The Notional Defined Contribution Approach to Public Pension Reform: Implications for Women and Low-Wage Workers

by John B. Williamson, Department of Sociology, Boston College, and Stephanie A. Howling, Department of Sociology, Harvard University

Most countries around the world base their old-age pension programs largely on the pay-as-you-go defined benefit (PAYGO DB) model. However, due to a number of factors including population aging, the maturing of these schemes, rapidly increasing old-age pension costs, and the perceived need to become more competitive in international markets, many nations have become increasingly concerned about the present (or projected future) economic burden of paying for the pension benefits promised by these schemes. This concern has led policy makers to look for alternative models. One of the most innovative alternatives to emerge during the past ten years is the notional defined contribution (NDC) model. In this article we describe this model and discuss some of the implications of a shift to this model for women and low-wage workers. We conclude that in the industrial nations women and low-wage workers are likely to do less well with schemes based all or in part on the NDC model because such schemes are typically designed to be less redistributive (from higher to lower income groups) than the PAYGO DB schemes they will be replacing. However, in developing countries the reverse will often be true as the NDC schemes are likely to be replacing PAYGO DB schemes that tend to redistribute from low-income groups to higher income groups. Relative to funded DC schemes a major advantage of the NDC model is that it does not subject individual pension benefits to the volatility of financial markets. This issue is relevant to workers in both developed and developing nations, but it is a particularly important consideration in developing nations.

Today most of the nations of the world have social security programs that provide pensions to at least a portion of the elderly population. In the developed nations these pensions provide at least some support for most of the elderly, but in many developing nations coverage is limited to less than ten percent of the elderly population, typi-
cally former government workers and modern sector employees living in urban areas (Gillion, Turner, Bailey & Latulippe, 2000). PAYGO schemes vary from country to country, but most base pension benefits on a specified number of “best years” and are designed to replace a specified fraction of pre-retirement income independent of the rate of inflation or fluctuations in stock and bond markets (SSA, 1999). In most industrial nations these schemes are redistributive from higher income workers to lower income workers, sometimes as in the United States due to the structure of the “bend points” in the payout formula, but more often due to a separate minimum pension designed to assure at least a minimally adequate benefit for low-wage workers who have contributed for many years.

The trend with respect to redistribution tends to be different in the developing nations. In many of these nations there are special provisions for civil servants, members of the military, the police, and other favored groups that have relatively high wages. These special provisions often make the scheme regressive because they tend to redistribute from lower wage workers to higher wage workers (Overbye, 2001).

Most nations around the world that have mature PAYGO DB schemes in place are facing, or soon expect to be facing, problems financing these schemes. Such schemes are typically easy to finance during the first few decades after introduction, but once they mature the financing becomes much more difficult, particularly during periods of slow economic growth and rapid population aging. In many nations these concerns have lead to a search for an alternative model more suited to the nation’s current circumstances.

The first major new alternative to emerge was the funded (as opposed to PAYGO) defined contribution (DC) model. Until quite recently most DC schemes were limited to voluntary private occupational and personal pension schemes. In 1981 Chile became the first nation to shift from the PAYGO DB model to the funded DC model. The Chilean example has proven very influential, particularly in Latin America (Kritzer, 2000; Williamson, 2001). Today 20 coun-
tries in Europe, Asia, and Latin America have fully or partially privatized their prior PAYGO DB social security systems (James, 2002). Funded DC schemes are typically designed to assure a stronger link between contributions and eventual pension benefits than is the case with most PAYGO DB schemes. They are also designed to be less redistributive than the PAYGO DB schemes they are replacing. That means they may be less regressive than schemes that tend to redistribute from low to high wage workers and to be less progressive than those that tend to redistribute from higher to lower wage workers.

During the mid-1990s a second major alternative to the PAYGO DB model started to emerge based on the concept of notional accounts. Today pension schemes based on or including a pillar based on the notional defined contribution (NDC) model (less commonly referred to as the PAYGO DC model), are in the process of being implemented in six countries: Sweden, Italy, Latvia, Poland, Kyrgyzstan (the Kyrgyz Republic), and Mongolia. This paper seeks to describe and evaluate this new model with particular attention to implications of the model for economically vulnerable groups such as women the low-wage workers. Where appropriate, comparisons will be made to the PAYGO DB model and the funded DC model.

The NDC Model

Like a funded DC scheme, an NDC scheme calls for the creation of an individual retirement account for each covered worker. As workers pay into the system they are credited for the amount paid (in many cases this also includes matching contributions from the employer). The accounting is done in the form of "notional" (virtual) credit. No trust fund builds up and the implicit ‘return’ on such accounts is determined by trends in the rate of economic growth, trends in the wage rate, or trends in the wage base (a measure that takes into consideration both trends in wage rates and changes in the number of workers). Unlike a funded DC scheme, the NDC model is a PAYGO scheme because the workers’ contributions go directly to pay current retiree pensions. In Sweden, for example, the total payroll tax is 18.5 percent split evenly between the employer and the employee. Of this total, 16
percent is earmarked for the NDC and is credited to the worker’s notional account (Sundén, 2000; Palmer, 2002). The size of the payroll tax used to pay pensions and credited to these notional accounts varies from country to country. Yet in all nations with NDC schemes these accounts remain notional, not capitalized. Because it is indexed on the basis of trends in average wage levels rather than trends in financial markets, NDC benefits are likely to be much less volatile than funded DC schemes (Disney, 1999). With the funded DC model from time to time workers in the industrial nations will experience sharp drops in their pension assets just prior to retirement. This is a major problem for all workers, but it is particularly problematic for those of limited means, a group that includes many women. For workers in developing countries market risk is even more problematic. One reason is that more workers in these countries are living near the economic margins. Another reason is that financial fluctuations tend to be more dramatic in the emerging markets. Stock market manipulation is a problem in both rich and poor nations, but in the poor nations financial markets tend to be thin, poorly regulated, and particularly vulnerable to various types of manipulation.

Nations with NDC schemes typically set a minimum retirement age, but no maximum retirement age for workers. The goal of the system is to provide an incentive for workers to continue participating in the labor force beyond the average age of retirement under the prior PAYGO DB system. With NDC schemes the benefit at retirement is based on the notional assets in the account at the time of retirement. The actual pension is adjusted for any increase in life expectancy for the worker’s age cohort. Benefits during the retirement years are adjusted for changes in the cost of living and in some cases for the rate of economic growth as well. By deferring retirement, the individual decreases life expectancy at the time of retirement and increases the notional credit in the account, both of which contribute to a larger monthly pension upon retirement. It is a PAYGO scheme that emulates some of the principles of a funded defined contribution scheme such as no explicit or implicit incentive to retire before a specified age.
It is this combination of PAYGO financing and individual accounts which allow NDC schemes to be beneficial to countries electing to make the transition from a DB to a DC model while facing rapid population aging. NDCs allow the transition from a DB to an individual account DC system without having one generation pay into the system twice; the burden gets shared across more than one generation. In addition, most NDC schemes are multi-pillar schemes that also include funded pillars. The plan in many of these countries is to gradually increase the size and relative dependence on the funded pillar over the years.

There are several other strengths of the NDC model. One is that the individual accounts associated with the NDC model cost less to administer than do those associated with funded DC schemes (Fox & Palmer, 2001). Costs incurred when collecting contributions, keeping records, and providing information to participants are considerably lower with NDC systems than with funded DC schemes (Sundén, 2000).

Another strength is that the NDCs may also help to slow the decrease (or reverse the trend) in the average retirement age that has taken place in many countries with PAYGO DB schemes. The NDC model makes it explicit that the longer the worker remains in the labor force, the larger the eventual pension will be. The expected return for an additional year in the labor force does not drop off after a specified age or number of years worked (Fox & Palmer, 2001). In Italy, the reformed system increases benefits by 6% for those who retire at 65 and decreases benefits by 15% for those who retire at 57. In Sweden, a worker receives a replacement rate of 46% if retiring at 62, 60% if at 65, and 82% if at 68 (Myles & Pierson, 2000). It is estimated that in Latvia, the motivation to remain in the workforce will increase the average retirement age to about 63 by 2005 (Gray & Weig, 1999).

For many transition economies and many developing nations the transparency of the NDC model may reduce the incentive for shifting to work in the informal sector of the economy in an effort to avoid paying high payroll taxes. While the NDC payroll tax may be just as high
as previous payroll taxes, the taxes are more likely to be viewed as retirement savings (Gray & Weig, 1999).

**Limitations of the NDC Model**

Given the structure of existing NDC schemes, there is reason to believe that in most industrial nations women and low-wage workers would tend to do less well under an NDC scheme than under the PAYGO DB scheme they would be replacing. However, there is also reason to believe that the reverse may be true for most developing nations. In many cases changes in social security policy are being made largely because the prior PAYGO DB scheme is in deficit (or projections suggest that it soon will be). Thus the relevant question is not so much how do low-wage workers do relative to how they did under the old (and no longer sustainable) scheme; rather the relevant questions become: (1) Are they being asked to bear a disproportionate share of the burden associated with the changes being made? (2) How will they do relative to the major alternatives that would also produce an acceptable level of balance between revenues and benefits paid?

In the industrial nations women and low-wage workers would often do better under an NDC scheme than under a funded DC scheme, but less well than under the prior PAYGO DB scheme (even with the structural reforms needed to bring pension benefits and revenues into balance). However, any such generalization needs to be made with caution as there are many ways to reform a PAYGO DB scheme and the consequences for vulnerable groups such as women and low-wage workers would differ depending on which reforms were made. Our generalization assumes that the reforms would be made in such as way as not to change the level of redistribution by gender and wage level. The primary reason why women and low-wage workers are likely to do less well under NDC schemes than under PAYGO DB schemes is that NDC schemes or, more precisely, the notional defined contribution pillars of what are often multi-pillar schemes, are not redistributive. The shift to the NDC model, as with the shift to the funded DC model, is often made with the intention of making the system less redistributive than the scheme it replaces.
In most industrial nations a shift from a PAYGO DB scheme to an NDC scheme will result in greater income inequality among retirees. Less redistribution means that it is likely that many low-wage workers will end up worse off than under the prior PAYGO DB scheme. Some, but not all NDC schemes have some redistributive components such as a guaranteed minimum pension or childcare credits that are financed using general tax revenues (Palmer, 2002). While an earnings-related benefit structure may be actuarially fair, certain groups, such as low-wage workers and women (many of whom are low-wage workers), are likely to lose out when a shift is made from a scheme that calls for substantial redistribution to one that calls for much less redistribution.

An NDC scheme will typically provide income replacement in the range of 50 percent of pre-tax earnings for workers who have contributed to the system for at least 40 years (Fox & Palmer, 1999). However, in many of the countries that have introduced NDC schemes (as in many other countries as well) a disproportionate number of women and low-wage workers have work histories that fall far short of 40 years. Many of these workers will need to depend upon a guaranteed minimum pension (if there is one) or on some sort of means-tested pension for the elderly poor (if there is one). Due to the evidence that women and low-wage workers tend to have lower lifetime earnings than middle and upper income men and given the evidence that on average the more affluent tend to live longer than low-wage workers, in most industrial countries men and higher-wage workers tend to benefit whereas women and the less affluent tend to be put at risk of being harmed when a shift is made from a PAYGO DB scheme to an NDC based replacement (Valdés-Prieto, 2000).

The presence of a guaranteed minimum pension provides at least some income redistribution and if it is a generous minimum pension, the redistribution can be substantial. But only Sweden has what would reasonably be considered a generous guaranteed minimum pension. In Latvia, the minimum pension for those over age 60 is approximately 56% of the average pension (Fox & Palmer, 1999). Poland also has a minimum pension for those who have contributed for a minimum of 20
years (for women) and 25 years (for men) that comes to approximately 33% of the average wage (Chłon, Góra & Rutkowski, 1999). Kyrgyzstan and Italy are different as neither has an explicit minimum pension. However, in Kyrgyzstan there is a base pension, a flat amount added to the earnings-related pension for each year of service up to 20 years for women and up to 25 for men. In 1997 that pension was set at the minimum, about 29% of the average wage (Castel & Fox, 2001). In Italy while there is no minimum pension, there is a means-tested social assistance pension for those age 65 and older (Borella, 2001).

With an NDC scheme one consequence of early retirement is a sharp reduction in pension benefits, often much more than was the case under the PAYG DB scheme being replaced. In Latvia women who retire at age 55 will receive on average a 25% lower pension under the new NDC scheme (Fox & Palmer, 1999). In Poland this becomes even more problematic as women who retire early receive a mere 50% of what they would have received had they remained in the labor force until age 60, the age of eligibility for full pension benefits (Fox, 1998). Due to the tendency in these countries for women in their 50s and 60s to be drawn into caring for an ailing spouse or ailing parents, it is often hard to avoid taking early retirement. When women retire early their NDC pensions are reduced in part by the tendency to have contributed for fewer years, in part by the longer life expectancies at retirement, and in part by lower wages during the working years. All these factors increase the risk of poverty among retired women (Fox & Palmer, 1999; Castel & Fox, 2001).

Low-wage workers tend to have more health problems and shorter life spans due to poor working conditions. In several of these countries low-wage workers are going to find it difficult to work, or to find covered (formal sector) work, for the 40 years or so required to assure an adequate NDC based pension. When they retire early, as many will, they will end up with lower lifetime benefits due in part to short work histories and in part to low wages. In Sweden a worker does not become eligible for the minimum pension until age 65 (Palmer, 2002). As a result low-wage earners who retire early may have to wait several years before they become eligible for the minimum pension. Policy in
Latvia is even more stringent as those who retire before age 60 are ineligible for the minimum pension at any age (Fox, 1998). In addition, in both Latvia and Sweden the family of a worker who dies before becoming a pensioner receives no funds from the deceased’s notional account. In contrast, this is not the case in nations with funded DC schemes. Rather than distributing the funds to the deceased’s estate, the notional credit is redistributed nationally to the accounts of other workers in the same age cohort (Diamond, 2002).

NDC schemes often compensate workers for time spent out of the workforce for child-care, long-term illness, or a job related injury; but the notional credit for such periods out of the workforce tends to be meager. In Latvia workers receive three years of compensation per child, but it assumes that the parent (usually a woman) getting this credit would have been working at the minimum wage (Fox, 1998). For many this is not at all a realistic assumption and the contribution to their notional pension account is as a result very modest. The Swedish system is more generous. For a parent with no earnings prior to the birth of a child, the notional credit assumes a wage of 75 percent of the average wage in Sweden. But for a parent with prior earnings there is the option to set the notional credit at the level of the parent’s own earnings the year prior to the birth of the child. For parents who return to work very quickly there is a third option, a fixed supplement indexed to average per capita wage levels that is added (Palmer, 2000).

While many PAYGO DB schemes have special benefits for spouses with little or no paid labor force experience, such provisions are lacking in NDC schemes. In addition widow benefits are typically included in PAYGO DB schemes, but excluded from NDC schemes. However, many nations with NDC schemes do require participation in a separate survivor’s insurance scheme. Latvia, for example, eliminated all survivor benefits, except those to minor children as part of the shift to its NDC scheme. Given that women on average live eight years longer than men in Latvia, this is a substantial loss for many women (Fox & Palmer, 1999).
Compensation for disability and unemployment has also become problematic in some nations that have adopted NDC schemes. In Latvia, for example, the self-employed and those employed in agriculture are now ineligible to receive unemployment benefits or worker’s compensation for job injury. In addition, those who are above the minimum pension age are ineligible for any unemployment or disability coverage (Fox & Palmer, 1999).

To this point we have argued that the shift from a PAYGO DB scheme to a NDC scheme will often benefit high-wage workers while putting low-wage workers at economic risk. However, the lack of redistribution that is central to the NDC model is likely to lead to a very different outcome in those countries with PAYGO DB schemes that tend to redistribute from lower-wage to higher-wage workers as is the case in many developing countries. For some countries the reason is that special provisions have been written for a few favored categories of workers (e.g., judges) who are allowed full pension benefits at an earlier age or after many fewer years of contribution than is the case for ordinary workers. In other countries the reason is that many low-wage workers in covered jobs are only in those jobs for a few years and never qualify for pension benefits. If the scheme requires at least 30 years of covered work to become eligible, many workers in low-wage jobs will never make it to 30 years. When this happens the contributions they do make get distributed to other workers who tend to be in higher paying more secure jobs. For those developing countries with PAYGO DB schemes that tend to redistribute from lower to higher wage workers, the shift to a NDC model that calls for less redistribution could increase pension benefits for low-wage workers.

However, a shift from a PAYGO DB scheme to an NDC scheme will not automatically improve conditions for low-wage workers. The NDC schemes themselves have provisions about the number of years a person must contribute to be eligible to obtain a pension based on those contributions. In some countries relatively few years are required. In Italy the lower limit is 5 years (Hamann, 1997), as it is in Latvia (Fox & Palmer, 1999), but in some other countries more years are required.
In addition, if the worker dies before becoming eligible to receive a pension, there is sometimes, as in Sweden, no provision to transfer credit for those contributions to a surviving spouse or child. In Kyrgyzstan a survivor pension is paid to the family if the workers had been covered for 5 years or more (Castel, Personal correspondence, July 5, 2002). In Latvia the survivor benefits are limited to minor children (Fox & Palmer, 1999). In Poland, half of the notional assets are transferred to the surviving spouse and the other half is paid as a lump sum to designated beneficiaries (Chfort et al., 1999). In short, even with an NDC scheme many low-wage workers and many women will never become eligible for pension benefits.

How about funded DC schemes for the developing nations? With such schemes those low-wage workers who are covered should eventually become eligible for at least some pension benefits based on contributions made over the years. However, when accounts are small, as they will be for many poor workers in poor nations, the cost of administering these accounts is often quite high. When this problem is combined with risks of market manipulation and high volatility, many of these workers will end up taking out less than they put into these funded accounts. Many will get something for their contributions over the years and many will be able to leave some sort of inheritance to surviving family members, but it is likely that very few low-wage workers will enjoy high returns on their contributions. In short, for the developing countries the funded DC model will assure at least some sort of return which will be more than many low-wage workers will get in these countries under either PAYGO DB or NDC schemes. However, it will be easier to make the NDC model work in such countries (because it is administratively simpler and there is less room for corruption, stock market manipulation and the like) and it should be possible to adapt this model so that a substantial number of low-wage contributors end up with at least some pension benefits.

**Improving the NDC Model**

Most existing NDC schemes include a minimum pension of some sort. In some cases it is means tested for all sources of income and thus is a
form of social assistance and in some it is means tested only for other sources of pension income and thus is not a form of social assistance, but in all cases this minimum pension is means tested in some way (Cichon, 1999). Only in Sweden would it be appropriate to describe this minimum pension as generous; in most countries this pension is at best a subsistence pension. The level to which this minimum pension can be raised to assure something more than a subsistence minimum is going to depend upon available economic resources (e.g., level of development), demographic pressures (e.g., the rate of population aging) economic pressures (e.g., sensitivity to global competitive pressure), and political will (e.g., the political influence of those who favor using the pension system as a mechanism for income redistribution). Where the minimum is relatively high (which is most likely in the industrial nations), the overall NDC scheme could be designed to be as redistributive as the PAYGO DB scheme being replaced. In theory the minimum could be set at a level such that the shift from a prior PAYGO DB scheme would not adversely impact women or low-wage workers more generally. However, as most nations do not make major changes in their social security systems unless they are having, or anticipating, problems financing the existing scheme, it is reasonable to assume that in connection with the switch from the PAYGO DB model to the NDC model there will be a number of other changes designed to reduce the fiscal burden on the government. There is a high risk that a number of these changes (e.g., increasing the age of retirement) will disproportionately impact economically vulnerable groups such as women (particularly single women) and low-wage workers who tend to have less influence on government policy than do the more affluent.

A well designed minimum pension will provide a relatively high replacement rate, provide an adequate level of progressive redistribution, and protect most covered workers against poverty in old age without at the same time providing incentives for early retirement or to shift to the informal market (Holzmann & Palacios, 2001). While a generous minimum pension component would go a long way toward dealing with the major risks to women and minorities associated with the NDC alternative (relative to the PAYGO DB alternative), it will be
a challenge to do this without undermining the incentives to increase the number of years workers remain in the labor force (James, 2002).

A second improvement that would help to protect many women and low-wage workers is the introduction of more comprehensive and generous notional credit for workers who spend time out of the labor force for a number of legitimate reasons. Of particular note in this context is coverage for those (usually women) providing care to young children, to disabled family members, or to elderly parents. Several NDC schemes do provide such coverage, but it is often provided at the level of the minimum wage. More adequate protection would be provided were more nations to follow the Swedish model and offer several alternatives for computing the notional credit including some that would more adequately compensate middle-income workers for time out of the labor force in connection with caregiving activities. In Sweden coverage is provided for up to four years for each child with the credit based on the most favorable of several options including: (1) seventy-five percent of the average earnings for all covered persons, (2) the worker’s own earnings the year before the child’s birth, or (3) a fixed amount indexed to the covered wage per capita (Palmer, 2000). The Swedish model is also useful for the range of other categories of workers who are eligible for notional credit for transfer income from unemployment insurance or disability insurance and for special credit while serving compulsory military service or while university students (Sundén, 2000). While social security policy makers in some nations may want to provide more generous notional credit and to more categories of covered workers, there will be limits as to what is feasible given the concern about undercutting work incentives and promising overly generous pension benefits that will burden future workers.

**Conclusion**

The notional defined contribution model is one of the two major old-age security policy models that have been proposed as alternatives to the PAYGO DB model; the other being full or partial privatization via the introduction of funded defined contribution individual accounts. In most cases these new models are being sought as ways to deal with
current or projected future problems financing existing PAYGO DB public pension systems. While the NDC model has some drawbacks relative to the PAYGO DB model and generally some different drawbacks relative to the funded DC model, it may well be very appropriate as the major pillar for many nations seeking an alternative to their current PAYGO DB schemes. It may be useful as part of a comprehensive set of changes designed to reduce overall public pension spending levels (James, 2002). The model may be particularly useful to nations in the European Union (EU). Workers in the EU can move freely from nation to nation to work and the portability of NDC pension benefits could prove to be a substantial advantage for those who do end up working for substantial periods of time in two or more countries (Feldstein, 2001). The NDC model may also prove useful for many of the former Soviet nations as they struggle to deal with the transition from command to market economies. Many of these nations inherited pension systems that promised pension benefits far in excess of what is feasible given the current state of their economies. Many of these PAYGO DB schemes are in partial default and the NDC model offers a way to make a gradual transition to an alternative that is more transparent and provides more predictable pensions.

With any major change in social security policy there are likely to be some who stand to gain from the changes and some who are put at risk. With the shift from a PAYGO DB scheme to a defined contributions scheme with individual accounts, in most developed nations low-wage workers and women will be put at increased risk unless special provisions are included to help protect them; but in many developing nations these same groups may benefit from the shift. In this paper we have focused on two of the most important protective provisions. One is an adequate minimum pension. The inclusion of a minimum pension pillar as part of the overall old-age security scheme is a plus and a generous minimum pension can greatly benefit women, low-wage workers, and a number of other vulnerable groups. A second provision that can potentially help women and other vulnerable groups is generous notional credit for time out of the labor force for a number of clearly
specified reasons such as providing care to a young or disable child or to an elderly spouse or parent.

It is becoming common to introduce multi-pillar schemes that include both funded and notional defined contribution accounts. One advantage of the funded DC model is that it has the potential to increase the rate of national savings which in turn is likely to contribute to economic growth. In the long run this would tend to make it easier to support a larger retired population. Another advantage is that it would be politically more difficult for the government to expropriate funds in a funded account than in a notional account. However, the NDC model has a different set of advantages. It is a lot easier to make the transition from a PAYGO DB model to an NDC model than to a funded DC model because the fiscal burden of paying pensions to those already retired (or near retirement) at the time the transition is started can be spread over a longer period of time. With the NDC model it is also easier to provide pension credit for time out of the paid labor force in connection with certain socially valuable activities such as child care or parent care. In addition the NDC model does not subject workers to the market risks associated with schemes based on the funded DC model. This last issue is important to all workers, but particularly those who are the most dependent upon these pensions for retirement income, a group that includes many women and low-wage workers.

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