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- Legros, Florence. 2003. Notional defined contribution: A comparison of the French and German point systems. Paper presented at the World Bank and RFV Conference on NDC Pension Schemes, Sandhamn, Sweden.
- Palmer, Edward. 2000. The Swedish pension reform model—Framework and issues. World Bank Pension Reform Primer Social Protection Discussion Paper no. 0012. Washington, DC: World Bank.
- Settergren, Ole. 2001a. The automatic balance mechanism of the Swedish pension system—A non-technical introduction. *Wirtschaftspolitische Blätter* (4/2001) 339–49. <http://www.forsakringskassan.se/sprak/eng/publications/dokument/aut0107.pdf>.
- . 2001b. Two thousand five hundred words on the Swedish pension reform. Paper presented at workshop on pension reform at the German Embassy, Washington DC.
- Swedish Pension System. 2005. *Annual report*. Stockholm: Swedish Social Insurance Agency. <http://www.fk.se/filer/publikationer/pdf/par05-e.pdf>.
- Valdes-Prieto, Salvador. 2000. The financial stability of notional account pensions. *Scandinavian Journal of Economics* 102 (3): 395–417.

## Comment Jeffrey Liebman

Notional defined contribution (NDC) systems are the latest fad in social security retirement system design, having been adopted in the past decade in Sweden, Italy, Poland, Latvia, and Mongolia. Additional countries are looking seriously at the NDC model. For example, there is currently a debate raging in China about the future of its social security system.

The Chinese pension law on the books says that China is implementing a funded defined contribution (DC) personal retirement account (PRA) system. Unfortunately, local governments responsible for collecting the revenues for the personal accounts have been diverting the funds to other uses—resulting in what is known as the “empty accounts” problem. Some western experts have been arguing that China should follow through with the setting up of funded accounts—that the establishment of clear property rights to the accounts will minimize the chance that local governments continue to misappropriate the funds (Feldstein and Liebman 2006). Other experts have argued that China should adopt an NDC system (Ahser et al. 2005)—an approach that would result in the accounts remaining permanently empty.

The fundamental features of an NDC system are that it is pay-as-you-go and that there is a transparent relationship between contributions and future benefits, with benefits defined by the accumulation of past payroll tax

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contributions at a given interest rate and with no redistribution from high earners to low earners. Indeed, assuming that the annuitization factors do not vary with the size of accumulated balances, such systems are actually regressive because high-balance individuals will, on average, live longer and receive payouts for more years, a perverse sort of redistribution that is offset in the U.S.-style defined benefit (DB) system by a progressive benefit structure.

The two potential advantages of the NDC approach relative to a traditional DB system result directly from the transparent link between contributions and benefits. First, there will be fewer labor supply disincentives. Part of the reduction in labor supply disincentives comes from the lack of redistribution from lifetime higher earners to lifetime lower earners in an NDC system. This component reflects a standard equity-efficiency trade-off and may or may not be desirable depending on one's tastes for redistribution. But another part comes from increasing workers' awareness of the marginal retirement benefits they earn per hour of work. If the complex benefit formulas of traditional DB systems cause workers to ignore the incremental benefits per hour of work and to instead perceive the Social Security payroll tax as a pure tax, then switching to an NDC system could improve labor supply incentives (a switch from a traditional DB system to a PRA system also has the potential to produce this improvement in labor supply incentives. See Auerbach and Kotlikoff 1987). With this channel, there is no offsetting loss of redistribution. Moreover, an NDC system avoids the kinds of retirement incentives that the Goda, Shoven, and Slavov paper (chapter 1 in this volume) documents.

The second potential benefit of the transparent link between contributions and payments is that it gives governments a way to resist pensioner demands for benefit increases. With an NDC system, the government can simply explain that people's benefits are what they deserve based upon their contributions. This consideration is said to have motivated Italy's adoption of the NDC approach.

What struck me as I read this excellent chapter by Auerbach and Lee is how far behind research on NDC systems is compared with research on PRA and traditional DB systems. While there has been some notable NDC research (Holtzmann and Palmer 2006; Valdes-Prieto 2000), countries such as Sweden have erred in designing some of the details of their NDC systems quite simply because the type of analysis done in this chapter was not available at the time the design choices were made.

That said, this chapter is not really about NDC systems at all. It is about the much broader topic of how one designs automatic stabilizers in pay-as-you-go social security systems, whether they are NDC systems or DB systems. The presence of an automatic stabilizer is not a fundamental feature of an NDC system.

In particular, the chapter studies four features of the Swedish NDC system that cause benefit levels to depend on realized economic and demographic conditions, thereby helping to keep the system in balance:

1. The rate at which tax payments are accumulated forward to determine a worker's notional account balance at retirement. In the Swedish system, this rate is based upon the growth rate of average wages.
2. The annuity factor for converting notional account balances to retirement income, a factor that is adjusted in the Swedish system based on contemporaneous mortality probabilities.
3. Postretirement adjustments to retirement benefit levels that occur based on the growth rate of average wages.
4. A braking mechanism that reduces benefits if the system's assets become too low relative to its liabilities.

Studying the stability of such a system requires a stochastic simulation model that incorporates both demographic (mortality and fertility) and economic (productivity growth and interest rate) factors and that is linked to a cohort-by-cohort model of social security finances. The authors are uniquely qualified to develop such a model. What they find when they do so is that the Swedish NDC system is not as stable as one might like, with the system accumulating large balances in a significant fraction of simulation runs and with later cohorts receiving higher rates of return than earlier ones. Auerbach and Lee show, however, that with two fairly simple modifications, the system can be made much more stable. First, Sweden accumulates contributions at the wage growth rate, but the authors show that NDC system are more stable if they accumulate benefits based on the sum of wage and population growth. The intuition behind this result is that it is the total earnings base, not just the average wage, that determines the level of benefits that can be supported with a given tax rate. Second, the braking mechanism in the Swedish system is an asymmetric one. Benefits are adjusted downward if the system becomes underfunded, but they are not increased when the system starts to accumulate assets. Auerbach and Lee show that a symmetric brake, applied continuously, leads to much greater stability. Because these modifications are straightforward to implement, it seems likely that the analysis in this chapter will lead rather quickly to improved system design by future adopters of NDC systems.

The payoffs to this research need not be limited to NDC systems. A similar set of stabilizers could be applied to the U.S. DB system, achieving the stability benefits illustrated in the Auerbach-Lee analysis without sacrificing the redistributive nature of the U.S. benefit formula:

1. The United States already implicitly accumulates contributions at the wage growth rate via the wage-indexing provisions of the average indexed monthly earnings (AIME) calculation.

2. It would be straightforward to have the U.S. primary insurance amount (PIA) formula include a multiplier to adjust annually for changes in longevity.

3. Similarly, postretirement benefit levels could be adjusted based not only on the Consumer Price Index (CPI) but also on wage and population growth rates.

4. A braking mechanism could be introduced in the United States.

I, therefore, suggest that the authors write a follow-up paper that simulates the effects of applying automatic stabilizers to the current U.S. system. Doing so would illustrate that it is possible to obtain the benefits of stabilization, while preserving redistribution based upon lifetime income. I would also suggest that the authors extend their analysis to include simulations in which the stabilization features work via adjustments to payroll tax rates, rather than solely via changes in benefit levels. It seems unlikely to be optimal to have all stabilization occur only on the benefit side.

## References

- Asher, Makul, Nicholas Barr, Peter Diamond, Edwin Lim, and James Mirrlees. 2005. *Social Security reform in China: Issues and options*. Policy Study of the China Economic Research and Advisory Programme. <http://econ-www.mit.edu/files/691>.
- Auerbach, Alan, and Lawrence Kotlikoff. 1987. *Dynamic fiscal policy*. Cambridge, UK: Cambridge University Press.
- Feldstein, Martin, and Jeffrey Liebman. 2006. Realizing the potential of China's social security pension system. *China Economic Times*, February 24, 2006.
- Holtzmann, R., and E. Palmer, eds. 2006. *Non-financial defined contribution (NDC) pensions schemes: Concept, issues, implementation, prospects*. Washington, DC: World Bank.
- Valdes-Prieto, Salvador. 2000. The financial stability of notional account pensions. *Scandinavian Journal of Economics* 102 (3): 395–417.