Why China can afford (and benefit from) a generous unfunded pension system

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The design of the pension system is a hot policy issue in China, given its fast-ageing population. This column discusses how different pension systems could allow different generations to share the benefits of high growth. The authors argue that a reform of the current system is necessary to achieve financial sustainability. However, delaying its implementation is advisable on the grounds of its effect on income inequality.

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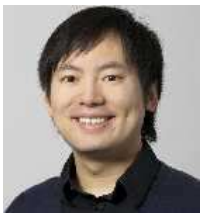

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Sharing high growth between generations

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China faces a sharp demographic transition. The total dependency ratio has fallen from 75% in 1975 to 37% in 2010. This change is due to the combination of high fertility in the 1960s and the family planning policies introduced in the 1970s. The expansion of the labour force implied by this transition has contributed to economic growth. However, China is now at a turning point – by 2040 the old-age dependency ratio will have increased from the current 13% to 39%. The ageing population threatens, on the one hand, the viability of the traditional system of old-age insurance – the share of elderly without children who can actively support and care for the parents is growing, due to shrinking average family size. On the other hand, it undermines the fiscal viability of redistributive pension system.

The common wisdom is that the best response to such adverse demographic dynamics is to switch to a pre-funded pension system (see, for instance, Feldstein 1999, Feldstein and Liebman 2006 and Dunaway and Arora 2007). However, there is no consensus. Barr and Diamond (2008) argue that China should not reform the pension system in a pre-funded direction.

In Song et al. (2014), we study the extent to which alternative pension systems can allow different generations to share the benefits of high growth in China. The current Chinese pension system has two tiers. The first pillar is a standard transfer-based basic pension system with resource pooling at the provincial level. The second pillar is based on individual accounts. In spite of this notional distinction, the system has a low capitalisation, and hinges de facto on the contributions of workers although it permits, as does the US Social Security system, the accumulation of a trust fund to smooth the ageing of the population. The current replacement ratio is relatively generous (ca. 60% on average), although it has a limited coverage. Only a fraction of the urban workers, estimated to be about 60% of the workforce, is currently enrolled in the system. Rural workers earn no pension, although a new limited rural pension programme was launched in 2013.

Social bail-out of unlucky generations

In many respects, China today is reminiscent of Western nations when these first introduced their modern pension systems. For instance, the US introduced Social Security in 1935 to curtail poverty among the generation of elderly whose wealth had been wiped out by the great depression. The pension systems in the West expanded significantly after WWII, at a time when growth rates of output (and population) were large. In these countries, the relatively poor initial old generations were

largely 'bailed out' by the old-age programmes – they received pension benefits without having paid pension contributions during their working life. The initial systems had a large pay-as-you-go component, implying that workers' contributions were used to finance current pension benefits, instead of being saved to finance the future the pension benefits of those who paid the contributions. Similarly, a booming China faces the challenge of bailing out the unlucky generation that entered the labour force at the time of the 'cultural revolution', and that contemplates retirement having contributed little-to-nothing to the pension system.

Intergenerational inequality is indeed important in today's China. The present value of earnings for a worker entering the labour force in 2000 is six times as large as that of a worker entering in 1970, before the start of economic reforms. While young Chinese workers earn much higher wages than did their parents, poverty among the elderly is pervasive, aggravated by the gradual demise of traditional family insurance.[1]

We calibrate a multi-period overlapping generation model to the Chinese economy prior to 2013 (based on Song et al. 2011) and use it to generate future wage and interest rate sequence. Our main quantitative findings are that:

The current is not financially viable; given its current statutory rules and the demographic outlook, the present value of the promised benefits exceeds the present value of the contributions. This means that sooner or later a reform that either increases contributions or reduces benefits is necessary.

Despite such imbalance (that in turn is due to the demographic transition), China can afford to design its reform so as to keep intergenerational redistribution high during the next 40 years and to bail out the current generation without imposing a major burden on its future generations.

China is 'quasi dynamically inefficient'

The intuition for our result is rooted in a classical argument in economics. It says that if the interest rate on savings were lower than the growth rate of aggregate wages (and, hence, of the tax base), then a pay-as-you-go system would be self-financing. Diamond (1965) labels such a scenario (when it persists in the long-run) as a 'dynamically inefficient' economy. In dynamically inefficient economies, the introduction of a pay-as-you-go is a win-win situation where all generations – including the future ones – are net benefactors of the system. However, if the economy is dynamically efficient, there is no free lunch, and some generations must pay a price. Whether or not China is dynamically efficient, it faces a long transition during which paying generous transfer to low-income retirees is cheap. The bill that will be presented to future generations entering the labour force after 2050 will be surprisingly low, given the much higher wages that these will earn.

Welfare criterion: A highly forward-looking social planner

We use a calibrated model to assess quantitatively the financial sustainability and welfare properties of alternative reforms. In line with previous studies (e.g., Sin 2005), we find that the current pension system is not financially sustainable, due to the unfavourable demographic transition that will increase the old age dependency ratio in coming years. The welfare effects of alternative sustainable reforms are evaluated from the perspective of a benevolent planner who weighs the utility of different generations with a geometrically declining weight. We take as a conservative benchmark a highly patient (i.e., forward-looking) planner who has no desire to redistribute resources across generations in mature economies (or, equivalently, in the steady state of the Chinese economy). This planner has an annual discount rate of 0.5%, being closer to the low social discount rate advocated by Stern (2007) than to that advocated by Nordhaus (2007) in the debate on environmental policies. Such a low discount rate (i.e., a high weight on future generations) translates in our context into a high concern for the cost imposed on future generations to bail out the poor initial generations. The low-discount planner is a conservative benchmark; the optimal pension system would be even more redistributive if the choice were entrusted to a more impatient planner endowed, as in Nordhaus (2007), with a social discount rate equal to the market interest rate.

Alternative pension reforms

As a benchmark, we consider an immediate reform adjusting benefits so as to make the system long-run sustainable (in the sense that the benefits and taxes would not need any future

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adjustment). This policy, which we label as the benchmark reform, involves a draconian permanent reduction in the replacement rate, from 60% to 39%, for all workers retiring after 2012 without reneging on the outstanding obligations to current retirees. This implies the accumulation of a large pension fund until 2052 to pay for the pensions of future generations retiring in times when the dependency ratio will be very high.

We consider, then, three alternative reforms.

- The first reform is a *delayed reform*, by which the current rules of the Chinese system remain in place until 2050 (which we show to be the optimal delay).

Thereafter, benefits are permanently reduced so as to balance the pension system in the long run. This reform is equivalent to letting all current workers stay in the existing system and letting all workers entering in the future be in a new and less generous pension system. This policy yields large welfare gains for the transition generations relative to the benchmark reform in 2013. The cohorts retiring between 2013 and 2050 would enjoy welfare gains equivalent, on average, to a 16% increase in their lifetime consumption. Later cohorts would only suffer negligible welfare losses in the form of a three percentage point reduction in the future replacement ratio.

Figure 1. Comparisons between an immediate ('benchmark') draconian reform and a delayed reform, implemented in 2050

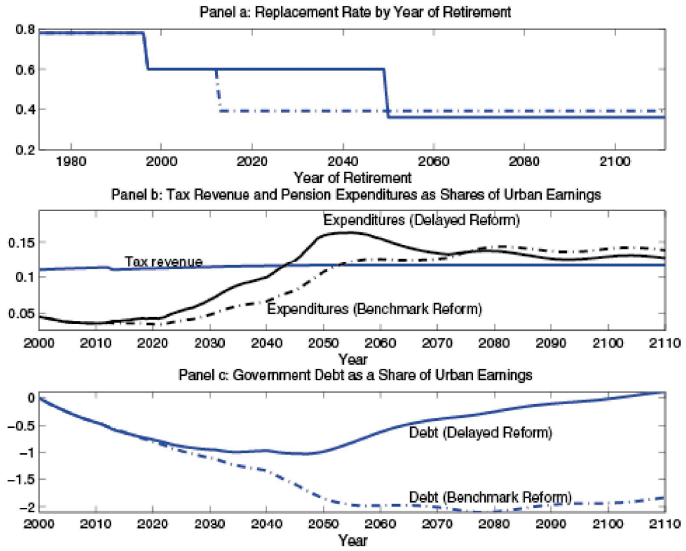


Figure 1 shows the evolution of the replacement rate in the benchmark reform (panel a, dashed line) compared with the case in which the reform is delayed until 2050. Panel b shows tax revenue and expenditures, expressed as a share of aggregate urban labour income, for the benchmark reform (dashed curve) and the delayed reform (solid curve). Finally, panel c shows the evolution of government debt, expressed as a share of aggregate urban labour income (the benchmark reform is dashed and the delayed reform is solid). Negative values indicate a surplus. Note that, as anticipated above, the immediate reform implies the build-up of a large government surplus to finance the future pension system when the dependency ratio will be higher.

- The second reform is a *fully funded* reform that replaces the defined benefit transfer-based pension with a fully funded individual account system.

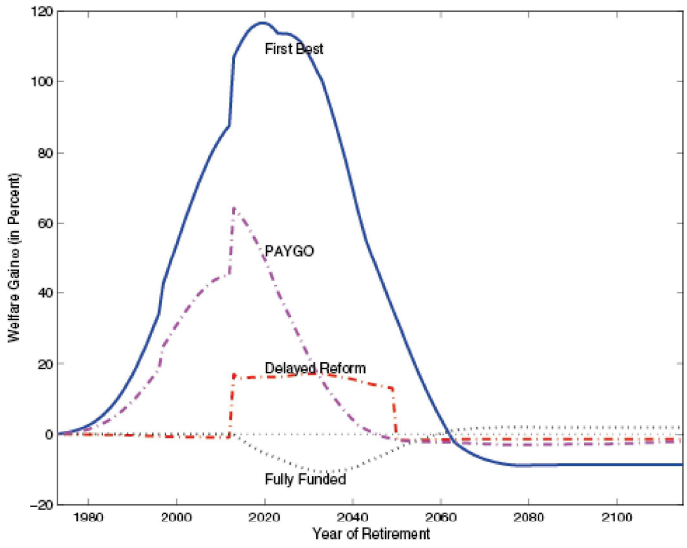
To honour existing obligations, the government issues bonds to compensate current workers and retirees for their past contributions. A standard trade-off emerges – all generations retiring after 2059 benefit from the fully funded reform, whereas earlier generations lose. On the one hand, such a reform reduces tax distortions on labour supply. On the other hand, it eliminates a redistributive policy that the planner values. We find that both the low-discount planner and, a fortiori, the Nordhaus planner prefer the delayed reform to the fully-funded reform.

- The third reform is switching to an unfunded pay-as-you-go system where the replacement rate is endogenously determined by the dependency ratio, subject to a sequence of balanced budget conditions for the pension system.

Given the demographic transition of China, the pay-as-you-go system delivers very generous pension benefits to early cohorts at the expense of the generations retiring after 2045. This reform yields substantial welfare gains by allowing the poorer current generations to share the benefits of high wage growth with the richer generations entering the labour market when China is a mature economy. The gains outweigh the losses originating from the larger labour supply distortion relative to the fully funded reform.

Figure 2 displays welfare gains for each cohort of the alternative reforms described above relative to the benchmark reform. The gains are expressed as percentage increases in consumption equivalent relative to the benchmark reform. As discussed above, the pay-as-you-go and the delayed reform yield large welfare gains to the earlier generations, and small losses for the generations entering the labour market after 2045 and 2050, respectively. In contrast, the fully funded reform imposes sizeable losses on the earlier generation, and delivers small gains for the future generations.

Figure 2. Welfare effects of alternative reforms (expressed in terms of percentage consumption equivalent changes)



The results above accrue in a standard neoclassical model which takes into account the distortions to savings and labour supply that a more generous pension system would entail. The key for the results are a high wage growth and a low rate of return on savings. The same model yields in fact mainstream normative predictions for mature economies. For instance, in an economy where wages grow at a constant 2% per year, the planner would prefer a fully funded reform (or, alternatively, the immediate draconian reform) to a delayed reform or to a pure pay-as-you-go system.

Appropriate policies and institutions

Our analysis illustrates a general point that applies to fast-growing emerging economies. Even for economies that are dynamically efficient, the combination of a prolonged period of high wage growth and a low return on financial savings makes it possible to run a relatively generous pension system over the transition without imposing a large burden on future generations. The sharp contrast of the normative prediction of our theory across developed and emerging economies illustrates the general principle that mechanically transposing policy advice from mature to developing or emerging economies may be misleading, as argued by Acemoglu et al. (2006).

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Footnote

1 Cai et al. (2006) document that, although retirees in urban China receive transfers from their children in response to negative income shocks (e.g., pension arrears), such transfers provide only very limited insurance. Their study concludes that improving the public pension system is unlikely to lead to any significant crowding out of private transfers. This conclusion is shared by Park et al. (2012) who document that, irrespective of the public pension system, the effectiveness of the informal private insurance system declines over time as economies develop (an example being the recent history of Latin America), since the elderly will have fewer children and more of them will live separately from their children.