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## **Adequacy of Households' Savings and Financial Literacy: Challenges from Pension Reforms**♦

### **1 Introduction**

Household saving rates and wealth levels are very heterogeneous both across and within countries, varying with respect to demographic and economic factors, from a macroeconomic point of view, and with respect to age, cohort, education, family size, and health, from a microeconomic perspective.

Given these differences, in what sense is it possible to enquire about the *adequacy* of households' retirement savings?

The concept of (retirement) savings *adequacy* combines two dimensions: (a) a well-structured *institutional design* for an efficient sharing and diversification of the main risks affecting financial security in retirement and (b) sensible *individual behavior* with

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respect to the time allocation of resources, in a given market and institutional context.

The first aspect is crucial because even rational individuals will accumulate wealth poorly/inefficiently if they are forced to participate in ill-designed pension schemes or if they lack proper instruments and markets for accumulating. Institutional features are extremely important but difficult to characterise in a single model. In Europe, for example, a wide variety of retirement provisions are in place, varying according to the extent of state intervention, the provision of inter- and intra-generational insurance, the degree of actuarial fairness and of neutrality with respect to retirement choices, the amount of redistribution, and other characteristics (Kim and Lee 2007). Moreover, reforms are modifying, in some cases rather radically, the playing field.

Given this diversity, individual saving behaviour is expected to vary not only because of heterogeneous preferences and constraints but also because of the different level of mandated saving, its characteristics, and its substitutability with respect to “discretionary” wealth accumulation. In particular, the pension reform process that started in the 1990s in most, if not all, European countries substantially increased workers’ uncertainty with regard to their replacement rates, typically by shifting from more guaranteed Defined Benefits (DB) formulae to less certain Defined Contribution (DC) ones. The reforms will make future pensions not only less generous

and more “self-made,” but also more uncertain and difficult to understand, thus imposing greater costs upon planning ahead.

In the context of the pension systems’ transition, the success of the reforms and the possibility to achieve adequate outcomes rests also on the ability of individuals to fine-tune their saving decisions in response to the normative changes. As young generations can no longer rely on the experience of their parents to plan their resources in retirement, they have to use their own capability, and in particular their *financial education*, in order to understand reformed pension systems and take decision in the new institutional context. Financial literacy – defined as “*the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial wellbeing*” (President’s Advisory Council on Financial Literacy 2008; Jump\$tart Coalition for Personal Financial Literacy 2007) is thus a very important element in the implementation of reforms and a subject that, in recent years, has attracted increasing attention and concerns among both governments and academia.

## **2 Several dimensions of saving adequacy**

### *2.1 Adequacy from the point of view of the pension systems*

Heterogeneous European retirement provisions are reflected in differences in the age saving profiles. Without ignoring that several driving forces can be at work in explaining cross-country saving

differences (including market imperfections and the stringency of borrowing constraints), part of the variations are the direct effects of the different pension setups: for instance, the more generous social security in Italy and Germany reduces the need to save for retirement during the working age, while the Dutch flat rate pension benefits—with rather lower replacement rates—are at the root of the marked hump-shaped saving profile in that country (Börsch-Supan and Lusardi 2003). Thus, a proper understanding of the adequacy of retirement savings cannot but start from pension provisions, which are the main vehicle for the accumulation of retirement wealth, substituting for discretionary savings with a mix of compulsory features and rather complex (dis)incentive structures.

When looking at pension systems from an adequacy perspective, more important than benefit levels *per se* is the government's role in promoting and delivering a good *ex ante* allocation/diversification of risks. This entails an institutional framework that, under a financial sustainability constraint<sup>1</sup>:

- a) provides *efficient* ways to broaden the scope for risk pooling and sharing, not only through public pensions (and other benefits for the elderly, such as survivor benefits), but also through a good regulation/supervision of market provisions;

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<sup>1</sup> Adequacy should always be viewed within a context of financial sustainability, given that it is always possible to increase benefit levels by ignoring—at least for a certain period—the government's intertemporal budget constraint. Financial sustainability, however, “*does not imply fully funded pensions, but only that unfunded obligations are not growing excessively relative to the contribution base*” (Barr and Diamond 2008, p. 10).

- b) reduces poverty among the elderly;
- c) encourages individuals' *awareness* of retirement needs, and their capacity to make informed and farsighted decisions, by means of financial literacy programmes and appropriate choice designs.

As for efficiency (point a), in overlapping generations models a source of market incompleteness comes from the impossibility of individuals to engage in *intergenerational* risk sharing with yet unborn generations: in the absence of such markets, governments substitute for them by establishing, as a vehicle to set up an intergenerational contract, a Pay-As-You-Go (PAYG) method of financing, entailing pension benefits correlated to the wage bill (Shiller 1998; Ball and Mankiw 2007). Risk diversification, however, also demands a good combination of public and private choices, as well as good regulation/supervision of market provisions, thus offering a rationale for a *mixed system* (Lindbeck and Persson 2003; Castellino and Fornero 2007). Finally, although from considerations of pure efficiency, less distortive DC formulae should be preferred, some kind of guarantees – and thus features of DB formulae – should not to be ruled out from pension system design, as they carry important implications in terms of social welfare (Gomes and Michaelides 2003).

The last point is directly connected to the scope for state intervention from the point of view of *intragenerational* risk sharing, with poverty prevention as another way to look at the provision of

“adequate” pensions (point b). Even though the extent for intragenerational risk pooling might be reduced by issues such as moral hazard and prior income inequality (which obviously cannot be entirely “cured” by the pension system), there are many practical limitations to the ability of the elderly to diversify their incomes by themselves, which emphasize government’s role in providing this kind of risk sharing, as a way to fight poverty in old age (Shiller 1998; Barr and Diamond 2008), for example through the provision of a universalistic benefit or a means-tested minimum pension level.

Finally, given that public provisions typically do not (and should not, given the efficiency considerations of point a) fully cover financial needs in retirement, governments should also aim at increasing and improving individuals’ ability to make sensible choices, concerning both the age of retirement and the accumulation/investment of personal savings (point c). This can be done not only by fostering individual preparedness, but also by reducing the distortions embedded in pension formulae, and/or by choosing an enhanced choice structure, for example, through an appropriate design of pension default options (Madrian and Shea 2001; Holzmann and Pallarès-Miralles 2005; Lusardi 2008a; OECD 2008). The specific issue of financial preparedness will be expanded in section 4.

## 2.2 Adequacy from an individual perspective

The *normative benchmark* of the economic analysis of household savings assumes rational individuals who make consistent intertemporal plans over their lifetime (Scholz and Seshadri 2008, p. 4). Starting from this premise, on a positive level: “*a household is said to be saving adequately if it is accumulating enough wealth to be able to smooth the marginal utility of consumption over time in accordance with the optimizing model of consumption*” (Engen et al. 1999, p. 70). The stylized version of the *Life Cycle Model* (LCM), in which individuals save during their working life to provide for consumption in old age, allows for a neat conceptualization of retirement savings adequacy: the annuity value that, under the constraint of life cycle resources, can support the preferred consumption path, which is proportional to life time resources.

From the original Modigliani and Brumberg’s theory (1954), more complex versions have subsequently been exploited by including real-life features such as labour supply decisions and retirement choices; the timing of income receipts; uncertainty over future earnings, rates of return, length of life, and health conditions, all generating scope, even in old age, for *precautionary savings*. Borrowing constraints—although less important in retirement as household wealth reaches its peak in correspondence with retirement—may explain the decision of an individual to draw from her pension wealth and the timing of the decision. Other motives for saving, such as bequests, have also been added to the model.

Apart from predicting the smoothing of marginal utilities, an important feature of the model is its ability to distinguish between “*inadequate*” and low levels of saving/wealth. For instance, facing an upward sloping income profile, young people may save very little or indeed be borrowing. Similarly, older individuals may have little “discretionary” saving because the amount of mandatory saving is already providing (together with other public provisions, such as health and long term care) for their retirement needs.

It is then almost natural to take the LCM model as a benchmark for assessing saving adequacy. However, the empirical evidence, implicitly or explicitly based on the LCM, is mixed, and also largely concentrated on data from the United States. Some studies use reduced forms to project households’ lifetime assets and income paths and derive from them implications for saving adequacy. Results are diverse: Kotlikoff et al. (1982), Love et al. (2008) and Hurd and Rohwedder (2008) all find there is no systematic under saving. On the contrary, according to Haveman et al. (2006) and Moore and Mitchell (1997) many households will not have enough resources in retirement to meet their pre-retirement consumption level.

Other models are more sophisticated, as optimal household consumption and wealth accumulation profiles are simulated from a structural model and compared to actual data (Bernheim and Scholz 1992; Engen et al. 1999; Munnell et al. 2006; Scholz et al. 2006; Scholz and Seshadri 2008). These papers find that saving is adequate (or even *more* than adequate, suggesting some over saving) for the



large majority of the population and that *under saving* is concentrated among households without a college degree (Bernheim and Scholz 1992) or in the lower part of the wealth/earnings distribution.

A different strand of literature – which also provides some evidence on European countries such as Germany, Italy, and the UK – studies the so-called “consumption drop,” i.e., whether or not consumption falls around the time of retirement, and for what reason. Optimal saving, however, does not necessarily mean *smooth consumption*; thus, the drop itself could be “optimal” (Banks et al. 1998; Bernheim et al. 2001; Miniaci et al. 2003), for instance because retirement is typically an anticipated (or even chosen) event, and there are reasons that justify a fall in consumption, such as a decrease in work-related expenses (Haider and Stephens 2007; Hurd and Rohwedder 2006; Smith 2006). On the whole, this kind of evidence – heavily centred on US data – points again to groups at risks, rather than to a general problem of inadequate savings in the general population.

### **3 Adequacy and pension systems reforms**

The pension systems of European countries are almost invariably undergoing transitions, with uncertain consequences on adequacy (Castellino and Fornero 2006). The effects on adequacy of pension system reforms occurred in Italy and in other European countries in

the '90s are not straightforward a priori. On the one hand, most reforms sensibly reduce pension benefits (in terms of replacement rates), while on the other many reforms redress distortions embedded in the PAYG systems, particularly implicit taxes on the continuation of the activity, which effectively encouraged early retirement.

Three aspects of reforms are worth considering.

*First*, since most of the recent reforms are negatively impacting (or will in the future) on the replacement rates offered by the public scheme (the *first pillar*, typically financed on a PAYGO basis), they have been accompanied by measures directed at increasing the average retirement age and at encouraging the development of occupational and personal pension plans (the *second and third pillars*). Indeed, most recent pension reforms are designed with the implicit idea that household saving is too scarce, at least for a large segment of the population (Borsch-Supan and Brugiavini 2001). As the growth of *funding, per se* a device to improve the risk diversification of pension provisions, is seen as an offsetting measure for the reduction of the PAYG coverage, the transition problem can be very severe: indeed, when the young are told that they will receive lower pensions for the same payroll tax rate, and encouraged to contribute to a funded pillar to compensate the gap, they are asked to save more for the same replacement ratio. This retrenchment of past promises would seem to shrink the adequacy of the pension system; however, by restoring its financial sustainability, it could indeed

reinforce it, because all future generations would benefit from a system that does not pile up additional (implicit) public debt.

*Second*, another important feature of pension reforms is the move from DB to DC type of formulae, which implies both a stronger dependence, at the individual level, of benefits on contributions and a closer proximity (when not a strict correspondence, as in a Notional Defined Contribution, NDC, system) of the internal rate of return to the equilibrium rate represented by the growth of the wage bill (countries such as Italy, Sweden, Poland and Latvia have adopted this kind of *actuarially fair formulae*). Pensions based on actuarial principles are in sharp contrast to the history of many PAYG schemes, where workers had been accustomed to generous pay-offs. Moreover, the shift from DB to DC is also occurring in the private sector, induced by the increasing, and in some instances destabilizing, cost of DB plans to employers. The expansion of DC formulae within both PAYG and pension funds clearly implies an increase in the uncertainty surrounding the replacement rate at any given age of retirement and a transfer of risks resting on workers. Again, these greater risks would seem to undermine the adequacy of pension systems, but if the overall design should attain—although again with transition and redistributive costs, whose incidence should not be ignored—a better diversification of risks, the opposite could be true.

*Third*, while pushing up the effective retirement ages, reforms are also, in general, implementing a greater flexibility of retirement, instead of the traditional “mandatory” retirement ages, differentiated

rather arbitrarily by gender and/or working categories. This introduces an important adjusting margin, as workers are not forced to leave at a certain age, neither induced to leave as soon as they reach the minimum requirements by pension formulae which contain high implicit taxes on the continuation of the activity.

These aspects of pension system reforms can have a differential impact on retirement saving adequacy depending on the ability of individuals to understand the new rules/incentives and to adjust their behaviour accordingly. In order to fully comprehend the implications of the reformed system, however, individuals should have at least a grasp of some general financial principles. We will consider the interaction between financial literacy and pension reforms in the following section.

#### **4 Adequacy and financial literacy**

In recent years, a growing literature has documented significant departures from the standard life-cycle model, which assumes that people make rational, consistent intertemporal plans, and pointed to various behavioural and psychological “anomalies” and paradoxes, and to factors that limit individual ability to plan ahead and to compare consumption today with consumption in the far future .

Lusardi and Mitchell (2006) studied the extent of retirement planning by looking at data from the Health and Retirement Study

(HRS) on respondents aged 51 or older. They found that only as many as one-third of respondents had thought about retirement. While some of this behaviour may be perfectly rational, it is nevertheless surprising that the majority of older respondents had not given any thought to retirement, even when only five to ten years away from it.

The evidence on the lack of planning for retirement is reinforced by recent studies indicating that workers know little about their public pension benefits and the characteristics of their private pension plans (Gustman and Steinmeier 2004; Gustman et al. 2009). Results from the English Longitudinal Study of Ageing (ELSA) show that about 30% of individuals age 50–59 with a DB employer pension do not know the accrual rate of their pension plan, cannot tell how much they expect to receive from this pension, and do not know whether their pension benefit will go up by more or less than prices after their retirement (Banks and Oldfield 2006).

One reason individuals do not engage in planning or are not knowledgeable about pensions or the terms of their financial contracts could be that they lack financial literacy. Lack of knowledge would be inconsequential if knowledge had little effect on behaviour. However, a growing body of literature has recently shown that financial knowledge affects a wide range of financial behaviors, including wealth accumulation (Lusardi and Mitchell 2007; Bernheim and Garrett 2003; van Rooij et al. 2008), stock market participation (van Rooij et al. 2007), portfolio diversification (Guiso and Jappelli 2008),

participation and asset allocation in 401(k) plans (Howlett et al. 2008), and debt behaviour (Lusardi and Tufano 2008).

We argue that financial literacy can also be extremely important in relation to retirement decisions, because reformed PAYG pension systems are rather complex and call for a fair degree of knowledge. In particular, they require understanding the implications of the move from DB to DC and of the introduction of funding elements within the PAYG. Moreover, most reforms act in the direction of granting more freedom of choice, thus leaving more responsibility to individuals about both the accumulation and decumulation of their pension wealth. This means that people have to be aware of the various options they have and be able to choose among them. We will discuss all these elements in turn.

#### *4.1 Many pillars and many choices*

In many countries the shift to a multi-pillar system entailed the introduction or a strong encouragement towards forms of saving that until that moment were used by a very small fraction of the population, usually the wealthiest. Given the prospected reduction in pension benefits, young workers – who will suffer the most from the economic consequences of population ageing and from pension reforms – have to accumulate additional savings to ensure themselves an adequate retirement income. Occupational and personal pension plans (the second and third pillars) are the leading candidates.

However, even though they usually receive a favourable tax treatment, various elements reduce their attractiveness.

There is, first, the question of why private pensions – annuities – are so unpopular, a paradox when judged from the stance of the paradigm of rational individuals. Economic theory states that, because of the “mortality premium,” annuities dominate (the return offered by other) financial assets, so that individuals should annuitize all their retirement wealth to remove both the risk of outliving their resources and the risk of leaving unintended bequests (Yaary 1965). Although in incomplete markets the arbitrage-like dominance argument does not hold any longer, suggesting that complete annuitization is not the optimal strategy (Davidoff et al. 2003), simulation exercises show that annuities are quite valuable to individuals, in terms of Money’s Worth Measures<sup>2</sup> (MWM), (Geanakoplos et al. 2000) even when the optimal consumption trajectories differ substantially from the time paths of annuity payouts.

In practice, many problems limit individuals’ propensity to annuitize and provide a rationale for preferring lump sums to annuities (Turra and Mitchell 2004; Sinclair and Smetters 2004; Kifmann, 2008). Selection effects—estimated by the difference between MWR calculated from annuitant and from population-wide mortality tables—and administrative costs could also restrain the demand by making annuities too expensive. Researchers have calculated the

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<sup>2</sup> The ratio of the expected present value of the future payment stream associated with an annuity to its purchase price.

MWR of annuities: although not equal to one (corresponding to the actuarial fair price), they are not very far from it, suggesting that cost is hardly the main reason for the limited demand.

Their complexity and riskiness surely act as a further disincentives. In countries where these products are relatively new, individuals lack not only the financial literacy that would allow them to judge the pros and cons of annuities, but also the familiarity with the notion of financial risk itself. It is not surprising that individuals who do not understand the advantages of annuities or are not used to deal with risky products prefer lump sums, when these are available. In the case of Italy, the choice between annuities and lump sums includes the decision of how to distribute the severance payments (TFR) employees are entitled to upon retirement, between annuities provided by pension funds and the safer but less profitable lump sum provided by employers. Such choice is further complicated by the fact that it has to be taken a long time before retirement.

Finally, individuals enter retirement not only with very different wealth levels but also with different wealth compositions. Apart from social security wealth, housing wealth—which is rather illiquid—is the other major component of wealth in old age. The house is an attractive investment because it combines a flow of services with an investment good and, given the low correlation between housing value and financial investment returns, provides scope for portfolio diversification. However, household do not appear to draw down housing wealth after retirement (Lusardi and Mitchell 2007a), even



though financial markets have developed instruments to extract equity from a home and to transform it into more liquid forms: mortgage refinancing, mortgage equity withdrawals, and reverse mortgages (Muellbauer 2007).

A lack of financial knowledge reduces the ability to know which options are available to finance retirement in addition to public pension benefits, which are their characteristics, and to compare them in order to choose the most appropriate solution to the household's financial needs.

#### *4.2 From DB to DC: the power of compounding*

One of the greatest novelties of reformed pension systems—especially where NDC systems have been introduced—concerns the way benefits are computed. The emphasis on actuarial fairness implies that applying some rule of thumb—such as a certain percentage of last earnings times the number of contribution years—is no longer sufficient to figure out the size of pension benefits. When the computation of benefits is of DC type, understanding interest compounding is crucial to figure out how benefits are obtained. Clearly, understanding inflation, risk and the main characteristics of financial products are also key elements of financial literacy, but interest compounding is particularly important when funding elements are introduced in PAYG systems.

Failure to understand the power of compounding can affect choices workers make during the “accumulation phase” and therefore has

important implications on the accumulation of resources in retirement. First, it is important to understand that starting saving—even little amounts— as early as possible can produce greater results than saving a lot but only in the last few years of the career, due to effect of interest compounding. Second, since in DC-like systems contributions are accumulated along the entire career, workers should be aware that job discontinuities matter, and have more serious consequences if they happen at the beginning of the career. Analogously, withdrawing money from a fund before the retirement date (when it is possible) will have consequences lasting the whole retirement period, through reduced benefits. Third, one should understand that the shape of the earnings profile along time is also important, even though it is not entirely in the workers' control.

The shift from DB to DC type of formulae is one of the elements of recent pension systems reforms that implies the greatest change in mentality and therefore needs a considerable amount of financial knowledge to be appropriately understood.

#### *4.3 Flexibility and incentives*

The previous paragraph concentrated on the accumulation phase. However, financial literacy is also important in relation to the “withdrawal phase”, not only—as we said before—in the choice between annuities and lump sums, but also and above all in the choice of the retirement age.

In many countries, the introduction of defined contribution elements in a pension system is accompanied by more flexibility in the age of retirement. The formula is typically inspired by an actuarial neutrality principle, and flexibility is coupled with an adjustment of benefits, meaning that benefits are lower/higher if the time of retirement is anticipated/deferred. The various elements that affect the conversion of accumulated funds into an annuity—longevity expectations, hypotheses on the spouse (if benefit is reversible), indexation—are unified into a conversion factor that determines the size of benefits and that varies according to the age at which benefits are claimed.

Again, this mechanism differs substantially from the traditional notion of “normal retirement age” and requires a change in mentality to be fully understood. In this respect, financial literacy matters, in the sense that more knowledgeable individuals—those who know at least interest compounding and the meaning of present discounted values—are more likely to understand the incentives provided by the system for retiring later and to take advantage of them.

## **5 Concluding remarks**

Unfortunately, saving for retirement is a typical situation where feedback is scarce. Other financial practices give immediate feedback: credit card holders, for instance, receive monthly statements showing

whether late or over-the-limit fees were incurred. Given that feedback is quite rapid, individuals can learn and adjust their behavior accordingly. It is more difficult to learn and accumulate knowledge in a process where feedback is limited and comes a long time after financial decisions were taken (Thaler and Sunstein 2008). In the case of long-term saving for retirement, people might not know whether they made the appropriate investment decisions until they reach retirement or even after. This makes choice more difficult and mistakes more painful.

In their reform process, European pension systems became more financially sustainable, more actuarially fair and reduced distortions. However, at the same time they became more complex and handed over to individuals the burden of ensuring themselves an adequate income in retirement. While this allows a greater individual freedom of choice, it also gives considerable responsibility to individuals who are not necessarily ready to manage it. Improving financial literacy can help overcome the knowledge gap between what the average worker know in terms of basic economic and financial principles and what they are supposed to know in order to address responsibly and consciously some of the most important decision of their lifetime.

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