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July 2003

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P.O. Box 1248
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Abstract

A reform process is under way in Italy. Achieving financial sustainability of the social security system has been the first objective characterizing the reforms of 1990s, but these have also introduced rules which aim at a more actuarially fair system. Indeed the social security system prevailing in Italy, financed on a PAYG basis, was, at the end of the 1980s, clearly unsustainable and also extremely unfair to some group of workers, enacting a form of perverse redistribution which is typical of "final salary" defined benefit systems. It was also a system characterized by strong incentives to retire early.

In this paper we briefly describe the different regimes of the Italian pension system in its recent history and focus on some aspects of the reform process taking place during the 1990s. Since economists and policy makers are still struggling to assess the results and the long-term effects of these reforms we provide both a survey of this debate and some fresh evidence on the evaluation of the policy changes. We carry out this analysis with a particular emphasis on two aspects which are relevant in the debate. On the one hand we stress the role of economic incentives and the overall fiscal implications of changing the systems as well as these incentives. On the other hand we emphasize the intergenerational considerations and the political implications of the ageing process of the Italian population. From our description it emerges that the overall design of the Italian reform is probably a good one, and yet some more steps need to be taken to speed up some of the positive effects of the reform process that, due the adverse demographic trends affecting PAYG systems as well as the political arena, could easily evaporate.

1. Introduction

A "good pension reform" should address a number of issues. The most important objective is what design of the social security system the country wants to achieve and the country needs, most important pensions should provide protection in retirement: In Europe we observe clusters of countries: Italy, together with other continental and southern countries is in the Bismarckian tradition, i.e. the main focus is on preserving the standard of living that workers enjoyed during their active life.

However this general view immediately translates into practical policy choices. These are related to financial soundness of the system, particularly in the light of the legacy that we leave to future generations. Policy makers should also address economic efficiency at two levels: no waste of resources for a given contribution rate (or for a given benefit level) and no distortions of individual choices (or at least minimize distortions). Distortions could occur as a result of introducing a pension system or reforming a pension system in the area of saving behaviour and labour supply behaviour. But also firms' behaviour and ultimately competitiveness of the economy could be affected. Finally policy makers should take account of risks: demographic and economic risks, but also political risks. Last, but not least, related to the issue of distortions is the issue of equity: a sound system should aim at achieving intergenerational equity and intragenerational equity.

In this paper we briefly describe the Italian pension system and in particular some aspects of the reform process. Italy has seen a flurry of reforms during the 1990s and economists and policy makers are still struggling to assess the results and the long-term effects of these reforms. From my description it emerges that the overall design of the Italian reform is probably a good one, and yet some more steps need to be taken to speed up some of the positive effects of the reform process that, due the adverse demographic trends affecting PAYG systems, could easily evaporate.

In section two we provide an overview of the Italian pension programme within the European landscape. In section 3 we look directly at the Italian pension system with an historical perspective by focusing the attention on the reforms. In section 4 we present some lines of "evaluation" of the reforms and in section 5 provide some conclusions.

2. An overview of the Italian Pension System and its Reforms within the European landscape

2.1 Some stylised facts on the European landscape

It is very hard to provide a comprehensive view of the developments of pension programmes for a given country. It is even more complex to assess the pace and efficacy of reforms in a European context, however this is a necessary step both because of the growing concern of the European Community over the targets imposed by the Stability and Growth Pact (SGP) and because European countries cannot think about welfare reforms in isolation.

We do not review here the wide debate on pension reforms: the implications of an ageing population and advantages and disadvantages of the different policy scenarios in the European context have been described in many contributions. What is relevant here is that some changes have taken place during the 1990s throughout Europe and in some cases the positive effects of these reforms are now emerging. However these changes may be inadequate in the light of future demographic trends. It is sufficient here to illustrate a few stylised facts[1]. In all OECD countries concerned the percentage of people over 60 is expected to rise. Since the elderly, typically, require more health care and are no longer active in the labour market, the increase in the relative share of the elderly has major policy implications. In several respects the challenge will be bigger in Europe than in other parts of the world: compared to the rest of the developed world, Europeans *effectively* retire very early, as illustrated for a number of countries in Table 1. Thus, on top of the adverse demographic trends we observe that many of the individuals under 60 have already retired and hence do not contribute to the productive base from which the consumption of the elderly has to be financed[2]. The high percentage of non-labour force participants under the age of 60 is the result of developments that have taken place since the 1950s. In Figure 1 we show the dramatic downward trend in labour force participation for European countries, particularly for those age groups which are relatively young, like the age group 60 to 64. Although in very recent years the decline in labour force participation is less marked, there is no indication that this trend will substantially revert in the near future. More importantly, as the Italian example will illustrate, there could be a very long time span between the time in which a pension reform is passed by Parliament and the time in which the effects are felt in the economy.

One fundamental underlying cause for the falling trend in labour force participation before the age of 60 lies in the incentives inherent in the generous retirement benefits provided by the social security and welfare system of European countries. Table 2 illustrates this by making use of the concept of "implicit

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[1] Figure and tables are provided at the end of this paper.

tax" on continued work for three selected countries (Italy, Spain and the USA). This is the cost for a typical worker of delaying retirement by one year: it includes the cost in terms of pension benefits that she-he foregoes and the extra contributions paid, but also the (possible) advantages of building pension rights. A positive tax implies an incentive to retire. There is a strong relationship between the tax incentives to retire and the age at which men are observed to retire in different countries[3]. Given the speed at which older men leave the labour force, it is not outrageous to project that by 2030 in many European countries a quarter of the earnings of the working population may be needed just to support the elderly, if the present incentives and old age security systems persist.

The other striking fact is that a very unequal distribution of "pillars" across European countries exists. It is hard to provide a general rule on what should be the ideal distribution of pillars, but there is growing consensus that in order to cope with multiple risks – amongst these demographic risk is probably the most relevant – it may be wise for workers to hold a "pension portfolio", featuring a first pillar financed on a pay-as-you-go basis and a funded second (and/or third pillar). It is interesting to note that the existing data suggest some degree of substitutability between pillars (as documented by Börsch-Supan and Miegel, 2000), hence there is scope for a portfolio re-composition, if this has the advantage of reducing the overall risk in retirement income while preserving a given level of resources in old age.

2.2 Assessing recent developments in the European pension reform process

In the "Progress Report on European Pension Reforms" published in January 2001, Merrill Lynch presents a "Pension Reform Barometer for Europe" that measures the overall progress that has been made by the European Union member states in the reform of their public retirement systems.

Their results prompt two considerations. While it is useful to look at the recent developments in terms of broad indicators, the underlying demographic and macroeconomic picture should provide the key to interpret the behaviour of each country in terms of pension reforms. The effectiveness of reforms can only be judged on the basis of objectives that the different countries pursued, which may be only partially reflected in simple indexes. There might be conflicting objectives (or at least conflicting directions of reforms) and this makes it hard to draw conclusions on the overall pattern, and on future developments, on the basis of stylised indicators[4]. Furthermore, there is generally uncertainty surrounding the effects of reforms, mainly due to lack of fundamental information. This generalized impasse in assessing the effect

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[2] See on this point Gruber and Wise (1999) and the Chapter by Boeri, Brugiavini and Maignan in Boeri et al. (2001)
3 The causes of early retirement and the concept of "implicit tax" have been introduced by two international studies: Gruber and Wise (1999) and Blöndal and Scarpetta (1999)
[4] Italy performs in a "median" position.

of reforms or even learning about the importance of reforms, stresses the role of timely data availability and the importance of converging on co-ordinated objectives and efforts by European countries.

These points have been recently developed by the European Commission (2000a and 2000b) and further developed by Boeri et al. (2001), particularly by the contribution of Buti and Costello (2001[5].

In a number of contributions the European Commission directly addresses the issue of pension reforms by asking where the European economy would end up in the presence and in the absence of welfare (pension) reforms. In this exercise the demographic and macroeconomic assumptions are clearly spelt out and the sensitivity of the results to the underlying hypotheses can be assessed. In particular the EC Report suggests two possible scenarios: a "current policy" scenario and a "Lisbon" scenario.

On the basis of these demographic and macroeconomic scenarios, Member States were expected to provide simulations for public pension expenditure as a percentage of GDP. In the current policy scenario this is predicted to rise in all Member States (except in the UK, where it should fall) over the next few decades. In some countries, the rise is substantial. However, the peak is not reached at the same time in all Member States. In fact, in the majority of cases the effects of ageing will add roughly 3-5 per cent of GDP to pension expenditure, i.e. Belgium (3.7 percent, peaking in 2040), Denmark (4.5 percent, by 2030), Germany (4.3 percent, by 2050 or after), France (3.9 percent, by 2030), Ireland (4.4 percent, by 2050 of after), Austria (3.1 percent by 2030) and Finland (4.7 percent, by 2040).

In a smaller number of cases the upward pressure is even higher, i.e. in Spain the pressure on the pension system could add 8.3 percent (by 2050 or after), in both the Netherlands and Portugal it could amount to an extra 6.2 percent of GDP (by 2040 and 2030, respectively). When the Lisbon scenario is considered, projections show a modest increase of pension expenditure as a percentage of GDP for all countries. The improvement is most pronounced in Portugal (where the change between the year 2000 and the peak year is reduced from 6.2 to 4.1 percentage points of GDP), Belgium (from 3.7 to 1.6 percentage points), and Germany (from 4.3 to 2.3 percentage points). For Sweden and Italy this scenario implies that pension expenditure, as a percentage of GDP, should almost stabilise at 2000 levels. Nevertheless, even in this very favourable scenario the rise of pension expenditures as a percentage of GDP remains high for most countries of the European Union. In some countries, the cost of the pension system is made more sustainable by the (assumed) existence of a strong funded component. However, if on the one hand this might indeed release pressure in the long run, it might increase financing costs in the short run.

The overall assessment of this analysis carried out by the Working Group on the Implications of Aging Populations at the EC suggested that demographic developments would soon result in pressures on public

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[5] See Buti and Costello in Boeri et al. (2001).

pension expenditure. However, the intensity of these effects would vary across Member States due to the different impact and timing of demographic pressures and to a significant difference between pension regimes in Europe. Long-term sustainability of public finances is therefore a policy recommendation which features high in the agenda of the EC.

Population aging has a crucial effect also on the political support of the pension system across Europe. Several studies – see Galasso and Profeta (2002) for a survey – have suggested that pension systems are favored by a voting coalition of elderly people – retirees and middle-aged workers close to retirement age – and of low-income young. The aging process induces an increase in the political power of the elderly and hence of the relevance of the pension issue in the policy-makers' agenda. A synthetic measure of the political influence of the elderly is given by the median age among the voters, which we report in table 3.

3. The Italian pension system and the recent reforms

3.1 The starting point

In this section we describe the main features of the legislation governing the Italian pension system just before 1992. Some of the basic features are still present in the system (e.g. a large first pillar), but a number of important reforms have occurred during the 1990s. We will then provide an historical perspective and a more detailed account of the reforms.

The Italian pension system relies on three pillars: (i) mandatory old age insurance, also providing insurance to survivors and disability benefits; (ii) collective pension funds and (iii) private annuities or individual accounts. The first covers the majority of the working population (almost all private sector employees and all public sector employees) and is financed through a PAYG (Pay-As-You-Go)[6] method, while the remaining forms of insurance provide additional coverage outside (or, in a few cases, substitutes for) the public program. Pension funds are generally fully funded and non mandatory (unless they substitute the public program, as it happens for employees in some banks and financial institutions). In this paper we define the social security system to be a mandatory public insurance program collecting payroll taxes both from employers and employees to provide old-age benefits, benefits to survivors and disability insurance to its members[7]. The social security program is based on a number of Institutions administering public pensions. A vast majority of the population is insured with the *National Institute for Social Security (INPS)*. This is itself responsible for a number of separate and independent funds, the

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[6]   I.e. an unfunded method of financing.

most important one is the *FPLD (Private Sector Employees Fund)*. Although a description of the INPS-FPLD gives a fairly good idea of the system as a whole, it should be borne in mind that a wide variety of cases actually exists. INPS provides insurance to a large fraction of the working population (something like 11 million workers); public sector employees account for only 15% of total INPS workers and 20% of the INPS-FPLD group.

Payroll SS taxes

The inflow of resources into the system comes from the employers' contributions and employees' contributions: when outlays exceed revenue the deficit is financed by the Central Government which has come under increasing pressure to pay for pensions. For example, it was estimated at the time (1992) that the theoretical equilibrium payroll tax (i.e. the payroll tax which would balance the budget) was between 35% and 42%. This was much higher than the actual payroll tax (26.4% in 1991).

The payroll tax was (and still is) unevenly shared between employer and employee. For the INPS-FPLD, the rule-of-thumb is one third falling on the employee and two thirds on the employer. A further 7.41% should be added in the private sector for a "severance pay fund" referred to as T.F.R.. This is retained by the employer and builds up in a fund, directly managed by the employer, which provides a lump sum benefit at the time of retirement. The tax base on which payroll taxes are paid is not capped: this is a point long debated in the literature, as social security benefits used to be capped (until 1992) and are now indexed in a staggered fashion (i.e. the benefit system is progressive).

Eligibility

Before 1992 eligibility requirements were met when a man reached age 60 (a woman 55) and had contributed for at least 15 years[8]. However the early retirement option often made the age-requirement irrelevant as a worker in the private sector could claim early retirement benefits at any age if 35 years' tax payments had been completed. For a male public sector employee 20 years of tax payments were required (15 years for a married woman[9]). In general, a year of work is completed if 52 weeks of SS tax payments have been recorded by the SS Administration.

From this brief description of eligibility criteria there emerges a SS System which was actuarially unfair and enacted, willingly or unwillingly, redistribution of resources across the population. In

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[7]   The Italian SS system has had a major role in providing a safety net for low-income households both explicitly (through special provisions which are part of the INPS Administration, e.g. income maintenance provisions to the needy and very old) or implicitly through disability benefits.

[8]   Retirement is non-mandatory, but individuals who intend to work beyond the normal retirement age are not protected by the law. However, before the 1992 Reform a worker could postpone retirement (up to age 65 in the private sector) if this would allow him to complete 40 years' tax payments. The 1992 Reform encouraged workers to postpone retirement (until age 65) even if 40 years' contributions had been completed by providing a slightly higher return in the benefit computation formula.

[9]   However it should be added that normal retirement age for the public sector was (in the pre-1995 legislation) 65 for both genders.

particular, there was an incentive to early retirement as no actuarial penalty applied to early retirees. For example, a private sector employee who started work at age 16 could retire at age 51 while the same worker could retire at age 36 in the public sector. This might explain why detachment from the labor force increased significantly over time in the age group 50-60 as well.

Benefit Computation

Before 1992 for a private sector employee (INPS-FPLD) benefits were computed by first averaging the last five years' earnings (prior to the retirement age): this gives the level of "pensionable earnings". Actual earnings of each year were taken before tax and converted to real amounts by means of a consumer price index[10]. Pensionable earnings were converted to the first social security benefit by applying a 2% factor (referred to as "rate of return") for each year of payroll tax payment up to a maximum of 40 years. Hence a worker could get at most 80% of his pensionable earnings. If retirement was postponed, additional years of work beyond a total of 40 did not count for benefit computation; however, they were included in pensionable earnings as they replaced earnings of earlier years. The system was progressive both because of capping on earnings and because of old-age minimum benefit levels. Earnings entering the benefit computation were capped. Between 1969 and 1988 pensionable earnings would be set against a given limit and the amount in excess of that limit would not contribute to the benefit formula. E.g. in 1985, pensionable earnings in excess of 32 million Lit (1.6 times average earnings of that year) would not be included in benefit calculations. After 1988 the constraint was less stringent, as a lower "rate of return" was applied to pensionable earnings in excess of a given limit.

It is worth recalling that public-sector employees had their benefit level based on final salary rather than average earnings of the last five years. For all funds, benefits increased at regular intervals with nominal wages, i.e. consumer price growth plus real earnings growth. The former was measured by the consumer price index, but implemented in a slightly staggered fashion (e.g. if the SS benefit amounts to more than three times the "minimum benefit", indexing is based on 75% of the price change.) Wage growth was measured by changes in real wages both in the private sector and public sector[11].

Minimum benefit

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10   This is an index provided by the Central Statistical Office (ISTAT) in which weights applied to prices are taken from a large sample of the Italian population based on a sampling frame of blue-collar and white-collar employees (Indice dei prezzi al consumo per le famiglie di operai e impiegati).

11   Indexation to nominal wage started, for INPS-FPLD, in 1975: the legislation has changed several times in the last few decades tending to extend this feature to more groups of the working population. The timing of indexation has also changed several times: during the 70s it was done quarterly.

This is a relevant concept in the Italian SS system both because the number of retirees involved is non negligible, and because the minimum benefit is often used as a benchmark against which to set incomes for other provisions. In practice, if the benefit formula gives a retiree a benefit level below a given threshold the benefit itself is set in line with that threshold. Up to 1983 this provision could be applied to more than one pension for the same retiree, while in 1992 it affected only one pension for each retiree, leaving the other benefits at their computed level. This income transfer to low income retirees is conditional on means-testing: up to 1992 this test would involve only the claimant's income and exclude the income of the spouse. Hence, for example, in 1985 the means-test had a cutoff at twice the minimum level (roughly 4.7 million Lit.. of that year, which was 17% of mean household income of the same year). More recently, a similar limit applies to singles, but for married couples what matters is the sum of incomes of both spouses, which has to be below 4 times the minimum level (in 1995 approximately 8 million Lit, which was 18% of mean household income).

Taxation

While SS taxes are not subject to income taxes (as these are paid after the SS tax), SS benefits are taxed at current income tax rates.

Survivor Benefits

While survivor benefits to widows were part of the insurance contract at a very early stage, it was only in 1977 that several household members were entitled to claim such benefits: eligibility extending from widows and children below 18 to include widowers and children older than 18 in full-time education. More recently beneficiaries include: (i) the surviving spouse, (ii) children younger than 21 if in secondary school and younger than 26 if attending college for a degree or of any age if disabled, (iii) conditional on none of the above being alive, dependent parents or single dependent sisters and brothers can claim the benefit. In order to claim survivor benefit the worker should have had a full 15 years' tax payments. Survivor benefits can also originate from the DI benefit of the worker (described below): in this case only 5 years of SS tax payments are required. The actual benefit is a percentage of the old-age benefit that the deceased worker would receive at that age. This is 60% for lone surviving spouse, 20% to each child, if one of the spouses is alive, and 40% if orphan, up to a total amount not exceeding the initial old age benefit of the worker. Parents, brothers and sisters receive, if eligible, 15% of the old-age benefit each, up to grand total of 100% of the old-age benefit itself. The Italian SS system does not envisage a dependent wife benefit: the only advantages to married couples are for those drawing minimum level pensions (described above).

Other SS Programs

In recent years the SS program has been under scrutiny as the financial distress within the system led to calls for a reduction both in benefits levels and eligibility. This also focused the attention of policy makers on a global SS reform in order to achieve a much needed realignment of treatment of different groups of workers. This process started with two important changes brought about in 1984 and in 1989; the former relating to DI provision and the latter trying to regulate those benefits aimed at the redistribution of income. One of the key elements in the debate which took place at the time was the insistence on clearly distinguishing between benefits relating to an income maintenance program (implementing redistributive policies, which would therefore be financed by the entire population) and benefits (which were more closely related to old-age insurance and therefore more properly financed by the working population).

A typical income maintenance provision, in which the role of Central Government predominated over that of the SS Administration was the means-tested "*basic pension*" (*pensione sociale*) granted to individuals over 65 (even if they had made no SS tax payments). To be eligible, a single person should not have an income above the level of the basic pension itself (the basic pension in 1995 was 4.6 million Lit., 13% of mean earnings) while a couple should not have an income above 19 million Lit. in 1995 (54% of mean earnings). The benefit is granted with no penalty in the absence of other incomes and it is awarded only partially if some resources are available within the income cutoff. Another interesting example is unemployment benefit, paid in the form of early retirement benefit (*pre-pensionamento*), granted to workers of firms in specific industries going through a recession period. This benefit can be claimed by the worker five years earlier than the normal retirement age and could be regarded as a form of "involuntary" early retirement. However, not only does this apply to a limited number of occupational sectors in the economy but it is also becoming less frequent.

Disability Insurance

The most striking feature in this debate is the role of Disability Insurance, which is still part of the SS Program. There are at present two possible DI benefits: (i) "DI Pension", provided under the legislation which applied up to 1984 and (ii) "DI Provision" (*Assegno di Invalidità*) which can be claimed under the post-1984 legislation. The former was granted to workers who proved they were physically unable to carry out their job (with their earnings ability reduced by 2/3) and who had completed 5 years' tax payments. Earnings ability was, however, a rather loose concept involving the doctor's judgment of the general welfare level of the claimant, and not just his/her health quality. DI Pensions were computed by following the general rules of eligibility and of benefit calculation and by computing pensionable earnings as the average of actual earnings prior to date of the claim. After 1984 the existing DI Pensions were not terminated or modified, with the only exception for cases in which the beneficiary had an income

exceeding three times the minimum benefit. Starting in 1984, the "DI provision" was the new form of disability insurance benefit; it was granted under the same eligibility requirements as before, with the important difference that "loss of earnings ability" became a much tighter requirement. Furthermore, the DI provision was temporary and a new claim was required for renewal every three years, which entailed new medical examinations. Screening of health status is now carried out randomly on DI recipients. The DI provision is to be brought in line with the minimum benefit whenever the calculated benefit is below that level.

This brief description of the DI benefit and its evolution over time highlights the strong incentive provided to claim disability insurance in order to achieve early retirement in those cases where the early retirement option was not available. However, the 1984 Law had a major impact in reversing this trend: the share of DI benefits over total benefits peaked in the years 1975-1980 and declined sharply thereafter. The steepest decline came in 1987, when the new DI legislation of 1984 had its full impact. More interestingly, the age group for which DI benefits over total benefits dropped dramatically was the age group 50-59, i.e. at the early retirement ages.

The Severance Pay Fund -T.F.R.

This provision applies both to private sector and public sector employees. In the private sector, a non-negligible fraction of annual earnings (7.41%) are ear-marked by employers towards an end-of-job one-off payment. This money does not contribute to any pension fund but is directly managed by the firm which uses it as internal funds. This appears as another key feature of the system in analyzing the incentives of S.S. with regard to retirement: the prospect of cashing in a lump sum at retirement (which would otherwise earn a low rate of interest) may induce a worker to leave the labor force earlier than the normal retirement age.

The TFR was originally set up in the private sector and was regarded by workers as a form of unemployment benefit, while firms encouraged the growth of this fund in order to both reduce workers' mobility and create an extra source of internal financing. The legislation concerning the lump sum benefit computation differs from sector to sector and, prior to 1982, from occupation to occupation within the private sector. In particular, prior to 1982 the lump sum would, for the vast majority of private sector employees, correspond to a share of 8.33% (i.e. 1/12) of final wage adjusted according to the number of years in employment with the same firm. Hence the fund would effectively grow at the wage-growth rate for each year up to 1982 and the employer would each year retain 8.33% of the gross wage of his employees. After 1982, for all employees in the private sector the fund built up each year was capitalized at a rate given by the sum of two components: a fixed 1.5% plus 75% of the growth in prices recorded in the month of December of the previous year. In periods of high inflation this growth rate would be below

the price growth rate and much below nominal wage growth. For this reason, it is often argued that workers would be better off if they could invest that money with a financial institution. While 7.41% of gross earnings is retained by the employer for the TFR fund in the way decribed above, a further 0.8% of the worker's gross earnings is paid by the employer to the INPS Administration, which does not contribute to the employee's SS benefit nor to his TFR. The employer collects a full rebate on this additional payroll tax by reducing the TFR of his employees for an equivalent amount at the end of the year. Hence this additional tax is effectively paid by the employee with no corresponding benefit.

While the TFR payroll tax is not subject to any income tax, the worker pays on the TFR lump sum benefit separate income tax. I.e. the TFR lump sum received at retirement is not summed with other incomes but is itself subject to income tax at the current tax rates[12].

Old Age Insurance Through Private Schemes.

Before 1992 saving through Pension Funds was available for a limited number of individuals in specific occupational sectors and was almost invariably a voluntary additional supplement to the basic pension. More recently, the need to alleviate part of the burden of pension provision that falls on Social Security has shifted attention to a system in which, in addition to the public pension scheme, there should exist a non-own-managed Pension Fund and possibly a private old-age insurance contract. The recent reforms intend to channel the enforced "low-return" savings of the TFR into Pension Funds for newly-hired employees, provided the firm/industry and the Fund itself abide by a number of requirements. The need for a funded pillar became apparent around the time of the first reform (and indeed it was one of the motivations of that reform of 1992), hence a description of this point is provided in section 3.6 below along with a discussion of the reforms.

3.2 The historical perspective

The first pension plans were established for public employees in the second half of the nineteenth century. A voluntary pension scheme for private employees was introduced in 1898 and was made compulsory in 1919. The scheme, which was funded, was managed by INPS (the National Social Security Institute). It was financed by a payroll tax and provided old age and disability benefits on a contributory basis. After the Second World War the funded schemes were unable to sustain the costs of pension benefits. This was due to the effects of inflation and to the use of pension fund assets to support government finances as only a small part of assets was invested in shares and real estate. Hence Italy adopted (together with many

other countries) a PAYG financing system. The transition was completed in 1952, when new rules were eventually introduced, at the same time a guaranteed minimum pension level was also introduced (Franco, 2000).

By the end of the fifties, frequent changes had taken place almost invariably increasing the generosity of the system. Public pension coverage was extended to the self-employed[13], to work-disabled citizens (in 1966) and to elderly persons with low incomes (in 1969). In 1969 pension benefits for private sector employees started to be computed on the basis of earnings (final salaries). The change was seen as a major achievement in guaranteeing pensioners a standard of living correlated with that of active workers and it had the full support of unions. An early retirement option was also introduced in 1956, making age requirements irrelevant, provided that the worker has a minimum contributory period. No evaluation of budgetary costs was carried out at the time of these reforms, which altogether have been estimated to involve a net transfer to living generations of about 80% of GDP (Castellino, 1996).

During the 1960s and the first half of the 1970s the social assistance functions of the pension system were extended. Pensions were used to provide income support to people working in agriculture, in the country's poorer regions and to elderly workers with short contributory periods. Pension expenditure helped in easing social conflicts, and started to play the role of "soft landing" devices, partly through new provisions (a "citizen" benefit for persons over 65 lacking adequate means of support and for the disabled) and partly through distortions in the existing ones (e.g. disability insurance[14]). The 1980s saw the first steps towards rationalising the rules, prompted by increasing expenditure on retirement provisions leading to difficulties of the public finances (coupled with a growing explicit debt). In 1983 means testing was introduced for eligibility to the minimum pension level and to disability pensions. In 1984 the eligibility requirements for disability pensions were tightened: the criterion for eligibility was changed from loss of earning capacity to work disability.

3.3 The Recent Reforms

Some of the issues raised in the above description of the Italian social security system have been tackled by the recent reforms. A first reform (known as the Amato Reform) was passed by Parliament in 1992.

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12   Income tax is paid on the TFR only above a given minimum level. This tax-exempt level changes over time.

13   Special schemes (managed by INPS) were introduced for self-employed farmers in 1957, for artisans in 1959 and for other self-employed businessmen (mainly shopkeepers) in 1966.

14   DI benefits were granted on the basis of the inability to earn income more than on actual physical disability, and this was assessed in the light of the socio-economic conditions of the applicant's province of residence. See Franco (1999).

Once phased in, it would reduce pension outlays and iron out major differences between various sectors and occupations. However, this left the rules governing the early retirement provision almost untouched, and, according to many, did not produce the much needed savings in the SS budget. Hence the second reform (known as the Dini-Reform) of 1995 totally changed some of the basic rules for granting benefits to future retirees and attempted to harmonize the actuarial rates of return for early and late retirees. The Amato reform had a major impact on retirement behavior as it was the first signal of a coherent redesigning of the SS System. Table 4 summarizes some of the key features of three regimes: the regime prevailing before the Amato-Reform (denoted as pre-1992 Regime), the one prevailing at the steady state after the Amato-Reform (post-1992 Regime) and the one prevailing after the Dini-Reform (post-1995-Regime). However both reforms are characterized by a rather long transitional period affecting all the cohorts of post-1992-retirees: the provisions for the transitional periods involve a *pro rata* method of establishing eligibility and benefit computation criteria. This method allows the legislation of the old regime to apply to the share of years in employment under that regime, while the remaining share is regulated by the new rules. This meant that in practice during the transitional phase a retiree could have his eligibility and his SS benefits computed according to three different systems of legislation[15].

The 1992 reform

The 1992 Reform takes place at a time when pension expenditure increased from 5.0% of GDP in 1960 to 7.4% in 1970, 10.2% in 1980, and 14.9% in 1992. Demographic pressure explains only part of this trend, generosity of the system coupled with the timing of a large number of cohorts coming to "maturity" of their vesting rights did the most. At the same time early retirement had become a widespread phenomenon due to the incentives embedded in the system. In other words, there was a high implicit tax on continuing to work (Brugiavini, 1999). This situation was reflected in the low employment rates of older men and women.[16] The lack of a strict correspondence between contributions paid in and entitlements accrued also encouraged evasion and avoidance of contributions. The segmentation into several funds, each one operating with its own rules, hampered the mobility of workers both between and within the public and private sectors. Finally the provisions where extremely uneven in a rather haphazard

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15   For example, for someone retiring at age 62 in 1995 benefits in the transitional period were based on two regimes as follows. A weighted average of final salaries was computed by distinguishing two components: for a portion the average of the last five years' real earnings and for a portion the last six years' real earnings (plus a further six months). This average was the pensionable earnings measure. To this, a return of 2% per year (up to a maximum of 40 years) was applied, provided pensionable earnings were below a given limit: a reduced rate applied to earnings above the limit.

16   In 1990 only 32% of individuals in the age-group 55-64 were employed. In 1995 this percentage was down to 27% and was far below the percentages recorded in most other Western countries. See OECD (2000).

fashion (depending on sex, age, seniority, sector of employment etc..) hence generating serious equity problems within the programme.

In this situation, expenditure control was closely linked to the reduction of differences in the rules applying to the different groups of workers. For instance, private sector employees would not have accepted a reduction in entitlements if the special provisions granted to public sector employees were not limited. The issue of harmonisation remained at the core of the policy debate through the 1990s, when the debate gradually shifted from harmonisation across workers of different sectors to harmonisation across different age-groups[17].

To recap, the 1992 reform focussed on the following changes. It raised the normal retirement age (over a ten years transition) from 55 to 60 for women and from 60 to 65 for men in private employment; the reference period for calculating pensionable earnings was also extended (over a ten years transition) from 5 to 10 years. However for younger workers (less than 15 years of contributions in 1992) it was extended to the whole working life. Past earnings were to be converted in actual amounts at a rate equal to the growth in the cost of living index plus one percentage point per year. The minimum number of years of contributions for eligibility to an old-age pension was raised (over ten years transition) from 15 to 20.

Indexation was based on prices rather than nominal wages, but the government was allowed to introduce discretionary additional adjustments through the Budget. The minimum number of years of contributions required for public sector employees to become eligible for early retirement was gradually raised to 35 (i.e. it was harmonized to the requirement already in effect for private sector workers).

The parametric reform implemented in 1992 substantially changed the outlook for pension expenditure. At least a quarter of net pension liabilities was cancelled. According to Beltrametti (1994), total outstanding liabilities[18] were reduced from 389% to 278% of GDP (a 29% cut). Using estimates by Beltrametti (1995 and 1996), D'Amato and Galasso (2002) suggest that the largest burden of the reform was beard by individuals with less than 44 years. Rostagno (1996) estimates that the liabilities of the scheme for private sector employee were reduced by 27%. The cuts were unevenly distributed. Rostagno estimates reductions of 8% for pensioners, 42% for male workers, 94% for female workers, 37% for workers with long working history, 42% for those with short or discontinuous careers.

The 1995 Reform

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[17] See Franco (1999) for a detailed account.

[18] Beltrametti takes into consideration different definitions of pension liabilities. The estimates presented in this paper refer to the present value of pensions to be paid in the future on the basis of accrued rights to pensioners and existing workers, net of the contributions that the latter will pay under current rules.

The 1995 reform adopts a "contribution based" method of benefit calculation. It should be stressed that this only applies to benefit computation, while financing is still on a PAYG basis, i.e. this belongs to the class of systems defined as "notionally funded or notionally defined contribution NDC" (Disney, 1999). The first SS benefit is the annuity equivalent to the present value (at retirement) of past payroll taxes, capitalised by means of a 5-years moving average of the nominal GDP growth-rate. The relevant tax rate is 33% and an age-related actuarial adjustment factor is applied to the resulting figure[19]. In this case too capping is applied (on the present value of contributions rather than on pensionable earnings). As for the early retirement provision, the 1992 Reform ironed out differences between programs (contributions had to be paid for at least 35 years; irrespective of type of occupation, sector, etc.), with no adjustment of retirement benefits, while the 1995 Reform introduced – at the steady state - a *window* of pensionable ages with actuarially-based adjustment of pensions. These vary between age 57 and 65 with "actuarial adjustment factors" between 4.720% and 6.136% respectively. Coefficients, which make the present value of future benefits equal to capitalised contributions, can be revised every ten years on the basis of changes in life expectancy and a comparison of the rates of growth of GDP and earnings assessed for payroll taxes. Contribution requirements changed from the initial 15 years, to just 5 years after 1995. Payroll taxes jumped to 32.7% of gross earnings (to be split between employer and employee): the increase (from approximately 27% in 1995) was partly artificial as it was simply the result of re-labeling under one SS tax rate several contribution items. The other provisions were basically unchanged, though following the new eligibility requirements and benefit formula, the rules governing "minimum benefits" became tighter. The Basic Pension (Pensione Sociale) was replaced by a Basic Provision (Assegno Sociale) which was to be financed by the Central Government and was granted under stricter means-testing.

In spite of the change in the design of the pension system, the 1995 reform did not significantly affect long-term expenditure trends. At the time Rostagno (1996) estimated that the reform increased the liabilities of the private sector employees pension scheme by 4 to 9% of GDP, depending on the rate of growth of GDP. Moreover, the implementation of the reform was (and still is) extremely gradual. Workers with at least 18 years of contributions in 1995 will receive a pension computed on the basis of the rules applying before the 1992 reform. Those with less than 18 years of contributions in 1992 will be subject to a *pro-rata* regime: the 1995 reform will apply only to the contributions paid after 1995.[20] Only individuals beginning to work after 1995 will receive a pension computed only on the basis of the new

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[19]   Hence the benefit is: (33%)*(adjustment factor)*(present value of SS taxes).

[20]   The benefits paid to individuals in the *pro-rata* regime will be computed on the basis of two components: the pre-1995 contributions and the contributions paid from 1995 onwards.

rules. Hence the length of the transition phase and other aspects of the reform may significantly reduce its expected benefits. In fact, according to D'Amato and Galasso (2002), only those individuals who were younger than 40 years experienced a reduction in their net pension wealth.

3.4 A "first round" assessment of the Italian reforms of the first pillar

A first round of evaluations of the reforms became available throughout the 1990s. Some of these evaluations were based on "generational accounting studies". For example, on the basis of 1990 figures, the gap between the net taxes paid by the last newly-born generation (on the basis of current policies) and those paid by future generation (taking into account policy actions to restore government solvency) was estimated at Lit. 198 million. On the basis of 1998 accounts, it was estimated at Lit. 100 million.[21] In the latter case, in order to ensure the long-term sustainability of public finances, a 5% increase in the taxes paid by all generations would be required. Without the pension reforms introduced in the 1990s the required tax increase would have been 9%.

What was the feeling about the effects of a long transitional phase? – The rules introduced in 1992 and 1995 become fully operational only after a long transitional period. This depends crucially on the political decision to exempt individuals with 15 years of contributions from some important changes. About 40% of those employed in 1999 could fully retire under the pre-1992 regime. For these people, the incentive to retire early was even increased by the expectations that retirement conditions might be tightened (Franco, 2000).

There was also a budgetary problem. According to Italian Treasury (Ministero del Tesoro , 1999), the ratio of public pension expenditure to GDP, which despite the reforms introduced during the 1990s reached 16% in 1999, was likely to rise by another 1.4 percentage points by 2015. Since the Stability and Growth Pact requires close-to-balance budgets and revenue increases are problematic, it was felt that the transition had to speed up, otherwise primary non-pension expenditure would have to be substantially squeezed.

How did the long-term expenditure forecasting look like? – The Italian Treasury estimated in 1999 that the ratio of pension expenditure to GDP would rise by an additional 0.2 points between 2015 and 2031. Subsequently, even though the ratio of pensioners to workers was predicted to rise sharply, expenditure

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[21]   Estimates are expressed in 1998 prices. See Franco *et al,* (1992), Cardarelli and Sartor (2000).

should stabilise in relation to GDP for some years and is expected to significantly decline thereafter. According to INPS projections, the equilibrium contribution rate of the private sector employees' pension fund will rise from 45% in 2000 to 47.8% in 2010 and 48.5% in 2025. The corresponding rate of the artisans' pension scheme was projected to increase from 21.3% to 28.2% and then to 30%, and that of the shopkeepers' pension scheme from 18.5% to 25.4% and then to 33.9%. Three lines of considerations emerged.

1. These expenditure trends imply either larger transfers from general taxation or a further increase in social security contribution rates, which were already high. Both these solutions conflict with the need to reduce the tax and contributions burden in view of growing international economic integration.

2. Although the post-1995-system is based on a close link between contributions and benefits for each individual, it is still vulnerable to demographic and economic shocks (Franco, 2000). In fact, the system is still PAYG, the system is vulnerable to increases in the dependency ratio determined by reductions in birth rates, since these increases would not affect the amount of accumulated contributions and the pensions already awarded. Increases in life expectancy automatically reduce new pension benefits, via the conversion coefficients. However, it will take a long time before the impact of increases in life expectancy on the number of pensions is fully offset by the reduction in the average amount paid to each pensioner. This depends on the fact that reductions in mortality rates that take place after a pension is awarded do not affect its level. The 10 year interval between revisions in coefficients increases further the adjustment lag.

3. A decline in the rate of GDP growth would not affect the amount of accumulated contributions and the pensions already awarded. A lasting decline in the ratio to GDP of earnings assessed for social security contributions can affect new pension benefits, via the conversion coefficients. As in the case of changes in life expectancy, financial equilibrium would be restored very slowly. In the face of adverse demographic and economic trends, as in the case of traditional PAYG systems, cash deficits could occur. Gronchi and Aprile (1998) argue that the predetermination of the rate of return on accumulated contributions (1.5%) introduces unnecessary inflexibility in the system. If GDP growth is lower than 1.5%, there would be financial problems. In any case, the interest rates imputed to workers and pensioners would be different.

The expect budgetary effects

Back in the years following the reforms (1996 to 1999) it seemed that the plan for bringing the pension system back into balance had to rely primarily on reducing the average pension benefit. Limiting the number of pensions seemed to play a relatively modest role. According to Ministero del Tesoro (1999),

the ratio between the pensions paid by the main pension funds and the total number of persons in work would rise from 92% in 1998 to 100% in 2015, 119% in 2030 and 130% in 2050. The ratio of the average pension to per capita GDP would remain constant at 15.5% up to 2015 and then decline to 13.3% in 2030 and 10.1% in 2050. These projections assumed that pensions would remain indexed exclusively to prices and that the conversion coefficients used to relate new pensions to the contribution record of each individual will be revised every ten years on the basis of demographic trends. These evaluations brought about two comments on the features of the Italian system after 1995.

In spite of the increase in longevity, individuals will still be allowed to obtain a pension at 57. Although actuarially discounted old-age pension will provide individuals with a greater incentive to delay retirement than previous rules, the conversion coefficients embody a discount rate which may still provide an incentive to quit the labour market (Brugiavini, 1999) or may not discourage individuals from claiming a low, actuarially reduced, pension at an early age. Even an actuarially neutral pension system may not be sufficient to achieve a large increase in the activity rate of elderly individuals. Changes in the demand side of the labour market may also be required. More specifically, the wage structure for the different age groups should be consistent with their productivity.

The 1995 reform was designed to achieve a replacement rate at retirement which, for individuals retiring at 62 after 37 years of service was close to the pre-reform rate; a full or a partial indexation to increases in real wages would have implied a reduction in the replacement rate at retirement (Banca d'Italia, 1995). Price indexation, which is adopted in several countries, implies that the purchasing power of each pensioner declines over time in comparison with that of workers and younger pensioners. [22] Two aspects may make this solution problematic in Italy over the long run. First, individuals are allowed to retire rather early. Moreover, the adjustment to price increases of pensions which are twice as high as the minimum pension level is only partial. These factors may generate sizeable disparities among pensioners depending on the year of retirement. The reliance on the reduction in the transfer ratio, instead than on increases in retirement age, may create political pressure for discretionary increases of pension in real terms (Gronchi and Aprile, 1998; Peracchi and Rossi, 1998). [23] Moreover, revisions of conversion

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[22]   Assuming a 1.5% yearly growth in real wages, other things being equal, a newly awarded pension would be 43% higher than a pension awarded 25 years earlier. The gap would increase to 61% with a 2% rate of growth and to 81% with a 2.5% rate of growth, See Aprile *et al.* (1996).

[23]   Rostagno (1996) points to the possibility that pensions, which implicitly include an adjustment to real wage dynamics, since the conversion coefficients have been computed assuming a 1.5% returns on residual accumulated contributions, may in the end be increased by ad hoc decisions prompted by the political pressure of pensioners.

coefficients at ten-year intervals may produce large differences in the treatment of contiguous generations of pensioners.

The expected microeconomic effects – The introduction of actuarial principles in social security systems has been recently advocated to limit some of the negative effects of the systems on labour market and employment. Contributions are often loosely related to benefits, so that they are largely regarded as a tax; expenditure controls frequently rely on administrative constraints rather than on built-in incentives; redistributive motives and insurance features are frequently mixed. The strengthening of the contribution/benefit link is a crucial factor. It increases the incentive to work and, more specifically, to stay on in regular jobs (since benefits would depend on work record), to delay retirement, to move from benefits to work. In the case of pension schemes, this implies increasing the role of funded schemes (where the contributions-benefits link is typically very strong), or shifting PAYG schemes from defined-benefits systems (which base pensions on earnings in final period of work) to defined-contribution systems (which base pensions on contributions paid over whole working life). Since 1995 Italy took both routes. Several factors may have reduced the immediate impact of the rules introduced in 1995 on the behaviour of individuals. One aspect which should be singled out is that an important fraction of the work-force is not affected by the reform. The other is that workers retire early.

The political forces behind the reforms – During the '90s, there have been three attempts to reform the Italian pension system: the Amato and Dini reforms described earlier, and the project of reform presented by the Berlusconi government in September 1994. D'Amato and Galasso (2002) argue that redistributive elements have determined the political success of the former reforms, and the failure of the Berlusconi's attempt. They suggest that an evaluation of the political support in favor of the different reform proposals requires to identify the impact of each reform on the net pension wealth[24] of different individuals.

Using estimates provided by Beltrametti (1995 and 1996), D'Amato and Galasso (2002) suggest that the political success of the Amato and Dini reforms and the failure of the Berlusconi's attempt may be due – among other things – to the decision of placing the largest burden of the reforms on the young generations of workers.

The 1992 Amato reform took place in a period of large financial imbalance of the pension system, and represented an emergency policy aimed at ensuring the financial solvency of the system in the near future. This reform reduced the net pension wealth of the workers by 52.9%. Although both workers and retirees

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[24] The net pension wealth represents the discounted value of the future pension benefits, which an individual is entitled to under current legislation, minus the discounted value of her future contributions to the system. Hence, a reduction in the net pension wealth of an agent represents a measure of the cost of the reform to this individual.

had to bear some cost of the adjustment, the largest share was sustained by the young cohorts, since the net wealth of the individuals aged 30 years or less decreased by more than 100%, while the reduction was less than 5% for the workers and retirees aged 60 years or more (see table 5).

In 1994, the Berlusconi government presented a reform package to further correct the financial unbalance of the system. The expected reduction of the net pension wealth of the workers was estimated to be around 27.5%, while there were to be no effects on retirees. Unlike in the Amato reform, however, the burden was to be equally spread among workers of different age groups, so that young cohorts were not to be more penalized than middle aged or elderly workers.

In 1995, Dini – a former minister in the Berlusconi government – proposed a reform with important differences with respect to the package proposed by Berlusconi on the previous year. The reform was milder, with a reduction in the net pension wealth of the workers of only 11%, and its costs were unequally shared among individuals – even more than in the Amato reform – being exclusively born by individuals with less than 40 years of age.

To summarize, D'Amato and Galasso (2002) argue that while the Amato reform represented an emergency measure to correct the short term financial unbalance of the system, the successive reform's attempts were perceived as long term restructuring of the system, and their political success depended on how their costs were divided across individuals. In 1995, the majority of the voting population was older than 44 years. These individuals were not touched by the Dini reform and hence supported it. The Berlusconi reform package, on the other hand, featured a reduction in the net pension wealth of workers elderly than 40 years and did not enjoy the same political support.

3.5 The Italian reforms: ten years after

Italy has taken brave steps, however some of the enacted changes are not new to the European landscape. It is no coincidence that in a number of European countries we see changes in the legislated "normal retirement age" (NRA). However this is often implemented as a simple eligibility requirement without adopting appropriate actuarial penalties for early retirees or without tightening eligibility rules in other programmes (disability insurance or unemployed insurance) offered to the over-50. For example currently in Italy there is no actuarial penalty affecting early retirement[25]. In some cases the minimum age restriction to become eligible for early retirement is totally overcome by a seniority rule based on the number of years of contributions (see again Italy). The results of increasing the NRA may be nullified by

exits through early retirement or through alternative options, if there exists an incentive to do so (e.g. if the system is generous with early retirees).

Following the rules of the 1992 reform the NRA age has just become (in the year 2000/2001) 65 for men and 60 for women. However the minimum age requirement to become eligible for retirement is still substantially lower than the NRA, provided the worker has accrued a given number of years of contribution (see Table 6). The 1995 reform envisages a window (between age 57 and age 65) with actuarial adjustment, but this will become fully effective only in 2035. The 1997 reform introduced tighter and more harmonized restrictions on eligibility requirements for early retirement. But not even at the steady state will the system achieve complete age-neutrality (see Table 7).

It is too early and particularly hard to isolate the effects of the changes of the 1990s in terms of retirement age, given the overlapping of different trends in the economy. For Italy some empirical work has been done on the evolution of early retirement on available data: Italy gives an interesting example of the "delayed effects" that the 1992 reform has achieved in terms of retirement decisions. In particular, Brugiavini and Peracchi (2001) look at labour force participation on quarterly data for Italy and can detect a reversion of the trend out of the labour force for the younger cohorts of workers only in the years 1999 and 2000 (Figure 2). This is mainly the effect of the tightening of the rules on minimum age requirements.

Besides the actual reduction in the number of pensions, it is clearly very hard to place a precise number on the advantage to the economy from delaying retirement. One could attempt to measure the cost of its mirror image (early retirement) for the economy.. In Italy an evaluation of the recent reforms has been carried out by a specially appointed Ministerial Committee, which has provided an overall assessment of the effects of the 1995 (and 1997) reform[26]. The results of the Italian Committee Report show that the savings obtained between 1996 and 2000 are essentially due to curtailing early retirement.

As we said, the 1992-Reform changed the way benefits were computed by basically changing from a "final salary" formula to a "lifetime salary" one, however the effect of this change would be hardly felt. Although the change in indexation rules – also introduced in 1992 - was not recognized at the time a major budget-saving amendment of the system, proved to be a substantial and far-reaching improvement for social security finances. The effects of the changes in benefit computation of the1995 reform are still under scrutiny as they will be most felt in the future (see section 4 below). In Figure 3 one has a first

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[25] For a discussion on this point see Brugiavini, Peracchi and Wise (2001).
[26] Relazione Finale della Commissione Ministeriale di "Verifica del sistema previdenziale ai sensi della legge 335/95 e successivi provvedimenti, nell'ottica della competitività, dello sviluppo e dell'equità", October 2001.

impression of the recent trends: after a sudden fall in expenditure over GDP following the reforms, the underlying trend of increasing spending prevails.

3.6 The move toward a funded pillar

We have mainly discussed the features of the "parametric" reforms enacted in Italy, however it should be noted that both reforms addressed the problem of introducing a second pillar. One has to look hard in the European landscape to find a clear-cut experiment of a structural change: in most cases the introduction of a second pillar is normally enacted very gradually.

It is worth recalling that in Italy the first pillar is monolithic and the second pillar basically non-existent. In the early 1990s it became clear that high contributory rates and large public finance imbalances respectively reduced the scope for additional contributions and for supporting the transition to funding via budgetary transfers or large-scale tax deductions. The contributions allocated to severance-pay funds (about 1.5 % of GDP for private sector employees) were therefore considered the only sizeable source of funds to develop the second supplementary pillar.[27] This was not unproblematic both for employers and employees. For the former group, severance-pay funds represented a source of cheap credit. For the latter, they represented an important form of liquidity during unemployment (Fornero, 1999).

Legislation was enacted in 1993 and in 1995 with a view to increasing the role of funding by modifying the destination of severance-pay contributions and allowing additional contributions to be tax deductible. Employers and workers can unilaterally or jointly set up "closed" funds for workers of particular industries, companies, areas, etc. Banks, insurance companies and other financial institutions can set up "open" funds, to which anyone can sign up. However, workers can enrol in an open fund only if a closed company or industry fund is unavailable. Funds are usually based on defined contribution criteria.

The development of supplementary pension funds has been rather slow. Employers have not been enthusiastic because of the loss of the cheap credit source. Trade-unions and government have supported the development of contractual funds, limiting the possibility of joining "open funds". This may have negatively affected the employees' willingness to invest in pension funds. In a situation in which PAYG pensions still guarantee relatively high replacement ratios for elderly workers and young workers are rather uncertain about the reliability of long-term commitments, several employees may have preferred to

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[27]   Under the assumptions that only new entrants in the labour market shift their severance-pay contributions to pension funds, only these contributions are paid into the funds, contributions are not drawn for any reason, and the rate of return is 3%, Castellino and Fornero (1997) estimate that pension fund assets would represent 3% of GDP after 10 years, 12% after 20 years and 50% after 40 years.

avoid the loss of liquidity determined by the shift from the severance-pay provision to supplementary funds. Moreover, tax incentives have been rather limited (Fornero, 1995). [28]

Recently the Italian government took further actions: tax deduction thresholds for contributions to the funds were to be increased. In order to benefit from the tax deductions, individuals would have two options: (i) joining the closed fund of the company or industry to which they belong; (ii) retaining the severance-pay provision; in this case the contributions would no longer be managed by the employer.

The new rules[29] introduced a more careful legislation on tax incentives (or rather lifted some previous unfavorable taxation on pension funds). These rules currently envisage an 11% tax on net returns from the fund, contributions to the fund are tax deductible up to a ceiling. The ceiling is the minimum between 12% of gross income (but below 10 Million Lira) and twice the amount of TFR going into the fund. Benefits emerging from the fund in form of an annuity are subject to income tax only for the part that did not attract tax during the contribution phase. If benefits emerge in the form of lump sum at retirement the tax is applied in different tiers with the higher tax rate applying to the higher tier. In other words the Law wants to discourage retirees from opting for a lump sum.

It is widespread opinion (see also the recent Ministerial Report, 2001), that in Italy the funded component has not yet taken off. The 1995 reform was the first structured attempt to re-organize the tax treatment of future (or newly born) pension funds, while preserving the fundamental principle that the pay-as-you-go social security component of the pension programme is the basic pillar. However the available data clearly show that the growth in the number of pension funds is minute (for a total of about 100 funds between 1996 and 2000) and also the number of workers participating is at most 30% (this is the peak reached in the private sector, much less elsewhere) for a small amount of total contribution. In 1999 about 400.000 workers were enrolled in these funds and assets amount to 0.015 % of GDP (Banca d'Italia, 1999). Basically only some large private firms have in place a functioning pension fund and the typical worker joining the fund is middle-aged. This is worrying in view of the fact it is the younger workers who will have a lower replacement rate as a result of the 1995 reform, once this reform will be fully phased in. For example, Fornero and Castellino (2001) estimate that with only 35 years of contribution the replacement rate will be lower for about 13% points, while for longer careers this is not too far from previous levels (approximately 75%). However women and younger workers (with interruptions in their careers) could possibly end up with a replacement rate as low as 50%.

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[28]   The tax treatment was unfavourable and cumbersome. In particular, when legislation concerning funded supplementary pension schemes was introduced in 1992, contributions to funded schemes were subjected to a 15 per cent withholding tax. Tax credits proportional to the tax levied on contributions were granted on future pensions. Tax credits were to be calculated on the basis of the rate achieved by each pension fund on the remaining 85 per cent of the contributions paid to pension funds.

[29] Law: lgs 47/2000 "attuazione Delega Visco".

The obstacles to the growth of pension funds are essentially related to the lack of legislation and lack of political support. Workers and firms still see in the end-of-career (TFR) benefit an effective unemployment device (the firms also value the cost-free access to liquidity), hence there is little incentive to convert the TFR fund into a proper pension fund, when given the option, despite the potential excess return which workers could gain. Also the taxation scheme maintains the "Exempt the contribution-Tax the capital/return-Tax the benefit" (ETT) format rather than EET, while the latter normally prevails in the rest of the world.

3.7 Fiscal and behavioural effects of the reforms

We argued in the introduction that a good pension system should minimize distortions of individual's choices. However there is plenty of evidence that the Italian system which was in place before 1992 was encouraging early exits (and to some extent still does). Hence one obvious distortion is in the area of labor supply decisions. Furthermore, there is now growing evidence that the increasing generosity of the system crowded out private saving up to the year 1992.

In order to provide some examples of these aspects of the system it is useful to describe the effect of the reforms both on labor supply and on saving.

In order to further clarify how the 1995-reform has affected Italian workers and whether there exists room for further reforms we present some calculations based on the Griber and Wise (2002) methodology[30]. This builds on previous econometric work (Brugiavini and Peracchi , 2001) which estimates exists from the labor force for a sample of Italian workers in the context of an "option value" approach, i.e. modeling the choices of individuals who consider whether to work or retire in the next year given that they work in the current year and given their current information. In the present exercise we simulate the effects of two reforms: (i) the Dini reform at the steady state and (ii) a "modified Dini" regime. In both cases we focus on three cohorts of individuals born in 1938, 1939 and 1940 and look at their social security wealth (present value of social security benefits), a dynamic measure of this wealth measure (the option value) and their retirement behavior. By taking the pre-1992 system as the baseline we estimate the conditional probability of exit at any age between 50 and 70 and simulate the exit behavior before and after the reforms have taken place. This way we can assess the impact of the reform *per se* (reduction in benefits), referred to as the mechanical effect, and the further effects due to induced delayed exits (behavioral effect). The "modified Dini" reform is simply the Dini reform where we changed the conversion

coefficients to the values suggested by the Report on "Quality of the statistical information useful for evaluating pension expenditures", 2001[31]. The latter is closer to an age neutral system given the recent mortality experience of the Italian population and we argue that this further change is not only feasible, but also advisable. It should be stressed that, since we simulate the steady state, we assume that workers who are on the verge of retirement around the years 1990-2000 face immediately the new regime, hence our results cannot be generalized to the entire population and we are looking at an hypothetical sudden change.

In table 8 we present the results of the simulation for the two reforms. The table contains estimates of social security wealth for a typical individual of the selected cohorts who takes decisions as from age 50, plus the total fiscal impact of the reforms for those cohorts. The total fiscal impact contains not only the changes of gross social security benefits (in the form of social security wealth), but also changes in present value of contributions, should the individual continue her work, plus changes in income taxes and VAT taxes, so that the total net change for those cohorts is evaluated[32]. It is clear that the total fiscal impact is substantial (recall that we simulate the steady state): around 48% of the baseline value of benefits. Note that the changes to the conversion factor as emerging from the work of Barbi (2001) would induce further non-negligible revenue saving, though these are confined to the mechanical effect. However, the Brugiavini- Peracchi approach, by hinging essentially on the changes of the option value variable between the two regimes, predicts small changes in retirement behavior after age 57. Should workers substantially delay their retirement after age 57, more than our model is capable of predicting, this behavior should produce further revenue increases.

Our calculations suggest that if the Dini reform is applied to all active cohorts, including senior workers, the total fiscal impact is substantial.

The saving behavior of Italian households has been characterized for a long time by very high saving rates. From the beginning of the 1980s, however, the saving rate of Italian households has decreased considerably. The national saving rate (adjusted for inflation and for durable purchases) has declined from a peak of 24 percent at the beginning of the 1960s to just below 10 percent in the early 1990s. Almost invariably changes in the social security legislation taking place after the 1950's went in the direction of increasing the generosity of the system: Rossi and Visco (1995) propose an explanation for

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[30] This methodology is developed in the context of the Gruber and Wise NBER project which looks at the sustainability of pension systems throughout the world and is implemented by Brugiavini and Peracchi 2002..

[31] Report for the Italian Council of Ministers, Committee on "Quality of Statistical Information", coordinated by F. Peracchi. See in particular Chapter 2 by Elisabetta Barbi.

[32] From the point of view of the typical individual this change is a loss when it has the negative sign, which corresponds to a gain in revenue for the social security administration.

the decline in the saving rate driven by the increase in public pension wealth that took place starting in the early 1970s. Their analysis is based on time series regressions and on the identification of long run relationships between saving, growth, and private wealth and pension wealth. Such an approach involves computing an estimate of aggregate financial pension wealth and necessarily neglects aggregation issues.

The 1992-reform of the Italian social security system[33] concerned mainly the basic social security system. It should be noted once again that the rules in place for the transitional period affected the normal retirement age, the benefit calculation and the access to early retirement on the basis of seniority, i.e. on the basis of accrued rights in 1992. For senior workers (those who had accrued 15 years of contributions in 1993) the increase in normal retirement age was introduced only gradually, the benefit calculation rules were almost untouched and, most importantly, restrictions on eligibility to early retirement were implemented very gradually.

Hence the transitional period left almost unaffected social security rights for workers who were on the verge of retirement while greatly affecting younger workers. Younger workers were potentially losing a substantial share of their pension wealth from the reform, particularly if their age-earnings profile was sufficiently steep. It is relevant to note that the seniority criterion outlined above does not affect only the very young, i.e. those entering the labor market in 1993, but, to a larger extent those who had contributed to the system for a substantial number of years in 1992.

Attanasio and Brugiavini (2003) measure pension wealth for each household in a household sample (SHIW) before and after the Amato reform, they then relate changes in this variable to changes in saving for different groups. The authors use a simple regression framework and relate, for each household in the sample, saving rates to pension wealth and future earnings, both of which are corrected by an age factor. The left-hand side of the equation is the saving rate defined as income minus consumption divided by income. Pension wealth and future human wealth (when included) are both age adjusted. The estimates of the coefficients of interest are obtained by Instrumental Variables, using as instruments the interaction of time and group dummies. The intuition is to let the degree of substitutability between financial and pension wealth to be a function of age.

The 1992 reform is particularly useful for several reasons. First of all, we have two large and consistent household surveys that immediately precede and follow the reform. Second, the reform did not change the *nature* of the pension system, in that the Italian system remained an un-funded defined-benefit system. The 1992 reform, however, changed substantially the presented discounted wealth of a large majority of Italian households. Furthermore and more importantly for our purposes, the reduction in

public pension wealth was far from uniform across households. It is the variability in the changes in pension wealth across well-defined groups of Italian households that we exploit to identify the effect that pension wealth has on saving rates.

The results indicate that pension wealth is a substitute of private financial wealth (more specifically for private saving), especially for individuals in the middle of their life cycle. Our assessment of how good a substitute, however, depends crucially on the specification we use. When we include an explicit estimate of future earning along our estimate of future pension wealth, we obtain that for some age groups, pension wealth is a perfect substitute of financial wealth. When, however, we proxy such a variable with age effects, we find much lower estimates of the degree of substitutability. For the same age group a lira of pension wealth is worth at most 0.4 liras of saving.

Our estimates of the degree of substitutability depend also on which of the two samples we use and on the particular parameterization. For the larger sample it is on average –0.30 and –0.4 in the smaller sample when pension wealth is interacted with an age polynomial, while when interacting pensions wealth with age dummies we obtain for the larger sample we obtain an estimate of an average effect of –0.35 (and as large as –0.71 in the smaller sample).

Our results constitute one of the first pieces of evidence in the European literature derived from micro data on the relationship between the provision of social security and household saving. In this sense, they complement the time series evidence provided by Feldstein (1974) and many other authors. They also provide information on the importance of life cycle saving, and more generally, on the validity of the life cycle model of consumption.

3.9. Political Effects of the Reforms

The Italian reforms of the 90s aimed at a reduction in the growth in pension spending, at an increase in the distributive equity of the system through specific provisions that reduced its generosity, and at a stabilization of the proportion between contributors and beneficiaries (the dependency ratio). From an economic and political viewpoint, the most important features of the reforms have been: the increase in the retirement age (Amato), the reduction in the incentives to retire early (Dini); the price rather than wage indexation (Amato); and the adoption of a defined contribution formula for the computation of the pension benefits (Dini).

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[33] The system was changed again in 1995 by the Dini government. We will not discuss the changes introduced by the Dini reform here.

Several studies have indicated the lengthy transition to the new regime as the main weakness of the reforms. During this transition, – to be completed in 2036 – for the political reasons addressed in section 3.4, the treatment of successive generations of workers will be arbitrarily different, thereby creating concern about the distributive equity. D'Amato and Galasso (2002) cast some doubts also on the long run consistency of the provisions introduced by the reforms, because of possible manipulation of the formula that calculates the pension benefits for electoral purposes. In particular, in the new regime, the generosity of the system may still be easily changed by modifying some "conversion coefficients", which transform – at retirement – the capitalized contribution into a pension annuity. According to the Dini reform, these coefficients obey to actuarial principles and depend on the expected residual life at retirement.

D'Amato and Galasso (2002) simulations suggest that the Amato-Dini reforms are not sufficient to stop the increase in the public spending for pension provision, which is set to grow even further. The contribution tax rate is estimated to increase from 38% in 1992 to a remarkable 53.2% or to 48.9% for a statutory retirement age of respectively 62 and 65 years. This is mainly due to population aging, which greatly increases the political power of the elderly: the median age among the voters increases from 44 years in 1992 to 57 years in 2050. The long run political sustainability of the Amato-Dini reform in our aging society thus requires an increase in the contribution tax rate.

According to D'Amato and Galasso (2002), the impact of each provision in the reforms on the size of the system is quite different. The adoption of the defined contributions formula has mainly an intragenerational effect, by transferring resources from agents with a steep income profile to agents with a flat profile. Price indexation has virtually no effect on the size of the system, since voters anticipate future reduction of pension benefits, in terms of real wage, and vote for a larger replacement rate at retirement and therefore for a larger tax rate. The most effective provision to limit the growth of the pension expenditure is to increase the retirement age. This measure reduces the profitability of the system by increasing the period of contribution for an agent while reducing the residual life at retirement, and thus the period of pension benefits collection. Moreover, this provision reduces the dependency ratio, i.e., the ratio of retirees to workers, and thus increases the profitability of the system. In D'Amato and Galasso (2002) simulations, the former effect dominates the latter, and an increase of one year of the statutory retirement age reduces the contribution tax rate by one percentage point.

To summarize, D'Amato and Galasso (2002) main message is – at least partially – encouraging. The Amato-Dini reform went some way in achieving the long-term financial sustainability of the Italian pension system, and paved the road – along the lengthy transition – for a steady rise in the effective retirement age. Such increases would reduce the support by future voting majorities for a larger pension system.

4. The future of the Italian Pension Programme

The Italian example makes clear that substantial reforms are complex: both because the starting point matters and because the process requires an effort from the different actors of the economy who participate the reform process. Any assessment or projection on the likely impact of introducing a substantial second pillar requires a large body of knowledge and data, even more than it is the case when looking at parametric reforms. This is not to say that complexity should discourage a serious approach to reforms: on the contrary EU countries and other European countries should tackle these issues starting to build a body of knowledge now.

The very recent Ministerial Report[34] shows that a modest decline of pension spending over GDP occurs between 1999 and 2000, however the level is still striking high (13.5%): it is no surprise that further changes are being proposed following the Italian Ministerial Report.

Forecasts of the future trend of pension spending over GDP for Italy show a well known "hump": pension spending declines until the year 2001 to approximately 13.5% it then grows to reach more than 15% in 2030 and gradually peters down to 13.5% in 2050 (see Figure 6). These projections are obtained on the basis of assumptions about demographic trends (within 2050 life expectancy will increase of 3 years and immigration will be substantial, about 120.000 workers per year) and for a GDP growth rate of 1.5%. If this done by making different assumptions about the GDP growth rate one has three paths according to whether GDP grows at 1%, 2% or 3% (Figure 7). It requires a growth rate of GDP if 3% to reach levels of pension spending over GDP close to 10% by the year 2050[35].

What explains these forecasts? As we argued most of the saving in public spending occurs now and it is mostly due to the changes in early retirement rules. The saving seems to "vanish" once early retirement becomes less of a problem, because the cohorts approaching retirement would not have the same work history as previous cohorts.. The figures on the growth of future pension spending mean that on the one hand there will be new substantial generations of Italian retirees in the near future (the baby boomers, see Figure 4). This immediately translates into a hump in the future number of pensions (see Figure 5). However part of the story is that the system is still quite generous in terms of benefit computation.

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[34] See footnote 25.

5. Conclusions.

The Italian Reforms have seriously taken the challenge of a "good reform". First both the 1992 Reform and the 1995 Reform have taken steps to reduce financial imbalances. Secondly there has been some serious effort in introducing transparency and equity into the system by linking benefits to contributions. The microeconomic distortion in the area of labour supply should be minimized thanks to introduction of a window of retirement ages which leaves choice to individuals while preserving some age-neutrality of the pension provision. The long term forecasts show that eventually there will be a substantial decrease in pension spending as a fraction of GDP, more in line with the EU average and consistent with the Stability and Growth Pact. However the reforms seem to be weak on the short-medium term as there will be a growth of pension spending in the next couple of decades. At the same time, in that time-span different generations will be treated differently and some privileges will persist for some groups of workers. The other major weakness of the Italian reform process is in the lack of growth of a funded second pillar, which will become essential for a large number of workers who will face lower replacement rates as a result of the reforms, particularly younger workers. Lack of timely legislation is probably the basic obstacle to reaching a more balanced pension portfolio for Italian workers.

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[35] The differences in the year-profiles between Figure 7 and Figure 8 are due to slightly different assumptions on demographics.

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Figures and Tables

Table 1: Normal and Effective Retirement Age (in 1996)

Male	Normal Retirement age	Early Retirement age	Effective Retirement age
COUNTRIES			Average for 1995
BELGIUM	65	60	57,6
CANADA	65	60-64	62,3
DENMARK	67	60	62,7
FINLAND	65	60-64	59,0
FRANCE	60	57	59,2
GERMANY	65	63	60,5
ICELAND	67	65	69,5
ITALY	62	35 years of contributions	60,6
JAPAN	65	60-64	66,5
NERTHELANDS	65	58-63	58,8
NORWAY	67	60-66	63,8
SPAIN	65	60-64	61,4
SWEDEN	65	60-64	63,3
UNITED KINGDOM	65		62,7
UNITED STATES	65	62-64	63,6

Source: Blondal & Scarpetta, 1999.

Figure 1: Labor Force Participation trends for men aged sixty to sixty-four
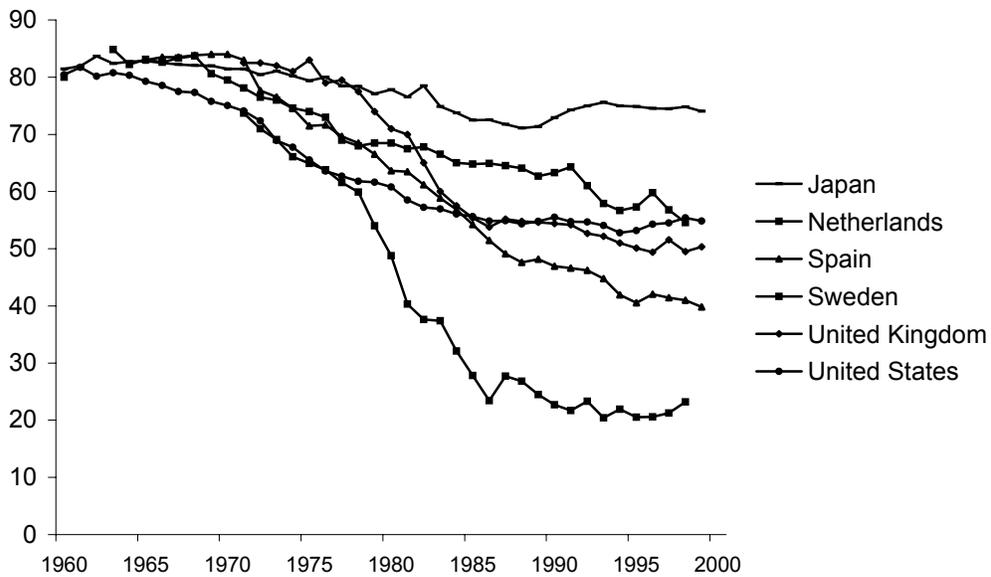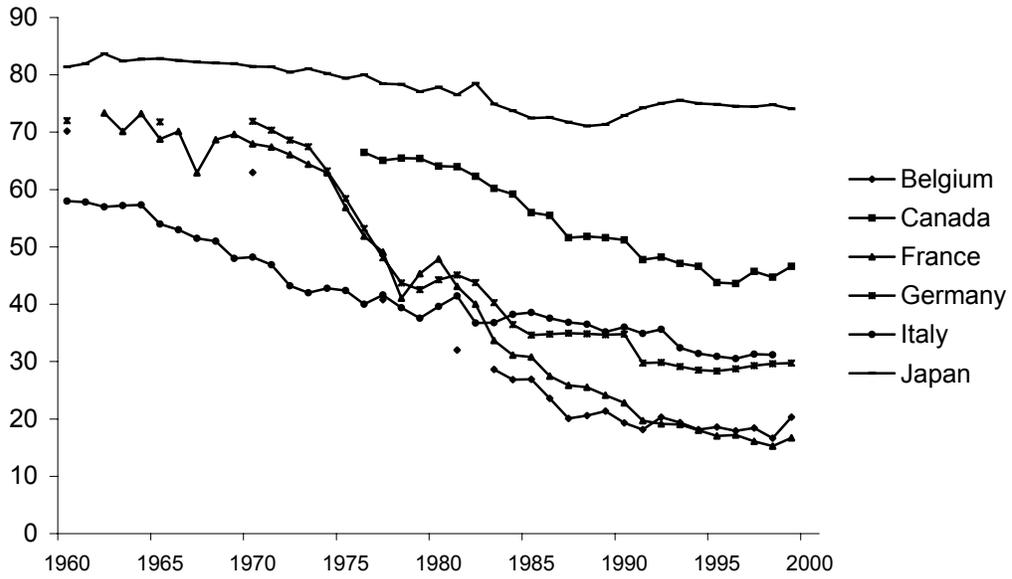
Source: EU-Labor Force Survey

Table 2: A comparison of incentive calculations. Representative individual (man).

Last year of work	Italy		Spain		USA	
	Replacement Rate	Tax/ Subsidy	Replacement Rate	Tax/ Subsidy	Replacement Rate	Tax/ Subsidy
54	…	0	…	…	…	0
55	0,726	0,245	…	0,201	…	-0,022
56	0,744	0,308	…	0,096	…	0,046
57	0,761	0,338	…	0,152	…	0,060
58	0,780	0,372	…	0,355	…	0,069
59	0,798	0,401	0,590	0,279	…	0,072
60	0,799	0,697	0,661	-0,074	…	0,071
61	0,804	0,711	0,730	0,010	0,403	0,064
62	0,805	0,718	0,816	0,032	0,440	-0,028
63	0,805	0,729	0,895	0,167	0,476	-0,005
64	0,809	0,746	0,996	0,264	0,703	0,031
65	0,809	0,756	0,998	0,729	0,749	0,188
66	0,809	0,772	0,996	0,725	0,798	0,225
67	0,809	0,787	0,988	0,718	0,845	0,269
68	0,809	0,803	0,981	0,677	0,872	0,439
69	0,809	0,818	0,973	0,636	0,898	0,455

Source: Gruber and Wise, 1999, "Social security and retirement around the world".

Table 3: Median Age among Voters

Germany	46	49	52	54	55	55
France	47	50	52	54	55	56
Italy	46	48	52	55	56	56
Spain	44	47	50	54	56	57
United Kingdom	45	47	50	51	52	53
United States	47	50	52	53	53	53

Source: Galasso and Profeta (2003)

Table 4: Key features of the pre-1993 regime, and the 1992 and 1995 reforms (at the steady-state).

	Pre-1993 regime	1992 reform	1995 reform
Normal retirement age	60 (men) 55(women)	65 (men) 60(women)	Any age after 56 (for both men and women)
Transitional period		Until about 2032	Until about 2035
Pensionable earnings	Average of last 5 years real earnings (converted to real values through price index)	Career average earnings (converted to real values through price index + 1%)	Career contributions (capitalized using a 5-year moving average of GDP growth rate)
Pension benefit	2%*(pensionable earnings)*(t), where t is years of tax payments (at most 40)	2%*(pensionable earnings)*(t), where t is years of tax payments (at most 40)	Proportional to capitalized value of career contributions, the proportionality factor increasing with age at retirement (from .04720 at age 57 to .06136 at age 65)
Pension indexation	Cost of living plus real earnings growth	Cost of living	Cost of living
Pension to survivor	60% to spouse 20% to each child 40% to each child (if no spouse)	Same	Same
Years of contributions for eligibility	15	20	5
Early retirement provision	Any age if contributed to SS for 35 years or more, no actuarial adjustment	Any age if contributed to SS for 35 years or more, no actuarial adjustment	No early retirement provision
Total Payroll tax	24.5% of gross earnings	27.17% of gross earnings	32.7% of gross earnings

Table 5: The Effects of the Reforms on the Net Pension Wealth by Age

	Amato Reform[a]				Berlusconi Proposal[a]			Dini Reform[a]	
	Before	After	Δ	**Before**	After	Δ	After	Δ
15-19	28	- 31	- 59	-48	- 52	- 4	- 56	- 8
20-24	152	- 50	- 202	-101	- 116	- 15	- 128	- 27
25-29	276	- 43	- 319	-112	- 131	- 19	- 145	- 33
30-34	347	46	- 301	-20	- 56	- 36	- 63	- 43
35-39	415	198	- 217	139	71	- 68	99	- 40
40-44	504	282	- 222	227	174	- 53	227	0
45-49	497	349	- 148	306	251	- 55	306	0
50-54	533	441	- 92	402	338	- 64	402	0
55-59	394	360	- 34	339	238	- 101	339	0
60-64	183	177	- 6	168	160	- 8	168	0
65+	79	76	- 3	74	74	0	74	0
Workers	3.407	1.802	- 1.605	1.375	997	- 378	1.225	- 151
Retirees	2.660	2.527	- 133	2.710	2.710	0	2.710	0

Source: Beltrametti (1995, 1996), D'Amato and Galasso (2002)

Note: [a] in billion of Italian liras in 1992

Table 6: Italy. Current retirement eligibility rules(*)

Year	INPS (Private Sector) Age and years of contribution	INPS-(Private Sector) Only years of contributions	INPDAP (Public Sector) Age and years of contribution	INPDAP (Public Sector) Only years of contribution	Self-employed Age and years of contribution	Self –employed Only years of contribution
1998	54 and 35	36	53 and 35	36	57 and 35	40
1999	55 and 35	37	53 and 35	37	57 and 35	40
2000	55 and 35	37	54 and 35	37	57 and 35	40
2001	56 and 35	37	55 and 35	37	58 and 35	40
2002	57 and 35	37	55 and 35	37	58 and 35	40
2003	57 and 35	37	56 and 35	37	58 and 35	40
2004	57 and 35	38	57 and 35	38	58 and 35	40
2005	57 and 35	38	57 and 35	38	58 and 35	40
2006	57 and 35	39	57 and 35	39	58 and 35	40
2007	57 and 35	39	57 and 35	39	58 and 35	40
2008	57 and 35	40	57 and 35	40	58 and 35	40

(*) Source. Ministero del Lavoro – INPS. Rules prevailing after 1998 according to the Law 449/1997. These rules apply to white-collar employees, they differ only slightly for blue-collar employees.

Table 7. Actuarial Adjustments for early Retirement After the 1995 Reform (at the steady state).

Age	Increment of the actuarial adjustment	Implied Penalty
57	-	0.231
58	0.030	0.208
59	0.030	0.184
60	0.031	0.159
61	0.033	0.131
62	0.034	0.101
63	0.035	0.070
64	0.034	0.038
65	0.040	0.000

Figure 2:. Italy: Recent trends in labor force participation rates and employment rates, October 1992-April 2000 (index October 1992 = 100).

Figure 3. Number of pensions, pension expenditure, average pension and expenditure/GDP ratio, 1975-98.

Old-age, disability and survivor pensions.
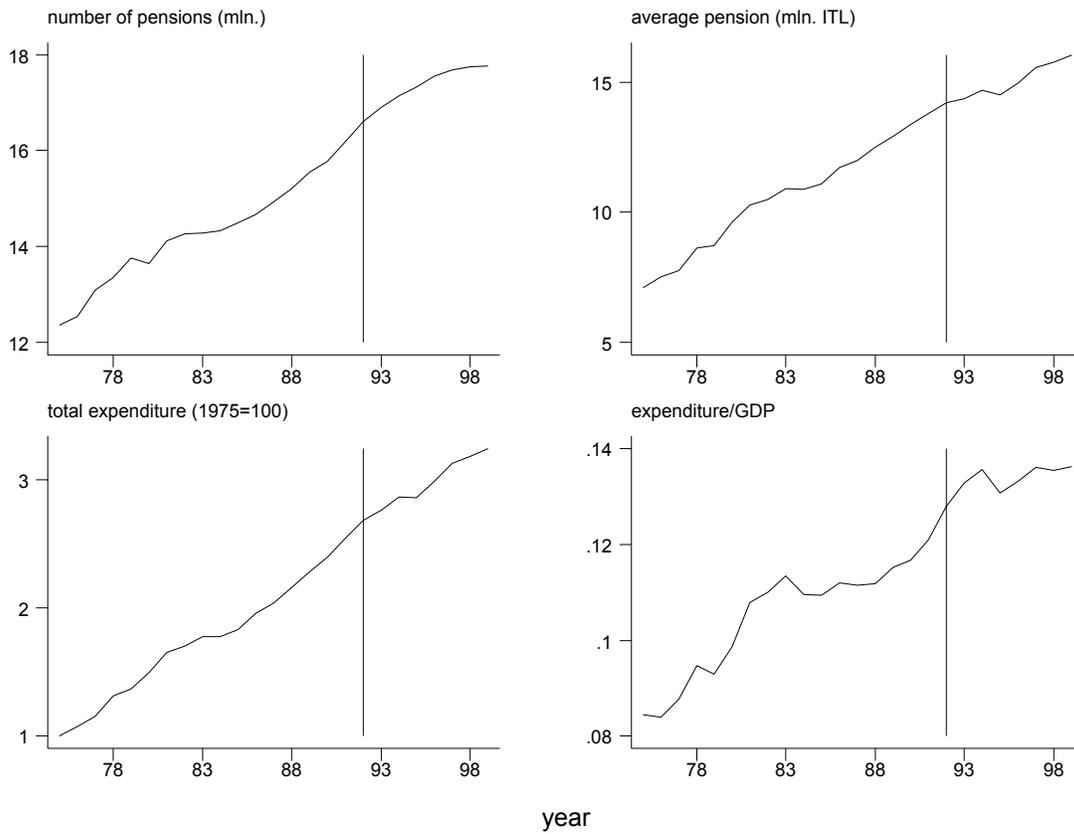
Table 8: Total Fiscal Effect of the Dini Reform

	BASE CASE	DINI REFORM	TOTAL EFFECT	BEHAVIOURAL EFFECT	MECHANICAL EFFECT
Social Security Wealth	166778	99171	-67607	-493	-67114
Taxes: Total			-10415	3480	-13895
Net Change			-57192	-3973	-53219
Change as a % of Base Benefits			-34.29%	-2.38%	-31.91%
		MODIFIED DINI REFORM			
Social Security Wealth	166778	97522	-69256	-2142	-67114
Taxes: Total			12431	26326	-13895
Net Change			-81687	-28468	-53219
Change as a % of Base Benefits			-48.98%	-17.07%	-31.91%

Figure 4

Italian Population by Year of Birth
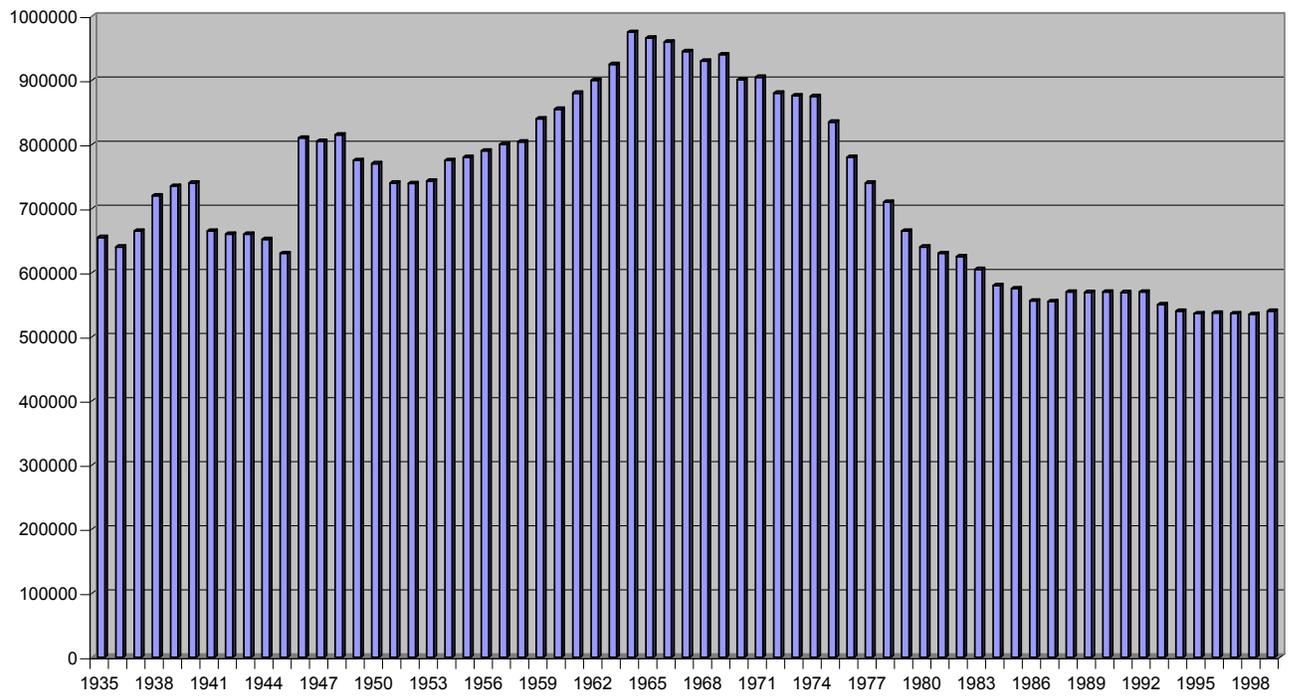
Figure 5

Number of pensions over insured population (in %)
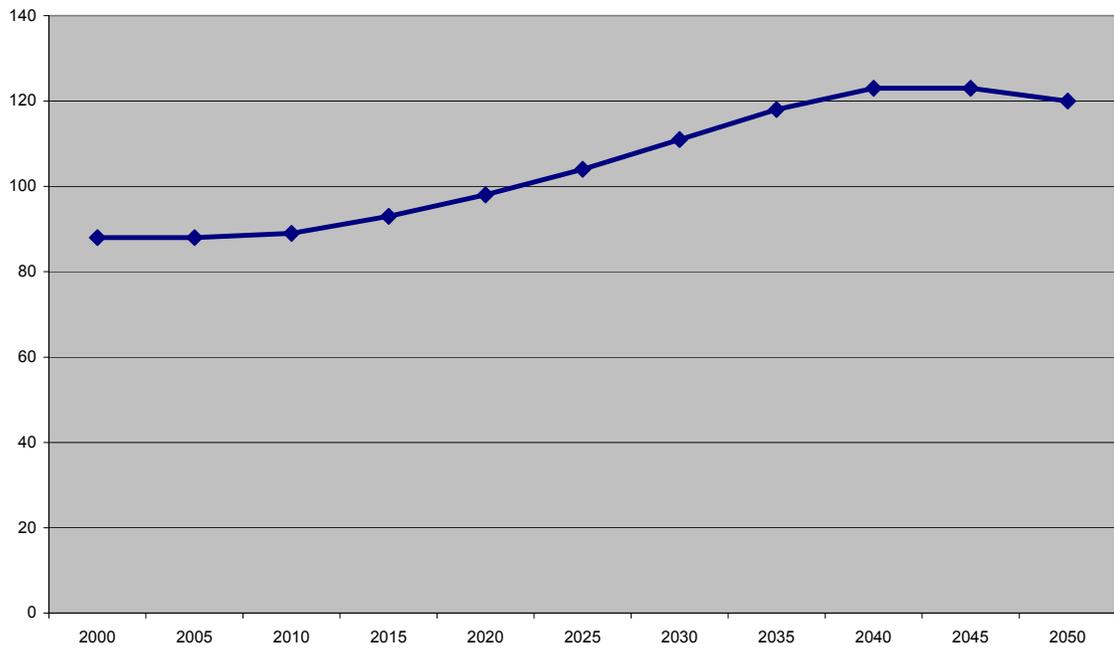
Figure 6

Pension Spending as % of GDP (1.5% growth)
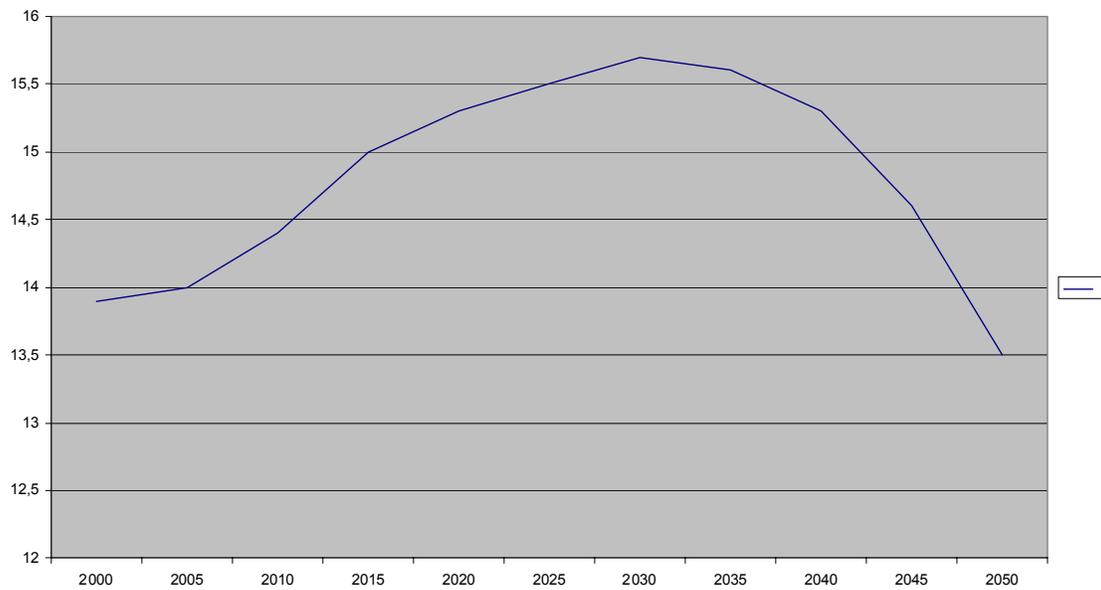
Figure 7

Pension Spending as Percentage of GDP