

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

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Abstract

As populist and protectionist sentiments across the world increase, this paper explores the role that financial and economic literacy plays in shaping individual economic policy preferences. Analyzing original survey data collected in Italy, this study shows that financially and economically literate individuals, regardless of their economic self-interest, are more likely to prefer remaining in the Eurozone, to favor free trade, EU immigration, non-EU immigration, and the Fornero pension reform. The author provides preliminary evidence that the lack of differential effects between financially and economically literate winners and losers from globalization and pension reform is driven by longer time horizons. Finally, the author examines different ways to measure financial and economic literacy and finds that there is no evidence of a similar effect when looking at general education, suggesting that financial and economic

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literacy has distinctive features that more closely capture an individual's ability to evaluate policies.

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1 Introduction

With populism at an all-time high (Funke, Schularick, and Trebesch, 2020), 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 non-mainstream, populist parties (Hobolt and Tilley, 2016). 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 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. Many of these theories implicitly assume that all individuals know what the effects of a policy on their economic well-being will be. Instead, I argue that individuals are not necessarily aware of how a policy affects them and that financial and economic literacy provides a toolkit to understand how policies impact our lives.

Some key components of this toolkit include: numeracy, scarcity, costs and benefits, opportunity costs, demand and supply, and discounting. 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 Europe (Di Frischia, 2017). 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 influence the accuracy with which an individual evaluates the impact of a certain policy. Assuming that individuals are rational and will choose the policy that they think will give them the highest expected utility, variation in financial and economic literacy, and hence in the accuracy at predicting the effects of a policy, may lead to drastically different policy choices. While 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, 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, which may lead them to support policies that in the end do not reflect their interests. 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 rates and that financial literacy changes people's time preferences (Lahav, Rosenboim, and Shavit, 2015; Magistro, 2020a).

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 Italy¹,

using a representative national 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, to investigate the potential mechanism behind the lack of heterogeneous policy preferences between FEL winners and losers, I also test whether FEL individuals have lower subjective discount rates.

Findings from multinomial logit models indicate that financial and economic literacy does influence 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,

¹In 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 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 Five Star and League government in 2018 decreased the retirement age again, regardless of its long-term unsustainability.

non-EU immigration, and the Fornero pension reform. Finally, findings from a multiple linear regression and the Mann-Whitney U test show that indeed FEL individuals have significantly lower subjective discount rates, providing preliminary evidence that the mechanism behind the lack of heterogeneous effects between FEL winners and losers may be longer time horizons: when analyzing policy issues with long-term implications, FEL short-term losers may be more likely to make sacrifices today in exchange for benefits in the long run.

I also conduct sensitivity analyses to show that my results are not driven by financial literacy or economic literacy alone, and that indeed the two are additive and capture different dimensions of one's ability to evaluate policies. The findings show that each index individually 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 better proxy of an individual's ability to assess the costs and benefits of a policy. I also consider the role of general education alone, distinguishing between people with a high school diploma or less and those with an undergraduate degree or more, as an alternative measure of financial and economic literacy and find no relation between it and policy preferences, suggesting that financial and economic literacy has distinct features that years of schooling do 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 expanding (Behrman et al., 2012; Lusardi, 2008; Lusardi and Mitchell, 2014; Lusardi and Mitchell, 2017; Monticone, 2010; Rooij, Lusardi, and Alessie, 2012), studies looking at how financial literacy influences policy and political preferences are limited (Fornero and Lo Prete, 2019; Magistro, 2020b; Montagnoli et al., 2016). Since financial literacy alone may not be strongly related to the task being studied in a political context, such as making a

policy choice, this study goes beyond financial literacy only and introduces a new measurement of a person's ability to evaluate policies, which also includes a measure of economic literacy, tapping into knowledge of basic economic concepts, and capturing country-specific and policy-specific knowledge too. Furthermore, this paper provides preliminary evidence on an important mechanism between financial and economic literacy and policy preferences, by investigating the role played by subjective discount rates.

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, factoral, and more recently individual task-level models, implying that individuals are always aware of their economic condition and of the effects of such policies². 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 question³. Very few studies (Mansfield and Mutz, 2009; Walstad, 1997), 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

²See for example Acemoglu and Autor (2011), Blonigen and McGrew (2014), Owen and Johnston (2017), Ebenstein et al. (2014), Kambourov and Manovskii (2009), Matias Cortes (2016), Mayda and Rodrik (2005), and Scheve and Slaughter (2001b).

³See for example Card, Dustmann, and Preston (2012), Chandler and Tsai (2001), Citrin et al. (1997), Daniels and Von Der Ruhr (2003), Hainmueller and Hopkins (2014), Inglehart and Norris (2017), Kriesi et al. (2006), Kriesi et al. (2008), O'Rourke and Sinnott (2006), Scheve and Slaughter (2001a), Van Der Brug and Van Spanje (2009), and Elsas, Hakhverdian, and Brug (2016).

argument, followed by a description of the data and of the models employed, the findings, sensitivity analyses, and the conclusion.

2 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 there are winners and losers, hence explaining why we may not see overwhelming support for open borders⁴. Similarly, although the need to reform public pension systems is clear to experts, this also entails winners and losers in the short run (Fornero, 2015). 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 longer⁵.

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 models (Acemoglu and Autor, 2011; Blonigen and McGrew, 2014; Owen and Johnston, 2017;

⁴<http://www.igmchicago.org/surveys/free-trade>; <http://www.igmchicago.org/surveys/migration-within-europe>

⁵<http://www.igmchicago.org/surveys/aging>

Ebenstein et al., 2014; Kambourov and Manovskii, 2009; Matias Cortes, 2016; Mayda and Rodrik, 2005; Scheve and Slaughter, 2001b). 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 key literatures motivating 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 literature (Daniels and Von Der Ruhr, 2003; O'Rourke and Sinnott, 2006; Scheve and Slaughter, 2001a). Likewise, 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 globalization (Kriesi et al., 2006; Kriesi et al., 2008; Elsas, Hakhverdian, and Brug, 2016).

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 (2009) find little support for the sectoral and factoral models using two U.S. surveys (Mansfield and Mutz, 2009). 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. Recent works also suggest that preferences for trade depend on non-material considerations, such as nationalism, ideology, or ethnocentrism (Rho and Tomz, 2017). Rho and Tomz (2017) suggest that these recent findings are actually explained by people's economic ignorance on protectionism. As people learn more about

the distributional effects of trade, the relationship between self-interest and policy preferences becomes stronger. However, their experiments also uncovered significant heterogeneous effects across individuals and do not investigate why some groups appear to be more sensitive to economic information than others. Hainmueller and Hopkins (2014)'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 whole (Card, Dustmann, and Preston, 2012; Chandler and Tsai, 2001; Citrin et al., 1997). In a similar way, several studies find that Euroscepticism is driven more by cultural considerations, especially public attitudes towards immigrants, than by economic ones (Inglehart and Norris, 2017; Van Der Brug and Van Spanje, 2009; Elsas, Hakhverdian, and Brug, 2016).

Findings on the determinants of pension policy preferences are also mixed. Boeri, Boersch-Supan, and Tabellini (2002) find that opposition to reform is very high even among people who have knowledge about the costs and unsustainability of the current systems. However, Boeri and Tabellini (2012) find that citizens who are more informed about the costs and functioning of pension systems are more willing to accept reforms. Finally, using aggregate-level data, Fornero and Lo Prete (2019) 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 higher.

Departing from most extant theories, I argue that the reason why political economy theories often do not hold up in reality has to do with people's lack of understanding of policy effects. I hence hypothesize that financial and economic literacy influences individual economic policy preferences. Financial and economic literacy influences 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.

In the absence of heterogeneous effects or inter-temporal trade-offs across policies, predictions are trivial: FEL individuals are more likely to favor the policy with the highest true utility than FEI individuals. However, in scenarios where certain groups stand to lose in the short run, while only experiencing benefits in the long run, it is unclear what individual policy preferences across FEL and FEI individuals would look like. Recent findings from the literature on financial literacy suggest that financially literate individuals are more patient and have longer time horizons (Lahav, Rosenboim, and Shavit, 2015; Magistro, 2020a). 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, FEI individuals are more likely to be inaccurate at calculating the expected utility of the policy.

2.1 Financial and economic literacy

In representative democracies it is important for citizens to be able to evaluate policies and subsequently vote for candidates that pursue policies that reflect their interests. But are citizens sufficiently informed and do they understand the policies they are often called to decide upon? In

line with Boudreau (2009), Gilens (2001), and Pietryka and MacIntosh (2013), I argue that most current measures of citizens' knowledge, particularly those pertaining to political sophistication, present significant shortcomings. Instead, I propose a measure of financial and economic literacy, which due to its ability to tap into an individual's capacity to evaluate the effects of an economic policy, addresses some of the limitations of the political sophistication literature and of the financial literacy literature.

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' (Atkinson and Messy, 2012). Financial literacy has been identified as a key determinant of personal decisions regarding retirement, savings, and investments (Boisclair, Lusardi, and Michaud, 2017; Delavande, Rohwedder, and Willis, 2008; Jappelli, 2010; Jappelli and Padula, 2013; Lusardi, 2008; Lusardi and Mitchell, 2014; Rooij, Lusardi, and Alessie, 2012). 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. (2016) 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 extremes (Montagnoli et al., 2016). Investigating the relationship between financial literacy and public policies, Fornero and Lo Prete (2019) find that pension reforms take less of a toll on the politicians that passed them in countries where financial literacy is higher (Fornero and Lo Prete, 2019). Magistro (2020b) measures winners and losers from globalization both objectively (using a measure of the import shock from China) and subjectively (using education, income, and routineness of occupation) and 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 objective or subjective self-interest (Magistro, 2020b).

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 diversification (Lusardi and Mitchell, 2014). The objective of these questions is to measure one's understanding of basic financial 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 and policy 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 influence one's economic well-being (Atkinson and Messy, 2012). For example, a person may know what inflation is, but if they do not know that tariffs can be inflationary, knowledge about inflation may not be very informative of their trade preferences. For this reason, in this study I not only include a measure of financial literacy, but I also add questions that tap into economic literacy, building an additive index.

Financial and economic literacy requires having the knowledge, skills and confidence to understand and evaluate economic concepts not only as they relate to our personal finance, but also to our political systems. Financial and economic literacy provides a toolkit to understand how policies affect our lives. Some key components of this toolkit include: numeracy, compound interest, inflation, risk diversification, costs and benefits, opportunity costs, and discounting. For instance, in order to understand how a pension reform affects one's economic well-being one needs to have

basic numeracy skills, to understand compound interest in order to also understand how pension wealth accumulation works (not only in fully funded pension systems but also in the public NDC systems), to understand what inflation is and whether it will dissipate one's pensions savings, and to understand the concept of risk diversification, especially as voluntary supplementary pension plans become more common, as a way to combine an unfunded and a funded pension. People need to understand the difference between pay-as-you-go systems, where current workers pay for current pensions, and fully funded systems, where each individual has their own pension fund that earns interest over time. The concept of opportunity cost is also important, especially in PayGo systems, which if in deficit require a top-up from the public budget: those funds could have been spent on more productive uses. Finally, it is important to be able to understand the short run and long run costs and benefits of a reform. Here discounting is particular important: people who know about concepts like the time value of money are also more likely to have longer time horizons (lower discount rates) (Lahav, Rosenboim, and Shavit, 2015; Magistro, 2020a), and this is especially important for reforms that entail very clear short run costs and uncertain long term benefits, as is often the case not only for pension reform but for many other structural reforms, including those relating to climate change. I hence build a financial and economic literacy measure that taps into the different concepts of this toolkit, including numeracy, compound interest, inflation, risk diversification, and costs and benefits.

Other measures that have been used to capture similar underlying concepts are political sophistication, numeracy, and education. However, I argue that these are imperfect measures of the underlying concept exposed in this paper. First, political sophistication is usually proxied by an index measuring an individual's ability to answer factual questions about politics, with questions asking respondents to identify key political figures like the vice-president, the party that holds

the majority in the House, the relative ideological position of the two parties, the veto override percentage, and judicial review (Delli Carpini and Keeter, 1996). The problem with this measure is that it is not clearly related to the tasks that an individual conducts when making a policy choice, which implies weighting the costs and benefits of a proposal. When it comes to numeracy, although possibly correlated with some measures of financial and economic literacy, it is unlikely to be a substitute for them. Having math skills does not necessarily mean using the economic way of thinking of costs and benefits, trade-offs, and incentives or possessing policy related knowledge, so although it may be a necessary condition for financial and economic literacy, it is far from being sufficient. Previous studies confirm this intuition and suggest that financial and economic literacy is distinct from numeracy (Fornero and Lo Prete, 2019). Lastly, another question pertains to whether financial and economic literacy is actually distinct from general education or not. To this end, multiple studies find that this is the case. Financial and economic literacy has distinctive features that more general dimensions of education do not capture (Caplan, 2002; Fornero and Lo Prete, 2019). As a sensitivity analysis I test this latter hypothesis, specifically whether financial and economic literacy is distinct from education.

2.2 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 FEL 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 studies (Magistro, 2020b) 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 operates on 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 employment⁶. Similarly, although some findings suggest that immigration has short-term negative effects for certain groups of natives, its effects in the long run are positive (Coppel, Dumont, and Visco, 2001; Fogel and Peri, 2016; Leeson and Gochenour, 2015; Hamilton and Whalley, 1984; G. I. P. Ottaviano and Peri, 2012; G. I. Ottaviano, Peri, and Wright, 2013; Peri, 2012; Sequeira, Nunn, and Qian, 2020). Hence, it is plausible that, if FEL individuals indeed have longer time horizons, FEL losers from globalization might be weighting costly short run adjustments less, in expectation of reaching a 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

⁶<http://www.igmchicago.org/surveys/free-trade>

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. In the next section I explore how subjective discount rates may operate as a mechanism between financial and economic literacy and policy preferences.

2.3 Subjective discount rates

Subjective discount rates (SDR) measure the degree to which an individual discounts a future reward. A higher SDR means that the individual is less patient, while a lower one means that the individual is more patient and future oriented. Patience is a topic of great interest in economics, psychology and political science. Studies suggest that more patient people are more cooperative and that they have better financial outcomes, for instance through searching longer for a good job, having higher credit scores, and being less likely to default on their loans (Curry, M. E. Price, and J. G. Price, 2008; Daly, Delaney, and Harmon, 2009; Della Vigna and Paserman, 2005; Meier and Sprenger, 2007). In the political realm, it seems like more patient individuals are more willing to make sacrifices today in order to enact policies that will bear benefits in the long run (Amdur et al., 2015; Fowler and Kam, 2006; Healy and Malhotra, 2009; Jacobs and Matthews, 2012).

Recent studies find that subjective 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 (2013) suggest that discount rates influence financial literacy, as they find that more future-oriented respondents are more likely to participate in free financial counseling programs (Meier and Sprenger, 2013). However, both Lahav, Rosenboim, and Shavit

(2015) and Magistro (2020a) conduct classroom experiments among undergraduate students to test the 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 present (Lahav, Rosenboim, and Shavit, 2015; Magistro, 2020a). In particular, Magistro (2020a) addresses some endogeneity concerns that plagued some past studies and also finds that there is not a selection effect into economics and finance, as students enrolling in these fields do not have significantly lower SDRs than other students when they start college; and finally that more schooling in general does not change time preferences, only financial and economic education does. This may explain why certain citizens are more willing to make sacrifices today in order to enact policies that will only bring benefits in the long run.

2.4 Hypotheses

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.

3 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 survey research firm Cint⁷. I created the survey questions in Qualtrics and Cint recruited a representative sample of the Italian population, adding quotas to make the respondents representative in terms of age, gender, and region of residence, and distributed the survey. Participant recruitment occurred in July 2018, including a total of 1,128 individuals, all of whom were over 18⁸.

3.1 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

⁷For more information on Cint see www.cint.com.

⁸I used multiple imputation with the R package Amelia to deal with 211 missing values, but the analysis was also run with listwise deletion and findings do not change. Multiple imputation has been shown to reduce bias and increase efficiency compared to listwise deletion (Honaker, King, and Blackwell, 2011). I run the analyses on 5 multiply imputed datasets, since Honaker, King, and Blackwell (2011) argue that unless the rate of missingness is very high 5 imputed datasets are enough.

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

3.2 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 numeracy, interest compounding, inflation, interest rates, and risk diversification (Lusardi and Mitchell, 2014). 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?'⁹

1) Only to pay for future pensions,

2) Only to pay for current pensions,

⁹Italy has a nonfinancial defined contribution (NDC) pension scheme, which features the lifelong contribution-benefit link of defined contribution systems, but is based on a pay-as-you-go format, where contributions paid by current workers finance current pensions, with additional funds possibly coming from the overall government budget (Fornero, Oggero, and Puglisi, 2020; Fornero, 2015). Like in many other EU countries, the national social security system (INPS) is the main pension provider, with the standard of living of the elderly depending largely or exclusively on it (Fornero, Lusardi, and Monticone, 2010). This suggests that respondents would be unlikely to address this question thinking of any voluntary supplementary private pension plans, which to this day the number of workers enrolled in a private pension fund is still low. Furthermore, this question has been validated and used in other papers analyzing the Italian context by Boeri, Boersch-Supan, and Tabellini (2002) and Boeri and Tabellini (2012). Their findings similarly show that most respondents are unaware of how the Italian pension system works, with about half the respondents not understanding how the pay-as-you-go system works.

- 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:'¹⁰

- 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'¹¹:

¹⁰This question is one of the questions asked in the Test of Economic Literacy by Walstad, Rebeck, and Butters (2013), which has been revised and used throughout the US to assess knowledge of basic economic concepts to high school students for over 40 years. The economic content of the Test of Economic Literacy is based on the Voluntary National Content Standards in Economics by the Council of Economic Education, which focuses on the more fundamental economic ideas and concepts that are widely shared by professional economists.

¹¹This questions taps into what current research finds about the impacts of immigration on wages and employment. While there are widespread beliefs that immigration increases unemployment and reduces wages among native workers, falling prey to "the lump of labor fallacy" and to the idea that there is a fixed number of jobs to go around, this is problematic for at least two reasons (Leeson and Gochenour, 2015; Portes, 2019). Most models assume that workers are perfectly substitutable for one another. In this context, immigration would increase the supply of labor, which would in turn lead to a decline in the wages of native workers. However, immigrant labor may be in many cases complementary to some subpopulations of native labor. In this latter case, immigration would actually raise native wages. The second problem of using this model to predict immigration's economic effects is that it is a partial-equilibrium model, and

- 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 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,

it ignores important general-equilibrium effects of immigration. For instance, an influx of immigrants does not only increase the supply of labor, it also increases the demand for labor, since immigrants are also consumers and become employers themselves, putting upward pressure on native wages and employment (Leeson and Gochenour, 2015; Peri, 2012; Portes, 2019). Several studies show that increased immigration leads to net gains in GDP, it has no direct impact on unemployment in the host country, it increases innovation, and it actually increases total factor productivity (Coppel, Dumont, and Visco, 2001; Foged and Peri, 2016; Hamilton and Whalley, 1984; G. I. P. Ottaviano and Peri, 2012; G. I. Ottaviano, Peri, and Wright, 2013; Peri, 2012; Sequeira, Nunn, and Qian, 2020). The negative impacts of migration for native workers in developed countries are, if they exist at all, relatively small, short-lived and affect unskilled native labor (Portes, 2019).

- 4) 4 correct answers,
- 5) 5 correct answer, and
- 6) 6 correct answers.

In the sensitivity analyses, I consider financial literacy and economic literacy alone, to show that my results are not sensitive 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 endowment (Hays, Ehrlich, and Peinhardt, 2005; Mansfield and Mutz, 2009). 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 tasks (Acemoglu and Autor, 2011; Halikiopoulou and Vlandas, 2018; Matias Cortes, 2016). *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 ordinal variable that indicates in which bracket the individual's respondent gross income is¹². 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,

¹²The 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/

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).

3.3 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 rate¹³. 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

¹³Two methods are mainly used to measure SDRs: the choice-based methods and the matching method. Choice-based methods present participants with a series of binary comparisons and use these to infer an indifference point, which is then converted into a discount rate. Conversely, with the matching method, which is used here, subjects reveal an indifference point, and hence an exact discount rate can be imputed for a single response. Most often these indifference points can then be converted to discount rates, using two popular equations: exponential or hyperbolic. The hyperbolic model has been found to descriptively model discounting data better than the exponential model and hence it is used here (Hardisty et al., 2013). As to the choice between choice-based methods or the matching method, there is no theoretical basis for preferring one of these methods over any other, but there are trade-offs for each and they actually yield very different discount rates. The former is often associated with an anchoring problem, where the discount rates may simply be recovering the expectation of the experimenter (Frederick et al., 2008). The latter though, although much quicker to ask, appears harder for participants to understand (Hardisty et al., 2013).

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

	Relative frequency, %	N
Vote intention on Italexit		
Stay in the Eurozone	59.2	666
Leave the Eurozone	26.8	303
Don't know	14	158
Views on immigration from EU		
Oppose	10.5	118
Favor	85	958
Don't know	4.5	51
Views on immigration from outside EU		
Oppose	47.7	538
Favor	42	473
Don't know	10.3	116
Views on free trade with the EU		
Oppose	12.5	141
Favor	80.9	912
Don't know	6.6	74
Views on Fornero pension reform		
Oppose	61.2	690
Favor	24.8	279
Don't know	14	158

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
N	29	163	282	275	223	110	45
Financial literacy questions							
	% Correct	N	% Incorrect	N	% Don't know	N	
Interest rate	71.4	805	22.8	256	5.8	66	
Inflation	68.3	769	20.8	235	10.9	123	
Risk diversification	54.5	615	13.6	359	31.9	153	
Economic literacy questions							
	% Correct	N	% Incorrect	N	% Don't know	N	
Pay as you go pensions	33	372	61.5	693	5.5	62	
Effects of protectionist measure	53.1	599	33.2	374	13.7	154	
Effects of immigration	30	338	51.6	582	18.4	207	

in the amount that you are willing to receive one year from now, instead of 15,000 €today. Insert minimum amount' ¹⁴. The annual discount rate for delaying payment was calculated as 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.

¹⁴I excluded individuals that reported numbers below 15,000 €, implying negative discount rates, as they likely resulted from misentering numbers.

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

	Rel. frequency, %	N
Education		
Low education	66.9	754
High education	33.1	373
Income		
Low income	31	350
Middle income	46.2	521
High income	22.8	256
Occupation		
Non-routine	45	275
Routine	54.9	336
Female	50.6	570
Region		
North	44	492
Center	19.2	215
South	36.8	411
	Mean	Sd
Age	45	14.4
Political ideology	6.3	2.8
Discount rate (with outliers)	121,838	2,139,975
Discount rate (without outliers)	29	32

4 Models

4.1 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 controls¹⁵.

¹⁵All regression tables are available in the online appendix.

4.2 The relationship between financial and economic literacy and subjective discount rates

In this paper, since data on subjective discount rates is available, I investigate whether lower subjective discount rates among FEL individuals might be one mechanism behind the lack of a differential effect between FEL winners and losers from the policies under analysis. 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 main covariate of interest, and income, age, gender 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. Subjective discount rates calculated with this type of question are very high with high variance, in line with earlier findings (Lahav, Benzion, and Shavit, 2011; Lahav, Rosenboim, and Shavit, 2015; Thaler, 1981). Table 3 shows that the response variable includes very significant and extreme outliers, which may or may not be the result of misentered numbers or non-sensical answers. An OLS on this data would be extremely unreliable as it would essentially be a regression on noise. In these cases it is essential to use methods not overwhelmed by those outliers. Hence, I take three steps. First, I run a robust and resistant regression¹⁶. Whereas robust regression

¹⁶I use the MM method in R, which uses the Biweight influence function initialized by a resistant S-estimator.

methods attempt to only dampen the influence of outlying cases, resistant regression methods use estimates that are not influenced by any outliers. This is best accomplished by trimming the data, which “trims” extreme values from either end (or both ends) of the range of data values (Venables and Ripley, 2002). This is a conservative principled method for avoiding giving any weight to cases that are clearly extreme, while only giving weight to the central part of the data. Second, I run an OLS regression on a dataset where I have removed cases with high discrepancy and high leverage. In order to identify such cases I take two steps: I use a measure of leverage - “standardized” hat scores - that tell us how much weight an observation carries in least squares; furthermore, I use a measure of discrepancy - studentized residuals - that tell us how outlying each residual is. These, together, tell us how much influence an observation has. I consider outliers those observations with absolute hat scores and/or studentized residuals above 3. Finally, I run a quantile regression at the 50th quantile, hence a median regression, which is more robust to outliers. In all models I control for potential confounders such as age, gender, income and education.

The second test I run consists in looking specifically at potential losers from the policies under analysis and comparing subjective discount rates between FEL and FEI individuals. Due to the unknown distribution of subjective discount rates I use the Mann-Whitney U test. In case that there are few observations and several outliers, the t-test may give unreliable results: Outliers can affect the sample mean and they can also make the standard errors larger than what they should be. If the observations come from a distribution which is skewed, and the sample size is small, then the central limit theorem may not hold, in which case the t-test is inappropriate. As explained in the paragraph above, I do not use a linear regression due to extreme outliers. However, I do not use robust and resistant regression in this case since on really small samples (I am only including the losers from these policies) resistant measures may not have enough observations to work with

and may be very inefficient (Venables and Ripley, 2002). Conversely, non-parametric tests, like the Mann-Whitney U test, are less sensitive to distributional assumptions. 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.

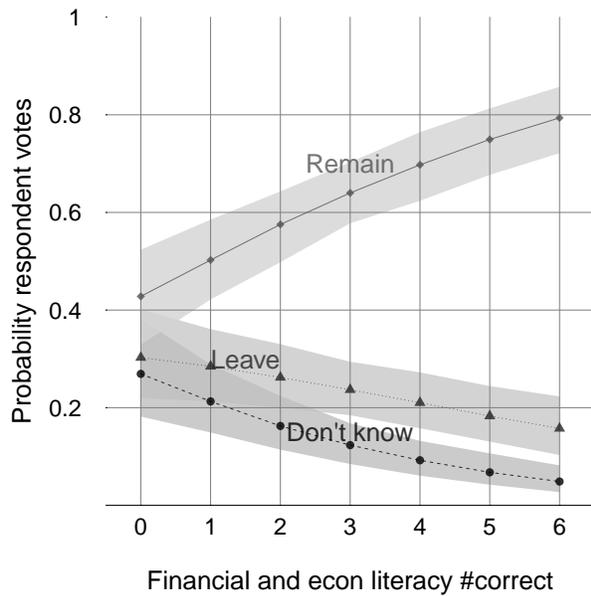
5 Results

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

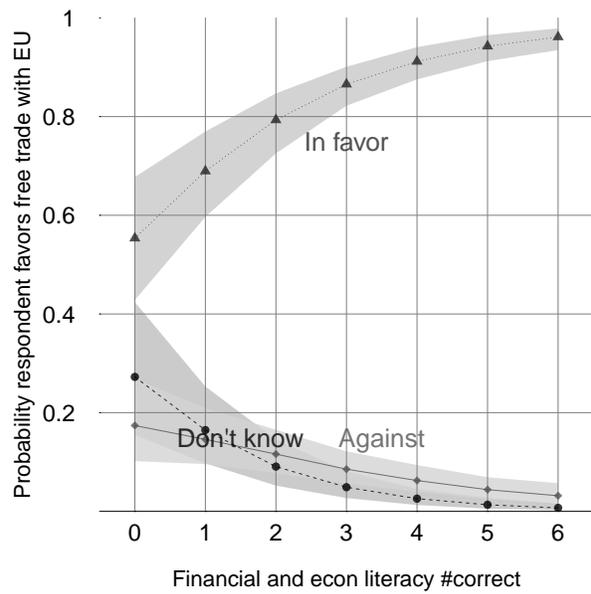
The first hypothesis that I test (H1), using multinomial logit models, is whether on average FEL individuals are more likely to favor economic openness and pension reform than FEI individuals. The following figures show the expected probabilities with 95% confidence intervals of favoring or not favoring Eurozone membership, free trade, EU immigration, non-EU immigration, and the Fornero pension reform¹⁷.

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. After estimating the models, we can interpret the results by simulating the probabilities of favoring each policy under different levels of financial and economic literacy, while holding all other covariates constant at their means. This process adds no new

¹⁷The 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 (A1 through A5).

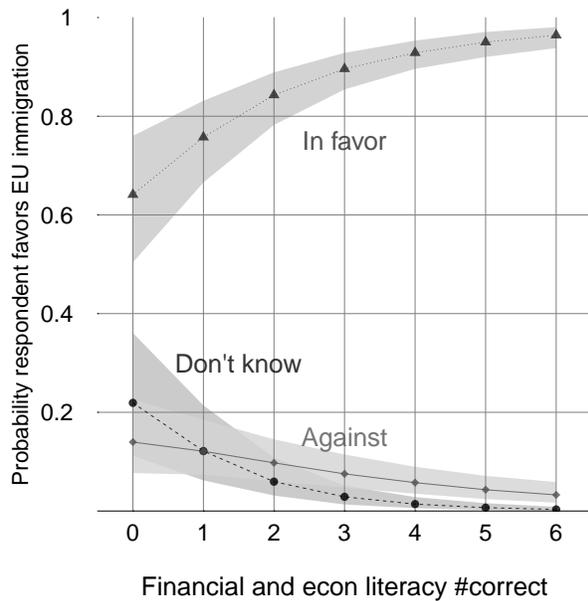


(a) Eurozone

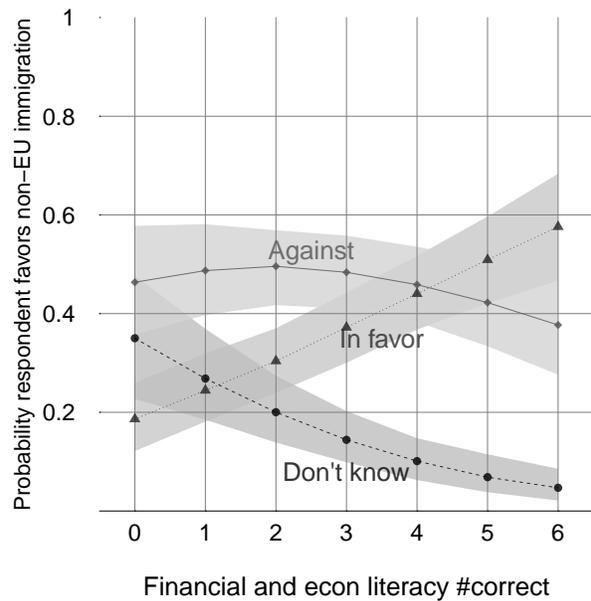


(b) Free trade

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

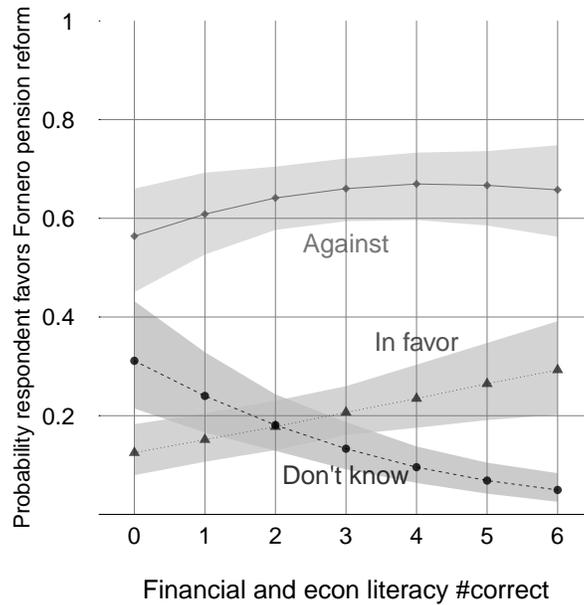


Figure 3: Expected probabilities of favoring Fornero pension reform with 95% confidence intervals modeling assumptions. I define as FEL individuals those who got five out of six questions correctly (mean + 1sd of financial and economic literacy score or 85th percentile) and as FEI those who got one out of six questions correctly (mean - 1 sd of financial and economic literacy score or 15th percentile). This helps to understand the substantive significance of these findings¹⁸. A FEL individual is respectively 25%, 26%, 19%, 27%, and 11% more likely than a FEI individual to favor remaining in the Eurozone, free trade, EU immigration, non-EU immigration, and the Fornero

¹⁸I use Zelig in R to simulate the probability to favor each policy when financial and economic literacy is 1 vs 5, while keeping everything else constant in the model. Zelig takes the difference between these two values for us, called first difference. So the first difference in predicted probabilities for each category j , as defined in (King, Tomz, and Wittenberg, 2000) is given by:

$$FD_j = Pr(Y = j | x_1) - Pr(Y = j | x)$$

pension reform (see figures 8 to 10).

5.2 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 change in probability of favoring the policies under analysis under different levels of financial and economic literacy with 95% confidence intervals¹⁹.

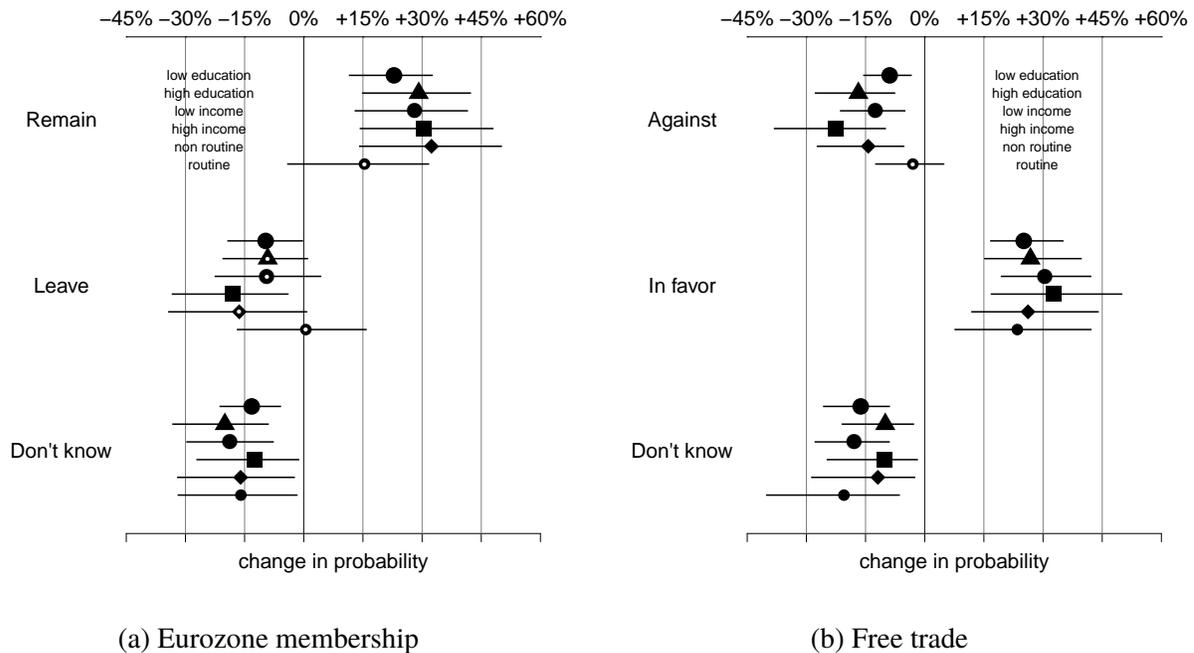


Figure 4: Change in probability of voting Remain or Leave in Eurozone membership referendum, and of favoring free trade with the EU with 95% confidence intervals between FEI individuals (1 correct answers) and FEL individuals (5 correct answers), by education, income, and job routineness

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

¹⁹The 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 (A6 through A10).

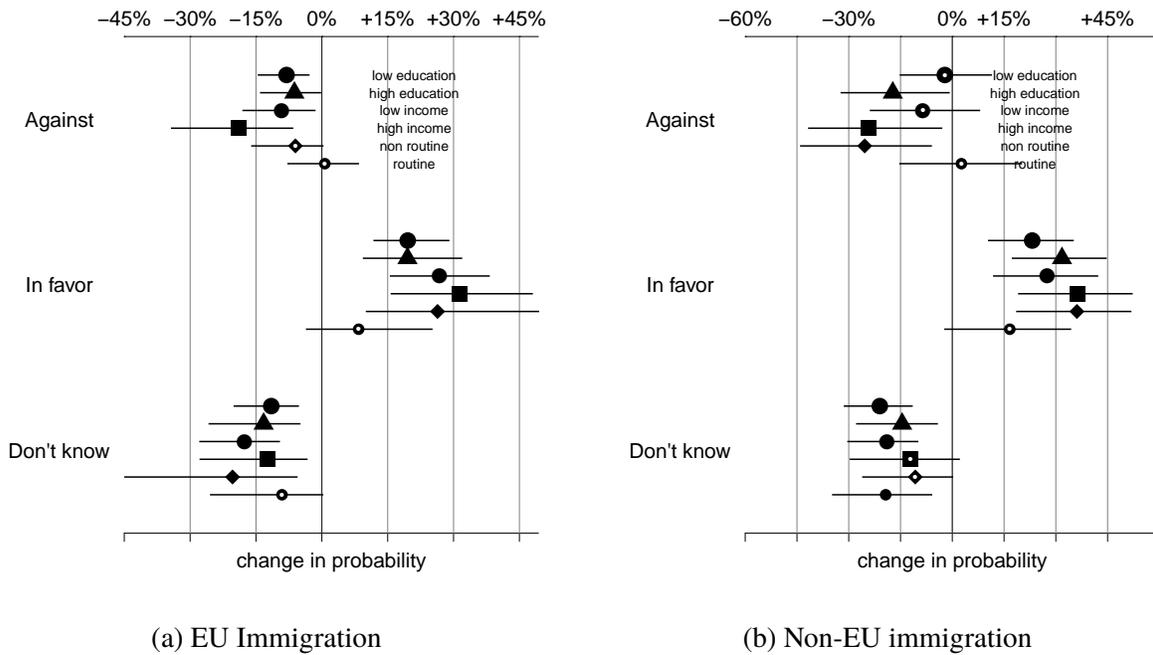


Figure 5: Change in probability of favoring EU immigration, and of favoring non-EU immigration with 95% confidence intervals between FEI individuals (1 correct answers) and FEL individuals (5 correct answers), by education, income, and job routineness

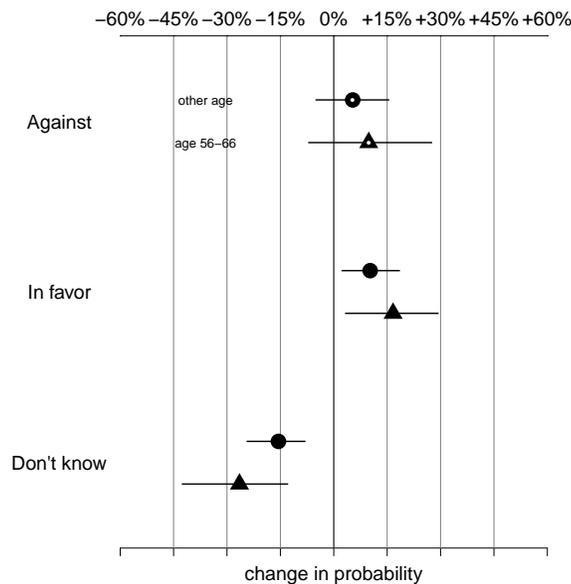


Figure 6: Change in probability of favoring Fornero pension reform with 95% confidence intervals between FEI individuals (1 correct answers) and FEL individuals (5 correct answers), by age group

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 the changes in probability of favoring each policy, where we are comparing individuals who got one questions correctly (FEI individuals) to individuals who got five questions correct (FEL individuals). With regard to the question on remaining or leaving the Eurozone, among individuals with low education, FEL individuals are 22% more likely to vote remain than similar FEI individuals, while for those with high education, the FEL are 30% 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 25% more likely to be in favor of free trade than similar FEI individuals, while for those with high education, the FEL are 27% 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 20%(23%) and 19%(32%) 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 17% and 10% 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.

5.3 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, explaining the lack of heterogeneous effects between FEL winners and losers. Figure 7 shows that this is the case for the robust and resistant regression, for the OLS regression that excludes extreme outliers, and for the quantile regression at the 50th quantile: as financial and economic literacy increases, subjective discount rates decrease²⁰.

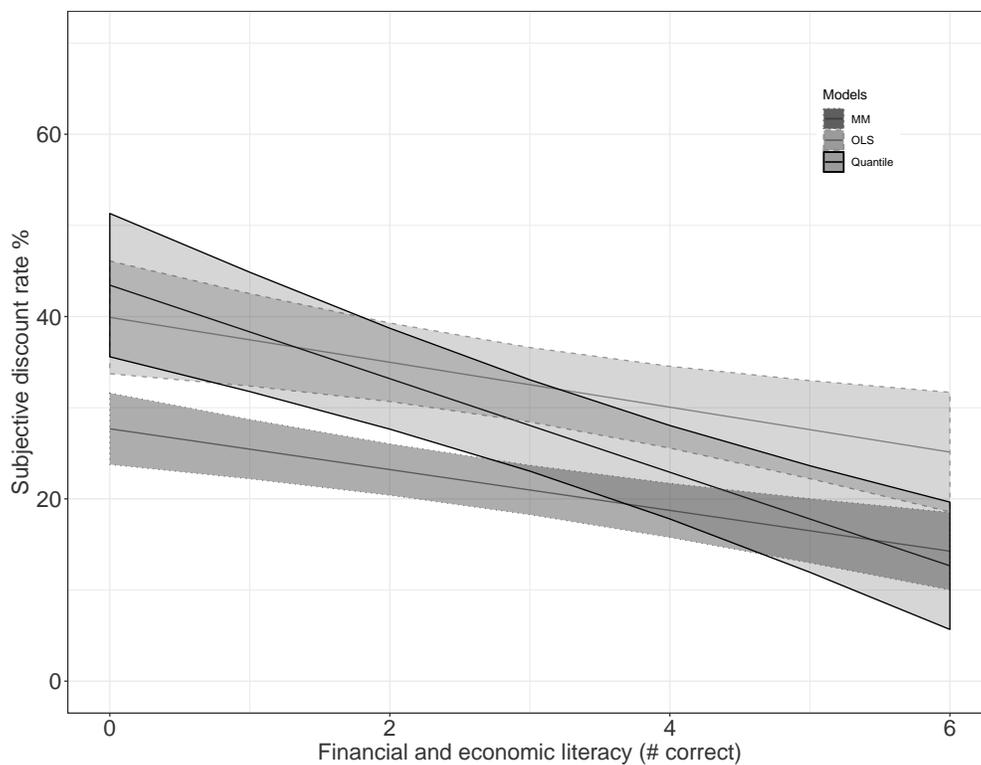


Figure 7: Expected values - Subjective discount rates by financial and economic literacy

The third hypothesis is also tested in a second way. The second test I run, the Mann-Whitney U

²⁰The online appendix shows the regression table (A11).

Table 4: Summary statistics of subjective discount rates (SDR) and Mann-Whitney Test for imputed dataset (for dataset without outliers in parentheses) between FEL and FEI individuals.

Group	Count	Mean SDR	Median SDR	Standard Dev. SDR	Mann-Whitney test	
					W	p-value
Low income						
FEL	41 (37)	83.4 (32)	20 (20)	203.7 (38.9)	109,060	0.000
FEI	56 (36)	300,900 (40.6)	50 (33.3)	1,062,200 (34.1)	(56,950)	(0.000)
Low education						
FEL	97 (87)	113.6 (17.8)	6.7 (6.7)	676.4 (23.4)	206,050	0.000
FEI	84 (56)	231,518 (36.6)	33.3 (33.3)	844,089 (31.3)	(111,850)	(0.000)
Routine						
FEL	51 (46)	161.6 (13.2)	6.7 (6.7)	918.9 (18)	84,372	0.000
FEI	26 (14)	464,600 (36.7)	66.7 (33.3)	1,361,749 (28.5)	(47,120)	(0.000)
Age (56-66)						
FEL	52 (50)	12.4 (12.8)	6.7 (6.7)	15.2 (15.3)	80,586	0.000
FEI	22 (15)	546,237 (35.9)	33.3 (33.3)	1,243,905 (30.8)	(51,050)	(0.000)

test, consists of comparing the mean subjective discount rates of FEL (those scoring above mean + 1 sd of FEL index) and FEI (those scoring below mean - 1 sd of FEL index) 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 counterparts²¹. 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.

While findings from both Magistro (2020a) and Lahav, Rosenboim, and Shavit (2015) suggest that there is a causal relationship between financial literacy and subjective discount rates, it is

²¹Results are significant even when running the standard t-test.

possible that these studies among college students are not generalizable to the broader population. Hence, the lack of heterogeneous effects between FEL winners and losers may be due to other unobservable factors. One plausible explanation could be that FEL individuals are more sociotropic – they care more about how a policy affects their country than themselves – rather than egotropic – driven by pocketbook evaluations. As a matter of fact, Mansfield and Mutz (2009) provide evidence from the US that sociotropic perceptions of how trade affects the country as a whole are more important than egotropic perceptions of one’s self in predicting trade policy preferences. These perceptions may vary along different levels of financial and economic literacy. FEL individuals’ higher accuracy at calculating the effects of a policy may make them more likely to be able to identify both individual and country-level effects correctly, while inaccuracy may bias the FEI individuals’ calculations. This question should be further investigated in future studies.

6 Sensitivity analyses

6.1 Different indicators of financial and economic literacy

As I laid out in 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 better proxy for one’s ability to estimate the effects of any economic policy on their economic well-being. Here, I check whether it is indeed the case that the financial and economic literacy index captures different, additive dimensions of this ability, or whether the results are driven by just one. Furthermore, I also assess whether financial and economic literacy is distinct from general

education.

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

Before I proceed, one concern is that the composite index may be plagued by collinearity. Collinearity is a problem when two variables in a regression model are highly correlated. In this case, the coefficient estimates can swing substantially and become very sensitive to small changes in the model, reducing the precision of the coefficients. To alleviate concerns, in table 5 I show the correlation coefficient between the financial literacy index and the economic literacy index. The correlation between the two separate indices is relatively weak: 0.26. This means that the proportion of variation in one variable that can explained by the other is only about 6.8%.

Table 5: Table of correlations between Financial Literacy index and Economic Literacy index.

	Financial Literacy Index
Economic Literacy Index	0.26***

Figures 8 to 10 show the changes in probability 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 at the 85th percentile (or whose score was equal to the mean score plus one standard deviation), hence those that answered 5 questions correctly out of 6 for financial and economic literacy, 3 out of 3 for financial literacy and 2 out of 3 for economic literacy. Illiterate individuals are those at the 15th percentile (or whose score was to equal to the mean score minus one standard deviation), hence those that answered 1 question correctly out of 6 for financial and economic literacy, 1 out of 3 for financial literacy and 0 out of 3 for economic literacy. Highly educated individuals are

individuals with a college degree or more, while low educated individuals are those with a high school diploma or less.

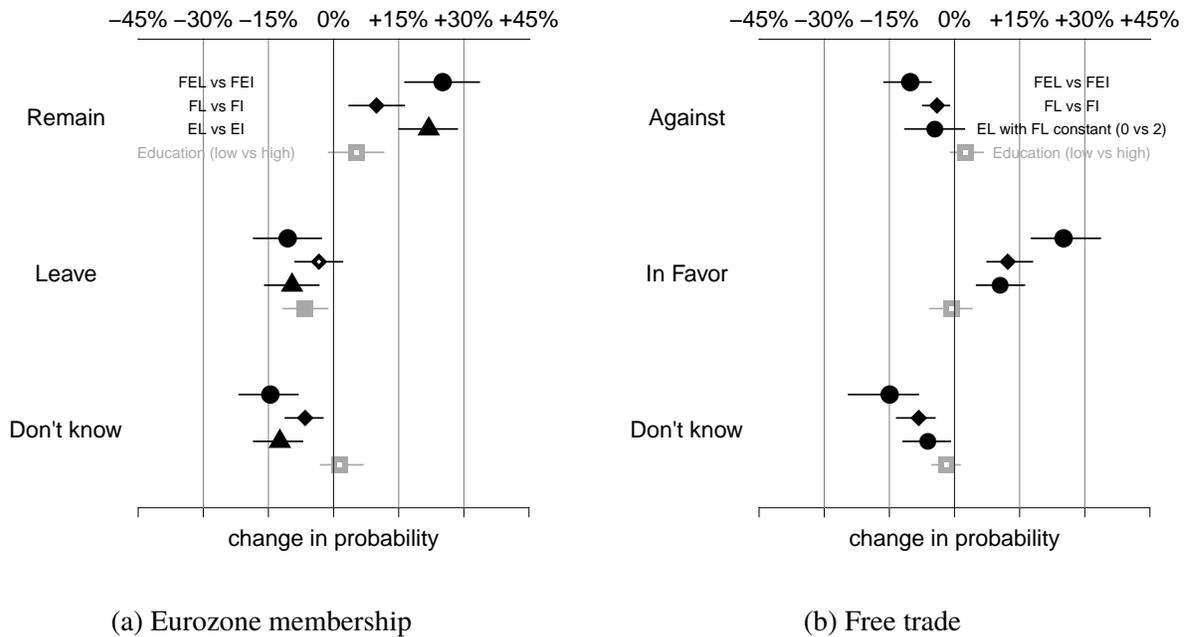
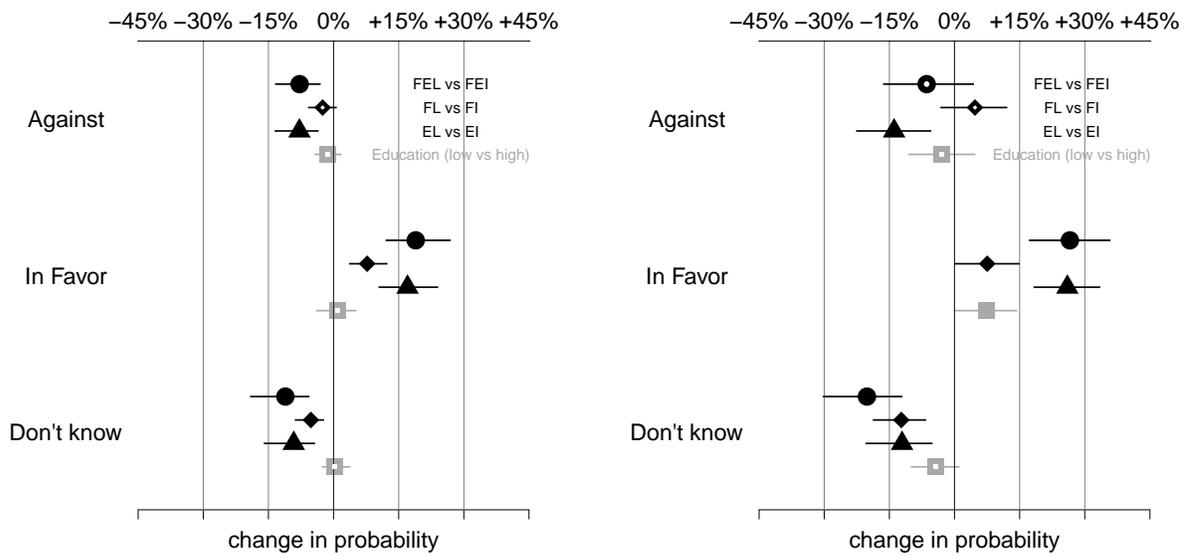


Figure 8: Change in probability of voting Remain or Leave in Eurozone membership referendum, and of favoring free trade with the EU with 95% confidence intervals between highest and lowest scores of literacy, across different measures of literacy and education. FEL stands for financial and economic literacy, FL for financial literacy and EL for economic literacy.

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 policies under analysis than illiterate people, and this is especially the case for economic literacy²². These findings suggest that the financial and economic literacy index, by capturing different, additive dimensions of the ability to evaluate the effects of a policy, is a better proxy of such ability. Conversely, the effect of education is almost never significant across the five specifications, which suggests that

²²Except for financially literate people and the Fornero pension reform, where the effect is not statistically significant at the 95 % level.



(a) EU Immigration

(b) Non-EU immigration

Figure 9: Change in probability 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. FEL stands for financial and economic literacy, FL for financial literacy and EL for economic literacy.

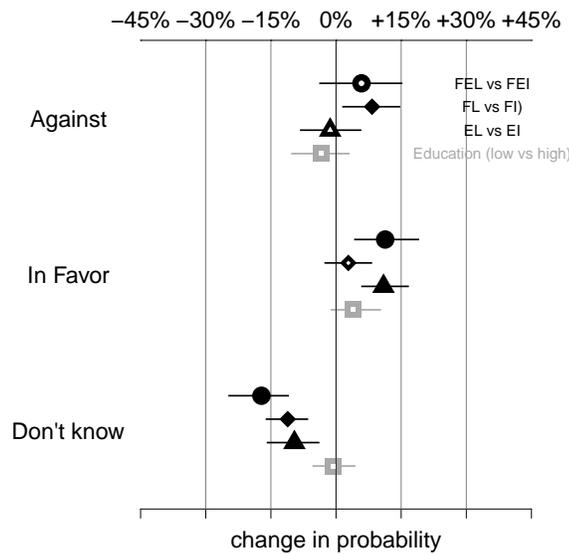


Figure 10: Change in probability of favoring Fornero pension reform with 95% confidence intervals between highest and lowest scores of literacy, across different measures of literacy and education. FEL stands for financial and economic literacy, FL for financial literacy and EL for economic literacy.

financial and economic literate has distinctive features that are not captured by years of schooling only.

7 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 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. 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. To further investigate the potential mechanism behind the lack of differential effects between FEL winners and losers from the economic policies in question, I look into the relationship between financial and economic literacy and subjective 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. Indeed, findings show that FEL individuals have significantly lower discount rates.

Sensitivity analyses show that the findings are not driven by financial literacy or economic literacy alone. When using financial literacy and economic literacy as predictors separately results are in the same directions, although the effect sizes are often smaller, suggesting that the composite index is a better proxy for one's ability to evaluate the effects of an economic policy on their well-being. Furthermore, all models are ran with general 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 among the non-college population, to further disentangle the causal mechanisms at play.

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