

Does Financial Regulation Unintentionally Ignore Less Privileged Populations? The Investigation of a Regulatory Fintech Advancement, Objective and Subjective Financial Literacy

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Abstract

Define contribution mechanism combined with a dynamic job market can affect the sum of retirement savings and the choices of plans and products. Hence, it is important for regulators to engage savers to manage the accounts they accumulate over the years. In 2013-2014 the Israeli regulator reached out to the population, recommending the use of a website to help individuals find inactive retirement savings accounts and close them (withdraw the savings or transfer them to active accounts). The government's efforts did not result in the closure of most of the inactive accounts. Proprietary data indicate that those who closed the inactive accounts live in central locations with a higher socioeconomic index. Survey data indicate that those who lacked financial literacy and confidence in their financial knowledge were less likely to take financial actions. Using a controlled field experiment, we also provide evidence that an intervention with a human touch can promote greater involvement.

Keywords: Retirement savings; objective financial literacy; subjective financial literacy; fintech; field experiment.

JEL: D12, D14, D91, G28, G40, J32

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1. Introduction

In recent decades, financial regulators around the globe have transferred financial responsibilities from governments and employers to individuals (e.g., Ryan et al (2011) and Campbell et al. (2011)). This is especially true for long term savings, where the transition from a DB (Defined Benefits) system to a DC (Defined contribution) system transferred responsibilities from employers and the state to individuals. This transition was accompanied with a change from a system with guaranteed and known benefits to a system where the end benefit is dependent completely on the decision and actions of savers during the life-cycle. To help with the transition of responsibilities, regulators' actions emphasize transparency and disclosure, with the aim of individuals using this available information rationally and in their best interest. In addition, technological advances have enabled regulators to use digital media and websites as platforms for promoting different initiatives. The use of these platforms is intended to promote direct interaction or to provide aggregative information in a timely manner while bypassing intermediaries. However, this transfer of responsibilities to the public, combined with the increased use of technology by the regulators, has also been criticized because it does not take into account the public's financial literacy (Karlan et al. (2016), Campbell (2016)). Specifically, regulation can be unsuccessful when people do not respond as intended, or when people are not equally exposed to it. Unsuccessful regulation can in turn impact public opinion of, and trust in, the financial sector and financial regulators (Zingales (2015) and Campbell (2016)). This dynamic leads to the questions, which warrant empirical answers, of once a fintech advancement is introduced, whether all individuals receive the needed information and whether they act upon it. The answers to these questions can be based on two channels: the first is information dissemination and comprehension and the second is transaction costs and behavioral biases.²

This paper uses a natural experiment in Israel (the "Money Mountain" regulatory campaign) which is the introduction of an internet portal by the regulator and tax reform. As individuals change multiple jobs during the life-cycle they can find themselves having multiple long-term savings accounts and products at multiple providers and accounts opened at former employers turn inactive (no new funds are being deposited). In the Israeli pension system over 50% of accounts in some savings vehicles are inactive.³ Many of these accounts are very small and

² For a summary of issues regarding time preferences, risk preferences, social preferences, overconfidence, projection bias, framing, limited attention, menu effects, persuasion, social pressure, and emotions, see DellaVigna (2009).

³ The 2014 CMISD annual report shows that in 2014, 48% of accounts in the new pension system were inactive and about 80% of accounts in the old pension system were inactive.

the account owners are often unaware of their existence. The regulatory campaign studied here was aimed to reduce substantially the transaction costs and help savers locate and manage inactive retirement savings. The regulatory campaign was supported by developments in technology that have enabled the regulator to (a) gather information about inactive accounts, and (b) build a digital platform that allows the population to access their personal information while upholding privacy standards.

The paper focuses on the information dissemination and comprehension channel, which can affect various subpopulations in different ways. In particular, we explore the question of who responded to the new regulation on retirement savings, and examine whether the regulatory campaign alienated certain populations, such that they may not have been cognizant of, understood, or acted upon the information provided.

As previously mentioned, in 2013, the Israeli retirement savings regulator reached out to the Israeli public to inform them of a new service: a website intended to help individuals find inactive retirement accounts. The campaign was named “Money Mountain,” which implied the possibility of finding vast sums of lost money. A year after the “Money Mountain” campaign went into effect, a second campaign in the form of a tax exemption on savings withdrawn from small inactive accounts in provident funds was launched. Its aim was to encourage individuals to close the inactive accounts, here meaning to either withdraw these savings as cash or transfer them to a different active account, thus avoiding new minimum management fees that would gradually exhaust the savings over time. To illustrate the need for action, for example, at the given fixed minimum management fees, an inactive account of 100 USD will completely exhaust itself in approximately 6 years even after taking into account a 6% annual return rate. The first Money Mountain campaign targeted the general population and was publicized in prime-time advertisements on television and radio, and on the Internet. The second campaign, regarding the tax exemption, was not as broad. By the end of the second campaign, only 15 percent of the eligible accounts had been closed,⁴ which was a much lower response than initially expected.

There are several advantages to researching these Money Mountain financial campaigns: (1) they are relevant to the general population. Because of the mandatory savings regime in Israel, and certain unions’ salary agreements before the law, anyone who worked at some point (even for a short or part time) might have an inactive account. This means that the

⁴ Data received by Capital Markets, Insurance, and Savings Division representatives.

regulation is relevant for both low and high socioeconomic population and might even be more relevant for those of the very low socioeconomic population which changes jobs frequently, (2) it is clear what the optimal action for each individual is. Everyone should enter the website and search for inactive funds and if they find a small inactive account in a provident fund they should close the account (withdraw or transfer savings to another active account) otherwise the funds are technically being given away to the provident fund provider because of minimum fees, (3) the campaigns are widely and nationally publicized, (4) the campaigns are related to long-term retirement savings, a topic where savers engagement has grave repercussions for their wellbeing. Additionally long-term retirement savings is a topic important to the public in Israel (Mugerman et al. 2014), (5) even though the financial actions required are simple, the financial “jargon” might deter individuals and affect the reception of the information, (6) the natural experiment contributes to two key literature areas discussed below: benefits take-up and financial literacy. In addition, it is related to the growing interest in the technological and digital aspects of financial regulation.

In this paper we aim to increase our understanding on the relation of financial literacy to the success of consumer oriented digital financial regulatory campaigns. Given that financial literacy is one of our focuses, we would like to acknowledge that there is an ongoing discussion in the academic literature regarding how to define it. The Organization for Economic Cooperation and Development (OECD) describes financial literacy as “the combination of customers’/investors’ understanding of financial products and concepts, and their ability and confidence to appreciate financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being” (Atkinson and Messy (2012)). In this paper we use the term *objective financial literacy* to describe one's *objective* literacy regarding general issues and we based our measure on a common measure in the academic literature (an index of the number of correct answers to three financial questions first presented by Lusardi and Mitchell (2007)). In addition to objective financial literacy, we investigate another aspect of the OECD definition of financial literacy, namely, *subjective* financial literacy, which is confidence in one's own knowledge of financial issues. We focus on the confidence in one's own knowledge in the specific subject matter; for this paper—confidence in one's knowledge of retirement savings. Like objective knowledge, subjective confidence can affect a person's financial behavior. Having confidence in one's own knowledge of the issues mitigates the perceived difficulty of

the task (even more than actual knowledge does) and hence overcomes the tendency to procrastinate and delay action.⁵

In order to investigate the effectiveness of the Money Mountain and tax exemption campaigns, we use two data sets. The first data set is from a provident fund provider, and contains information on the number of tax-exempt accounts closed, totaling over 12,000 eligible accounts. The second data set is a nationally representative Internet survey sample of 504 people that was distributed in 2015 after the end of the campaigns. For robustness checks, it is complemented by an additional sample of 124 respondents from the same Internet survey who stated that they were aware of the “Money Mountain” campaign. We begin our research with an estimate of the percentage of the inactive accounts that were closed as a result of the campaigns. Then, using the provident fund data and the survey, we try to find how and when objective financial literacy, subjective financial literacy, geography, age, and other sociodemographic characteristics of individuals affected the awareness and actions of people following the financial campaigns. As administrative data from provident funds and survey data each have their own shortcomings, we believe that by using both data sources we achieve a richer evaluation of the actual effect of the financial regulation on the population. Our proprietary data and survey data indicate a low closing rate of 16 percent of accounts, which is consistent with the information provided by the regulator, which in turn suggests that our samples are representative of the total population in this matter⁶. In this paper, we provide evidence from both data sources that having a higher socioeconomic index is correlated with being aware of the financial regulation and taking financial action. The proprietary data from the provident fund provider show that individuals who closed small inactive accounts were older and came from localities with a higher socioeconomic index. The survey data show evidence that people who lacked objective or subjective financial literacy, as well as younger people and women, also lacked awareness of the regulatory campaigns and ability to take financial action. As expected, objective and subjective financial literacy are correlated with the socioeconomic locality index. The survey data indicate that our measure of subjective financial literacy is a personality trait correlated with several financial actions. Hence, it is more plausible that the documented correlation is an indication that subjective financial literacy affected action. It is less plausible that we observe reverse causality, where being

⁵ For further discussion see Tversky and Shafir (1992) and Heath and Tversky (1991).

⁶ Provident fund account holders come from localities with a slightly higher socioeconomic index than the country average but the general closing rate is in line with the country’s average reported by the regulator. The survey is an internet survey and hence, like all Internet surveys, it represents only the technologically skilled population and underrepresents certain parts of the population.

aware of one specific financial regulation or taking one financial action-affects the individuals' subjective financial literacy. It is also unlikely to find reverse causality with objective financial literacy; Objective financial literacy involves knowledge you are unlikely to learn about from the Money Mountain. When looking at financial actions taken by individuals, we find that one's subjective confidence in one's relevant knowledge, here specifically retirement savings, is more important than one's objective knowledge of general financial concepts. Additionally, education has a positive and statistically significant correlation with the decision of individuals to enter the website. We also find that immigrants were less aware of financial campaigns that were publicized in mass media.

We conclude that the regulator had limited ability in communicating financial information to the public and that less privileged populations were less likely to be aware of the campaign and less likely to take action based on the information. This inherently leads to the question of whether other actions, beside media, can be more effective in promoting actions from less privileged populations. In order to test this hypothesis, we conducted a field experiment. The field experiment investigated the effectiveness of different communication methods on the awareness and actions of one particular underprivileged population in our sample: ultra-Orthodox Jewish women with potentially low objective and subjective financial literacy. The women were recruited from a college as part of taking a class. For our experiment, we used the launch of the "Money Mountain 2" campaign. Like the initial Money Mountain campaign, Money Mountain 2 was launched to help the population to find inactive accounts, except that it extended this service from the long-term retirement savings system to the banking system. The motivation for our experiment is related to the literature that documents that the presentation of relevant and detailed information to consumers can affect consumers' objective financial literacy (Drexler et al. 2014 and Lusardi et al. 2017) and actions (e.g., Clark et al. 2017; Goda et al. 2014). In the field experiment, the interventions we looked at included both digital and human touch interventions that could easily be widely simulated in future regulatory interventions. The interventions were: (1) no intervention at all (for the control group), (2) an e-mail explanation of the financial campaign, (3) an e-mail explanation together with a video explanation given by a professional actor, (4) a face-to-face explanation of the financial regulation given by an employee of the Bank of Israel (the organization in charge of banking regulation), and, finally, (5) an e-mail explanation given to one of the control groups after they had filled out a baseline survey. This last intervention enabled us to isolate the effect of detailed information provided in an e-mail on a group that had had an earlier encounter with a Bank of Israel employee (who handed out a baseline survey). We

found that the interventions that included a human touch (including in a digital context in the form of an e-mail with an accompanying video presentation) increased the awareness of the campaign of the intervention groups by more than 100% relative to the control group. These interventions were also more successful in raising the percentage of subjects entering the website (from 14% in the control group to between 16% and 28% in the treatment groups).

Above and beyond our contribution to the aging and long term savings academic literature, our work is related and contributes to three main key areas. The first key area is literature documenting underprivileged populations that failed to receive benefits in designated programs such as the Earned Income Tax Credit and the State Health Insurance Program,⁷ and indicates that the information channel is an important factor in explaining take-up.⁸ We contribute to this literature in several ways: (1) by researching financial digital campaigns, (2) the absence of stigma for people who act upon the regulation and the relatively low transaction costs allow us to focus on the information effect on take-up,⁹ (3) our use of an Internet survey in addition to provident fund data enables us to investigate individuals who declared that they had contacted the long-term savings fund provider with the intention to close an account (withdraw or transfer savings), in addition to the actual accounts closed. This helps us to further disentangle the information channel from transaction costs and related technical difficulties, (4) the survey data also allows us to connect financial literacy to take-up.

The second key area we contribute to is the investigation of financial literacy as we demonstrate that financial literacy has an effect on the success and equality of long-term savings regulation. Earlier literature documents that objective financial literacy is correlated with financial behavior, including planning and saving for retirement,¹⁰ personal debt management,¹¹ participation in the stock market,¹² choosing mutual funds with lower fees,¹³

⁷ Currie et al. (2006) and Bhargava et al. (2015)

⁸ For example, Russell et al. (2014), Herd et al. (2013), Riphahn (2001), Leventhal et al. (1965), Coe (1983), and Daponte et al. (1998). Coe (1983) emphasizes lack of information as the most significant explanation for the unsatisfactory take-up rate of the food stamps program, even though the program was heavily publicized. Bhargava et al. (2015) claim that take-up is sensitive to the frequency, salience, and simplicity with which information is provided. Ebenstein and Stage (2010) suggest that reducing application barriers alone may not be an effective tool for increasing program participation and that information barriers may still exist.

⁹ Currie et al. (2006) cite three channels that were found to affect less privileged populations: lack of information, stigma, and transaction costs. Moffitt (1983) provides an economic model of stigma and Baumberg (2016) shows a quantitative measure of the effect of stigma on benefit take-up in the UK.

¹⁰ Hilgert et al. (2003), Bayer et al. (2009), Clark et al. (2015) and Uppal (2016); for a review, see Lusardi and Mitchell (2014).

¹¹ Lusardi and Tufano (2009).

¹² Van Rooij et al. (2011).

¹³ Hastings and Tejada-Ashton (2008), Hastings et al. (2010), and Hastings and Mitchell (2011).

and accumulation and management of wealth.¹⁴ Objective financial literacy is also associated with sociodemographic characteristics¹⁵ such as gender, education, wealth, race, ethnicity as well as having a generational effect¹⁶ as it has been documented that parents' objective financial literacy affects a child's literacy and financial behavior. We also highlight the importance of subjective financial literacy—specifically, confidence in one's knowledge in the specific subject matter (here long-term savings), to the effectiveness of the long-term savings regulation and financial behavior. Earlier research investigated general confidence in one's financial literacy. Allgood and Walstad (2012) have shown that both objective financial literacy and financial confidence are important aspects for financial behavior:¹⁷ individuals with high self-reported financial knowledge are more likely to plan their finances, to have substantially more retirement savings, and to pay fewer management fees. Financial confidence is also associated with sociodemographic characteristics. It has been documented that older, better educated, male respondents are more likely to possess subjective financial literacy.¹⁸

In addition, the natural experiment described above allows us to focus on the technological and digital aspects of financial regulation and financial literacy (objective and subjective). In particular, as there are no mediators or advisors when individuals use the website, financial literacy and other socioeconomic characteristics might play a bigger role. Goldfarb and Tucker (2017) review the effect and advantages of digital technology, Karlan et.al (2016) discuss the benefits and downsides of digital financial services for financial inclusion and Barber and Odean (2001) show the benefits of digital technology in finance for investors but also mention a "dark side" stemming from investors' behavioral biases.

Thirdly, our work is related to the key area that uses field experiments to research the effectiveness of different policies and theories. Levitt and List (2009) offer a review of field experiments, Duflo (2006) a review on field experiments evaluating policies in development economics. Choi et al (2017) and Beshears et al. (2015) are examples of field investigations that aim to encourage retirement savings where the latter investigated behavioral interventions

¹⁴ Stango and Zinman (2009), Hilgert et al. (2003), and Lusardi (2008).

¹⁵ OECD (2005), Lusardi and Mitchell (2008), Atkinson and Messy (2012), Brown and Graf (2013), Lusardi and Mitchell (2014), and Bucher-Koenen et al. (2017). Financial literacy is also related to personal attributes such as cognitive ability and motivation; see, e.g., Fernandes et al. (2014), Van Rooij et al. (2011), and Lusardi et al. (2010).

¹⁶ Lusardi et al. (2010) and Mandell (2008).

¹⁷ Financial confidence was found to be important in Van Rooij et al. (2012), Parker et al. (2012), Lusardi and Mitchell (2007, 2017), Lusardi and Beeler (2006), Lusardi et al. (2017), and, using different measures, Hadar et al. (2013).

¹⁸ Drolet (2016); for a review, see Lusardi and Mitchell (2014).

using emails. We also contribute to literature on field experiments encouraging the public to gain personal long term savings information using websites (Bauer et al. (2018)).¹⁹ A meta-analysis by Keiser and Menkhoff (2017) shows that financial education interventions (including nudges) have a positive effect on financial literacy and behaviour but that the interventions are less effective for low socioeconomic population. We use a field experiment to evaluate different ways of providing financial information to the public and highlight the importance of a human touch for populations with low objective and subjective financial literacy.

The paper is organized as follows. Section 2 provides institutional details on the two long-term savings campaigns in Israel as well as an overview of the Israeli retirement savings market and related demographics. Section 3 describes the data. Section 4 discusses results for the provident fund data. Section 5 describes the main independent variables—how the objective financial literacy index was built and how we defined the subjective financial literacy variables—and presents the results of the survey data. Section 6 describes the field experiment, and Section 7 concludes.

2. Setting

This section describes the two financial regulations on retirement savings, with an overview of the broader context in Israel, including Israel’s retirement savings market and a brief outline of Israel’s demographics. It also describes the two socioeconomic geographical indices used in this paper and provides a summary of past findings on objective financial literacy in Israel.

2.1 The “Money Mountain” and tax exemption campaigns

[Figure 1]

In Israel retirement savings accounts are usually created by employers who are legally obligated to open new accounts for their workers (since 2008 there is a mandatory retirement

¹⁹ When comparing our results to the results of the Bauer et al. (2018) field experiment, which investigated the effect of letters with different wording on entering a website that provides personal details on individual's retirement savings, the effect we found seems substantial. In Bauer et al. (2018), the most effective letter, which included a financial incentive (small lottery) to enter the website, raised entrances from 3% in the control group to 5%.

savings regime and high earlier enrollment due to certain unions' salary agreements before the implementation of the law) and who often decide on many aspects of the plan, including the retirement plan provider²⁰ that will manage it. However, there is no automatic continuity of savings after a change of workplace and, as a result, a new account can be opened in a different savings vehicle or with a different retirement plan provider when an employee has more than one job at a time or starts a new job. As a consequence, a large percentage of workers who change jobs have inactive accounts in former savings vehicles or providers. Inactive accounts are defined as retirement savings accounts that have received no new deposits in the last two years. The Capital Markets, Insurance, and Savings Division of Israel's Ministry of Finance (hereinafter, CMISD), which regulates retirement savings vehicles, assessed at the time of the Money Mountain campaign that there was more than USD 2.5 billion²¹ in all retirement savings inactive accounts. The CMISD also stated that in 2014 40% of accounts in all retirement saving vehicles were inactive and that there were more than 10 billion NIS²² in inactive accounts. The CMISD also indicates that the number of accounts (active and inactive) is much higher than expected by the size of the Israeli labor force and they explain that this probably stems from the fact that savers have more than one account²³. Israel is one of the first countries in the world to close the DB pension funds to new savers back in 1995, which means that the DC system was almost 20 years old in 2014. Hence it is an interesting setting to investigate. In the beginning of 2013, CMISD launched a website and search engine allowing people to find inactive accounts (Figure 1) and in May 2013, the CMISD ran a campaign called "Money Mountain." The name was chosen to suggest the possibility of finding vast sums of lost retirement money and was advertised in a way so that a majority of the population should be exposed to on television²⁴, radio, and Internet sites. The campaign was aimed at promoting the simple action of entering the designated website; however, it used retirement savings "jargon" and did not provide explicit instructions on how

²⁰ Retirement vehicles in Israel are pension funds, life insurance funds and provident funds.

²¹ NIS 10 billion.

²² Around 2.5 billion dollars.

²³ Capital Markets, Insurance, and Savings Division, Annual Report 2014.

²⁴ To put in context during May 2013 the average weekly viewing rate of the main news broadcasts in television (the 8 pm news) were around 25% of all households in Israel and the number is still the same today. This means that commercials running during prime time and the news are being seen by a very large proportion of households in Israel. Data on Israeli TV ratings taken from the Israeli Audience Research Board. In the US, none of the main news broadcasts have such high viewing rates and none of them reach the top ten viewed weekly shows. Data on US TV ratings taken from Nielsen's website.

to use the website and withdraw savings, despite prior research that showed that explicit instructions are important in promoting action.²⁵

The website uses information collected from all long-term savings providers in Israel, which are legally obligated to provide this information to the regulator. The website then allows individuals to use information portrayed in their identity card in order to view all of their inactive accounts, and it identifies the retirement fund providers where these accounts are held.²⁶ To close an inactive account (withdraw or transfer savings), the individual needs to contact the retirement fund provider and receive further instructions conditional on sending in forms or physically arriving at the provider's office or bank branch.

In June 2013, the CMISD commissioned a survey in order to evaluate the success of the campaign, based on a representative Internet sample of 500 Jews (not including the population of ultra-Orthodox) between the ages of 30 and 60. The findings showed that 67 percent were aware of the Money Mountain campaign, and the percentage was higher among older individuals and secular Jews. Fifty-four percent of the respondents stated that they had entered the Money Mountain website, and the proportion was higher among individuals aged 30–39, secular Jews, and individuals with higher income. Among those who were aware of the campaign, 66 percent indicated that they had used or intended to use the Money Mountain website. It is noteworthy that 51 percent of the people who were not aware of the campaign stated that they used or intended to use the Money Mountain website and that this number was higher among older individuals and secular Jews. Additionally, the CMISD assesses that there were over 1.2 million visits to the Money Mountain website in May 2013.

Concurrently with the Money Mountain campaign, the CMISD was lobbying for a tax exemption on savings withdrawn from small inactive accounts (with a balance of less than USD 1,800)²⁷ in provident funds for a limited period of time (one year). The reason for the need for the tax exemption was that legislation from 2013 was to come into effect in the beginning of 2015 that would impose new minimum management fees on provident funds. While provident funds have maximum fees that they can collect as a percentage of deposits and accruals, the new minimum fees would allow provident funds to collect a fixed amount of

²⁵ Leventhal et al. (1965) show that a communication about tetanus shots was effective in changing beliefs and attitudes, but only 3% took the step of getting inoculated, compared with 28% of those who received a more precise explanation of how to get to the inoculation center and schedule an appointment. See also Clark et al. 2017 and Goda et al. 2014.

²⁶ Retirement fund providers are also obligated to disclose relevant contact information (telephone number, fax number, e-mail address, and street address).

²⁷ 7,000 NIS.

USD²⁸ 2 per month, if they collected less than that amount, even if these fees exceed the usual maximum fees allowed by law. As a consequence, the new minimum management fees would gradually exhaust small inactive accounts over time. To illustrate the effect of the relevant fixed minimum fees, for example, an inactive account of 100 USD will completely exhaust itself in approximately 6 years even after taking into account a 6% annual return rate. The regulator hoped that the tax exemption would create a buzz and encourage individuals to withdraw small inactive accounts or transfer them to other active accounts in provident funds and thus avoid losing their investment in the fund to fees. The tax exemption went into effect in April 2014 for a year, but was later extended for another three months, until the end of July 2015. The provident fund providers were also obligated to send owners of small inactive accounts a letter that notified them of their eligibility to withdraw their savings, tax free, for a limited period of time, and that explained how they could withdraw their savings via the fund or a bank. The CMISD assessed that there were about 1.8 million small inactive accounts, valued at a total of around USD 680 million.²⁹ Press coverage of the tax exemption was carried in news and lifestyle programs on television³⁰, radio, the Internet, and in print media for the duration of the exemption. In the first quarter of the tax exemption, until the end of June 2014, only three hundred thousand accounts were closed (11.5 percent of the eligible accounts) and by the end of the period the 15 percent of the accounts were closed, equal to approximately 19 percent of total savings in the eligible tax-exempt accounts.³¹ During the period of the tax exemption, withdrawing savings from provident funds was easier than at other times.

The CMISD originally expected that the majority of the accounts would be closed during the tax exemption campaign and were surprised by the relatively low closing rate.

In July 2015, the CMISD extended the tax exemption indefinitely, from the beginning of 2016 onward.

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²⁸ 6 NIS.

²⁹ Over NIS 2 billion.

³⁰ Data from the Israeli Audience Research Board shows that during April 2014 economic consumer TV shows were very popular and the average weekly viewing rate was around 10%-15% of Israeli households. When looking at all news and life-style shows that rates exceed 30% (we do not know the exact number because some households watch more than one show a day; we present the maximum number of households watching news and life-style shows at 8 pm).

³¹ Data received by CMISD representatives.

2.2 Israel: Demographics

Compared to other OECD countries, Israel is characterized by high income inequality (Figure 2). Nineteen percent of families in Israel live in poverty. Poverty rates are higher for ultra-Orthodox Jewish families and Arab families (with a poverty rate of over 50 percent in 2014), families where the head of the household has less than 8 years of education, families where the head of the family is unemployed, immigrant families, and families living in the geographic periphery of the country.³² The poverty rate for women in Israel (18.3% in 2014) is higher than for men (17.1% in 2014) and the gender gap for earnings in Israel is higher than the OECD average.

[Figure 2]

The Program for the International Assessment of Adult Competencies (PIAAC) 2014–2015 survey of workers' competence in a digital environment shows that Israeli adults have a slightly lower average grade (274) than the OECD average (279). The survey also shows a considerable difference between the Jewish population, which has a slightly higher grade than the OECD average (280), and the Arab population, which has a much lower grade (238).³³ Israel's Central Bureau of Statistics (hereinafter, CBS) Expenditure Survey of 2014, which is a representative sample of the Israeli population, indicates that only 26% of ultra-Orthodox Jews and 41% of Arabs have a personal Internet subscription, compared with a 71% national average.

2.3 Israel: Geographical indices

The CBS publishes two sociodemographic indices for Israeli local authorities: the socioeconomic index and the periphery index. These indices can be used to characterize localities and their population, on average. The indices are noisy proxies for individual data because they use average characteristics of the localities, and there can be large internal differences in the conditions of the population in these localities.

The socioeconomic index is calculated using data from the 2008 national survey on demographic and standard-of-living features of the population in each locality, such as data on income, level of education, level of employment, and national insurance allowances given to the population in each locality. Each locality is given a ranking between 1 and 10, where 1

³² National Insurance Institute of Israel, Poverty, and Social Gaps Report, 2014.

³³ The Israeli Central Bureau of Statistics.

is given to localities with very low socioeconomic conditions and 10 to localities with very high socioeconomic conditions. Ninety percent of the localities with a low grade of between 1 and 3 are Arab localities.

The periphery index is based on data from 2004 and grades localities' proximity to economic activity or potential for activity. The index is calculated using data on each locality's proximity to the Tel Aviv or Jerusalem districts, the locality's size, and the locality's proximity to other local authorities. Each locality is given a ranking between 1 and 5, where 1 is given to the most peripheral localities and 5 to the most central. Scores of 4 and 5 are given to localities in the vicinity of the Tel Aviv and Jerusalem districts.

2.4 Israel: Objective financial literacy

In 2012, the CBS published an objective financial literacy survey that included a representative survey of 1,200 people in Israel over the age of³⁴ 20. The survey shows that relative to the OECD average,³⁵ the Israeli population has low objective financial literacy: 59% of the Israeli population knows how to calculate interest paid on a loan (versus an international average of 82%), 65% can define inflation (versus an international average of 80%), and 48% understand the concept of diversification (versus an international average of 71%).

The survey also indicates that the Israeli population has a very positive attitude toward long-term saving relative to other countries³⁶

Meir et al. (2016) analyzed objective financial literacy (estimated using common measures in the literature), general financial behavior, retirement planning, and numeracy abilities in Israel, using an Internet survey taken in 2012 of 501 Israeli individuals between the ages of 46 and 61. Their estimates of the objective financial literacy in Israel are higher than those of the CBS financial literacy survey. The authors show that their objective financial literacy index is positively correlated with being male, having higher education, having higher income, and being a non-immigrant. In addition, they show that retirement planning is correlated with a higher objective financial literacy index.

³⁴ Financial Literacy Survey: Knowledge, Opinions, and Behavior in Financial Issues, November 2012, CBS.

³⁵ The average was calculated for the following countries: the UK, Germany, Norway, Ireland, Poland, Peru, Albania, South Africa, Estonia, Hungary, Armenia, the Czech Republic, Albania, and the Virgin Islands.

³⁶ Only 18% stated that they would rather spend money today and not save for the long term (versus an international average of 45%).

3. Data description

The data was obtained from two sources: a large provident fund and two Internet surveys (a main survey and a complementary survey).

3.1 Provident fund data

The first data source is proprietary data obtained from a large provident fund in Israel, and contains data on 12,735 inactive accounts that were eligible for tax-exempt withdrawal as of March 1, 2014, with an indication of whether these accounts were closed (money was either withdrawn or transferred to another active account) before the end of the tax exemption period that ended in July 2015.³⁷ From the provident fund, we also have data on the account owner's gender (this does not have to be the person who actually closes the account), age, savings value and locality. Using the locality data we are able to identify if the locality is Arab, as well as the locality's ranking on both the CBS' socioeconomic index and the CBS' periphery index.

In the provident fund account owners are: 54% female, 4% from Arab localities, their average socioeconomic index is 5.7, which is above the country's average of 4.8, and their periphery index is 3.6, which is also above the country's average of 2.8. The average eligible fund size is around USD 450 (median USD 250).³⁸

3.2 Internet surveys: Main survey and complementary survey

Our Internet survey consisted of questions about retirement savings, awareness of the two financial campaigns, and financial actions taken as a result of the campaigns (we define financial action as entering the website, closing an inactive account³⁹ or contacting the retirement fund provider with the intention to close an inactive account). The survey also included objective questions about financial literacy, subjective questions about the respondent's confidence regarding the issue of retirement savings, and several demographic questions.

The main Internet survey, based on a nationally representative sample of 504 people, was conducted in August 2015 using a professional survey company. The sample is supposed to represent the general population, even though, like all Internet surveys, it represents only the

³⁷ We were not able to retrieve earlier data.

³⁸ NIS 1,650 and NIS 990, respectively.

³⁹ Withdrawing or transferring retirement savings

technologically skilled population and underrepresents certain parts of the population such as ultra-Orthodox Jews and Arabs.

Our sample is similar to the CBS Expenditure Survey of 2014, which is a representative sample of the Israeli population (the percentages in parentheses are those of the CBS survey): 48% males (48%), 57% married (64%), 29% with traditional beliefs (29%), 15% with religious beliefs (13%), 6% retired (5%), and 22% non-workers⁴⁰ (25%). Our sample underrepresents immigrants: 16% (30%); ultra-Orthodox Jews: 3% (8%); and Arabs: 1% (16%).

The nationally representative survey was complemented by an additional sample of 124 people who initially stated that they were aware of the Money Mountain financial campaign. Our aim in conducting the complementary survey was to obtain better statistics on this “cognizant” population. The complementary sample shows that this population is more male, more educated, more employed, more secular, and older compared to the representative survey sample. The complementary sample is used for robustness checks.

4. Provident fund accounts closed

The proprietary data from the provident fund has information on actual inactive accounts closed. Although we thus know each account owners' choice in the matter, we have limited information about their personal characteristics or financial knowledge.

Informal inquiries made to the provident fund provider indicated that during the campaign the closing rate was much higher than usual and that the campaign therefore had an impact. The closing rate of eligible inactive accounts in our data was 16%, similar to the 15% stated by the CMISD.

[Table 1]

In Table 1 we present differences between the population that closed (withdrew or transferred funds) inactive accounts and the population that did not do so. For the geographical indices (the socioeconomic index and periphery index), we divided our sample based on localities above and below the median score of the indices in the general population.⁴¹ In Table 1, using T-tests, we can see that when dividing the population according to socioeconomic conditions,

⁴⁰ Not in the working force or unemployed (mostly not in the labor force).

⁴¹ Our choice of partition involved a trade-off: if we considered only localities at the tails of the distribution we would be better able to distinguish the populations, but, at the same time, we would have fewer observations and hence our model would have less explanatory power.

people from localities with a higher socioeconomic index and older account owners are more likely to close accounts (the optimal action). The closing rate for account owners from localities with a high socioeconomic index is 18%, versus 13% for account owners from localities with a low socioeconomic index, and this difference is statistically significant. The closing rate for account owners from peripheral localities is 15%, versus 18% for account owners from non-peripheral localities. Additionally, the closing rate for Arab localities is only 11%, significantly different from the 16.5% average for all other localities. As noted above, in Israel, higher poverty rates have been found in the periphery and in the Arab community. Older account owners have a statistically significantly higher closing rate (account owners over the age of 60 have a closing rate of 23% and account owners under the age of 35 have a closing rate of 15%). Based on the provident fund data, we did not find a difference in closing rates between men and women.

When comparing the percent of inactive accounts closed by savings size and by socioeconomic partition (see Table 2), we obtain the following outcomes. First, for all socioeconomic populations, the larger the savings in the inactive account, the higher the percent of accounts closed. In addition, for the low socioeconomic population, the percent of inactive accounts closed, when the size of the account is small (in the lowest quarter when partitioning accounts by size), is less than half of the low socioeconomic population average: a closing rate of 6% for small inactive accounts versus a 13% overall average. For the high socioeconomic population, the percentage of large inactive accounts closed is larger than the high socioeconomic population average: a closing rate of 24% for large accounts versus an 18% overall average. This high rate of large inactive accounts closed is larger for the high socioeconomic population than it is for the low socioeconomic population. The low closing rate of small and large inactive accounts by the low socioeconomic population runs counter to an expected income effect that should make small savings more worthwhile to withdraw (or even save in a different provider) for the poorer population. Possible explanations can stem from either information dissemination issues (i.e. Low socioeconomic population have lower awareness of accounts derived from short-term jobs) or transaction costs and behavioral biases (i.e. if closing accounts is more costly for the low socioeconomic population they are less likely to close small accounts).

[Table 2]

One of the major advantages of the provident fund data is that they describe individuals' real choices. Using this data we were able to document geographical connection between financial

action, on the one hand, and Arab localities, a locality's socioeconomic index, and a locality's periphery index, on the other. The disadvantage of the provident fund data is that although we know that financial literacy (objective and subjective) is correlated with socioeconomic characteristics, we cannot infer whether the individual's financial literacy is responsible for the correlation or whether it stems from other factors. Another disadvantage is that in addition to financial literacy, behavioral biases and technical difficulties can affect the closure of actual inactive accounts. The survey data presented in the next section will enable us to investigate factors on an individual level and to focus on the information channel.

5. Survey Data

While the financial literacy definition provided by the OECD is relatively broad, we focus on "objective (general) financial literacy" that measure basic knowledge of financial concepts and "subjective financial literacy" that is based on the confidence in one's knowledge of the specific subject matter; retirement savings. The following section describes how we measure and define these personal attributes

5.1 Survey: Personal characteristics variables

5.1.1 Objective Financial literacy

The most comparable and widespread measure of financial literacy in the academic literature is an objective measure of one's knowledge and is made up of three questions regarding interest rate, inflation, and risk diversification.⁴² As in the literature, here the objective financial literacy index score, which will serve as our proxy for the objective financial literacy, is calculated so that each correctly answered question gives the respondent a score of 1, and the index value is the total of correct answers.⁴³ These basic questions are the same ones used in this paper and have been shown to differentiate well between naïve and sophisticated respondents. The responses can characterize people's levels of financial knowledge and are strongly correlated with financial behaviors. Lusardi and Mitchell (2017)

⁴² An example of the status of these questions can be found in Hasting et al.'s (2012) literature review, where they are called the "Big Three." Hung et al. (2009) show that the three original financial literacy questions are stable over time and have a high correlation with other financial literacy measures. The wording of the questions is presented in Table 3.

⁴³ Unlike in Lusardi and Mitchell (2007) and the Dutch DNB Household Survey (DHS) (Van Rooij et al. 2011), in this paper the wording of the diversification question is not changed and we present only one formulation of the question. More specifically, we use the formulation that had the highest response rate. The fact that wording matters provides evidence that respondents often do not understand the question or the concepts, and some answers are simply the result of guessing. It also shows that answers to advanced financial literacy questions should not be taken at face value and the empirical work should take into account that these measures are often noisy proxies for the true level of financial literacy.

found that when more questions are added to the three stated above, the additional questions do not change any of the conclusions or the major demographic characteristics of people with higher or lower objective financial literacy. The main statistics on these three questions appear in Table 3, where we can see that 76% correctly answered the interest rate question, 59% correctly answered the inflation question, and 45% correctly answered the diversification question.

[Table 3]

A comparison of these outcomes with previous studies and other countries is presented in Figure 3 and uses data from Hastings et al. (2012). Our Israeli sample scored higher in the interest rate question (76% answered correctly versus an international average of 66% in Hastings et al.), slightly higher in the inflation question (59% versus 57%), and slightly lower in the diversification question (45% versus 47%). The overall score we found in Israel was a bit lower than the average score in Hastings et al. (31% versus 33%). The findings of our main survey are similar to those of the CBS Financial Literacy Survey of 2012 and are presented above and a bit lower than the findings in Meir et al. (2016).⁴⁴

[Figure 3]

5.1.2 Subjective financial literacy

As stated in the literature, financial awareness and action can depend on subjective feelings of confidence that people have with regard to their financial knowledge.⁴⁵ In this paper we wanted to isolate this subjective component of financial literacy and specifically financial confidence in one's knowledge of retirement savings (as distinct from other financial knowledge). Therefore, in the questions presented in this paper we specifically asked about confidence in one's knowledge of retirement savings. The wording of the question and the main statistics are presented with other subjective questions in Table 4.

[Table 4]

⁴⁴ The wording of the questions in the CBS survey was different than the wording of the questions in our survey but covered similar fields. The Meir et al. (2016) survey was distributed to an older population, which might explain the differences.

⁴⁵ Previous studies, e.g., Lusardi and Mitchell (2011a), Lusardi and Tufano (2009), and Van Rooij et al. (2011, 2012) used a general question about confidence in financial knowledge: "On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?" In Lusardi and Mitchell (2017) the wording of the question was slightly different: "On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your understanding of economics?"

When asking about confidence, we find that the percentage of people who answered that they had a fair to excellent understanding of retirement savings (i.e., on a scale from 1 to 5, all those answering 3 and above) is 29%, while in Lusardi and Mitchell (2011a) the percentage of people who stated that their general financial knowledge is 5 and above (5–7) is 70%. This indicates that there might be differences between subjective confidence in one's retirement literacy and subjective confidence in one's general financial knowledge, with the former being lower. It is also interesting to note that the correlation between the subjective and objective financial literacy measures that we used, i.e. the answers to the question of confidence in one's retirement knowledge and the objective financial literacy index⁴⁶ is only 0.16.

Subjective financial literacy is a personality trait that is correlated with many economic actions and outcomes. In the survey data, we find a positive and significant⁴⁷ correlation of around 0.3 for the subjective financial literacy variable and the survey answers regarding: frequency of checking information on your retirement account, bargaining with fund providers on retirement savings management fees, and being aware of complicated concepts related to retirement savings⁴⁸. It also has a high positive and statistically significant⁴⁹ correlation of 0.24 with having additional personal investments in stocks, bonds or investment funds.

5.1.3 Robustness test: interest in retirement issues

Our subjective measure of financial literacy is not as widely used or validated in the academic literature as the objective financial literacy index that we use. That is why for robustness, we also included in the survey another subjective question about the degree of one's interest in retirement issues. The wording of the question and the main statistics are presented in Table 4. The correlation between the stated confidence in one's retirement knowledge and their stated interest in retirement issues⁵⁰ is 0.35 and the correlation between stated interest in retirement issues and the measure of objective financial literacy is not statistically different from zero.⁵¹

⁴⁶ Spearman non-parametric correlations and significant at the 1% level. In Van Rooij et al. (2012), Parker et al. (2014), Lusardi and Mitchell (2007, 2017), and Lusardi and Beeler (2006), a positive correlation between financial literacy and financial confidence was found, despite the fact that about one-third of the highest and lowest financially educated respondents didn't have the same matching self-reported financial knowledge.

⁴⁷ The difference between individuals with high and low confidence in one's retirement knowledge is statistically significant at the 1% level.

⁴⁸ Actuarial deficit and indirect expenses.

⁴⁹ The difference between individuals with high and low confidence in one's retirement knowledge is statistically significant at the 1% level.

⁵⁰ Spearman non-parametric correlation and significant at the 1% level.

⁵¹ Spearman non-parametric correlation.

5.1.4 Descriptive statistics of personal characteristics variables

Our survey results indicate (Table 5) that individuals with high objective financial literacy are likely to be older, male, have a higher income, have a higher education, and come from localities with a higher socioeconomic index. We also learn from Table 5 that individuals with high subjective financial literacy are likely to be older, male, Israeli-born, and come from localities with a high socioeconomic index and central (non-peripheral) localities.

[Table 5]

5.1.5 Descriptive statistics regarding awareness of the campaigns and financial action taken

As described above, the Money Mountain campaign is relevant to all adults with a working history. Additionally, the regulatory campaigns were widely advertised in prime time TV, radio and the Internet as well as in personal letters and were expected to reach almost all households in Israel. Lack of awareness in this case can mean two things: 1) Populations with less access to the media were not exposed to the information at all (i.e. immigrants, ultra-Orthodox Jews and Arabs). 2) Individuals exposed to the advertisement did not register the information, could be because of lack of financial literacy. The awareness of the Money Mountain campaign and the awareness of the tax exemption for withdrawing savings from small inactive provident fund accounts are the same (42% and 40%, respectively). When comparing this outcome to the CMISD evaluation of June 2013, we see that after two years the awareness of the campaign was much lower (42% versus 67% in the CMISD survey). Even though the issue of inactive funds and Money Mountain continues to remain in the public eye to this day, the decline in awareness could stem from the fact that the effects of interventions diminish over time (Fernandes et al. 2014). In addition, most of the people who heard about the Money Mountain campaign were also aware of the tax exemption: 58% in the representative sample and 74% in the complementary sample. The fact that most of those who were aware of one campaign were also aware of the other is initial evidence that some features of the population might be associated with reception to financial campaigns in general.

In the representative sample, most of the people who visited the site were aware of the Money Mountain campaign or of the tax exemption (65% and 61%, respectively). We also find that more people visited the Money Mountain website than were aware of the campaign, 53% versus 42%, which suggest that some people entered the portal because of consultation or other sources of information that are not related to the campaign itself. When comparing this

outcome to the CMISD evaluation of June 2013, we see that the percentage of people who visited the Money Mountain website was the same: 53% in our survey versus 54% in the CMISD evaluation.

The percentage of people who contacted their retirement fund provider with the intention to close an account as a result of the campaigns is much lower and stands at 14% for the main representative sample. These individuals may have made these contacts with the intention to withdraw tax-exempt savings from provident funds or other retirement savings vehicles as a result of the Money Mountain campaign. Not all those who contacted their retirement fund provider actually closed inactive accounts. The survey data indicates that 70% of the individuals who intended to close an inactive account stated that they actually did so, while 25% left the savings in the inactive accounts. The individuals who left the savings in the inactive accounts may have encountered technical difficulties or experienced behavioral biases. That is why we look at an individual's intentions, which are more relevant to information dissemination, and not at final outcomes.

It is noteworthy that a high percentage of the people who had the intention to close an account were fully aware of at least one of the campaigns: 68% were aware of the Money Mountain campaign and 76% were aware of the tax exemption campaign. Fifty-one percent of the people who had the intention to close an inactive account were aware of both campaigns.

In Figure 4A we can already see that people with high objective financial literacy were more aware of the financial campaigns: around 55% of individuals with high objective financial literacy were aware versus around 25% of individuals with low objective financial literacy.⁵² Individuals with high objective financial literacy were also more likely to enter the Money Mountain website: 62% versus 41% of individuals with low objective financial literacy.⁵³ Yet at the same time, when we examine the intention to close an inactive account, objective financial literacy does not seem to matter,⁵⁴ and this may imply that other factors should be taken into account, such as confidence in retirement knowledge, our subjective measure of financial literacy. Subjective financial literacy plays a role in awareness and in financial action, as can be seen in Figure 4B. Individuals with high subjective financial literacy, compared with all other individuals,⁵⁵ were more aware of the Money Mountain campaign:

⁵² This difference is statistically significant at the 1% level.

⁵³ This difference is statistically significant at the 1% level.

⁵⁴ This difference is not statistically different from zero.

⁵⁵ All differences between individuals with high and low subjective financial literacy are statistically significant at the 1% level.

73% versus 40%; were more aware of the tax exemption campaign: 78% versus 37%; were more likely to enter the designated website: 85% versus 50%; and were more likely to have an intention to close an inactive account: 35% versus 13%.

[Figure 4]

5.2 Survey: Results

5.2.1 Empirical model

We have investigated the relationship between the financial outcomes and the personal characteristics of individuals, their objective measure of general financial knowledge (objective financial literacy index)⁵⁶, and their subjective financial literacy (confidence in their knowledge in retirement savings). We report correlations and would like to infer from them causality. Objective financial literacy involves knowledge you are unlikely to learn about from the Money Mountain regulations (interest, inflation and diversification have nothing to do with the Money Mountain regulations). Hence, the reasonable interpretation of an observed correlation is that objective financial literacy effects the observed actions and not the reversed causality. With respect to the subjective financial literacy, as previously tested and described, the investigated subjective financial literacy measure is a personality trait affecting and affected by many economical outcomes and activities. Hence, it is more plausible that we are testing the influence of the subjective financial literacy on awareness of the financial campaigns and related actions rather than testing the reverse causality.⁵⁷

⁵⁶ When examining each of the questions in the objective financial literacy index separately, the outcomes are consistent with former research by, e.g., Lusardi and Mitchell (2011b) and Van Rooij et al. (2011): it is the understanding of risk diversification (understanding of advanced financial knowledge) that matters most for retirement planning. Nevertheless, for the specifications presented above we still believe that the objective financial literacy index has better explanatory power because of former research that shows the stability of the index over time and the correlation with other financial literacy measures (Hung et al. 2009).

⁵⁷ Additionally, the correlation of being aware of the Money Mountain regulations, entering the Money Mountain website or contacting the fund provider with the intent to close an account as a result of the campaigns, and the other economic outcomes (the frequency of checking information on your retirement account, bargaining with fund providers on retirement savings management fees, being aware of complicated concepts related to retirement savings, and having additional personal investments in stocks bonds or investment funds), is much lower than the correlation of these economic outcomes with subjective financial literacy. We conclude that subjective financial literacy is a personality trait that has a stronger connection than the Money Mountain campaigns with other economical outcomes and activities.

Financial outcomes are awareness of financial campaigns and financial action which are dummy variables that can receive two possible values: 0 or 1. Hence, the specification of the main regressions is as follows:⁵⁸

$$y_i = \alpha + \beta_1 * \text{Objective financial literacy}_i + \beta_2 * \text{Subjective financial literacy}_i + \beta_3 * X_i + \epsilon_i$$

where y_i is the outcome variable for individual i for four outcomes: (1) awareness of the Money Mountain campaign, (2) awareness of the tax exemption campaign, (3) entrance to the Money Mountain website, or (4) intention to close (withdraw or transfer savings) an inactive accounts as a result of the campaigns. We denote by X individual i 's demographic characteristics, including age, gender, marital status, income, education, religious identity, work status, and an indicator of whether the individual is an immigrant.⁵⁹ The variable description is presented in Appendix 1.⁶⁰

We estimate the model using three data specifications: the first and main data specification is the representative sample. The second and third data specifications are used for robust estimates: the second is the representative sample with an additional complementary sample of 124 individuals that indicated they were aware of the Money Mountain campaign and the third is the representative sample with weights on the complementary survey (individuals in the complementary sample received a weight of 0.42 and individuals in the representative sample received a weight of 1. The reason for this is that only 42% of the respondents in the representative sample stated that they were fully aware of the Money Mountain campaign).⁶¹

We begin by examining the characteristics of individuals who were aware of the financial campaigns from the representative sample (Table 6) and describe the outcomes. We also

⁵⁸ When running the regressions for awareness of the campaigns and financial action taken without the confidence in retirement knowledge variable, we found that the financial literacy index variable had a stronger and more significant effect.

⁵⁹ It should be stated that none of the demographic variables have a correlation higher than 0.3 with either the financial literacy variable or the confidence in retirement knowledge variable.

⁶⁰ The results were similar when we used different specifications of the sociodemographic variables. In addition, as expected of the structure of the variable, when we used a dummy variable that indicated whether an individual had a score that was above or below the median score of the financial literacy index, the outcomes of the models were similar except for the fact that the effect of the financial literacy variable was stronger. Similarly, when we added a dummy variable that indicated whether an individual answered that he had little or no understanding of retirement issues, we found similar outcomes for the regressions except that the two dummy variables for confidence in retirement knowledge were not always both statistically significant. In a robustness check of the weighted complementary sample, we added income information for 82 observations where income was missing, using a forecast regression from the CBS expenditure survey of 2014. The outcomes were again similar in size and significant for the main specifications in the paper.

⁶¹ A specification where a dummy variable is used instead of weights for the complementary sample produces similar outcomes.

examine the characteristics of individuals who took financial action following the financial campaigns from all three data descriptions (Table 7). As the outcomes from all three data descriptions are similar, we describe the outcomes from the main representative sample, yet, when outcomes from the other data specifications created for robustness checks are different, we discuss it in the footnotes. We present and describe the size of the characteristics' effects on individuals' awareness of financial campaigns and on their financial actions from the representative sample (Table 8). We then proceed to examine and describe robust specifications from the representative sample (Table 9).

5.2.2 Characteristics of individuals who indicated that they were aware of the campaign

[Table 6]

In Table⁶² 6 we analyze which characteristics of individuals had an effect on their awareness of the financial campaigns using only the main representative sample (as the complementary sample is conditioned on being aware of the Money Mountain campaign). We used the logit method of estimation but the results are qualitatively similar when using either a linear probability model (estimated by OLS) or the probit method of estimation. In particular, our main coefficients of interest (namely, objective financial literacy and subjective financial literacy (confidence in retirement knowledge) have the same sign and similar levels of statistical significance across all three estimation techniques.

Column (1) of Table 6 shows that there are a number of variables that significantly affect the awareness of the Money Mountain campaign that was advertised on television, radio, and Internet sites. The coefficients of the value of the objective financial literacy measure and the subjective measure are statistically significant and positive. Immigrants and non-workers have a significant negative correlation with awareness of the campaign. A possible explanation of the negative effect of being an immigrant (over 50% of the immigrants in the survey came from the former USSR) is that maybe a language barrier or even a culture barrier prevented this population from being aware of the campaign.⁶³ When regressions are estimated with only immigrants who arrived after the fall of the USSR in 1989 instead of all immigrants, the outcomes are very similar (not displayed). Controlling for all other related variables in the

⁶² When analyzing the awareness of the campaigns variables, we investigate only the representative sample (columns (1) and (4)) because the complementary sample is made up of respondents who stated upfront that they were aware of the Money Mountain campaign.

⁶³ In line with literature on language and cultural barriers e.g. Osili and Paulson (2008).

representative sample, age was found not to have a significant effect.⁶⁴ Age and age squared were also found not to have an effect in the regression when the work status dummies, which have a high correlation of over 0.4 in absolute value with the age variable, were not added, as shown in column (1) of Table 9.

Column (2) of Table 6 shows the effect of the dependent variables on awareness of the tax exemption campaign. In this regression, too, the effects of objective and subjective financial literacy are significant and positive, and not working remains statistically significant with a negative effect. Age and higher education are statistically significant and positively correlated with being aware of the tax exemption. The coefficient of immigrants with awareness of the tax exemption campaign is negative but not statistically significant. Age is positively correlated with awareness of the tax exemption campaign and when we add age squared and drop the variable for work status (which includes “retired” and is strongly correlated with age), then age squared is negative and age stays positive and both age variables are statistically significant; see column (2) of Table 9. This is in accordance with the literature, where the effect of age on financial outcomes has been found to have an inverted U shape.

5.2.3 Characteristics of individuals that took financial action

[Table 7]

Table 7 presents the effect of the dependent variables on entering the website and/or contacting the provider with the intention to close an inactive account using all three data descriptions.⁶⁵ The regulator’s objective was not only to raise the awareness of the population but also to provide the population with a digital tool to help them check whether and where they had inactive accounts. In columns (1)–(3) of Table 7, we investigate the variable for entering the Money Mountain website. We do not know the exact dates when individuals entered the Money Mountain website, or the exact dates when they contacted the fund providers with the intention to close an inactive account. Therefore, we do not know whether people entered the site as a result of the Money Mountain campaign, the tax exemption

⁶⁴ Age has a correlation of 0.41 with the work status variable.

⁶⁵ When financial action regressions were run only on the population that indicated that it had savings in retirement funds, provident funds, or insurance policies (412 respondents out of the full representative sample of 504 respondents), we found that education was no longer statistically significant for entering the Internet site and the non-working variable was no longer statistically significant for intention to close an account while all other outcomes were hardly changed (not shown). We believe that a large segment of the population does not know whether it has retirement savings and that looking at the more general sample gives a better indication of actual outcomes.

campaign, or both.⁶⁶ In the main representative sample regression, column (1), objective financial literacy, subjective financial literacy, age, being female, and academic education⁶⁷ are positive and statistically significant. We also find that the effect of age has an inverted U shape even when controlling for work status variables (not shown; the regression without the work status variables is presented in column (3) of Table 9). The nature of the financial action in this regression is technological and requires that individuals be comfortable with the Internet and technology as well as with the topic. As expected, the effect of this kind of financial action has a strong inverted U shape with regard to age. The gender effect found in the regression is consistent with the literature on financial behavior, although we do not find such an unequivocal outcome for awareness of the financial campaigns.

We have data on whether people contacting fund providers with the intention to close an inactive account did so because of the Money Mountain campaign or because of the tax exemption campaign, but as discussed earlier, we don't have data on the dates of these contacts. Therefore, in columns (4)–(6) of Table 7, we analyze the data on the intention to close an inactive account using all three data descriptions while acknowledging that it may be jointly driven by both campaigns. In the main representative sample regression, column (4), subjective financial literacy measure, being female,⁶⁸ and not working⁶⁹ are the only statistically significant variables.⁷⁰ Our results suggest that in this case, taking financial action, which amounts to contacting one's retirement fund provider, is more significantly correlated with our subjective financial literacy measure which is based upon the indicated confidence in one's knowledge of retirement savings than with objective financial knowledge.⁷¹ This confidence can be the mechanism that facilitates reception of financial information as well as overcoming apathy and procrastination. If indeed confidence in the knowledge related to the relevant topic is critical, it suggests that financial regulation aimed at transparency and disclosure is missing an important factor. This might also explain some of the contradictory

⁶⁶ In matching the overall entries to the CMISD data of June 2013, we find few differences, which could mean that most of the visits to the website resulted from the Money Mountain campaign.

⁶⁷ In column (2) of Table 7 the education variables are not statistically significant but we believe that this sample suffers from uncorrected sample selection.

⁶⁸ In column (5) of Table 7 the female variable is not statistically significant but we believe that this sample suffers from uncorrected sample selection.

⁶⁹ Only in the representative sample.

⁷⁰ When we ran the regressions only on the population that indicated that they were aware of at least one of the financial campaigns, confidence in retirement knowledge was the only statistically significant variable and its size effect was similar to the regressions presented in Table 7.

⁷¹ This is in line with an outcome in Meir et al. (2016), which shows that objective financial literacy and retirement action are not correlated when controlling for background variables.

outcomes in the literature on the effects of financial literacy and financial education on economic behaviors.⁷²

Similarly to its effect on entering the Money Mountain site, gender has a negative effect on the intent to close an inactive account. The fact that non-workers intended to close fewer inactive accounts might be because current work status is positively correlated with past work status and hence the non-workers did not have savings in retirement savings vehicles, but there may also be an effect originating from the inattentiveness of this population to financial, and specifically, retirement issues.

It is interesting to note that age has no effect on the intention to close an inactive account, as seen in columns (4)–(6) of Table 7 and in column (4) of Table 9. This may be because the younger population opened more savings accounts after 2008 and hence are more likely to benefit from the tax exemption. As stated above, all retirement savings saved before 2008 were already eligible for a tax exemption on lump-sum withdrawals. The outcomes for the age variable are consistent with the outcomes in the CMISD evaluation of June 2013.

5.2.4 Illustration of size effects of individuals' characteristics

[Table 8]

To illustrate the size of the effects from the main representative sample regression in Tables 6 and 7 on different populations, Table 8 displays the probability of being aware of the financial campaigns or taking financial action in several pre-specified values of the explanatory variables. We can see that both the demographic characteristics and the objective and subjective financial literacy effects are substantial. The model states that over 65% of individuals (depending on gender and campaign) with high objective and subjective financial literacy were aware of the campaigns but is less than 51% for individuals with low financial objective and subjective literacy. For individuals with high demographic attributes (55 years old, academically educated, with an above-average income) and high objective and subjective financial literacy the awareness of the campaigns rises to over 82%, while for individuals with high demographic attributes and with low objective and subjective financial literacy it is less than 34%. Awareness for the tax exemption campaign is the lowest and stands at 13% for woman with low demographic attributes (35 years old, with a high school degree or lower,

⁷² Many papers find that people's financial behavior is better when they were offered or attended financial education courses at work, school, or in other venues (Bernheim et al. 2001; Bayer et al. 2009), while others obtain mixed results (Fernandes et al. 2014), especially with regard to financial education in school programs (Mandell and Klein 2009; Cole and Shastry 2009).

and below-average income). Between 77% and 95% of individuals (depending on high or low demographic attributes and gender) with high objective and subjective financial literacy entered the Money Mountain website compared with between 33% and 74% of individuals with low objective and subjective financial literacy. Additionally, between 18% and 48% of individuals (depending on high or low demographic attributes and gender) with high objective and subjective financial literacy intended to close accounts versus between 10% and 30% of individuals with low objective and subjective financial literacy.

5.2.5 Robustness test on inquiries about inactive accounts and additional subjective questions

[Table 9]

We were also able to examine individuals who contacted their retirement fund provider to inquire about inactive accounts. By “inquiry” we mean *any* inquiries about inactive funds and not specifically inquiries resulting from the financial campaigns. In the representative sample, when investigating the variables affecting this financial action, we find that only the subjective financial literacy (confidence in retirement knowledge) is statistically significant; see column (5) of Table 9. This lends support to the role of subjective financial literacy in financial action.

As mentioned above, the question that we use in this study to estimate confidence in retirement knowledge is not as wide spread in the literature as the objective financial literacy index. For a robustness check we investigated the effect of another subjective variable about interest in retirement issues instead of the subjective question about confidence in retirement knowledge. When we added this question to the main specification in the representative sample⁷³ (as presented in columns (6)–(9) of Table 9), we found that interest in retirement works in the same direction as confidence in retirement knowledge and is positively correlated with financial awareness and action, as expected, and that all other outcomes remain similar. It should be noted that interest in retirement is significant only for awareness of the tax exemption campaign and entering the Money Mountain website.

⁷³ When additional regressions are run on the weighted complementary sample, the outcomes are very similar and our conclusions are the same.

5.3 How to reconcile provident fund data and survey data

The proprietary data about actual inactive accounts closed from provident funds during the campaign are largely compatible with the representative survey data.⁷⁴ We find that taking financial action is negatively affected by age and weaker socioeconomic characteristics. The effect of socioeconomic characteristics on financial action can be observed in the positive effect of education and the negative effect of unemployment on financial action but also in the positive effect of objective and subjective financial literacy on financial action. The objective and subjective financial literacy variables are positively correlated with the socioeconomic and periphery indices, which in turn indicates a positive correlation between socioeconomic characteristics and financial action.

We did not find differences in the number of inactive accounts closed between men and women in the provident fund data, as we did in the survey data and literature, possibly because we don't know the gender of the person who closed the account, but only the gender of the account owner. It is quite probable that in some households the husband (or other male family member) took the initiative to close the wife's (or other female family member's) inactive account for her. The fact that the data from the provident fund are missing information on the actual characteristics of the individuals shows us the advantages of using survey data when trying to separate out the effects of interventions on the population. The survey data allow us to investigate factors on an individual level and, specifically, they show us the importance of gender as well as other factors on financial action.

6. Field Experiment

In order to follow up on the outcomes described above, we conducted a field experiment to examine how different informational interventions affect an underprivileged population's awareness of a financial campaign and the financial actions taken by it. We have shown that populations with low objective and subjective financial literacy were less aware of the information on financial regulation which affected their ability to take action. The next natural question to ask is if there is a different setup of financial campaigns that the regulators can use that will lead to stronger effect. To address that question we propose to document the effect of different modes of communication. Our prior (based on previous academic literature such as

⁷⁴ It should be stated that the representative sample is younger than the provident fund population (41.77 versus 44.34) and that the representative sample also has fewer women than the provident fund population (50% versus 54%). The provident funds also have a higher representation of people living in Arab localities, which are underrepresented in the representative Internet survey.

Clark et al. 2017 and Goda et al. 2014) was that for underprivileged populations, a more detailed presentation of the steps required for financial action needs to be made. We also would like to test whether a more personal human touch explanation has the potential to be more effective. We investigated digital and face-to-face interventions that can be easily and widely simulated in future regulatory interventions.

6.1 Experiment setting

6.1.1 Population

The experiment aimed to investigate potential interventions for less privileged population. Since in our main survey we found that the ultra-Orthodox population had low scores of the objective and subjective financial literacy as well as lower awareness of the financial campaigns and website (Table 10), the experiment targeted a population of female ultra-Orthodox college students studying education and health professions. The students took specialized classes for the ultra-Orthodox community. Indeed, our field experiment subjects have low objective and subjective financial literacy. In the survey that we conducted on the field experiment population we find that this population has very low objective financial literacy and therefore is a good target sample. Only 6% of all subjects knew the right answers to all three objective financial literacy questions (versus 31% in the overall earlier representative sample). Moreover, 25% of the subjects answered that they did not know the answer to all three questions (versus 0% in the overall earlier representative sample). When comparing the woman aged 24-35 in our sample to ultra-Orthodox woman aged 25-34 from the CBS Expenditure Survey 2014 we find similar attributes. In our sample the socioeconomic index is 4.5 versus 4.1⁷⁵ in the CBS sample, the periphery index is 4.2 versus 4.3 in the CBS sample but the marriage rate in our sample is lower and stands at 85% versus 94% in the CBS sample. The ultra-Orthodox community suffers from high poverty rates and it is usually the women who, from an early age, are the main providers of the household. Hence, there is great importance in being able to affect and relay financial information to this population.

(Table 10)

6.1.2 Financial Regulation

⁷⁵ In the CBS survey the socioeconomic locality index is between 1-5, and the average reported above is the average multiplied by two.

Our field experiment was based on an additional new extension of the government internet portal that was added recently to the Money Mountain campaign. While the first part of the campaign was about raising awareness of inactive accounts in the retirement savings system, the second part, dubbed “Money Mountain 2,” was about raising awareness of inactive accounts in the banking system (when the focus of Money Mountain 1 was on long term saving products). The two campaigns relied on the same website, where individuals are able to look for their own and other close family members’ inactive accounts. The opening of the Money Mountain 2 website in September 2016 was advertised in a minor media campaign. Another media campaign was launched on radio and Internet sites in September 2017, after our field experiment was over.

6.1.3 Interventions

The interventions we examined in the experiment are as follows:

1. **No intervention:** The control group received no intervention.
2. **E-mail intervention:** Detailed information on the financial regulation was provided in an e-mail.
3. **E-mail–video intervention:** Detailed information on the financial regulation was provided in an e-mail, together with a video presentation by a professional actor.⁷⁶
4. **Face-to-face intervention:** A face-to-face explanation of the financial regulation was given by an employee of the Bank of Israel (the organization in charge of banking regulations).
5. **Survey–e-mail intervention:** An e-mail was sent to one of the control groups after they filled out a baseline survey. This enabled us to study the effect of detailed information provided in an e-mail after the class had had an earlier encounter with an employee of the Bank of Israel (who handed out the baseline survey).

The e-mail provided (1) detailed instructions on how to enter and use the website, (2) an explanation of the steps that needed to be taken if inactive funds were found (e.g., contacting the relevant bank), and (3) a direct link to the website. The video had an actor explain all this information using relevant print screens from the website. Our experiment on the effect of different interventions builds on existing financial behavior research that shows that quick

⁷⁶ The video presentation was 1:10 minutes long.

training programs, especially those that provide detailed⁷⁷ and personalized information, can affect financial behaviors.⁷⁸

The various interventions described above enabled us to test the effectiveness of the mode of communication – in particular, digital versus face-to-face. In addition, we were able to examine the dimensional effect of adding a video presentation to an e-mail text or of having the class meet and interact with a person before receiving more detailed information in an e-mail. For some of the specifications, we compared the three interventions that included interactions with a human touch: the e-mail–video, the face-to-face explanation, and the survey–e-mail (hereinafter, “human touch interventions”).

6.2 Randomization and Data Collection

The fact that we could enter and reenter classes enabled us to relay information in a supervised framework with the possibility to follow-up on the impact of the intervention on the individuals. Classes were randomly selected to be the control and intervention groups. Each class was part of a different academic program or curriculum such that students in one class were not taking courses with students in the other classes. To further minimize the risk of spillovers between treatment areas, the face-to-face intervention took place on a different campus in another city where there is another branch of the college. This branch is located in an area as central as the other campus but with lower socioeconomic attributes. Every intervention group was made up of two classes: one in education and one in a health profession, except for the face-to-face intervention group, which was made up of one education class.

We drew on survey data for the analysis. For the field experiment, we looked again in the survey at both the subjects’ subjective financial confidence and their objective financial literacy in two fields: general financial issues and specific related knowledge, here; banking and checking account issues. The personal survey also identified a number of personal characteristics, including digital access to personal banking data, marital status, income, work status, and age. Survey data allowed us to see how these personal characteristics correlated with awareness of the Money Mountain 2 financial campaign and usage of the website.

Baseline surveys and interventions took place in the beginning of August 2017 and the follow-up surveys took place ten days to two weeks after the interventions.

⁷⁷Drexler et al. (2014), Lusardi et al. (2017), and Lusardi et al. (2017).

⁷⁸Clark et al. (2017).

For the final intervention group, the survey–e-mail group, 75% of the initial group filled out the survey for a second time after the e-mail intervention and an additional 7 new subjects answered the survey after the e-mail intervention; we added these subjects’ data to the general e-mail intervention group.

In the control and treatment groups’ data we find similar personal characteristics, with no significant differences in the average income and the average periphery index. There are differences between the groups in the percentage of married women, but this characteristic was not found to have a significant effect or correlation with financial outcomes in the representative sample survey in the earlier section of the paper. The average age for most of the groups is early to mid-20s: 23 for the control group, 26 for the e-mail intervention group, 24 for the e-mail–video intervention group, and 22 for the survey–e-mail intervention group. The only outlier is the average age of the face-to-face intervention group, which is 34. While there is a significant difference between the average socioeconomic index in the face-to-face intervention group and the control group (probably due to the different location of the campus), there is no significant difference between the groups in the individuals’ income. Hence, we believe that they have similar socioeconomic individual characteristics. All the other groups have a similar average socioeconomic index in addition to the individual socioeconomic characteristics.

6.3 Methodology

The empirical analysis compares the outcomes in the intervention groups to those in the control group. For each subject i we regress each outcome (y_i) on an indicator variable (dummy value of 1 or 0) for the different treatment groups while controlling for the personal characteristics of the subject (x):

$$Y_i = \alpha_j + \beta_t * Intervention_t + \beta_{xt} * X_i + \epsilon_{ij}$$

where Y_i is the outcome variable for individual i , namely, awareness of the Money Mountain 2 campaign. The coefficient of interest β_t indicates a dummy variable for the method of intervention $t \in (1, 2, 3, 4)$, namely, either (1) e-mail intervention, (2) e-mail–video intervention, (3) face-to-face intervention, or (4) survey–e-mail intervention, where no intervention is our baseline case. Additionally, we have another regression where the coefficient of interest β_t indicates a dummy variable for the method of intervention $t=5$, which is the human touch intervention where all other interventions are our baseline case. For both regressions we denote by X individual i ’s personal characteristics: age, income, objective financial literacy;

knowledge of general financial issues and knowledge of specific banking and checking account issues, subjective financial literacy; confidence in knowledge of general financial issues, and confidence in knowledge of specific banking and checking account issues, and digital access to banking account. The variable description is presented in Appendix⁷⁹ 2.

6.4 Results

Statistics about the groups' awareness and financial actions taken as a result of the Money Mountain 2 campaign are presented in Table 11. In Table 11 we document that interventions increased the awareness of the campaign for the intervention groups by more than 100% relative to the control group (42% versus 18%) and that the human touch interventions had a positive effect on entering the website (between 16% and 28% versus 14%).

(Table 11)

Our results indicate that the interventions had a significant effect on awareness of the Money Mountain 2 campaign (columns (1) and (2) of Table 12). The effect of human touch intervention (i.e., e-mail–video, face-to-face, or survey–e-mail) was stronger than a digital one and had a positive effect on entering the website (column (4) of Table 12).⁸⁰ When we controlled for individual characteristics, the effect of the non-human touch intervention (i.e., the e-mail intervention) became insignificant for awareness of the campaign (column (3) of Table 12).

(Table 12)

These outcomes indicate that more personal interactions with more detailed and specific information can have a strong effect on the success of financial regulation through awareness and comprehension of the regulation by disadvantaged population and that through this there is an effect on financial action. The outcomes can be used to design more effective regulatory campaigns.

7. Conclusion, discussion and further research suggestions

In this paper we research the outcomes of financial campaigns by investigating specific retirement regulatory campaigns in Israel aimed at the public, where the regulator reached out to the population to inform them of a new service intended to help them find inactive

⁷⁹ The results are similar for different specifications of the sociodemographic variables.

⁸⁰ It is likely that the insignificant effects of variables when personal characteristics are controlled for stems from the small sample size.

retirement savings accounts and close small inactive accounts in provident funds on a tax-exempt basis. By analyzing provident fund data and survey data we conclude that low financial literacy and/or socioeconomic background are detrimental on the extensive margin. Less privileged populations with lower financial literacy, socioeconomic and geographical indices took less advantage of the campaigns. Survey data also shows that these populations have low awareness of the campaigns which indicates that an information channel is affecting outcomes. The regulator's unintentional bypass of underprivileged populations can also be found in the strong positive correlation between the effectiveness of the financial regulation and the individuals' objective and subjective (confidence) financial literacy, and specific sociodemographic characteristics such as age, gender, education, and work status. The sociodemographic and age effects seem to be the most pronounced in regard to the use of the Money Mountain website.

The paper also contributes to the understanding of financial literacy and the difference between objective financial literacy and subjective financial literacy. These personal characteristics, especially subjective financial literacy, that in our research we define as confidence in one's own knowledge of retirement savings, are important for the effectiveness of financial regulation, and future regulatory campaigns and interventions will need to address them. Regulators should be aware of the effectiveness of their regulations and the spillover effects they have on inequality and it seems that using digital media exasperates this effect.

We documented that the current policy of informing the public about regulatory changes via the mass media and the use of a website may not reach the total population. Our field experiment indicates that more personal (and detailed) digital and interventions that include a human touch can contribute to the transfer of information to underprivileged populations and can increase the activeness of these populations after exposure to the information. For example, face-to-face explanations and e-mails that include a video presentation are effective ways to relay financial information to the public that can easily be widely simulated in future regulatory interventions. We leave the study of additional interventions for future investigations.

As the prevalence of inactive accounts in many countries grows due to the aging of the population in DC pension systems and dynamic job markets we anticipate that the importance of managing inactive accounts will rise. We leave to future research to continue to investigate how regulators and savers may engage with this issue around the world.

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Figure 1 – CMISD Campaigns timeline

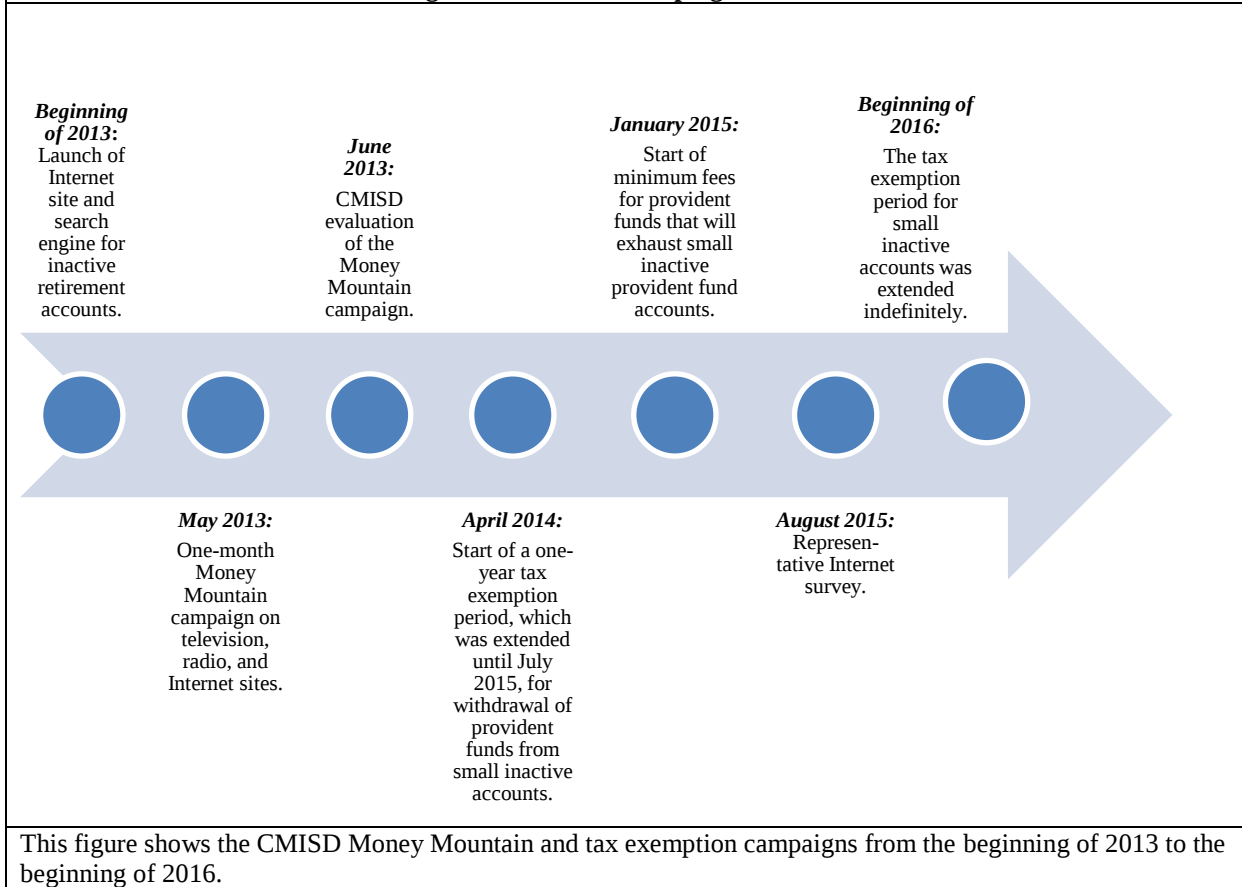
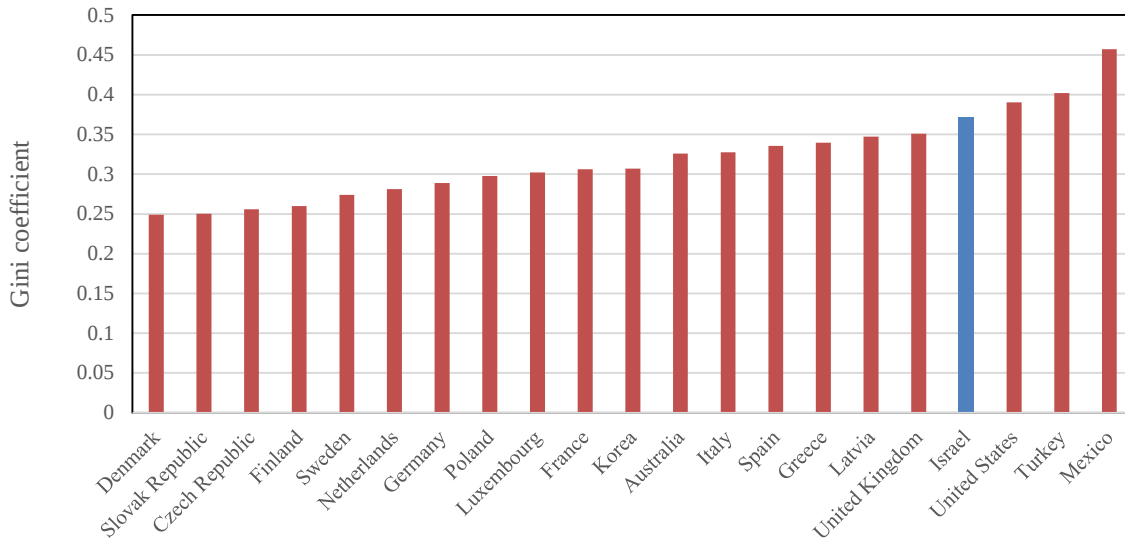
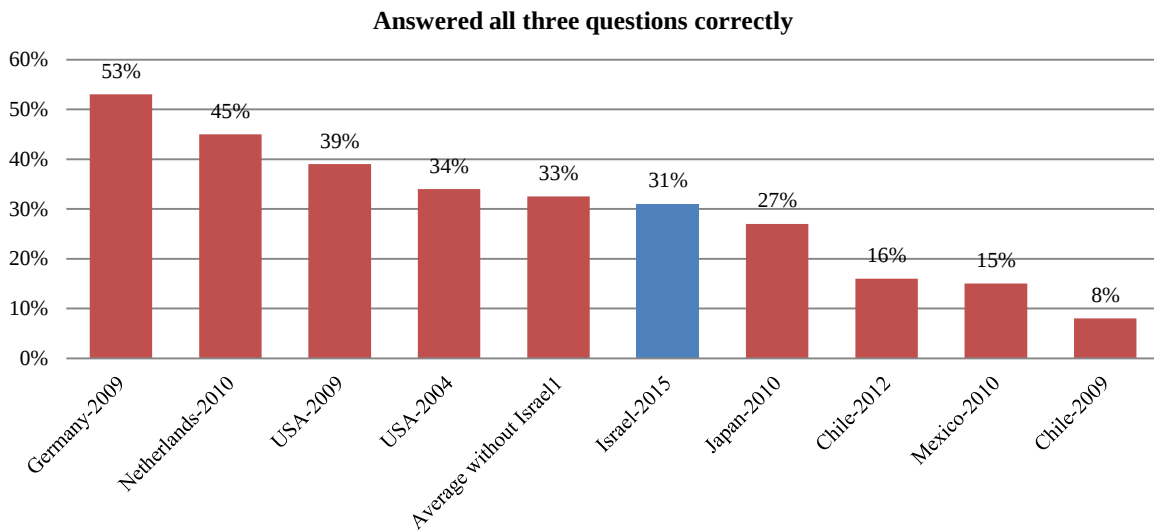


Figure 2 – Gini coefficient on disposable income, 2012



The Y axis shows the inequality index of the Gini coefficient on disposable income. The X axis is selected countries in 2012. Israel is colored in blue. The data is publicly available in the OECD Employment Database.

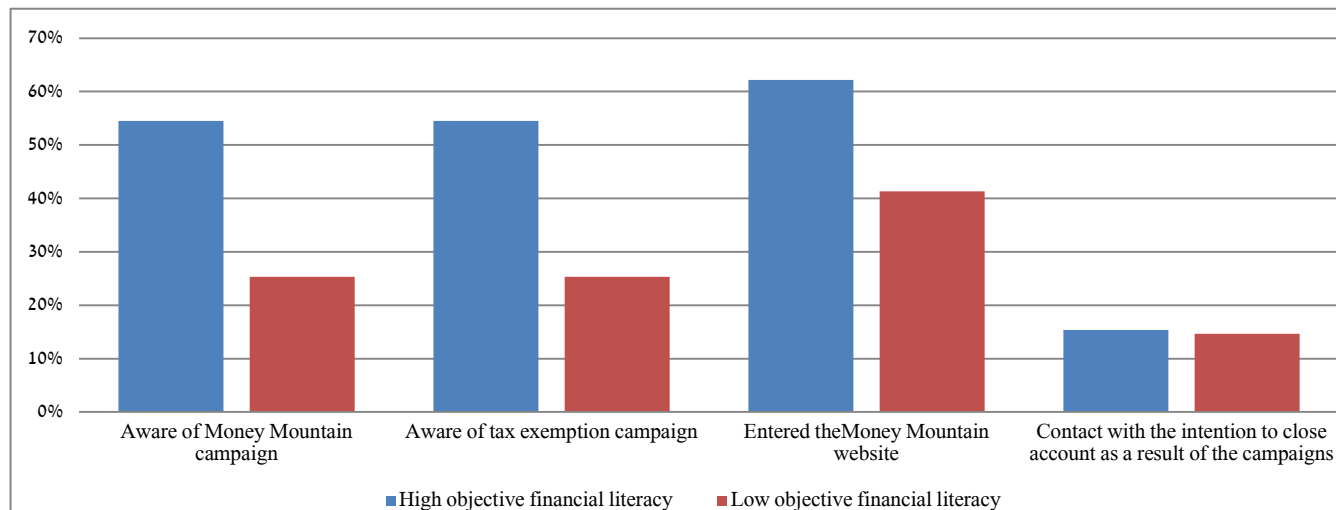
Figure 3 – Objective financial literacy answers, past research



The Y axis shows the percentage of individuals who correctly answered all three objective financial literacy questions in past studies. The X axis shows the country and year in which the survey took place. If a country had two observations, only the later one was taken into account when we calculated the average. The survey outcome from our paper is presented in blue. Data obtained from Hastings et al. (2012) and our representative sample survey.

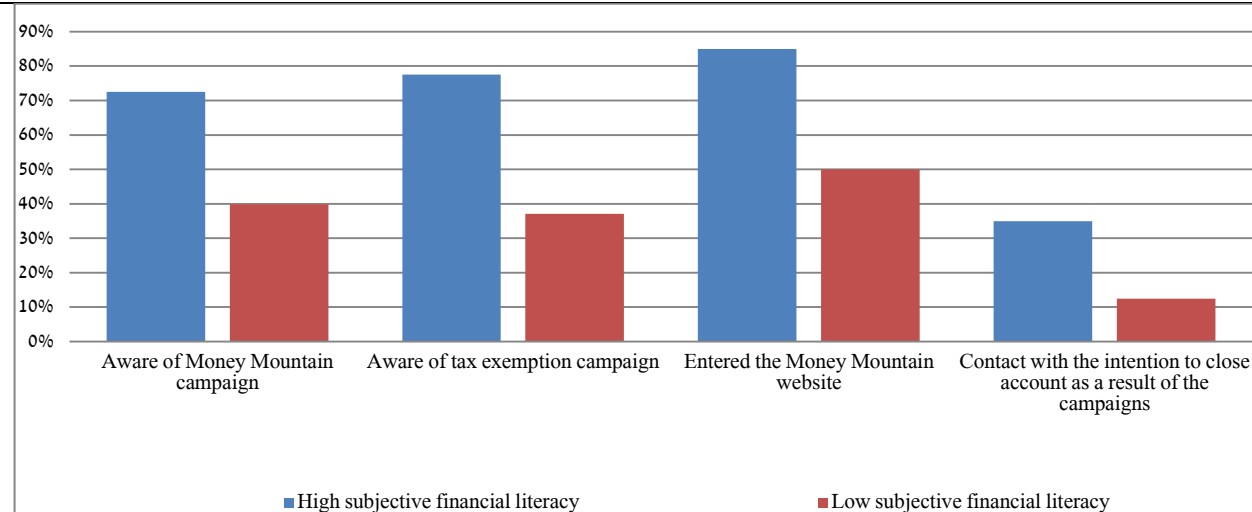
Figure 4 – Financial regulation outcomes by objective and subjective financial literacy, representative sample

Figure 4A – Financial regulation outcomes by objective financial literacy



The Y axis shows the percentage of individuals who answered that they were fully aware of the financial campaigns or who took financial action. The X axis shows the level of the individuals' objective financial literacy. Individuals with high objective financial literacy answered all 3 objective financial literacy questions correctly and are indicated in blue. Individuals who had low objective financial literacy did not answer any objective financial literacy questions correctly and are indicated in red. Data obtained from our representative sample survey.

Figure 4B – Financial regulation outcomes by subjective financial literacy



The Y axis shows the percentage of individuals who answered that they were fully aware of the financial campaigns or who took financial action. The X axis shows the level of the subjective financial literacy, here, the individuals' confidence in their retirement knowledge. Individuals with high subjective literacy stated that they had an excellent or good understanding of retirement savings and are indicated in blue. Individuals with low subjective literacy stated that they had fair, poor, or no understanding of retirement savings and are indicated in red. Data obtained from our representative sample survey.

Table 1 – Mean differences of closed accounts during tax exemption campaign by different population subsets						
(Number, means, percent)						
Population subsets:	Age>60	Age<35	Periphery index above median¹	Socioeconomic index above median²	From Arab locality	Female
N	1,787	3,074	6,582	6,144	499	6,852
% Closed accounts	23%	15%	18%	18%	11%	16%
Population subsets	Age<61	Age>34	Periphery index below median¹	Socioeconomic index below median²	Not from Arab locality	Male
N	10,937	9,650	1,311	3,109	12,236	5,883
% Closed accounts	15%	17%	15%	13%	16%	16%
T-score of difference between groups % closed accounts	7.38***	-2.16**	2.7***	7.2***	-4.09***	0.75
1. Periphery index of local authorities in Israel from the Israeli Central Bureau of Statistics (1 is for authorities in the outskirts of the country and 5 is for authorities in the heart of the country). The country median is 3 and the average is 2.8. Data is presented for subsets above or below the country median.						
2. Socioeconomic index of local authorities in Israel from the Israeli Central Bureau of Statistics (1 is for low economic authorities and 10 is for high socioeconomic authorities). The country median is 5 and the average is 4.8. Data is presented for subsets above or below the country median.						
*** p<0.01, ** p<0.05, * p<0.1.						
<i>Notes:</i> The table shows the number and percentage of closed accounts out of all eligible accounts during the tax exemption campaign, from the beginning of March 2014 to the end of July 2015, for different population subsets. Data obtained from a large provident fund provider.						

Table 2 –Percentage of closed accounts by socioeconomic index and account size				
		Small account ²	Medium account ²	Large account ²
Socioeconomic index above median ¹	Account size USD	47	323	1,166
	% Closed accounts	14%	18%	24%
	T-score of difference between group's % closed accounts and the general population	-4.79***	-1.91	3.47***
Socioeconomic index below median ¹	Account size USD	48	318	1,158
	% Closed accounts	6%	14%	19%
	T-score of difference between group's % closed accounts and the general population	-6.19***	-0.93	2.13**
1. Socioeconomic index of local authorities in Israeli from the Israeli Central Bureau of Statistics (1 is for authorities with a low socioeconomic index and 10 is for authorities with a high socioeconomic index). The country median is 5 and the average is 4.8.				
2. Size of account is calculated by dividing the accounts savings size to quarters and then categorizing them: small accounts are accounts that are in the 1 st quarter of accounts, medium accounts are in the 2nd and 3rd quarters, and large accounts are in the 4th largest quarter.				
*** p<0.01, ** p<0.05, * p<0.1.				
Notes: The table shows the number and percentage of closed accounts out of all eligible accounts during the tax exemption campaign, from the beginning of March 2014 to the end of July 2015, by socioeconomic index and size of account (amount of money): small, medium, or large. NIS to USD conversion rate of 3.8. Data obtained from a large provident fund provider.				

Table 3 – Objective financial literacy questions and the distribution of answers											
Name of question	Interest question				Inflation question				Diversification question		
Question	Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?				Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?				Do you think that the following statement is true or false? “Buying a single company stock usually provides a safer return than a mutual fund stock.”		
Answer	More than \$102	Exactly \$102	Less than \$102	DK ¹	Less than today	More than today	Exactly the same	DK ¹	FALSE	TRUE	DK ¹
	correct answer	wrong answer		DK*	correct answer	wrong answer		DK*	correct answer	wrong answer	DK*
	76%	11%		14%	59%	14%		27%	45%	7%	47%
1. Did not know the answer.											
Notes: The table shows the wording of the three objective financial literacy questions and answers, with the percentage of individuals who answered correctly, incorrectly, or stated that they did not know the answer. Data obtained from the representative sample survey.											

Table 4 – Subjective financial literacy questions and distribution of answers							
Question category		Excellent	Good	Fair	Poor	Not at all	DK ¹
Confidence in retirement knowledge	How much do you feel you understand pension savings / retirement savings / provident funds?	1%	7%	21%	37%	29%	6%
Interest in retirement	How much are you interested in pension savings / retirement savings / provident funds?	9%	17%	33%	23%	14%	4%
1. Did not know the answer. <i>Notes:</i> The table shows the wording of the two subjective questions and answers, with the distributions of individuals' answers. Data obtained from the representative sample survey.							

Table 5 – Demographic characteristics and mean differences of people who have high and low objective and subjective financial literacy index scores						
	Objective financial literacy⁵			Subjective financial literacy⁶		
Demographic characteristics	Low	High	T-score of mean difference between Low and High	Low	High	T-score of mean difference between Low and High
Age	37.19	41.97	-2.45**	39.21	43.43	-1.81*
Female	72%	35%	5.78***	59%	23%	5.11***
Immigrant	12%	17%	-0.97	18%	8%	2.2**
Income level¹	1.97	2.52	-3.87***	2.23	2.36	-0.84
Education level²	1.61	2.13	-6.03***	1.88	1.97	-0.82
Percentage of people who have a socioeconomic index above the median³	42%	62%	-1.79*	60%	54%	0.7
Percentage of people who have a socioeconomic index above³ 8	13%	35%	-3.96***	22%	21%	0.28
Percentage of people who have a socioeconomic index below the median³	21%	12%	1.57	12%	13%	-0.06
Percentage of people who have a socioeconomic index below³ 3	1%	1%	0.06	1%	0%	2.01**
Percentage of people who have a periphery index above the median⁴	63%	71%	-1.19	62%	67%	-0.57
Percentage of people who have a periphery index below the median⁴	13%	6%	1.55	8%	3%	1.77*
1. Income ranges between 1 and 3, where 1 is below-average income, 2 is average income, and 3 is above-average income.						
2. Education ranges between 1 and 3, where 1 is high school education or below, 2 is above high school education but non-academic, and 3 is academic education.						
3. Socioeconomic index of local authorities in Israel from the Israeli Central Bureau of Statistics (1 is for authorities with a low socioeconomic index and 10 is for authorities with a high socioeconomic index). The country median is 5 and the average is 4.8.						
4. Periphery index of local authorities in Israel from the Israeli Central Bureau of Statistics (1 is for authorities in the outskirts of the country and 5 is for authorities in the heart of the country). The country median is 3 and the average is 2.8.						
5. Objective financial literacy index (0 is for people with low objective financial literacy and 3 is for people with high objective financial literacy).						
6. People with low subjective financial literacy stated that they had fair, poor, or no understanding of retirement savings. Individuals with high subjective literacy stated that they had an excellent or good understanding of retirement savings.						
*** p<0.01, ** p<0.05, * p<0.1.						
<i>Notes:</i> The table shows means and mean differences for individuals with high or low objective and subjective financial Data obtained from the representative sample survey.						

Table 6 – Awareness of campaigns, main specification, representative sample			
		Full awareness of the Money Mountain campaign	Full awareness of the tax exemption campaign
Variables:		(1)	(2)
Objective Financial literacy		0.281**	0.337***
		(0.116)	(0.125)
Subjective Financial literacy		0.937**	1.497***
		(0.414)	(0.454)
Age		0.015	0.024**
		(0.01)	(0.01)
Female		-0.347	-0.317
		(0.219)	(0.231)
Married		0.054	0.348
		(0.254)	(0.265)
Income Level	Average income	0.469	-0.086
		(0.439)	(0.476)
	Above-average income	0.148	0.019
		(0.255)	(0.273)
Education Level	Non- academic above high school education	-0.046	0.993***
		(0.272)	(0.315)
	Academic education	0.272	0.959**
		(0.357)	(0.392)
Religious Identity	Traditional	0.026	-0.14
		(0.242)	(0.259)
	Religious	-0.235	-0.254
		(0.329)	(0.344)
	Ultra-Orthodox	-0.214	-0.348
		(0.736)	(0.753)
Work Status	Non-workers	-0.6**	-0.594*
		(0.293)	(0.32)
	Retired	-0.472	-0.278
		(0.516)	(0.53)
Immigrant		-0.498*	-0.135
		(0.297)	(0.298)
Constant		-1.268***	-2.744***
		(0.486)	(0.555)
Observations		424	424
McFadden Pseudo R ²		0.23	0.29
AIC		562	517
Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Notes: Each column represents a different regression of the effect of individual characteristics on awareness of financial campaigns. Column (1) reports a logit estimation of awareness of the Money Mountain campaign for the representative sample. Column (2) reports a logit estimation of awareness of the tax exemption campaign for the representative sample.			

Table 7 – Financial action, main specification							
		Entered the Money Mountain website			Contact with the intention to close account as a result of the campaigns		
Variables:		(1) ¹	(2) ²	(3) ³	(4) ¹	(5) ²	(6) ³
Objective Financial literacy		0.1430	0.234**	0.188*	-0.050	0.0010	-0.028
		(0.115)	(0.102)	(0.109)	(0.171)	(0.147)	(0.159)
Subjective Financial literacy		1.447***	1.049***	1.234***	0.874**	1.398***	1.158***
		(0.494)	(0.383)	(0.436)	(0.432)	(0.324)	(0.37)
Age		0.027***	0.031***	0.029***	0.010	0.0080	0.009
		(0.01)	(0.009)	(0.009)	(0.014)	(0.011)	(0.012)
Female		-0.372*	-0.405**	-0.39*	-0.604*	-0.4520	-0.521*
		(0.22)	(0.198)	(0.209)	(0.326)	(0.278)	(0.302)
Married		0.1920	0.1980	0.190	0.2750	0.4660	0.373
		(0.25)	(0.226)	(0.238)	(0.376)	(0.319)	(0.348)
Income Level	Average income	0.0680	-0.0640	0.0040	0.1330	-0.1010	0.002
		(0.447)	(0.429)	(0.438)	(0.655)	(0.593)	(0.625)
	Above-average income	0.0730	-0.0190	0.0350	0.1440	-0.1980	-0.028
		(0.25)	(0.229)	(0.239)	(0.395)	(0.337)	(0.365)
Education Level	Non-academic above high school education	0.49*	0.2090	0.3430	-0.0320	0.2180	0.097
		(0.268)	(0.237)	(0.252)	(0.416)	(0.359)	(0.387)
	Academic education	0.734**	0.4970	0.608*	0.440	0.4880	0.47
		(0.364)	(0.33)	(0.347)	(0.501)	(0.442)	(0.472)
Religious Identity	Traditional	-0.432*	-0.3070	-0.3670	0.280	0.0260	0.157
		(0.244)	(0.219)	(0.232)	(0.345)	(0.298)	(0.321)
	Religious	-0.0170	0.0320	0.0040	0.1320	-0.0690	0.03
		(0.327)	(0.306)	(0.317)	(0.46)	(0.406)	(0.434)
	Ultra-Orthodox	-0.0980	0.3130	0.1120	0.0210	0.2410	0.149
		(0.69)	(0.62)	(0.652)	(1.112)	(0.818)	(0.949)
Work Status	Non-workers	-0.2140	-0.2580	-0.2380	-1.11*	-0.5330	-0.803
		(0.278)	(0.254)	(0.266)	(0.572)	(0.431)	(0.495)
	Retired	-0.1510	-0.6580	-0.4240	-0.2270	-0.9530	-0.558
		(0.536)	(0.439)	(0.487)	(0.719)	(0.614)	(0.662)
Immigrant		0.0090	-0.1950	-0.0940	-0.4620	-0.0950	-0.26
		(0.288)	(0.269)	(0.279)	(0.474)	(0.371)	(0.417)
Constant		-1.45***	-1.242***	-1.351***	-2.245***	-2.339***	-2.287***
		(0.487)	(0.444)	(0.465)	(0.711)	(0.617)	(0.663)
Observations		424	539	539	424	539	539
McFadden Pseudo R2		0.24	0.23	0.24	0.27	0.24	0.27
AIC		559	682	561	333	447	335

1. Representative sample.

2. Representative sample and complementary sample.

3. Representative sample and weighted complementary sample.

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Notes: Each column represents a different regression of the effect of individual characteristics on financial action taken. Column (1)–(3) reports logit estimations of entering the Money Mountain website for three different samples. Columns (4)–(6) reports logit estimations of contacting the savings vehicles provider with the intention to close inactive accounts as a result of the Money Mountain campaign or the tax exemption campaign for three different samples.

Table 8 – Probability of being affected by the financial regulation for specific populations

			Full awareness of the Money Mountain campaign	Full awareness of the tax exemption campaign	Entered the Money Mountain website	Contact with the intention to close accounts as a result of the campaigns
Have high objective and subjective financial literacy	Male	High demographic attributes	86%	92%	95%	48%
		Low demographic attributes	75%	72%	83%	29%
	Female	High demographic attributes	82%	89%	93%	32%
		Low demographic attributes	68%	65%	77%	18%
Have low objective and subjective financial literacy	Male	High demographic attributes	51%	47%	74%	30%
		Low demographic attributes	34%	17%	42%	16%
	Female	High demographic attributes	43%	40%	66%	19%
		Low demographic attributes	26%	13%	33%	10%

Notes: The table shows the representative sample regulatory outcomes (being aware of financial regulation or taking financial action) deriving from the logit model in Tables 6 and 7 for individuals who are married, non-immigrant, secular, and employed. The table displays data for women and men who had either a high (3) or low (0) objective financial literacy index and had high subjective financial literacy meaning they were confident in their retirement knowledge, (stated that they had good or excellent understanding of retirement issues), or had low subjective financial literacy meaning they were not confident in their knowledge (stated that they had poor or no understanding of retirement issues). The data also represents results by individuals with high and low demographic attributes. Individuals with high demographic attributes were aged 55, with an academic education, and with above-average income. People with low demographic attributes were aged 35, with a high school degree or lower, and with below-average income.

Table 9 – Robustness tests: Age squared and Interest in retirement issues

Age squared						Inquiry	Interest in retirement issues						
Variables:		Awareness of the Money Mountain campaign	Awareness of the tax exemption campaign	Entered the Money Mountain website	Contact with the intention to close accounts as a result of the campaigns	Inquiring about inactive accounts	Variables:		Awareness of the Money Mountain campaign	Awareness of the tax exemption campaign	Entered the Money Mountain website	Contact with the intention to close accounts as a result of the campaigns	
		(1)	(2)	(3)	(4)	(5)			(6)	(7)	(8)	(9)	
Objective financial literacy		0.262**	0.33***	0.146	-0.068	0.094	Objective financial literacy		0.298***	0.362***	0.160	-0.0220	
		(-0.115)	(-0.124)	(-0.114)	(-0.169)	(0.164)			(0.116)	(0.126)	(0.115)	(0.168)	
Subjective financial literacy		1.045**	1.585***	1.467***	0.989**	0.848*	Subjective interest in retirement issues		0.320	0.992***	0.774***	0.4940	
		(-0.411)	(-0.453)	(-0.49)	(-0.431)	(0.446)			(0.244)	(0.26)	(0.26)	(0.322)	
Age		0.082	0.157**	0.129**	0.074	-0.021	Age		0.016*	0.024**	0.027***	0.010	
		(-0.059)	(-0.066)	(-0.059)	(-0.088)	(0.089)			(0.009)	(0.01)	(0.01)	(0.014)	
Age Squared		-0.001	-0.002**	-0.001*	-0.001	0	Female		-0.404*	-0.3780	-0.432**	-0.667**	
		(-0.001)	(-0.001)	(-0.001)	(-0.001)	(0.001)			(0.216)	(0.23)	(0.219)	(0.32)	
Female		-0.366*	-0.341	-0.374*	-0.62*	-0.089	Income Level		Average income	0.4280	-0.220	-0.0280	0.0990
		(-0.217)	(-0.23)	(-0.22)	(-0.325)	(0.31)			Above average income	(0.437)	(0.476)	(0.444)	(0.649)
Income Level		0.498	-0.071	0.081	0.158	-0.372	Education Level		Non-academic above high school education	0.1230	-0.0270	0.0360	0.110
		(-0.438)	(-0.478)	(-0.447)	(-0.653)	(0.677)			(0.254)	(0.274)	(0.25)	(0.393)	
		0.219	0.032	0.067	0.248	-0.062	Academic education		-0.0710	0.948***	0.455*	-0.0770	
		(-0.252)	(-0.273)	(-0.249)	(-0.392)	(0.354)			(0.27)	(0.311)	(0.265)	(0.414)	
Education Level		Non- academic above high school education	-0.04	0.92***	0.388	-0.009	0.141	Immigrant		0.2670	0.979**	0.761**	0.40
		(-0.276)	(-0.317)	(-0.274)	(-0.413)	(0.395)	(0.356)			(0.392)	(0.365)	(0.499)	
		Academic education	0.28	0.851**	0.587	0.476	0.166	Constant		-0.553*	-0.2190	-0.0530	-0.5470
(-0.368)	(-0.4)	(-0.375)	(-0.507)	(0.524)	(0.297)	(0.304)	(0.29)			(0.474)			
Immigrant		-0.477	-0.076	0.065	-0.436	0.221	Control for other variables presented in the main specification		-1.23**	-2.793***	-1.453***	-2.246***	
		(-0.296)	(-0.298)	(-0.29)	(-0.474)	(0.396)			(0.485)	(0.558)	(0.487)	(0.707)	
Constant		-2.724**	-5.45***	-3.379***	-3.843**	-1.834	McFadden Pseudo R ²		Y	Y	Y	Y	
		(-1.132)	(-1.32)	(-1.143)	(-1.749)	(1.739)			424	424	424	424	
Control for other variables presented in the main specification		Y	Y	Y	Y	Y	AIC		0.22	0.29	0.24	0.27	
McFadden Pseudo R ²		0.23	0.29	0.25	0.27	0.16			566.24	514.84	559.84	334.44	
AIC		564.27	515.09	554.37	335.07	353.11							

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Notes: Each column represents a different regression of the effect of individual characteristics on awareness of financial campaigns. Columns (1)–(4) report logit estimations of awareness of the financial campaigns and financial action taken controlling for age and age squared without controlling for work status variables. Column (5) reports logit estimations of taking financial action and inquiring about inactive accounts (any inquiries about inactive funds and not specifically inquiries resulting from the financial campaigns). Columns (6)–(9) report logit estimations of awareness of the financial campaigns and financial action taken when controlling for an additional subjective question about interest in retirement issues. All columns have 424 observations that were taken from the representative sample.

Table 10 – Ultra-Orthodox population, representative sample		
	Ultra-Orthodox population	Rest of the Population
Subjective financial literacy¹	0%	8%
High objective financial literacy²	14%	31%
Full awareness of the Money Mountain campaign³	21%	43%
Full awareness of the tax exemption campaign³	36%	40%
Entered the Money Mountain website⁴	36%	53%
Contact with the intention to of close accounts as a result of the campaigns⁴	14%	14%
1. Individuals who stated in the representative survey that they have high subjective financial literacy (stated that they had good or excellent understanding of retirement savings). 2. Individuals who had high objective financial literacy and correctly answered all 3 objective financial literacy questions about interest rate, inflation, and risk diversification. 3. Individuals who stated that they were fully aware of the Money Mountain regulatory campaign that was advertised on television, radio, and Internet sites or who were aware of the tax exemption campaign advertised in professional media and news outlets and in a letter to provident fund owners. 4. Individuals who stated that they had entered the Money Mountain website or who contacted their retirement fund providers about closing accounts because of one of the campaigns (the Money Mountain campaign or the tax exemption campaign). Notes: The table reports subjective and objective financial literacy, awareness of financial campaigns, and financial action taken by ultra-Orthodox Jews relative to the rest of the population. The data is taken from the representative sample survey.		

Table 11 – Awareness of financial campaign and financial action taken by different intervention groups						
		Control group	E-mail intervention	E-mail–video intervention	Face-to-face intervention	Survey–e-mail intervention
Awareness of the Money Mountain 2 campaign	%	18%	45%	50%	62%	42%
	N	78	33	42	29	43
Entrance to the Money Mountain website	%	14%	9%	19%	28%	16%
	N	11	3	8	8	7
<i>Notes: The table shows the number and percentage of people from each intervention group who were aware of the Money Mountain campaign or entered the Money Mountain website.</i>						

Table 12: Regressions of interventions on awareness of the financial campaign and on financial action				
	(1)	(2)	(3)	(4)
E-mail intervention	0.975	1.293**		
	(0.611)	(0.556)		
E-mail–video intervention	1.648***	1.293**		
	(0.559)	(0.556)		
Face-to-face intervention	1.499**	1.447***		
	(0.561)	(0.5)		
Survey–e-mail intervention	1.403**	1.939***		
	(0.561)	(0.549)		
Human touch intervention			0.975	0.79*
			(0.511)	(0.462)
Constant	-3.058***	-1.447***	-3.058***	-2.165***
	(0.996)	(0.393)	(0.943)	(0.399)
Control for individuals' characteristics	Y	N	Y	N
McFadden Pseudo R²	0.18	0.06	0.13	0.02
AIC	230.16	241.98	161.57	163.73
N	174	182	174	182
Standard errors in parentheses.				
*** p<0.01, ** p<0.05, * p<0.1.				
<i>Notes: Each column represents a different regression of the effect of interventions on awareness of financial campaigns. Columns (1) and (2) report logit estimations of awareness of the financial campaign. Columns (3) and (4) report logit estimations of financial action taken. All observations were taken from the field experiment data.</i>				

Appendix 1– Variable description	
Y Variables	Description
Full awareness of the Money Mountain campaign	Binary variable for people who stated that they had full awareness of the campaign
Full awareness of the tax exemption campaign	Binary variable for people who stated that they had full awareness of the campaign
Entered the Money Mountain website	Binary variable for people who stated that they entered the Money Mountain website
Contact with the intention to closing accounts as a result of the campaigns	Binary variable for people who stated that they contacted their retirement fund provider about closing inactive accounts (withdraw or transfer savings) because of one of the campaigns
X Variables	Description
Objective financial literacy index	Financial literacy index, which is the sum of correct answers to three questions about interest rate, inflation, and diversification risk
Age	Value in years
Subjective financial literacy	Dummy variable for all those who answered that their understanding of retirement issues was good or excellent
Interest in retirement	Dummy variable for all those who answered that their interest in retirement issues was good or excellent
Interest rate question	Dummy variable for all those who answered correctly
Inflation question	Dummy variable for all those who answered correctly
Diversification question	Dummy variable for all those who answered correctly
Married	Dummy variable for married
Income level	Dummy variables for below-average income, average income, and above-average income
Education level	Dummy variables for high school education, Non- academic above high school education, and academic education
Religious identity	Dummy variables for secular, traditional, religious, and ultra-Orthodox
Work status	Dummy variables for employed (including voluntary army service and part-time employment), non-workers (including mandatory service and student status), and retired
Immigrant	Dummy variable for immigrant

Appendix 2 – Variable description	
Y Variables	Description
Awareness of the Money Mountain 2 campaign	Binary variable for people who stated that they were aware or thought they were aware of the campaign
Entered the Money Mountain website	Binary variable for people who stated that they entered the Money Mountain website
X Variables	Description
Financial literacy index	Financial literacy index, which is the sum of correct answers to three questions about interest rate, inflation, and diversification risk
Banking and checking account knowledge	An index that is the sum of correct answers to two questions about the price of transactions while using an automatic machine versus using a clerk and about the option to invest in stocks from your bank account
Confidence in financial knowledge	Dummy variable for all those who answered that their understanding of financial issues was good or excellent
Confidence in banking and checking account knowledge	Dummy variable for all those who answered that their understanding of banking and checking account issues was good or excellent
No digital access	Dummy variable for all those who answered that they did not access data about their checking account online
Age	Value in years
Income level	Dummy variables for below-average income and above-average income