THE NOTIONAL DEFINED CONTRIBUTION MODEL: AN ASSESSMENT OF THE STRENGTHS AND LIMITATIONS OF A NEW APPROACH TO THE PROVISION OF OLD AGE SECURITY

John B. Williamson*
Matthew Williams

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Center for Retirement Research at Boston College
550 Fulton Hall
140 Commonwealth Ave.
Chestnut Hill, MA 02467
Tel: 617-552-1762 Fax: 617-552-1750
http://www.bc.edu/crr

John B. Williamson is a professor of sociology at Boston College, and Matthew Williams is a Ph.D. Student in the sociology department at Boston College. The research reported herein was performed pursuant to a grant from the U.S. Social Security Administration (SSA) to the Center for Retirement Research at Boston College (CRR). The opinions and conclusions are solely those of the authors and should not be construed as representing the opinions or policy of SSA or any agency of the Federal Government or of the CRR. The authors want to thank Catherine Sigworth, Stephanie Howling, Giuseppina Chiri, Jenna Nobles, Paulette Castel, Elaine Fultz, Barbara Kritzer, Shari Grove, and Annika Sundén, for their assistance in various ways with the research reported in this paper.

ABSTRACT

Most public old-age pension schemes around the world are based at least in part on the pay-as-you-go defined benefit (PAYGO DB) model. As these schemes have matured and the limitations of this approach have become more salient, pension experts have begun considering alternative models. The Notional Defined Contribution (NDC) model, which is also financed on a PAYGO basis, has emerged as one of the major new approaches. In the years ahead it may be combined with or possibly displace the funded defined contribution model as the major alternative to the PAYGO DB model. Drawing primarily on evidence from NDC schemes in 6 countries (Sweden, Italy, Poland, Latvia, the Kyrgyz Republic, and Mongolia), the goal of this paper is to describe the NDC model and to review its strengths and limitations relative to the major alternatives. A four pillar pension scheme is proposed to illustrate how a NDC pillar might be integrated into a multi-pillar scheme. One strength (relative to the PAYGO DB model) is that it makes a more explicit link between contributions and eventual pension benefits; however, the flip-side of this strength is that it provides less adequate pension benefits to low-wage workers due to the lack of income redistribution. The fiscal burden of the transition is less than that associated with a shift to a funded defined contribution scheme, but NDC schemes lack many of the potential economic benefits associated with funded defined contribution schemes, such as contributing to economic growth. The NDC model may become common among the nations in the process of making the transition from centrally planned to market economies, among Western European nations, and among developing nations. It is less likely to be adopted in nations that currently have fully or partially privatized schemes in place. In the United States, the model will probably get relatively little attention in the debate over Social Security reform, at least for the foreseeable future. However, it is a model that would put workers with low wages and irregular work histories at less risk than the funded defined contribution alternative being actively considered in current debates about Social Security reform in the United States.

Prior to World War II national pension schemes paying modest benefits were in place in many industrial countries and a few developing nations, particularly in Latin America. After the war, conditions were right for the expansion of existing schemes and the introduction of new schemes in nations that did not have them. During the interwar and war years the assets in several of the funded pension schemes were depleted, discrediting the funded pension model. This history, combined with the rapid population growth and rapid increases in wages, contributed to the increased popularity of the pay-as-you-go defined benefit (PAYGO DB) model during the post-war period. While many schemes emphasized the PAYGO DB model, there was much structural variation. Most did build up at least some reserves making them partially funded as opposed to pure PAYGO schemes. The defined benefit was sometimes means-tested, sometimes earnings-related, and sometimes a flat benefit (World Bank, 1994).

In several developing countries in Africa and Asia, provident funds (publicly-managed funded defined contribution schemes) were introduced (Gillion, Turner, Bailey, & Latulippe, 2000). However, this model has declined in popularity in recent years due in large part to the history of paying poor returns, often substantially below inflation (Williamson & Pampel, 1993; World Bank, 1994).

While the trend in recent years has been away from the PAYGO DB model, the preponderance of public old-age pension schemes around the world today are based, at least in part, on this model (Dixon, 1999; SSA, 1999). Defined contribution retirement savings schemes are also found in many nations, but until quite recently they were limited to the national provident funds and to voluntary private and occupational pension schemes. This changed in 1981 when Chile became the first nation to shift from a

PAYGO DB scheme to a mandatory privately-managed funded defined contribution (FDC) personal pension scheme. During the 1990s, a number of other nations around the world, including several in Europe and many others in Latin America took their cue from Chile and either shifted from the PAYGO DB model to the FDC model or, more commonly, to a mixed model that included a FDC pillar in combination with or as an alternative to a PAYGO DB pillar (Kritzer, 2000; SSA, 1999; Williamson, 2001).

Most nations that have relatively mature PAYGO DB schemes in place are facing current or projected problems financing these programs due to a combination of factors such as: program maturation, population aging, prior promises of overly generous benefits, changes in employment patterns (e.g., the trend toward early retirement), and in some cases fiscal problems associated with the transition to a market economy. The shift from a PAYGO DB scheme to a FDC scheme or to a multi-pillar scheme that includes a FDC component has come to be viewed by many public pension experts as a potential long-term solution to the projected financing problems most schemes face (Fox and Palmer, 2001; Holzmann and Stiglitz, 2001; World Bank, 1994).

However, during the mid-1990s yet another model emerged that is based on the concept of *notional* accounts. Pension schemes (or pillars in multi-pillar schemes) based on the notional defined contribution (NDC) model have been introduced in Italy (1995), Latvia (1996), the Kyrgyz Republic (1997), Sweden (1999), Poland (1999), and Mongolia (2000). This paper seeks to describe and assess the strengths of this model relative to the PAYGO DB and FDC alternatives. It seeks to assess the utility of this new model as a potential pillar in a multi-pillar (alternatively referred to as a tier in a multi-tier) old-age security scheme.

THE STRUCTURE OF NDC SCHEMES

The NDC model has some characteristics associated with PAYGO DB models and some associated with FDC schemes. The NDC model (also referred to as the PAYGO DC model) can be viewed as a variant of the PAYGO DB model with a number of provisions designed to assure a much closer link between contributions and benefits (Cichon, 1999). The NDC model is based on PAYGO financing. Funds obtained from payroll taxes are used to finance pension benefits to those currently retired. It differs from a PAYGO DB scheme in that with the NDC scheme an individual notional (unfunded or virtual) account is established for each worker. This NDC account is typically credited (without any funds being deposited) for that portion of payroll taxes (including both employee and employer contributions) that is used to pay pension benefits to others during the person's working years. NDC retirement benefits are then directly linked to these payroll contributions.

Contributions to NDC accounts are notional, not capitalized. If they were capitalized, appreciation from year to year would be based on trends in capital markets, but this is not the case with NDC accounts. The indexing procedure used varies from one country to another, but in all cases it is linked to the change in wages, the wage sum (the total wage base subject to the payroll tax, a measure based on trends in both wage levels and the number of workers contributing), or to GDP growth. In Sweden and Mongolia, the indexing is based on the change in wage levels (Disney, 1999a; Bender & MacArthur, 2000). In the Kyrgyz Republic, it is based on 75% of the change in wage level (Castel & Fox, 2001). In Latvia, the indexing is based on the change in the wage sum (Castel &

Fox, 2001) and in Poland it is 75% of the wage sum (Chlon-Dominczak, 2002). In Italy it is based on GDP growth (Brugiavini & Fornero, 1998).

A distinctive component of NDC schemes is the way in which the starting pension benefit is calculated when the notional assets are annuitized. While there are differences from one country to another, they all incorporate some mechanism to adjust for changes in life expectancy that take place over time. In Sweden, for example, the formula is based on age-specific unisex life expectancies at the time when the worker's cohort reaches age 65 (Sundén, 2000). The procedure used is very similar in the other countries with NDC schemes, although there is some variation with respect to how often estimates of life expectancy are updated (Chlon-Dominczak, 2002; Bender & MacArthur, 2000; Castel & Fox, 2001).

Retirement pensions need to be indexed in some way to keep up with changes in the standard of living (wage increases) or at least inflation (price increases); however, the Kyrgyz Republic has not yet passed legislation to do this (P. Castel, personal communication, July 5, 2002). In Sweden the formula takes into consideration both inflation and changes in the rate of economic growth. If the rate of economic growth is above 1.6%, the annual adjustment exceeds the rate of inflation; if the rate of economic growth is below 1.6%, it falls below the rate of inflation (Palmer, 2001). The goal in Sweden is to adjust the burden of paying for these pension benefits as a function of economic performance in order to keep a balance between payroll tax revenues and pension benefits paid. In Italy and Latvia, pensions are indexed to inflation (Hamann, 1997; Castel & Fox, 2001). In Poland, the indexing is based on inflation plus 20% of any

change in the real (after inflation) wage rate (Chlon-Dominczak, 2002). This means that if real wages fall, the pension benefit will decline (World Bank, 2001).

In some countries, such as Sweden and Poland, the employer and the employee contribute equal shares to the payroll tax; but in Italy, Latvia, the Kyrgyz Republic, and Mongolia, the employer share is larger. In most countries, some of the payroll tax is credited to the NDC account and some is not. In several of these countries (see below) most of the contributions not credited to the NDC accounts are diverted to individual FDC accounts. In Mongolia, that part of the payroll tax not credited to the NDC accounts is used to pay administrative costs as well as to fund disability benefits, survivor benefits, and the minimum pension (Bender & MacArthur, 2000).

In Sweden, the payroll tax is 18.5% -- evenly split between the employer and the employee. Of this amount, 16% is credited to the worker's NDC account (Palmer, 2000). In Poland, the total payroll tax is much higher (32.52%), but the amount credited to the NDC account is actually lower than in Sweden (12.22%) (Chlon-Dominczak, 2002). In Italy, the total payroll tax is 32.8% with 23.91% contributed by the employer and 8.89% by the employee with the full amount credited to the notional account (Brugiavini & Fornero, 1998). In Latvia, the payroll tax is 23.58% for the employer and 9% for the employee with 20% credited to the NDC account (Fox & Palmer, 1999). In the Kyrgyz Republic, the payroll tax is 29% with the employer contributing 24% and the employee 5% (P. Castel, personal communication, July 5, 2002). In Mongolia, the employer contribution is 13.5% and the employee contribution is 5.5% with 15 percentage points being credited to the NDC account (Bender & MacArthur, 2000).

The NDC scheme is typically financed by a payroll tax on income up to a specified earnings cap that varies from country to country. For example, the cap is about 6 times the average wage in Latvia, 2.5 times the average wage in Italy and Poland, and 1.5 times the average wage in Sweden (Fox & Palmer, 1999; Internal Market Directorate-General, 2000; Chlon-Dominczak, 2002; Palmer, 2000). In general, the higher the cap for earnings subjected to the payroll tax the greater the eventual wage replacement rate for the associated pensions.

In each country that has introduced an NDC scheme, there are provisions for making the transition from the old PAYGO defined benefit scheme to the new scheme. When an NDC scheme replaces a PAYGO DB scheme, some way must be found to compensate those who had made contributions for many years to the PAYGO DB scheme; these transition procedures provide a mechanism to do so. In most countries, the transition will be quite gradual with pension benefits for many years being based on a complex weighting of entitlements earned in connection with both schemes; that is, pension benefits are derived in part on the basis of the old scheme and in part based on the new scheme as a function of wage or contribution history, year of birth, and the number of years of contribution to the respective schemes at the time of retirement. Since the first of these NDC schemes was introduced in 1995, it will be several decades before all of those retiring will derive all of their pension benefits on the basis of these new schemes.

In Latvia, there was a translation of acquired pension rights under the prior scheme into a notional credit which was then added to the person's NDC account (Fox & Palmer, 1999). In Mongolia, workers born before 1960 will remain with the prior scheme

(Bender & MacArthur, 2000). In the Kyrgyz Republic, pensions will be based on a weighted sum with one component based on the five best years prior to 1996 and a second based on the notional capital accumulated in the NDC account since 1996. In the Kyrgyz Republic, there is also a third component, the base pension (see below).

The transition process in Poland, Italy and Sweden is more complicated; in all three countries, workers are broken into three categories based on year of birth. In Poland, workers in a specified age range (that excludes the youngest and the oldest workers) have the option of participating in the new scheme; those born after 1968 must participate in the new NDC scheme, those born between 1949 and 1968 have the option of being covered by the new NDC scheme alone or in combination with a FDC scheme, and those born before 1949 must remain with the scheme in place before the NDC scheme was introduced (Chlon-Dominczak, 2002).

In Italy, only those who entered the work force in 1996 and after must participate in the NDC scheme and those with 18 years or more of coverage under the old scheme are required to remain with that scheme. This leaves a group with fewer than 18 years of coverage under the old scheme as of 1996 who had the option to switch to the new scheme. For those who did switch, their pension will be based on a weighted combination of pension credits linked to each of the two schemes (Hamann, 1997).

In Sweden, those born after 1954 will have a pension based entirely on the new scheme. Those born before 1937 will have a pension based entirely on the old system. And those born between 1938 and 1953 will receive a pension based on a weighted average of contributions to the old and the new schemes (Palme, 2003; Sundén, 2000).

It is difficult to make comparisons between nations with respect to likely wage replacement rates for the schemes in various countries. However, it is clear that there will be substantial differences depending on how much of a worker's wage is credited to their NDC account, the way in which notional assets are incremented on a year-to-year basis, the formula used to convert notional assets to an annuity at retirement, and the procedure used to index benefits during the retirement years. Also important is whether we are considering the replacement of pre-tax or after-tax earnings. In Latvia, one estimate is that the new pension will replace 50% of pre-tax earnings (the most commonly used measure) and 75% of after-tax earnings (Fox & Palmer, 1999). In some countries the projection is that the replacement rate will decline over time. In Poland, the wage replacement rate for the NDC is projected to gradually decline from the current 65% to 40% of prior wages for men and from 50% to 30% for women between the retirement of the 1949 and the 1974 birth cohorts (Fultz, 2002a). This gender difference is due to different assumptions about the number of years women and men will contribute and different assumptions about retirement age.

NDC schemes are designed to reward those who remain in the labor force for more years and to penalize those who retire early. In Italy, for example, the projected replacement rate (62%) is basically the same under the new NDC scheme (the Dini reforms) as under the prior scheme (the Amato reforms) at age 62 (with 37 years of contribution); however, the replacement rate will increase for those who remain at work until age 65 (with 40 years of contribution) (74% under the Dini reforms vs. 66% under the Amato reforms). Similarly, for those who retire early (at age 57 with 35 years of

contribution) the replacement rate is lower under the new scheme (50% vs. 59%) (Brugiavini & Fornero, 1998).

While the NDC schemes are designed to keep a balance between contributions and pension benefits paid out, it cannot be assumed that there will be a balance under all conceivable demographic and economic scenarios. For this reason, some schemes, such as those in Sweden and Poland, build in provisions for a reserve or buffer fund. Sweden is able to draw on pre-existing funded accounts that were in place for several decades prior to the introduction of the NDC system. In Poland, part of the payroll tax is set aside in a special reserve fund for just such contingencies (Chlon et al., 1999). In Sweden, there is also a provision to abandon the standard mechanism of indexing of notional assets if the implicit pension debt moves above a specified level (Sundén, 2000).

There are other components of the pension schemes in nations with NDC accounts that are not actually part of the NDC tier itself, but are very relevant to the impact of the overall scheme. Although the NDC model is non-redistributional, redistribution can be accommodated within the scheme, by transfer from general government revenues. For instance, most countries have a minimum pension. These pensions, generally paid for out of general government revenues, are designed to ensure that low-wage workers who have contributed for a specified number of years will be guaranteed at least a basic minimum pension benefit. They are not considered social assistance. The minimum pensions are typically means tested, but only for other sources of pension income. The minimum pension is not part of the NDC, but many pension policy experts argue that it is needed due to the lack of any income redistribution in the NDC component itself. Depending on how generous the minimum pension is, the net

results when combined with the NDC component can be more redistributive, less redistributive, or about as redistributive as the DB scheme being replaced.

The Kyrgyz Republic and Italy are partial exceptions; neither have minimum pensions *per se*. In the Kyrgyz Republic, there is a *base pension*, a flat amount added to the earning-related pension for each year of service—between 5 and 20 years for women and between 5 and 25 for men (Castel & Fox, 2001). This pension was set in 1997 to the minimum wage (about 29% of the average wage). The plan is not to increase it until it declines to 12% of the average wage. The pension is available at age 60 for men and 55 for women, but these ages will gradually increase to 63 for men and 58 for women by 2006 (P. Castel, personal communication, July 5, 2002). In Italy, under the Dini reforms (the NDC scheme) there is no minimum pension, but there is a means-tested social assistance pension for those age 65 and older (Borella, 2001).

All other countries with NDC schemes have minimum pensions. The minimum pension is typically available to workers (or, in the case of Sweden, residents) when they reach a specified eligibility age. Many countries require payroll tax contributions for a specified number of years. The eligibility age ranges from a low of 55 (for women in the Kyrgyz Republic) to a high of 65 in Sweden (for both genders). In some countries, the eligibility age is the same for both genders (e.g., Latvia at age 60, Sweden at age 65), but in others it differs by gender (e.g., 60 for women and 65 for men in Poland, 55 for women and 60 for men in Mongolia and the Kyrgyz Republic).

In some countries, such as Sweden, the minimum pension is quite generous, but in others it tends to be very modest (Cichon, 1999). In Sweden, the full minimum pension assures a pension equal to about one-third of the average wage (Sundén, 2000). A modest

minimum pension is available to those age 65 and over who have resided in Sweden for at least three years; however, for the full minimum pension a worker must have been a resident for 40 years. In Latvia, the minimum pension is about one-quarter of the average wage and is available to those who have been covered by the schemes for five or more years. In Mongolia, it starts at 20% for those with 15 years of coverage, gradually increasing to 30% for those with 35 years of coverage (Bender & MacArthur, 2000).

Another way most NDC schemes accommodate redistribution is by providing notional credit for certain categories of people who are out of the paid labor force or not subject to payroll taxes for certain reasons. Typically, the government makes contributions out of general revenues to the fund used to pay pensions and at the same time a corresponding amount of notional credit is recorded in the NDC account for the covered person. The contingencies covered vary from one country to another, but most include credit to a parent (typically the mother) who takes time off from work to care for a young child. The amount of time allowed varies from country to country, as does the level of compensation provided. In Poland, the government is also negotiating a program of "bridging pensions" with the labor unions, which would allow workers in physically demanding occupations such as mining to retire early and still receive benefits before they reach legal retirement age (Chlon-Dominczak, 2002; Góra & Rutkowski, 2000).

Italy has a rather generous program which offers benefits for childcare until the child reaches age six, as well as benefits for care of the elderly (Myles & Pierson, 2000). Latvia offers a credit for a maximum of 1.5 years per child (for up to two children) (Castel & Fox, 2001). Latvia also contributes for sickness and disability leave as well for military service. For covered noncontributory periods, transfers are made from general

government revenues to the pension fund at the minimum wage level and a corresponding amount is credited to the person's NDC account (Fox & Palmer, 1999). In Sweden, there are contributions for those enrolled in higher education and those in the military as well as those who are eligible for disability or unemployment benefits. In addition, there is coverage for up to four years of parental leave per child with credit being based on the most favorable of several options: 75% of the average earnings for all covered persons; the individual's own earnings the year before the child's birth; or a fixed amount indexed to the covered wage per capita (Palmer, 2000). Poland contributes benefits to personal accounts for unemployment, childcare, and care for the disabled (Disney, 1999a). The parent who leaves the labor force to care for a young child can get up to three years of credit per child, but there is a maximum of six years of such credit. The government contribution to the pension system and to the parent's NDC account is at the level of the minimum wage (Fultz, 2002b). The Kyrgyz Republic is, again, a partial exception; the childcare credit counts only towards earning the base pension (P. Castel, personal communication, July 5, 2002).

Some countries with NDC schemes also have or plan to have a FDC scheme as well. In Sweden, in addition to the 16% of the payroll tax credited to its NDC system (and used to pay benefits to current pension recipients), another 2.5% is allocated to funded individual retirement savings accounts. In Poland the split is more even, with 12.22% credited to the NDC component and 7.3% to the funded individual accounts (Chlon, 2000). In Italy and the Kyrgyz Republic, there are no mandatory funded individual accounts. In Mongolia, there are plans to add a funded component in 2005 starting at 3% of the payroll tax and then gradually increasing to 7.5% by 2020 (Bender

& MacArthur, 2000). While Italy does not have mandatory funded accounts, it does have tax incentives for voluntary individual accounts (Franco, 2002). Sweden also has a voluntary accounts tier; Poland and Latvia will soon be adding such a tier (Orenstein, 2000; Fultz & Ruck, 2001). When an NDC component and a funded individual accounts component are included in the same schemes, the result is a mixed or multi-pillar model. With such schemes, part of the worker's pension is subject to the risk associated with trends in wage levels and part is subject to the risks of fluctuations in stock and bond markets.

For a table providing a comprehensive overview of the major features of the NDC schemes in Italy, the Kyrgyz Republic, Latvia, Mongolia, Poland, and Sweden, see Appendix 1.

THE PROS AND CONS OF NDC SCHEMES

When assessing the strengths and limitations of the NDC approach, ideology and political philosophy do matter; what is a strength to one analyst is often a limitation to another. For example, many conservative analysts will see the lack of redistribution as a strength of the NDC model, whereas many liberal analysts will view this attribute as a weakness. For this reason, an effort will be made to qualify many of the arguments presented in this section. Since these NDC schemes are all new, there is currently little hard evidence as to how they work in actual practice. Some of the problems that will eventually emerge have not had the time do so, and some of the problems that have already emerged will turn out to be minor and temporary. It is also important to keep in

mind that some of the purported strengths (and limitations) are relative to the FDC approach while others are relative to the traditional PAYGO DB approach.

One strength of the NDC model relative to the PAYGO DB model is that it will, at least in the long run, help keep pension benefits in balance with available payroll tax revenues. Policy makers in Sweden, for example, believe that it will be possible to keep the payroll tax at the current 18.5% level. It may turn out that it is not possible to do so, but this is the goal and expectation of current Swedish pension policy experts. While the size of the specified payroll tax varies from one country to another, in most cases the expectation is that it will not increase in the decades ahead. Italy is an exception. Italian pension policy experts recognize that in order to maintain the current level of benefits, a 5% increase in taxes per generation will be required (although this is an improvement from the old PAYGO DB system, under which the required increase would have been 9% per generation) (Franco, 2002).

The NDC model goes a long way toward dealing with possible labor force and demographic changes and the potential funding consequences of such changes. All NDC schemes are designed to deal with changes in the rate of economic growth and related macroeconomic phenomena, particularly changes in wage levels. All NDC schemes have some provisions designed to deal with population aging (including adjustments in the formula for computing the annuity based on notional assets at retirement), and some have provisions designed to deal with fluctuations in the size of the labor force. For example, the Latvian and Polish schemes (but not the Swedish or Mongolian schemes) automatically adjust benefits when there are changes (including reductions) in the number of workers paying into the system.

What happens when the provisions for keeping the scheme in financial balance do not work, that is, when pension benefits start to exceed contributions? While NDC schemes are designed to make automatic adjustments in pension benefit levels based on demographic changes and fluctuations in the economy, this does not mean it will always be possible to keep the scheme in balance based on these provisions alone. For just such contingencies, Sweden has created a reserve fund that includes assets that could be liquidated in such a contingency. In addition, Sweden has a special "brake" that can be activated if the imbalance gets above a specified level: at that point the formula for adjusting pension benefits each year (a formula that does include a provision for lower benefit increases in the event the economy does not perform well) can be temporarily abandoned. In Poland, revenues from surpluses in the PAYGO DB system and, from 2002-2008, one percentage point of the payroll tax are being used to build up a special reserve fund for just such contingencies (Chlon-Dominczak, 2002). The extent to which such back-up protections have been built into the NDC scheme varies, and several countries seem not to have any such formal provisions in place.

While a case can be made that the NDC model goes a long way toward creating a balance between payroll tax revenues and pension benefits, it does not by itself offer a solution for those countries that face a serious short-term imbalance (Valdés-Prieto, 2000). This is an important consideration given that most countries that have turned to the NDC model have done so at a time of short-term financial crisis, at a time when their pre-existing PAYGO DB schemes were very much out of financial balance. In some cases, inflation has been allowed to erode the value of pension benefits promised under the prior PAYGO DB scheme. That is, part of the solution, particularly in the transition

economies, has sometimes been a partial default on prior promises. Over the long run (a period of several decades), the NDC model does offer a mechanism to help keep a pension system in balance, but in the short run (particularly the first few years), by itself it will be of little if any help.

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 (World Bank, 2001). Balance is thus achieved by means of what are essentially parametric reforms, such as increasing the retirement age, that are separate from the NDC scheme, but enacted as part of the same basket of reforms. These changes would be unpopular and very difficult to enact on their own, but become viable in the context of a fundamental reform of the old-age security system from the PAYGO DB scheme to an NDC scheme, when people's attention is focused elsewhere (Cichon, 1999; Lindeman et al., 2000; World Bank, 2001). They provide a way to potentially bring the public pension system into balance by means of incentives such as a larger pension for more years of work (the carrot), as opposed to the politically less popular alternative of mandating an increase in the age of retirement, an increase in the payroll tax rate, or a decrease in the size of the pension benefit (the stick). For understandable reasons, elected officials prefer where possible to use positive incentives to achieve such goals (Disney, 1999a).

According to many, a second strength of the NDC model is that it is more transparent than the PAYGO DB alternative. However, there is no consensus on what exactly transparency means, and some analysts argue that the NDC model is in fact less transparent in important ways than the PAYGO DB system. Those who say that NDC

accounts are more transparent point out that the worker can at any time check to see how much is in his or her account and knows that the amount is a function of past payroll tax contributions that are being indexed based on a clearly specified formula that will seem fair to most workers. Such transparency is enhanced when, as in Latvia, the government issues a recalculated table of age-specific average life expectancies on a periodic basis that can be used to adjust projections of post retirement annuity (pension) benefits (Fox, 1997).

This transparency may increase political support for the program, particularly among more affluent workers, as covered workers can expect to get out in direct proportion to what they put in. In comparison with a PAYGO DB scheme, an NDC scheme has the potential to foster a greater sense of ownership. One reason for this is that a worker covered by an NDC scheme periodically gets a statement from a government agency stating the explicit value of the credit (or notional assets) in the notional account and how much that value has changed in recent months. For similar reasons, it is more likely that the NDC scheme will be viewed as a savings plan than as just another tax (Gray & Weig, 1999).

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 at any time, the rate of return is less clear than under a PAYGO DB system. The benefit formula under a PAYGO DB 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 (Sundén, 2000) and the basis (average wage, wage sum, or GDP) on which accounts are indexed. Pensions so indexed do tend to be less

volatile than those based on equity, which are subject to stock market fluctuations. Although NDC systems might be less transparent in terms of expected benefits in comparison to PAYGO DB systems, they are still more transparent than FDC systems.

The system is arguably also more transparent in terms of redistribution (Myles & Pierson, 2000). As discussed above, although the NDC system itself is non-redistributional, redistribution can be (and in most cases is) incorporated through such means as childcare credits and minimum pensions. The funds for these no longer come from payroll taxes, but from the government's general revenue (Lindeman, 2000). This results in a clear separation between benefits based on contributions and redistribution programs. Redistribution is no longer obscured by complex benefit formulas, as it may be in a PAYGO DB system.

There are also analysts who 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 parametric reforms, some analysts see NDC schemes as a matter of tactical packaging, allowing policymakers to enact what would be otherwise unpopular reforms (Cichon, 1999). Some see this ability to get such reforms passed as a strength of the NDC model, but others argue that this decreases the transparency of the pension reform process, leaving other claims to greater transparency rather hollow (World Bank, 2001). For instance, the agency in charge of pension reform in Poland started its public relations campaign on behalf of the new mixed NDC-FDC 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 to choose from (Chlon, 2000). 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.

Many analysts contend that a third strength of the NDC system is that it is likely to lead to an increase in the average age of retirement as it removes the economic disincentives to continued labor force participation implicit in many PAYGO DB schemes (Gray & Weig, 1999). Those who are at the age of eligibility for retirement, but opt to remain in the labor force for another year, can expect to benefit in three respects: (1) the notional assets already in the account will grow for an additional year, (2) there will be yet another year of notional assets added to the account, and (3) the pension formula will call for a higher pension based on fewer years of projected life expectancy at the time of retirement.

In addition, it will not take long for workers to realize that if they retire early, pension benefits will be low and that for each year retirement is delayed benefits will increase substantially (Normann & Mitchell, 2000). In Italy, benefits under the reformed system increase by about 6% per year for those who retire at 65 rather than at 62 and decrease by 15% for those who retire at 57. In Sweden, a worker receives a pre-retirement wage replacement rate of 46% if retiring at age 62, 60% if retiring at 65, and 82% if retiring at 68 (Myles & Pierson, 2000). If a substantial portion of workers were to remain in the labor force longer than they would under the prior PAYGO DB scheme, this would ease the burden of paying for those who are retired. However, if over an extended period of time the notional rate of return were to fall below the level realized in

funded schemes, the NDC model would probably become less effective in delaying retirement than would the FDC alternative.

The NDC model has been described as a way to make workers' age of retirement more flexible. The reason is that the eventual pension benefit is based on total contributions over the years. Each year counts. This allows those who are willing to accept a lower pension benefit to retire at a relatively early age and those who elect to remain in the labor force out of the desire to work or economic need to do so without any penalty with respect to their eventual pension benefit. In short, the NDC model removes the economic incentive in many PAYGO DB schemes to stop work at a certain age, often a rather early age (Brugiavini & Fornero, 1998).

The argument that the NDC system will lead people to retire later is questionable though. It rests on the assumption that people are rational actors who will make the calculation to work longer because they will receive higher benefits. This assumption, however, reflects a certain set of cultural values, those of the middle and upper classes in Western societies. Some white collar workers in Western European countries like Italy and Sweden might hold these beliefs, but blue collar workers seem less likely to do so. Given how workers, both white and blue collar, were probably socialized under Marxist-Leninist systems, it is doubtful that many people in Poland, Latvia, the Kyrgyz Republic or Mongolia would make such calculations. Indeed, the worldwide empirical evidence suggests that most people do in fact retire at the earliest possible age (Lindeman et al., 2000). In some cases, early retirement is due to very unfavorable labor market opportunities, particularly in the transition economies. For women, the early retirement is often linked to their family caregiving roles. In short, for many workers the flexible early

retirement option becomes a *de facto* reduction in the wage replacement rate (Cichon, 1999). Consequently, some analysts argue that this flexibility in retirement age is likely to lead indirectly to pension cuts for many (Fox & Palmer, 1999).

Another strength of the NDC model is that such schemes are less vulnerable to political risk than are PAYGO DB schemes. They are less vulnerable because of increased transparency and the lack of redistribution. Also contributing to the political viability of such schemes are the mechanisms for automatic benefit cuts that have been built into the indexing procedures. This way, any cuts needed due to an increase in life expectancy, a decrease in the number of contributors, or fluctuations in the economy can be made without the need for additional legislative action.

Critics, however, point out that NDC schemes are not immune to political risks. Decisions about how to do the indexing are political and changes could be made at any point. Decisions about who to credit for time out of the paid labor force and how much to credit them are also political. Because the NDC scheme does not include any redistribution, some sort of guaranteed minimum pension is generally included. The generosity of this pension, which could become the major source of pension income in many of the less affluent nations, is vulnerable to political risk. In short, while nations that opt for NDC accounts may reduce political risk somewhat, substantial vulnerability to political risk and the politics of spending levels remains in all countries with NDC schemes. It is also possible that the transparency of NDC schemes will make it easier to compare the returns for the notional accounts with those of funded individual accounts. When the discrepancy favors the funded accounts, this may undercut the political support for the NDC scheme (Disney, 1999b).

Because NDC schemes are indexed on the basis of trends in average wage levels (or aggregate wage growth) rather than trends in financial markets, NDC benefits are generally much less volatile (Disney, 1999a). In most countries, the stock market fluctuates much more dramatically than does the aggregate wage bill, potentially contributing to substantial differences in the levels of pensions from FDC accounts for different retirement cohorts based on short-term fluctuations in financial markets. However, it is of note that in some of the transition economies there have also been very dramatic ups and downs in the aggregate wage bill, fluctuations that are comparable to major stock market shifts that mature capitalist economies periodically experience.

Some advocates of funded individual accounts support a shift from a PAYGO DB scheme to an NDC scheme on the grounds that it is a potentially useful first step in the evolution of a scheme that will eventually include a substantial mandatory funded component (James, 1999a). Many developing countries and transition economies do not have either the administrative or economic resources needed to implement the introduction of a scheme based in large part on mandatory funded individual accounts. Many of these countries also lack the necessary financial markets and financial institutions. An NDC model can be introduced before such infrastructure is fully in place (particularly if it is one pillar in a multi-pillar scheme that also includes a very modest FDC pillar) and might provide a stimulus to the development of such institutions. It provides an opportunity to build a scheme based on individual accounts that at some point in the future could be modified to include funded accounts as well. This is, for example, the intent behind the adoption of the NDC system in Mongolia (Bender & MacArthur, 2000; Hulan, 2000). Clearly, this line of argument has more appeal to those

who favor the introduction of funded individual accounts than to those who oppose this trend in old-age security policy.

In recent years, many nations have considered shifting from their current PAYGO DB schemes to FDC schemes. Some have made or started to make the shift, but the high transition costs have made other nations hesitate. The main cost of a full switch to FDC accounts is that the current generation of workers would end up paying twice—once to fulfill pension obligations under the existing PAYGO DB system and once for their own future pensions (Myles & Pierson, 2000). A major advantage of the NDC model over the FDC alternative is that it helps reduce the transition cost while still gaining some of the benefits of a FDC system (World Bank, 2001). The NDC model spreads the burden of the shift from a DB model to the DC model across a wider range of age cohorts. While the shift is being made, funds that would be redirected into individual funded accounts with a FDC model can instead be used to pay pensions to those who are currently retired under the NDC model.

One of the major criticisms of the NDC approach relative to the FDC alternative is that the assets in the NDC accounts are not capital assets. There is no reason to believe that such a scheme will contribute to the national savings rate. In Sweden, studies suggest that the NDC system may have a *negative* effect on the savings rate (Sundén, 2000). For this reason, there is not likely to be any boost to the economy and in many countries long-term economic growth is going to be very important when it comes time to pay for the retirement of the baby boom generation and population aging more generally. A related argument, particularly for less developed countries, is that these NDC accounts would not be a source of the capital needed to promote economic growth and they would not

contribute as much as would a scheme based on funded individual accounts to the development of financial markets and institutions, for example, the banking and insurance industries.

Many critics (and some supporters) of the NDC system argue that it undermines public welfare programs in ways beyond simply drastically limiting the redistributional aspects of public pensions. NDC schemes, especially when combined with partial privatization, could create a path dependency effect leading to full privatization of the pension system. According to some analysts, partial privatization tends to undermine public pension systems both politically and financially as more and more money is diverted from the public to the private sector (Müller, 2000b). With the exception of the Kyrgyz Republic, all countries that currently have NDC systems either have or are planning to create a system of FDC accounts, although in some countries it will be mandatory and in some optional. The logic of individual accounts implicit in the NDC model increases the likelihood that such schemes will over time move in the direction of increasing privatization.

One of the major reasons for creating public pension systems was for redistribution (Disney, 1999b). By eliminating redistribution, a situation is created where no social group has any reason to oppose further privatization (Normann & Mitchell, 2000). Thus, with the possible exception of the Kyrgyz Republic, those countries that have implemented NDC systems may have set themselves on a slippery slope where it makes the most sense to future generations of public policy makers to eliminate a public pension system altogether. Even if this extreme is not reached, the focus on financial stability and individual responsibility present in NDC schemes is likely to lead to less

focus on redistributive goals (Valdés-Prieto, 2000). Over time we might expect cuts in the minimum pension and reductions in the level of NDC credit for time out of the work force for childcare and other such noncontributory periods.

Beyond these general criticisms, critics have also pointed to several specific ways in which NDC systems would undermine public welfare programs. For instance, NDC systems could actually end up redistributing money from the poor to the rich. Pensions are calculated using a uniform actuarial formula that does not take into account lifetime income or longevity risk classes; however, the rich tend to live longer than the poor, which means that the rich will often end up reaping disproportionately more from the system (Valdés-Prieto, 2000). Setting up an NDC system in combination with FDC accounts (even voluntary ones) as most countries under consideration here have done could have a similar effect. In Italy, although the privatized accounts are voluntary, the government is paying to set up the system and giving people tax breaks to invest in them. However, it is the rich who are most likely to have the extra disposable income to invest, meaning that the government is subsidizing higher pensions for the rich (Pizzuti, 1998).

Another negative effect of the switchover from a PAYGO DB scheme to an NDC scheme is that, in the absence of a generous guaranteed minimum pension, there will generally be greater income inequality among retirees. This characteristic is likely to make the NDC more popular among affluent workers, but less popular among less affluent workers and their advocates. Less redistribution means it is likely that in many countries low-wage workers will end up worse off under an NDC scheme than under existing PAYGO DB schemes, even if we take into consideration the need for benefit

reductions and payroll tax increases to bring the nation's existing PAYGO DB scheme into financial balance.

An NDC scheme will typically provide good income replacement (something in the range of 50% of pre-tax earnings) for workers who have contributed for 40 years or more (Fox & Palmer, 1999). However, for many rural workers, women, irregular low-wage workers, and those who spend much of their working lives in the informal economy, the number of years of contributions will fall far short of 40 years. Given the current economic climate, workers with low wages and irregular work histories or those who have worked mostly in the informal sector are likely to grow more common (Cichon, 1999). Many of these workers will need to depend upon the guaranteed minimum pension for their retirement income. Some, if not many, workers will be worse off under the new NDC scheme than they would have been under a less radically reformed variant of the prior PAYGO DB scheme. This would also involve drawing greater amounts of money from general revenues and not the payroll tax, possibly undermining the fiscal stability NDC systems are meant to promote. All of the minimum pensions have a required minimum number of years a worker must contribute to receive a pension, ranging from 5-20 years. Although these requirements do not sound unreasonable, it is possible in transition economies (particularly Mongolia with a 15-year requirement or Poland with 20 years) that some workers might not meet them and be left pensionless.

Not all of the evidence points to NDC schemes undermining public welfare systems though. Some supporters of NDC schemes point to ways in which they could actually enhance public welfare. A transition from a PAYGO DB scheme to an NDC

scheme could, in some instances, free up additional money for social spending. In Poland, for instance, both the contribution rate under the old PAYGO DB system and the implicit pension debt were so high (31% of payroll and 220% of GDP respectively) that they essentially precluded many other forms of social spending (Hausner, 2001).

There are also ways that a PAYGO DB system redistributes from the poor to the rich that an NDC scheme would eliminate. Under most PAYGO DB systems, only a handful of years—either the highest earning or the last few—are taken into account when calculating pensions. Either method tends to favor white collar workers over blue collar workers; the former usually tend to make substantially more money at the end of their career than at the beginning, while blue collar workers' income tends to stay fairly level. As a result, under PAYGO DB systems, white collar workers often receive pensions that are disproportionately *greater* than what they contributed (Myles & Pierson, 2000; Sundén, 2000). An NDC scheme would eliminate this regressive redistribution by making pensions directly proportionally to contributions (except at the lowest levels where the minimum pension comes into effect).

Another major limitation of NDC schemes is that women, particularly low-wage and single women, will generally be worse off than under prior PAYGO DB schemes, although they are likely to be better off under NDC schemes than under FDC schemes. One reason for this is that women tend to have lower wages, less regular work histories, and accumulate fewer years of full-time employment prior to retirement. As a consequence they can expect less by way of NDC based annuity benefits at retirement than their male counterparts. In fact, in Sweden with its relatively generous minimum pension, most women will not earn enough to get more than the minimum pension

(James, 1999b). Women are also penalized by benefit provisions designed to discourage early retirement. In Latvia, for example, a woman who retires at age 55 will receive, on average, a 25% lower pension under the new system (Fox & Palmer, 1999). In Poland, women who accept the early retirement option receive a mere 50% of what they would have received had they remained in the workforce until the age of 60 (Fox, 1997). However, on the positive side, it is a general practice for NDC schemes (as with PAYGO DB schemes and many FDC schemes) to use unisex life expectancies when computing annuity benefits at retirement.

Despite the obvious disadvantages of retiring early, the fact that women are often responsible for caring for young children as well as ailing spouses and parents makes it difficult for them to match the length of the typical work history for men. Moreover, because women on average live longer than men, if they retire at an early age, the burden of this lower pension benefit will be experienced over a longer time period. Women who retire early potentially face many years in poverty (Fox & Palmer, 1999; Castel & Fox 2001). In some countries with transition economies, such as Latvia and the Kyrgyz Republic, early retirement is often a short-term survival strategy. By retiring and taking their pension, women can provide additional income to their household; additionally, some women may actually continue to work in the informal economy. Many poor women in these countries are simply not in a situation to plan ahead and consider their income needs for when they are no longer able to do paid work (Castel & Fox, 2001). Castel and Fox (2001) recommend raising the minimum retirement age for women as a solution to this problem. They are also hopeful that the minimum pension guarantee will encourage women to participate in the system by creating the perception that they have a stake in it.

Given poor women's immediate short-term survival needs though, it seems more likely that they will participate for the minimum number of years necessary to earn the minimum pension and then, if possible, switch over to the informal economy to avoid paying taxes to maximize their immediate income.

NDC schemes may also be detrimental to women because unlike PAYGO DB schemes they lack benefits for divorced women and widows with little or no paid labor force experience. Latvia, for example, eliminated all survivor benefits, except those to minor children, during its pension reformation. Given the fact that women on average live eight years longer than men in Latvia, the elimination of such a benefit is a loss for women (Fox & Palmer, 1999). However, some countries (including Mongolia) include as part of a more comprehensive old-age security system at least some protection for survivors (Bender & MacArthur, 2000).

Arguments can be made for and against the various protections for women that are built into many existing PAYGO DB schemes, but there is no doubt that they do help compensate for the impact of lower wages and irregular work histories that many women face due, at least in part, to childcare responsibilities. While it may be true that in many countries less in the way of such protection is called for today than fifty years ago, it is not clear that the reduction in such protection associated with most NDC schemes assures adequate protection for women today, particularly less affluent women.

While the NDC model will typically involve less economic risk (in the sense of volatility in pension benefit levels between adjacent retirement cohorts) than the FDC model, it does involve greater economic risk than does the PAYGO DB alternative. As with the FDC model, the NDC model shifts some risks (in this case those linked to

demographic change or fluctuations in the economy) from the government to individual contributors. Critics of the NDC approach argue that it is more appropriate for the government rather than the individual to bear these risks (Myles & Pierson, 2000).

Another potential weakness of an NDC scheme is that it may cause administrative chaos in countries without the proper administrative infrastructure. While this has not been a problem for Italy or Sweden, several of the transition economies have suffered from the path dependency effects of their PAYGO DB pension administration systems, which were not in the least oriented towards individualized record keeping. Due also in part to the haste with which the pension reform legislation was passed, the Polish pension agency (Social Security Institution or ZUS) was not able to design a system of paperwork for reporting payments that was clear to everyone. Consequently, three years after the program began, they were still trying to determine how much should be credited to many workers' accounts (Chlon-Dominczak, 2002). Latvia's records were so incomplete that there was no way to calculate people's initial notional capital based on past contributions. Instead, it was calculated based on the number of *years* of past contributions and their contributions in the first few years *after* the transition to the NDC scheme (Fox & Palmer, 1999). Both Poland and Latvia also lacked the proper computer equipment to run their new systems, which only added to their administrative troubles (Chlon- Dominczak, 2002; Müller, 2000a). Officials with the World Bank's Social Protection Team have expressed concern that the Kyrgyz Republic may also have overreached its administrative capabilities with its new NDC scheme; this is a country where 15% of pension contributions are made in kind and must be valued by the local pension offices (Social Protection Team, 2000).

DISCUSSION

The NDC model is likely to become increasingly common among the transition economies of Eastern Europe, Central Asia and in other formerly centrally-planned economies around the world. It could well become much more widespread than it is today among nations in the European Union. It may eventually become common among poor nations, particularly those that currently have mature PAYGO DB schemes in place. NDC systems have been implemented as a response both to fiscal and demographic crises (or potential crises) and to the growth of neoliberalism, both as an ideology and as a structural force in the process of globalization. Countries facing similar pressures may be those most likely to implement an NDC scheme.

NDC schemes may be adopted by many countries in part as a way to address practical social policy problems. While it is not yet clear how many nations in the European Union (EU) will adopt the NDC model, it is possible that eventually many will. One reason is that it offers a way to help deal with the problem of financing the retirement of the baby boom generation, an issue that most of these nations will soon be facing. It does so by using what amounts to a combination of benefit cuts and tax increases. While it would be possible to achieve essentially the same result by making similar benefit cuts and tax increases in the existing PAYGO DB schemes (Barr, 2000), as discussed above, some analysts argue that it is sometimes politically easier to make such cuts in the context of a shift to a radically changed scheme.

Another reason that more European Union (EU) countries may adopt the NDC model is that it would make it easier to provide adequate pension coverage for workers

who move from country to country as their jobs change or are relocated (Feldstein, 2001). The lack of portability of pension credit associated with traditional PAYGO DB schemes when a worker moves from one European nation to another may become a problem in the decades ahead. The NDC model with its individual accounts offers a number of alternatives that do not exist in traditional PAYGO DB schemes for dealing with pension credit from several countries.

Many of the transition economies are faced with mature PAYGO DB schemes that, at least on paper, promise far more generous pension benefits than their economies can support. In some countries in Central and Eastern Europe, the number of workers contributing to pension schemes has been contracting rather than growing in recent years (Fultz & Ruck, 2001; Orenstein, 2000). The primary reason is that many older workers have been forced into retirement due to the lack of jobs in the new economy. But in some of these countries, low fertility rates are also a factor (Fultz & Ruck, 2001). Both trends contribute to making the projected dependency burden worse in the years ahead. In all of these countries, it has been necessary to make deep cuts in promised benefits. Failure to adequately adjust for inflation has become in many countries the de facto mechanism to cut benefits (Orenstein, 2000).

The NDC model is likely to be attractive to nations in economic transition that are doing less than adequate jobs in paying promised pension benefits under prior PAYGO DB schemes. While such schemes cannot promise generous pension benefits until the economies of these transition countries recover, the transparency of the approach makes it clear how much the workers have to retire on and the indexing mechanisms will assure that workers and pensioners benefit from economic growth both during the working years

and during retirement. Among the transition economies, only Latvia, Poland, the Kyrgyz Republic, and Mongolia have adopted the NDC model, but others may follow suit in the years ahead. The NDC model offers a way to introduce an individual accounts DC scheme without having to actually fund those individual accounts. It offers a way to spread the cost of any such transition across more age cohorts than is the case with a FDC scheme.

All of these practical policy questions will, however, not be decided in a political vacuum. Other pressures such as the rise of neoliberal ideology, structural constraints arising from globalization, and the resistance of labor unions and pensioners' organizations will affect the decisions that are made. All of these factors have in fact shaped the decision to adopt NDC schemes in the countries that have already done so. A consideration of these factors may give us a clearer sense of which countries are likely to adopt NDC systems in the future and why.

An NDC system does not, of course, represent the full-scale privatization that neoliberals generally advocate. NDC schemes are nonetheless consistent with the ethos of neoliberalism in important ways. Although the system remains public, redistribution is greatly reduced as benefits are tied more closely to contributions. Some of the financial risks of old age that public pensions were originally designed to protect against are shifted from the nation-state to individual workers (Myles & Pierson, 2000). Thus an NDC scheme replicates in PAYGO form the non-soladiristic logic of individualism implicit in the FDC schemes favored by neoliberals (Barr, 2001).

To have an impact, any ideology must have social carriers. In the case of neoliberalism, these carriers are members of certain factions of the global and national

elites, positioned at the top of such institutions as transnational corporations, intergovernmental organizations (IGOs) like the World Bank and European Union, and national governments. Those in transnational corporations and IGOs have considerable room to maneuver. Transnational corporations are, as the name suggests, not tied to any particular nation-state but can invest wherever they find the conditions most favorable. In an effort to attract these corporations, national governments are under enormous pressure to tailor their social policy to meet the needs and desires of these corporations. In most cases, this means cutting social spending, including pensions (Scarbrough, 2000). IGOs also have increasing power to shape national governments' policies. Italy, for instance, adopted its NDC scheme as a result of the constraints created by the Maastricht Treaty (part of the process solidifying the EU), which required it to halt the growth of public debt as rapidly as possible—which essentially meant large cuts to the welfare system (Ferrera & Gualmini, 2000).

The World Bank has played a particularly important role in promoting NDC schemes (as well as privatization) in transition economies. Many of these countries are in debt to the World Bank, which puts it in a position to strongly influence social policy. Even where they do not owe debt, the Bank's approval or disapproval of policy can still be very important. It is very difficult for countries to get loans from private transnational banks if the World Bank does not consider their policies to be economically sound. The World Bank is also one of the few organizations willing to make advice on pension reform readily available to the financially struggling governments of the former Soviet bloc. In the case of Poland, the World Bank actually funded their pension reform agency, which was headed by a World Bank official on temporary leave. The Bank also flew

Polish policy makers and other influential people such as labor union officials to Latin America to observe their privatized and partially privatized pension systems at work (Müller, 2000a; Müller, 2000b; Müller, 1999; Orenstein, 2000).

Neoliberal elites within national governments have less room to maneuver than those in transnational corporations and IGOs. Usually some other faction of the national elite, such as the social democrats in Italy and Sweden and the ex-Communist parties in the transition economies, has their electoral base in groups such as labor unions and pensioners' organizations that oppose any thing other than parametric reforms to the PAYGO DB scheme. In most such cases, for any reform at all to take place, some sort of compromise had to be devised in which labor unions and other popularly based social groups felt they had input (Myles & Pierson, 2000). In most countries with NDC schemes, they have been implemented, at least in part, because of such needs to deal with contending social groups. Thus NDC schemes are often arrived at as a compromise between national elites favoring privatization (often with backing from transnational corporations and neoliberal IGOs) and those social groups resisting neoliberal policies and supporting the preservation of PAYGO DB schemes.

In Italy, the first Berlusconi government (in 1995) tried simply pushing pension reform through without negotiating with the labor unions. A massive strike resulted and the government was forced to back off. In contrast, the Dini government negotiated directly with the labor unions and was able to enact legislation putting the NDC system into place (Ferrera & Gualmini, 2000; Myles & Pierson, 2000). In Sweden, the pension reform process was initiated by a four-party center-right governing coalition. Although they did not deal directly with the labor unions, the Social Democratic Party which has its

electoral base in the blue collar union (the Trades Union Confederation or LO), was included in the committee that designed the new pension system (Myles & Pierson, 2000; Palmer, 2001; Sundén, 2000).

The political situation in many of the transition economies is less clear cut. Political parties often represent conflicting social interests, and there may be factions within both left-wing and right-wing parties that support or oppose privatization (Orenstein, 2000). In Poland, for instance, the left-wing parties included social groups like the ex-Communist labor union that opposed privatization and a liberal leadership that favored partial privatization as a way to save the pension system; the right-wing parties included both pro-free market factions supporting privatization and populist ones opposing it. Additionally, the Solidarity labor union supported full privatization. The ex-Communist union was persuaded to support the mixed NDC-FDC system in part by being given the right to set up some of the new private sector pension programs (Orenstein, 2000; Müller, 1999). Political parties in Mongolia represented a similar mix of contradictory interests. When one faction of the then governing Democratic Union Coalition put forward a proposal for total privatization that would simply wipe out current pension obligations, it was forced to withdraw the proposal in the face of popular opposition. The NDC scheme was eventually settled on as a compromise between those supporting neoliberal reforms and those who wanted to ensure social welfare (Hulan, 2000). In both cases, the compromises among the national elite had to be made not just between parties but within parties.

NDC schemes are then usually implemented by policymakers when faced by fiscal and/or demographic crises and under political pressure from both right-wing elites

to follow neoliberal ideology and left-wing social organizations pushing for the preservation of a public welfare system. This is not to say that policymakers in every country facing the conditions discussed above will implement an NDC scheme, but it does increase the chances that they will choose it over parametric reforms to a PAYGO DB scheme or a stand-alone FDC scheme.

At this point, no poor developing nations have adopted or have plans to adopt an NDC scheme. Many poor nations face the same fiscal, demographic and political pressures as those with transition economies though and an NDC model may address practical policy concerns they face as well. The NDC model may therefore become increasingly popular in developing nations. The model has relatively high transparency, which may be attractive in nations where corruption is endemic and that corruption has had adverse consequences for the receipt and level of pension benefits. It is also a model that, unlike the FDC approach, does not require a well-developed infrastructure of financial markets and related institutions. While most poor nations with relatively mature PAYGO DB schemes still have relatively high fertility rates, many are experiencing rapid population aging due to a combination of lower fertility and increased life expectancy. As a result, many of these nations are facing serious dependency burdens in the years ahead that have implications for the sustainability of their PAYGO DB schemes. Given the need to cut promised future benefits, the shift to an NDC scheme may become an attractive way to make those cuts. Nations with large implicit pension debts may find the NDC system a viable way to reduce benefits in an over-inflated system (James, 1999a). Many of these nations are in debt to the World Bank, which uses this leverage to push for

neoliberal reforms, while facing a growing resistance to neoliberal policies from internal social movements.

However, there are also reasons that the PAYGO DB model may be preferable in many poor nations. These nations tend to have very poor record keeping and the recording keeping requirements of an NDC scheme are substantially more demanding than those associated with the typical PAYGO DB scheme. Some transition economies have run into trouble trying to implement NDC schemes because of this, as discussed above. 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 record keeping requirements are less complex than those for a FDC scheme. The NDC model may in the end provide a middle path for developing nations that are under pressure to privatize by the World Bank and transnational corporations but lack the financial markets or administrative infrastructure to do so.

Over the next few decades, we anticipate the emergence of a contest between advocates of the NDC model and advocates of the FDC model for the attention of nations with PAYGO DB schemes that are not performing well. But given the evidence from the six NDC schemes currently in place, it is likely that the outcome in many nations will be a combination of the two as separate but complementary pillars in multi-pillar schemes. The primary contest may be over the relative weighting of these two pillars. The four pillar model outlined below illustrates one way in which NDC and FDC pillars can be

combined. It is in large part based on a model outlined in Turner (1998) and Gillion et al. (2000).

In the years ahead, we may see more countries in which an NDC pillar is introduced as one pillar in a four pillar scheme with: (1) the first, a minimum pension pillar, often noncontributory and financed with general government revenues; (2) the second, a *mandatory* NDC pillar; (3) the third, a *mandatory* FDC pillar; and (4) the fourth, a *voluntary* pillar made up of occupational or personal retirement savings plans. The first pillar would focus on poverty reduction; the second and third pillars would focus on income replacement; and the focus of the fourth pillar would be on supplementation. The four pillar model would be suitable for industrial nations and many middle-income nations. However, the NDC and FDC pillars may be unsuitable for many low-income nations. Both the NDC pillar and the FDC pillar would require the administrative capacity to collect contributions, keep track of those contributions, communicate with contributors on a periodic basis, and pay benefits when they are due. For the FDC pillar, there would be the added need to regulate financial markets and the various institutions managing the pension contributions. There would also be the added risks of market volatility and manipulation in nations with thin financial markets and poorly developed financial institutions (Gillion et al., 2000; Turner, 1998).

CONCLUSION

It is possible that the ascendance of the NDC model will in the years ahead greatly reduce the current enthusiasm for fully FDC schemes. High transition costs and the lack of the necessary national financial markets and institutions and related legal

structures may make FDC accounts a poor choice for many developing and transitioning nations at this point in time. For some of these nations, the NDC model may be more feasible. The rise of neoliberalism may also contribute to the choice of many nations to move from a PAYGO DB scheme to an NDC scheme.

As popular as the NDC model or a mixed model with an NDC component might become, this model is not going to be attractive for all categories of nations. In particular, it is unlikely to be attractive for nations such as Chile, Mexico, Hong Kong, or the United Kingdom that have already shifted to largely privatized schemes. These economies are already dominated by FDC individual account schemes and there is no reason to assume they will find the NDC model an attractive alternative. The United States is unlikely to adopt the NDC model in part because its financing problems can be fixed with much less radical reforms, such as increasing the normal retirement age or the number of years of work the benefit is based on. Another reason is that, in the United States, groups representing the interests of those who would be hurt by the shift to the NDC model are well organized and would make the political price of supporting such a major change too high for most members of Congress.

Transparency is an important consideration when assessing the NDC model. Relative to the PAYGO DB model, the link between contributions and the size of eventual pension benefits is more transparent with the NDC alternative. However, with many PAYGO DB schemes the proportion of pre-retirement wages to be replaced by the pension and the size of the pension benefit can be easily estimated well before retirement. In contrast, with NDC schemes the eventual size of the pension is less clear, in part because it depends on economy-wide trends in wage rates (before retirement) and/or

economic growth rates (after retirement). Also relevant to the transparency debate is the argument that the NDC model will, in effect, obfuscate the cut in pension benefits associated with the shift from the existing PAYGO DB scheme to the NDC replacement (Müller, 2000). This may make the model attractive to policymakers, but it also raises issues with respect to transparency. One of the reasons that the transparency issue is complex is that the term "transparency" is used in different ways in different contexts.

One of the most important limitations of the NDC model relative to the PAYGO DB model is that it is less likely to assure adequate pension benefits for women, low-wage workers, and other workers with irregular employment histories. The benefit structure for many PAYGO DB schemes is designed to be redistributive, helping to assure an adequate pension for many vulnerable workers who would otherwise be at risk. This is not the case for an NDC scheme, but this limitation can be handled when it is part of a multi-pillar scheme that also includes a minimum pension pillar.

A limitation of the NDC model when compared to the FDC alternative is that it is less likely to have a positive impact on the economy. FDC schemes often provide an important source of investment capital. In developing countries, FDC schemes are more likely to contribute to the development of financial institutions such as the banking and insurance sectors, institutions that in turn are likely to have positive long-term effects on economic development. FDC schemes are also likely to provide an even greater sense of individual accounts ownership than would be the case for corresponding accounts associated with NDC schemes. This could make FDC schemes less vulnerable politically.

One of the most important strengths of the NDC model relative to the PAYGO DB model is that it will do a better job of keeping revenues in balance with benefits paid

when there are rapid changes in demographic and economic trends. It also provides more of an incentive for older workers to remain in the labor force. The individual accounts associated with the NDC model are likely to generate a greater sense of ownership and entitlement to pension benefits proportional to contributions than is the case with the PAYGO DB model, which may make those benefits politically less vulnerable.

An important strength of the NDC model relative to the FDC model is that it puts pension benefits at less financial market risk. This is particularly important for developing countries with more volatile financial markets and a higher proportion of covered workers living near the economic margins. If a nation decides to shift to a pension scheme based on individual accounts, the NDC model makes it possible to do so in a way that spreads the economic burden more evenly over more generations of workers. This burden spreading has advantages not only for individual workers, but also for governments faced with the need to make good on pension benefits promised under prior schemes. The NDC model is likely to have lower administrative costs and to be less vulnerable to various forms of corruption than is the case with the FDC alternative. An NDC scheme would also be more suitable for nations that do not have well-developed financial institutions and capital markets.

The NDC model has great potential. While it has only been adopted by six nations to this point, the diversity among these nations illustrates the potential range of nations that may eventually conclude that it makes sense to add (or substitute) an NDC pillar. It could be used by many more European nations as they struggle to deal with consequences of population aging and low rates of productivity growth. It would be useful in many developing nations as they confront population aging and the maturation of their PAYGO

DB schemes. It would be useful in many other transition nations including Russia and China. Russia is currently in the early phases of introducing a multi-pillar scheme that will include an NDC pillar (Afanasiev, 2003; Ivanov & Stroutchenevski, 2003). China, a nation that will account for approximately one quarter of the world's population over age 60 by 2025, currently has a multi-pillar scheme that includes a FDC pillar; but, for the vast majority of covered workers, the funds purportedly earmarked for these funded accounts are being appropriated to pay pensions to current retirees (Williamson & Zheng, 2003).

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APPENDIX 1: An Overview of the Major Features of the NDC Schemes in Six Countries

	Italy	Kyrgyz Republic	Latvia	Mongolia	Poland	Sweden
Year Adopted	1995[1]	1997[2]	1996[3]	2000[4]	1999[5]	1999[6]
Payroll Tax (Contribution Rate)	33%—workers pay 8.89% while the employer pays 23.91%[7]	29%—workers pay 5%, while the employer pays 24%[8]	A payroll tax of 23.58% for the employer and 9% for the worker with 20% credited to the NDC account[9]	19%—the employer pays 13.5%, the employee 5.5%; 4% of the total goes to administering the NDC system[10]	19%—12% for NDC and 7% for FDC[11]	18.5%—16% for NDC and 2.5% for FDC[12]
Cap on Wage Subject to Payroll Tax	250% of the average wage[13]	Unknown	600% of the average wage[14]	Unknown	250% of the average wage[15]	150% of the average wage[16]
Minimum Retirement Age	Either age 57 (with at least 5 years of contributions) or 40 years of contributions[17]	60 for men and 55 for women in 1997; starting in 1998, it began increasing by 4 months a year until it reaches 63 for men and 58 for women in 2006[18]	61.5 years for men and 58.5 years for women in 2002; the retirement age is being raised by 6 months each year until it reaches 62 for both sexes; early retirement, with a pension reduced by 20%, will be allowed for men at age 60 and women 2 years before their standard retirement age[19]	60 for men and 55 for women (50 if they have at least 4 children)[20]	62 for both sexes[21]	61 for both sexes[22]

APPENDIX 1 (Continued)

	Italy	Kyrgyz Republic	Latvia	Mongolia	Poland	Sweden
Childcare Credit	For years raising a child to age 6[23]	Up to 6 years caring for children under 3 is counted as credit towards the base pension (see below)[24]	1.5 years for each child for a maximum of two children[25]	Unknown	Up to 3 years per child for each child under 4, up to a total of 6 children; the credit is calculated based on the minimum wage.[26]	For four years per child, using whichever of the following computations is most favorable: 75% of the average earnings for all covered persons; the individual's own earnings the year before the child's birth; or a fixed amount indexed to the covered wage per capita[27]
Mechanism for Dealing with Potential Imbalances Between Contributions and Pensions Paid	None	None	None	None	Reserve fund from surpluses in the PAYGO system and, for the years 2002-2008, 1% of the payroll tax[28]	Reserve fund carried over from the old pension system; a provision to abandon the standard mechanism of indexing of notional assets if the implicit pension debt moves above a specified level.[29]
Annuity Formula	Unisex life expectancy at the time of retirement[30]	Unisex life expectancy at the time of retirement[31]	Unisex life expectancy at the time of retirement[32]	Unisex life expectancy at the time of retirement[33]	Unisex life expectancy at the time of retirement[34]	Unisex life expectancy at the time of retirement[35]
Notional "Interest" Rate	Five year-moving average of GDP growth[36]	75% of the change in wage level[37]	Wage Sum[38]	Average trends in wage levels[39]	75% of the quarterly growth in the wage bill[40]	Average trends in wage levels[41]

APPENDIX 1 (Continued)

	Italy	Kyrgyz Republic	Latvia	Mongolia	Poland	Sweden
Indexing of Pension	By inflation[42]	None[43]	By the consumer price index[44]	Unknown	By inflation plus 20% of real wage growth[45]	By both inflation and changes in the rate of economic growth. If the rate of economic growth is above 1.6%, the annual adjustment exceeds the rate of inflation; if the rate of economic growth is below 1.6%, it falls below the rate of inflation.[46]
Wage Replacement Rate	50% for retirement at age 57; 74% for retirement at age 65[47]	Unknown	49% for retirement at age 60; 94% for retirement at age 70[48]	29.5% for retirement after 20 years of service (26.3% for women retiring at 55); 59.1% for retirement after 40 years of service[49]	60% for men, 50% for women[50]	30% for retirement at age 60; 52% for retirement at age 70[51]

APPENDIX 1 (Continued)

	Italy	Kyrgyz Republic	Latvia	Mongolia	Poland	Sweden
Minimum Pension Level	Means-tested income support is available to everyone over age 65.[52]	None, but there is a *base pension*, a flat amount added to the earnings-related pension for each year of service between 5 and 20 years for women and between 5 and 25 for men.[53]	Available to those over the age of 60 who have contributed for at least 5 years; set at the rate of about 56% of the average pension and 28% of the average wage.[54]	Available to those who have contributed for a minimum of 15 years; set at about 20% of the average wage with a provision to increase the level for those who contribute for longer than 15 years.[55]	Available to those who have contributed for a minimum of 20 years and are 60 years old (women) or a minimum of 25 years and are 65 (men); set at the rate of 33% of the average wage.[56]	Means-tested; available at age 65 with 40 years of residence, to be reduced by 1/40 for each year under 40 with a minimum requirement of three years residence. The guaranteed minimum pension is offset by the standard NDC pension the individual collects. The minimum pension will be reduced by 11% for married pensioners.[57]

APPENDIX 1 (Continued)

	Italy	Kyrgyz Republic	Latvia	Mongolia	Poland	Sweden
Transition Process	Those who began work after January 1, 1996 must participate in the new system; those with more than 18 years of contributions as of December 31, 1995 remained in the old system; those with fewer than 18 years of contributions as of December 31, 1995 could either switch to the new system or have their pensions calculated as a weighted average of the new and old systems.[58]	Rights acquired under the old system were converted to the NDC system by taking 1% of the average of their 5 best years before 1996; this was multiplied by the years of service they completed before 1996.[59]	Acquired rights under the old system were immediately converted to notional capital based on years of previous service; because no records of individual contributions were kept, initial notional capital was based on contributions in the years immediately following the transition.[60]	Current pensioners at the time of transition continue to receive their pensions under the old system. People born before 1960 also remained under the old program.[61]	Those born after 1968 must participate in the new NDC scheme; those born between 1949 and 1968 have the option of being covered by the new NDC scheme alone or in combination with a FDC scheme; and those born before 1949 must remain with the scheme in place before the NDC scheme was introduced.[62]	Those born in 1954 or later participate fully in the new system; those born in 1937 or before remain in the old system; those born from 1938-1953 receive a percentage of their benefits from each system, the exact combination depending on year of birth.[63]

[1]Brugiavini & Fornero, 1998; [2]Castel & Fox, 2001; [3]Castel & Fox, 2001; [4]Bender & MacArthur, 2000; [5]Chlon-Dominczak, 2002; [6]Sundén, 2000; [7]Brugiavini & Fornero, 1998; [8]P. Castel, personal communication, July 5, 2002; [9]Fox & Palmer, 1999; [10]Bender & MacArthur, 2000; [11]Chlon et al., 1999; [12]Palmer, 2000; [13]Internal Market Directorate General, 2000; [14]Fox & Palmer, 1999; [15]Chlon-Dominczak, 2002; [16]Palmer, 2000; [17]Hamann, 1997; [18]P. Castel, personal communication, July 5, 2002; [19]ISSA, 2000; [20]Bender & MacArthur, 2000; [21]Gora & Rutkowski, 2000; [22]Sundén, 2000; [23]Myles & Pierson, 2000; [24]P. Castel, personal communication, July 5, 2002; [25]Castel & Fox, 2001; [26]Fultz, 2002b; [27]Palmer, 2000; [28]Chlon-Dominczak, 2002; [29]Sundén, 2000; [30]Baldini et al., 2002; [31]P. Castel, personal communication, July 5, 2002; [32]Castel & Fox, 2001; [33]Bender & MacArthur, 2000; [34]Chlon-Dominczak, 2002; [35]Sundén, 2000; [36]Franco, 2001; [37]Castel & Fox, 2001; [38]Castel & Fox, 2001; [39]Bender & MacArthur, 2000; [40]Chlon-Dominczak, 2002; [41]Sundén, 2000; [42]Hamann, 1997; [43]P. Castel, personal communication, July 5, 2002; [44]Castel & Fox, 2000; [45]Chlon-Dominczak, 2002; [46]Sundén, 2000; [47]Brugiavini & Fornero, 1998; [48]Fox & Palmer, 1999; [49]Bender & MacArthur, 2000; [50]Chlon, Góra, & Rutkowski, 1999; [51]Palmer, 2000; [52]Borella, 2001; [53]Castel & Fox, 2001; [54]Fox & Palmer, 1999; [55]Bender & MacArthur, 2000; [56]Chlon-Dominczak, 2002; Lindeman et al., 2000; [57]Palmer, 2000; Sundén, 2000; [58]Hamann, 1997; [59]P. Castel, personal communication, July 5, 2002; [60]Fox & Palmer, 1999; [61]Bender & MacArthur, 2000; [62]Chlon-Dominczak, 2002; [63]Sundén, 2000.

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