

The effects of financial and economic literacy on policy preferences in Italy

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As populist and protectionist sentiments across the world continue to increase, this paper explores the role that financial and economy literacy plays in influencing individual economic policy preferences. The theory suggests that financial and economic literacy affects individual economic policy preferences in a direct way and in an indirect manner, through discount rates. To test my hypotheses, I analyze original survey data collected in Italy. Findings show that financially and economically literate individuals, regardless of their economic condition, are more likely to prefer remaining in the Eurozone, to favor free trade, EU immigration, non-EU immigration, and the Fornero pension reform. Moreover, they also have significantly lower discount rates. The findings are robust to alternative specifications of the literacy measure, but not to education, suggesting that financial and economic literacy has distinctive features that more closely capture an individual's ability to evaluate policies.

INTRODUCTION

As we are witnessing a backlash against globalization, many theories have tried to explain the determinants of nationalist and protectionist policy preferences. Electoral outcomes in the aftermath of the Eurozone crisis across Europe seem to support the contention that there has been a rise in support for nonmainstream, populist parties. Italy represents a case in point. In March 2018 the anti-establishment Five Star Movement became the largest Italian party, while the anti-immigrant League took over Berlusconi's Forza Italia to emerge as the dominant party on the right. Running on a similar populist agenda, centered on promises to reintroduce early retirement, deport migrants, institute a guaranteed minimum income, along with tax cuts, the two

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parties formed a coalition government in May 2018. Most extant theories have focused on testing two competing hypotheses to explain the rise in preferences for populist, often welfare-reducing, policies: one argues that self-interest considerations drive these policy preferences, while the other claims that such attitudes are to be attributed to a cultural backlash against progressive values, such as cosmopolitanism and multiculturalism. The hypothesis tested in this paper is that financial and economic literacy influences economic policy preferences. A recent survey by the Bank of Italy on financial literacy has found that Italy is the least financially literate country in Europe¹. Only one in three Italians know at least three of these four basic financial concepts: inflation, interest compounding, interest rates, and risk diversification. Furthermore, issues such as free trade, immigration, Eurozone membership, and pension reforms have been especially salient in Italy, given its struggle to get back on track after the recent financial and economic crisis.

Based on my theoretical argument, I expect financial and economic literacy to affect the accuracy with which an individual evaluates the short-term and long-term expected costs and benefits of a certain policy. I assume that any individual will choose the policy that she thinks will give her the highest expected utility. Hence, financially and economically literate (from here on FEL) individuals are more likely to be accurate at predicting the effect of a specific economic policy on their economic well-being. Conversely, financially and economically illiterate (from here on FEI) individuals are less likely to be accurate at estimating the effects of a policy on their economic well-being and, as a result, they may be more likely to rely on other factors, such as political ideology or cues from reference groups to make their policy decisions. Furthermore, in the presence of inter-temporal policy trade-offs, I expect FEL individuals to put more weight on the long run, since recent evidence shows that they have lower discount rates².

Following the theory, this paper looks at five economic policy preferences: 1) remaining in or leaving the Eurozone, 2) favoring free trade, 3) favoring EU immigration, 4) favoring non-EU immigration, 5) and favoring the Fornero pension reform in Italy³, using a representative national

¹Di Frischia 2017.

²Meier and Sprenger 2008; Lahav, Rosenboim, and Shavit 2015.

³In December 2011, as public finances were getting close to collapse, a pension reform (the so-called Fornero reform) was passed in Italy. The reform introduced the defined contributions system for everyone, it harmonized eligibility

survey of the Italian population. First, I test whether on average FEL individuals are more likely to prefer economic openness, and second, whether this holds true across winners from globalization (those with high incomes, high education, and non-routine jobs) and losers from globalization (those with low incomes, low education, and routine jobs). Similarly, I test whether FEL pension reforms winners (age groups 18-55 and 67-88) and losers (people close to retirement in age group 56-66), are more likely to favor the Fornero pension reform than their illiterate counterparts. Finally, I also test whether FEL individuals indeed have lower subjective discount rates.

Findings from multinomial logit models indicate that financial and economic literacy does affect economic policy preferences as predicted: FEL individuals, regardless of their economic condition, are more likely to prefer remaining in the Eurozone, to favor free trade, EU immigration, non-EU immigration, and the Fornero pension reform. Furthermore, findings from a multiple linear regression and the Mann-Whitney U test show that indeed FEL individuals have significantly lower subjective discount rates.

As a robustness check, to show that my results are not driven by financial literacy or economic literacy alone, and that indeed the two capture different dimensions of one's ability to evaluate policies, I also consider financial literacy and economic literacy separately. The findings show that each index has the predicted effect on the policies under analysis, however, the sizes of the effects are often smaller, suggesting that in general the composite financial and economic literacy index is a more encompassing proxy of an individual's ability to assess the costs and benefits of a policy. I also consider the role of education alone as an alternative measure of literacy, and find no relation between it and policy preferences, suggesting that financial and economic literacy has different features that general education does not capture.

This paper contributes to several literatures. The first is the literature on financial literacy. While works on the effects of financial literacy on household decisions, such as retirement, savings, and investment, are thriving and expanding⁴, studies looking at how financial literacy conditions between men and women, and linked eligibility conditions to changes in life expectancy, raising the retirement age. This pension reform encountered tremendous public opposition and the current Five Star and League government has decreased the retirement age again, regardless of its long-term unsustainability.

⁴Behrman et al. 2010; Lusardi 2008; Lusardi and Mitchell 2017; Monticone 2010; Van Rooij, Lusardi, and Alessie 2012.

affects policy and political preferences are limited⁵. This study also makes a methodological contribution, since it does not only focus on financial literacy, which measures knowledge of basic economic concepts, but it also adds an important element to the current literature, which is the concept of economic literacy. The latter also captures country-specific knowledge about policies and their effects on individual economic well-being. Furthermore, it analyzes different policy preferences in Italy, and adds a further mechanism to the theory, investigating the role played by subjective discount rates as well.

The second literature this paper contributes to is that on economic policy preferences. Currently, most studies on preferences for free trade investigate how trade affects an individual's income, and more specifically they look at its distributional consequences using sectoral, factorial, and more recently individual task-level models, implying that individuals are always aware of their economic condition and of the effects of such policies⁶. Similarly, the majority of studies on preferences for immigration and EU membership test two competing hypotheses, one in relation to their effects on self-interest, and the other focusing on the role of concerns for the cultural impacts of immigration on the country in question⁷. Very few studies⁸ investigate the influence of financial and economic literacy on a set of economic policy preferences, and none, to my knowledge, uses these sets of questions and theoretical and empirical specifications.

The remainder of the paper is organized as follows. The next section contains the theoretical argument, followed by a description of the data and of the models employed, the findings, robustness checks, and the conclusion.

⁵Fornero and Lo Prete 2019; Magistro 2018; Montagnoli et al. 2016.

⁶Acemoglu and Autor 2011; Owen and Johnston 2017; Ebenstein et al. 2014; Kambourov and Manovskii 2009; Matias Cortes 2016; Mayda and Rodrik 2005; Scheve and Slaughter 2001b; Blonigen and McGrew 2013.

⁷Citrin et al. 1997; Chandler and Tsai 2001; Card, Dustmann, and Preston 2012; Daniels and Von der Ruhr 2003; Hainmueller and Hopkins 2012; Inglehart and Norris 2016; Kriesi et al. 2006, 2008; O'Rourke and Sinnott 2006; Scheve and Slaughter 2001a; Van der Brug and Van Spanjie 2009; Van Elsas, Hakhverdian, and Van der Brug 2016.

⁸Mansfield and Mutz 2009; Walstad 1997.

THEORETICAL ARGUMENT

Economic policies often end up with distributional consequences, which result in winners and losers. Although there is near consensus among experts that free trade and immigration have positive aggregate effects, and that the gains in the long run are much larger than any effects on employment, these policies come with distributional consequences at least in the short run, where a minority loses while the majority wins, hence explaining why we may not see overwhelming support for open borders⁹. Similarly, although the need to reform public pension systems is clear to experts, this also entails winners and losers in the short run¹⁰. Population aging and declining productivity growth are some of the factors that have caused the necessity for reform of public pension systems, most of which are financed on a pay-as-you-go (PayGo) basis, where contributions from current workers are directly used to pay for current retirees' pensions. A common solution across European countries has been that of raising the retirement age, since as people live longer, they should also work longer¹¹.

One large strand of the literature on policy preferences has focused on self-interest considerations as determinants of individual policy choices. The literature on free trade has paid particular attention to its distributional consequences using sectoral, factoral, and more recently individual task-level models¹². According to these models, respectively, people who own factors of production that are abundant in supply relative to the rest of the world, people working in exporting industries, and people performing non-routine tasks, which are harder to outsource and automate, should be more likely to favor open borders. Conversely, those owning scarce factors, working in industries facing competition from imports, and performing routine-tasks should be more likely to be protectionist. Similarly, one of the literatures dominating the research on natives' attitudes towards immigrants is the political economy one, which explains preferences for immigration in relation to its effect on self-interest, in a very similar way as in the trade preferences

⁹<http://www.igmchicago.org/surveys/free-trade>; <http://www.igmchicago.org/surveys/migration-within-europe>

¹⁰Fornero 2015.

¹¹<http://www.igmchicago.org/surveys/aging>

¹²Acemoglu and Autor 2011; Owen and Johnston 2017; Ebenstein et al. 2014; Kambourov and Manovskii 2009; Matias Cortes 2016; Mayda and Rodrik 2005; Scheve and Slaughter 2001b; Blonigen and McGrew 2013.

literature¹³. Analogously, with respect to preferences for or against the EU, most studies have tested the economic insecurity thesis, which contends that preferences for EU membership are determined by self-interest considerations between winners and losers from globalization¹⁴.

However, several studies find that preferences for free trade, immigration, and EU membership do not seem to be linked to economic self-interest. For example, Mansfield and Mutz find little support for the sectoral and factoral models using two U.S. surveys¹⁵. They find that the effect of education disappears once they incorporate out-group anxiety into their models. Their findings also suggest that sociotropic perceptions of how trade affects the country as a whole are more important than egotropic perceptions of one's self. Haimueller and Hiscox's review of the literature suggest that preferences for immigration do not seem to be linked much to personal economic circumstances. Rather, they seem to depend on cultural concerns for the nation as a whole¹⁶. In a similar way, several studies find that Euroscepticism is driven more by cultural considerations, especially public attitudes towards immigrants, than by economic ones¹⁷.

Findings on the determinants of pension policy preferences are also mixed. Boeri, Boersch-Supan and Tabellini find that opposition to reform is very high even among people who have knowledge about the costs and unsustainability of the current systems¹⁸. However, Boeri and Tabellini find that citizens who are more informed about the costs and functioning of pension systems are more willing to accept reforms¹⁹. Finally, using aggregate-level data, Fornero and Lo Prete investigate how financial literacy affects voting in the aftermath of a pension reform and they find that the electoral cost of a pension reform is significantly lower in countries where the level of financial literacy is higher²⁰.

Departing from most extant theories, I argue that financial and economic literacy affects individual economic policy preferences. More specifically, financial and economic literacy affects economic policy preferences both in a direct and in an indirect manner. In a direct way, financial

¹³Daniels and Von der Ruhr 2003; O'Rourke and Sinnott 2006; Scheve and Slaughter 2001a.

¹⁴Kriesi et al. 2006, 2008; Van Elsas, Hakhverdian, and Van der Brug 2016.

¹⁵Mansfield and Mutz 2009.

¹⁶Citrin et al. 1997; Chandler and Tsai 2001; Card, Dustmann, and Preston 2012.

¹⁷Van der Brug and Van Spanje 2009; Van Elsas, Hakhverdian, and Van der Brug 2016; Inglehart and Norris 2016.

¹⁸Boeri, Boersch-Supan, and Tabellini 2002.

¹⁹Boeri and Tabellini 2012.

²⁰Fornero and Lo Prete 2019.

and economic literacy affects the accuracy with which an individual calculates the effects of a specific policy on their economic well-being. FEL people are expected to be able to conduct more accurate cost-benefit analysis, while FEI people are less likely to be accurate at estimating the effects of a policy on their individual economic well-being and may be more likely to rely on other decision-making factors such as political ideology, or cues from reference groups, to make their decisions. Indirectly, recent findings from the literature on financial literacy suggest that financially literate individuals have longer time horizons. Hence, it is possible that these individuals, in presence of clear policy trade-offs between the short and the long run, might weight the long-term effects more heavily. As a result, the argument is that FEL individuals' ability to do more sophisticated cost-benefit analyses will give them a more precise and unbiased estimate of the expected utility of the policy. Conversely, for FEI individuals, I expect that there is more uncertainty over the expected utility of the policy. Hence, I argue that individuals who are FEL are expected to weigh the short run and long run costs and benefits of an economic policy with more precision and less bias and as a result, they are more likely to accurately estimate what effect that policy is going to have on their expected utility than a FEI individual.

Financial and economic literacy

Financial literacy is defined by the OECD as 'a combination of awareness, knowledge, skill, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being'²¹. Financial literacy has been identified as a key determinant of personal decisions regarding retirement, savings, and investments. Although the relationship between financial literacy and household decision making is an expanding area of research, the literature investigating the relationship between financial literacy and political and policy preferences is still in its early stages. In this respect, in a recent paper Montagnoli et al. find that there is a correlation between financial literacy and political orientation in the U.K., as financially literate individuals are more likely to orientate at the center-left or center-right of the political spectrum rather than at the extremes²². Investigating the relationship between financial literacy and public

²¹Atkinson and Messy 2012.

²²Montagnoli et al. 2016.

policies, Fornero and Lo Prete find that pension reforms take less of a toll on the politicians that passed them in countries where financial literacy is higher²³. Magistro also finds that financial literacy is linked to policy preferences in the U.K.: financially literate individuals are more likely to be in favor of economic openness (immigration, free trade, remaining in the EU) than illiterate individuals, regardless of economic self-interest²⁴.

Studies on financial literacy have been measuring the concept in a consistent manner, using questions on basic financial concepts, such as the working of interest compounding, the difference between nominal and real values, and the basic risk of diversification²⁵. The objective of these questions is to measure one's understanding of basic economic concepts, such as how to balance a budget, how compound interest works, or how inflation affects one's income. However, although financial literacy questions provide a good overview of a person's basic financial knowledge, there may be limitations in using these alone in a political context. These questions fail to capture country-specific and policy-specific knowledge, such as understanding how the tax system or the pension system in one's country work, and how changes in these policies affect one's economic well-being²⁶. For this reason, in this study I not only include a measure of financial literacy, but also questions that tap economic literacy, which measure a person's country-specific knowledge on certain policies and on their inherent trade-offs. By measuring an individual's understanding of basic economic concepts and their knowledge of the working and effects of policies, I expect the constructed financial and economic literacy index to be a better proxy for the respondent's ability to estimate the effects of any economic policy.

Finally, recent studies suggest that discount rates also play a key role in the relationship between financial literacy and policy preferences, although the direction of the relationship has been a cause of debate. Meier and Sprenger suggest that discount rates affect financial literacy, and hence that more future-oriented respondents are more likely to participate in free financial counseling programs²⁷. However, Lahav et al. conduct a lab experiment to test the

²³Fornero and Lo Prete 2019.

²⁴Magistro 2018.

²⁵Lusardi 2008.

²⁶Atkinson and Messy 2012.

²⁷Meier and Sprenger 2008.

relationship between financial literacy and time preference and they find that financial literacy, through learning financial concepts like compound interest, the time value of money, and the risk of capitalization, affects subjective discount rates by dramatically decreasing preference for the present²⁸.

Effect heterogeneity: winners and losers from different policies

Although on aggregate the policies under analysis lead to efficiency gains, they also come with distributional consequences, creating different sets of winners and losers. More specifically, in this case, in line with consistent findings from the literature, on the one hand, FEL winners from globalization (individuals with higher income, higher education, and non-routine jobs) are expected to be more likely to favor the policy with the highest true utility for them, hence economic openness, than their illiterate counterparts. On the other hand, it is uncertain whether FEI losers from globalization (individuals with lower income, lower education, and routine jobs) are more likely to favor the policy with the highest true utility for them in the short run, i.e. protectionism, or in the long run, i.e. economic openness. Findings from previous studies²⁹ suggest that financial literacy is associated with higher preferences for economic openness, regardless of economic condition. As a result, if we assume that part of the mechanism through which financial and economic literacy affects economic policy preferences is via lower discount rates, we might not find a differential preference between FEL winners and losers, as they would both be more likely to favor economic openness than their illiterate counterparts. Experts agree that freer trade improves productive efficiency and offers consumers better choices, and in the long run these gains are much larger than any effects on employment³⁰. Similarly, although some findings suggest that immigration has short-term negative effects for certain groups of natives, its effects in the long run are positive³¹. Hence, it is plausible that, if FEL individuals indeed have longer time horizons, they might be weighting costly short run adjustments less, in expectation of reaching a

²⁸Lahav, Rosenboim, and Shavit 2015.

²⁹Magistro 2018.

³⁰<http://www.igmchicago.org/surveys/free-trade>

³¹Leeson and Gochenour 2015; Coppel, Dumont, and Visco 2001; Fogel and Peri 2013; Hamilton and Whalley 1984; Ottaviano and Peri 2006; Ottaviano, Peri, and Wright 2010; Peri 2009; Sequeira, Nunn, and Qian 2017.

new equilibrium with larger and broader gains in the long run. Similarly, with respect to pension reform, we may expect FEL people closer to retirement age (age group 57-66) to be more likely than FEI individuals to be opposed to a pension reform that increases retirement age since it will affect them more directly and immediately. However, if the assumption that FEL individuals indeed have lower discount rates is true, we might not find a differential preference across the two different FEL age groups if we expect FEL losers from pension reform to put more weight on the long run gains from reform on the state coffers, also given population aging and declining productivity.

From these follow my hypotheses:

- H1: On average, FEL individuals are more likely to favor remaining in the Eurozone, EU immigration, non-EU immigration, free trade, and the Fornero pension reform than their FEI counterparts;
- H2: FEL winners and losers from economic openness and from pension reform are more likely to favor remaining in the Eurozone, EU immigration, non-EU immigration, free trade, and the Fornero pension reform than their FEI counterparts;
- H3: FEL individuals are more likely to have lower subjective discount rates.

DATA

Using a representative online survey of the Italian population, I attempt to overcome some of the limitations of the current research on the relationship between financial and economic literacy and policy preferences. To my knowledge, there is no available dataset in Italy with questions on financial and economic literacy, subjective discount rates, and policy preferences. The data used to test the hypotheses was collected by the author through the company Cint. A representative survey of the Italian population was conducted online in July 2018, including a total of 1,128 individuals³².

³²I used multiple imputation with the R package Amelia to deal with missing values, but the analysis was also run with listwise deletion and findings do not change.

The dependent variables

The first dependent variable measures a respondent's intention to leave or remain in the Eurozone: 'If there was a referendum on Italy's membership in the Eurozone (and as a consequence in the European Union), how do you think you would vote?'

1. Remain (reference category)
2. Leave
3. Don't know

The second dependent variable asks the respondent whether they are in favor or against free trade with the EU: 'Are you in favor of free trade with the EU?':

1. Against (reference category)
2. In favor
3. Don't know

The third and fourth dependent variables measure a respondent's attitude towards immigrants from EU and from non-EU countries. The third and fourth questions ask respectively 'Are you in favor of immigration from countries within the EU?' and 'Are you in favor of immigration from countries outside of the EU?':

1. Against (reference category)
2. In favor
3. Don't know

The fifth dependent variable asks the respondent what they think of the recent Fornero pension reform: 'Are you in favor of the Fornero pension reform?':

1. Against (reference category)
2. In favor
3. Don't know

The independent and control variables

Financial and economic literacy is my main covariate of interest and it is measured by the number of correct answers to three questions on financial literacy and three questions on economic literacy. The financial literacy questions reflect knowledge about interest compounding, inflation, interest rates, and risk diversification³³. The economic literacy questions reflect knowledge of the effects of certain public policies in the country. The first financial literacy question is: ‘Suppose you have €100 in a savings account with an interest rate of 2% per year. If you never withdrew any money from this account, how much do you think there would be after 5 years?’ The answers are: 1) More than €102, 2) Exactly €102, 3) Less than €102, 4) Don’t know. The second question is: ‘Suppose inflation is 2% per year and you have put money into a savings account with an interest rate of 1% per year. Assuming that you buy the same things today and in one year’s time, do you think you would be able to buy more with the money in this account in one year than today, less in one year than today, or do you think you would be able to buy exactly the same things in one year as today?’ The answers are: 1) More than today, 2) Exactly the same as today, 3) Less than today, 4) Don’t know. The third question asks: ‘The following statement: ‘An individual share in a company is usually a less risky asset to invest in than a portfolio of different company shares’ is’: 1) True, 2) False, 3) Don’t know. The first economic literacy question asks: ‘According to you, for which purpose are pension contributions paid for?’ 1) Only to pay for future pensions, 2) Only to pay for current pensions, 3) To pay for both current and future pensions, 4) Don’t know. The second question asks: ‘If Italy adopts public policies that restrict imports from another nation that is a major trading partner, then in Italy:’ 1) The cost of producing products will decrease, 2) Job opportunities in export industries will increase, 3) Consumers will pay higher prices for products, 4) Don’t know. The third question asks: ‘Economic research agrees on the effects of immigration on advanced economies. More specifically’: 1) In the short run there may be a decline in wages and employment of unskilled natives, but these would be offset by rising wages and employment in the long run, 2) In the short run there may be an increase in wages and employment of unskilled natives, but these would be offset by declining wages and employment in the long run, 3) Native

³³Lusardi 2008; Lusardi and Mitchell 2014; Montagnoli et al. 2016.

workers lose, in terms of wages and employment, in both the short run and the long run in all sectors, 4) Don't know. The variable of interest combines these six questions and measures the number of correct answers to the questions: 0) 0 correct answers, 1) 1 correct answer, 2) 2 correct answers, 3) 3 correct answers, 4) 4 correct answers, 5) 5 correct answer, and 6) 6 correct answers. In the robustness checks, I consider financial literacy and economic literacy alone, to show that my results are robust to either index. Furthermore, I also consider education, to show that financial and economic literacy has distinctive features from years of schooling in general.

In order to analyze the heterogenous effects between economic self-interest and financial and economic literacy, I include measures of the respondent's skill level and occupational task that they perform. Following the Heckscher-Ohlin, Ricardo-Viner models and the recent literature on the effects of the routine content of tasks, owners of relatively abundant factors of production should benefit from trade, and in the case of Italy, the abundant factors are highly skilled labor, capital and non-routine tasks. Hence, I use individual annual income as a proxy of capital endowment and level of education to measure skill endowment³⁴. Furthermore, since I have disaggregated data on the type of occupation that each individual conducts, I am able to construct a more accurate routine variable. I rely on the recent literature's distinction between routine and non-routine tasks³⁵. *Education* is a dummy variable indicating the respondent's qualification, low education includes anyone who has a secondary education or less and high education anyone who has a university degree (undergraduate or postgraduate): 1) low education (reference category), 2) high education. The variable *routine* is a dummy variable and it is derived from two variables: one that asks respondents what their main occupation is, and the other that asks them more broadly which sector they work in, so that the constructed variable can be as accurate as possible. In general, routine jobs include clerical/administrative/sales occupations, production, craft and operative positions. Non-routine occupations include professional, managerial, technical occupations and production, operative, and service positions. The variable *routine* indicates whether the respondents' occupation is: 0) non-routine (reference category), 1) routine. Finally, income is an

³⁴Hays, Ehrlich, and Peinhardt 2005; Mansfield and Mutz 2009.

³⁵Acemoglu and Autor 2011; Matias Cortes 2016; Halikiopoulou and Vlandas 2018.

ordinal variable that indicates in which bracket the individual's respondent gross income is³⁶. The variable was recoded so that, based on values below the 25th percentile, between the 25th and 75th percentile, and above the 75th percentile, it takes three values: 0) low-income (below 10,000 €, reference category), 1) middle-income (between 10,000 and 29,999 €), and 2) high-income (above 30,000 €).

Furthermore, I also include political ideology as a control variable. The main concern is that the economic literacy questions may be confounded by political ideology. Political ideology may affect both how people answer factual economic questions and their economic policy preferences, confounding the relationship. The political ideology variable is a self-placement question where respondents self-identify from 0 - extreme left - to 10 - extreme right.

Finally, the usual demographic controls are also included (gender, region of residence, age). Table 1 shows descriptive statistics for the dependent variables, Table 2 shows descriptive statistics for the constructed measure of financial and economic literacy, and Table 3 shows descriptive statistics for the other independent and control variables, from one of the imputed datasets (N = 1,128).

Measures of subjective discount rate

In order to investigate the relationship between financial and economic literacy and subjective discount rates I included a question in the survey that allows me to infer an individual's subjective discount rate. The question asks: 'You are supposed to receive 15,000 € in your bank account immediately. Instead, we offer you the option of receiving a sum of money one year from now. Fill in the amount that you are willing to receive one year from now, instead of 15,000 € today. Insert minimum amount'³⁷. The annual discount rate for delaying payment was calculated as

³⁶The numbers are in line with those reported by the Ministry of Economy and Finance in 2018: https://www.repubblica.it/economia/miojob/lavoro/2019/03/28/news/mef_il_reddito_medio_italiano_e_sceso_a_20_670_euro-222716008/

³⁷I excluded individuals that reported numbers below 15,000 €, implying negative discount rates, as they likely resulted from misentering numbers.

TABLE 1: Descriptive statistics of the dependent variables for the imputed dataset (N = 1,128)

| | Relative frequency, % |
|--------------------------------------|-----------------------|
| Vote intention on Italexit | |
| Stay in the Eurozone | 59.2 |
| Leave the Eurozone | 26.8 |
| Don't know | 14 |
| Views on immigration from EU | |
| Oppose | 10.5 |
| Favor | 85 |
| Don't know | 4.5 |
| Views on immigration from outside EU | |
| Oppose | 47.7 |
| Favor | 42 |
| Don't know | 10.3 |
| Views on free trade with the EU | |
| Oppose | 12.5 |
| Favor | 80.9 |
| Don't know | 6.6 |
| Views on Fornero pension reform | |
| Oppose | 61.2 |
| Favor | 24.8 |
| Don't know | 14 |

TABLE 2: Descriptive statistics of the financial and economic literacy measures for the imputed dataset (N = 1,128)

| Financial and economic literacy index | | | | | | | | |
|---------------------------------------|-----------|-------------|--------------|------|------|-----|-----|--|
| # Correct answers | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| % | 2.6 | 14.5 | 25 | 24.4 | 19.8 | 9.8 | 3.9 | |
| Financial literacy questions | | | | | | | | |
| | % Correct | % Incorrect | % Don't know | | | | | |
| Interest rate | 71.4 | 22.8 | 5.8 | | | | | |
| Inflation | 68.3 | 20.8 | 10.9 | | | | | |
| Risk diversification | 54.5 | 13.6 | 31.9 | | | | | |
| Economic literacy questions | | | | | | | | |
| | % Correct | % Incorrect | % Don't know | | | | | |
| Pay as you go pensions | 33 | 61.5 | 5.5 | | | | | |
| Effects of protectionist measure | 53.1 | 33.2 | 13.7 | | | | | |
| Effects of immigration | 30 | 51.6 | 18.4 | | | | | |

follows:

$$SDR = \left(\frac{P}{X} - 1 \right) \cdot \frac{12}{t} \quad (1)$$

where P is the amount the subject is willing to accept in t months for delaying the receiving of the amount X today. This hyperbolic model has been found to descriptively model discounting data better than the exponential model³⁸.

TABLE 3: Descriptive statistics of the other independent and control variables for the imputed dataset (N = 1,128)

| | | Rel. frequency, % | |
|----------------------------------|----------------|-------------------|---------------|
| Education | | | |
| | Low education | 66.9 | |
| | High education | 33.1 | |
| Income | | | |
| | Low income | 31 | |
| | Middle income | 46.2 | |
| | High income | 22.8 | |
| Occupation | | | |
| | Non-routine | 45 | |
| | Routine | 54.9 | |
| Female | | 50.6 | |
| Region | | | |
| | North | 44 | |
| | Center | 19.2 | |
| | South | 36.8 | |
| | | Mean | Sd |
| Age | | 45 | 14.4 |
| Political ideology | | 6.3 | 2.8 |
| Discount rate (without outliers) | | 1218.4 (0.7) | 21399.8 (1.8) |

³⁸Hardisty et al. 2011.

MODELS

The relationship between financial and economic literacy and policy preferences: multinomial logit models

I use multinomial logit models to test the relationship between financial and economic literacy and policy preferences. Let Y_i be the unordered categorical dependent variable for individual i which takes an integer values $j = 1, \dots, J$. I model respondent i 's policy preference using multinomial logistic regression:

$$Y_i \sim \text{Multinomial}(Y_i \mid \pi_{i,j}) \quad (2)$$

where $\pi_{i,j} = \text{Pr}(Y_i = j)$ for $j = 1, \dots, J$.

$$\pi_{i,j} = \frac{\exp(\mu_{i,j})}{\sum_{k=1}^J \exp(\mu_{i,k})} \quad (3)$$

$$\mu_{i,j} = \beta_{j0} + \sum_{k=1}^P \beta_{j,k} x_{i,k}, \quad (4)$$

where x is a vector of k explanatory variables for observation i and β is a vector of coefficients for category j . Category J is assumed to be the baseline category. I estimate all models using this specification, with different outcome variables, interaction terms, and controls³⁹.

The relationship between financial and economic literacy and subjective discount rates

In this paper, since data on subjective discount rates is available, I test the relationship between financial and economic literacy and subjective discount rates in two ways. First, I run a multiple linear regression:

$$y_i = \beta_0 + \beta_k x_{i,k} + \epsilon_i \quad (5)$$

where i stands for the i^{th} individual, k stands for the k^{th} predictor, y , the response variable, is subjective discount rate, and the various predictors, x_k , are financial and economic literacy, the

³⁹All regression tables are available in the online appendix.

main covariate of interest, and income and education, as controls. The error term, ϵ , is normally distributed with mean 0 and variance σ^2 . However, in this case, the latter condition only holds approximately, in that it describes the majority of observations, but some observations follow a different pattern. This can have a large distorting influence if we fit the regression using least squares. As a result, since the response variable includes very significant and extreme outliers, which may or may not be the result of misentered numbers, I run a robust and resistant regression⁴⁰, which eliminates the influence of outliers. Furthermore, I also run an OLS regression on a dataset that excludes the most extreme outliers.

The second test I run consists in looking specifically at potential losers from the policies under analysis and compare mean subjective discount rates between FEL and FEI individuals. However, the t-test is not appropriate if one is unsure about the distribution of the variables, if the variance is unequal across groups, and if some groups are very small. As a result, I used the Mann-Whitney U test, a non-parametric test. In this case, significant results can be reported as ‘Values for group 1 were significantly different from those of group 2’. I am interested in knowing whether values for group 1 are significantly lower than those for group 2. The Mann-Whitney U test is run for both the imputed dataset with no missing values and for the dataset which excludes extreme outliers.

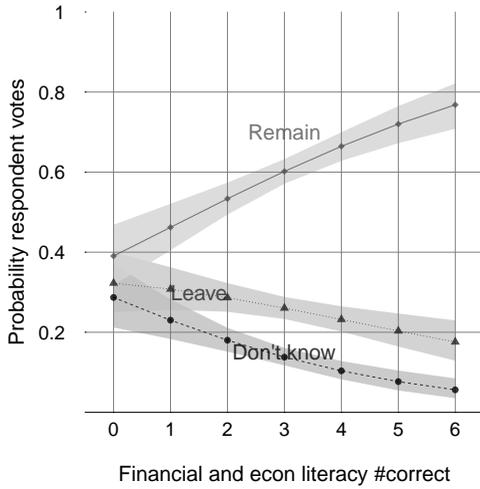
RESULTS

Results for the relationship between financial and economic literacy and policy preferences

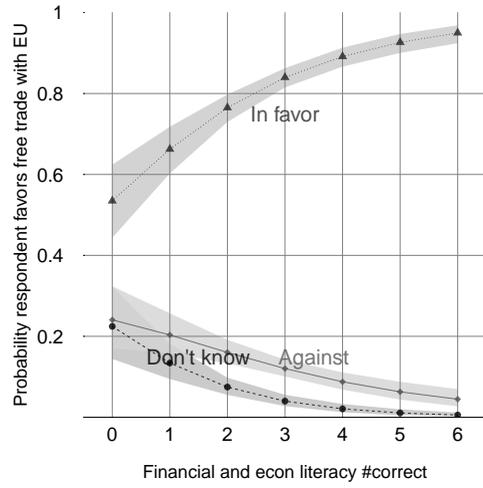
The first hypothesis that I test (H1), using multinomial logit models, is whether on average FEL individuals are more likely to favor economic openness and pension reform than FEI individuals. The following figures show the expected probabilities with 95% confidence intervals of voting for or against Italexit, favoring or not favoring free trade, EU immigration, non-EU immigration, and the Fornero pension reform⁴¹.

⁴⁰I use the MM method in R, which uses the Biweight influence function initialized by a resistant S-estimator.

⁴¹The figures are generated using the full models that include all the controls: education, income, political ideology, age, gender and region. The online appendix shows the regression tables (B2 through B6).

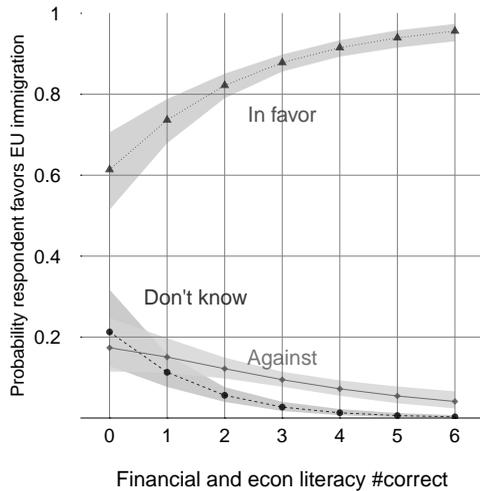


(a) Eurozone

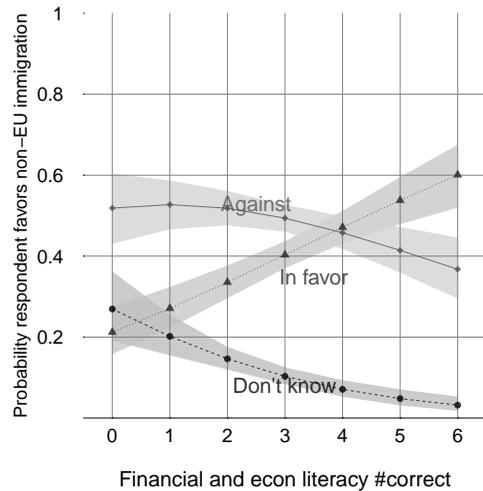


(b) Free trade

Figure 1: Expected probabilities of voting Remain or Leave in Eurozone membership referendum, and of favoring free trade with the EU with 95% confidence intervals



(a) EU Immigration



(b) Non-EU immigration

Figure 2: Expected probabilities of favoring EU immigration, and of favoring non-EU immigration with 95% confidence intervals

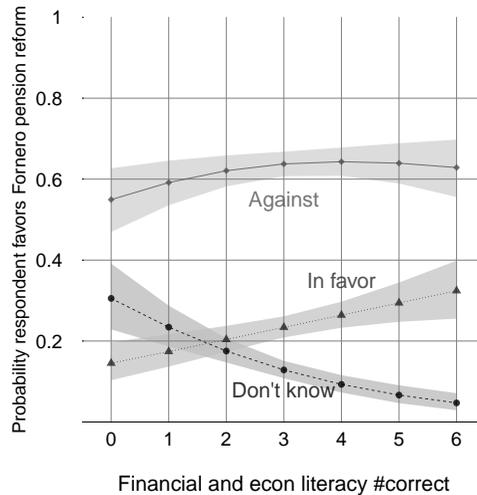


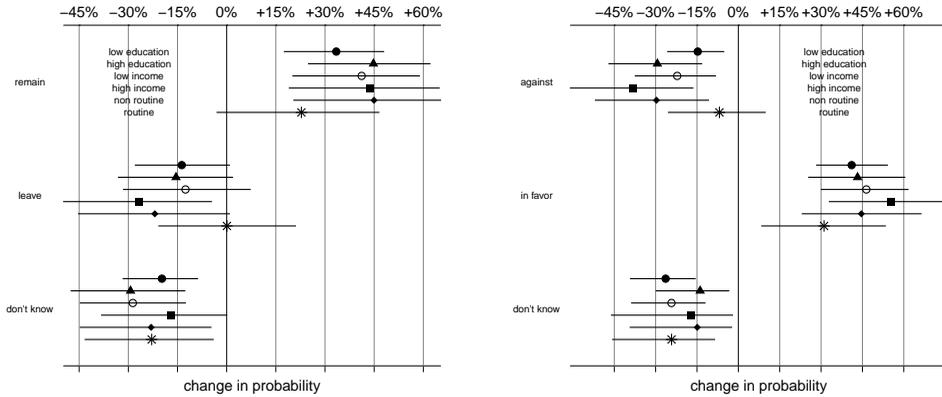
Figure 3: Expected probabilities of favoring Fornero pension reform with 95% confidence intervals

Figures 1 to 3 show that as financial and economic literacy increases so does the probability that the respondent favors remaining in the Eurozone, free trade, EU immigration, non-EU immigration, and the Fornero pension reform. Comparing FEL individuals (someone who got all six questions correct) to FEI ones (those who got no correct answers) may help to understand the substantive significance of these findings. A FEL individual is respectively 38%, 42%, 34%, 39%, and 18% more likely than a FEI individual to favor remaining in the Eurozone, free trade, EU immigration, non-EU immigration, and the Fornero pension reform.

Heterogenous effects

I then test the second hypothesis (H2), specifically whether both FEL winners and losers from economic openness and pension reform are more likely to favor remaining in the Eurozone, free trade, EU immigration, non-EU immigration, and the Fornero pension reform than similar FEI individuals. Figures 4 to 6 show the first differences of favoring the policies under analysis with 95% confidence intervals by sub-group⁴².

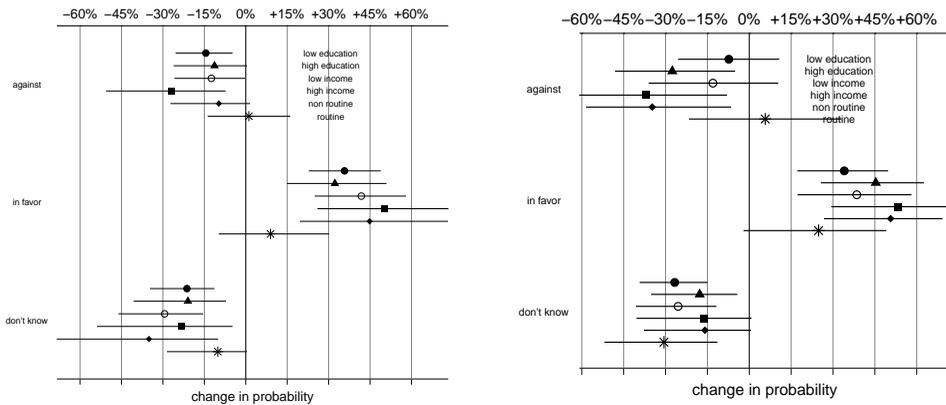
⁴²The figures are generated using the full models that include all the controls: education, income, political ideology, age, gender and region. The online appendix shows the regression tables (B7 through B11).



(a) Eurozone membership

(b) Free trade

Figure 4: First differences of probabilities of voting Remain or Leave in Eurozone membership referendum, and of favoring free trade with the EU with 95% confidence intervals between FEI individuals (0 correct answers) and FEL individuals (6 correct answers), by education, income, and job routineness



(a) EU Immigration

(b) Non-EU immigration

Figure 5: First differences of probabilities of favoring EU immigration, and of favoring non-EU immigration with 95% confidence intervals between FEI individuals (0 correct answers) and FEL individuals (6 correct answers), by education, income, and job routineness

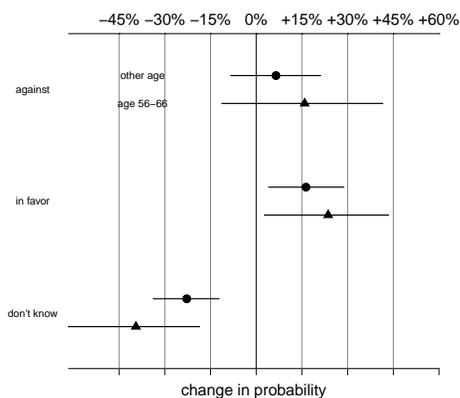


Figure 6: First differences of probabilities of favoring Fornero pension reform with 95% confidence intervals between FEI individuals (0 correct answers) and FEL individuals (6 correct answers), by age group

Across all models FEL individuals, regardless of economic condition, are more likely to favor economic openness and pension reform. The results are statistically significant for all of the policies under analysis and for all sub-groups, except for routine workers, for which the effects are in the expected direction, but they fail to reach statistical significance. This might be due to the fact that the sample size is significantly smaller when doing the interaction between routine jobs and financial and economic literacy, since only people who are currently employed are included (609 out of 1128).

To understand the substantive significance of the results, it might help to look at first differences, where we are comparing individuals who got no questions correct (FEI individuals) to individuals who got all six questions correct (FEL individuals). With regard to the question on remaining or leaving the Eurozone, among individuals with low education, FEL individuals are 34% more likely to vote remain than similar FEI individuals, while for those with high education, the FEL are 45% more likely to vote remain than the FEI.

The results for free trade tell a very similar story. Looking at individuals with low education, FEL individuals are 41% more likely to be in favor of free trade than similar FEI individuals, while for those with high education, the FEL are 43% more likely be in favor of free trade than the FEI.

Findings for immigration both from the EU and from outside the EU also support the hypotheses. To provide another example of the substantive significance of these results, low educated and highly educated FEL individuals are respectively 36%(34%) and 32%(45%) more likely to be in favor of EU immigration (non-EU immigration) than similar FEI individuals.

Finally, the results from pensions suggest that FEL individuals in the 56-66 age group and in all other age groups are respectively 24% and 16% more likely to be in favor of the Fornero pension reform than similar FEI individuals.

Overall, these results support the hypothesis that FEL individuals, regardless of their self-interest, are more likely to favor remaining in the Eurozone, free trade, EU immigration, non-EU immigration, and the Fornero pension reform than similar FEI individuals.

Results for the relationship between financial and economic literacy and subjective discount rates

The third hypothesis (H3) that I test is whether FEL individuals do indeed have lower discount rates. Figure 7 shows that this is the case for both the regression estimated with the MM method, which includes outliers, and the OLS regression that excludes extreme outliers: as financial and economic literacy increases, subjective discount rates decrease.

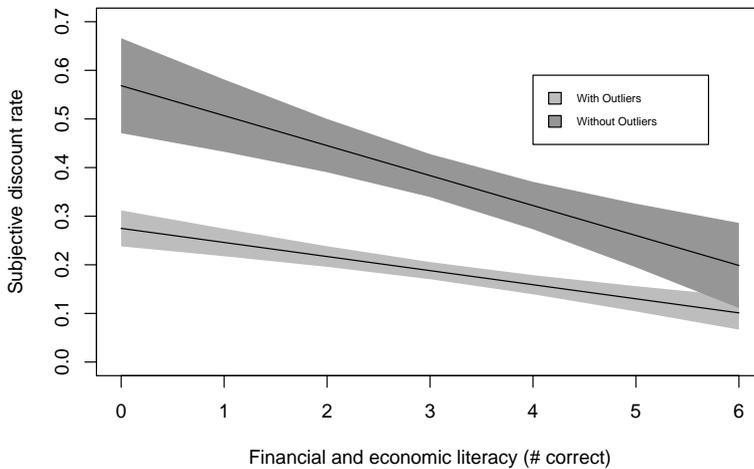


Figure 7: Expected values - Subjective discount rates by financial and economic literacy

TABLE 4: Summary statistics and Mann-Whitney Test for imputed dataset (for dataset without outliers in parentheses)

| Group | Count | Mean | Median | Standard Deviation | Mann-Whitney test | |
|---------------|---------|--------------|-------------|--------------------|-------------------|---------|
| | | | | | W | p-value |
| Low income | | | | | | |
| High FEL | 7 (7) | 0.12 (0.12) | 0.03 (0.03) | 0.15 (0.15) | 5668 | 0.000 |
| Low FEL | 24 (14) | 4124 (0.61) | 1 (0.33) | 8981 (0.58) | (1567.5) | (0.000) |
| Low education | | | | | | |
| High FEL | 7 (7) | 0.14 (0.14) | 0.07 (0.07) | 0.14 (0.14) | 4959.5 | 0.000 |
| Low FEL | 23 (16) | 2131 (0.65) | 0.67 (0.33) | 4980 (0.71) | (1868) | (0.000) |
| Routine | | | | | | |
| High FEL | 6 (6) | 0.06 (0.06) | 0.05 (0.05) | 0.04 (0.04) | 2323.5 | 0.000 |
| Low FEL | 5 (3) | 2845 (1.67) | 2.33 (2.33) | 6354 (1.15) | (865) | (0.000) |
| Age (56-66) | | | | | | |
| High FEL | 9 (9) | 0.15 (0.15) | 0.07 (0.07) | 0.22 (0.22) | 2650 | 0.000 |
| Low FEL | 5 (2) | 11155 (0.33) | 3068 (0.33) | 16364 (0) | (1130) | (0.000) |

The third hypothesis is also tested in a second way. The second test I run, the Mann-Whitney U test, consists of comparing the mean subjective discount rates of FEL and FEI potential losers from the policies under analysis. Table 4 shows the summary statistics for the Mann-Whitney U test for the imputed dataset with outliers, with values for the dataset without outliers in parentheses. The Mann-Whitney U test is significant for both datasets and indicates that the subjective discount rates of FEL losers are significantly lower from those of their FEI counterparts⁴³. This suggests that it is possible that FEL losers from certain policies may be weighting the long-term gains more than the short run losses.

ROBUSTNESS CHECKS

Different indicators of financial and economic literacy

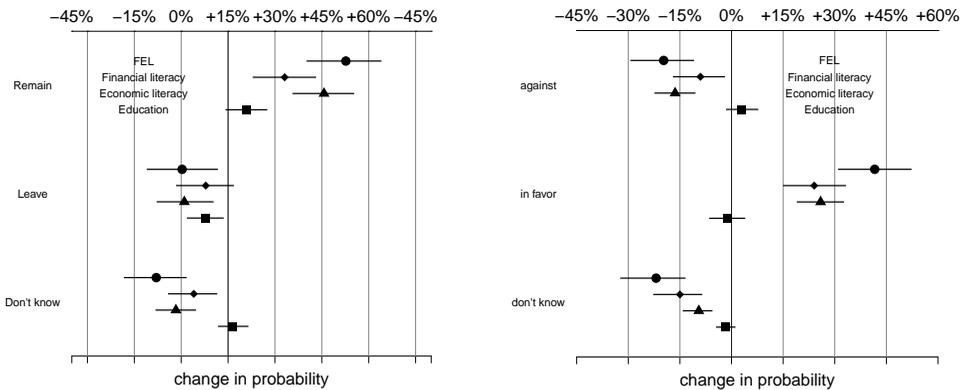
As I laid out my theory, I argued that in a political context financial literacy alone may not capture the country and policy-specific knowledge required to make an accurate policy assessment. For this reason, I added a battery of economic literacy questions, which were aimed at constructing a more encompassing proxy for one's ability to estimate the effects of any economic policy on

⁴³Results are significant even when running the standard t-test.

their economic well-being. Here, I check whether it is indeed the case that financial literacy and economic literacy on their own capture different, complementary dimensions of this ability, or whether the results are driven by either one. Furthermore, I also assess whether financial and economic literacy is distinct from education.

Hence, I run all the full models using the FEL index, the financial literacy only index, the economic literacy only index, and education only.

Figures 8 to 10 show the first differences in the probabilities of favoring or not favoring Eurozone membership, free trade, EU immigration, non-EU immigration, and the Fornero pension reform, between literate (highly educated) and illiterate (low educated) individuals. Literate individuals are those who answered all questions correctly and who hence have a perfect score (either 6 out of 6 in the FEL index or 3 out of 3 in the financial literacy only index and economic literacy only index), while illiterate individuals are those who got no questions correctly. Highly educated individuals are individuals with a college degree or more, while low educated individuals are those with a high school diploma or less.

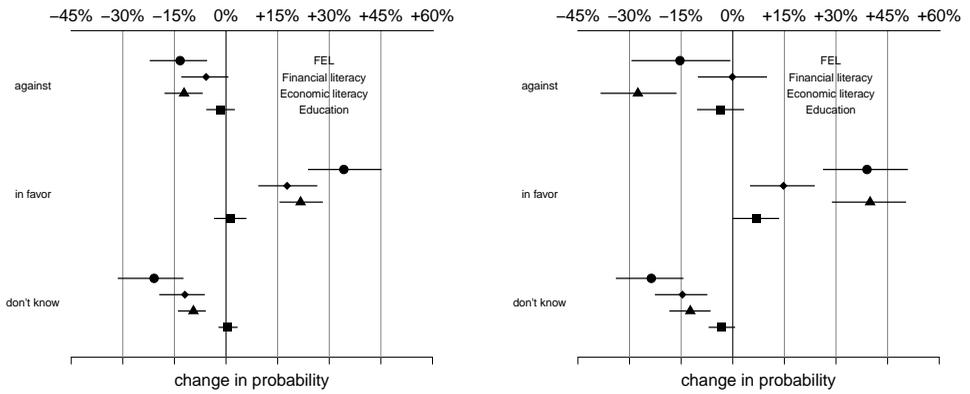


(a) Eurozone membership

(b) Free trade

Figure 8: First differences of probabilities of voting Remain or Leave in Eurozone membership referendum, and of favoring free trade with the EU with 95% confidence intervals between highest and lowest scores of literacy, across different measures of literacy and education

The results indicate that when using financial literacy alone or economic literacy alone, although most of the effects are smaller, their direction is unchanged: no matter what index of financial and economic literacy we use, literate people are always more likely to favor each of the



(a) EU Immigration

(b) Non-EU immigration

Figure 9: First differences of probabilities of favoring EU immigration, and of favoring non-EU immigration with 95% confidence intervals between highest and lowest scores of literacy, across different measures of literacy and education

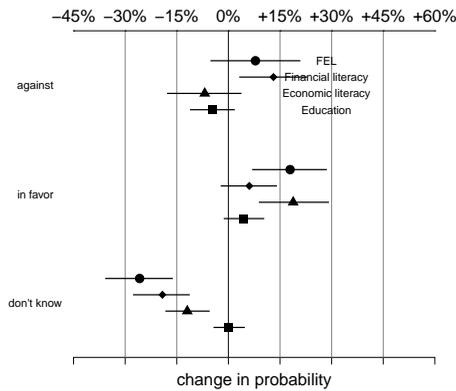


Figure 10: First differences of probabilities of favoring Fornero pension reform with 95% confidence intervals between highest and lowest scores of literacy, across different measures of literacy and education.

policies under analysis than illiterate people⁴⁴. This suggests that the FEL index, by capturing different, complementary dimensions of the ability to evaluate the costs and benefits of a policy, is a more encompassing proxy of such ability. Conversely, the effect of education is almost never significant across the five specifications, which suggests that financial and economic literacy has distinctive features that are not captured by years of schooling only.

CONCLUSION

This paper investigates the influence of financial and economic literacy on individual economic policy preferences. It focuses on the case of Italy and examines five policy areas: free trade, Eurozone membership, EU immigration and non-EU immigration, and the Fornero pension reform. Financial and economic literacy is expected to have both a direct and an indirect effect on policy preferences. In a direct way, it is expected to affect the accuracy with which an individual calculates the effects of a policy on their expected utility. FEL people are expected to be more accurate at calculating the costs and benefits of a policy, and hence at determining whether it will affect them positively or negatively, than FEI individuals. Conversely, FEI individuals are less likely to be accurate at estimating the costs and benefits of a policy, and hence may be more likely to rely on other factors (such as political ideology, or party cues) in making their decision. Furthermore, indirectly, financial and economic literacy is expected to affect policy preferences through discount rates. Recent studies suggest that financially literate people have longer time horizons, this may affect how they make judgments in the presence of clear trade-offs between the short and the long run, placing more weight on the long-term effects. Findings show that FEL individuals, regardless of their economic condition, are more likely to prefer remaining in the Eurozone, and to favor EU immigration, non-EU immigration, free trade, and the Fornero pension reform. Moreover, FEL individuals have significantly lower discount rates.

Robustness checks show that the findings are not driven by financial literacy or economic literacy alone. When using financial literacy and economic literacy as predictors separately

⁴⁴Except for financially literate people and the Fornero pension reform, where the effect is not statistically significant at the 95 % level.

results are in the same directions, although the effect sizes are often smaller, suggesting that the composite index is a more encompassing proxy for one's ability to evaluate the effects of an economic policy on their well-being. Furthermore, all models are ran with education as an alternative measure of financial and economic literacy and the results are not significant, implying that financial and economic literacy captures different features from more general measures of education, such as years of schooling.

These findings carry significant implications. Issues such as immigration, trade deals and EU membership have been especially salient in recent times and some countries have been called to vote on whether to remain or leave the European Union. Empirical evidence from two countries, the U.K. and Italy, suggests that financial and economic literacy does play a role in influencing individual economic policy preferences, providing novel contributions to the existing literature on the determinants of policy preferences and on financial literacy. Future research should address internal validity issues through the use of randomized controlled trials, and it should investigate in depth the direction of the relationship between discount rates and financial and economic literacy, to further disentangle the causal mechanisms at play.

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