Chapter 19

Implementing the NDC
Theoretical Model: A Comparison of Italy and Sweden

Sandro Gronchi and Sergio Nisticò*

In the course of the last century, most of the industrial countries adopted public pay-as-you-go (PAYG) pension systems; after World War II, a period of rapid economic and population growth created the conditions for award formulae and methods of indexation that brought retirement benefits ever closer to final salary and also yearly adjusted to the earnings growth of active workers. Subsequently, those conditions of rapid economic and population growth vanished. The sharp economic slowdown of the 1970s was accompanied by the harbingers of a population aging that is expected to be accentuated drastically in the coming decades. However, the downward rigidity of benefits has prevented pegging the growth of expenditure to the reduced growth of available resources. In some countries such a difference in growth rates has already caused the emergence of disequilibria. Italy stands out from the others: 30 to 35 percent of its pension expenditure is financed from the state budget and half of its public debt has been generated by this expenditure.

Some scholars hold that the unbalance has to be warded off by a courageous process of liberation from the “trap” of pay-as-you-go to arrive ultimately, if after a lengthy and costly transitional phase, at the safe haven of funded public retirement systems or private ones. Others question the curative powers of funding, while still others call for facing the demographic emergency by simply revising the parameters to make the traditional award and indexation rules less generous. The debate on the “virtues and vices” of the two types of pension plan and their ability to weather demographic cycles has not yet produced a victor, although the recent difficulties of the financial markets appear to have temporarily clipped the wings of the most ardent advocates of funding. In the absence of reliable theo-

* Sandro Gronchi is a full professor of economics at La Sapienza University of Rome. He is at present seconded to the School of Economics and Finance, the researching and training unit of the Italian Ministry for Economy. Sergio Nisticò is a professor of economics at the University of Cassino.

For invaluable comments and collaboration, the authors thank Onorato Castellino, Giulio De Capraris, Richard Disney, Elsa Fornero, Fosco Giovannoni, Mario Intorcia, Agneta Kruse, Beniamino Lapadula, Raimondo Manca, Marcello Messori, and Ole Settergren. Our special thanks go to Gudrun Ehnsson of the Swedish National Social Insurance Board, for patiently supplying the statistical-actuarial data, the laws and regulations, and the explanations that made possible the in-depth study of major aspects of the Swedish pension reform.
retical bases, there is growing support for the compromise proposal of mixed systems to
diversify working people’s retirement portfolios, a position long advocated by the World
Bank, among others.\(^5\)

The range of possible plans has recently been extended by a sort of “genetic innovation”
that has inspired the Italian and Latvian reforms that went into effect in 1996 and those of
Sweden and Poland, in effect since 1998 and 1999 respectively. Retaining the PAYG fi-
nancial architecture, meaning that current pension expenditure is still financed by current con-
tribution revenues, the new scheme switches over to the award formula and indexation
rule typical of funded, defined contribution systems. This is why Italians call it the contribu-
tions-based scheme. Internationally, different terms are used to label the new plan: notion-
ally funded, notional accounts, notional defined contribution, or simply the acronym NDC.\(^6\)

The present work aims to provide a detailed comparative analysis of the Italian and
Swedish NDC reforms as produced independently within their respective national con-
fines, in the absence of any opportunity for fruitful interchange between Swedish and Ital-
ian experts, or even trade unions or political leaders.\(^7\) The comparison will be made in the
light of a preliminary theoretical inquiry, which will better allow us to assess the main dif-
ferences separating the two reforms.

The NDC Scheme

In most PAYG defined benefit schemes, newly granted benefits are the product of three
factors: the number of years of contributions, a percentage called the accrual rate, and a
conventional salary called pensionable earnings—the mean of the earnings obtained over
the final years of work, revalued at a given rate. Although in some countries the mean is
calculated over a certain number of “top” earnings years rather than the last ones, award
formulae are still dominated by “last earnings rules.”\(^8\) As to indexation, pension benefits
have traditionally grown with wages, while the recent strains that adverse demography
has exerted on PAYG systems have induced most countries to adopt less generous rules.\(^9\)

In defined benefit schemes that exhibit financial equilibrium—that is, that year by year
levy a tax rate equal to the ratio between pension expenditure and wage bill—paid in con-
tributions are implicitly remunerated with a rate of return equal to the growth rate of the
wage bill itself. This is a well-known theorem\(^10\) that rigorously holds when wage and pop-
ulation growth as well as mortality rates are constant through time.\(^11\)

It is important to emphasize that the return referred to in the theorem is a “genera-
tional” one—that on the indistinct aggregate of contributions paid by a cohort as a
whole—while the “individual” returns on the contributions paid by each member will dif-
fer significantly from one another. It has been shown that earnings-based schemes are
inherently unfair in that they reward early retirement and careers with fast rising wages.\(^12\)

The principal purpose of the NDC scheme is precisely to preclude differences in indi-
vidual returns, so as to guarantee actuarial fairness. On the other hand, the scheme is also
intended to ensure sustainability of the PAYG pension systems—that is, to adjust automati-
cally to demographic shocks and so avoid the delays inevitably faced by unpopular poli-
cies that have either to reduce benefits or to increase tax rates.

A Broad Definition

The NDC scheme conceives the PAYG system as a “virtual bank.” Every individual has a
savings account in which the contributions are “deposited” up to retirement and from
which the yearly pension benefits are “withdrawn” afterward.

For the purpose of taking into account the incongruities of the Italian reform discussed
below, it is helpful to accept a broad definition of contribution-based schemes that admits
the partial heterogeneousness of the rates of return that the virtual bank credits to the personal accounts. Specifically, these schemes should be allowed to remunerate pensioners’ accounts at one rate (for instance, the yield on short-term government paper) and active workers’ accounts at another (say, the yield on long-term government bonds). In any case, the deposit-exhaustion constraint must be satisfied; that is, the money withdrawn must equal the money deposited including the interest accrued. In other words, the account balance must be zero after the last annual benefit has been withdrawn.

Assuming for simplicity that time is discrete, the deposit-exhaustion constraint takes the form of the following equivalence between the future value of contributions deposited up to retirement and the present value of pension benefits that will be withdrawn from then on:

$$a \cdot \sum_{i=1}^{n} w_i \cdot \prod_{j=i+1}^{n+1} (1+\pi^R_j) = p \cdot \left(1 + \sum_{i=2}^{n+m} \prod_{j=i+1}^{n+1} \frac{1+\sigma_j}{1+\pi^R_j}\right).$$

(19.1)

where $n$ denotes the duration of working life, $a$ the contribution rate, $w_i$ the wage earned in $i$th year, $p$ the first annual benefit, $\pi^L_i$ and $\pi^R_j$ the value taken in $j$th year by the returns chosen to credit the account balances of workers and pensioners respectively, $\sigma_j$ the value taken in $j$th year by the rate chosen to index pension benefits, and $m$ the life expectancy at retirement.

From equation 9.1 it follows that:

$$p = \left[a \cdot \sum_{i=1}^{n} w_i \cdot \prod_{j=i+1}^{n+1} (1+\pi^R_j)\right] \cdot h$$

(19.2)

where

$$h = \left(1 + \sum_{i=2}^{n+m} \prod_{j=i+1}^{n+1} \frac{1+\sigma_j}{1+\pi^R_j}\right)^{-1}.$$  

(19.3)

Adopting Italian terminology, hereafter $h$ will be called conversion rate and the term in square brackets on the right-hand side of equation 19.2 will be notional capital accrued at retirement.

When the first annual benefit must be granted according to equation 19.2, the notional capital is known in that it can be calculated from the worker’s wage history and the time series of the past values taken by the rate of return for active workers, $\pi^L$. Calculating the conversion rate would instead require knowledge of the future values that will be taken in the next $m - 1$ years by both the indexation rate $\sigma$ (for instance, inflation or the average wage growth) and the rate of return for pensioners, $\pi^R$.

Calculating $h$ becomes possible if one forgoes the idea of choosing $\sigma$ independently from $\pi^R$. One can elect one of two options. Under one, adopted by the Italian reform, the policy maker chooses the indexation rate, which is therefore the exogenous variable, and allows the annual rates of return to pensioners to be endogenously determined by the formula

$$\pi^R_j = (1+\sigma_j) \cdot (1+\delta) - 1 \quad \forall j,$$  

(19.4)

where $\delta$ is also set by the policy maker. Notice that $\delta$ is the amount by which $\pi^R$ will deviate from $\sigma$ in each year, which explains why it is called deviation rate in this study. Substi-
tuting equation 19.4 into 19.3, \( h \) reduces to the following function of only two independent variables, \( \delta \) and \( m \):

\[
h(\delta, m) = \left[ \sum_{i=1}^{\infty} (1+\delta)^{-i} \right]^{-1}.
\]

(19.5)

Under the second option, which was taken by the Swedish reform, the policy maker sets exogenously the rate of return to pensioners, letting the annual indexation rates be endogenously determined by the formula

\[
\sigma_j = \frac{1 + \pi^R_j}{1 + \delta} - 1.
\]

(19.6)

Algebraically, formula 19.6 is simply the inverse of 19.4. Therefore, substituting it into equation 19.3, one again gets equation 19.5.

Formula 19.5 shows that the conversion rate is an increasing function of the deviation rate. It is important to note that choosing high values of \( \delta \) to have more generous initial pension awards will have effects that differ depending on whether the policy maker opts for the endogenous return to pensioners (19.4) or for the endogenous indexation (19.6). If the former, the rate of return to pensioners will be higher; if the latter, the indexation rate will be lower. Under option 19.6 there is thus a trade-off between the initial pension award and indexation, while \( \delta \) is the “lever” to resolve it.

Formula 19.5 also shows that for any given value of the deviation rate \( \delta \), the conversion rate is decreasing with respect to life expectancy, so that (gender given) it increases with age at retirement and (age given) is higher for men.

The Canonical Scheme

The definition of the NDC scheme set out above is broad enough to cover both the Italian and the Swedish reforms as well as the canonical scheme discussed here. The comparative discussion of the three is deferred to the following section.

The canonical scheme is characterized first of all by the option expressed in equation 19.6, which takes the rate of return to pensioners as exogenous, and, within that option, by the further choice

\[
\pi^R_j = (1 + \alpha_j) \cdot (1 + \lambda_j) - 1 \quad \forall j,
\]

(19.7)

where \( \alpha \) and \( \lambda \) denote respectively the growth rates of wages and employment so that the right-hand expression is the growth rate of the wage bill in year \( j \). Second, the canonical scheme is characterized by the following condition:

\[
\pi^R_j = \pi^L_j \quad \forall j,
\]

(19.8)

which precludes different treatment of workers and retirees, thus ensuring spatial or horizontal uniformity of returns.

In a steady state—that is, under the assumption that \( \alpha \) and \( \lambda \) are constant through time—uniformity takes on a “temporal” or “vertical” dimension as well, in that the rate of return the virtual bank accords in each year to all account holders is the same overall rate it accords to each of them throughout all years. Therefore, in steady state the scheme pre-
cludes different overall returns to individuals that assume different behaviors and/or belong to different cohorts.

In a less restrictive context—a semisteady state where the rate $\lambda$ is constant while the rate $\alpha$ is allowed to vary—it can be proved that the canonical scheme is sustainable in that it generates a pension expenditure equal to revenue generated by the preset contribution rate.\(^{14}\) That is why the growth rate of the wage bill is referred to below as the sustainable return.

In the presence of variable employment growth rates, the canonical scheme cannot ensure equilibrium year by year. Nevertheless, temporary surpluses or deficits that result from an increase or decrease in $\lambda$ are progressively absorbed.\(^{15}\) Therefore, the NDC scheme is endowed with a powerful "automatic pilot" that, in the presence of recurrent shocks of opposite sign due to business cycles, ensures equilibrium as a trend. In the event of a stable reduction in $\lambda$ that occurs because of a long-run demographic depression, the pilot immediately takes countermeasures to curb expenditures, avoiding the usually protracted waiting period necessary before governments resign themselves to bearing the electoral cost of parametric reforms and unions assume the responsibility of agreeing to such changes. As this prompt intervention takes the two-fold form of slower indexation of existing pensions and reduction of the notional capitals being formed (thus containing future pensions that will be awarded to present workers), the sacrifice is correctly imposed on all generations in being.\(^{16}\)

The Italian and Swedish NDC Reforms

Neither the Italian nor the Swedish pension reform of the 1990s adopted the canonical scheme set out in in the previous section. Nevertheless, they both fit the broad definition given in this chapter. The two schemes are discussed below.

The Crucial Differences

A first difference, quite radical, concerns the choice between the option expressed by equation 19.4 and that expressed by equation 19.6. Italy opted for equation 19.4, with indexation solely to inflation, so that the real return to pensioners each year will be equal to the value chosen for the deviation rate $\delta$. Sweden opted for equation 19.6, giving pensioners a return equal to the increase in the average wage and thus each year letting indexation be equal to the average wage growth net of $\delta$.

A second important difference concerns the rate of return to active workers. In Sweden it is identical to the rate of return of pensioners (nominal wage growth); in Italy it is equal to nominal GDP growth. It follows that Sweden has perfectly achieved spatial fairness, in that year by year the same return is credited to workers and pensioners, while Italy has not achieved this fairness.

These choices carry implications for sustainability. As a consequence of the contraction of the work force presaged by demographic projections, in the decades to come, the increase in average wage will tend to exceed the sustainable rate indicated by the wage bill growth rate. Accordingly, in 2001 the Swedish parliament acted to remedy this problem, introducing an ingenious balance mechanism that went into effect in 2003.\(^{17}\)

In Italy, sustainability is not ensured, because neither the return to workers nor the return to pensioners is equal to the sustainable return. The return to workers (the GDP growth rate) can be equal to the wage bill growth rate only if the distributive shares in GDP remain constant. For the return to pensioners, only by a fluke could the warranted rate of $\delta$ percentage points in real terms match the sustainable rate.
Other Implementation Features

There are other, equally important features characterizing the two NDC reforms. The most significant are those involving values chosen for the deviation rate $\delta$, retirement age, survivor’s benefits, differentiation of conversion rates by gender, the contribution rate, the updating of the conversion rates, disability pensions, administrative costs, the fragmentation of the pension system, and the diversification of the workers’ retirement portfolio via a parallel funded scheme. Discussion of all these features will provide the occasion for an overview of the options and flexibilities offered by NDC pension schemes.

The Values for $\delta$

A modest difference between the two NDC schemes concerns the value of the deviation rate $\delta$ for calculating the conversion rates under equation 19.5. Italy took $\delta = 1.5$ percent, Sweden $\delta = 1.6$ percent. These values are both fairly high in order to provide replacement rates comparable to those in being prior to the reforms.

As a consequence of the different choice between option 19.4 and option 19.6, discussed above, the high values chosen for $\delta$ will have quite different effects in the two countries. First of all, the Swedish NDC scheme is open to a “social” threat deriving from negative real indexation that will occur any time the real return (real wage growth possibly adjusted by the balance mechanism) is lower than 1.6 percent. If such reductions in the purchasing power of pensions will not be politically viable, unsustainability problems will arise. Italy precluded negative real indexation but offered to pensioners a nominal return equal to inflation plus 1.5 percent, a choice which, as noted above, jeopardizes both horizontal fairness and sustainability.

In addition, both the Italian and the Swedish schemes are open to another kind of social threat to sustainability. This threat derives from the excessive divergence between the rise in newly granted pensions (which should tend to parallel real wages growth) and the indexation of old ones. In Sweden, the differential is 1.6 percentage points, so that the pensions first paid in any given year have purchasing power 1.6 percent greater than those initiated in the previous year, 17 percent greater than those initiated 10 years earlier, 37 percent greater than those started 20 years earlier, and 61 percent greater than 30-year-old pensions. Such pronounced disparities may prove to be socially intolerable, resulting in periodic equalizations of the longest-standing pensions. In Italy, these equalizations threaten to create analogous or even more severe problems, because pensions are indexed only to prices and because ordinarily real wages rise by more than 1.6 percent.

There is an important difference, however, between Italian and Swedish “vintage pensions” deriving from the choice the two countries made between options 19.4 and 19.6. Italy’s small, long-standing pensions will be perceived by public opinion as the product of an unfair indexation rule that politicians have arbitrarily chosen and that they should redress (for instance by raising indexation to wages), whereas in Sweden the endogenous indexation rule should make people understand that vintage pensions are the price retirees have to pay for higher replacement rates. This trade-off could be understood even better if, at retirement, workers could opt for stronger indexation in exchange for a lower conversion rate. This could deter them from complaining about not having done it afterward.

Retirement Age

When the reformed Italian pension system is fully phased in, workers will ordinarily be allowed to retire between the ages of 57 and 65. However, provision is also made for employees to agree with their employer to continue working beyond the normal retirement age. Consequently, conversion rates should have been defined for all ages from 57
up. As this was not done, and conversion rates are specified only for the normal retirement ages, there will be quite a technical problem in determining the benefits for those retiring after 65. Should these benefits be unfairly determined on the basis of the 65-year-old conversion rate? And should the pensions for categories such as university teachers and magistrates, whose mandatory retirement age is traditionally after 65, be determined on the same basis?

No such neglect is to be found in the Swedish system. Retirement is ordinarily envisaged between 61 and 67 but, as in Italy, can be deferred with no upper limit (employees must have the employer’s consent). Thus the conversion rates have been calculated for all foreseeable retirement ages. Since the age range is broad indeed, the conversion rates are highly differentiated. The rate for someone retiring at 80 is nearly two-and-half times as high as the rate for a retiree at 61.

Actually, the Swedish reform allows for a “partial retirement” that essentially does away with the very notion of standard retirement ages. For starting at age 61, part of the individual’s notional capital can be converted into a pension while he or she continues to work. The contributions paid by these “worker-pensioners” augment the residual notional capital that at full retirement will be converted into a supplement to the pension.

The free choice of retirement age, in some way preserved by both the Italian and the Swedish reforms, is a “value” that the NDC schemes can allow for. Those who choose to retire earlier actually self-finance their choice by accepting a lower conversion rate. However, the system can undergo temporary unbalances when sudden changes of the individuals’ behaviors take place that determine large alterations of the average age at retirement. Clearly, the broader the range of the allowed retirement ages is, the higher the risk of temporary unbalances. In Sweden, the risk might be attenuated by the possibility of partial retirement that allows for smooth changes of behavior.

SURVIVOR’S BENEFITS

In the area of survivor’s benefits, the reforms of both countries retained the preexisting rules. Sweden has retained a 1990 law that had abolished the survivor’s pension, to which only women had been entitled previously. Italy kept the survivor’s entitlement, for which both men and women are eligible, to 60 percent of the deceased spouse’s pension.

Excluding survivor’s benefits implies that the cost of welfare benefits for needy survivors must be defrayed by the state. The cost may be substantial in a country (such as Italy) where women’s labor market participation is low.

At the same time, however, the concession of survivor’s benefits raises some major questions. First, the conversion rates are significantly lower than the rates that can be granted when pensions are not paid to survivors, because the second term in equation 19.1 must be augmented by the weight of the continuation of the pension payment to the survivor. So, in order to keep the income replacement rate from being too low, appreciably higher contribution rates are required. Second, it must be decided whether the conversion rates are differentiated only according to the age at retirement or also according to marital status and possibly also spouse’s age.

Note that the latter option must take into account the social acceptability (or lack thereof) of the idea that one individual should get a smaller pension than another “just” because he or she has a spouse, or a spouse who is younger. However, this reluctance could be attenuated if pensioners could choose freely between conversion rates (hence pension awards) “on one head” or “on two heads.”

Also note that the former option (differentiation by age) produces a significant redistribution in favor of married persons, especially those with younger spouses. It also poses practical problems, because calculating conversion rates requires detailed information that
national statistics do not generally furnish, such as the probability of a deceased pensioner’s leaving a spouse and the difference in age between direct beneficiary and spouse. Both of these data may vary with the age of the deceased pensioner, so data would have to be collected for all possible ages.

Under the time pressure on the reform process stemming from the general political situation in Italy, consideration of the two options (together with the various questions of fairness and calculation raised by each) could not be exhaustive and the decision was taken to differentiate conversion rates only by age at retirement. Most statistical information was not available, so that a rather serious lack of data surrounded the Italian decision. Nor was the National Statistical Institute ever assigned to collect the data needed for proper calculation of the conversion rates. Thus the first decennial review of the system intended to produce the conversion rates that will go in effect starting from 2006 will face exactly the same lack of information.

Finally, Italy makes the survivor’s benefit available also in the cases of workers dying before retirement age. The pension going to the surviving spouse is 60 percent of the “virtual” pension that the deceased worker would have been entitled to. Similar to calculating disability allowances (see the discussion of disability below), such a virtual pension is calculated by means of a “quasi-contributions-based formula.” In fact, it is calculated by multiplying the notional capital accrued to the deceased by the conversion rate corresponding to 57 years of age (whatever the actual age of the survivor).

The Swedish system, not recognizing survivor’s benefits to pensioners’ spouses, does not accord them to worker’s spouses either. When a worker predeceases a spouse, the surviving spouse is assisted by a welfare institute entirely separate from the pension system, while the deceased worker’s notional capital is distributed to the members of his or her cohort in the form of a contingent rise in the rate of return.

Notice that the Swedish choice ensures financial stability, whereas the Italian way of transforming the balance of the predeceased worker’s account into a survivor’s benefit does not.

**DIFFERENTIATION OF CONVERSION RATES BY GENDER**

Differing on survivor’s benefits, the Italian and Swedish schemes are united in excluding differentiation of conversion rates according to gender. As life expectancy for men and women is fairly different, this approach tends to reward women. In Italy the premium is appreciably attenuated by the presence of survivor’s benefit. In particular, it is attenuated by the following two factors:

- Women are much less likely to leave a surviving spouse than men, and
- Male survivors are less long-lived than female survivors.

Both of these factors are further accentuated since the husband is generally older than the wife, so that male workers might actually be getting a premium if survivor’s benefits were not significantly lower than the direct pension of the deceased (60 percent).

Unisex conversion rates should be based on parameters (mortality tables and the other statistics necessitated if survivor’s benefits are available) that are neutral—that is, derived from mixed populations of both sexes. The Swedish calculations use precisely this rigorous technique, while the Italian conversion rates are an average of rates calculated separately for men and women.

**THE UPDATING OF THE CONVERSION RATES**

Three main issues should be taken into account by the mechanisms that regulate the updating of the conversion rates. First of all, system sustainability requires that the con-
version rates be continuously updated according to mortality rates. Second, the system must safeguard workers’ right to choose their retirement age on the basis of stable conversion rates. In other words, the decision to postpone retirement in order to be entitled to a larger pension must not be neutralized (even in part) by the subsequent lowering of the conversion rates (due to updating). Third, the system must prevent a different updating of conversion rates for workers in the same cohort who elect to retire at different ages. This would be an unacceptable intragenerational unfairness, tantamount to positing different life expectancies to different workers born in the same year.

The Swedish reform has sought to reconcile these three needs by devising a procedure for assigning conversion rates by cohort, as follows.

- At the start of the year (say, 2002) before that in which a cohort first reaches the minimum retirement age of 61 (2003 for those born in 1942), the workers in this cohort are informed of the conversion rates for ages 61 to 64. These rates are based on the life expectancy tables referring to the last five years (1997–2001). They have temporary validity in that they are used to calculate the provisional pension benefit, up to age 65, of the workers in this cohort retiring over the next four years (2003–6).
- At the start of the year (2006) before that in which the cohort turns 65 (2007), the conversion rates for all ages from 65 up are announced, calculated according to the life expectancy tables referring to the last five years (2001–5).
- In the year (2007) when the cohort turns 65, the provisional pensions of workers already retired (having elected to retire between the ages of 61 and 64) are definitively recalculated on the basis of the new conversion rate for 65-year-olds and their notional capital that remains after the deduction of the benefits received and the addition of the returns credited to the balance since retirement.

In practical terms, full conversion rate stability, and hence full retirement planning, is ensured only from age 65. Retiring earlier is not prohibited, but those who elect to do so must accept the uncertainty implicit in the fact that at 65 their imputed life expectancy will be the same as the life expectancy that will be assigned to contemporaries who elected to continue working.

Unfortunately, the Italian procedures for revising the conversion rates do not satisfy any of the three needs—for continuous updating according to mortality rates, for safeguarding workers’ right to choose retirement age based on stable conversion rates, and for preventing the attribution of different life expectancies to individuals belonging to the same cohort—set out above. First of all, the Italian procedures do not effectively contain disequilibria, because revision takes place only every 10 years. The rates in effect from 1996 will not be updated until 2006. Second, the intragenerational inequities cited above are not avoided, because the new rates apply to all workers (regardless of cohort) retiring over the subsequent decade. For example, someone born in 1962 and retiring at 64 in 2026 will be assumed to have a longer life expectancy (at birth) than someone belonging to the same cohort who retires at 63 in 2025. And finally, not all cohorts can plan their retirement on the basis of stable conversion rates. Indeed, as the range of retirement ages spans 9 years (57–65) while coefficients are updated every 10 years, full planning is assured to only two of every ten cohorts: the first to reach retirement age after each revision. This uncertainty is aggravated by the fact that there is no provision for the new conversion rates to be announced before the old ones expire. Fears of the worst could thus trigger massive retirement on the eve of every revision.

To conclude, let us mention the different nature of the decision-making process whereby the conversion rates are revised. In Italy, the process is political, involving parliament and business and labor organizations and ending with a joint decision taken by the
minister for social policy and the minister for the economy and finance. In Sweden, the revision is performed in a strictly technical forum, namely the statistical-actuarial bureaus of the National Social Insurance Board, based on life expectancy tables prepared by the national statistical institute.

**Contributions**

Italy has an overall contribution rate for payroll employees of 32.7 percent. Formally, 27 percent of this amount is charged to workers and 73 percent to employers. In Sweden, the overall rate is 14.884 percent, 40 percent of which charged to workers and 60 percent to employers.32

For the self-employed, when fully phased in the Italian system will have a contribution rate of 19 percent.33 In Sweden, since 1998 the self-employed have paid contributions equal to those of payroll employees (including the employers’ quota).

It should be noted that in Italy the rate actually paid, called the financing rate, is different from the rate used to determine the notional capital, which is a conventional “award rate” equal to 33 percent for payroll employees and 20 percent for self-employed workers.

The difference between the two rates amounts to a creeping transfer of the cost to general tax revenue, further undermining not only the self-sufficiency of the system but also its fairness. In fact, one can prove that such a difference rewards early retirement and careers marked by steeper earnings increases.34

Sweden’s enormously lower contribution rate, by comparison with the Italian award rate, is only partly reflected in income replacement rates, thanks to two factors:

- The higher Swedish retirement age, which permits more generous conversion rates and larger notional capitals because of the additional years of contribution and the returns on them; and
- For the same retirement age in both countries, the Swedish conversion rates are higher, owing to the absence of survivor’s benefits and the slightly higher value of δ (1.6 instead of 1.5 percent).

Finally, both countries have limited the social security earnings base by exempting income above a given ceiling from the tax.35

**Disability**

In the area of disability risk, again the two countries have responded differently. In Sweden the social security system provides disability allowances through a program totally separate from retirement provisions. The disability program is financed by contributions charged to firms alone. The arrangements are as follows.

- Disability allowance is treated like wages, in that it is subject to pension contributions. More precisely, the program that finances the disability allowance also pays the employer’s portion of the old-age pension fee, while the beneficiary pays the portion levied on employees. The overall contribution goes to augment the beneficiary’s notional capital, in addition to any contributions paid in connection with work (payroll or self-employed) that the beneficiary may continue or undertake notwithstanding the disability.
- The beneficiary receives the disability allowance up to retirement age, and in any case not beyond 65, when it is replaced by the old-age pension, calculated ordinarily on the basis of the notional capital accumulated up to that point (as a result of total contributions paid, both before and after the disabling event).36
- Consistent with this, no allowance is paid when the disability occurs after age 65.
The Swedish arrangement is rational. The disability program does not weigh on the old-age pension system because it is financed by a different contribution, while inclusion of the allowances in the tax base for the old-age system gives the latter the resources to finance the retirement benefits of the disabled.

Italy’s reformed pension system retains the old “mixed” formula, paying retirement benefits and also covering disability risk. More restrictive eligibility requirements have been in effect since 1984, but disability allowances nevertheless still account for a significant part of total system spending.

The NDC reform of old-age pensions would have required a quite separate disability program in the style of the Swedish; alternatively, specific procedures should have been identified allowing full financing of disability pensions out of total contributions paid to a mixed system. As we can see, this was not the case:

- The Italian disability allowance is equal to the notional capital at the time of disability multiplied by the conversion rate used to calculate the pension award of a 57-year-old retiree.
- The allowance is paid up to age 57, when it gives way to the old-age pension calculated on the basis of the notional capital accrued at that time thanks to contributions paid previous to disability or also afterward, if the disabled worker continues work activity.
- Consistent with this, as in Sweden, no allowance is paid when the disability occurs after the lowest pensionable age (57) has been reached.

It is evident that there is no correspondence between the disability allowance (received up to age 57) and contributions paid prior to disabling event because these go entirely to determine the old-age pension. To remedy these faults, disability allowance should be financed through a “set-aside rate”—a portion of the total contribution that must not count toward the old-age pension. Further, the formula used to calculate the disability allowance appears to be meaningless; a better formula should not consider the disabled worker’s contribution history.

**Administrative Costs**

NDC schemes have two ways of covering administrative costs. One option is for the costs to be financed by a set-aside quota of the contribution rate along the lines of that envisaged in the discussion on contributions above to finance disability allowances. The other option subtracts administrative costs from the return credited to workers and pensioners. Sweden took the second option. Italy simply ignored the problem, so that administrative costs will increase the deficit implied by the shortcomings discussed so far.

**The Fragmentation of the Pension System**

Even when the long-run equilibrium of the whole pension system is ensured by correct NDC rules, fragmentation of the whole into different occupational funds may generate fairly serious financial problems owing to the diversification of the growth rates of categories. This is precisely the case in Italy, where NDC reform has not coincided with unification of the pension system, which remains divided into a number of different funds. Most private sector employees are covered by the Employee Pension Fund, but some categories have funds of their own. Among these are mass transit workers, telephone workers, public and private electricity workers, clergymen, civil aviation flight personnel, show business workers, professional athletes, and others. The same applies to public employees (central government, local government, health system, and so on) and the self-employed.
(shopkeepers, craftsmen, farmers, lawyers, notaries, doctors, pharmacists, journalists, and so on). Most of these category funds operate under the two major public retirement institutions, one for the private sector and the other for the public sector of the economy. Only a few are actually independent funds, and even these are subject to central government oversight. The NDC reform was not automatically extended to these independent plans, which have a fairly small number of members, mostly professionals.

In Sweden, the reformed system is strictly unified. Truth to tell, there does exist an unexpected form of fragmentation. At the time of the 1998 reform, the existing public PAYG system had substantial assets equal to four times the system’s outlay in 2001, accumulated thanks to large surpluses that the system has continued to run. To optimize the management and maximize the return on these assets, they were divided into four parts and assigned to four different, competing funds with broad freedom on portfolio choices. Each fund receives one-fourth of the contribution revenue and pays out one-fourth of pension benefits. Revenue and expenditure being equally distributed among the funds, assets (initially equal) will increase more (or decrease less) in the fund that achieves the highest yield. At the end of 2001, the “best” fund had 1.2 percent more assets than the “worst.”

DIVERSIFICATION OF THE SOCIAL SECURITY PORTFOLIO
The intellectual battle between advocates of PAYG and of funding being undecided, many countries are opting for mixed compulsory systems under which workers’ retirement portfolios can be diversified. Sweden is one such. The 1998 reform flanked the compulsory, PAYG pillar with an advanced, funded pillar financed by compulsory contributions equal to 2.326 percent of earnings. In the case of payroll employees, 60 percent of the contributions are paid by the firm and 40 percent by the worker. Unlike the first pillar, which is state guaranteed and unified, the second is mainly private and fragmented in a multitude of open funds in genuine competition with one another (there were 571 pension funds in 2001). Competition is guaranteed principally by the workers’ right to transfer from one fund to another at no cost and without delay. To permit risk diversification, workers may distribute both accrued capital and new contributions among different funds (a maximum of five).

Relations between workers and the private pension funds are conducted by means of a public agency, the Premium Pension Authority (PPA), which has five main objectives:

- Provide standardized, certified information on the performance of the competing funds, allowing workers to make informed choices;
- Centralize the collection of contributions and the transfers of retirement savings between funds, thus reducing the administrative costs, which are defrayed by workers in the form of lower net yields;
- Guarantee anonymity—that is, keep the funds from knowing the names of their members, thus preventing costly forms of publicity and promotion (addressed to nonmembers), which would reduce net yields;
- Act as annuity provider while the funds keep the money left after each annual installment; and
- At the worker’s request, start administering the capital accrued at retirement and guarantee a constant 3 percent nominal yield.

This second pillar also comprises a “residual” public pension fund into which are channeled the contributions of workers who, for one reason or another, fail to choose one of the authorized private funds.

The private pension funds already existing in 1998 were relegated to the third pillar. Most of these funds, which arose spontaneously out of collective bargaining in the 1970s,
are occupational, and cover between 80 and 90 percent of workers. Contributions (tax-exempt) to the third pillar are at rates ranging from 2.5 percent to 4.5 percent.

In Italy, at present no true compulsory funded retirement plans are in effect. However, there are compulsory severance pay funds. Tax-exempt contributions are fairly large (about 7 percent of wages). The funds are set aside by the employers (who pay the contributions “to themselves”) while the workers are credited with a return of three-fourths of the inflation rate plus 1.5 percentage points. When the employment relation is terminated, for whatever reason, the firm pays the accrued credit to the worker as a lump sum.

This anomalous second pillar provides firms with low-cost funds and enables them to obviate, at least in part, the credit rationing to which smaller firms especially are subject.

A 1993 law allows transformation of severance pay funds into funded pension plans through collective bargaining. Under the law, this tax-exempt contribution (generated by the transformation of the severance pay funds) can be supplemented by additional contributions from employer and employees of up to nearly 14 percent of wages (subject to an annual ceiling of just over €5,000). If this opportunity were fully exploited, tax-exempt retirement savings would total more than 50 percent of wages (32.7 percent for the first pillar, 7 percent + 14 percent for the second).

So far, the voluntary conversion of severance pay funds has involved 10 percent of private sector employees and has generally been partial—that is, only a part of the firms’ contribution to these internal funds have been channeled into external pension funds. The reason for this relative lack of interest is not only the cost to firms, but also workers’ affection for an established scheme that provides a semi-guaranteed (albeit low) yield and, allowing the payment of a lump sum whenever an employment relation is terminated, is particularly helpful in case of unemployment or when moving to a new job in another part of the country. Workers have two additional reasons for reluctance to give up the severance pay scheme: first, today’s low interest rates; and second, the high income replacement rates of the first pillar, due not only (in the short-to-medium run) to the extreme gradualness with which the NDC reform is being phased in but also (in the long run) to the generous benefits that the new formula can still provide (even for those retiring relatively young), thanks to a contribution rate that, at more than twice Sweden’s, is unparalleled in the rest of the world.

The Transition

Any time pension rules are changed, the problem of safeguarding the claims accrued under the old rules arises. Sweden and Italy adopted quite different criteria in facing this question.

Sweden chose:

- No protection (no preservation of old entitlements) for workers born after 1953—that is, those not yet 45 in 1998, when the reform was passed;
- Full safeguards (no application of the new award formula) for workers born before 1938—that is, those already at retirement age (61 or more) in 1998;
- Partial application of the new rules for workers born from 1938 through 1953, giving them 5 percent of the earnings-based pension that they would have been entitled to in the absence of the reform for each year of age above 44 in 1998. For example, those born in 1950, who turned 48 in 1998, will receive a portion of the earnings-based pension calculated as follows: 5 percent \cdot (48 – 44) = 20 percent.

These standards give outcomes set forth in detail in columns 2 and 5 of table 19.1. Note that these safeguards apply even to persons who had not begun to work at all before the reform was enacted.
Italy opted for a criterion based on contribution seniority rather than age, with these rules:

- Full protection (no application of the new award formula) for “senior” workers who, at the time of the reform, had already paid contributions for at least 18 years;
- Pro rata protection for “junior” workers, who are entitled, for each year of contribution prior to the reform, to a portion of the earnings-based pension they would have been entitled to under the old system equal to the reciprocal of their total contribution seniority upon retirement.

The lesser severity of the Italian transition is shown first of all by the fact that it totally exempted 40 percent of existing workers from the new contributions-based formula, compared with 7 percent in Sweden. Given the different criteria taken (age and seniority), no specific comparison is possible without assumptions concerning age at the start of the career and the duration of work activity, so as to convert seniority into age or vice versa. Supposing the start of work in one’s 24th year and a career of 40 years (ending at age 63), the Italian rules would produce the outcomes “by age” set forth in columns (3) and (6) of table 19.1. These confirm the much greater swiftness of the Swedish transition.

In terms of fairness, Italy’s manner of protecting acquired entitlements is unsatisfactory for two reasons.

- There is an unacceptable gap between the oldest “junior” workers (with 17 contribution years and thus aged 41 on our posited career pattern) and the youngest “senior”

### Table 19.1. Protection of Prereform Entitlements in Sweden and Italy

<table>
<thead>
<tr>
<th>Age at reform (1)</th>
<th>Percentage of earnings based pension preserved</th>
<th>Age at reform (4)</th>
<th>Percentage of earnings based pension preserved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in Sweden (2) in Italy (3)</td>
<td></td>
<td>in Sweden (5) in Italy (6)</td>
</tr>
<tr>
<td>24</td>
<td>0</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>25</td>
<td>0</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>26</td>
<td>0</td>
<td>45</td>
<td>5</td>
</tr>
<tr>
<td>27</td>
<td>0</td>
<td>46</td>
<td>10</td>
</tr>
<tr>
<td>28</td>
<td>0</td>
<td>47</td>
<td>15</td>
</tr>
<tr>
<td>29</td>
<td>0</td>
<td>48</td>
<td>20</td>
</tr>
<tr>
<td>30</td>
<td>0</td>
<td>49</td>
<td>25</td>
</tr>
<tr>
<td>31</td>
<td>0</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>32</td>
<td>0</td>
<td>51</td>
<td>35</td>
</tr>
<tr>
<td>33</td>
<td>0</td>
<td>52</td>
<td>40</td>
</tr>
<tr>
<td>34</td>
<td>0</td>
<td>53</td>
<td>45</td>
</tr>
<tr>
<td>35</td>
<td>0</td>
<td>54</td>
<td>50</td>
</tr>
<tr>
<td>36</td>
<td>0</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>37</td>
<td>0</td>
<td>56</td>
<td>60</td>
</tr>
<tr>
<td>38</td>
<td>0</td>
<td>57</td>
<td>65</td>
</tr>
<tr>
<td>39</td>
<td>0</td>
<td>58</td>
<td>70</td>
</tr>
<tr>
<td>40</td>
<td>0</td>
<td>59</td>
<td>75</td>
</tr>
<tr>
<td>41</td>
<td>0</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>42</td>
<td>0</td>
<td>over 60</td>
<td>100</td>
</tr>
</tbody>
</table>

*Source: Authors’ calculations.*
workers (18 years seniority and aged 42); the former get 45 percent protection, the latter 100 percent.

- Two junior workers with the same prereform seniority get disparate protection depending on how many years they work after the reform. If two workers with 10 years of contributions at the time of reform continue working for 10 and 30 years respectively, the first has 50 percent protection \((10 \times \frac{1}{(10 + 10)})\) but the second gets only 25 percent \((10 \times \frac{1}{(10 + 30)})\). To apply the seniority principle fairly, it would have been necessary to emulate the way in which Sweden applied the age principle, providing that for every year of seniority at the time of the reform a certain portion of the pension would be awarded under the old formula, regardless of one’s seniority at retirement. For example, putting such a portion at 3 percent, the two junior workers hypothesized just now would both enjoy 30 percent protection (both would get 30 percent of their earnings-based pension).

The two countries also constructed the NDC portion of the total benefit in different ways. In Sweden, this portion is a percentage of the total NDC pension generated by contributions paid both before and after the reform. The portion is the complement of 100 of the percentages given in columns (2) and (5) of table 19.1. In Italy, such workers get only the NDC pension generated by contributions paid after the reform (not a portion of the total NDC pension generated by the contributions paid both before and after).

Finally, Italy excluded application of the new retirement age range (57–65 for both men and women) to all current workers, who continue to be subject to the old retirement ages of 65 for men and 60 for women. However, there is the possibility of early retirement with at least 35 years of contributions at a minimum age that is diversified by occupational category and extended gradually, though it does not apply to all workers until 2006 (at age 57). Sweden extended the retirement age immediately (to a range of 61–67) for all current workers from the prior age of 65 for both men and women.

On indexation, Sweden did not hesitate to extend the new rate for the contributions-based pensions (the rate of return less 1.6 percentage points) to the pensions awarded according to the old rules (until then indexed to prices), or to be awarded during the transition. The overriding concern, in fact, was to avoid the coexistence of two different indexation regimes.

In Italy, the same concern presumably played a role in making the diametrically opposite choice—namely to extend the existing price indexation to the contributions-based pensions. It is a pity that the correct indexation of NDC pensions, which would have ensured sustainability and fairness, was permanently sacrificed to a medium-term necessity.

Conclusions

The comparative examination of the Italian and Swedish NDC reforms shows the former’s fragility. The main conceptual defect of the NDC scheme Italian-style remains the refusal to make the rate of indexation of pensions endogenous, which rate should result from the difference between the sustainable return (albeit as proxied by GDP growth) and the value of 1.5 percent assigned to deviation \(\delta\) in calculating the conversion rates. The fundamental objectives of fairness and sustainability are jeopardized.

The many other shortcomings and inconsistencies discussed in this chapter testify to the weak NDC culture that accompanied both the approval and the subsequent management of the reform in Italy. The intensive debate that stirred the passions of scholars, politicians, and trade unionists for years, which enabled Swedish society as a whole to
understand and come to agree with the economic and ethical bases of the new scheme and enabled Swedish parliament to pass a consistent and rational reform, was lacking in Italy. The same process has prompted Swedish lawmakers to introduce further refinements. One of these is the balance mechanism, a statistical-actuarial method to correct the return that better ensures the trend sustainability of the NDC scheme, effectively overcoming not only the problems created by the choice of the average wage growth rather than of wage bill growth, but also other causes of temporary disequilibrium.57

None of the governments in power in Italy since 1996 has worked to consolidate the NDC reform and remedy the errors due to the hastiness—which has been a source of complaint not only by the authors of the present paper58—with which it was drafted in 1995. The theoretical and conceptual complexity of the matter should have suggested the appointment of committees of experts who could properly bridge the gap between the theoretical foundations of the NDC scheme and the countless details that implementation would inevitably bring. By doing so it would have been possible to recoup, at least after the fact, the crucial work of analysis and study that Sweden scrupulously performed beforehand.

Possibly, this study could provide a preliminary agenda for some emerging policy maker interested in providing the country with a fair and sustainable pension scheme.

Notes

5. See World Bank (1994).
6. The idea was developed independently in the early 1990s in Italy and in Sweden. In Italy, the contributions-based scheme has been proposed by Gronchi with the aim of remedying the unfair redistribution typical of the earnings-based formulae and to ensure sustainability for the pay-as-you-go scheme. A different version was put forward by Niccoli with the alternative aim of awarding the forced savings accrued to social security with the same return earned by savings directed toward financial markets. In particular, see Niccoli (1992), Italian Ministry of Treasury (1994) of which Gronchi (1993) is the first draft while Gronchi (1995b) is a revised version, Gronchi (1994a, b), Niccoli (1994) and Gronchi (1995a). The attention of the Italian parliament was drawn to the new ideas in 1994 when a detailed contributions-based plan was produced by the Democratic Party of the Left. One year later, the same ideas were resumed by the draft bill that the Dini Cabinet brought before parliament and that was approved by a large majority of votes.

In Sweden, the new plan, already outlined in the works of Bröms (1990), Olsson and Schubert (1991), Persson (1991), and Ackerby (1992), gradually took shape in the expert committees mandated to develop reform proposals based on the principles of sustainability and correspondence between contributions and pension entitlements. In particular, see En Promoria av Pensionsarbetsgruppen (1992), Reformerat pensionssystem: Bakgrund, principer och skiss (1992), Palmer and Sherman (1993), Reformerat pensionssystem: Betänkande av pensionsarbetsgruppen (1994), and Reformerat pensionssystem: Kostnader och individeffekter (1994).

It must be pointed out that this Italian and Swedish literature of the early 1990s seems to be unaware of the anticipations to be found in two important works of the late 1960s, rediscovered in Gronchi (1998) and Valdés-Prieto (2000), one of which is by J. Buchanan and the other by O. Castellino. In the scheme proposed by Buchanan (1968), all income earners are requested to purchase “social insurance bonds” whose return is set equal to the higher of the rate of growth in GNP and the rate of interest on U.S. treasury bonds. It is interesting to
note that the aim of the author was to secure workers with more generous benefits than those granted by the earnings-based scheme. Castellino (1969) thoroughly analyzed the properties of a sort of a contributions-based pay-as-you-go second pillar where the return is set equal to the growth of the average wage. Neither of these articles gained sufficient attention within the international literature or could inspire any economic policy choice. On the other hand, those proposals were formulated in abstract terms without tackling the many complex details (discussed for instance in this work) that one inevitably faces when building a real contributions-based scheme. Valdés-Prieto (2000) recalls that an old-age contributions-based scheme was also proposed by Boskin, Kotlikoff, and Shoven (1988) within a more comprehensive social security model entirely based on personal accounts.

7. There is no evidence for the suggestion hinted at in Franco (2002, p. 221), according to which the echo of the discussion going on in Sweden would have inspired the Italian reform.


9. In Italy, the “all” earnings rule was substituted for the “last five” earnings rule in 1992. At the same time the price indexation rule was substituted for the wage indexation.

10. See Samuelson (1958), Aaron (1966), and, in Italian, De Finetti (1956). Note that in Samuelson (1958) the theorem is not explicitly proved in a defined benefit context, and that in Aaron (1966) the award formula is not properly related to earnings, in that the first annual benefit is equal to the average wage of active workers. A proof of the theorem is given in Gronchi and Nisticò (2004) within a clear-cut defined benefit framework that also realistically allows for different retirement ages and career patterns.

11. Actually, some other conditions are needed for the theorem to hold. See Gronchi and Nisticò (2004, Appendix A.1).

12. See Gronchi (1993), Italian Ministry of Treasury (1994) and Gronchi (1995b) for an empirical analysis of unfairness characterizing the Italian earnings-based scheme prior to the 1996 NDC reform. These papers showed the existence of other sources of inequalities in individual returns besides those stemming from the differences in retirement age and in earnings growth. Moreover, they showed that the Italian decision in 1992 to calculate the pensionable earnings as an average of all annual earnings attenuated but did not eliminate the disparity in individual rates of return.

13. In Swedish practice, the pension award is obtained by dividing the left-hand side of equation 19.1, which is called account balance, by the reciprocal of \( h \), called annuitization divisor (Settergren 2002, p. 61).

14. The proof of this sustainability is given in Gronchi and Nisticò (2004) for the realistic context referred to in note 10.


16. The theoretical foundations of the canonical scheme are better discussed in Gronchi and Nisticò (2004). Among the various issues there discussed, one is worth summarizing, namely the critical examination of the idea—expressed, for instance, by Chicon (1999)—that extending pensionable earnings to the whole career is a quick way of attaining the purpose of the contributions-based scheme while avoiding the announcement of falsely innovative reforms. Actually, this thesis can be easily refuted. To understand why, let us recall that the traditional earnings-related formula for the first annual benefit is

\[
p = n \cdot k \cdot \frac{\sum_{j=1}^{n} w_j \cdot \prod_{j=1}^{n+1} (1+\gamma_j)}{r},
\]
where \( k \) is the accrual rate, \( r \) the number of years of salary used to calculate pensionable earnings, and \( \gamma \) the revaluation rate. In fact, for \( r = n \) the above equation becomes

\[
p = k \sum_{i=1}^{n} w_i \prod_{j=1}^{n+1} (1+\gamma_j),
\]

from which it readily follows that

\[
p = \left[ a \cdot \sum_{i=1}^{n} w_i \prod_{j=1}^{n+1} (1+\gamma_j) \right] \cdot \frac{k}{a}.
\]

Therefore, the earnings-based pension can be rearranged to display formal analogies with that of the canonical NDC scheme, as it too can be expressed as the product of a notional capital and a conversion rate. In other words, the canonical NDC scheme can be disguised under DB dresses. It suffices to choose special values of the parameters involved in the award formula. In particular, one should set \( \gamma \) equal to the growth rate of the wage bill, differentiate the accrual rate by age according to the equation \( k = h(\delta, \mu) \cdot a \) and select indexation according to equation 19.6. However, the camouflage could not last. How would the bizarre indexation rule be justified? Or how could one justify the circumstance that, for a given mortality, the contribution rates could not be altered without at the same time altering the accrual rate? Or, even, that whenever mortality decreases, the accrual rates will be diminished?

18. In the last 30 years, real wages in Italy have risen at an average annual rate of 2 percent (ISTAT 2002).
19. The unrestricted choice of \( \delta \) could generate adverse selection. That is, it could encourage those who know they have lower-than-average life expectancy to choose higher \( \delta \). Even so, this is a circumscribed phenomenon that will result in much less severe disequilibria than the mass equalizations needed to adjust very low vintage pensions. Adverse selection can produce greater disequilibria where, as in Italy, survivor’s benefits are provided for but the conversion rates are not differentiated according to the presence and age of the spouse (see the section on survivor’s benefits).
20. See the section on the transition.
22. The rates have been announced for all ages from 61 to 80 and may be calculated for still older ages “on request.”
23. The pensionable quotas allowed are one-fourth, two-fourths, and three-fourths. See Palmer (2000) and Settergren (2001b).
24. On this matter, see Gronchi (1996), Beltrametti and Bonatti (1996), and Bosi (1997).
25. Actually, this entitlement is attenuated in that entitlement to the full percentage is means-tested. In addition to the spouse’s benefit, there may be entitlements for minor children, up to a ceiling of 100 percent of the deceased’s pension.
26. For the purpose, among other things, of not discriminating against common law couples, the second person could also be freely chosen.
27. See note 58 below.
28. See Gronchi (1998). Other informational shortcomings stemmed from the choice of making the survivor’s benefit variable according to the survivor’s other income (see note 25). This choice was made without sufficient awareness of the great difficulties that it would entail for the calculation of the conversion rates.
29. See the discussion on updating conversion rates.
30. See Kruse (2002).

31. Even continuous updating does not guarantee the perfect balance of the system. In the presence of “backward-looking” conversion rates, given steadily lengthening life expectancies, deficits cannot be avoided. On the other hand, surpluses would be generated if conversion rates were of the forward-looking type (see Valdés-Prieto 2000).

32. The 14.884 percent tax that finances the compulsory pay-as-you-go scheme is supplemented by 2.326 percent that goes to the funded scheme (also compulsory) discussed in the section on diversification of the social security portfolio. The total tax rate is thus 17.21 percent. Official sources cite a rate of 18.5 percent. The difference depends on the tax base, which for the higher rate is unusually equal to the wage net of the worker’s social security contribution (Settergren 2002, p. 33).

33. This common value will be reached gradually. For instance, in 2003, the contribution rate is 16.8 percent for craftsmen and 17.19 percent for traders.

34. See Gronchi (1996, 1998) and Gronchi and Nisticò (2004). The “disorder” is aggravated by the fact that in Italy (under a rule not abrogated by the 1995 reform) earnings above a certain ceiling are subject to a financing rate that is 0.7 percentage points higher than the award rate. The same additional rate is levied on the earnings of self-employed above a certain ceiling (different from that of employees).

35. Swedish firms pay contributions also on earnings above the ceiling. But these contributions are a true tax on firms, as they are paid to the state and not to the social security system. They do not form part of the notional capital.

36. Legislative changes affecting some of these provisions are under way. For more details see Palmer (2000, Appendix 2).

37. See Gronchi (1996b).

38. Notice that if the disabled person continues to work, the disability allowance is diminished according to his earnings. Moreover, the Italian legislation considers a more generous and permanent disability allowance, which is granted to those seriously disabled. Though life expectancy of the beneficiaries is generally very short, these allowances constitute quite a heavy burden for the system, given that they are extended to the survivors.

39. Actually, the reform does not set any age ceiling. The age of 57 is obtained by extrapolating earlier rules for the automatic transformation of the disability allowance into an old-age pension at retirement age (or earlier, in case of early retirement). The disability allowance is granted at first for a three-year period and becomes definitive after two renewals.

40. For pensioners, the decrease in the rate of return would take the form of a lower indexation rate.

41. Actually, Sweden elected to exempt pensioners from defraying these costs, avoiding reduction in their indexation.

42. See Gronchi (1996b).

43. Actually, the first three groups have now been switched into the Employee Pension Fund, albeit with separate accounts.

44. See Settergren (2001b, p. 4).

45. Contribution revenues in 2001 exceeded pension outlays by about 10 percent (Settergren 2002, p. 15). The 1998 reform was not enacted to counter a present deficit but to prevent the emergence of one after 2010, when the baby boomers will begin to retire (Palmer 2002, p. 173).

46. The relative absence of portfolio constraints is shown by the fact that, overall, 48 percent of the four funds’ portfolio consists of foreign securities. Of these foreign investments, 73 percent consist of shares (Settergren 2002, p. 27).
47. See note 32.
48. The law provides that the worker’s transfer order be executed within 24 hours (Palmer 2000, p. 33).
49. This option is taken by those individuals who want to avoid further risk after retirement. Their money is invested at low risk and returns possibly exceeding 3 percent cannot be claimed though they can be awarded at PPA’s discretion. To avoid adverse selection, the single allowed adjustment rule is zero indexation (implying fixed annual installments).
50. For a more detailed description of the second pillar, see Palmer (2000, pp. 30–42), and Premium Pension Authority (2001).
51. For a more detailed description of the third pillar, see Palmer (2000, pp. 4, 8–9), and (2002, pp. 180–2).
52. Assuming an inflation rate of 2.5 percent, the finance provided by the severance pay fund costs 0.875 percent in real terms.
53. By law, conversion cannot be partial for workers hired after April 28, 1993.
54. See the section on transition.
55. On the fairness effects of tax changes, see Feldstein (1976a, b). For a different viewpoint see Graetz (1985) and Kaplow (1986). For a specific analysis of social security changes, see Giovannoni (2000) and Nardini (2001).
56. In 2005, the lower age limit is 56 for blue-collar workers and 57 for white-collar workers. According to a 2004 law, starting from 2008, the minimum age for early retirement will be 60 for all workers.
57. Such causes are discussed in Gronchi and Nisticò (2004).
58. Professor Giarda, who was undersecretary for the economy and as such among the most authoritative drafters of the reform, writes: “Almost everyone involved in the preparation of the measure—both in government and in the unions—had to master the complex technicalities of the contributions-based scheme and translate them into legal norms in scarcely two months. The defined-contributions method had a rigorous high priest in Professor Sandro Gronchi. His acolytes—including myself—in those spring months of 1995 were not always up to his standards.” Moreover, “The strict time limits for the drafting of the measure resulted in unsatisfactory determination of several fundamental parameters in the award formula. The result, in practice, was a violation of the conditions for long-term financial equilibrium and of some rules of fairness” (Giarda 1998, p. 275). On the same wavelength, Professor Salvati, one of the most authoritative economists of the Italian left sitting in parliament, commented as follows on the agreement between government and unions that opened the way to the reform: “Let me merely say that up until a year ago the contributions-based scheme was discussed in circles scarcely broader than academia, and now we find it as the calculation criterion upon which the entire public pension system will converge” (Salvati 1995).

References


