ASSESSING THE NOTIONAL DEFINED CONTRIBUTION MODEL

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AN ISSUE IN BRIEF
CENTER FOR RETIREMENT RESEARCH AT BOSTON COLLEGE
OCTOBER 2004, NUMBER 23

INSIDE

Introduction

The structure of pension systems varies by two key dimensions: the way in which benefits are determined and the way in which they are financed. The determination of benefits follows one of two main methods: (1) the defined benefit approach, in which benefits are based on a formula that relies on how much workers make and how long they work; and (2) the defined contribution approach, in which benefits are typically determined by the amount contributed and the accumulated earnings on those contributions. Pension financing also follows one of two general approaches: (1) pay-as-you-go, with contributions from current workers and their employers used to pay the pensions of current retirees; and (2) funded, with contributions invested in individual accounts that are used by workers to pay for their own retirement benefits.

Today most national pension systems are based in large part on the defined benefit model and are financed on a pay-as-you-go basis. But as many of these schemes have matured and some of their limitations have emerged, policymakers have begun to search for alternatives. One alternative that has received a great deal of attention since the early 1980s is the funded defined contribution model of individual accounts. Another alternative emerged in the mid-1990s: the notional defined contribution (NDC) model. It also features individual accounts, but they are financed on a pay-as-you-go basis. This issue in brief draws on evidence from six countries that have introduced NDC schemes: Sweden (1994), Italy (1995), Latvia (1996), the Kyrgyz Republic (1997), Poland (1999), and Mongolia (2000). It describes the NDC model, reviews its major strengths and limitations, and assesses how widespread it may become in the future.

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What Is an NDC Plan?

An NDC system "mirrors the philosophy" of a funded system of individual accounts, but with a pay-as-you-go financing structure.[1] The key distinction with the defined benefit model is that NDC benefits are defined not by a formula based on wages and years of service, but by a worker's accumulated account balance at retirement. In this way, benefits are closely linked to contributions, a key goal of many pension reformers who seek to improve labor force incentives. NDC plans vary in size and may exist either by themselves or as one component of a pension system that also includes a funded account (see Table 1).[2]

Table 1. Taxes as Percent of Payroll for NDC and Funded Accounts in Selected Countries

		Portion to:	
	Total Payroll Tax Rate	Notional Account	Funded Account
Latvia	33.0%*	20.0%	2.0%
Italy	32.8	32.8	0.0
Kyrgyz Republic	29.0	29.0	0.0
Poland	19.52	12.22	7.3
Mongolia	19.0	19.0	0.0
Sweden	18.5	16.0	2.5

Source: Williamson and Williams (2003).
*Note: For Latvia the total payroll tax is 33 percent, but only 22 percent of payroll is currently credited to the NDC and the funded accounts. The balance is used to pay current pension obligations. The 2 percent figure for the funded accounts will increase to 10 percent by 2010 and the NDC figure will decrease to 10 percent.

Benefits under NDC Plans

Under an NDC plan, employees have an individual account that reflects the amount of payroll taxes that they and their employer pay each year.[3] These accounts are notional accounts, meaning that they serve a bookkeeping purpose only. No assets are actually deposited in the accounts as the payroll taxes are immediately used to fund benefits for current pensioners — so, in contrast to a funded account system, an NDC system is financed primarily on a pay-as-you-go basis. The NDC account earns a "virtual" rate of return that is usually tied to the growth of economy-wide wages or other economic factors.[4]

When the employee retires, the accumulated balance in the notional account is converted to an annuity, which is based on unisex life expectancy at the time of retirement. Thus for two workers with the same notional account balance, the one who retires at a younger age will receive a smaller monthly pension to equalize lifelong benefits. The procedure for calculating annuity benefits automatically incorporates changes in life expectancy over time, although countries vary with respect to how often the estimates are updated.[5] Accounting for rising life expectancy means that monthly benefits are reduced so that they can be spread over a longer lifespan. This automatic adjustment for life expectancy is one feature that helps keep NDC systems in financial balance.

Once individuals retire, a variety of mechanisms are used to increase benefits each year. In countries such as Italy and Latvia, the adjustment is for price inflation; but in Poland and Sweden, both price and wage inflation are taken into consideration.[6]

Under an NDC scheme, as under a funded account scheme, some workers may reach retirement age with account balances that are too small to ensure a minimal level of retirement security. For such cases, it is common to include a minimum pension provision, often financed out of general government revenues. In some countries the minimum pension is relatively generous, making the total scheme somewhat redistributive, but in many it is so low as to provide little redistribution.

[1] Brooks and Weaver (2004 forthcoming).

[2] As is typical with major reforms, the shift to an NDC or mixed NDC-funded account system occurs gradually and includes provisions to compensate workers for contributions to the prior pension system. For more details, see Williamson and Williams (2003).

[3] As is typically the case with defined benefit schemes, there is a cap on the level of wages subject to the payroll tax. The level at which this cap is set varies a great deal from one country to another. When the cap is set higher, the wage replacement level of the retirement pension is also higher.

[4] Jappelli, Padula, and Bottazzi (2003).

[5] Chlon-Dominczak (2002); Bender and MacArthur (2000); and Castel and Fox (2001).

[6] Jappelli et al. (2003); Castel and Fox (2001); Chlon-Dominczak (2002); and Palmer (2002).

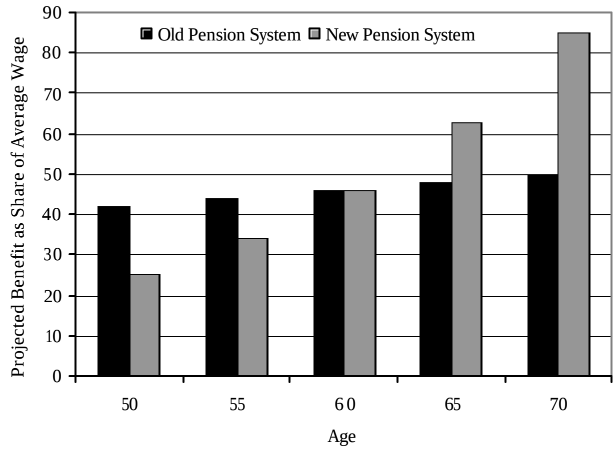
What Are the Strengths of the NDC Model?

Moving to an NDC scheme may be attractive for several reasons. First, and most importantly, it ties pension benefits closely to contributions, which is a key goal of many reformers. Second, since NDC plans operate on a pay-as-you-go basis, they avoid requiring the current generation of workers to pay twice — once for current retirees and once for their own retirements. These "transition costs" may make it difficult politically to move from a pay-as-you-go to a funded system. Third, in contrast to funded account plans, NDC plans carry no financial risk because the rates of return are not dependent on financial markets. Fourth, NDC plans are generally less expensive to operate than funded account plans. Finally, policymakers may find it politically easier to cut promised benefits in the context of creating a new system than to make such cutbacks in an existing public pension plan. In this way, they may be able to establish a pension system that is financially sustainable. Each of these points is discussed in more detail below.

Benefits Closely Linked to Contributions

A major goal of many pension reformers is to establish a tighter link between workers' contributions and their benefits. Such a change can improve labor force incentives by signaling to workers that the longer they work, the more they will receive in retirement. Under defined benefit systems, working beyond the normal retirement age usually adds little, if anything, to an individual's retirement benefit. For example, in Latvia, the old defined benefit system provided only minor increases in replacement rates — benefits as a share of wages — for working additional years (see Figure 1). In contrast, under an NDC system, workers would see their account balances continue to grow based on payroll contributions and the account's rate of return. For example, as Table 2 also shows, the new Latvian system has very strong incentives to continue working; replacement rates for an average-wage earner are projected to jump from 46 percent at age 60 to 63 percent at age 65.

Figure 1. Replacement Rates in Latvia under the Old Defined Benefit Scheme and the New NDC Scheme



Source: Fox and Palmer (2003).

*Note: Results for the old system are based on 1998 average wages. NDC simulations are based on 1996 wages. The guaranteed minimum pension is not included. All models assume uninterrupted employment from age 18.

No Transition Costs

When the goal is to shift from a defined benefit scheme to a defined contribution plan, an NDC scheme will be easier for most nations to finance than a comparable funded account scheme. Under a pay-as-you-go system, the payroll taxes paid by current workers are used to fund the benefits of current retirees. Under a funded system, such as the funded account model, workers save and invest their tax contributions in order to pay for their own retirements. Moving to a funded system often requires substantial transition costs that may be politically unattractive in the short term. These costs arise because some group of workers has to pay both to fund the current generation of retirees and to save for their own retirement. By retaining pay-as-you-go financing, NDC systems avoid these transition costs.

No Financial Risk

Relative to the funded account model, the NDC model is not vulnerable to volatility in financial markets because its rate of return is tied to broad economic indicators like wage growth rather than the performance of stocks and bonds. An NDC system does face economic and demographic risks, but in general the rate of return on its notional accounts will tend to fluctuate less than returns based on financial assets.[7] While a funded account plan may provide a better return over the long run for the average worker, many individuals base their retirement decisions on relatively short-term personal projections of pension benefits. A rapid drop in such assets during the weeks or months just prior to planned retirement could require workers to adjust their retirement plans even when the lifetime average return is quite favorable.[8] An NDC system avoids this need to revise retirement plans.

Low Administrative Costs

The administrative costs for operating NDC schemes will be substantially lower than those associated with funded account schemes because the accounting structure is much simpler. NDC plans require no actual investments, just bookkeeping notations. In contrast, with funded account plans, administrators must keep track of the performance of different investment funds, regulate the ways in which these funds are managed, and keep in touch with the workers who own the funds. When, as is typically the case, administrators contract out the management of these funds to a private firm, they also need to factor in costs for marketing and profits.

Financial Sustainability

One concern facing many pension reformers is how to design a system that is financially sustainable over the long term. The funded account approach meets this goal by definition — workers set aside contributions to finance their own retirements. While the NDC model is not funded, it does address a key challenge to financial balance: rising life expectancy. As noted, when a new retiree's monthly benefits are calculated, life expectancy is a key variable. As lifespans go up, monthly benefits go down. By building in automatic reductions to benefits, this mechanism is intended to help keep payroll tax rates stable.[9] Some NDC schemes also have provisions designed to deal with fluctuations in the size of the labor force. For example, the Latvian and Polish schemes automatically adjust benefits for changes (including reductions) in the number of workers paying into the system. In Sweden, an automatic balancing provision reduces the rate of return credited to the notional accounts if the system is out of financial balance in any given year.

While NDC proponents can make the case that the model helps achieve long-term sustainability, it does not by itself offer a solution for those countries that face a serious short-term imbalance.[10] This consideration is important given that most countries that have turned to the NDC model have done so at a time when their defined benefit schemes were far from financial balance. Several of these countries have found ways to deal with their short-term pension financing problems via the set of reforms that included the introduction of the NDC scheme, reforms that add up to some combination of tax increases and benefit cuts.[11] For example, both Latvia and the Kyrgyz Republic raised their retirement ages when they switched to an NDC system — by five years and three years, respectively.[12] These types of changes tend to reduce replacement rates. For example, replacement rates in Mongolia are expected to drop across the board under the NDC system (see Table 2).

Table 2. Replacement Rates in Mongolia under the Old Defined Benefit Scheme and the New NDC Scheme

Years of Service	Retirement at Age 60	
	Defined Benefit	NDC
40	65.9%	59.1%
35	59.3	51.7
30	52.7	44.3
25	46.1	36.9
20	39.6	29.5

Source: Bender and MacArthur 2000.

[7] Since NDC systems are unfunded, their ability to pay benefits is vulnerable to economic and demographic changes. In response, the systems tend to rely on a variety of mechanisms to ensure that they remain in financial balance.

[8] Williamson (2004). While individuals could significantly reduce their financial risk by shifting to less volatile assets as they age, evidence from 401(k) plans in the United States suggests that many do not follow this strategy (Munnell and Sundén, 2004).

[9] Italy is an exception. Italian pension policy experts recognize that, in order to maintain the current level of benefits, a 5 percent increase in taxes per generation will be required (although this is an improvement from the old pay-as-you-go defined benefit system, under which the required increase would have been 9 percent per generation) (Franco 2002).

[10] Valdés-Prieto (2000).

[11] World Bank (2001).

[12] Castel and Fox (2001).

What Are the Potential Weaknesses of NDC Plans?

Advocates of defined benefit plans and funded account plans both spot weaknesses in the NDC model. Compared to a traditional defined benefit plan, NDC systems tend to be less redistributive, potentially undermining retirement security for low-income workers and for those without a strong attachment to the labor force. Compared to a funded account plan, NDC systems lack the potential economic benefits of advance funding, such as higher national saving, investment, and long-term growth and stronger capital markets.

Less Income Redistribution

NDC systems — like all defined contribution systems — are designed to tie benefits closely to contributions, and thus they are generally less redistributive than defined benefit plans.[13] Less redistribution suggests a greater degree of economic inequality among retirees. Whether or not this outcome is viewed as a limitation of the model depends on the ideology and policy goals of those asking the question. In many industrial nations, it has become increasingly difficult to sustain existing pension benefit levels as defined benefit schemes have matured. As a result, pressure builds, particularly from higher-wage workers, to make the program less redistributive. In some countries, it has proven easier to accomplish this goal through shifting from a defined benefit scheme to an NDC scheme.[14]

While the NDC model typically involves less redistribution than the defined benefit model, it generally does include some redistribution. For example, most countries with NDC schemes provide some notional credit for time spent out of the paid labor force to care for young children.[15] In Sweden, parents who leave the labor force to care for their children can receive up to 4 years of credit for each child.[16]

Less Saving and Investment

Pension reformers who favor the funded account model point to the prospect that it will increase national saving and investment, which tends to boost a nation's capacity for long-term economic growth. Since the NDC model is not funded, it does not have the potential to directly generate any new saving.[17]

Funded account systems may also contribute to the development of the banking industry, the insurance industry, and financial institutions more generally, particularly in developing countries. NDC systems are very unlikely to provide a major stimulus to the development of financial markets or institutions.

Are NDC Systems More or Less Transparent than Other Models?

Some analysts argue that the NDC model is more transparent than the defined benefit model. However, much disagreement exists over the meaning of the term "transparent," making it difficult to classify as a strength or a weakness.

The NDC model, like the funded account model, is more transparent in the sense that at any point workers can ask for a statement giving their exact account balance; that cannot be done with the defined benefit alternative. Account statements reflect payroll contributions plus the rate of return, which is tied to a visible economic indicator.

The NDC model is more transparent with respect to redistribution than is typically the case with defined benefit schemes. As discussed above, most NDC systems include some redistributive elements, such as child care credits and minimum pensions. The funds for these no longer come from payroll taxes, but from the government's general revenue.[18] This results in a clear separation between benefits based on contributions and redistribution programs. Redistribution is no longer obscured by

[13] Evidence suggests that in some countries, particularly less developed countries, existing defined benefit schemes have a regressive impact because many low-wage workers never meet eligibility criteria and thus end up ineligible for pension benefits despite having contributed for many years. In such countries, a shift from the defined benefit model to the NDC model may actually reduce the degree of regressive redistribution.

[14] Williamson and Williams (2003).

[15] While NDC schemes often provide caregiving credits, they generally offer less protection for divorced women and widows than do the defined benefit schemes they are replacing.

[16] Sundén (2000).

[17] If the NDC system leads to reduced spending on pensions, it could indirectly boost national saving by improving the government's budgetary balance.

[18] Lindeman (2000).

complex benefit formulas, as it may be in a defined benefit system.

Those who argue that the NDC system is less transparent say that, although it is clear how much is credited to a worker's account, the benefit they will receive upon retirement is less clear than under a defined benefit system. The benefit formula under a defined benefit system is fairly straightforward, while it is much more difficult for workers to estimate their pension based on an NDC formula since the amount paid out is dependent on such factors as changes in life expectancy and average wage growth.[19] And it is difficult for people to figure out monthly benefits from a lump sum amount.

Some analysts also argue that NDC systems are a less politically transparent way of reforming the pension system. Because many of the benefits of an NDC system could be achieved through reforms to the traditional system, NDC schemes may be a form of tactical packaging, allowing policymakers to enact what would be otherwise unpopular reforms, such as benefit reductions.[20] For instance, the agency in charge of pension reform in Poland started its public relations campaign on behalf of the new mixed NDC-funded account system by conducting public opinion polls that showed broad support for the principles behind the new system, making it difficult for elected officials to oppose. However, the consequences of the reforms were never spelled out in these surveys, and respondents were only offered two options.[21] Thus, the advocates of the new system were able to achieve benefit cutbacks while avoiding much of the public debate on the need for these changes or the merits of different approaches.

Will We See More NDC Plans Ahead?

If current trends continue, the NDC model is likely to be adopted by some other transition economies in Eastern Europe and Central Asia. It is likely that we will see additional countries in the European Union adopt an NDC pillar as part of their multi-pillar schemes. The big open question is how pervasive the model will become in the developing nations around the world. One factor that may make it more difficult for these nations to adopt NDC systems is that they typically require a degree of administrative complexity that is greater than a defined benefit system, and developed countries may lack the necessary infrastructure.[22]

The NDC alternative offers a way to shift from the defined benefit model to a less generous defined contribution model without the diversion of payroll tax revenues into funded individual accounts. This alternative is likely to grow increasingly attractive as nations confront the retirement of the baby boom generation and rapid population aging more generally. While the NDC model is currently found in less than half as many countries as the funded account model, in the decades ahead it has the potential to displace the funded account model as the second most prevalent system after the defined benefit system (or a mixed system with a dominant defined benefit pillar).

We are unlikely, however, to see the introduction of NDC schemes in nations, such as the United States, with defined benefit schemes that can be brought into balance with a combination of relatively modest benefit cuts and/or payroll tax increases. We are also unlikely to see such pillars introduced in countries such as Chile and Mexico that have already in large part privatized their schemes or in countries like the United Kingdom and Switzerland that have already made privatization a large component of their mixed systems. It is also unlikely that we will see NDC schemes introduced in nations such as Singapore that have well-institutionalized provident fund schemes (mandatory-funded, government-managed pension plans) in place.

[19] Sundén (2000).

[20] Cichon (1999).

[21] Chlon (2000).

[22] The need to keep up-to-date records on individual accounts for all workers, including many who may not have made contributions for years, and the need to communicate with these workers at least annually, may demand more administrative and information technology resources than many developing nations currently have available. On the other hand, the recordkeeping requirements are less complex than those for a funded account scheme.

Conclusion

For those nations that plan to shift from an existing defined benefit model to a defined contribution alternative, the NDC model, or more likely a multi-pillar scheme that includes a substantial NDC pillar, may well make sense. It will make sense in those nations that have defined benefit schemes that are, or soon will be, very much out of balance and are faced with a political context that rules out the benefit cuts and payroll tax increases that would be needed to bring their schemes into balance. While advocates of the funded account model may suggest a shift to a multi-pillar scheme with a heavy emphasis on a funded account pillar, the required transition costs may make this approach problematic in many countries. The NDC model, in contrast, avoids transition costs by maintaining a pay-as-you-go structure. It also involves much lower administrative costs and pension benefits that are not vulnerable to the volatility of financial markets.

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