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Angelo Marano

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Via Gioberti 5 - 20123 Milano
Tel. +39 02 4344101 - Fax +39 02 43441027
Info@ref-online.it – www.ref-online.it

The effects of pension funds' development on the financial markets in Italy, Germany and France

Angelo Marano

(University of Tuscia - Viterbo)

angelo.marano@polimi.it

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Abstract

Among the most distinctive features of the current wave of pension reforms in Continental Europe is the aim of stimulating the takeoff of funded private pension funds, which should allow in the future to supplement shrinking public pensions, while stimulating, at the same time, saving and the financial markets.

The paper quantifies the size of the resources that could be conveyed by pension funds in Italy, Germany and France till 2050. Although the simulation builds on a very favorable scenario for pension funds, their weight is likely to remain marginal for still many years, their annual asset accumulation generally not exceeding 1-1.5 points of GDP. Moreover, the size of the financial flows allocated on the domestic markets will be much lower than this and, in particular, the investments on the national stock exchanges will probably be negligible if compared to market capitalization.

JEL: G23, H55, F37

Keyword: pension funds, international financial flows

1. Introduction*

A widespread belief holds that in the coming decades private, fully funded pension funds will represent one of the main structural elements of development of financial markets and stock exchanges. This paper aims at evaluating the size of the financial flows that pension funds could convey in the three main countries of continental Europe (Italy, Germany and France) under the assumption of a gradual diffusion of such an instrument, on a time horizon reaching 2050. Section 1 introduces the issue of pension funds' accumulation and defines the notion of funds used. Section 2 discusses the current situation in the three countries, while section 3 contains the calculations. Section 4 concludes.

A picture of the current development of pension funds in the EU offers an image quite jeopardized. UK and the Netherlands (as well as, on the other side of the ocean, the US) are characterized by large private pension systems, which manage resources roughly of the size of GDP (85.1%, 115.2% and 69.9% respectively, see Table 1 and Graph 1) and account for a large proportion of the total pension expenditure. EU northern countries are moving in the direction of adding a funded part to the public pay-as-you-go system, aiming at building an individual-based management of pension saving on an administration system remaining under public control. Countries like Italy, Germany and France instead, where pensions are still almost entirely financed pay-as-you-go and pension funds' assets amount to less than 5% of GDP, seem, although not always linearly (as in the case of France), moving towards assigning to pension funds the role of compensating for the reduction of public pension benefits. In general, the EU Commission is pushing hard to launch pension funds, given that their assets only sum to 8.9% of GDP of the Euro area and only account for 5% of the total assets of pension funds in the OECD area (COVIP 2002).

The mechanism through which pension funds operate is particularly clear if one looks at those based on defined contribution. Workers' individual contributions are invested on the financial market and sum every year, together with financial rents, to build a capital which will be used, at the moment of retirement, to buy a financial contract called *annuity*, typically issued by an insurance company. It follows that, at the beginning, until the pension fund starts paying the first pensions, the entire contribution flow and all the financial rents (net of taxes and expenses) add to the fund's assets. The fund wealth growth continues when the first pensions start being paid, although with a lower momentum, till the fund reaches "maturity", which means that the ratio of pensioners to active members stabilizes. From that moment on the growth of fund' assets stops

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(except for what is due to the normal wage dynamics) and constitutes a pool from which to draw in case the retirement flow exceeds new memberships: in this case the annuities will be bought at least in part with funds obtained decumulating assets, and, under the extreme assumption of no new members entering, the pension fund wealth will go to zero when the last member will retire.

From such mechanism derives that the amount of saving conveyed by pension funds depends upon two key elements: on one side the demographic and occupational dynamics, on the other the degree of development of the pension funds themselves.

In countries like the US, where pension funds are already reaching maturity, the ratio of pensioners to active members tends to reflect the demographic and occupational dynamics. In particular, one expects that during the next decades accumulation will stop and possibly drop, as baby boom generations will be followed by less numerous ones, at least that the demographic trend will not be offset by rising contribution rates or by climbing earnings or membership (in terms of % of covered workers – currently at around 50% – or in absolute numbers – possibly due to an higher-than-expected flow of immigrants (Schieber 2001)).

The second key element is the degree of development of the pension fund system. Indeed, in spite of the demographic crisis and of the negative net flows in the labor market expected for the future in many EU countries, one can expect there a substantial rise of the amount of saving conveyed by pension funds because membership is likely to rise strongly, while the number of pensions will begin rising only with a significant time lag, i.e. when new members will reach the retirement age.

Before proceeding one needs to make more precise the definition of pension funds used hereafter and to signal some caveats.

For what is concerned with the definition, only funded, private pension funds, allocating their assets “on the market”, are considered; furthermore, life insurances are excluded.

The consideration of only funded, private funds allows to exclude from the analysis on one side the reserve funds that many EU countries have set up to supplement, in the coming years, the financing of their public pension expenditure, on the other some only-formally-autonomous pension institutions, mostly financed pay-as-you-go, like the French occupational pension funds (which in effects are generally considered as part of the first pillar).

Furthermore, the requirement that pension funds allocate their assets “on the market” is justified by the aim of understanding the effects they could have on the financial markets. This however means excluding funds like the German “direct guarantee” ones, which are based on book reserves, while considering their transformation into funds investing on the market – promoted by the 2001 pension reform – as part of the pension funds' development. The same applies to the

diverting to pension funds of the Italian deferred wage (TFR), currently paid by employers only at the end of the individuals' working activity at the firm (see below).

Finally, life insurances, although holding an important shares of financial assets¹, are excluded from the analysis because they answer to partially different needs than pension funds and because, although they may in part constitute an alternative to them, the same could apply to many others financial instruments, as well as to investments in estates.

The last two considerations bring to a first element of caution. In the next sections one evaluates the size of financial flows conveyed by pension funds; however, not necessarily the wealth that accumulates in the funds constitutes new saving: in part, as in the case of diverting of book reserves to pension funds, it is just saving finding in the pension funds a new and more convenient allocation, often due in part to their favorable fiscal treatment.

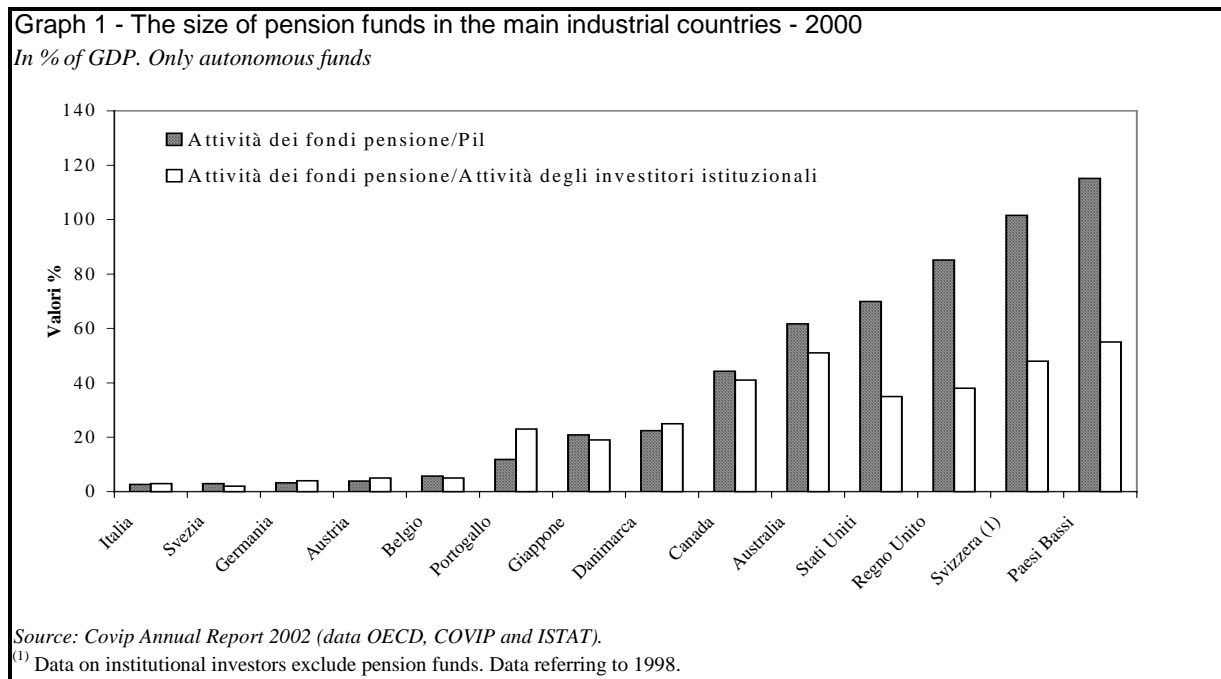
A second caution concerns the fact that pension funds do not invest their entire wealth in shares. COVIP 2002 evaluates that at the end of 1999 pension funds in the main OECD countries were allocating 55% of their wealth in equities, 25% in bonds and 10% in real estates (see Table 8 below). In principle, it should be the single member to choose the favorite portfolio allocation: an ideal profile would imply a heavier investment in equities during the first years of contribution, followed by a gradual shift towards bonds when the individual, becoming older, needs to reduce the variability and riskness of the wealth she is funding her future income on.

	<i>All institutional investors</i>				<i>Pension funds</i>			
	1997	1998	1999	2000 ⁽⁴⁾	1997	1998	1999	2000 ⁽⁴⁾
France ⁽¹⁾	95.3	113.7	117.9	133.8	0.07
Germany	57.5	70.2	72.7	80.8	2.9	3.3	3	3.3
Italy ⁽²⁾	53.1	80.1	93.6	98.2	2.3	2.1	3.3	3.6
Italy ⁽³⁾					3	3.1	4.2	4.5
Netherlands	182.2	156.6	200.8	211.4	101.2	87.2	112.6	115.2
UK	204.6	212.9	226.5	..	83.1	83.7	85.1	..
US	189.7	205	208.7	197.7	71.1	76	74.7	69.9

Source: OECD

Notes: ⁽¹⁾ For France, data are not distinguishable from those for insurance companies; the only data explicitly referring to pension funds is for 1997, when their assets were almost insignificant (5,7 FF billions). ⁽²⁾ Only autonomous pension funds. ⁽³⁾ Including autonomous pension funds of banks, insurance companies and the Bank of Italy. ⁽⁴⁾ Forecasts.

¹ The ratio of life insurance assets to GDP is about 16%, 27% and 30% respectively in Italy, Germany and France (the first two data refer to 2000 and come from OECD 2001a; the French data refers to 1995 and comes from the estimations contained in EU Commission 1997).



2. Pension funds and pension policies in Italy, Germany and France

As said at the beginning, for what concerns the size of pension funds' financial assets, the difference between, on one side, Italy², Germany and France³ and, on the other, UK, US and the Netherlands is striking: while the latter are characterized by large private pension systems, which manage resources roughly of the size of GDP, in the three main countries of Continental Europe pension funds' financial wealth is below 5% of GDP. This section analyses more in detail the current situation and the private pension policies in these three countries.

2.1 Italy

In Italy pension funds are high in the policy agenda since 1992, when the first of the three big pension reforms of the 1990s was undertaken. The choice of supplementary pension funds as a mean to balance the drop of public pensions was made explicit since the very beginning.

In effects (see Table 2), considering a 60 year old individual with 35 years of career, the reforms of 1992, 1995 and 1997 will have the effect of reducing by 2050 the replacement rates of

² For Italy, autonomous and non-autonomous pension funds are distinguished. The firsts refer to pension funds already active before 1993, to pension funds created thereafter (close-end and open funds) and to 17 other private pension institutions, among which some professionals' funds which are compulsory and belongs to the first pillar, although being mostly funded. Non-autonomous funds belongs to banks, insurance companies and the Bank of Italy.

³ In France pension funds, whose introduction in the law dates back to 1994, are not reported separately with respect to "insurance companies"; their dimension is nevertheless negligible, as it is shown by the only data reported in Table 1,

public pension, i.e. the ratio of pension to the individual last working income, by almost 20 points for the employees (from 67.3% to 48.1%) and by more than 35 points for the self-employed (from 64.4% to 29.2%). Such reduction mostly originates from the introduction of a new notional-defined-contribution pension formula and from the use of an actuarial correction mechanism, periodically updated, to transform the notional capital in pension.

To balance the decline, private pension funds have been advocated, which, with the gradual increase of the length of membership, should provide a growing part of pensioners' income. As shown in Table 2, in 2010 private pension funds should offer, with a 10 years membership, a pension amounting to 4.7% of the final wage, which would rise to 9.4% in 2020 (20 years membership) and to 16.7% in the following years (35 years membership). In such calculations, taken from the 2002 Italian National Strategy Report on Pensions (Ministry of Welfare 2002), one assumes an annual return on pension funds, net of all expenses, of 2.5% in real terms, while the contribution rate to pension funds is 9.25% of gross earnings, which is the average for (new hired) workers choosing to divert to private funds their TFR, a sort of deferred wage which has been identified in the Italian system as the principal instrument to finance pension funds⁴.

Thus, pension funds are the principal instrument, together with the increase of the effective retirement age, chosen by the Italian policymaker to counterbalance the upcoming demographic crisis. Currently, membership to pension funds is voluntary, but the government is proposing to make it compulsory. Moreover, fiscal incentives have been strengthened in 2001, in particular increasing tax exemption till 5164 Euro per year.

Regulation of pension funds dates back in 1993 and further interventions have been put in place in the following years. Pension funds may be of three types: pre-existing funds, created before 1993 and subject to a special regulation; funds based on collective agreements (closed-end funds), mostly covering employees; open funds, that mostly address to the self-employed. The new funds started operating at the end of the 1990s, and are now 143, of which 41 are based on collective agreements.

At the end of 2001 pension funds' membership amounted to about 2 millions, i.e. about 10% of all the workers had signed, the majority being private employees, public employees not having

referring to 1997. It must be noted in any case that the French first pillar contains some occupational funds with accumulated reserve funds of an estimated size at 80.8 Euro bls (6% of GDP) (COVIP 2001).

⁴ The TFR (Trattamento di Fine Rapporto) is a kind of deferred wage which amounts to about one month worth of salary every year (6.91% of gross earning). Workers in sectors where collective pension funds are present may divert part or all of their TFR to pension funds, but they need to add a further contribution which, for newly hired workers, amounts to about 1.17% of gross earnings and is matched by an equal contribution from the employer. Otherwise, being deferred wage, the TFR is not paid year by year to the worker, but accumulated in the firm's books instead, till the worker changes job, retires or needs to buy a house. On the TFR, firms pay an annual interest of 1.5% plus 75% of the inflation rate. Traditionally, TFR funds have represented for firms a source of cheap financing, which explains why are unwilling to renounce to such instrument in favor of pension funds.

yet the possibility to sign in (Statistical Appendix to Ministry of Welfare 2002 and COVIP 2002). Moreover, while employees' membership is expected to further expand during the next few years, due to the diverting of TFR, which is likely to boost contributions, membership of the self-employed remains low and doubts remain on their future perspectives⁵.

At the end of 2001 (Table 3) Italian pension funds were managing assets for Euro 27.8 bls (2.3% of GDP), the main part (24.6 bls) belonging to pre-existing funds and the remaining to closed-end (2.3 bls) and open (0.9 bls) funds, these last two components rising however at a fast rate. Closed-end funds were investing in equities only 19.6% of their assets, and only 3.6% in domestic shares; open funds invest in share a larger proportion of their portfolio, amounting to 48.3%, with 8.1% invested in domestic shares. Overall (see Table 8 below), thus considering also pre-existing funds, Italian funds invest about 50% (47.1%) of their portfolio in bonds, while less than 10% is allocated in equities.

A final point concerns how much of the inflow of resources to pension funds will constitute new saving. Indeed, the TFR is an example of how private funds not always convey new resources. From this point of view the new element is not really that private funds increase saving, but rather that, such saving being now allocated on the market, efficiency should increase and higher returns could be paid.

Retirement in year Pillars	2000			2010			2020			2030			2040			2050		
	I	II	Tot	I	II	Tot	I	II	Tot	I	II	Tot	I	II	Tot	I	II	Tot
<i>Contribution years</i>	35	0		35	10		35	20		35	30		35	35		35	35	
Private employee	67.3	0	67.3	67.1	4.7	71.8	56	9.4	65.4	49.6	14.5	64.1	48.5	16.7	65.2	48.1	16.7	64.8
Self-employed	64.4	0	64.4	64.7	4.7	69.4	41.2	9.4	50.6	30.7	14.5	45.2	29.4	16.7	46.1	29.2	16.7	45.9

	Resources destinated to pension payments (€mln)	Investment % of the total, direct and indirect (through UCITS) in:				Other (included cash) in % of the total	Total
		Italian bonds	Foreign bonds	Italian shares	Foreign shares		
Close end pension funds	2,256	45.5	28.8	3.6	16.0	6.1	100
Open pension funds	943	33.1	12.0	8.1	40.2	6.6	100
Preexisting funds ⁽¹⁾	24,626						

⁵ The 2002 Italian Strategy Report assumes that an increasing proportion of such workers will sign with a pension fund and that they will pay the same contribution rate of private employees, i.e. 9.25%. However, they face two opposite tendencies: on one side, contributions to pension funds are taken directly from the self-employed disposable income, which makes membership more expensive; on the other, the greater reduction of public benefits this type of workers

2.2 Germany

In the 2002 German National Strategy Report on Pensions one reads that “[Of the 2001 pension reform] *certainly the most important innovation is a substantial expansion of supplementary, capital-covered old-age provision, flanked by comprehensive state support*” (Federal Republic of Germany 2002, p. 7).

Indeed, the German reform seems to follow the same logic of the Italian: contribution rates should be stable around 19-20% till 2020, and only increase up to 22% in the following decades, while the replacement rate of public pensions should drop and private funds compensate for the loss. However, the role assigned to private provision in Germany is less important than in Italy: the public pension should not drop too much, and after 45 years of work it should guarantee a replacement rate around 67%⁶, which should rise by further 3-4 points thanks to private funds. These would be financed by contributions increasing over time from 1% (2002) to 4% of gross earnings (since 2008). Workers and firms need to reach such contribution rates to get fiscal incentives, in the form of tax exemptions and state supplements to the contribution, which are expected to cost around 12.7 Euro bls by 2008.

Only part of the contribution paid to pension funds will increase the amount of resources dedicated to old-age insurance. Indeed, in Germany occupational funds are already well developed, covering, for example, 28% of workers in the trading sector, 64% of the employees in the manufacturing and a large part of public employees. However, pensions paid by such funds are very low: overall, about 50% of private employees receives an occupation pension, which, in average, amounts to just 30 €a month (Federal Republic of Germany 2002, Annex 1).

Since the 2001 reform extends the fiscal benefits also to occupational funds, one could think that no substantial change has been introduced, the aim being only to increase contributions and membership⁷. However, not all types of occupational funds can benefit from the incentives, being required that they allocate their assets on the market. This leaves outside the most common funds, based on “direct guarantee”, which implies that pension liabilities are only written on firms’ books. To get the benefits, such funds need to transform and start operating on the market, with a result quite similar to the diverting of the TFR to pension funds in the Italian case: resources before

will face, due to the lower contribution rates, suggests that for them private funds will have to play a much greater role (see Table 2).

⁶ The public pension expenditure being also financed through the carbon tax.

⁷ The German government expects the average amount of occupational pension to more than double by 2014.

managed within the firm would now be allocated on the market. Indeed the German government has clear in mind the effects of such policy on the financial markets: *“Pension investment funds will strengthen Germany as a financial centre. Because of the longer-term nature of investments, pension investment funds will be oriented more towards assets of substance, such as equities and other holding securities. This will lend further impetus to the capital market and thereby also to growth and employment”* (Federal Republic of Germany 2002, p. 11).

It seems therefore that the German government is moving with some caution towards private pension funds, and such orientation is confirmed by the new pension reform proposal elaborated in 2003, which does not change the framework built in 2001 for private funds. Public pension should thus continue to be the principal instrument to guarantee the elderly living standard, while private funds should receive contributions of limited amount (as said, 4% by 2008), although the government aims at expanding membership as much as possible.

2.3 France

In France 90% of the workers are members of occupational supplementary pension schemes, which account for 21% of all pension expenditure (European Commission 1997); however, these are by and large compulsory pay-as-you-go schemes, which in practice are part of the first pillar. Pension funds, instead, are much less developed than in Italy and Germany and do not play any substantial role. The real size of pension funds is difficult to evaluate, because data do not distinguish between them and insurances, however, together with the single data reported in Table 1, Table 4 gives an idea of the level of underdevelopment. Even considering, as the 2002 French National Strategy Report on Pensions does, some pay-as-you-go occupational fund within the second pillar, this does not account for more than 2% of the total expenditure, as against the 98% of the first pillar, the role of the third pillar being negligible. Furthermore, pension funds' investments are subject to tight regulation, which limits the possibility of risk capital allocation (Gouvernement Française 2002).

If private provision is underdeveloped, public provision is well developed instead: the French government calculates the average replacement rate being currently around 78%. It is expected that it will drop to around 64% in 2040, but the government efforts, as illustrated in the French Report on Pensions, seem focusing more on finding ways of maintaining the level of public provision, rather than at stimulating private funds, which only benefit of tax incentives: *“Il faut toutefois souligner qu'étant donné l'importance des pensions de retraite obligatoires en répartition, les dispositifs d'initiative professionnelle ne couvrent qu'une fraction limitée de la population active.*

Sur le plan individuel, bien que le taux d'épargne des ménages s'établisse à un niveau satisfaisant, la partie, difficile à estimer, de cette épargne affectée à un projet de retraite semble faible, les ménages se tournant notamment, y compris dans la perspective de la préservation de leur niveau de vie après la retraite, vers l'acquisition du logement principal. (...) En ce qui concerne les orientations pour l'avenir, la préservation des régimes de retraites obligatoires en répartition et la garantie de leur pérennité dans le respect de l'équité sont des objectifs privilégiés pour le Gouvernement. Mais, au-delà, chacun doit avoir la possibilité de compléter sa pension par un revenu d'épargne grâce à une incitation fiscale". (Gouvernement Française 2002, pp. 18, 19).

The pension reform approved in 2003 is coherent with such orientation. Indeed, while focusing on increasing working life and harmonizing the public and private employees pension systems, it confirms, at least at level of principles, the choice of focusing the effort on strengthening the public pay-as-you-go system, aiming at maintaining the level of benefits it provides and leaving membership to pension funds to the individuals' choice, with at most a strengthening of fiscal incentives.

	Compulsory first pillar schemes (basic and complementary regimes)		Second pillar (professional funds)			Third pillar schemes	
<i>Modo di finanziamento</i>	<i>Pay-as-you-go</i>		<i>Pay-as-you-go, capitalization and mixed</i>			<i>Capitalization</i>	
	Payments	<i>In % of the tot I and II pillar</i>	Payments	<i>In % of the tot I and II pillar</i>	Contributions	Payments	Contributions
Private employees	100,943	97.8	2,244	2.2	3,556		
Public employees	44,929	99.2	354	0.8	824		
Self-employed	15,591	98.6	214	1.4	903		
Total	161,453	98.3	2,813	1.7	5,823	1,057	1,193

Source: Statistical Appendix to the French National Strategy Report on Pension, 2002

3. The financial flows that pension funds could convey in Italy, Germany and France during 2000-2050

3.1 The scenario: pension fund membership, earnings, contributions and the macroeconomic framework

To evaluate the financial flows that could be conveyed by pension funds one needs to start from the expected demographic and employment dynamics. Indeed, as long as the baby-boom generations will be on the labor market, their participation to pension funds will translate in an accumulation of wealth; when they will start retiring, however, the net flow (contributions net of pension payments) could fall sharply, as is already happening in countries where private pension systems are already reaching their maturity.

We start with Eurostat's 1995 demographic and labor forces projections⁸, calculated over the period 2000 – 2050 at 5-years intervals, for 5-years age groups, separately for males and females. We consider the data for each year as the average value during the 5-years period starting two years before and ending two years later (i.e. 2000 refers to the average 1998-2002, 2040 to the 2038-2042 period and so on). Only full time labor forces are considered (32 or more hours of work a week), excluding part-time workers, which are less likely to sign for supplementary pension funds.

To obtain the actual number of workers, labor forces have been multiplied by the employment rates, based on calculations by the EU-DG Employment and Social Affairs in the “Lisbon scenario” till 2010 (Employment Committee 2001). For the following period, the 2010 rates have been used. However, while within such scenario in 2010 the unemployment rate would fall to 4.3% and 4.5% respectively in France and Germany, in Italy it would drop to 2.7%. Seeming such rate too low, the Italian employment rate has been adjusted to obtain an unemployment rate more in line with the two other countries.

The next step is to determine the % of full time workers which will become members of a pension fund, their earnings and their contributions.

For what is concerned with membership, one assumes no membership of workers younger than 25 and older than 65, so that the contribution period concerns the 40 years between 25 and 64 years of age. In such interval, membership is assumed to be the same for each 5-years age group. For Italy and Germany, where private pension funds are already operating, the current membership suggests initial values for the period 1998-2002 of 10% and 5% respectively for males and females.

⁸ One considers the 1995 Eurostat “central” scenario. The 1995 projections are used instead of the 2000 ones because the latter only concern population and not the labor forces. Differences are not such, however, that could substantially modify the result of the analysis.

Moreover, the policies of the two governments (see above) justify the assumption that coverage will increase by 10 and 7 percentage points every 5 years, respectively for males and females, until the reaching of maximum values of 85% and 70%⁹. For France, the argument is different: as said, not only a system of private pension funds is currently absent, but the government strategy is currently focusing on reforming the public system and addressing the demographic problem by increasing working life, with just a marginal role left to private funds. In spite of this, to evaluate the purely potential financial flows that pension funds could convey in the French case, one has arbitrarily assumed that, starting in 2008-2012, France will follow, with a 10 years lag, the same path of the other two countries.

The first two panels of Table 5 report pension funds' membership, in % of the full-time labor force and in absolute value. Members would increase in the three countries until reaching, around 2050, 65% of the full time workforce¹⁰. In absolute terms, however, because of the underlying demographic scenario, membership would start falling already in 2040 in Italy (where the ageing process is expected to be particularly strong) and since 2045 in Germany, while continuing to rise in France, due to the lagged development.

Having determined pension fund membership, the average work earnings for each age group and each year has to be determined. As baseline, the wage of the *Average Production Worker* (APW), as calculated by the OECD for 2000, has been taken, assuming it applies to the age group 45-49 year (Table 5.c). Then, an individual career profile has been considered, with a career component 0.4 percentage points greater than the annual productivity growth, set, coherently with the EU long term projections, at 1.8% for Italy and Germany and at 1.7% for France (Economic Policy Committee 2001).

However, particularly at the first stage of pension funds' development, the average income of pension funds' members is likely to be substantially greater than that of the APW¹¹, the two tending to converge when membership expands to the entire population; thus, missing specific data on members' income, this has been set at 1.5 times that of the APW during the first period (1998-2002 for Italy and Germany, 2008-2012 for France), the difference decreasing by 5 percentage points every 5 years, till zero.

To evaluate the annual flow of resources to pension funds one needs a final assumption, concerning the individual contribution rate in % of earnings (Table 5.d). In the Italian case, the

⁹ In the Italian case, the current government proposal of making membership to pension funds compulsory for all employees has not been considered, as important details are not clear yet, while the overall proposal is being subject to debate.

¹⁰ Membership in % of the workforce is lower than the 85% and 70% considered above for males and females because these concerned only employed people aged between 25 and 64 years.

¹¹ It is not by chance that pension funds are typically activated in the banking sector at first.

initial value has been set at 6%, and a rise to 9.25% since 2008 has been assumed, such value corresponding to the average contribution of workers diverting their TFR to pension funds (see above). For Germany, as said, at present the government aims at reaching 4% by 2008, which it will supplement with fiscal benefits which, at least in part, will add to the individual contributions; thus, a contribution rising from 2% during the first 5 years to 5% (4% plus 1% of public add-up) in 2008-2017 has been postulated. For the following period, a further rise, of 1 point every 5 years till reaching 9% has been assumed. For France, the assumption is of a contribution of 4% during 2008-2017, rising, as for Germany, of 1% every 5 years till 9%.

To complete the scenario, the macroeconomic framework needs to be described. Following the EU long-term forecast scenario already referred to, the annual GDP growth rate has been set to 1.4% for the entire period for Italy and Germany and at 1.7% for France (Table 5.c). Furthermore, the annual return on pension funds, net of all costs, has been set at 2.5% in real terms, the same rate used in the 2002 Italian National Strategy Report on Pensions (see above). The inflation rate has been assumed to be 0, but, assuming full indexation, all the nominal data and results can be thought of as at 2000 prices.

Tab. 5 - The assumptions											
Tab. 5.a - Pension funds membership in % of the full-time workforce											
	1998-02	2003-07	2008-12	2013-17	2018-22	2023-27	2028-32	2033-37	2038-42	2043-47	2048-52
Italy	6.7	14.5	22.6	30.1	37.6	44.9	52.5	60.1	64.9	66.8	67.2
Germany	6.6	13.9	21.5	29.1	36.5	43.8	51.0	58.1	62.7	64.7	65.3
France	0.0	0.0	6.9	14.4	22.0	29.4	36.9	44.4	52.0	59.6	64.5
Tab. 5.b - Pension funds membership in absolute value (millions)											
	1998-02	2003-07	2008-12	2013-17	2018-22	2023-27	2028-32	2033-37	2038-42	2043-47	2048-52
Italy	1.4	2.9	4.5	5.9	7.2	8.2	9.2	9.9	10.2	10.1	9.9
Germany	2.2	4.7	7.3	9.8	12.0	13.8	15.3	16.8	17.8	18.0	17.7
France	0.0	0.0	1.6	3.3	4.9	6.4	7.9	9.3	10.8	12.2	12.9
Tab. 5.c - Macroeconomic assumptions											
	Annual GDP growth rate %	Annual labor productivity growth rate %	Annual individual earnings growth rate %	Annual returns on pension funds net of administrative and managing costs %	Annual earnings of the Average Productive Worker (APW) in 2000 (€)	Inflation rate %					
Italy	1.4	1.8	2.2	2.5	20,582	0					
Germany	1.4	1.8	2.2	2.5	31,893	0					
France	1.7	1.7	2.1	2.5	20,809	0					
Average earnings of pension fund members: 150% of the APW wage in the first five years (1998-2002 for Italy and Germany, 2008-2012 for France), dropping by 5 points every five years till 100%.											
Tab. 5.d - Contribution rates to private pension funds in % of earnings											
	1998-02	2003-07	2008-12	2013-17	2018-22	2023-27	2028-32	2033-37	2038-42	2043-47	2048-52
Italy	6	7.5	9.25	9.25	9.25	9.25	9.25	9.25	9.25	9.25	9.25
Germany	2	3	5	5	6	7	8	9	9	9	9
France	0	0	4	5	6	7	8	9	9	9	9

3.2 Contribution flows and wealth accumulation

It is now possible to quantify the annual contribution flow to pension funds in the three countries, reported in Table 6. The quantification is done in absolute value, in % of GDP and cumulated in % del GDP, i.e. summing the total contribution over time. According to our estimates, the average annual contribution flow in Italy during the past five years is around Euro 2.4 bls (not far from the real value in 2000), which could rise to 7 bls during the next 5 years (0.5% of GDP); the level of accumulation should exceed 1% since 2008, and remain slightly above 2% during 2033-2047. Overall, total contributions to pension funds should sum to 84.3 points of GDP by 2052. The trend is similar in Germany, but contributions should reach a greater dimension there, summing, during the 50 years considered, to 105.1% of GDP, with an annual flow greater than 3% since 2033. France lags behind the two other countries, with a contribution flow which reaches 1% only after 2028.

The difference between Germany and Italy, summing, during the period considered, to more than 20 points of GDP, which would become 44 if one applied to Germany the same contribution rates used for Italy, is quite large and requires an explanation. Indeed, most of the difference is due to the different earning levels, which, in terms of the wage of the APW, are in Germany about one and a half time the Italians' (Table 5.c). In effects, the OECD reports that in 2000 the wage share of GDP in the private sector was greater in Germany by almost 10 points with respect to France (52% as against 42.4%) and by 4.6 points with respect to Italy (47.4%) (OECD 2001b, 2002). This means that the retirement saving collected by pension funds depends in a close way, and it could not be otherwise, upon the wage level and the income distribution: *ceteris paribus*, with contribution rates at 10%, a 10 points wage share rise means a 1% of GDP greater annual pension funds accumulation¹².

Beyond receiving contributions, pension funds pay pensions and reimburse those dropping from the scheme. To evaluate their accumulation, it is therefore necessary to quantify the resource outflows. One assumes that each worker retires at 65, and that the wealth she accumulated is paid back as capital, or used by the fund to buy an *annuity* issued by an insurance company, so that the entire capital stock flows out of the pension fund at the very moment of retirement¹³. Furthermore,

¹² One must notice however that the contribution rates considered here refer to wages gross of social contributions paid by the workers but net of contributions paid by the employers. Indeed, part of the greater wage level of the APW in Germany originates from the higher contribution rates paid by the employees. In 2000, while total social contributions in % of the labor cost was quite similar in Germany and Italy (34% as against 32%) in Italy workers were paying only 7%, the remaining 25% being in charge to employers, while in Germany each part was paying an equal share of 17% (OECD, 2001b).

¹³ It is worth stressing the implications of such assumption. In our exercise one considers only the 40 years of individual accumulation within the fund, not also the period of life after retirement. However, if the pension is paid by an *annuity*,

one assumes that 2% of members drops from the fund every five years, getting back their money (with the accrued interests), being replaced by new members. Instead, the fiscal component does not need to be considered, as both France and Germany use the EET system¹⁴, while Italy, where at present an hybrid ETT¹⁵ system applies, is moving in the same direction too.

Further outflows from pension funds are due to their initial situation: both in Italy and Germany currently funds' assets are not negligible, which means that pensions will have to be paid to those whose membership dates back to 1997 or before. Considering that the pension funds we are interested in are only a subset of those classified as such by the OECD *Institutional Investors* (see Table 1), pension funds' assets at the end of 1997 have been set at 15 Euro bls for Italy and at 25 bls for Germany (the data for France being negligible); a rising proportion of such capital is assumed to be liquidated to members during 2008-2037.

Table 7 and Graph 2 report the annual net flow of resources to pension funds. The outflow is increasing over time but lower, for the entire period considered and with the exception of Italy since 2043, to the inflow, so that the net flow is almost always positive. In the Italian case, the annual net flow, currently at 2.4 Euro bls, will become greater than 14 bls around 2030, falling thereafter at a fast pace and becoming negative around 2045, as result of the demographic crisis, of the reaching of pension funds' maturity and of the richer income of early pension funds' members. In terms of GDP, the annual accumulation is never greater than 0.85%, but it stays above 0.5% for more than thirty years, between 2003 and 2037. A stronger, although lagged, accumulation is found in France, where, due to the lower intensity of the demographic problem and to the fact that, differently than in the Italian case, the contribution rate have been assumed to rise only gradually, so does the outflow. An even stronger accumulation one finds in Germany, where, in part for the same reasons as in the French case, in part due to the greater size of the inflows, the annual net flow remains larger than 1.5% of GDP during the entire period 2028 – 2043.

To determine the overall accumulation, also the annual return rate on the pension fund assets matters, which, as said, has been set at 2.5%. The fact that for all the three countries financial market returns have been assumed to be higher than the economic growth constitutes an autonomous factor of growth of funds' assets, not only in absolute terms, but also with respect to GDP. Table 7 shows that around 2050 pension funds' wealth would almost reach 1000 Euro bls in

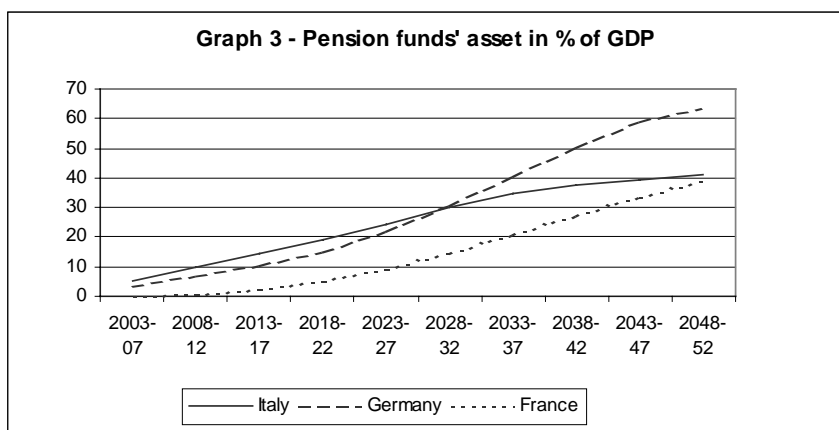
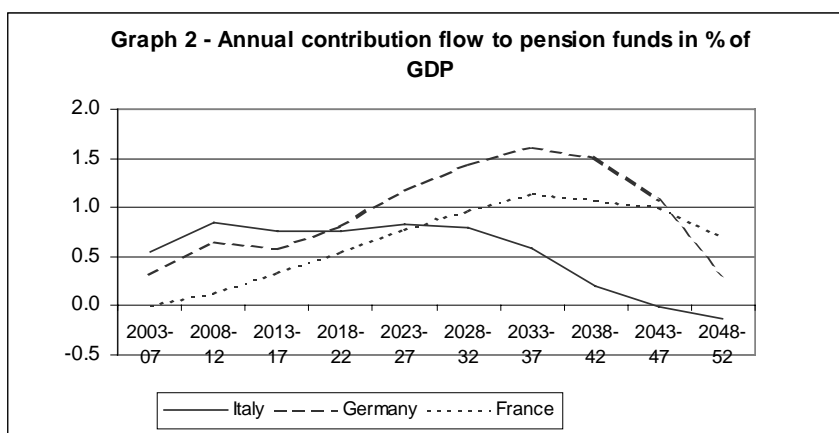
the pension funds development will translate in a subsequent greater accumulation of insurance companies, while, if the pension is paid in capital, it will nevertheless translate in more funds being managed by other financial intermediaries or directly by the individual. Life expectancy at 65 years of age being in Italy 16.2 years for males and 20.2 years for females, pension funds accumulation will thus affect, with a certain lag but in a sensible manner, other intermediaries' accumulation.

¹⁴ Exemption, Exemption, Taxation, i.e. exemption of contributions to pension funds, exemption of pension funds' gains, taxation of the private pensions.

Italy, 1300 bls in France and 2650 bls in Germany. In terms of GDP, as also shown in Graph 3, Italy would reach 41%, France 38.5% and Germany 63.7%.

		1998-02	2003-07	2008-12	2013-17	2018-22	2023-27	2028-32	2033-37	2038-42	2043-47	2048-52
Italy	Total annual contribution flow (€mln)	2,442	6,949	14,090	19,561	25,021	30,247	35,241	40,049	43,006	44,539	45,476
	<i>In % of GDP</i>	0.21	0.56	1.05	1.36	1.63	1.83	1.99	2.11	2.12	2.05	1.95
	End period cumulated in % of GDP	1.0	3.8	9.1	15.9	24.0	33.2	43.2	53.8	64.3	74.6	84.3
Germany	Total annual contribution flow (€mln)	2,066	6,955	19,264	27,319	42,273	59,537	78,866	102,088	113,104	119,275	122,149
	<i>In % of GDP</i>	0.10	0.32	0.83	1.09	1.58	2.08	2.57	3.10	3.20	3.15	3.01
	End period cumulated in % of GDP	0.5	2.1	6.2	11.7	19.6	30.0	42.8	58.3	74.3	90.1	105.1
France	Total annual contribution flow (€mln)	0	0	2,265	6,195	11,673	18,799	27,735	38,658	46,599	54,837	60,786
	<i>In % of GDP</i>	0	0	0.14	0.34	0.59	0.87	1.18	1.51	1.68	1.81	1.85
	End period cumulated in % of GDP	0	0	0.7	2.4	5.3	9.7	15.6	23.1	31.5	40.6	49.8

		1998-02	2003-07	2008-12	2013-17	2018-22	2023-27	2028-32	2033-37	2038-42	2043-47	2048-52
Italy	Net annual contribution flow (€mln)	2,442	6,793	11,323	10,924	11,617	13,656	14,060	11,078	3,969	-78	-2,924
	<i>In % of GDP</i>	0.21	0.54	0.85	0.76	0.76	0.83	0.80	0.58	0.20	0.00	-0.13
	End of period pension funds asset (€mln)	29,808	69,431	138,074	213,638	302,773	414,342	542,695	672,241	781,444	883,724	984,485
	<i>In % of GDP</i>	2.5	5.4	10.0	14.5	19.1	24.4	29.9	34.5	37.4	39.5	41.0
Germany	Net annual contribution flow (€mln)	2,066	6,818	15,106	14,370	21,571	33,693	44,250	53,325	53,639	40,643	12,438
	<i>In % of GDP</i>	0.10	0.31	0.65	0.58	0.81	1.18	1.44	1.62	1.52	1.07	0.31
	End of period pension funds asset (€mln)	39,145	80,127	170,058	267,940	416,533	648,368	966,163	1,373,418	1,835,840	2,290,717	2,657,116
	<i>In % of GDP</i>	1.9	3.6	7.1	10.4	15.1	22.0	30.6	40.5	50.5	58.8	63.7
France	Net annual contribution flow (€mln)	0	0	2,265	6,070	10,969	16,633	22,701	29,055	29,820	30,500	23,190
	<i>In % of GDP</i>	0	0	0.14	0.33	0.55	0.77	0.97	1.14	1.07	1.01	0.70
	End of period pension funds asset (€mln)	0	0	11,907	45,377	108,996	210,749	357,768	557,506	787,513	1,051,319	1,311,363
	<i>In % of GDP</i>	0	0	0.7	2.4	5.3	9.4	14.7	21.1	27.4	33.6	38.5



¹⁵ Exemption, Taxation, Taxation (but only for the part not originating from returns on which the fund has already paid

3.3 Asset allocation: flow of resources in the domestic and foreign stock markets

Pension funds do not invest their entire wealth in shares, nor they do it only on the domestic market. Indeed, prudential rules, diversification and the search for higher returns make it likely that most of the resources will be allocated in bonds and abroad.

COVIP 2002 evaluates that at the end of 1999 pension funds in the main OECD countries were allocating 55% of their wealth in shares, 25% in bonds and 10% in estates. Table 8 shows pension funds' portfolio composition in some European countries and in the US in 1999: while shares accounted for more than 50% of funds' assets in the UK, US and Ireland, they were much less important in Italy, Germany and France.

Moreover, as Table 3 shows for the Italian case, the part of wealth invested in shares is only in minimal part allocated on the domestic market: in 2001 only 3.6% of the Italian closed-end funds' assets and 8.1% of open funds' was invested in domestic shares. Indeed, it is likely that pension funds' resources will be allocated according to the relative importance of each international financial center. On this regard, the US market, with the NYSE capitalizing 39.5% of the world total and the Nasdaq capitalizing further 8.7%, seems in the best position to attract a large share of the European pension funds wealth. Even taking account of the investment home bias, a much lower share must be expected to be allocated within the EU markets, Euronext capitalizing only 6.7% of the total, Deutsche Borse 3% and the Italian Stock Exchange 2.1%.

In such a framework, to evaluate the flow of resources that could be allocated in equities and conveyed towards the domestic stock exchanges, we have assumed that funds' asset allocation will be the same in Italy, Germany and France than it is in the Anglo-Saxon countries, with an investment in shares summing to 50% of the total. Furthermore, we have assumed that in Italy 10% of the annual flow of resources will be allocated on the Italian stock exchange and that the percentage invested in the domestic market will rise in Germany and France in proportion to the respective stock exchange capitalization at the end of 2000.

Although such assumptions introduce a clear bias in favor of risk capital investment and the domestic markets, the results, shown in Table 9, leave somehow skeptical with respect to the ability of pension funds to convey large amount of capital on the domestic markets.

In Italy during the next years the annual flow of investment in shares should be around 3400 Euro bls, and such value would gradually rise to 7000 bls in 2030; the investment in domestic

shares would be of about 0.68 Euro bls during the next five years, to rise to just above 1.4 bls around 2030, which represents less than 0.1% of GDP. Much stronger would be the investment in shares of German pension funds, which should almost reach 27 Euro bls around 2040, with 8.6 bls allocated on the domestic market; although this last value may seem quite high, it does not represent, however, than a mere quarter of point of GDP.

Overall, it appears that, although in a period of 25-35 years pension funds could arrive to hold an important share of financial assets in Italy, Germany and France, their contribution to the financing of the domestic economy will be quite marginal, while their role on the EU financial markets will be for still many years much less important with respect to households and other institutional investors¹⁶.

Moreover, as said before, the picture could appear even worse if one considered that part of the resources that individuals will put on pension funds will derive from a mere portfolio reallocation, with the result that pensions' funds growing assets' demand will be counterbalanced by some reduction of households' and other intermediaries' demand.

Table 8 - Pension funds' portfolio composition							
<i>1999 (2001 for Italy); in % of the total</i>							
	Cash	Bonds	Shares	Estates	Others	Not allocated	Total
UK	4	17	75	4	0	0	100
IRL	4.5	24.1	65.2	4.8	1.4	0	100
US	3.1	22.6	59.8	1.4	13.1	0	100
NH	0.3	43.9	49.6	6.2	0	0	100
Suisse	6.7	40.8	28.9	22.8	0.8	0	100
FR	1.5	36.5	14.0	5.1	1.3	41.5	100
IT (1)	12.7	47.1	9.7	17.7	12.9	0	100
D (2)	3.0	75.0	11.0	11.0	0.0	0	100

Source: COVIP Annual Report 2001 - COVIP elaboration on data EFRP, OECD, COVIP and Bank of Italy.

(1) Data refer to 2001 and only concern autonomous pension funds; assets of funds internal to bank and insurance companies, as well as reserves with insurance companies not included. (2) For Germany the data refers to 1994 and is not fully comparable with the others, the source being European Commission 1997, which uses a different definition.

Table 9 - Pension funds' investment in shares (total investment and investment in domestic share)												
<i>Euro millions at constant prices</i>												
		1998-02	2003-07	2008-12	2013-17	2018-22	2023-27	2028-32	2033-37	2038-42	2043-47	2048-52
Italy (stock exchange capitalization at end 2000: 818.400)	Net annual contribution flow invested in shares (50%)	1,221	3,396	5,662	5,462	5,808	6,828	7,030	5,539	1,985	-39	-1,462
	Net annual contribution flow invested in domestic shares (10%)	244	679	1,132	1,092	1,162	1,366	1,406	1,108	397	-8	-292
Germany (stock exchange capitalization at end 2000: 1.352.900)	Net annual contribution flow invested in shares (50%)	1,033	3,409	7,553	7,185	10,785	16,846	22,125	26,662	26,819	20,321	6,219
	Net annual contribution flow invested in domestic shares (16%)	331	1,091	2,417	2,299	3,451	5,391	7,080	8,532	8,582	6,503	1,990
France (stock exchange capitalization at end 2000: 1.540.800)	Net annual contribution flow invested in shares (50%)	0	0	1,133	3,035	5,484	8,317	11,351	14,528	14,910	15,250	11,595
	Net annual contribution flow invested in domestic shares (19%)	0	0	430	1,153	2,084	3,160	4,313	5,521	5,666	5,795	4,406

¹⁶ For example, during the first semester of 2001, pension funds were holding only the 0.8% of the Italian Stock Exchange capitalization, as against 29.3% of households (Filippa and Franzosi 2001)

4. Conclusions

The exercise developed in the previous sections allows the quantification of the financial flows that pension funds could convey in the three main countries of continental Europe during the next decades.

The arbitrariness of the exercise must be stressed. The results depend upon the correctness of the demographic, employment and macroeconomic scenarios developed over a 50 years horizon at the EU level. Furthermore, they rely upon several assumptions, concerning pension funds membership as well as earning and contribution profiles and portfolio allocation which systematically biased in favor of a sustained development of private funds, even in cases, like the French one, where such a scenario is not high in the policy agenda or when, as in the case of Germany, the role the policymaker assigns to pension funds is more limited.

Thus, one should look at the results not as forecasts, but rather as showing a potential development. Nevertheless, the exercise appears useful from several points of view.

Firstly, it shows that in the countries analyzed pension funds could convey significant resources (net flows could be of the order of 1-1.5% of GDP per year), but not such to change substantially, at least in the short run, the financial market scenarios. It is likely that pension funds' assets will not exceed 40% (Italy and France) or 60% (Germany) of GDP by 2050 and that their investments will continue for several more years to play a marginal role with respect to the size of financial flows intermediated by other institutional investors or directly by the households.

Secondly, the exercise shows that the pension funds' accumulation is not unrelated with the demographic and employment dynamics. The accumulation is strong when a pension fund is young and/or its membership increases. But when the labor force starts shrinking and membership follows, the speed of accumulation falls consequently, and more and more with the fund reaching maturity.

Finally, the exercise shows how differences in the earning levels and in the income distribution could generate substantial differences in the accumulation of pension savings among different countries.

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