Wages
40	6	0.48	1.39	2.55
50	6	0.60	1.39	3.18
60	6	0.72	1.39	3.82
80	6	0.97	1.39	5.10
40	5	0.63	1.39	3.39
50	5	0.78	1.39	4.24
60	5	0.94	1.39	5.09
80	5	1.25	1.39	6.78
40	4	0.80	1.39	4.45
50	4	1.00	1.39	5.56
60	4	1.20	1.39	6.67
80	4	1.60	1.39	8.89

NOTES: We assume that government bonds carry a constant real interest rate of 4 percent. The growth rate of urban employment is calculated from World Bank projections (World Bank 1996: 151, Table TA4.2).

as Chile did.[6] It can also be made longer by deficit financing and issuing long-term debt.

The total size of the pension debt (present value of pension obligations to retirees and workers who accumulated pension credit under the old system) was estimated to be about 50 percent of GDP in 1996 (World Bank 1997). The calculation of necessary contribution rates can be done under the assumption that the rate of discount is 4 percent, the old system is phased out in 50 years, and the burden is spread out evenly across these years (see Table 6). This means that the government runs a deficit in years when compensatory pension payments exceed tax receipts and the deficit is financed using gov-

[6]When Chile transformed its pension system into a fully funded one, each worker in the old system was given an option to either remain in the old system and contribute about 20 percent of wages to the system or switch to the new system, while past participation in the old system was honored through recognition bonds that are redeemable at retirement (Piñera 1998: 311–14).

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ernment bonds.[7] Suppose that GDP grows at 4 percent a year in the next 50 years. Then, according to Table 6, it requires a tax rate equivalent to 1 percent of GDP.[8]

The tax we have discussed is a general tax such as the value-added tax. A general tax has the advantage over a payroll tax in that evasion and noncompliance are more difficult (Feldstein 2000). For the purpose of comparing our calculated tax with the payroll tax under the current system, in Table 6 we also compute the level of the payroll tax needed if the transition were to be financed by such a tax. Then under the assumptions that the wage rate grows at the same rate as GDP of 4 percent annually, and that the urban labor force grows at 1.39 percent annually,[9] it requires a payroll tax of 5.56 percent to pay for the debt.

To summarize, under reasonable assumptions about relevant parameters, the total tax required to support a fully funded pension system and to make the transition to that system will be equivalent to 15.76 percent of payroll. That figure is far smaller than the current contribution rate of 24 percent.

The general tax required for paying pension debt can be further reduced if assets in SOEs are sold to help finance the pension debts. According to World Bank estimates, productive assets in SOEs were worth over 5 trillion yuan and unproductive assets such as land and housing worth over 2 trillion yuan in 1995 (World Bank 1996). The explicit debt of SOEs to banks was less than 2 trillion yuan. Thus, there should be enough assets to pay for the pension debts, which totaled 1.9 trillion in 1995 (World Bank 1996). If selling state assets reduced pension debts to 40 percent of GDP, then the required tax rate would be only 0.80 percent of GDP, which would further reduce political resistance to financing pension debts through the use of fiscal revenue.

Conclusion

China has gone a long way toward reforming its pension system. The pre-reform system was an enterprise-based PAYGO system; it is now becoming a pooling system within each province. Our analyses show that pension reform in China has largely been motivated and

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[7]Smoothing out the tax burden over time is a simplifying assumption. It is also possible to estimate the required tax rate each year by assuming that pension debt is paid in full every year and thus requires no deficit financing.

[8]In 1998, fiscal expenditure was 13.6 percent of GDP.

[9]This is calculated from urban employment projections by the World Bank (1996: 151).

dictated by short-term problems in SOEs—that is, by labor immobility and financial crisis in pension programs. The reform has been successful in establishing portability of pensions and removing one of the major stumbling blocks that had delayed the imposition of a hard budget constraint on SOEs for more than a decade. However, the reform has failed to overcome financial imbalances in the system, which have resulted in repeated delays in paying pensions to retirees. Neither has it been able to respond to the long-term challenge of rapid aging. China's population is aging at a faster rate and at a much lower level of income than in Western countries. The best protection against problems related to an aging population is for young workers to start saving for themselves. Although the current system has a statutory pillar of individual accounts, the accounts have remained largely empty, so no real saving has occurred.

Our diagnosis shows that widespread noncompliance and evasion are responsible for the continued financial problem in the pension system and for the failure to accumulate funds in individual accounts. The reason for noncompliance and evasion is that little incentive has been given to enterprises and workers for contributing to the pension system—contribution rates are very high, the system has a large redistributive component, and returns to contributions into individual accounts are extremely low. Local governments either have little enforcement capability or no incentive to enforce the collection because local pools cross-subsidize each other.

We further show that the failure to deal with past pension debt in the old PAYGO system is responsible for the disincentives of high contribution rates, redistribution, and empty personal accounts. We argue that if all pension contributions go to individual accounts and remain in those accounts (i.e., the accounts become fully funded), and if the funds are managed by professional managers to yield the opportunity cost of the capital, then there will be no incentive for noncompliance and evasion. Once the disincentives are removed, the contribution rates can be significantly lowered. According to our calculation, under conservative assumptions, the required contribution rate under a fully funded system that provides the same replacement rate as the current system promises is only 10.2 percent of payroll.

The key to removing the disincentives is to finance pension debt independently of pension contributions. We show that under conservative assumptions, a tax of 1 percent of GDP per year for 50 years would pay off the debt. If the payroll tax were used, the tax would be 5.6 percent of payroll. The current system requires a 24 percent payroll tax merely to pay for current retirees. In comparison, under a fully funded system, it would take only 5.6 percent of payroll to fund

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current and future retirees in the old system. An additional 10.2 percent is needed to fund individual accounts in which workers can save and invest for future pension income.

In 2001, some progress was made in the area of pension reform. First, the government made more fiscal commitments to take responsibility for the pension debt. The government has pledged to boost the social security reserve fund by reducing its ownership in SOEs. However, a plan of setting aside 10 percent of proceeds in IPOs and new share offerings was discontinued in October after a short life of three months. Technical problems have been cited as the reason and details are still being worked out.

Second, the central government initiated a new experiment in Liaoning Province in 2001 that would completely transfer the responsibility of pension and other social security responsibilities from enterprises to social security agencies (State Council 2000). That measure would completely detach pension programs from enterprises and thus would guarantee the portability of pension accounts across firms and ownership types. Meanwhile, the government announced that workers discharged by enterprises would immediately sever ties with their previous employers. This is an important step toward further increasing labor mobility.

Third, the experimental scheme stipulates that individual accounts will become fully funded and managed separately from the PAYGO pillar. The accounts will be portable across pools and inheritable.

While making individual accounts fully funded will certainly increase incentives to participate, increasing the contribution rate into the pooled pillar from 13 percent to 20 percent of wages and reducing contributions into individual accounts from 11 percent to 8 percent of wages are likely to reduce participation. Although stricter enforcement may bring about higher participation, without voluntary cooperation by enterprises and workers, the underpayment problem will persist and enforcement costs are likely to be very high.

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