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Meeting the Migrant Pension Challenge in China

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Meeting the Migrant Pension Challenge in China

Abstract

China is currently undergoing the largest regional migration in the world's history. Young rural workers are moving to urban areas, often in a different province, for substantial periods of their working lives. Social security policy in China, while framed by national protocols and policy guidelines, is administered at more than 2000 lower-level jurisdictions, typically cities and counties, and at present this compromises pension entitlements of China's 150 million rural migrant workers.

This paper proposes a Notional Defined Contribution (NDC) mechanism to ensure pension mobility for migrating workers, in both the accumulation and drawdown phases. Plan governance would ensure independence from the three existing pension systems. Although the plan's design would be of the NDC type, requiring no pre-funding, in practice the relatively young migrant demographic has the potential to generate considerable reserves. An appropriately structured NDC plan of this type is shown to be viable by reference to a previously developed model of Zhejiang Province's social security systems. Such a plan would remove mobility barriers to migrating workers, increase the retirement benefit for mobile workers, and reduce the future government liability for payouts in other pension systems in which migrants currently hold membership.

JEL Classification: H55, J11, J18, R23

Keywords: Pensions, Migration, China, Notional Defined Contribution

1. Introduction

Currently, China is undergoing the largest regional migration in the world's history. Young rural workers are moving to urban areas, often in a different province, for substantial periods of their working lives. In 2010, there are about 220 million migrants, and about 153 million are rural workers, with no permanent right to stay in their immigrant location. The flows are not uniform across China. About 65% of the migrants originate from only 6 provinces, and about 87% go to only 6 provinces[1]- mainly the high-employment regions of the Pearl River Delta and Yangzi River Delta. About half of all workers in urban areas are migrants.[2]

China currently has three major pension plans, excluding separate plans for civil servants and government institutional workers. The informal sector, including rural residents and non-employed urban residents, is covered by the "New Rural Pension Plan" and the "New Urban Residents Pensions Plan" established in October 2009. RMB 55 yuan per month is guaranteed for any one aged 60 and above with younger residents paying a limited contribution as low as RMB100 per year. By the end of 2011, there were 376 million members with 107 pensioners in this new system. The formal labour force is covered by the "Enterprise Pension Scheme", a combination of Pay-as-you-go system and an individual account system. At the end of 2011, there were 235 million members with 63 million pensioners. Finally, there is an "Enterprise Annuity" scheme, a fully funded defined contribution pension plan, targeted at the employees of large companies. Benefits are typically asses to the Enterpirse pension. In 2010, about 13 million workers held membership.

In this paper we study how social security benefits might be securely delivered to these workers. At present, only 30% of rural migrant workers are members of a pension plan, and of these about 75% cannot transfer their pension records from one workplace to another (NPFPC-MPS, 2010, p 207). While national guidelines and policies recognise this issue, in practice, given the segmentation of the urban enterprise pension system into more than 2800 jurisdictions, these are ineffective in delivering to rural migrant workers adequate social security.

There are at least three separate circumstances which make providing social security for migrant workers in China especially challenging. First, China's social security system is extremely decentralised, involving more than 2000 jurisdictions. There is no centralised record-keeping. This makes portability difficult, since these plans differ from one another in entitlement, vesting, and benefit rules.[3] Second, most mobile workers are from rural jurisdictions, and only about 20% of them stay in one place more than 10 years. Third, the "enterprise pension scheme", China's longest established pension structure, now faces generous payout obligations, and these are typically financed by contributions from current workers: the plans effectively operate on a Pay-As-You-Go basis. While this is the plan a migrant worker's urban co-workers will join, long vesting periods are

[1] Information taken from Report on China's Migrant Population Development (hereafter NPFPC-MPS 2011), and authors' calculations.
[2] Cai et al (2009), p 4.
[3] Reducing the fragmentation of China's social security system is frequently advocated, most recently in World Bank et al (2012), p 54.

typical, and migrant workers who join are therefore unlikely to receive full benefits.[4] Of those (the majority) who return to their rural base to retire, the estimated pension is currently only about 38% of the corresponding urban rate for a worker with an urban Hukou[5], even though both have done the same work with the same income for the same period of time.[6]

The academic research literature on China's migrant pensions is sparse. The few papers written over the last decade have reported deficiencies of one kind or another in the way migrants accrue pension entitlements. Davies and Ramia (2008), with access to data in three cities in China (Changsha in Hunan, Harbin in Heilongjiang and Yinzhou district in Ningbo, Zhejiang) reported that official claims of success were not validated in various domains of the migrant worker experience, including social security and employment-related services (p 142). Various causes have been advanced for this. Li (2008) interviewed 70 migrants in Tianjin, and found that they had been given insufficient information about social security. Nielson (2005) undertook a regional investigation in Jiangsu province, and reported that the Hukou registration system and the ownership structure of the enterprise mattered most in discouraging migrant membership in pension programs.

The more substantial literature on China's pension policy has focused on reform of the enterprise pension scheme, which is a well-established PAYG enterprise pension system for urban workers in the formal sector. Among the more notable contributions, Feldstein and Liebman (2006) strongly advocated a pre-funded defined contribution (DC) structure, and Barr and Diamond (2008) recommended a Notional Defined Contribution (NDC) structure as a transition to full funding, a position also adopted in the Social Security Reform in China (International Team 2005), and by Oksanen (2010). The NDC paradigm makes it easier to cope with immediate payout obligations, since no pre-funding is required. Williamson and his co-authors (for example, Williamson and Deitelbaum 2005) advocate an NDC structure as of the best policy reform, "as a compromise between the pay-as-you-go defined benefit model that is common throughout the world and the funded defined contribution mode (Williamson & Deiterlbaum, 2005, p269).

Most economic models either explicitly or implicitly include migrants with urban residents and assume they will receive the same benefit as urban residents once they join the urban enterprise pension system (Oksanen 2010, Sin 2005, Wang et al 2000). As yet, there is almost no research into the rural pension scheme. Williamson and Shen (2010) provide an overview of the system, and Oskanen (2010) reports a simulation model for China with rural and urban systems under an NDC structure. He showed that with a lower contribution rate and lower replacement rates under the NDC structure, the government liability is reduced. As with earlier studies, he incorporates immigration from rural to urban sectors into the current urban enterprise pension scheme.

By contrast, this paper focuses on the pension entitlements of rural migrant workers, leaving aside the question of broader pension reform. We explore the feasibility and implications of a separate migrant pension scheme, based on NDC principles. The transparent and portable record-keeping

[4] Typically, the vesting period is 15 years; a shorter contribution period leads to nominal employee contributions being returned at termination with a low investment return credited.

[5] "Hukou" is the residency registration system which has traditionally controlled population flows in China. We discuss its relationship with retirement benefits further below.

[6] 2010 Report on China's Migrant Population Development (hereafter NPFPC-MPS 2010).

implicit in the implementation of the NDC paradigm renders it especially suitable for dealing with large regional migrant populations. We assume that under this scheme, mobile workers contribute some proportion of their wage which is credited to the notional account and attracts an annual return. Accumulations are sequestered from the local jurisdictions, but will be available at the provincial level, thus encouraging provincial support for the reform. When the migrant worker reaches retirement age, all his contributions and accumulated interest are annuitized and paid as a retirement income stream, guaranteed by the central government, and delivering an actuarially fair outcome. The notional rate of return could be based on any of the indices used in current NDC plans – GDP growth, per capita GDP growth, wage growth, payroll growth, or some other rate defined by the government.

We begin in Section 2 by providing a profile of the migrant population in China, and its predominant flows. Section 3 outlines the existing pension schemes in China and describes how mobile workers relate to these structures, arguing that to adequately accommodate migrant workers within the existing structures would require reforms that would negatively impact the populations they already serve. In Section 4, we analyse the feasibility of an NDC migrant pension plan from both theoretical and implementation perspectives. It is argued that the proposed NDC arrangement would not only improve the long term financial sustainability of the provincial pension fund balances, but also improve the retirement benefit for individual mobile workers. In Section 5 this is supported by simulation analysis, using a model calibrated to Zhejiang data, both for governments and individuals. Section 6 concludes.

2. China's Regional Migration

China's current labour migration followed the opening of the Chinese economy in 1978. Regional migration was low in the early 80s – the stock of migrants[7] was recorded at about 6.6 million in 1982. But the flow increased rapidly, and many migrants chose not to return to their place of origin. In 2010, the stock of migrants was reported at 220 million, and the current flow is thought to be about 10 million annually[8]. Chart 1 refers.

CHART 1 ABOUT HERE

About two thirds of all migrants come from just six of China's 32 province level jurisdictions, and more than 85% of migrants target only six destinations, including the city-states of Shanghai and Beijing.[9] The destinations are high income, eastern seaboard jurisdictions. Provinces of origin are less easily characterised, but are not the poorest. Families presumably need some resources to support a family member to migrate, and it may also be that these provinces provide better educational opportunities (World Bank 2009, p 99).

[7] This is the stock of migrants including migrant workers both from rural and urban areas with registered working place other than their Hukou registration for more than 6 months; some are non-working migrants' family members (children and parents, etc.)

[8] NPFPC-MPS 2010 and 2011

[9] In 2009 the proportions from provinces of origin were: Anhui Province, 15.9%, Sichuan, 14.8%, Hunan 10.1%, Henan 8.8%, Hubei 7.7% and Guizhou 7.6%. Destinations are Guangdong, 30.6%, Zhejiang, 23.6%, Jiangsu, 9.7%, Shanghai, 9.5%, Beijing, 9.1% and Fujian, 4.3% (NPFPC_MPS, 2011, p 235)

Migrants are about equally split by gender, with about 85% coming from the rural sector, and most are married. Their average age is 28. It is thought preferable to have one partner travel, while the other remains home to care for children and parents, but this is not always possible. However, there are no reliable estimates of the proportion of migrants migrating as a family. They average just over 9 years schooling. Average monthly income for a migrant is about RMB 2200. Their average stay in one location is about 5 years, and the majority wish to return to their homes in retirement.(NPFPC-MPS, 2010, p 42) .

The Hukou system ties a Chinese citizen to a given jurisdiction, but there is a broader classification as well – urban and rural. It is very difficult to move from a rural to an urban Hukou. Traditionally, the only channels for such a transfer were enrolling at a university, joining the army, joining the civil service, or marrying an urban resident. Now several new channels are available. In some jurisdictions. For example, "buying" an urban Hukou is possible: investing in housing or paying taxes. But numbers are very small compared with the scale of the rural-urban migration currently underway.[10]

Over the last decade or so, commentators have expressed increasing concern about the low quality of social protection of the migrant population (for example Nielson 2008, Maurer-Fazio et al 2011, Deng and Hu 2008). In 2010, about 30% were members of a social security plan, predominantly the enterprise system, compared with more than three quarters of urban residents. Rural membership has increased dramatically over the last 5 years, as Chart 2 indicates, but it is unclear that this is to the migrants' benefit, since vesting and benefit entitlement provision remain skewed against the migrant worker.[11]

CHART 2 ABOUT HERE

According to the 2010 White Paper of Ministry of Human Resources and Social Security of China[12], about 32.8 million rural migrant workers have joined the urban enterprise pension system. Assuming they are all contributing members, they represent 17% of all contributors to the system. If rural workers are able to vest, this would imply a dramatic increase in the future liabilities of the enterprise pension system, liabilities which are ultimately held by the provinces. In theory, migrants can transfer 12% of his 20% contribution to social pooling plus their individual account balances to the new work jurisdiction, but in practice, this is difficult to implement. Most migrants would still prefer to remain outside the system to retain flexibility and improve their current income; or perhaps exit the system each year, take their discounted entitlement, and re-join the following year.

The above discussion suggests that any dedicated migrant pension system should embody a number of characteristics. These include:

[10] Significant numbers of farmers have transferred from rural to urban Hukou because their farming land has been taken and converted to urban use. There are several studies which analyse the social security entitlements of these ex-rural residents (Tao, 2007, Wang 2006, Zhu, 2003, Gao 2004 and Yang and Huang 2004), but we do not view them as migrant workers in this analysis.

[11] Estimates are derived from the NPFPC-MPS 2010 and 2011

[12] This is available at: http://www.mohrss.gov.cn/page.do?pa=402880202405002801240882b84702d7&guid=e60c0ef72ddd4e8eb968ac5f11900f59&og=8a81f0842d0d556d012d111392900038. Report accessed in March 2012.

- The system should have a solid record keeping system, nation-wide, robust to changes in workplace, and simple to administer.
- The system should be centralized or at least be subject to central oversight. Inter-jurisdictional coordination is needed. It requires separation of contributions from urban and rural pension systems.
- The benefit design should be similar to a DC plan, with immediate vesting, and complete portability.

This list contrasts sharply with what currently available Chinese pension plans can deliver.

3. Current Practice and Alternative Approaches to Reform

Pension policy implementation in China is highly decentralised (see, for example, Impavido et al 2009)[13]. The central government is responsible for issuing guidelines (Circulars[14]) which define broad policy.[15] The provincial government interprets the Central government protocols in terms of specific provincial conditions. It sets targets for social security contribution revenues and definitions for retiree benefits. Based on these, more than 2000 local jurisdictions implement contribution collections and benefit payment.

The central government has defined three pension systems to cover all residents. The largest in terms of membership, but also the newest, is the Rural Pension plan, available on a contributory basis to farmers in the rural sector.[16] It targets rural residents. Since its implementation in late 2009, more than 275 million people have joined, with 67 million retirees receiving a pension – more than 60% of its target population. Its core features include an RMB 55 per month pension for over-60s without a contribution history, and contribution rates ranging from 3 to 8% of net income for those still working, with government subsidies to bring total replacement rates of between 15 and 35% of rural net income for a worker with a 15 year contribution history. This system combines a basic government subsidy and an individual account accumulation annuity.

Second, the enterprise pension scheme, the longest established pension system with its origins in the State Owned Enterprise (SOE) welfare systems, is available to employees with a formal labour contract relationship. It was formally established in 1996 and has undergone several reforms since. At the end of 2011, it had 235 million members, with 63 million pensioners. The key features are high contribution rates on wages and a high benefit, but with long vesting periods. For example, with a 28% contribution rate for 35 years, a retiree on average earnings is officially entitled to a pension benefit set at about 50% of final wage. Benefits are typically available at age 60 for men, and at 55 for women. In practice, however, the system varies widely across jurisdictions. Because many current pensioners have a truncated contribution history, the system essentially operates as a PAYG structure, with large subsidies to many current retirees. These obligations are met, in part, by

[13] For a more general discussion of the implications of China's decentralised policymaking, see Xu (2011).

[14] To illustrate, Appendix 1 provides summaries of the essential circulars pertaining to retirement income structures, and a translation of Circular 32, pertaining to the rural pension plan.

[15] It is believed that the central government has no record keeping so far. The so-called "Jin Bao" project aims to provide a centralised information system, but this is still in preparation.

[16] A corresponding plan for urban non-workers, the Urban Resident Pension Policy, was promulgated at the same time in Circular 18 (see Appendix 1).

contributions from migrant members. When migrants join the enterprise pension scheme, the long vesting periods give rise to a cross-subsidy from migrants to local Hukou residents.

The final component is the enterprise annuity system. Essentially an occupational pension plan, it is available to employees in qualified large companies. It covers only 13 million employees. It is a fully funded DC plan with 5% of wage contributions from employers free of tax. In 2010, assets totalled RMB 281 billion, about 0.7% of GDP (CASS, 2011, pp 61-71). Usually, members of the enterprise annuity system are also members of the enterprise pension system.

Migrant workers are predominantly attached to one of the first two systems, and move between them as they move from a farming to an employee role, typically in an urban area. Each plan, associated with some local jurisdiction, has its own protocols and guidelines, and there is very little flexibility for a worker to transfer their records from one to another. Migrants who have joined this plan provide contributions which are used to pay benefits to their retired urban counterparts. This reduces current fiscal burden. If, however, contributing migrants were to remain long enough in the system to have their benefits vested, the present value of liabilities would increase dramatically. The rural pension benefits, on the other hand, are far too low for urban conditions, and thus render the rural pension unsuitable for migrants who spend much of their working lives in an urban environment.

The only remaining alternative is the enterprise annuity system. It has the virtues of having a Defined Contribution structure and uniform conditions, so that portability is much easier. Often, companies offering enterprise annuities to their employees entrust the arrangements to private insurance companies licensed to enter the market – there are currently only 11 such organisations. They offer endowment type life insurance contracts, which provide a pension at retirement.

In principle, the enterprise annuity has some appeal as a basis for migrant pensions. The pension market would be immediately privatised for migrants and this would reduce substantially the administration work for both local and central governments. But it is currently available only to large private companies who "qualify" for membership. Even if it were opened to all firms to participate, its current regulatory framework gears it to high income individuals, providing them with additional retirement as a supplement to the enterprise pension. While possible as a vehicle for migrant pensions, it is likely that the advantages of its current structure – with a focus on high income workers – would be lost in the process of granting access to the migrant population.

Some jurisdictions, especially big cities with heavy inflows of migrant workers, have their own regulations for migrant pensions.[17] These are not standardised. Migrant workers find it difficult or impossible to move their pension plan between these provinces, even though the plans are set up specifically for migrants. Contribution rates and vesting conditions vary. But more often than not, the regulations are set up so that in practice, migrants pay contributions, but have little prospect of gaining access to full benefits. For example, migrants to Shenzhen join the enterprise pension system. But to gain benefits, not only is the vesting period 15 years, but also, they must be working and contributing for the five years immediately prior to drawing benefits. Typically, a migrant

[17] Important examples include Beijing, Chongqing, Shanghai, Shenzhen, and Hangzhou.

enrolled in the pension plan moves on with only his own contribution returned in cash, sometimes augmented with a low assumed investment return.

Existing structures, then, do not come close to meeting the criteria set out in Section 2 for migrant pensions. The rural pension is not calibrated to urban conditions; the enterprise pension system, fragmented and with long vesting periods, is unsuitable for different reasons; and the enterprise annuity structure is customised to high income earners. The size of the migrant population, and its projected increase, combined with the ageing of existing migrants, renders imperative the development of structures to provide this sub-population with a reliable and adequate retirement income. While modification of some of the existing systems to accommodate migrants' pension needs and entitlements might be possible, it would be extremely difficult to undertake this without compromising the services these systems deliver to their core clienteles. This suggests a separate structure will be required, and it is to this issue that we now turn.

4. An NDC Model for Regional Migrants: Structure and Implementation

In this section we analyse how a Notional Defined Contribution (NDC) system might be set up for mobile workers. The NDC paradigm is especially suitable for migrant workers because the record-keeping on which it is based is readily understood, and there is (or need be) no vesting period. In an NDC, no real prefunded assets are required, and the rate of return can be independently specified (Holzmann and Koetti 2011). Some centralised authority, for example a separate division in the Ministry of Human Resources and Social Security, is required to coordinate record-keeping and benefit entitlements. The NDC structure accommodates labour mobility and portability in much the same way as a pre-funded DC plan. The notional accumulation can be annuitized to provide a retirement income stream.

We divide this section into two parts. We begin by outlining issues raised by introducing centralised oversight of a multi-jurisdictional pension plan in an environment where, historically, lower level jurisdictions have enjoyed control. We then present a simple formal analysis of an NDC structure, generalised to recognise that rural migrants will earn in multiple jurisdictions.

Issues raised by centralised oversight

Centralising oversight of any previously decentralised pension plan carries three key requirements: cooperation, governance, and information. These all represent challenges in China's pension policy, but they are not insurmountable. We deal with them in turn.

Provinces are likely to cooperate if it is their interest to do so. Consider first the six major destination jurisdictions – Guangdong, Zhejiang, Shanghai, Beijing, Jiangsu and Fujian. These are in a relatively strong financial position with regard to current pension flows, with surpluses in their enterprise pension system accounts. However, migrant worker participation in the enterprise pension system has been increasing rapidly in recent years, and even if only a fraction of these are able to vest, the implied present value of future payouts will be very high. Further, these liabilities come at a time

when existing payouts will have increased substantially. These provinces are therefore likely to see some value in cooperating in a system which will relieve them of some of these future payouts.

It would also be possible to develop separate migrant pension reserve funds in these jurisdictions, leaving some control over reserves in provincial hands, with central oversight. This may make the proposal of a separate migrant pension plan even more attractive to these jurisdictions. Some existing enterprise pension contributors could be re-enrolled in the migrant pension system, reducing future liability further – we discuss this below. A central fund to accommodate workers who earn in minor destination provinces, where economies of scale for separate funds do not exist, would also be necessary.

Whether the migrant pension reserves are split in this way or remain in one central pool, the management of the reserves should be undertaken in the context of sound governance[18]. In China, such a fund already exists – the National Social Security Fund (NSSF). On 1st August 2000, the Central Committee of CPC and the State Council decided to establish National Social Security Fund (NSSF), and set up the National Council for Social Security Fund (SSF) to manage and operate the NSSF's assets.

The NSSF aims to be a solution to the problem of aging and serves as a strategic reserve fund accumulated by the central government to support future social security expenditures and other social security needs. In accordance with the "Interim Measures On the Administration of the Investment of National Social Security Fund" promulgated on 13th December 2001, the funding sources of the NSSF are as follows: fiscal allocation of the central government; allocation from the lottery public welfare fund, capital derived from reduction or transfer of state-owned shares; capital raised in other manners with approval of the State Council; investment proceeds and equity assets[19].

At the end of 2010, the NSSF held an asset pool of about RMB 856.8 billion. Its current asset allocation regulations comprise a maximum of 40% in equities, a minimum of 40% in fixed income products, and a maximum of 20% in unlisted equities. Between 2000 and 2010, it achieved an annual return on its assets of 9.17%, exceeding inflation by 7% (CASS 2011, pp 91-100). Because rural migrant workers are young on average, the aggregate reserve pool will grow for some time, and will be very substantial.

We now turn to the question of centralized information. This has been a difficult issue in the enterprise pension system since its inception. The "social pooling" component of the system, which requires sharing government contributions across jurisdictions, has led to local authorities providing inadequate and sometimes misleading information to provincial and national authorities.

This inhibition to information sharing is not present in an NDC migrant pension program, because no such pooling exists. Further, two sources of information on rural migrant workers' earnings are already at least partly available at the central government level. First, the Chinese Government has established a national social security card system. While not yet comprehensive, Ministry of Human

[18] Mitchell et al (2008) examine appropriate governance requirements for public pension fund reserves.
[19] Taken from http://www.ssf.gov.cn/Eng_Introduction/. This site provides further details of the administration and management of NSSF.

Resources and Social Security recently announced that they had issued 145 million social security cards and expect to issue 800 million cards by 2015, covering 60% of the population in China[20]. A second source of data comes from a data centre recently established by the China Population Control Birth Office, with, so far, 145 million individual records. Consolidation of these data sources should generate enough reliable information to provide at least partial monitoring of inter-jurisdictional reporting.

NDC Structure[21]

The NDC concept is at least 25 years old: Boskin et al (1988) outlines this possibility. In its purest form, NDC plan is a variant of a pay-as-you-go structure with the innovation of individual accounts. The individual account balances accumulate at a notional interest rate linked to system return.[22] These are maintained as a book-keeping system, with benefits annuitized at retirement based on each cohort's expected life expectancy and system returns.

For the individual worker, the NDC looks somewhat like a traditional DC plan with mandatory annuities. The key difference is that rather than have a defined benefit, the annuity value will depend on the notional accumulation, which in turn depends not only on contributions, but also on the system return. From the government's viewpoint, however, NDC financing in steady-state looks like a PAYG model. There is a mandatory contribution rate and each birth cohort's implicit rate of return on contributions is realized only over time.[23]

To state this more formally, the worker's notional accumulation is:

Equation 1: $$A_{\bar{S}}^{X} = \sum_{i-1}^{6}\left(\sum_{t}^{\bar{S}} \tau_{\bar{S}-t+1}^{X} \cdot E_{i\,\bar{S}-t+1}^{X} \cdot \prod_{k=0}^{t} R_{\bar{S}-k}\right)$$

Where A: Accumulation of the total pension
E_i: Earnings, (wage at place i)
R: 1+Investment returns or system returns
S: retirement age
t: number of years to retirement age
k: number of years worked
τ: Contribution rate
i: Migrant Fund location.

For present purposes, and for the simulations reported in Section 5, we will assume τ is set at 0.15.

[20] http://money.163.com/11/1115/08/7ISTA82F00253B0H.html, translated by authors.
[21] This section draws heavily on Lu *et al* (2008)
[22] The idea of a "system return" will become clearer in what follows.
[23] Various life payout patterns could be specified; an NDC annuity is usually price-indexed, but it may also include escalation clauses to take account of rising community standards over time (e.g. an average of price and wage indexation is sometimes used).

In funded DC plans, workers' returns on their contributions to their plan are tied to financial market performance. By contrast, NDC benefits are typically tied to the aggregate wage bill or some related magnitude, such as GDP growth. In the present case, we propose that the stipulated notional rate of return for year y be the greater of the NSSF earning rate and GDP growth:

Equation 2: $R_y = \text{Max}(r_y, \mu)$

where μ is the GDP growth rate.

At retirement, each worker's notional accumulation is converted to a pension payout annuity using a standard annuity conversion factor[24]. Specifically, the annual benefit is given by:

Equation 3: $\beta^X = A_{\bar{S}}^X / \sum_{t=n+1}^{\bar{T}} {}_t p_n^x \frac{1}{R_{X+\bar{S}}^{\ t}}$

where n is the retirement age.

5. Simulation Analysis: The Case of Zhejiang

In this section, we attempt to quantify the impact of the NDC proposal on a provincial government and on an individual migrant, using a simple projection model. Under the NDC proposals, we find some substantial changes in the local government's financial liability into the future. We find that individual migrants are better off than under current arrangements.

We use Zhejiang Province as our exemplar. Zhejiang is located on the east coast of China, with a population of 54 million in 2010. It is one of the richest provinces in China with per capita GDP equal to USD 8000 in 2010, compared to USD 4760 nationally. It has 14 million contributors in the enterprise pension system in urban areas with 2 million urban pensioners in the same system. Currently it has about 20 million migrants, almost all from other provinces.

The Government model[25]

We consider two extreme scenarios for the government liability in regard to migration. First, we assume that all migrants retire in the province, with an entitlement to the urban enterprise pension. Second, we assume that all the migrants return to their rural hometown to retire, taking with them their accumulation only, with no further urban pension entitlement. We use a previously developed projection model (Lu, 2009) to simulate the cash flow for these two extreme situations, projected to 2050. We use the current migrant worker urban enterprise system enrolment of 4.5 million in 2010 as a benchmark, and project an increase to 6 million in 2030[26].

The key features of the model include the following:

- The model is fitted to actual data from 2003-2010

[24] A universal annuity factor of 144 per month is applied in current China's policy settings.
[25] This model is documented in Appendix 2.
[26] See Appendix 2.

- All values are in 2003 RMB
- Provincial wage set at 8% in 2004, reducing to 2% from 2020
- New migrant contributors are based on real data and targeted plans of the government, starting at 21% of the system contributors in 2003, reducing to zero in 2030.
- Aggregate contributions and pensions are determined by existing demographics and formal labour force participation (contributor records separating urban local residents and migrants by age and sex etc.)
- Benefit design is based on current policy protocols

Our results indicate that although absorbing all migrant workers helps to relieve the short term funding shortage over the next 20 years, separating the mobile workers' contribution and benefit from the current enterprise pension system could reduce the implicit debt by half by 2050. An NDC paradigm for mobile workers would better facilitate the government's adjustment to the aging population while maintaining a reserve for future liability.

CHART 3 ABOUT HERE

Chart 3 depicts alternative projection paths for both the net present value and year-on-year net flows from 2004 to 2050. Should all migrants move with their pension records to other provinces, there would be significant impact on Zhejiang's pension fund balance. Through time, the NPV curve is much flatter – in the early years of our projection, reserves are slightly lower than they would otherwise be, but by 2050, the implicit debt is also much lower.

When we simulate the status quo, in which migrants remain within the urban enterprise system, the net cash flow remains positive until 2026-27. By contrast, if all migrant workers were transferred to the proposed NDC plan, the urban enterprise system would experience negative cash flows from 2023-24. Similarly, under the status quo, the pension fund balance becomes negative about 2036-37, while under the NDC scenario, the urban enterprise balance becomes negative in 2033-34. However, the implicit pension debt of the urban enterprise scheme is estimated to be 78% of provincial GDP by 2050, compared with 59% under the NDC scenario[27].

An Individual NDC Model

The advantages of an NDC system for mobile workers include portability, relative ease of record-keeping, appropriate incentives towards labour force participation, and actuarial fairness for an announced rate of return.

Under present practice, an individual migrant who works in various cities and contributes to the urban enterprise system for 20 years, and then returns to his rural homeland to retire, can transfer his accumulation to the rural pension system in his home province.

As columns 4 and 5 of Table 1 indicate, he would then be entitled to some fraction of what he would have received had he been able to retire where he had worked. On average, this ratio is about 36%. By contrast, the NDC scheme proposed here would provide about 80% of the urban enterprise pension (Column 3). This result is driven by two institutional assumptions. First, urban workers

[27] GDP growth is assumed at the same real growth of wage for this period.

receive full vesting in the urban enterprise system, thus benefitting from the Defined Benefit subsidy implicit in the system's pension promise whereas rural workers do not, receiving instead a zero real return on their contributions. Second, we assume that the NDC embraces a notional rate of return equal to the real rate of return earned by the NSSF, of about 5%. This combination allows both the provincial government and the individual to end up better off in our calculations.

Table 1: Replacement rate under NDC account compared to the current urban enterprise pension and rural pension plans (RMB):

Year	Individual account balance	Annuitized NDC monthly pension	Urban enterprise system monthly pension	Monthly Pension in Rural Zhejiang
2010	3696	27		76
2015	29895	215		151
2020	72154	519	683	273
2025	134865	970	1259	453
2030	222219	1599	1960	704

Note: NDC investment return at 5% real (similar to the NSSF real rate of return from 2000 to 2010), wage growth from 8% real to 2% real till 2030. One cannot entitle to enterprise pension without contribution for 10 years, each year the benefit is based on the person who retire at that year with contribution starting at 2010.

6. Conclusion

This paper has proposed a separated NDC type pension scheme for China's 150 million rural migrant workers. Implementing a NDC system for mobile workers in China is a win-win strategy for both the government and individual workers today. It enables portability for migrants moving among urban areas, and provides them with an adequate retirement benefit at realistic rates of return. It reduces the long term liability of the province-based urban enterprise system because it removes the necessity for provinces to pay the subsidy implicit in the system's pension promise. Because the urban enterprise system's cash flow and net present value become negative earlier, provincial authorities are likely to become aware of the financial implications of population aging sooner. Our proposal to leave NDC reserves under provincial management with centralised oversight provides a model with a degree of rivalry, under which, over time, best practice may be shared.

This innovation may also have wider implications. It may act as a pilot for the unification of the national pension scheme, and may also serve as a model for medical and disability insurance.

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Appendix 1: National Government Pension Reform Circulars

Circular 26 – Towards a unified Enterprise Pension System in China, 1997

Circular 26, released in 1997, ordered a unification of the pension system. We draw on Sin (2005) to elucidate its main features:

Coverage: Coverage under the old-age insurance program was applicable to all kinds of enterprises and their employees as well as individual workers in urban areas. Although current contributors were primarily from state-owned enterprises, a number of municipalities/provinces successfully extended coverage to include workers in foreign enterprises, private firms, individual businesses and casual workers employed by urban enterprises.

Contribution rates: Total contributions by enterprises were not to exceed 20% of the contributory wage bill. Total contributions to individual accounts were set at 11% of wages, with individual employee contributions to be at least 5% of wages in 1998. This was to increase by 1% every two years thereafter, until the contribution rate reached 8%. Correspondingly, the enterprise's contribution rate would decrease to 3%. The remaining 17% from the enterprise was to go to the social pool.

Contribution range: Employee contributions were to be a minimum of 60% and a maximum of 300% of the local economy's average wage. Those who earned less than 60% of the average wage were to contribute on the basis of an earnings level equal to 60% of the local economy's average wage.

Retirement benefits: Retirement benefits were determined based on each worker's status as of December 31, 1996. Workers who were already retired and receiving pension payments in 1996 were referred to as *old men*. They were to continue to receive their pension entitlements in accordance with the old defined benefit formula. Workers who started contributing after 1996 were referred to as *new men*. Their pension benefits were to consist of two parts: (i) a monthly basic pension equal to 20% of the previous year's local economy's average wage; and (ii) a monthly pension payable from the individual account derived by dividing the accumulated account balance at retirement by 120[28]. Workers who were not yet retired in 1996 but were already contributing to the old age insurance system in 1996 were referred to as *middle men*. Their pension benefits were to be determined on the same basis as the *new men*, and additionally, they were to be entitled to a transition pension to reflect their earlier contribution to the old system, and to compensate for their anticipated lower contribution period.

However, in many provinces/municipalities, it is quite common to provide these *middle men* (those who retired after 1996) with pension benefits that are the higher of the two – a pension determined using the calculation described above or a pension based on the old defined benefit formula. This practice has clear – and negative – implications for funding.

Pensionable wage: The reference wage used in determining the Basic Pension was defined as the local economy's average wage including the wages of the *xia gang* (laid off) workers. Quite often this

[28] Contributions to the individual accounts are credited with interest annually based on the nominal interest rates on one-year term deposits declared by financial institutions. In some locations, special bonus rates may be declared from time to time.

was different from, and usually lower than, the wage levels published by the bureaus of statistics which average scaled state owned enterprises' wages only.

Normal retirement age: This was set at age 60 for men and age 50 for women (age 55 for women in managerial positions).

Vesting period and termination benefits: Workers with less than 15 years of contributory service were not entitled to receive any Basic Pension. Accumulations under the individual accounts were to be refunded as a single lump sum.

Indexation of benefits: Although Circular 26 did not indicate a specific level of post-retirement indexation, other State Council documents made reference to indexation based on a percentage of increase in nominal wages. Historically, the level of indexation had been somewhere between 40% and 60% of the increase in regional average wages during the prior year.

Circular 26 was implemented nationwide immediately. But because of the deficit of pension funds in most provinces and cities, the individual account accumulation was expropriated by the social pooling account to pay the current retirees. The individual accounts were quickly dissipated, and became effectively notional.

Circular 10 – Enterprise Pension Coverage Extension Policy

Document No 10, 1999 – A Notice on Strengthening the Collection of Pension Fees by Increasing the Coverage of Social Security Cohort under the Two Regulations

This document allowed, for the first time, for employees of foreign companies, private companies and private business owners to be covered by the social security system.

Circular 42—Liaoning pilot for fully funded individual accounts

On Dec 25th, 2000, the State Council issued Circular 42, entitled *A Notice to Pilot Program on Consummation of Social Security System in Urban Areas*. It tackled the empty individual account problem by launching a pilot project in Liaoning province, a "rustbelt" province where the funding crisis was most severe as a result of downsizing traditional heavy industry enterprises. According to Sin (2005) the major features were as follows:

- Contributions to the individual accounts were to be borne solely by employees and the rate set at 8% of the personal wage.

- Contributions by the enterprise were to be maintained at around 20% (there would not be any changes for those enterprises currently contributing in excess of 20%). In addition, no contributions from enterprises were to be allocated to individual accounts.

- All social pooling or basic pension account funds were to be managed separately from those of the individual accounts, and no subsidies for social pooling were to be drawn from the individual accounts.

- Those with contributory service of 15 years or more were to be entitled to a replacement rate of 20% of the local economy's average wage. Additional years of contributory service were to be

credited at the rate of 0.6% per year. There was to be no ceiling on the maximum replacement rate.

- Individual accounts were to be disbursed monthly based on the accumulated balance divided by a factor of 120.

- For those with less than 15 years of contributory service, no Basic Pension would be disbursed, and there would be lump sum refunds of the accumulated balance for these workers.

- Upon exhaustion of the accumulated balance, any further pension entitlements under the Individual accounts were to be the obligation of the social pooling funds.

- Indexation for the Basic Pension was to be proposed jointly by the Ministry of Labour and Social Security (MOLSS) and the Ministry of Finance based on the local cost of living and nominal wage growth of employed workers, and to be approved by the State Council.[29]

The Liaoning pilot project enabled full funding of individual accounts – the main source of funding being the central government. It operates separately from social pooling and thus far there has been no cross-subsidy. However, investment options are limited - the capital market is far from mature - and the return on the accounts is still low due to the low interest rate set in the current domestic market. The Liaoning Pilot cannot be declared successful, and no decision has yet been taken on universal implementation, but the Government did extend the pilot projects to two more provinces in 2003: Jilin and Heilongjiang.

Circular No 20 : MOLSS Document No 20 - The Enterprise Annuity Initiative 2004

On May 1, 2004, the Enterprise Annuity Regulation was issued by MOLSS. Its key features are summarized below:

Coverage: Enterprises with good operational records.

Contribution Rate: No more than 5% of the individual wage contribution can be accounted for as a cost of the enterprise and total contribution shall not exceed 1/12 of the total wage bill for the previous year for each enterprise.

Investment Limitation: A separate regulation constrained major investment to government bonds and bank term deposits[30]

Circular 38- Further Reforms in 2006

In December 2005, the State Council issued Circular 38, "A Decision to Improve the Pension System for Enterprise Workers" which contained revisions to Circular No. 26. The main changes were:

- The pooling contribution was set at 20% and individual contributions at 8% and the abolition of the 3% transfer from the pooling account to the individual account from Jan. 1st 2006.

- Gradually, the individual account should be fully funded

[29] This list has been drawn from Sin (2003), page 5
[30] MOLSS Document No 23

- The benefit for contribution changed to 1% for each standard year of contribution and the vesting period was set at 15 years. If less than 15 years, the accumulated funds are to be returned to the contributor as a lump sum.

- The individual account accumulation is to be annuitised according to the retirement age, average local longevity status, and interest rate, etc. (i.e. market based).

In terms of benefit design, Circular 38 was an actuarial improvement on the previous versions.

Circular No. 32 (NRPP) in 2009 and Circular No. 18 (URSPP) in 2011-National Rural Pension Policy and National Urban Resident Pension Policy

The NRPP, officially in State Document (2009) No 32, naming "Guidelines of State Council to the Development of Rural Social Pension Insurance Pilot Project" was implemented in October 2009 from national level. The core principles "are: basic guarantees, wide coverage, flexible arrangements and sustainable development"

Firstly, the beginning stage should be in accordance with the actual conditions in rural areas and with low levels, its contribution standards and benefit formula should be in accordance with the economic development; secondly, individuals (families), communities and governments should share the responsibilities reasonably, its responsibility and its rights should be comparable; thirdly, the policy for contribution is not mandatory and the members should be promoted by the government voluntarily; and lastly, the central government would design the principles and major policies, local government should design its own implementation regulations and local government should be responsible for the management of their own residents.

The key guidance of NRPP includes:

1. The coverage group is rural residents from 16 years old (students are not included) who have not joined urban enterprise pension schemes. These residents are entitled to join the NRPP with their "Hukou" registered place.
2. NRPP Fund is composed of three parts: individual, community and government.
    a) Individual contribution: those who join the system should pay the contributions, the current design is 5 levels: 100 yuan, 200 yuan, 300 yuan, 400 yuan and 500 yuan per year per head. Local governments can adjust contribution levels according to its actual income conditions. Members can choose their own contribution levels and will benefit more if they contribute more. The government will adjust its contribution levels according to the growth of individual net income.
    b) Community subsidy: qualified villages should subsidize the contributors if conditions allow them to do, the standard of subsidy should be decided by the village demographic meetings. Other economic organization, non-profit organizations and individual charities are encouraged to supply subsidies to the contributors.
    c) Government subsidy: the government will be responsible to pay for all qualified members basic pension benefits, the central government will transfer 100% to mid-west areas and 50% to eastern areas. The local government should co-contribute to contributors to NRPP, co-contribution should be no less than RMB 30 per head per year; for those who choose higher level of contributions, certain encouragements should be articulated, details should be designed by the provincial (city and district) governments. To those heavily disabled or difficult groups who can not afford contributions, the local governments should pay for the lowest contribution level.
3. The state government should set up an individual life time pension record account. All contributions, including individual contribution, community subsidy and other organization and

personal contributions, local government co-contributions should all be recorded in the individual's account book. The account balance will be credited interest accordingly to the published People's Reserve Bank's one year interest rate to financial institutions.

4. The benefit of the pension should be combined by basic pension and individual account pension until the person dies.
    a) Central government defines that the basic pension level should be RMB 55 yuan per head per month. Local governments can increase its basic pension level according to its actual conditions; to those who pay contribution continuously for long period of time, premium basic pension can be designed. Increased and premium basic pension funds should be funded by the local governments.
    b) The balance of individual account should be annuitized with annuity factor of 139 per month (in accordance with the current Enterprise Pension System in urban areas). If the contributor dies, the capital balance in its individual account, apart from the co-contributions from governments can be inherited. The government co-contribution should be used to pay for other pensioners' benefits.
5. The pension benefit can be claimed by rural registered residents above 60 years old who have not benefited from urban Enterprise Pension System. And pensioners can claim benefit on monthly basis.
6. Upon implementation of the New Rural Pension Scheme, those who are already 60 and above and who are not entitled to urban pension benefits do not need to contribute and can get benefit on monthly basis, but their qualified children should pay their contributions; if the person's age has 15 years less than the retirement age, they may contribute accordingly to the actual remaining years or pay in lump sum up to maximum of 15 years; if the person's age has 15 years more than the retirement age, he should pay by year and accumulated contribution should be no less than 15 years.

ON June 7th 2011, the State Council Document (2011) No 18 announced "Guidelines towards Development of Urban Residents Social Pension Insurance Pilot Project" (URSPP). Apart from the target policy population and contribution levels (which stipulated 10 levels from RMB 100 to RMB 1000 per head per year instead of five in NRPP), all the other terms and conditions are the same as the NRPP.

Appendix 2. Zhejiang Aggregate Model Summary

The model is a projection of economic aggregates, focused on the labour force, wages, and social security entitlements. There is no endogenous link between the parameters. But the modelling does allow realistic settings of those aggregates important in determining pension outcomes, including the implicit pension debt and pension reserve cash flows through time. The control panels below provide a list of the basic information and changeable parameter settings.

1. Macroeconomic Structure and Assumptions
   - Inflation Assumptions: all parameters are assumed to be real.
   - Real Investment Return Assumption: the underlying assumed investment return (AIR) is the current nominal yield of long term government bond less the expected inflation. The central case assumption of the AIR is 2% per annum. We also run projections at 0% and 4% for sensitivity analysis.
   - Real Wage Growth Assumption: real wages are assumed to grow at 8% per annum in 2004. Convergence to global growth is assumed: the rate is assumed to gradually reduce to2% in 2020, and to continue at 2% thereafter.[31]

2. Pension Demographic Assumptions
   - Current Age Profiles Of The Contributors And The Pensioners: the typical age patterns are derived as the average age distributions of two typical counties.
   - Coverage Expansion Patterns: there are broadly two types of coverage expansion in the current social security system, which are considered separately in our aggregate model.
     - One is due to the natural expansion. The young workers join the system as long as they join the work force. We assume that the numbers of young joiners are about 2.5% of total active contributors in 2003 and about 1% of total population in 2050.
     - The other is due to the structural pension reform due to the migration and coverage extension to the private sector. Structural expansion is set at 21% of the contributor members in 2003 per annum, decreasing gradually to zero in 2020, at which point we assume the system will be in steady state and there will be no more structural coverage expansion. The 21% in 2004 comprises 11% migrant workers and 10% urbanized workers[32].
   - Mortality Assumptions and Longevity Adjustment: the Chinese Life Table 2000 estimated by World Health Organisation is the benchmark of the mortality assumption in our model. We also estimate the life tables for year 2001 and thereafter till 2050 using a set of annual mortality improvement factors.[33]
   - Other Important Assumptions
     - Other Pensioner Intakes: This value is set at 5% of the 2003 pensioner stock, decreasing to zero in 2020.
     - Inactive Contributor Ratios: provincial data indicates the average inactive ratio is about 7.6%.
3. Policy Parameters
   - Contribution Rate: the statutory contribution rates are 20% employer contribution and 8% individual contribution. A 28% overall contribution rate is used in our aggregate model. Because the average wage of contributors is less than the published average wage, we adjust this by what we term the

[31] The average rate of real wage growth in the current developed economies is used as a proxy in the sense that the Chinese economy will be converging to track of the global economy growth in 2020.

[32] Urbanized workers here referred to those who have changed from rural Hukou to urban Hukou and those with urban Hukou but join the urban enterprise pension at later ages.

[33] No official mortality improvement factors are available for Chinese population. We borrow the 100-year Australian mortality improvement factors in the sense that two countries are supposed to have similar longevity patterns in next 50 years according to similar life expectancy trends estimated by UN population division.

Contribution Wage Factor (CWF) – the ratio of the average wage of contributors to the official average wage. The CWF value is taken from county data.

- Statutory Retirement Age: the current retirement ages are 60 for males and 50 for females. Model users can adjust the targeting retirement ages in 2020 to analyse alternative financial outcomes over next 50 years.
- Average Replacement Rates: the historical effective pension escalation was around 50% of the real growth of province wage: a phase-in process is used to model the future average replacement rates for the transition period from 2004 to 2020 using current policy settings.
- Exogenous New Pensioners: actual data are used in the model.
- Average Age Of New Members: the historical average age of new members are 33 for males and 31 for females due to the transition effect of the structural expansion till 2020. After 2020, we follow a Poisson distribution, in which the average ages of new-member are set as 23 for males and 21 for female.

4. Key formulae (where x is attained age and t is the time)

$$All(x,t) = Con(x,t) + Pen(x,t) \quad (1)$$

$$All(x,t) = All(x-1,t-1)\times[1-q(x-1,t-1)-lapseRatio(x-1,t-1)] + newCon(x,t) + exPen(x,t) \quad (2)$$

$$Pen(x,t) = Pen(x-1,t-1)\times[1-q(x-1,t-1)] \text{ if } x < retireAge \quad (3)$$

$$Pen(x,t) = Num(x,t) \text{ if } x \text{ ? } retireAge \quad (4)$$

$$Con(x,t) = All(x,t) - Pen(x,t) \quad (5)$$

$$ActiveCon(x,t) = Con(x,t)\times[1-sleepingRatio(x)] \quad (6)$$

$$newCon(x,t) = naturalExpansion(x,t) + structuralExpansion(x,t) \quad (7)$$

$$pensionTax(x,t) = Con(x,t)\times Wage(t-1)\times cwf(x)\times 28\% \quad (8)$$

$$pensionBen(x,t) = pen(x,t)\times Wage(t-1)\times replacement(t) \quad (9)$$

$$DependentRatio(t) = \frac{ActiveConM(t) + ActiveConF(t)}{PenM(t) + PenF(t)} \quad (10)$$

$$NetCashFlow(t) = TotalContribution(t) - TotalBenefits(t) \quad (11)$$

where All stands for all system members, Con stands for contributors number and Pen stands for Pensioners number, x is the attained age and t is the year; $cwf(x)$ is the average contribution wage factor at age x; the sleeping ratio (inactive ratio) is the ratio of contributors who are in the system but not paying contributions.

Basic Information

Parameter Name	Default Value
Social Pooling Region	Zhejiang
Data Year	2003
Population	46,796,000
Total Contributors	6,570,000
Total Inactive Contributors	500,000
Total Retirees	1,270,000
Total Contributions (M)	18,626
Total Pensioners (M)	12,887
Fund Balance (M)	14,700
Using Default Age Structure?	0 for No, 1 for Yes

External Economic Assumptions

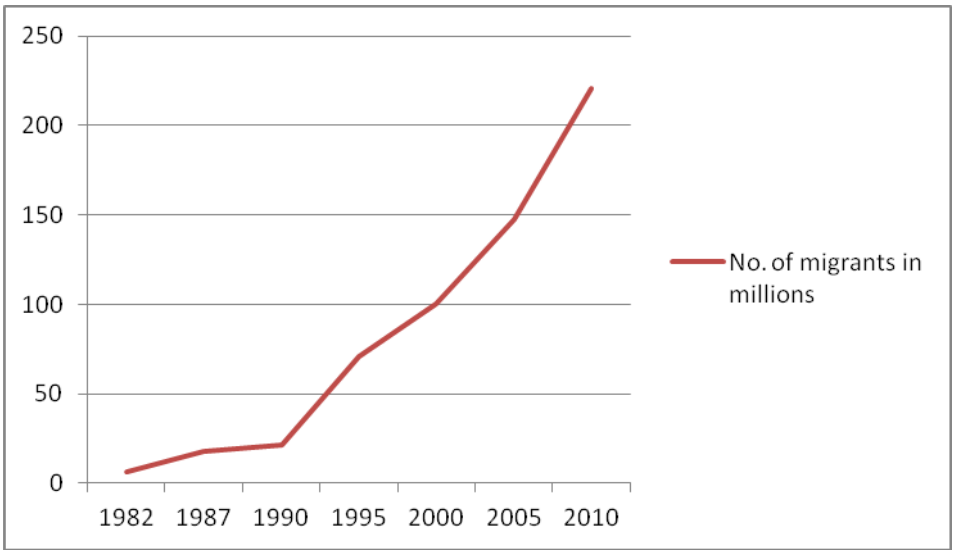
Parameter Name	Year	Default Value
Wage Growth Projection	2004~2050	low-1; mid 0; high 1
High Wage Growth	2004	10.0%
Medium Wage Growth	2004	8.0%
Low Wage Growth	2004	6.0%
High Wage Growth	2020~2050	3.0%
Medium Wage Growth	2020~2050	2.0%
Low Wage Growth	2020~2050	1.0%
High Real Investment Return	2004~2050	4.0%
Medium Real Investment Return	2004~2050	2.0%
Low Real Investment Return	2004~2050	0.0%

Policy Parameters

Parameter Name	Year	Default Value
Natural Expansion % (of total active contributors)	2004	2.5%
Average Age of New Members (Male)	2020~2050	23
Average Age of New Members (Female)	2020~2050	21
Structural Expansion %	2004	6.0%
Structural Expansion %	2020	0.0%
Structural Expansion %	2050	0.0%
Inactive Ratio %	2004	10.0%
Male Retirement Age	2020~2050	65
Female Retirement Age	2020~2050	55
External Pensioners %	2004	5.0%
External Pensioners %	2020	0.0%
Settle Down Age - Male	2004~2050	17
Settle Down Age - Female	2004~2050	17
Contribution Rate	2020~2050	28%
Contribution Wage Factor%- male	2003~2050	70.4%
Contribution Wage Factor%- female	2003~2050	67.2%
Replacement% Male	2003	61.5%
Replacement% Female	2003	52.9%
Replacement% Male	2020~2050	52.0%
Replacement% Female	2020~2050	44.5%

CHARTS 1 – 3.

Chart 1: Migration in China from 1982-2010



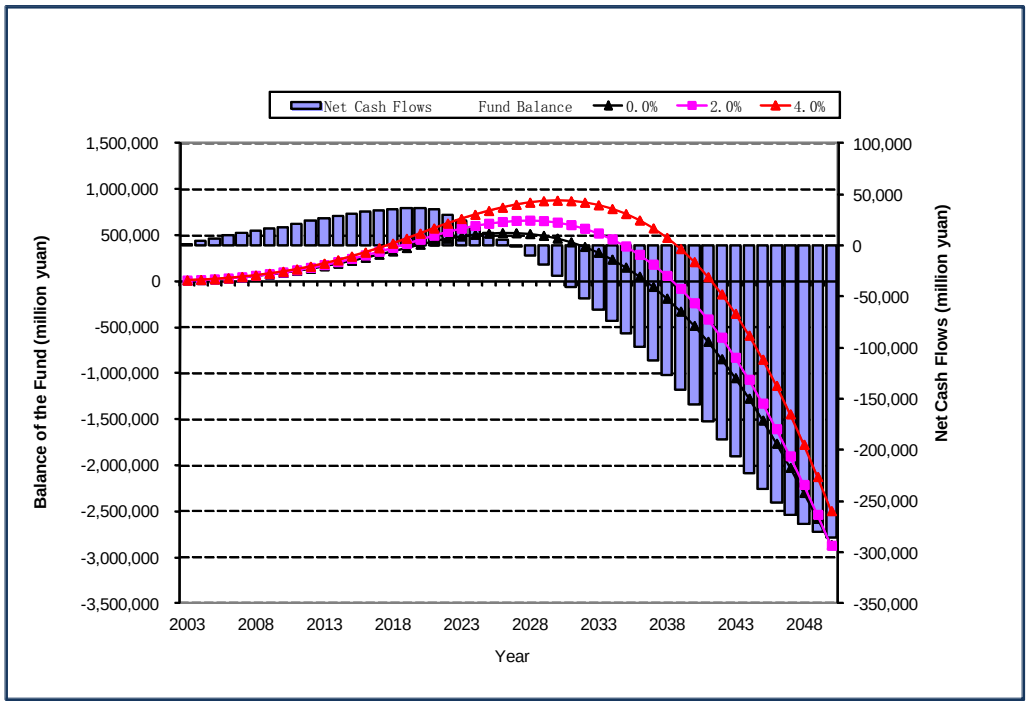
Note: data from NPFPC-MPS 2010, 2011.

Chart 2: Migrant Workers Social Security Coverage from 2006-2010 (unit: 1000 persons)

Source: Statistic Report on Labour and Social Security in China, 2006, 2008, 2010

Chart 3: Simulations for Zhejiang Pension fund balance with and without migrant members

a): With migrant workers in the urban enterprise pension system:



b) Without migrant workers in the urban enterprise pension system: