GENERALI INVESTMENTS

Core Matters

Sustainability and Adequacy in EU Public and Private Pension Schemes

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- Sustainability and Adequacy are the two main (conflicting) key objectives of multi-pillar pension systems: while population ageing, and macroeconomic shocks affect Sustainability in the Defined Benefit (DB) space, they reduce pension adequacy in the Defined Contribution (DC) schemes.
- The fast switching from DB to DC plans by public and private sectors is making the adequacy issue ever more relevant.
- To preserve adequacy, without affecting sustainability, EU-Governments should introduce incentives to defer individuals' retirement choices, enhance funded pension pillars, and increase flexibility e.g. through partial retirement.
- The insurance sector should blur out the distinction between saving and retirement/protection goals by mixing pension products with health and long-term medical care coverage, introducing guarantees of minimum return conditional to policyholders forgoing their capital early-redemption rights and accepting flexibility in the pay-out phase.
- Citizens need to contribute more and for longer but the increase of non-standard work among the youngest does not help.

Executive summary

As reported by EUROSTAT[1] in 2019, pensions are the main income source for close to one quarter of the EU-28 population. Therefore, it is very important that pensions should provide retirees with a decent standard of living and protect them from poverty. However, **pensions already represent one of the biggest public expenditure items in the EU** (old-age pension benefits in the EU-28 rose by 32.8% between 2008 and 2016, reaching 9.7% of GDP); as the **EU population ages**, due to lower birth rates and increasing longevity, pension systems have come under pressure. **Global financial and economic crises** have put more stress on public finances, in particular, in countries already highly indebted and in urgent need of **pension reforms. In this context, the pressure to raise the effective retirement ages** and **reduce the generosity of pension systems is growing**. Before the Covid-19 crisis, pension systems were considered broadly sustainable despite demographic ageing: according to EC, thanks to already undertaken pension reforms, the overall EU spending on public pensions as a percentage of GDP in 2060 was expected to be similar to today's level[2]. However, given that the number of pensioners is expected to increase (in absolute terms and as share of population), **the real challenge is to ensure that pensions remain adequate.**

In most European countries **retirement income derives from three sources**: **public pensions, private occupational pensions (pension funds and insurance policies) and private personal savings**. Multi-pillar pension systems, based on public and private sources of retirement income, are widely seen as the best overall policy to ensure the sustainability and adequacy of retirement provision.

On the one hand, EU-Governments should introduce incentives to **defer individuals' retirement choices**, **enhance funded pension pillars,** alongside the traditional PAYG statutory pension systems, to improve their sustainability and the adequacy of retirement incomes. **Higher flexibility** in retirement options and decumulation choices, **allowing partial retirement** for workers that are approaching legal age requirements could also help.

On the other hand, the insurance sector should offer products that blurs out the **distinction between saving** and **retirement/protection goals**. A minimum guaranteed return, a key tool to enforce this distinction in the past, could be re-introduced to shield the capital invested provided that policyholders renounce their capital early-redemption rights.

The offer of additional coverages to demographic / biometric, and longevity risks, by mixing pension products with health and long-term medical care coverage could be another tool. Insurers could also introduce a higher degree of **flexibility**, by giving individuals the chance **to adjust the size of the private pension income, according to the specific needs of retirees,** or to defer the pay-out phase and **avoid losses by selling at the bottom of the market.**

1 EUROSTAT, Ageing Europe – Looking at the lives of older people in the EU, 2019

2 https://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_BRI(2015)571327

Overview of pension systems in the EU: different systems with similar challenges

Pension systems are very diverse (they not only involve several different programmes but are embedded into other features of national social security provisions); classifying retirement-income schemes is difficult and can be done only by a number of dimensions which – in detail – can overlap.[3]

OECD classifies pension systems based on, **three tiers, two mandatory and one voluntary**: the first tier provides retirement income independent of past earnings level: this specific zero net social transfers are not covered in this paper, which focuses on the second tier, covering earnings-related components and the third tier, which entails voluntary provision, be it personal or employer-provided.

The weight of each tier and the mix (public vs private) in the second tier varies from country to country, according to a number of factors, first of all to the underlying welfare model adopted: while in *Beveridgean* countries like the UK, public 2nd tier plays a limited role, mainly aimed to provide a basic pension, in *Bismarckian* countries like Continental and Mediterranean Europe, public 2nd tier provisions aim to provide adequate standards of living at retirement.

The high level of heterogeneity in pension systems implies variability in some of key features and outcomes:

- **Legal status**: Pension systems can be **statutory** or **supplementary**. Statutory pension may cover all citizens or only certain (large) groups like employed people with a standard contract or certain occupational groups (e.g. public sector employees, farmers, etc.). Non-mandatory schemes are typically supplementary in the forms of occupational and personal pensions.
- **Pension coverage**: The coverage is either **"pay-as-you-go"**, where current contributions are used to pay for current pensions, or "pre-funded", where contributions are accumulated over time and then converted into an annuity. While public pensions are often "pay-as-you-go" this is not universally the case. Conversely, occupational rents are not always pre-funded.
- **Entitlement:** Other than **age,** pensions rights are typically based on **years of contributions** (paid or credited) or **participation** (for supplementary pillars) [4].
- **Contribution/Benefit schemes**: The basic distinction is made between **"defined benefit" (DB)** and **"defined contribution" (DC)** systems. In the former one, the future pension benefit is pre-defined and promised to the retiree. The level of benefits is typically linked to previous earnings and the employment career. The insurer (often the state) bears the investment risk and often also the longevity risk. In defined contribution (DC) schemes the contribution but not the final benefit is pre-defined. The pension level depends on the performance of the chosen investment and the individual retiree bears the investment risk. Variants of the systems are pension points or notional (NDC) accounts. The latter mimic the DC scheme. Contributions can also be funded (FDC). **In most EU countries, 2nd Tier pensions are Defined Benefit.**

EU-22 Pension systems: Second Tier (number of countries)				
Contribution-based (mandatory, earnings-related)				
Basic	**Minimum**		**Public**	**Private (quasi mandatory)**
5	13	DB	11	1
		Points	5	
		NDC	4	
		FDC	3	3

Source: OECD

- **Pension adequacy**: The theoretical replacement rate (TRR) shows the level of pension income after retirement as a percentage of individual earnings just before retirement (before taxes). Replacement rates measure whether the pension systems can preserve the living standard of a "typical worker" when retiring. The table below shows the expected TRR of a worker entering the labour market in 2018 at the age of 22 (OECD). It then includes the full impact of pension reforms that have been legislated over the last years. Of course, the career length is an important influence factor, and the earnings level another. The OECD simulation includes all mandatory pension schemes for private-sector workers, public and private. In addition, voluntary, occupational pensions play an important role in many countries. To include these, a second set of total replacement rates is shown where applicable. Finally, pension entitlements are compared for workers with different earnings levels, ranging from 0.5x to 1.5x of the average worker earnings (1.0).
  The differences in the replacement rates are striking. Private voluntary occupational rents soften the differences in some countries. For an average-income worker, **Italy ranks highest while it also has one of the highest retirement ages**. In many countries the replacement rates have a re-distributional element as they are higher for low income workers. On average, the EU-28 and OECD replacement rates show that initial pensions are just around half of the last average income. While replacement rates and thus a protection against old-age poverty is one of the most important elements of a pension system, it is not the only one. In terms of **sustainability**, both the **demography and macroeconomic environment play a central role**. Future pension benefits depend not only on the future spending capacity of governments but also on the financial returns accrued by private players on financial markets. Both are currently under strain because of high and rising debt levels on the public side and the very low rates of returns of safe assets, on the private side.

[3] European Commission, The 2018 Pension Adequacy Report: current and future income adequacy in old age in the EU, 2018.
OECD, Pensions at a Glance 2017 and 2019.

[4] In some cases also on years of residency. It can also be a derived right in case of spouses or survivors.

Gross pension replacement rates from mandatory and voluntary private pension
Source: OECD, Pensions at a glance, 2019, p147,151

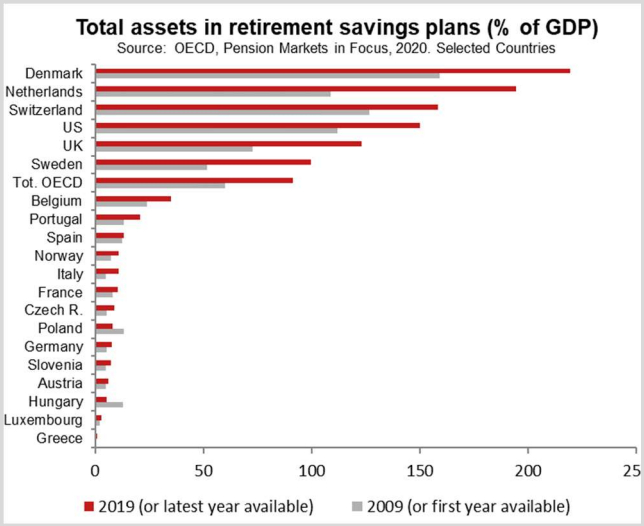
		Total Mandatory			Total with voluntary		
	Age	0.5	1	1.5	0.5	1	1.5
Austria	65	76.5	76.5	76.5			
Belgium	67	57.3	46.8	33.7	71.6	61.0	44.1
Czech	65	75.0	45.9	36.2			
Denmark	74	113.8	74.4	64.0			
France	66	60.2	60.1	54.0			
Germany	67	38.7	38.7	38.7	52.2	52.2	52.2
Greece	62	63.1	49.9	45.5			
Hungary	65	56.1	56.1	56.1			
Ireland	68	54.1	27.0	18.0	89.9	62.9	53.8
Italy	71	79.5	79.5	79.5			
Luxembourg	62	91.5	78.8	74.5			
Netherlands	71	73.5	70.9	70.1			
Poland	65	29.4	29.4	29.4			
Portugal	68	75.8	74.4	73.1			
Spain	65	72.3	72.3	72.3			
Sweden	65	54.1	54.1	65.3			
UK	68	43.5	21.7	14.5	72.6	50.9	37.4
OECD	**66.1**	**60.0**	**49.0**	**44.7**	**66.1**	**55.2**	**50.5**
EU28	**66.3**	**60.3**	**52.0**	**48.8**	**63.6**	**55.4**	**51.8**

Pension savings size in pre-funded schemes and rates of return

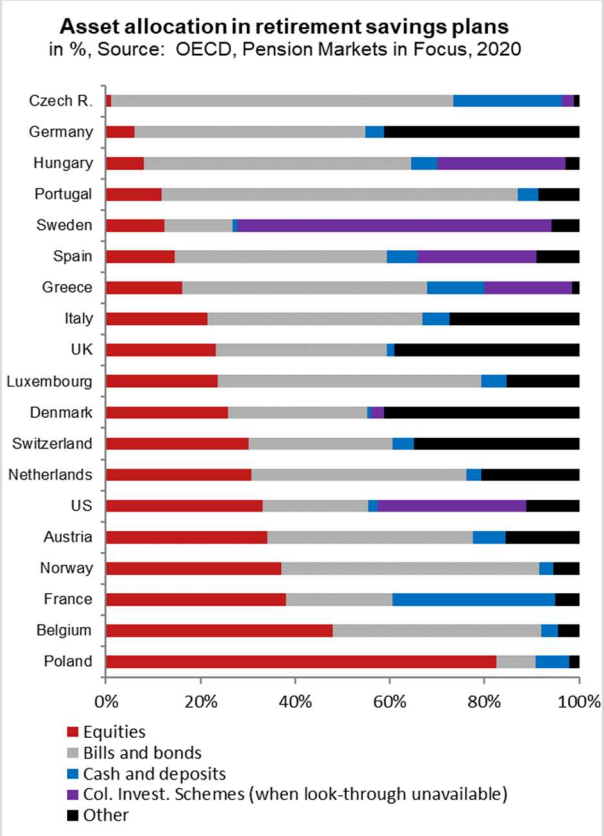
According to the OECD (Pension Markets in Focus 2020), **retirement savings exceeded US$ 50 tr for the first time in 2019,** of which US$ 49.2 tr were held in OECD countries. The figures include all retirement savings plans where assets accumulate to finance future benefit payments (pension funds, pension insurance contracts or other vehicles, i.e. pre-funded plans while pay-as-you-go or unfunded schemes are outside). Pension assets were overwhelmingly accumulated in pension funds (US$ 32 tr). **Assets are concentrated in a few numbers of countries**, obviously reflecting their pension system. Within the OECD, seven out of the 37 OECD countries held more than **90% of the total pension assets with the US alone** representing 65.4%, followed by the UK (7.3%), Canada (5.7%), Australia (3.8%), the Netherlands (3.6%), Japan (2.9%) and Switzerland (2.3%). The 30 other OECD countries jointly held about 9%.

However, returns over the long run are more important. "Average annual returns were all positive in nominal terms over the last 5, 10 and 15 years among reporting countries and remained positive in most countries after adjusting for inflation." Moreover, returns depend crucially on the asset allocation and the associated risk levels. In most countries, **bonds and equities are the two main important asset classes accounting for more than half of investments in 34 out of 37 OECD countries**.

Rankings based on absolute and relative size of pension assets in terms of GDP differ strongly. Based on the latter, Denmark and the Netherlands are the top countries. The OECD average rose from 60% at end-2009 to 92% in 2019.



Finally pension plans earned a **real rate of return** (net of investment expenses) **of 8.0% on average in the OECD**, and 4.4% in other jurisdictions in 2019. Retirement savings plans generally benefitted from the upturn of stock markets in 2019, after heavy losses in Q4 2018. However, the relative importance of equities and bonds varied substantially across countries in 2019, as the following graph shows.

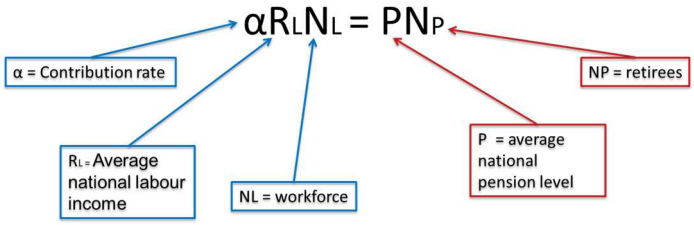


The rising burden of pension systems in the EU: sustainability vs adequacy

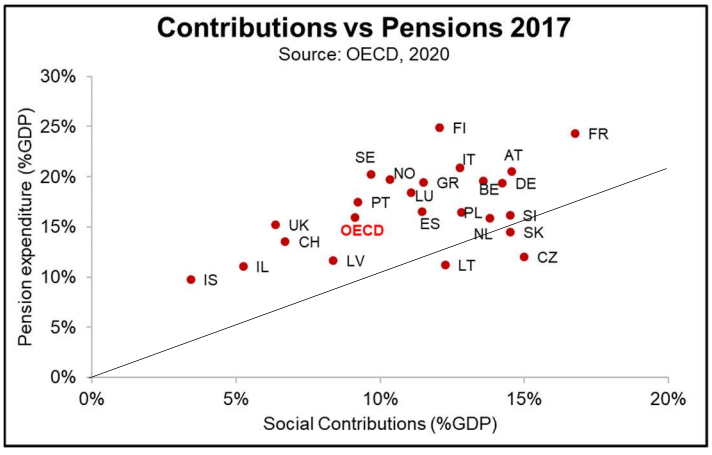
Demographic (ageing population) and macroeconomic factors (low interest rates, low growth and labour market rigidities) have raised concerns about the **sustainability** of pension schemes (defined benefit ones in particular) over the long term.

The actions undertaken by both public and private providers to address this issue have the collateral effect of reducing pension **adequacy**.

1. Ageing to create imbalances on the public pillar: Population ageing raises sustainability issues for EU public pension (European Commission, 2015 and 2018), which traditionally rely on a Pay As You Go (PAYG) system: current retirees' pensions are funded by social contributions payed by current active workers. The inherent logic of this set up is based on intergenerational transfers: a PAYG system is balanced when the amount of contributions by active individuals is at least equal to the amount of pensions paid.



All else equal, **aging population affects this intergenerational balance**, as the number of pensioners rises relative to the number of working-age people. Moreover, these retirees will live longer at retirement, due to **higher life expectancy levels**, leading to a **growth in pension expenditure that is not compensated by an increase of social contributions.**



The average decrease in the working-age population, according European Commission projections (2018), would imply a decrease by 2025, for the whole EU, of more than 6 million working-age people. The old dependency ratio will increase significantly over the long term in all EU countries, reaching values alarmingly close to 50% **in 2070** (from 25% in 2018[5]). **Public pension schemes would have almost as many retirees as contributors**.

In recent years, many countries implemented pension reforms to strengthen the financial sustainability of pension systems, basically via tightening eligibility and decreasing benefits. Nonetheless, public pension expenditure is expected to keep rising: according to EU Commission, **the pension gap** - the difference between the expected benefits to be paid and the expected contributions to be received by public pension schemes - should be **on average 2.3% of EU GDP in 2050**, with significant cross-country differences. Contributions would exceed benefits only in Germany, Luxembourg, Spain, Latvia and Finland[6]. The foreseen increase in gross public sector expenditure estimated by the EC (2018) implies a substantial increase in the financing needs of the public sector in many EU countries.

The sustainability issue has been tackled (and only partially addressed) at the expense of the system generosity, raising adequacy issues. A substantial decline is projected in public replacement rates for most Member States, moving on average from 47% in 2013 to 38% by 2060. In some countries the drop would be particularly severe, like in Spain, Portugal and Cyprus (-20pp, vs -9pp EU average). The most generous countries would be Luxembourg (53.4%), and Italy (50.7%), whilst the lowest levels of benefit ratio would be observed in Latvia (13.2%), Croatia (17.6%) and Estonia (18.8).

The EC estimates need to be considered as upper bounds since they rely on the hypothesis of continuity in work careers: early retirements, late starts to career (e.g. due to youth unemployment) and significant periods out of the labour market will therefore all take their toll on pension adequacy. Indeed, **supplementary pension income will be increasingly important in supporting adequacy and off-setting reductions in PAYG pension entitlements avoiding poverty in old age, but also on broadly maintaining pre-retirement living standards**.

Private Pension schemes more resilient to the ageing challenge. Demographic trends have smaller effects on private schemes than on public pillars. Indeed, private pillars are not based on intergenerational transfers but rely on savings accumulation. However, ageing population can impact DB plans, via longevity risk. Longevity risk is borne by the plan sponsor who suffers from the consequent increase in liabilities due to higher life expectancy of policyholders. This is an aggregate risk (difficult to diversify on the financial market) rather than an idiosyncratic one; a further element of complexity relates to the so-called basis risk, the risk that policyholders have a higher life expectancy than the population as a whole. Participants to private pension plans are likely to have higher standards of living than non-participants (higher income, access to higher standards of healthcare, etc.). As a consequence, their life expectancy, on average, could be higher than the population as a whole and negatively affect the pension funds' balance sheets.

[5] The Ageing Report 2018.

[6] These calculations are, by their own nature, very sensitive to demographic and growth developments over a long period of time and should therefore be interpreted not as being accurate estimates but as signalling trends.

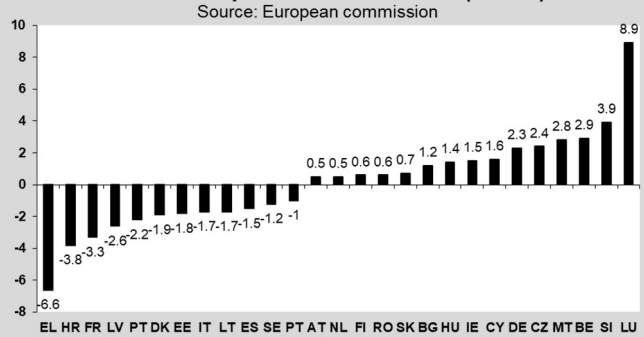
If, at the extreme consequences, the plan sponsor is not able to meet its obligations, either the public sector steps in to cover the sponsor obligations or the sponsor reduces the payouts to be given to policyholders.

DC plans, on the contrary, are much **more resilient**, since the pay-out are linked to the amount of contributions paid and the longevity risk is borne by policyholders.

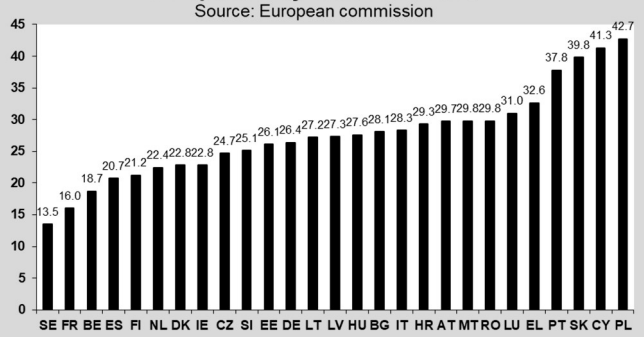
Public systems and macroeconomic shocks: DC vs DB schemes

Public DC pension systems (Italy, Poland, Sweden, Latvia and Norway) are more resilient than those of the DB type. Since the implicitly guaranteed return at the individual level automatically depends on the trend of economic growth and the evolution of longevity, the financial equilibrium at the aggregate level of the DC PAYG systems is robust to macroeconomic and demographic shocks. Furthermore, since the amount of the pension is closely connected with that of contributions paid and with retirement age, early retirement is disincentivized, even if some margins of flexibility are allowed.
A clear example is Italy: despite the forecasts of relatively low economic growth and strong hike in old-age dependency ratio, the future dynamics of public pension expenditure envisaged by the European Commission for Italy is one of the lowest in Europe. This result is mainly achieved by the increase in the effective retirement age rather than the reduction of unitary pension, which also remains, in relation to the last salary, on levels comparatively quite high (50%).

Δ Pension expenditure 2016-2070 (%GDP)
Source: European commission

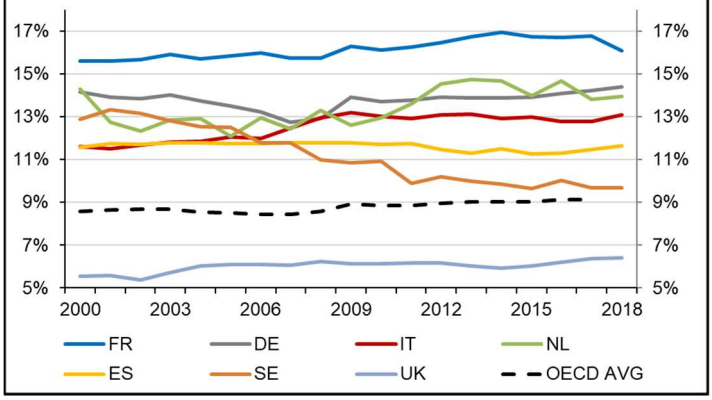


Δ Dependency ratio 2016-2070
Source: European commission



2. Low Growth and economic shocks to deteriorate public finances. In a broader perspective, an economic recession (followed by more timid growth) provides long-term challenges to public pension schemes. The first one is a result of the fiscal stimulus implemented by many countries in order to reduce the impact of the crisis and which usually led to a rapid deterioration of public finances. Further strains are expected from rising unemployment as well as reduced tax receipts and social contributions. Typically, following the Great Financial Crisis, employment contracted by around 2¼ per cent in 2009, with a further decline in 2010. The unemployment rate stabilised at close to 10% in the EU.

Social security contribution (% GDP) trend
Data Source: OECD - database



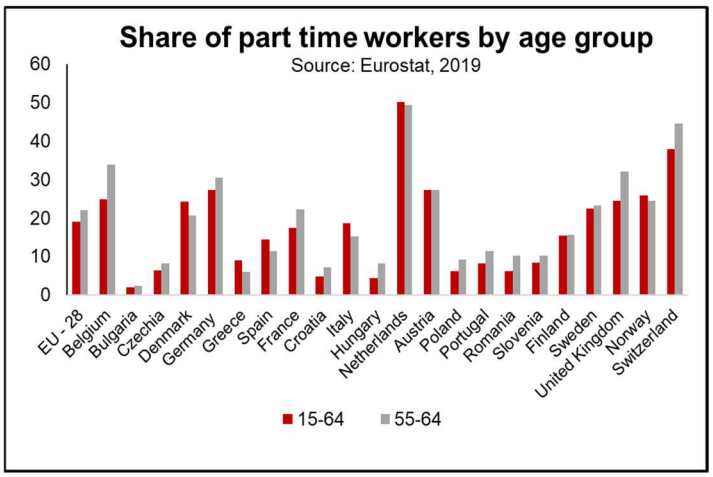
3. Labour market rigidities incentivize early retirement[7], while non-standard (young) workers are penalized by lower contributions and lower saving power. Most pension systems were built on the premise of stable, linear careers but **globalisation, automation and demographic changes** are re-shaping labour markets fast. New forms of **non-standard work** (self-employment, part-time work and temporary employment) are spreading out, relying on new technologies. Today, non-standard employment accounts for more than **one-third of employment in OECD countries**: this high labour market fragmentation implies a further reduction of **social contributions that in turns contributes** widening the public pillar funding gap.

Moreover, it is important to look at the distribution of non-standard workers by age class, which is highly heterogeneous among EU countries (figure below): The higher the overall incidence of part-time work, the larger the percentage of older workers engaged in such jobs. Conversely, where the incidence of part-time jobs is lower, this work is concentrated among the younger age groups. A distribution of non-standard workers (NSW) skewed towards younger cohorts is a signal of labour market precariousness and rises **concerns about the pension of future generations of retirees[8].** On the other hand, high levels of NSWs among old-age cohorts can be interpreted as an index of flexibility for working schedules at older ages, which reflects a better performing labour market and more efficient retirement rules.[9]

[8] Reilly, Catherine and Byrne, Alistair, "Investing for Retirement in a Low Returns Environment: Making the Right Decisions to Make the Money Last" (2017). Wharton Pension Research Council Working Papers. 33.

[9] Devicienti F, Grinza E, Manello A and D. Vannoni (2016). The Impact of Part-Time Work on Firm Total Factor Productivity: Evidence from Italy. Discussion Paper 10314. IZA.

The high variability in the share of part-timers within older cohorts in Europe (from 2.4% in Bulgaria to 49.4% in the Netherlands) suggests that disincentives on the demand side as well as legal restrictions (rigidities in both the pension system and the labour market) likely weigh on individual preferences.[10]



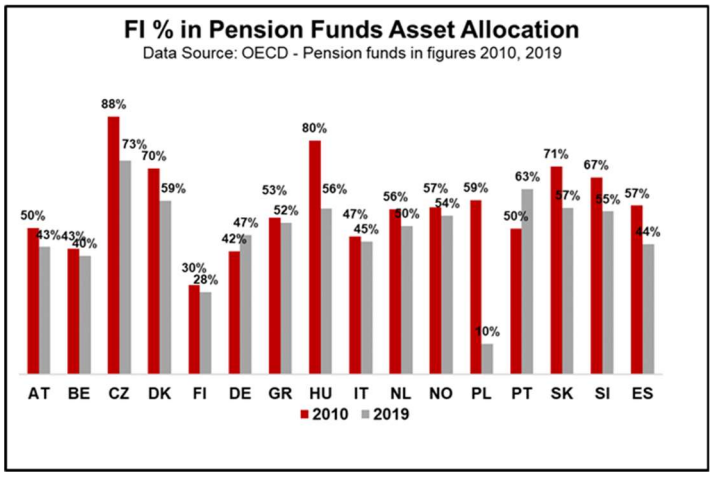
➔ Complementary private and occupational pension schemes for retirement remains a necessity, but low interest rates and financial shocks challenge participation, contributions and adequacy.

Across Europe, most pension assets are still held in Defined Benefit (DB) arrangements: A prolonged period of **low growth and low interest rates** put the guaranteed returns of pension schemes at risk:

- Falling investment returns: In 2004 the average return on pension scheme assets across the Euro Area was 8.9%, while in 2017 it was down to 4.6%, and in 2018, according to the OECD Global Pension Statistics, only private pension schemes located in Australia, Canada, Denmark, Iceland and Israel generated positive real investment returns[11]. During the last years the search for yield has led pension funds to shift from traditional asset classes towards riskier investments, including private equities. **Fixed income shares decreased over the last 10 years** almost everywhere in Europe.

- Falling yields tend to increase the present value of liabilities relative to assets, deteriorating the Funding ratio. In many countries a shift has been underway for some time (at least for the workers of the younger cohorts) from DB funds to DC funds. A law providing for this is currently being passed in the Netherlands, where the funding ratio, at the national level has been deteriorating sharply since 2009 (-10 pp)[12].

The shift to defined contribution schemes implies a substantial transfer of risk to households and may have deep implications in terms of ultimate risk bearing.



Households are, in principle, more risk averse and less capable of managing financial risks effectively than financial institutions and institutional investors and therefore may opt for an overly conservative approach (through the asset managers of the defined contribution schemes) to their own retirement savings, notwithstanding the fact that insufficient returns may jeopardize retirement income. Households with a high-risk appetite for their pension assets may push asset managers towards riskier investments, potentially contributing to procyclicality and fire sales. The asset management business faces a crossroads because future equity and fixed income 5y returns are expected to be lower than historical rates[13]. Not surprisingly, disappointed **retirement savers are becoming increasingly sensitive to investment fees and charges**, driving the trend toward lower-cost and passively managed investments. Moreover, the expected **low return environment is prompting savers to seek new - and riskier - types of investment**, including **alternative** and **less liquid investments**.

For DC Funds it is only a matter of adequacy. Macroeconomics shocks do not affect financial sustainability of DC plans by design[14]. Yet lower-income workers will need to save about 50% more if low rates of return persist in the future, and higher-income workers will need to save nearly twice as much in a low return environment compared to the optimal savings using historical returns[15].

Generations retiring in the near term (boomers) face increased longevity but have lived through periods of strong market returns boosting their assets, and many also have DB entitlements. Younger generations also face increasing longevity, but are likely to earn much lower investment returns on their retirement assets and few have DB. The challenge for them is tougher. Younger generations do face substantial challenges, but there are plausible courses of action involving increased contributions and delayed or partial retirement that can provide reasonable income

[10] Serena Trucchi, Elsa Fornero and Mariacristina Rossi (2018) Retirement rigidities and the gap between effective and desired labour supply by older workers, IZA Journal of Labor Policy

[11] Oecd, Pension Funds in Figures 2019

[12] http://www.oecd.org/daf/fin/private-pensions/Pension-Markets-in-Focus-2020.pdf

[13] Generali Investments: Life after Covid:5-year total return forecasts

[14] Ignazio Visco, Banca d'Italia, Covid shock, debito pensionistico e debito pubblico, november 2020

[15] Low returns and optimal retirement savings: Blanchett, Finke, Phau, 2017, Wharton Pension Research Council WP 31

replacement rates in retirement.[16] It seems self-evident that people should save more and expect to work for longer, but how much more do they need to save and at what age should they aspire to retire? Insurance Europe provides a good example: they estimate the annual saving rate (as a percentage of wage) needed to guarantee at retirement a 50% replacement rate by private provisions. In 25 years, the saving rate move from 10% to 33% when investment returns decrease from 5% to 1%[17].

Investment return	Salary to save (%) for 50% replacement rate
5%	10%
3%	19%
1%	33%

Source: Insurance Europe, 2020

That's why, persistent low returns can compel workers to save more and invest differently when allocating across stocks and bonds. Moreover, the **low interest rate environment can also change retirement decisions**, especially regarding how long to work and when to claim social security benefits.
Depending on the market conditions at the time of retirement, income from DC pension plans can be quite volatile. This **volatility** has led policy makers and regulators to consider changes in the design of DC pension plans. For example, they are revisiting the appropriateness of introducing guaranteed minimum returns in DC pension plans. Additionally, they are examining the benefits of requiring life-cycle strategies as default investment strategies.

Introducing **minimum return guarantees** does indeed reduce the volatility in replacement rates. Minimum return guarantees succeed in setting a floor on replacement rates, but to work it should be well above the riskless rate of return (6% or higher). Unfortunately, only insurers willing to bear more risk than the average market aversion to risk (i.e. more than other investors) could guarantee such high guarantee returns, which raises the issue of counterparty risk (Munnell, 2009).

The demand for private pensions: the case of Italy

The literature identifies a number **of individual determinants of demand for private pensions**. Income of course is an important factor, given that state retirement benefits will generally cover only a share of the last income earned. In the light of the main theories of saving and consumption, an individual will want to smooth out her average consumption in the long run, therefore she will need to cover for the missing share during retirement by means of savings set aside during the working age: the larger the income, the higher on average the role of private pensions in supplementing state benefits. **Education** is another strong candidate as a potential determinant, as enhancing the planning ability and improving the understanding of the need to insure.

More generally, the classical approach to identifying the determinants of private pension expenditure relies on a combination of **expectations regarding public benefits, the current financial wealth** of the individual (or the household) and a vector of **sociodemographic variables** describing the peculiar situation of the individual.

The explanatory variables to be included in an empirical analysis, next to wealth which stands for itself, will account for either the first or the third aspect. **Age** and **income of the individual will determine expectations as regards public retirement benefits**, but also **the need to cover the "missing share" of 1-the substitution rate**.

The needs to be covered will partly depend on the structure of the family. Moreover, from the viewpoint of risk, investing in a private pension can also be seen as a form of precautionary saving, which can be mobilised to serve for some fundamental categories of needs, like buying a home or paying for health expenses. Therefore, it might be hypothesized that households that are "more at risk" have a higher tendency to enter the market for supplementary private pensions. In this regard, **we control both for undiversifiable income risk and for measures of family-level management of diversifiable risk**. As for the first – undiversifiable -, we control for **dependent vs. self-employed**. A self-employed job is typically more at risk versus a dependent one and such risk is not diversifiable through insurance. Then, we include **the share of income earned by one single member of the household**, as a measure of the risk associated to the concentration of income.

We consider data taken from the **Italian Survey of Household Income and Wealth** (Bank of Italy) on the last available wave, 2016. The dataset contains observations over **6.597 families** on a number of characteristics, among which we select: household income, share of the latter earned by one member of the household (as an indicator of financial risk), number of family members; and some characteristics of the largest household earner: sex, age and education level.

In view of the well-known **regional heterogeneity** of Italy, **we also control for macro-regions** (north-west, north-east, centre, south or islands, which last is Sicily + Sardinia).

In the whole sample, **9.5% of households have some form of private pension coverage**. Penetration for life products is slightly lower (7%) and that of term life in particular is only 3.8%.

Family income averages 25K euros, with an interquartile range of 19K; the largest earner of the household makes, on average, about 70% of the total. The average of that member is 63 years old, with a median of 65. 24.8% of household heads in the sample are self-employed; their median education level is third grade (corresponding to secondary school), while the average is closer to a BA degree. Most families have between 1 and 3 members, with a median value of 2 and an average of 2.1; 32% of families live in the South.

[16] Insurance Europe (2020) Pension Survey: What do Europeans want from their pension savings?

[17] Insurance Europe (February 2017) A Blueprint for Pensions Saving enough, saving well, saving wisely.

The specific degree of **financial education** of the household 'head' is assessed according to the answers to three simple questions about financial returns (one on composite returns, to which 48% of household heads are able to answer correctly; one on real vs. nominal returns, to which 60% answer correctly; and one on the riskiness of stocks vs. common funds, which gets 52% of correct answers; while only 27% answer correctly to all, 37% on the first 2). Lastly, 52% of the households list "providing for old age" as an important motive for saving.

Covid-19: impact on pensions systems

Covid-19 has impacted the pension universe in several ways. In the short term:

- higher unemployment and, therefore, a reduction in public and private retirement contributions;
- higher government debt that could, in turn, lead to future cuts in public pension generosity;
- early withdrawals from accrued pension pots as a last resort measure for those who have suffered reductions in their income during the pandemic.
- reduction in regular capital income due to low interest rates, reduced dividends and lower rentals from property investments;
- a temporary increase in elderly mortality, which will have little short-term effects on PAYGO and DB schemes, unless the death rate would surge.
- a reduction in life expectancy driven by the higher mortality. For Italy, between 0.4 and 1.4 (Istat, 2020).

While for PAYGO (lower contributions) and Private DB systems (a deterioration in the funding and liquidity due to lower returns and early withdrawals), sustainability issues may further increase, for DC plans, the extreme consequences are entirely upon individuals in terms of pension adequacy.

In this scenario, individuals may have an incentive to:

- postpone the retirement to tackle pension shortfall,
- reduce consumptions to increase contributions,
- take higher financial risks to increase the rate of the investment returns.

Evidence from past crises show that retirement choices are driven by two factors: while a decline in future retirement wealth may push people to work for longer, poor labour market prospects among older workers who have the option to claim early retirement benefits generate incentives to exit the labour market as an alternative to unemployment.

The overall pension system structure, the ease of accessing retirement pensions early, employment prospects, and the availability of transfers that can help workers to ride the crisis are key factors in determining whether the wealth or the employment effect dominates. However, most of these negative effects should largely disappear in the long run, depending on the speed and extent to which the real economy and financial markets (asset prices and interest rates) recover to pre-COVID-19 levels.

Probability models:

We estimate the determinants of the probability of buying a pension, i.e. we concentrate on the decision of entering the market altogether rather than on the amount spent.

We estimate two kinds of models: a **linear probability model** and a **probit model**. Sex and age of the household 'head' play a role too. We allow for a nonlinear effect of age because often the propensity to buy financial products has been found to increase with age but in a declining fashion.

Liquidity considerations also surely play a role in deciding to commit to non-liquid investments like a pension product. We control for a measure of risk aversion (the stated preference for more or less risky assets, on a scale from 1 to 4); for the ability of the family to save positive amounts; for the self-assessed need for precautionary saving of the family; and for a dummy variable stating whether the family can count on informal emergency loans from either friends or other relatives.

We add, alternatively, either two dummy variables or one variable containing the number (0, 1, 2 or 3) of correct answers to the financial literacy questions, and one dummy stating whether the family has listed "providing for old age" as a motive for saving.

Probability models on Italian Survey of Household Income and Wealth
Source: Bank of Italy

	linear	probit
Intercept	-0.12 *	-4.02 ***
	(0.06)	(0.46)
Family income	0.00 ***	0.01 ***
	(0.00)	(0.00)
Sex	0.00	-0.11 *
	(0.01)	(0.05)
Age	0.00 *	-0.10 ***
	(0.00)	(0.02)
Age^2	-0.03 *	-1.09 ***
	(0.01)	(0.15)
Family size	0.01 **	0.03
	(0.00)	(0.02)
Income share of household head	-0.02	-0.45 ***
	(0.02)	(0.11)
Education level	0.00	0.04 *
	(0.00)	(0.02)
Dummy 1 (employee =1)	0.15 ***	0.63 ***
	(0.01)	(0.06)
Financial savings	-0.00	-0.03
	(0.01)	(0.03)
Dummy 2 (saving for retirement purposes =1)	0.01	0.10
	(0.01)	(0.05)
Financial education	0.01 ***	0.12 ***
	(0.00)	(0.03)
Dummy 3 (Homeowner =1)	0.03 ***	0.21 ***
	(0.01)	(0.06)
Lives in the North	-0.00	-0.03
	(0.01)	(0.06)
Lives in the South	-0.01	-0.07
	(0.01)	(0.07)

Discussion of results:

As expected, according to both models, **income is a positive determinant** of the probability of contributing to a private pension scheme, while somewhat **surprisingly, female and self-employed household heads are less likely to. Age has a positive but decreasing effect.**

Importantly, the likelihood of holding private pension policies increases with the **general education level** of the largest household earner (in the probit model only) and, very consistently and significantly across models, with our estimate of the **financial literacy** based on the three questions on interest rates, inflation and stocks vs. funds.

Households living in Northern, Central or Southern Italy do not have, ceteris paribus, a different probability of enrolling in private pension schemes.

Subjective measures of the risk attitudes - tested by a direct question - and of the strength of the motivation to provide for old age through savings **do not prove significant.** As for the **objective measures of risk**, the "income concentration" measure **is negatively and significantly related to pensions** (high income concentration reduces the probability of private pension purchase), although only in the probit model.

Conclusion: Policy considerations

Governments should introduce higher flexibility in retirement rules to foster sustainability and flexibility.

To cope with the demographic challenge, EU-Governments should introduce incentives to defer individuals' retirement, enhance funded pension pillars (occupational and personal pensions) alongside the traditional PAYG statutory pension systems. The design of the multi-pillar system is key: to be successful, pension pillars must be mutually reinforcing.

As a tool to encourage people to defer retirement, governments could introduce higher flexibility in retirement options and decumulation choices: **partial retirement** for workers that are approaching legal retirement age, allowing them to take out partial social security benefits rather than obliging them to always take the full benefit, has proved to be successful in Sweden. There, people eligible for retirement can decide to keep working (moving from full time to part-time) and compensate the drop-in labour income with a reduced pension income (they can opt for a 25 percent, 50 percent, 75 percent, or 100 percent benefit, and modify this percentage when desired at an actuarially fair rate).
Another policy would be to offer people **lump sum incentives**, relying on the well-documented behavioural reluctance of people to annuitize: Maurer et al. (2016) found that offering a lump sum incentive rather than a higher monthly payment after the Early Retirement Age (62) induced people to voluntarily claim 6–8 months later than they otherwise would.

To boost the uptake of supplementary pensions, Governments should also:

- introduce enrolment systems suited to local circumstances. **Automatic enrolment** has proved to be a very powerful tool in several countries.

- Adopt **stable tax configurations** that incentivise citizens to save for the long-term, e.g. by deferring the point of taxation and **penalising early exit/surrender**.

- **Ensure pension rights portability**: pension plans need to be fully portable to facilitate the mobility of workers between firms and countries. (e.g. Antolin et al. 2012). While in the occupational pension space, the EU directive 2014/50, has defined a common set of rules to ensure portability, establishing minimum standards for the protection of mobile workers' pension rights, work has still to be done in the 3rd pillar: The Pan European products, in fact, still face a number of issues (taxation being the most relevant) that have limited its circulation so far.

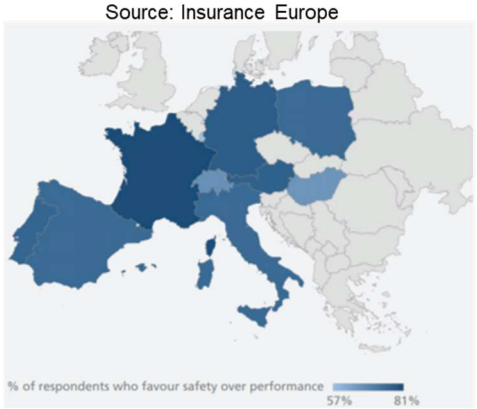
Insurance Europe in a recent survey[18] on pensions of 10,000 people across 10 European countries (Austria, France, Germany, Hungary, Italy, Luxembourg, Poland, Portugal, Spain, Switzerland) highlighted that 46% of survey respondents were not saving for retirement: 42% of those not saving said they could not afford to and only 20% of the respondent were planning to save for a supplementary pension. Crucially, the survey showed that the highest priority when saving for retirement was the security of the money invested (overwhelmingly 73% chose investment safety over performance).

Pension saving priorities	
Security	60%
Payment flexibility	33%
Legacy	32%
Liquidity	32%
Costs	28%
Tax relief	26%
Simplicity	20%
Investment performance	14%
Sustainable investments	12%
Portability	10%

Source: Insurance Europe, 2020

Investment safety versus investment performance

Source: Insurance Europe



[18] Insurance Europe (2020) Pension Survey: What do Europeans want from their pension savings?

Insurance is part of the solution, but steps are needed to increase product appeal.

Insurers, as major providers of occupational and personal pensions and an integral part of any multi-pillar system, are in the middle of the pension saving dilemma: on the supply side, sustainability issues are driving pension products towards the DC universe, leaving financial risks to the insured. DC products become de-facto, general financial products, the only differences being offered by the Public Sector in terms of tax and withdrawals rules. **On the demand side, individuals are asking for protection** due to the specific aim of this peculiar kind of savings: an increase of consumption capacity at retirement. It is interesting to note that the same inclination towards a "safe" approach unites countries with a different pension history, with different propensities towards investment and varying levels of financial education.

The role of the insurance sector is key, first in offering solutions that blurs out the distinction between **saving** and **retirement/protection goals**. A minimum guarantee of return has been, in the DB world, the key tool to enforce this distinction; in the low for long scenario guarantees have been removed; but they could be reintroduced, also in DC plans, at least to shield the capital invested and provided that the insured gives up the possibility of capital redemption (also partial, except in exceptional and limited cases) before having reached the retirement age. This, to minimize additional capital requirements for insurers, according to the Solvency II regulation[19].

Another way to enhance the protection feature of retirement plans, increasing product appeal, could be to **offer additional coverages to demographic / biometric and longevity risks**. As an example, by mixing pension products with **health and long-term medical care coverage**, where the full death benefit (for beneficiaries) or the cash value is available when the healthcare insured capital is not fully used. 40% of EU citizens would be interested in this formula, according to Insurance Europe Survey. A new design of public incentives allowing for cumulability could certainly help.

Insurers could also improve their actual offer by **introducing more flexibility**, giving individuals the chance:

- to increase or stop contributions, to leave savings to descendants (legacy);

- to defer the pay-out phase **and avoid materializing losses by selling at the bottom of the market.** Depending on the market conditions at the time of retirement, in fact, retirement income can be quite volatile. This volatility has led policy makers and regulators to consider changes in the design of DC pension plans[20]. If setting a floor on replacement rates through guaranteed minimum returns is not on the table, at least life-cycle strategies as default investment strategies should be reinforced.

- At retirement, **to adjust the size of the private pension income[21], according to the specific needs of retirees,** increasing flexibility in the timing **of buying an annuity,** as suggested by recent OECD reports[22]. In the Netherlands, the system allows future retirees to use one-half of accumulated capital to purchase an immediate 5-year annuity, deferring the rest of the purchase after this date.

Insurers could also offer **tailored solutions according to country specific demand/population characteristics**: typically, in Italy surveys indicate that the self-employed have a lower propensity to enrol in private pension schemes than employees.

Digital distribution can help not only in fostering more flexibility, but also in increasing private pension coverage, and, most importantly, active participation from the younger working population.

Improving pension awareness and financial literacy is key: together with policymakers, the insurance sector should focus their efforts in ensuring that European citizens are informed about their expected future statutory pension entitlements and possess basic financial literacy: results by SHIW survey in Italy give a hint on how urgent the issue is.

Citizens also need to take personal responsibility and contribute more and for longer periods to access an adequate retirement income. Participants who start the retirement saving journey at the beginning of their working career can afford lower saving rates and enjoy higher degree of freedom in retirement choices.

The Innovation process both on public and private side is slow moving: apart from some country-specific exceptions, public welfare and private pensions are still hugely skewed towards the DB world, at least as far as the decumulating phase is concerned. The Baby boomers generation, which is large in number and fully entitled with DB pension rights, is now approaching retirement: they have lower need of annuities or retirement deferrals. For them, bequest motives dominate over consumption smoothing needs.

Only when cohorts of future retirees adhering to DC schemes, both on the public and the private side, will reach non-negligible size the urgency for innovation (regulatory, product design etc.) will increase.

[19] ANIA (2020), La previdenza complementare e il valore della garanzia

[20] Pablo Antolin (OECD 2009), Private Pensions and the Financial Crisis: How to Ensure Adequate Retirement Income from DC Pension Plans, OECD Journal: FINANCIAL MARKET TRENDS, VOLUME 2009 ISSUE 2

[21] Today, private pension income is a constant flow of money. Retirees could be interested in fine tuning the annual amount of private pension income according to their expected needs.

[22] Pablo Antolin and Fiona Stewart, Private pensions and policy responses to the financial and economic crisis, oecd working paper on insurance and private pensions no. 36, 2009

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