Dipartimento
Economia e Statistica
Cognetti de Martiis

Department of Economics and Statistics "Cognetti de Martiis"
Campus Luigi Einaudi, Lungo Dora Siena 100/A, 10153 Torino (Italy)
www.est.unito.it

Working Paper Series

5/23

FINANCIAL EDUCATION: FROM BETTER PERSONAL FINANCE TO IMPROVED CITIZENSHIP

ELSA FORNERO and ANNA LO PRETE

UNIVERSITÀ DEGLI STUDI DI TORINO

The Department of Economics and Statistics "Cognetti de Martiis" publishes research papers authored by members and guests of the Department and of its research centers. ISSN: 2039-4004

Financial education: from better personal finance to improved citizenship

Elsa Fornero* and Anna Lo Prete**

ABSTRACT

Financial education is a crucial determinant of informed decisions, in both the private and social spheres. From a life cycle perspective, it improves personal finance. From youth to retirement, basic economic and financial competences, including specific pension literacy, help to plan for the future and to make better choices, thus reducing the probability of financial fragility, particularly in old age, and increasing economic independence, particularly for women. In the social sphere, a growing literature is demonstrating that basic financial education also affects public choices, influencing voting behaviour, economic reforms, policy outcomes, and, more generally, the workings of our democracies.

Keywords: financial literacy, personal finance, pension literacy, economic reforms, public decisions.

* University of Torino, G53 Network, and the Center For Research on Pensions and Welfare Policies – Collegio Carlo Alberto; email elsa.fornero@unito.it.
** University of Torino, G53 Network, the Center For Research on Pensions and Welfare Policies – Collegio Carlo Alberto; email anna.loprete@unito.it.

1. Introduction

A vast strand of literature over the past 25–30 years has explored whether and how much 'financial literacy' can effectively improve individuals' wellbeing, by helping them to manage their personal finance, from youth, when choices have lasting (possibly permanent) financial consequences, to old age, when health issues and retirement security are predominant.

This role of financial literacy (which includes basic economic concepts) is hardly surprising, since, as Alfred Marshall (1890) claimed, "'economics *is the study of mankind in the ordinary business of life',* such that a complete lack of knowledge of its fundamental concepts can only be harmful, almost by definition. Indeed, the ordinary business of life requires individuals to make decisions involving all kinds of trade-offs, almost always having to deal with a temporal dimension, that is, implying an immediate or short-term sacrifice (benefit) against an expected gain (loss) in the future. Lacking even a basic understanding of these trade-offs can lead to poor decisions. It can thus be claimed that financial literacy – as an analytical tool to study how people build, manage, and decumulate their personal wealth – is a topic entirely in the tradition of the Franco Modigliani's 'life cycle hypothesis'.

Research, of course, has gone far beyond both Marshall's assertion and a stylized Modigliani model and gained a remarkable place in recent economic studies. Financial (il)literacy has first been defined and extensively measured by means of surveys exploring three (and more) key concepts of basic economic understanding and numeracy, and then linked to various behavioural outcomes, such as inadequate savings, low participation in pension funds, bad or whimsical investment choices, excessive personal debt, and gullibility (Lusardi and Mitchell 2008, 2014). More recently, new frontiers have been explored concerning the role of financial literacy in the public sphere and socially responsible choices. This is a natural extension of the research on financial literacy, given that individuals' wellbeing reflects, particularly in European countries, not only personal choices, but also collective decisions,

typically embodied in public regulations and expenditures, often in response to a changing social and economic environment.[1]

The first part of this article discusses the main findings on the relevance of financial education to decisions having important financial consequences in the life cycle, from youth to working age and retirement. While economic theory predicts that people plan for future expenditures or contingencies and retirement, they often lack, in fact, even the most basic notions of economics and finance. This is true, at different levels, in both developing and advanced economies, particularly among women and older generations (Klapper and Lusardi, 2020). We thus focus on two issues, in particular: i) the need for pension literacy (Fornero, 2015) and ii) the importance of financial education to reducing gender gaps in financial performance and wealth management, both before and after retirement (Fornero, 2021).

Further research has provided empirical evidence on a positive correlation between financial literacy levels and important macroeconomic variables, such as national savings and wealth accumulation (Jappelli and Padula, 2013), human capital (Jappelli, 2010), income inequality (Lo Prete, 2013 and 2018), and financial inclusion (Grohmann et al., 2018). Having established that financial literacy is crucial for personal decisions and macroeconomic outcomes, the second part of this article analyses a new and growing literature exploring the link between financial literacy and public decisions, in turn influencing individual wellbeing. The authors of this article have opened this new path, exploring the link between basic financial

[1] This is not to say that higher expenditures are always equivalent to greater wellbeing; it could well be the opposite (Hessami, 2010). This is simply to argue that better informed and more knowledgeable citizens will be better equipped to judge economic policies and possibly be more informed voters.

knowledge and attitudes towards economic reforms (Fornero and Lo Prete, 2019) and citizens' participation in elections (Lo Prete, 2021).[2]

2. Financial education for better personal finance

The positive effects of financial literacy on behaviour have been empirically demonstrated in various critical points of one's life: in youth, when educational choices are predominant and have long-lasting cumulative consequences; in adulthood, when work, saving, portfolio and family formation decisions have to be made, some fairly often, others less frequently (e.g. buying a house); and in retirement, with decisions concerning when to exit the labour force, how to manage retirement wealth, and the growing need for health care.

a. A tool for navigating the life cycle[3]

The first important decisions in life come at a young age and concern education. Notions such as *human capital accumulation*, *expected rates of return, and opportunity costs*, or *interest on student loans* – topics sometimes considered too dry to attract children and youth – all provide a good guide of the type of knowledge that is needed to make decisions early in the life-cycle. Unfortunately, today's youth exhibits quite a low level of financial knowledge, a matter of growing concern among governments and institutions (Lusardi and Oggero, 2017). Measurements have been provided since 2012 by the Organisation for Economic Co-operation and Development (OECD), with the addition of a module on financial literacy to the Programme for International Student Assessment (PISA), assessing the knowledge of 15-year-

[2] The direct experience in policy making of one of the authors, Elsa Fornero, who served as Minister of Labor, Social Policies and Equal Opportunities in the Italian Government in 2011-13 and implemented a pension and a labor market reform, has further intensified her research interest in financial literacy as one of the foundations for citizens' support to economic reforms (see Fornero, 2013 and 2020).

[3] This section draws from Fornero, Lo Prete, and Oggero (2021).

old students (see also Section 3). The latest PISA survey (OECD, 2020, reporting data on 2018) showed that a sizeable fraction of students in the 20 countries that participated in the financial literacy assessment display inadequate financial literacy (below level 2), with more top-performing boys than top-performing girls. The fact that there are no major gender differences in the mean - apart from specific countries - is encouraging as educational gaps at an early age are likely to persist throughout life, contributing to women's economic vulnerability (see Section 2c). Another problem in which financial illiteracy is likely to play a relevant role is the growing number of youth who are neither employed nor engaged in education or training programs (NEET).[4] Among those 16–-29 years old, the European average of NEETs is 13.1 per cent, ranging from a minimum of 5.5 per cent in the Netherlands to 23.1 per cent in Italy. This represents a huge social problem, which COVID-19 pandemic has likely exacerbated (Aina et al., 2021). Last but not least, lack of basic financial knowledge is likely to be responsible for the widespread mistrust among youth regarding their retirement (Baldini et al., 2019; Kovacs and Vaskövi, 2020).

How to provide financial education to children and youth has been a subject of much research, although the results are still debated. Both informal devices – such as games,[5] pocket money (Sansone et al., 2019), opening bank accounts for children (OECD, 2014), and children's involvement in family discussions about budgeting – and formal education, in

[4] We are unaware of any study specifically devoted to the correlation between financial literacy and the NEET population, but the likelihood of a strong positive correlation is very plausible.

[5] Free online games and applications to teach children how to handle money are provided, for example, by the Washington State Department of Financial Institutions. Booklets are also freely available to learn about life cycle financial education, as in the case of the ANGLE project, financed by the Erasmus+ Programme of the European Union, which aims to promote financial literacy among university students (see www.carloalberto.org/angle-cerp-carloalberto).

schools, have been implemented and studied. Since the latter is more structured and can (at least in principle) guarantee quality and equity of educational standards, it should be preferred, in our opinion, with other means playing a supplementary role. Starting early (i.e. in primary school) and proceeding gradually, as in any other subject, is also recommended, because financial literacy is something to be acquired early in life, like reading and writing (Lusardi, 2015).

For most people, adult life starts with entry into the labour market, finding a job, earning an income, and becoming economically independent. Here, the main decisions of how to distribute income between consumption and saving, and how to invest the amount that has not been consumed have become more complex than in the past. At this stage in the life cycle, individuals need to have at least some familiarity with the basic notions of risk, wealth (il)liquidity, mortgages, and, again, interest rates, gross and net of taxes and fees. In addition, workers should become familiar with economic concepts such as payroll taxes/contributions to (one or more) pension schemes and the very meaning of participation in such schemes, that is, building up pension wealth to be consumed in retirement.

Surveys have shown that individuals' grasp of these notions are frequently either absent or inadequate, even in countries whose population performs relatively well in basic financial knowledge. For example, in the Netherlands, where respondents generally have some familiarity with basic concepts, many have no understanding of risk diversification, the difference between bonds and stocks, or the relationship between bond prices and interest rates; conversely, respondents with a higher level of financial literacy are more likely to invest in the stock market (van Rooij et al., 2011). Analogously, less literate Swedish savers under diversify their portfolios, do not participate in risky asset markets, and do not refinance their mortgages when it would be convenient to do so (Calvet et al., 2007).

Other studies have found a link between financial literacy and debt and debt management, such as using credit cards in expensive ways or taking up large amounts of debt or poor credit management, such as borrowing at high rates or using high-cost debt instruments, such as payday loans, pawn shops, rent-to-own products, and auto title loans (Lusardi and Tufano, 2015; Lusardi et al., 2020a). Financial literacy is also a determinant of the demand for life insurance (Lin et al., 2017), mainly purchased on men's lives, reflecting their role as the (main) breadwinner in the household (Hubener et al., 2016). Further, in the face of rather complex mortgage products, financial literacy can help people understand that low initial mortgage payments imply larger future costs (Cocco, 2013). Gathergood and Weber (2017) found that both impatience and poor financial literacy increase the probability of choosing mortgages with lower upfront costs but larger ensuing payments. Lusardi and Mitchell (2014) provides an early overview of the effects of financial literacy on many financial choices.

Finally, in the last phase of their life cycle, individuals retire from work and rely on their pension wealth and possibly other assets. This is the decumulation phase of the life-cycle, with limited margins of adjustment, given that going back to work, even part-time, is rarely an option and individuals must rely on their pension and accumulated assets. The ability to develop and implement plans for a financially satisfactory retirement is thus very important. To prevent poverty in old age, in the first half of the Twentieth Century, most countries have progressively introduced and extended social security schemes, and made retirement savings compulsory. This important achievement, however, is not sufficient to eliminate the risk of inadequate resources in retirement, as even public systems have from time to time to be restructured (reformed) to adapt to macro-shocks, population ageing, or to redress an unsustainable design. It is thus important that people be also informed and knowledgeable about the nature of pensions and the workings of the pension system – in other words, that they

master some pension literacy, since their financial wellbeing in old age depends both on their own choices (as savers/investors) and on collective choices made by the state (see Section 3).

b. The case for pension literacy

Pension systems typically have a quite complex structure. For example, most systems are composed of multiple pillars, with both private and public schemes working in different ways and being differently financed. The public component, largely preponderant in Europe, even when it mimics the market – as does the Notional (or Non-financial) Defined Contribution (NDC) scheme (see below) – performs roles that the market does not or cannot perform, specifically take into consideration solidarity and social cohesion.

Whereas in public schemes individual decisions are essentially limited to whether to retire after reaching a specific age and/or some minimum requirements or to continue working to obtain higher pension benefits, private schemes typically have many more degrees of freedom, such as whether to participate and how much to contribute; how to allocate the pension wealth and how to change the investment decisions as retirement approaches; when to retire (within the margins of flexibility allowed by the regulations); and whether and how to annuitize (i.e., with an increasing or stable pension, in real terms; with or without supplementary benefits, such as a survivors' pension).

The prevalence – at least in Europe, after the 'reform season' of the 1990s and 2000s – of Defined Contribution (DC)-type pension formulae in both private and public systems implies greater risks for the individual relative to the (once more common) Defined Benefit

(DB) formulae. While the latter typically embodies guarantees (e.g. in terms of a given *replacement ratio*[6]), the former entails a higher level of individual responsibility.[7]

In the Pay-as-You-Go (Pay-Go) scheme, workers' contributions are used, period by period, to pay for the current pensions in an "intergenerational compact", where the state is supposed to represent the interests of future generations. Adopting a defined contribution formula makes it possible to link pensions to individual workers' contributions.

In funded schemes, contributions are instead invested in the financial markets and, together with returns, determine the capitalized value to be transformed, by choice or by statutory rules into a pension flow at retirement. Moreover, while the Pay-Go is necessarily a collective scheme, funded schemes can be provided on a collective basis (e.g. occupational plans) or as an individual pension account. In any case, while personal responsibility for financial security in retirement has increased, the pension landscape has become more uncertain due to financial crises, repeated recessions, elsa and welfare reforms. Box 1 provides a taxonomy of basic pension concepts.

Box 1. **Pensions and the retirement toolkit**

On a *personal level*, it is important that people be *informed of* and (basically) *understand* the following:

- A pension income (an annuity) protects against longevity risk, i.e., the risk of outliving one's resources..

[6] The replacement ratio (gross or net of taxes) is one of the most important money's worth measures of a pension scheme. It measures the ratio of the first pension to (an average of) the last salary/labour income, providing important information to workers for consumption smoothing at retirement and, at an aggregate level, how effective a pension system is at granting a retirement income to replace the labour income.

[7] One should not forget, however, in the DB landscape, the political risk of unsustainable promises, conducive to the necessity of reforms, a risk that people tend to ignore by appealing to the notion of *acquired rights*.

- The amount of contributions/payroll taxes paid into the pension account each period.
- The accrued capital (either *financial*, in case of a funded scheme, or *notional*, in the case of Pay-Go) at given ages and at retirement, that is, the amount of pension wealth.
- How this wealth is transformed into a pension income (annuity) and whether this transformation reflects (cohort-averaged) expected longevity at retirement.
- Retirement ages (early and normal) and how the pension benefit changes in case of deferral.
- How the pension benefit will evolve in retirement (indexation rules).
- What supplementary benefits – such as survivors' – are included in pensions
- Whether it is possible to withdraw from the accumulated capital before retirement and whether/how paying back is envisaged to avoid benefit depletion.

About the *pension system*, citizens should be informed and have a basic understanding of the following:

- Governments have good reasons to be involved in pension regulations as the market's ability to protect people in old age is limited and relying on just the market risks causing poverty among the older population.
- In a multi-pillar system, the main pillar is typically written into law and managed by the state. Other pension incomes come from occupational pension funds and individual accounts, which are dependent on the market but subject to regulatory bodies.
- This combination of public and private pension schemes diversifies the pension income sources and reduces the risk of inadequate retirement resources.
- The government pillar typically is financed on a Pay-Go basis that sets up an intergenerational contract: the working population pays contributions (payroll taxes), which, are used to pay pensions to the retired population in the form of annuities.
- Unlike private insurance programs, the PAYG system does not rely on financial

reserves, but on the understanding that the contract will be maintained in the future.

- The PAYG system's sustainability is granted by pegging future pensions to a formula based on the entire flow of individual contributions, the age of retirement and the growth rate of labor income.
- Public pensions also promote social solidarity, so that those who are disadvantaged in the labor market do not struggle in retirement. Solidarity can take the form of early retirement without penalization and/or of tax-financed contributions directed to workers in hazardous jobs, unemployed, or providing long-term cares to close relatives.
- The main challenge confronting Pay-Go systems is the need to adapt to major structural demographic and economic shifts. As populations age, fertility rates decrease, and migration flows stall, the intergenerational contract becomes difficult to maintain.
- In good reform, the pension system cannot be separated from the labor market and the economy. Economic growth and inclusive labor markets that make it easier for workers to find a job and for employers to hire are the best prerequisite for adequate pension systems.

All these concepts are not easily conveyed, and being informed about them is complex; information – when unofficially provided – can be partial, opaque, and biased, thus contributing to erroneous attitudes or decisions. Nevertheless, awareness, including having both correct information and basic understanding, is essential to help individuals make better personal plans and decisions and, as citizens, to induce politicians to enhance the transparency, efficiency, and fairness of the public system (Fornero et al., 2019).

When retirement arrives, education and experience – which, also in financial matters, increases with age, somewhat compensating for the decrease in learning capacity (Salthouse, 2005; Lusardi and Mitchell, 2007), – should have done their part in providing the knowledge needed to manage accumulated wealth. U.S. survey data, however, show that older individuals perform only moderately better than their younger counterparts (Lusardi and Mitchell, 2014; Lusardi et al., 2020b), which can explain, for example, why some people arrive close to retirement with very little or no wealth (Lusardi and Mitchell, 2007). Agarwal et al. (2009) documented an inverse U–shaped relation between age and the quality of decision making: for example, compared to middle-aged individuals, older individuals borrow at higher interest rates and pay higher credit card fees. Indeed, financial illiteracy is a predictor of debt at older ages.

Typically, individuals with insufficient financial knowledge arrive unprepared at retirement. Using Health and Retirement Study data, Mastrobuoni (2011) analysed the introduction of the annual Social Security Statement in 1995 in the US and found that, after receiving it, workers were more likely to be able to provide a more accurate benefit estimate, but the additional information did not have significant effects on their retirement behaviour.

It has also been shown that in the US, those who are more financially knowledgeable are more likely to participate in saving plans, to contribute at a higher rate, and to invest more in equity (Clark et al., 2017). Importantly, Lusardi et al. (2017), in a calibrated life cycle model with endogenous financial knowledge accumulation, estimated that 30–40 per cent of wealth inequality at retirement is explained by financial knowledge.

In European countries, the situation is different because a) the public pillar is more important and its transparency has increased over the last decades, also due to better official communications and learning material offered to workers, in the wake of the famous ‘Orange envelope’ provided by the Swedish Pensions Agency, and b) the need for pension reforms has

alerted citizens to the fundamentals of pension economics. Despite this positive evolution, misunderstanding and misconceptions are still present and widespread, particularly in some Mediterranean countries, contributing, for example, to opposition to increases in the retirement age and/or restrictive changes in pension formulae, as well as in the indexation mechanism, even when pension systems exhibit imbalances. On the positive side, it has been shown for Italy, for instance, that more financially literate individuals are more likely to participate in a funded supplementary pension plan, thus integrating their (meanwhile reduced) social security benefits (Fornero and Monticone, 2011). Similarly, in a more recent paper, Debets et al. (2022), using Dutch longitudinal data, analysed the causal links between communication, pension knowledge, and pension decision making and found pension knowledge to have a positive causal effect on pension decision making.

It is thus clear that to avoid an unexpected consumption drop at retirement or to work much longer than planned will increasingly depend – for any given environment – on individuals' ability to understand the workings of the pension system and to plan ahead. This ability can be built through targeted financial education programs, for example financial education programs in the workplace. Together with pubic authorities, employers and trade unions (Bernheim and Garrett, 2003; Clark et al., 2006; Goda et al., 2014), as well as consumer and civic associations, can all help and/or work together by providing specific courses, retirement planning materials, and hypothetical pension projections to encourage saving and participation in supplementary pension plan. But, as we will show in section 2, pension literacy is also very important to sustain a well-designed public pillar.

c. Reducing gender gaps and achieving women's economic independence

Financial literacy is especially important for women's retirement, because they live longer, may have interrupted working careers because of childbearing and an unequal distribution of caring responsibilities in the family, and tend to earn less than men. However, one strong

finding of the empirical literature is that women – of all ages and in almost all countries – are less financially literate than men (Klapper and Lusardi, 2020). This gap persists even after accounting for different psychological gender traits, such as women' documented greater risk aversion (Jianakoplos and Bernasek, 2008) and lower self-confidence, which typically lead women to choose less risky portfolio choices with lower returns. When asked questions meant to measure basic financial literacy concepts, women are less likely than men to answer correctly and more likely to indicate that they do not know the answers (Lusardi and Mitchell, 2014). 'Don't know' responses could reflect genuine ignorance or just reveal a lack of self-confidence. For example, a survey experiment conducted by Bucher-Koenen et al. (2021) estimated that one-third of the gender gap in financial literacy can be explained by women's lower self-confidence. In turn, this contributes to lower levels of participation in the stock markets. Other papers have shown that women's lower financial literacy has an effect on their decision-making (for an overview, see Lusardi and Mitchell, 2014).

Research on the pervasive gender gap in financial knowledge has pointed to several, possibly complementary explanations, many having roots in social habits and stereotypes, such as differences in educational paths and, later, in skills and opportunities. For example, differences between genders can start at the beginning of life, with an emphasis on 'masculine' language, entertainment, and toys for boys, and 'feminine' versions for girls; different incentives towards different school subjects (with more mathematics, sciences, and financial education for boys and more arts and literature for girls); and subtle linguistic biases that tend to create familiarity with – or, conversely, disinterest in – issues such as earning money, saving, managing risk, budgeting, and the like (Boggio et al., 2018).

One way to summarize this state of affairs is to recognize that, even in advanced economies, the social value generally attributed (of course, with important differences) to women's economic/financial independence is still relatively low, compared to that of men. Not

surprisingly, to support women's rights and gender equality, the United Nations (UN) strongly advocates for women's economic *empowerment*.[8] Closing the gender gap requires not only developing an appropriate set of policies – such as prohibiting de facto discriminatory practices, the legal imposition of women's quotas, and incentives aimed at eradicating the still pervasive belief that men should play a predominant role in society – but also granting women more equal education rights and opportunities. These must include a special commitment to financial education to filling the gender gap and pursuing economic independence. Many projects with these objectives have been developed and implemented, and much progress has been achieved in the last decade, starting from a situation in which policy awareness of the importance of the gap was judged by an OECD investigation to be quite low (Hung et al., 2012).[9]

From a life cycle perspective, the benefits of financial education compound over time (as do the costs of illiteracy). Consequently, it is not surprising that the disadvantages/discrimination in educational paths, labour market participation, career progression (the so-called *glass ceiling*), and lower earnings translate into disadvantages in pension accruals and entitlements for women (Lis and Bonthuis, 2019). Subtler disparities are also generated by pension rules concerning eligibility conditions, retirement ages, and the specific formulae for calculating benefits (OECD, 2021; Fornero, 2021). Sometimes these rules

---

[8] According to the UN women: "[..] Women's economic empowerment includes women's ability to participate equally in existing markets; their access to and control over productive resources, access to decent work, control over their own time, lives and bodies; and increased voice, agency and meaningful participation in economic decision-making at all levels from the household to international institutions." (www.unwomen.org).

[9] The OECD has since led the way with its *Gender Initiative*, by promoting studies and offering guidelines, targets, materials, and advice to countries wanting to achieve more gender equity (see https://www.oecd.org/finance/financial-education/financialeducationandwomen.htm).

explicitly and paternalistically favour women, with the aim of providing (partial) ex post compensation for ex ante discrimination, as in the case of lower retirement ages, a 'generosity' not necessarily in their financial interest, as it backfires at the pension level both directly, through lower accrued pension wealth and higher retirement spans, and indirectly, through less efforts in career advancement, both resulting in lower pay and lower benefits. Sometimes the aim is not compensation but an explicit incentive for women to perform family chores and care activities and to substitute for deficient public services.[10] Lack of information/awareness is also responsible for women accepting moonlighting jobs, which do not contribute to their pension, or for economically disadvantaged choices, that have negative consequences on women's retirement security (Angelici et al., 2022).

Although the general education female gap has disappeared in many countries (or has even changed into a male gap), financial education still exhibits a gap. Appropriate policy measures, financial education programs, and a good design are needed to level the playing field. Adding to the current situation are the consequences of the COVID-19 crisis, with the related occupational, income, and pension costs, especially for women. Much work still needs to be done to move forward.

3. Financial education for informed public decisions

The behaviour of voters, policymakers, and bureaucrats and the design of electoral systems and rules are the subject of study of both political science and economics. Public choice, at the intersection between the two disciplines, according to the *New Palgrave Dictionary of*

[10] This was the motivation for the favourable access conditions to retirement in the Italian public sector in the 1970s and 1980s, which introduced the so-called 'baby retirees', where women working in the public sector who had children could retire with just 14 years and six months of seniority, instead of the 20 years required for men, already an exception – as if caring were natural for women and somewhat inappropriate for men and as if opportunity cost considerations were unimportant.

Economics, 'uses economic tools to deal with traditional problems of political science. Its findings revolve around the effects of voter ignorance, agenda control and the incentives facing bureaucrats in sacrificing the public interest to special interests' (Tullock, 2008).

The effectiveness of individual and collective decisions depends on both electoral participation and how informed personal and social choices are. More educated people are more likely to vote (Persson, 2015) and support democratic regimes (Glaser et al., 2007). This section of the paper discusses the link between financial education and better public decisions. As it is important to accumulate civic skills at school, to develop an understanding of society and personal rights and to act responsibly in the political sphere, some knowledge of economics and finance helps develop at least a basic understanding of the reasons behind public intervention and of the pros and cons of policy proposals and agendas. Economics teaches that markets are powerful instruments for allocating resources – natural resources, capital (real and financial), and labour – and distributing income and wealth. It also teaches that governments can intervene when markets fail to provide an efficient allocation[11] or when society wants to avoid an excessively unequal distribution of income, incentivize good practices for both individuals and firms, and pursue social justice.

a. Influence on policymaking and voting behaviour

To our knowledge, the first work to argue that financial literacy could help people better comprehend public policies is the study of Fornero and Lo Prete (2019) on the electoral cost of enacting a major pension reform.

[11] This is the case when some agents have more information or market power than others and when there are public (or merit) goods to be provided (e.g. streets and lighthouses) or externalities to manage (e.g. air and soil pollution or positive spillovers from culture, arts, and education).

Reforms that require sacrifices for the population are difficult to implement, because policymakers know that the burden they impose on citizens makes the government unpopular and reduces the chances of re-election. The authors test whether financially literate citizens are less likely to punish governments that implement entitlement-reducing policies, such as an increase in retirement age or the adoption of a less generous pension formula. As shown in Section 2b, pension reforms intended to reinforce the system's sustainability are not easy to understand, particularly when propaganda from interest groups crowds out more unbiased information.

Fornero and Lo Prete (2019) consider the electoral outcomes of 118 legislative elections held between 1990 and 2010 in 21 advanced countries. The results indicate that the electoral cost of reforms, defined as a lower probability of the head of the government being re-elected in the aftermath of the enactment of a pension reform, is lower in countries whose population has a higher average level of financial literacy. Table 1 reports estimates from the baseline specification: with macroeconomic, demographic, and political conditions being equal, financial literacy (FL) affects the probability of re-election, which is 51 percentage points lower in the country with the lowest level of financial literacy in the sample, 15 percentage points higher for an average level of financial literacy in the sample, and 84 percentage points higher in the country with the highest level of financial literacy in the sample. These numbers, from linear probability models, show the sizeable effect of financial education in reducing the unpopularity of extensive pension reforms.

Table 1. Reforms, financial literacy, and re-election

Dependent variable:	Re-election of the head of the government						
Estimator:	OLS	OLS	OLS	OLS	LSDV	LSDV	PROBIT
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pension reform	0.111	-1.266***	-1.173***	-1.279**	-1.181**	-1.404**	-1.561***
	(0.108)	(0.331)	(0.421)	(0.490)	(0.446)	(0.628)	(0.5133)
Pension reform*FL		0.265***	0.252***	0.290***	0.258***	0.326***	0.313***
		(0.067)	(0.080)	(0.089)	(0.078)	(0.101)	(0.099)
FL		0.009	-0.008	-0.062	-0.063	-0.100	-0.002
		(0.040)	(0.049)	(0.048)	(0.116)	(0.121)	(0.039)
Country effects					X	X	
Time effects				X		X	
Observations	118	118	107	107	107	107	107

Notes: Robust standard errors are in parentheses. All the specifications include control variables for macroeconomic, demographic, and political conditions, and a constant, which is not reported. Ordinary least squares (OLS) estimates are given in columns (1) to (4), least-squares dummy variable (LSDV) estimates in columns (5) and (6), and probit average marginal effects in column (7). *, **, and *** denote significance at the 10, 5, and 1 per cent levels, respectively.

Source: Fornero and Lo Prete (2019, summary of Table 1, (page 14).

The implications of these findings go beyond structural pension reforms, which are an example of policies necessary to redress the intergenerational imbalance of pension promises and to restore the sustainability of the pension debt implicit in the pay-go system (see Section 2b). Public policies can be the expression of specific interest groups or political stances, and parties can act strategically and propose candidates that are appealing to the masses but are incompetent, leading to worse policy outcomes after elections with higher participation (Lo Prete and Revelli, 2017, 2021). Or they can use fiscal policy to win elections, taking advantage, for example, of voters' failure to estimate the (net) cost of a tax reduction (in terms of higher debt and/or the lower provision of public goods and services), the so-called *fiscal illusion*.

Financial education provides citizens with a set of tools to independently[12] process information about the pros and cons of policy measures and reform proposals. Indeed, the scope for manipulation is smaller when voters have more *cognitive skills*, as measured by financial literacy, to process information about fiscal policy proposals (Murtinu et al., 2022).

A related determinant of the effectiveness of individual and collective decisions, along with how informed personal and social choices are, is, of course, electoral participation, often viewed as a desirable feature of democracies. Low turnout, which often occurs among the less educated and socioeconomically more fragile groups, can lead to the misrepresentation of preferences, if there are systematic differences across segments of the electorate (Lijphart, 2001).

Education itself is also a determinant of citizens' willingness to vote. Studies have shown that more educated people are more likely to vote (Persson, 2015) and to support democratic regimes in which larger numbers of citizens can be an active part of decision making (Glaser et al., 2007). However, an empirical paradox in political science (Tenn, 2007) – and a subject not directly explored in economics[13] – is that voter turnout, that is, the percentage of eligible voters who actually vote, is not higher in countries where the average level of general education is higher. As suggested by Delli Carpini (1997), the reasons for this evidence could be a decreased sense of belonging to a community that shares common values,

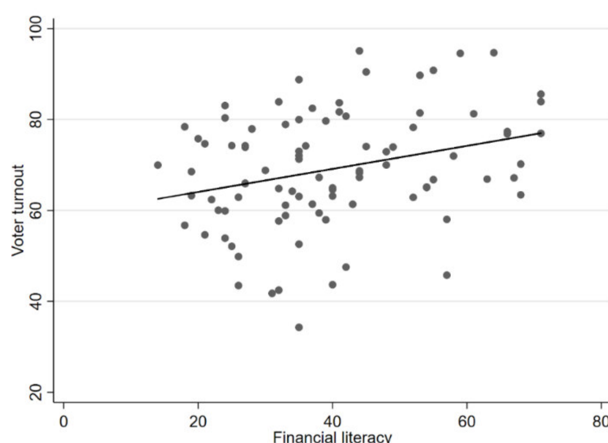
[12] Differently from providing reform-specific information, through the media and/or materials – which, in experimental frameworks, can increase support for pension reforms (Boeri and Tabellini, 2012; Fontoura Gouveia, 2017), - citizens mastering economic and financial concepts understand policy better.

[13] Works on the determinants of voter turnout do not focus on the role of education and include, at best, and with mixed results, school education in the set of independent variables (Mueller and Stratmann, 2003; Fumagalli and Narciso, 2012).

the decreasing quality of education content, or the increasing complexity of politics, as shown earlier.

Recent and ongoing research has explored whether different levels and kinds of education are related to people's participation in parliamentary elections across countries (Lo Prete, 2021). Figure 1 illustrates the simple relation between average levels of financial literacy and voter turnout at national elections. Over the period 1990–2014, the average level of voter turnout (on the vertical axis), is positively associated with the percentage of financially literate people (on the horizontal axis).

Figure 1. Financial literacy and voter turnout



Source: Lo Prete (2021, Figure 2).

Empirical models controlling for a large set of determinants of voter turnout indicate that financial literacy continues to have a positive and causal impact on electoral participation. The results from Lo Prete (2021), which also consider the association between school education at different grades and electoral participation, show that there is arguably more than civic skills and responsibility – taught at school – that matters to political engagement, such as the skills, measured by indicators of financial literacy, needed to gauge the basic content of economic policies.

b. Financial education and the macroeconomy

Mastering the basic concepts of economics and finance has become, as the previously reviewed studies suggest, a building block for effective participation not only in financial markets, as individuals, but also as knowledgeable citizens engaged in more prosperous and more inclusive societies. The progressivity of the tax system, the financing of the welfare state, and the use of natural resources can modify the distribution of resources and imply different pros and cons. Even the balance between markets and government intervention is the outcome of a collective decision process, and it is important to rely on financial knowledge to realize that the trade-off between more or less private markets' freedom depends not only on efficiency considerations, but also on society's preferences towards equity and distribution.

The field is open to new research, both theoretical[14] and empirical, testing the link between citizenship, financial education, and policy outcomes at the macroeconomic level. Some ground work has already been done, from which we can build. The OECD was one of the first international organizations to recognize the importance of financial education and developed policies and programs in the early 2000s. Financial literacy has been included in the OECD PISA assessment of 15-year-old students since 2012. As mentioned in Section 2, student performance in financial literacy was assessed for a subsample of 18 countries and economies participating in the survey in 2012, 15 in 2015, and 20 in 2018 (OECD, 2020). The importance of financial literacy has become universal and there are surveys that cover all countries in the world. For example, the Standard & Poor's Ratings Services Global Financial Literacy Survey provides information on financial literacy in 2014 across a sample of more than 140 countries. Specifically, it reports percentage of people who are financially literate in

---

[14] Bucci et al. (2023) set up a theoretical model to study if the accumulation of both general knowledge and financial literacy affects growth.

a country, providing information on the percentage of correct answers in each domain of financial literacy (numeracy, interest compounding, inflation, risk diversification).[15] The International Institute for Management Development (IMD) *World Competitiveness Yearbook* has collected indicators of *economic literacy* and *education in finance* based on interviews with senior representatives of national business communities. These data were the first aggregate indicators available for panel analyses. Covering up to 55 countries, economic literacy was measured since 1995 and education in finance since 1998. The IMD World Competitiveness Center stopped collecting data on financial education in 2008, limiting the use of the indicators thereafter.[16] That is unfortunate. Macroeconomic analyses would significantly benefit from having internationally comparable financial education indicators over large country samples and a relatively long (and updated) period of time.

Financial literacy has long been adopted as an important social goal by international institutions, such as the OECD, the G20, the World Bank and, recently, the United Nations in its 2022 Transforming Education Summit. Governments all over the world have moved in the same direction: they have set up national strategies and road maps aiming at increasing the financial knowledge and financial well-being of their citizens, focusing upon the more fragile and less fortunate segments of society.

[15] Examples of works using the Standard & Poor's indicators are those of Grohmann et al. (2018) on financial inclusion, Lo Prete (2021) on the determinant of electoral participation in national elections, Davoli and Rodrigúez-Planas (2021) on global economic and social preferences, and Lo Prete (2022) on digital and financial education.

[16] The IMD indicators are used, for example, by Jappelli (2010) for human capital and social security, Lo Prete (2013 and 2018) for income inequality and financial development, and Murtinu et al. (2022) for fiscal policy preferences.

The importance of financial literacy can also be linked to the macroeconomy, and to financial development and inclusion. As individual exposure to financial risks has increased in past decades – due to growing personal financial responsibilities, greater sophistication of financial/insurance markets, the spread of digital technologies (Fin Tech and Big Tech), financial market deregulation, the retrenching of public welfare programs – the costs of poor financial behaviour can be substantial. More accessible financial markets, in principle, make capitalism potentially more inclusive, but there are also risks involved because of the growing complexity and intricacy of financial products and sometimes aggressive marketing (Jonker and Kosse, 2020).

Financial education also helps to address the digital transition. The European Union has already acknowledged that education, in a general standard definition, is an important instrument to facilitate the creation of sustainable communities – that is, societies able to efficiently produce, allocate, and use their resources, targeting general prosperity based on environmental protection and social cohesion – and the digitalization of private and public products and services. Financial education should be explicitly included in these strategic goals, given the potential dangers for unsophisticated individuals who use digital payments. Indeed, in regression analyses accounting for individuals' level of financial literacy, digital literacy was found to increase access to digital instruments, but was not associated with better personal finance (Lo Prete, 2022).[17]

Given that financial literacy can inform public decisions and spur political participation, more research should explore the association of financial literacy and citizens'

[17] Microeconomic data on Italian firms has also shown that financial education is associated with positive attitudes towards the digital and sustainability transition advocated for small and medium enterprises by the European Commission in 2020 (D'Ignazio et al., 2023).

engagement in politics and decision making. Moreover, given the link between financial education and better citizenship – which would be interesting to explore with microeconomic data as well – there is greater scope for financial education to be introduced as a mandatory subject in school – as, for example, Portugal did in 2018 – and in specific learning programs for adults.

4. Conclusion

General awareness of the basic notions of finance and economics constitutes an essential element of general literacy in contemporary life. It improves both personal and collective decisions, with benefits in terms of financial wellbeing and inclusion, higher and more informed political participation, more effective economic policies, lower inequality, and a stronger macroeconomy. The research on the effects of financial literacy and financial education on individual decision-making, is now rich and empirically quite strong. The extension to both macroeconomics and the political arena is more recent and still very much a work in progress. In our opinion, it is a very promising field of research. It will provide further support for financial education programs, both in school, for all students, and for adults as well, with targeted interventions for the most disadvantaged segments of our societies. It is also important to note that financial education should be gender neutral, avoid linguistic biases, and teach essential notions of how the market economy and government work, in addition to basic financial concepts. Governments should introduce it in school curricula (possibly in parallel with civic education) and make sure it is offered to all students, and teachers are trained to teach it. Some countries have shown the way.

References

Agarwal, S., Driscoll, J.C., Gabaix, X., Laibson, D. (2009). The age of reason: Financial decisions over the life-cycle with implications for regulation. Brookings Papers on Economic Activity, 2, 51-117.

Aina, C., Brunetti, I., Mussida, C., Scicchitano, S. (2021). Even more discouraged? The NEET generation at the age of COVID-19. GLO Discussion Paper 863.

Alessie, R. Lusardi, A. and van Rooij, M. (2011) Financial literacy and retirement preparation in the Netherlands. Journal of Pension Economics & Finance, 10(4), 527-545.

Baldini, M., Mazzaferro, C., Onofri, P. (2019). Pension expectations, reforms and macroeconomic downturn. Applied Economics, 51(13), 1396-1410.

Angelici, M., Del Boca, D., Oggero, N., Profeta, P., Rossi, M.C., Villosio, C. (2022). Pension Information and Women's Awareness, Journal of the Economics of Ageing, 23, 100396.

Bernheim, D.B., Garrett, D.M. (2003). The effects of financial education in the workplace: Evidence from a survey of households. Journal of Public Economics, 87(7-8), 1487-1519.

Boeri, T., Tabellini, G. (2012). Does information increase political support for pension reform? Public Choice, 150 (1/2), 327-362.

Boggio, C., Fornero, E., Prast, E., Sandres, J. (2018). Seven ways to knit your portfolio: Is the language of investor communication gender neutral? in Garzone et al. (Eds.), Specialised and Professional Discourse Across Media and Genres, Milano, SSRN Electronic Journal, pp. 137-160.

Bucci, A., Calcagno, R., Marsiglio, S., Neves Sequeira, T. (2023). Financial literacy, human capital and long-run economic growth, G53 Network Working Paper Series 2023-1.

Bucher-Koenen, T., Alessie, R., Lusardi, A., van Rooij, M. (2021). Fearless woman: Financial literacy and stock market participation. ZEW Discussion Papers, 21-015.

Calvet, L., Campbell, J., Sodini, P. (2007). Down or out: Assessing the welfare costs of household investment mistakes. Journal of Political Economy, 115(5), 707-747.

Clark, R.L., D'Ambrosio, M.B., McDermed, A., Sawant, K. (2006). Retirement plans and saving decisions: The role of information and education. Journal of Pension Economics & Finance, 5, 45-67.

Clark, R., Lusardi, A., Mitchell, O.S. (2017). Employee financial literacy and retirement plan behavior: A case study. Economic Inquiry, 55(1), 248-259.

Cocco, J.F. (2013). Evidence on the benefits of alternative mortgage products. Journal of Finance, 68(4), 1663-1690.

Davoli, M., Rodrigúez-Planas, N. (2021). Preferences, financial literacy, and economic development. IZA Discussion Paper No. 14759.

Debets, S., Prast, H., Rossi, M., van Soest, A. (2022). Pension communication, knowledge, and behaviour. Journal of Pension Economics & Finance, 21(1), 99-118.

Delli Carpini, M.X. (1997). Book review: Education and democratic citizenship in America. American Political Science Review, 91, 971-2.

D'Ignazio, A., Marconi, D., Stacchini, M. (2023). Young micro-entrepreneurs towards the twin sustainable and digital transitions. Does financial literacy play a role? Mimeo.

Fontoura Gouveia, A. (2017). Political support for reforms of the pension system: Two experiments. Journal of Pension Economics & Finance, 16(3), 371-394.

Fornero, E. (2021). Towards Improved Retirement Savings Outcomes for Women By OECD, Paris, OECD. 2021. Journal of Pension Economics & Finance, 1-3.

Fornero, E. (2020). La réforme italienne des retraites. Ombres et lumières d'un parcours d'obstacles, Revue de l'OFCE, 170(6).

Fornero, E. (2015). "Reform, Inform, Educate": A New Paradigm for Pension Systems' Sustainability. Lessons from the 2011 "Rescue Italy" Pension Reform. In Marin, B. (Ed.), The Future of Welfare in a Global Europe, Routledge, 1-28.

Fornero, E. (2013). Reforming labor markets: reflections of an economist who (unexpectedly) became the Italian Minister of Labor. *IZA J Labor Stud* **2**, 20 . https://doi.org/10.1186/2193-9012-2-20

Fornero, E., Lo Prete, A. (2019). Voting in the aftermath of a pension reform: The role of financial literacy. Journal of Pension Economics & Finance, 18(1), 1-30.

Fornero, E., Lo Prete, A., Oggero, N. (2021). Now more than ever: why financial literacy is a key element of post-COVID-19 recovery. In Cude, B. J., Nicolini, G. (Eds.), The Routledge handbook of financial literacy. Routledge, London, pp. 137-152.

Fornero, E., Monticone, C. (2011). Financial literacy and pension plan participation in Italy. Journal of Pension Economics & Finance, 10(4), 547-564.

Fornero, E., Oggero, N., Puglisi, R. (2019). Information and financial literacy for socially sustainable NDC pension schemes. Social Protection and Jobs Discussion Paper No. 1924. World Bank.

Fumagalli, E., Narciso, G. (2012). Political institutions, voter turnout, and policy outcomes. European Journal of Political Economy, 28, 162-173.

Gathergood, J., Weber, J. (2017). Financial literacy, present bias and alternative mortgage products. Journal of Banking and Finance, 78, 58-83.

Glaser, E.L., Ponzetto, G.A. M., Shleifer, A. (2007). Why does democracy need education? Journal of Economic Growth, 12, 77-99.

Goda, G.S., Manchester, C.F., Sojourner, A.J. (2014). What will my account really be worth? Experimental evidence on how retirement income projections affect saving. Journal of Public Economics, 119, 80-92.

Grohmann, A., Klühs, T., Menkhoff, L. (2018). Does financial literacy improve financial inclusion? Cross country evidence. World Development, 111, 84-96.

Hessami, Z. (2010). The size and composition of government spending in Europe and its impact on well-Being. Kyklos, 63(3), 346-38.

Hubener, A., Maurer, R., Mitchell, O.S. (2016). How family status and social security claiming options shape optimal life cycle portfolios. Review of Financial Studies, 29(4), 937-978.

Hung, A., Yoong, J., Brown, E. (2012). Empowering women through financial awareness and education. OECD Working Papers on Finance, Insurance and Private Pensions, No. 14.

Jappelli, T. (2010). Economic literacy: An international comparison. The Economic Journal, 120(548), 429-451.

Jappelli, T., Padula, M. (2013). Investment in financial literacy and saving decisions. Journal of Banking & Finance, 37(8), 2779-92.

Jianakoplos, N., Bernasek, A. (2008). Family Financial Risk Taking When the Wife Earns More. Journal of Family and Economic Issues, 29(2), 289-306.

Jonker, L., Kosse. A. (2020). The interplay of financial education, financial literacy, financial inclusion and financial stability: Any lessons for the current Big Tech era? DNB Working Paper 692.

Klapper, L., Lusardi, A., P. (2020). Financial Literacy and Financial Resilience: Evidence from Around the World", Financial Management, 49(3), 589-614.

Kovacs, E., Vaskövi, Á. (2020). Pension pessimism in the young generation: Basics or instincts to blame? Business Systems Research, 11(2), 117-131.

Lijphart, A. (2001). Democracy in the 21st century: can we be optimistic? European Review, 9, 169-184.

Lin, C., Hsiao, Y., Yeh, C. (2017). Financial literacy, financial advisors, and information sources on demand for life insurance. Pacific-Basin Finance Journal, 43(C), 218-237.

Lis, M., Bonthuis, B. (2019). Drivers of the gender gap in pensions: Evidence from EU-SILC and the OECD pension model. Social Protection and Jobs Discussion Paper No. 1917. World Bank.

Lo Prete, A. (2013). Economic literacy, inequality, and financial development. Economics Letters, 118(1), 74-76.

Lo Prete, A. (2018). Inequality and the finance you know: Does economic literacy matter? Economia Politica: Journal of Analytical and Institutional Economics, 35(1), 183-205.

Lo Prete, A. (2021). Financial literacy, education, and voter turnout. SSRN 3802378.

Lo Prete, A. (2022). Digital and financial literacy as determinants of digital payments and personal finance. Economics Letters, 213, 110378.

Lo Prete, A., Revelli, F. (2017). Costly voting, turnout, and candidate valence. Economics Letters, 158, 10-13.

Lo Prete, A., Revelli, F. (2021). Voter turnout and city performance: Evidence from Italian municipalities. Journal of Law, Economics, & Organizations, 7(1), 168-197.

Lusardi, A. (2015), Financial Literacy Skills for the 21th Century: Evidence from PISA,” Colston Warne Lecture, Journal of Consumer Affairs*,* 49(3), 639-659.

Lusardi, A., Michaud, P., Mitchell, O.S. (2017). Optimal financial knowledge and wealth inequality. Journal of Political Economy, 125(2), 431-477.

Lusardi, A., Mitchell, O.S. (2007). Baby boomer retirement security: The role of planning, financial literacy, and housing wealth. Journal of Monetary Economics, 54(1), 205-224.

Lusardi, A., Mitchell, O.S. (2008). Planning and financial literacy: How do women fare? American Economic Review, 98(2), 413-417.

Lusardi, A., Mitchell, O.S. (2014). The economic importance of financial literacy: Theory and evidence. Journal of Economic Literature, 52(1), 5-44.

Lusardi, A., Mitchell, O.S., Oggero, N. (2020a). Debt and financial vulnerability on the verge of retirement. Journal of Money, Credit and Banking, 52(5), 1005-1034.

Lusardi, A., Mitchell, O.S., Oggero, N. (2020b). Debt close to retirement and its implications for retirement well-being. In Mitchell, O.S., Lusardi, A. (Eds.), Remaking retirement: Debt in an aging economy. Oxford University Press, pp. 15-34.

Lusardi, A., Oggero, N. (2017). Millennials and financial literacy: A global perspective. Global Financial Literacy Excellence Center.

Lusardi, A., Tufano, P. (2015). Debt literacy, financial experiences, and overindebtedness. Journal of Pension Economics & Finance, 14(4), 332-368.

Marshall, A. (1890). Principles of Economics.

Mastrobuoni, G. (2011). The role of information for retirement behavior: Evidence based on the stepwise introduction of the Social Security Statement. Journal of Public Economics, 95(7-8), 913-925.

Mueller, D., Stratmann, T. (2003). The economic effects of democratic participation. Journal of Public Economics, 87, 2129-2155.

Murtinu, S., Piccirilli, G., Sacchi, A. (2022). Rational inattention and politics: how parties use fiscal policies to manipulate voters. Public Choice, 190, 365-386.

OECD (2014). PISA 2012 results: Students and money: Financial literacy skills for the 21st Century (Volume VI). OECD Publishing: Paris.

OECD (2020). OECD/INFE 2020 International Survey of Adult Financial Literacy. OECD Publishing: Paris.

OECD (2021). Towards Improved Retirement Savings Outcomes for Women. OECD Publishing: Paris.

Persson, M. (2015). Education and political participation. British Journal of Political Science, 45(3), 689-703.

Salthouse, T. (2005). Effects of aging on reasoning. In Holyoak, K.J., Morrison, R.G. (Eds.), Cambridge handbook of thinking and reasoning. Cambridge University Press, pp. 589-606.

Sansone, D., Rossi, M., Fornero, E. (2019). Four bright coins shining at me: Financial education in childhood, financial confidence in adulthood. Journal of Consumer Affairs, 53(2), 630-651.

Tenn, S. (2007). The effect of education on voter turnout. Political Analysis, 15(4), 446-464.

Tullock, G. (2008). Public choice. In: The New Palgrave dictionary of economics. Palgrave Macmillan, London.