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Executive summary

Growing financialization and complexity demands financial literacy to be an integral part of the research agenda and policy design globally. It applies particularly to developed countries, since research findings suggest that financial literacy becomes more important with higher levels of economic development.

Financial literacy is financial education, such as basic economics, statistics and numeracy skills combined with the ability to employ these skills in making financial decisions. Research has shown that as people become more financially literate, they make better saving and borrowing decisions, are more likely to plan for retirement and hold more diverse assets in their balance sheet. As more and more households are asked to make their own decisions about such issues, financial illiteracy can become a serious threat to their life-time welfare.

European Union contains in itself world’s best performers (Sweden, Denmark) as well as those that score below global average (Romania, Portugal) in financial literacy rankings. The findings for the EU echo those that are also applicable to other developed economies, namely that low-income individuals, women, young people and less educated people tend to consistently underperform in literacy tests.

Financial literacy matters for the EU for three reasons: 1) in the face of rapidly ageing population, the pressure on the pension system could be mitigated through shifting towards more occupational and personal insurance systems. This shifts more and more responsibilities to the individual who can greatly enhance their decision-making with higher levels of financial literacy. 2) mortgage-debt makes up an overwhelming share of total debt of euro-area households. Understanding the implications of indebtedness and how financial literacy can help is especially important for young households, first-time homeowners and those at the lower end of the income distribution. 3) financial literacy is negatively associated with the main elements of inclusive growth in the EU, namely poverty, inequality, social exclusion and social immobility. Financial literacy can therefore help access the benefits of economic growth and contribute to the inclusive growth agenda in the EU.

In light of these findings, the policy recommendations entail starting financial literacy programs from the young age; promoting programs that are tailored to the specific needs of communities, especially young people, women and low-income groups; providing targeted financial education for people on the verge of major financial decisions, such as the first mortgage, student loan, retirement investment. However, at the same time it is important to resist information overload, support more research into financial literacy, especially behavioural aspects of financial decision-making and increase private sector involvement since they are at the forefront of financial education and service provision.

1 Financial literacy around the world

A sample United States survey question on financial literacy asks "*Suppose you had $100 in a savings account and the interest rate was 2 percent per year. After five years, how much do you think you would have in the account if you left the money to grow: more than $102, exactly $102, less than $102?*"

Seven in 10 US adults answer this correctly with large variations depending on their socio-economic backgrounds. People above the age of 50 score 5 percent higher. There are also gender disparities: 8 in 10 men answer the question correctly compared to 6 in 10 women[1]. Education, although not a perfect proxy, is a good determinant of the probability of a correct response – people with college education score almost 8 points above average.

In a Standard & Poor's global survey of financial literacy, 150,000 adults in 140 countries are asked four standard questions on compound interest (similar to the question above), inflation, risk diversification and numeracy (simple interest)[2]. Those that answered at least three of these four questions correctly are classified as financially literate (Table 1). Globally, Standard & Poor's has found only one in three adults to be financially literate.

The EU, US and non-EU advanced countries score on average higher than the rest of the world for financial literacy. At the same time, each region has champions and laggards. Almost every second person is financially literate in Uruguay, Botswana, Turkmenistan and Bhutan, but the financial literacy rate is below 20 percent in Haiti, Somalia, Tajikistan and Nepal.

Table 1: Financial literacy around the world

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Source: Bruegel based on Standard & Poor's Global FinLit Survey. Note: Unweighted averages are shown for country groups.

The relationship between economic development, proxied by per capita GDP, and financial literacy is stronger for developed economies than developing economies. Financial literacy, as distinct from numerical literacy is therefore, a 'rich-country skill'. However, while there is a relatively strong association between GDP per capita and financial literacy scores in developed economies, among the bottom 50 percent of countries in the financial literacy ranking there is a less clear relationship with level of development (Figure 1, Panel A). Financial literacy becomes increasingly important at higher levels of development. This is in contrast to general education, which is relevant (ie has a positive association with GDP per capita) at all stages of economic development (Figure 1, Panel B).

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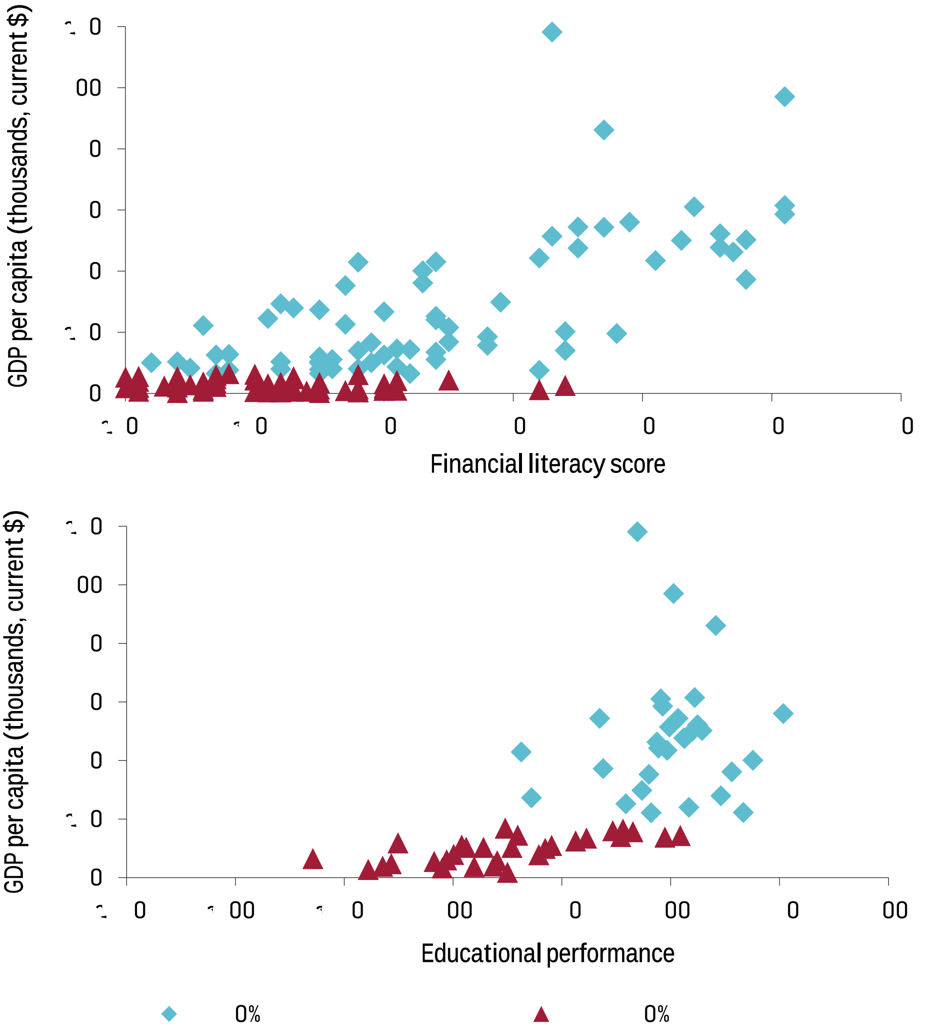
[1] American Life Panel nationally representative survey among US population aged 18+, survey data for 2009. For exact wording of the questions, see http://gflec.org/initiatives/sp-global-finlit-survey/, last accessed 13 February 2018.

Figure 1: Financial literacy and educational performance by per capita GDP by countries



Source: Bruegel based on World Bank World Development Indicators, Standard & Poor's Global FinLit Survey and OECD PISA. Note: We take the average of PISA maths, science and reading performance scores of 15 year old students in 64 countries as a measure of the educational performance of the country. PISA educational performance is for 60 countries, while financial literacy is for 140 countries.

Furthermore, we find that within the developed economies there is a positive association between adults' saving and borrowing behaviour and the country's financial literacy score (Figure 2). In Denmark and Sweden, the countries with the highest financial literacy scores, almost all adults reported they saved at a financial institution in the past 12 months.

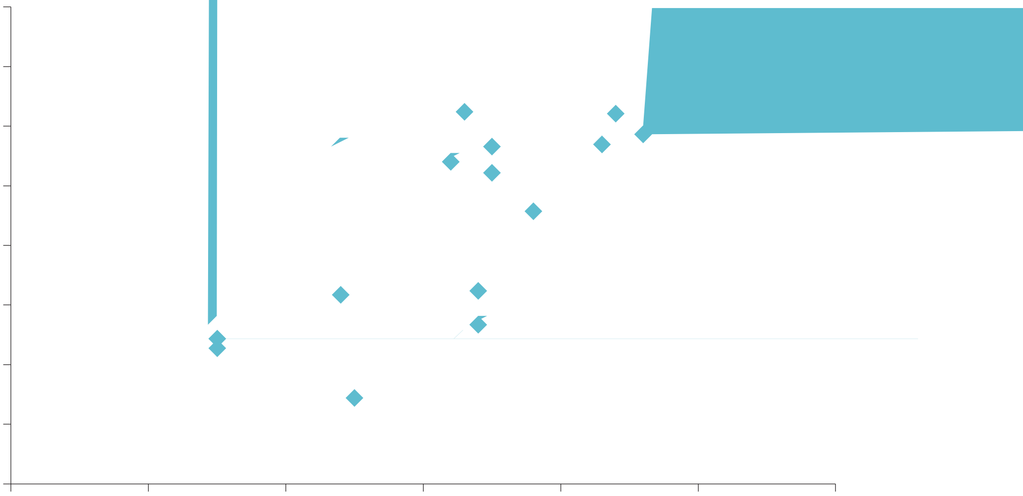
Figure 2: Share of adults saving at a financial institution in the past year (% of total adults) in 2014 and the financial literacy score

Source: Bruegel based on Global Financial Development Database and Standard & Poor's Global FinLit Survey. Note: The adult savings rate is understood as the percentage of respondents aged 15 or over who report saving or setting aside money by using an account at a formal institution such as a bank, credit union, microfinance institution or cooperative in the past 12 months. The adult borrowing rate is understood as the percentage of respondents aged 15 or over who report borrowing any money from a bank, credit union, microfinance institution or another financial institution such as a cooperative in the past 12 months. The interviews were conducted with a national representative sample of 1,000 adults per country, 15 years and older, through the World Gallup Poll survey. For more information on the methodology, see Čihák et al (2012).

It is important to note that the financial literacy score is positively associated with both saving and borrowing behaviours, indicating that in countries with higher literacy scores, adults have a more active relationship with financial institutions (Figure 3). Moreover, it appears that borrowing is more strongly associated with literacy than saving.

The ratio between borrowing and saving has a positive association with the financial literacy score. That is, in more financially literate countries the ratio is closer to one (Figure 4), a fact that can be thought of as financial prudence.

Figure 4: Ratio between borrowing and saving vs. financial literacy score



Source: Bruegel based on Global Financial Development Database and Standard & Poor's Global FinLit Survey.

Household saving behaviour is also positively associated with financial literacy in European economies (Figure 5).

Figure 5: Financial literacy and gross household saving rates

Source: Bruegel based on Eurostat, code-nasa_10_ki and Standard & Poor's Global FinLit Survey. Note: Gross household saving rate is defined as gross saving divided by gross disposable income. Gross saving is part of the gross disposable income which is not spent on consumption.

The association between students' maths performance and students' financial literacy scores is much stronger than the link between the math performances and the financial literacy scores of the general population (Figure 7). In 2012, the OECD ran a special module of PISA comparing financial literacy among 15 year olds against their socio-economic background and general school performance. The highest scorers in financial literacy were 15-year olds in Shanghai-China, followed by the Flemish Community in Belgium; while Italy and Colombia had the lowest scores. Unsurprisingly, socio-economically advantaged students and those from non-immigrant backgrounds tended to score better than their peers.

that financial literacy goes together with more diversified portfolios and better control over expenses (Van Rooij *et al*, 2009, 2011). In the US, Yoong (2011) finds that lack of stock market participation knowledge significantly reduces the likelihood of holding stocks.

3. **Higher awareness in terms of borrowing decisions.** Individuals with lower financial literacy tend to borrow at higher rates (Lusardi and Tufano, 2009; OECD, 2005), particularly young people engaged in credit card borrowing (Lusardi and Tufano, 2009). British young people engage in high credit card borrowing, which damages their borrowing opportunities later in life because of bad credit scores (OECD, 2005).
4. **Better allocation of lifetime resources.** A study of German households that were badly affected during the financial crisis showed that those with low financial literacy were more likely to sell their assets at a loss. This indicates that short-term decisions impact long-term possibilities for wealth accumulation (Bucher-Koenen and Ziegelmeyer, 2011). Some 30-40 percent of retirement wealth inequality is accounted for by variation in financial knowledge, ie financial knowledge enables individuals to better allocate lifetime resources (Lusardi *et al*, 2017).
5. **Increased planning and savings by women and low-income individuals.** Women have lower retirement age goals and retirement income goals. However, it has been shown that after attending financial education seminars provided by their employers, they are more likely than men to increase their retirement ages and increase contributions to their existing plans, start new tax deferred saving accounts and change/diversify their investment allocations (Clark *et al*, 2006)[4]. Lusardi *et al* (2009) found that financial education programmes specifically targeted at low-income individuals and women are effective and also inexpensive, resulting in participants being more likely to take immediate action to save in supplementary saving accounts. The study also highlighted that saving difficulty is particularly high for young female employees and older male employees with lower incomes.

Figure 8: Financial literacy in the European Union, 2014

Source: Bruegel based on Standard & Poor's Global FinLit Survey. Note: Darker shade indicates better performance.

4.1 Financial literacy in the EU

Findings about financial literacy in the EU echo similar findings from the US: that lower-income groups, women and less-educated respondents score lower than the rest of the population. Financial literacy rates across age cohorts form a hump shaped distribution. Individuals below 25 years and above 70 years score lowest and the correct response rate peaks among 55-65 year olds (Lusardi and Mitchell, 2011).

Women tend to score lower than men in all countries and within age groups, and are more likely to answer 'do not know' than men. By contrast, there is no gender gap in financial literacy among schoolchildren, underlining the need for financial education from a young age (OECD, 2012).

Saving, spending and investment decisions are integral parts of our lives, demanding an ever increasing level of knowledge of the risks and opportunities that come with these decisions. If globally one in three adults are not able to answer questions demanding relatively low levels of financial knowledge, let alone carry out simple numeracy calculations, it is alarming to imagine how these individuals respond when faced with complex choices, from signing a mortgage contract to investing in a pension plan. At the same time, the financial world is becoming more and more complex and consumers are increasingly offered a dizzying array of financial products with different levels of risk and reward. In addition to the growing financialisation, the risks related to spending, saving and investment are shifting

We outline three main interrelated arguments why financial literacy matters throughout an individual's life, and what implications financial literacy, or the lack of it, has for inclusiveness and inclusive growth, particularly in the EU.

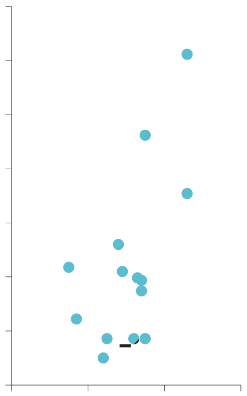
4.1.1 Savings, pensions and shifting risk

Fifty year olds respond that what occupies them the most is future savings and retirement. All people facing retirement worry if they have accumulated enough savings to carry them through retirement.

By 2050, one in three people in the EU will be over 65 and the ratio of working people to those aged 65 and over (the old-age dependency ratio) will shift from four to one currently to two to one. However, public pensions ratios are expected to remain broadly stable in the EU in the same

Figure 10: The share of financial assets in households' total assets by age group vs. the financial literacy score

Figure 11: Share of households with negative net wealth in selected EU countries by age groups vs. countries' financial literacy scores, 2014



Source: European Central Bank's Household Finance and Consumption Survey, wave 2 (2014). Note: Negative net wealth entails liabilities (mortgage and non-mortgage debt) exceeding total household assets (real estate, financial assets, vehicle and other assets).

Offers of low financing in an environment of rising house prices, attracted in particular large numbers of young first-time homeowners and those at the lower end of the income distribution during the crisis. It needs to be mentioned that low financial literacy increases the likelihood of individuals falling victim to appealing but fraudulent offers.

4.1.3 Inclusive growth

There is a rich literature detailing the link between economic growth and its impact on socio-economic outcomes. Growth is considered inclusive when individuals, regardless of their socio-economic background, have an equal opportunity to progress. Poverty, inequality and social mobility are the main components of inclusive growth. Studies show that children from socio-economically disadvantaged backgrounds tend to underperform at school, which hinders their prospects for better education at a later stage and leads to lower employability. Moreover, people with lower education have worse health and live shorter lives (Darvas and Wolff, 2016). In more unequal societies with higher shares of people living in poor households, social mobility also tends to be lower (Corak, 2013).

Investing in financial education throughout individuals' lives, particularly at an early age, increases financial knowledge overall and influences decision-making later in life (Van Rooij *et al*, 2009). This has major implications for inclusiveness, though the impact varies depending on country, socio-economic level and circumstances related to birth.

4.2. Financial literacy and inclusiveness

Why is financial literacy important for inclusive growth? We argue that giving people the education and tools to better navigate the increasingly complex financial world is one of the pre-conditions to achieving inclusive growth. For the poor and disadvantaged, increased financial literacy means improved opportunities to access the benefits of economic growth.

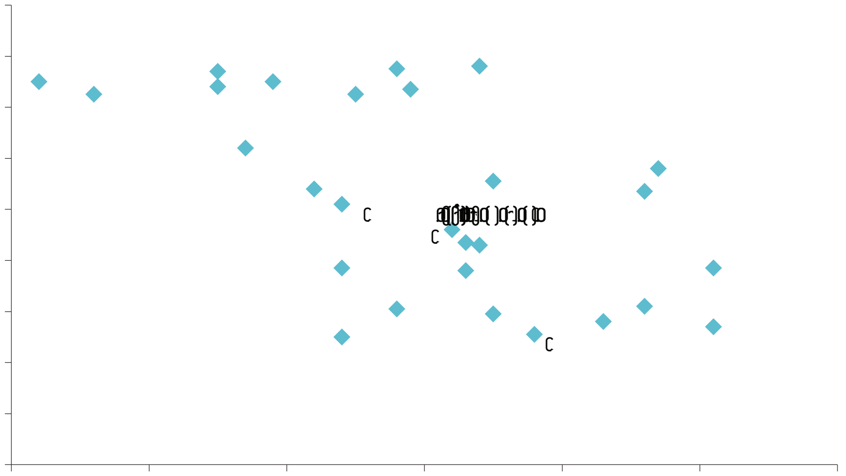
Surveys confirm that less educated and lower-income people tend to score lower on financial literacy than the rest of the population. In addition, adult women score lower than men on average and for all age groups, and are more likely than men to answer 'don't know.' There is a strong age bias – younger respondents do worse than older respondents – and a locale bias, with rural respondents tending to do worse than urban dwellers. In US, there is racial bias, with white and Asian cohorts tending to perform better than blacks and Hispanics. In Europe, school children from migrant backgrounds underperform compared to natives.

In light of these findings, we examine financial literacy in relation to the most important elements of inclusive growth, namely inequality, poverty and social exclusion and social mobility.

4.2.1. Inequality and financial literacy

There is a clear negative relationship between financial literacy scores and inequality in the EU (Figure 12). Countries performing better at financial literacy also tend to have lower inequality.

Figure 12: Financial literacy and inequality



Source: Bruegel based on Standard & Poor's Global FinLit Survey and Eurostat. Note: Gini coefficient of equivalised disposable income, code – ilc_di12.

4.2.2 At risk of poverty rate, social exclusion and financial literacy

Financial literacy scores are also strongly associated with poverty and social exclusion indicators. One of the five Europe 2020 targets is to *"lift at least 20 million people out of poverty by 2020"*. The headline indicator to measure the progress is the rate of people at risk of poverty (AROP) in each country. The findings suggest that countries performing better at financial literacy have lower shares of population at risk of poverty. Actively investing in financial education and literacy programmes might serve as one of the tools to reach the Europe 2020 targets.

In addition to the AROP indicator, we look at another measure of vulnerability and social exclusion: the severe material deprivation rate. We reach a similar conclusion, that the financial literacy score is negatively associated with the severe material deprivation rate (Figure 13).

Figure 13: Financial literacy and vulnerability and social exclusion

Source: Bruegel based on Standard & Poor's Global FinLit Survey and Eurostat. Note: 'At risk of poverty': people with a disposable income below 60 percent of the national median equivalised disposable income. 'Severely materially deprived': people unable to afford at least four of the following: 1. rent, mortgage or utility bills; 2. adequate home heating; 3. a reserve against unexpected expenses; 4. regular meat or proteins; 5. a holiday; 6. a television set; 7. a washing machine; 8. a car; 9. a telephone.

4.2.3. Mobility and financial literacy

There is a visible negative relationship between individuals' social mobility, proxied by the correlation between students' maths test scores and socio-economic backgrounds, and coun-

5 Policy recommendations

Countries have experimented with different policies to improve the levels of financial literacy. A number of general messages emerge from the experience of applying some of these policies, notwithstanding that tailored policies are needed.

1.

2. **Move away from 'one-size fits all' programmes** and tailor programmes to the needs of specific communities. Beck and Neiser (2009) from the San Francisco Fed write that financial education needs to move away from designing programmes for the middle class provided that individuals have reached a stable ground and ready to save. Instead, programmes need to target young people, low-income groups, families and women. Programmes designed for low-income individuals can start by building the skills needed to negotiate better deals on financial contracts, on establishing emergency funds or on ways to better make use of state financial assistance programmes. In the EU, there is a particular need to target and improve the financial literacy of refugees as a crucial step in improving financial inclusion and social integration (Batsaikhan *et al*, 2018). These efforts to measure, understand and improve financial literacy should be made with strong private support from banks and financial institutions in the EU.
3. **Financial education is a life-long learning process.** Provide financial education before individuals engage in costly financial transactions (Lusardi *et al*, 2010). This involves providing financial education to young adults before they start to borrow to finance education, to individuals before they enter into mortgage contracts, to employees before they invest in various types of retirement funds. Programmes, such as provision of financial counselling services to employees nearing retirement, have proved successful in increasing pension savings rates. This implies that financial education needs to be targeted and specific to different financial activities.
4. **Provide tools to better evaluate financial literacy.** It is important to understand the

References

Batsaikhan, Uuriintuya, Zsolt Darvas and Inês Gonçalves Raposo (2018) *People on the move – impact and integration of migrants in the European Union*, Blueprint Series 28, Bruegel.

Becchetti, Leonardo, Stefano Caiazza and Decio Coviello (2011) ‘Financial education and investment attitudes in high schools: Evidence from a randomized experiment,’ *CEIS Research Paper* No. 210, Tor Vergata University.

Beck, Ted, and Brent Neiser (2009) ‘Learning and growing: Lessons learned in financial education,’ *Community Investments* 21(2): 11-14.

Behrman, Jere R., Olivia S. Mitchell, Cindy K. Soo and David Bravo (2012) ‘How financial literacy affects household wealth accumulation,’ *American Economic Review* 102(3): 300-304.

Bruhn, Miriam, Luciana de Souza Leao, Arianna Legovini, Rogelio Marchetti and Bilal Zia (2013) ‘The impact of high school financial education: experimental evidence from Brazil,’ *World Bank Policy Research Working Paper* 6723, Washington DC: World Bank.

Bucher-Koenen, Tabea, and Michael Ziegelmeyer (2011) ‘Who lost the most. Financial literacy, cognitive abilities, and the financial crisis,’ *European Central Bank Working Paper* 1299, Frankfurt a.M: ECB.

Čihák, Martin, Asli Demirgüç-Kunt, Erik Feyen and Ross Levine (2012) ‘Benchmarking financial systems around the world,’ *World Bank Policy Research Working Paper* 6175, Washington DC: World Bank.

Clark, Robert L., Madeleine B. d’Ambrosio, Ann A. McDermed and Kshama Sawant (2006) ‘Retirement plans and saving decisions: the role of information and education,’ *Journal of Pension Economics and Finance* 5(01): 45-67.

Clark, Robert L., Annamaria Lusardi and Olivia S. Mitchell (2015) ‘Employee financial literacy and retirement behavior: A case study,’