Unshrouding product-specific attributes through financial education*

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Abstract

We estimate the impact of a product-specific education video on the intention to purchase a shrouded, sub-optimal insurance product in India. Our intervention results in a significant decline in potential demand, preventing welfare losses to newly-informed consumers; however, these benefits may come at the cost of other non-educated consumers if equilibrium outcomes remain unaltered by our intervention. Using a model of shrouded attributes in product markets with financial education, we characterize the size of treatment effects required to result in an unshrouded market equilibrium. Only for a narrow set of parameter values, our experiment results in a market equilibrium with fair prices. Positive effects of financial education may be necessary, but not a sufficient condition to improve overall welfare in retail financial markets.

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1 Introduction

The explosion of complex retail financial product offerings, and the multiplicity of choices makes financial decision-making for retail consumers a challenge. Even the most rational individuals are susceptible to making mistakes.[1] In part, it is a result of overall low financial literacy (Lusardi and Mitchell, 2014); however, this is also because financial firms choose to hide some product attributes, shroud them, to drive their sales (Anagol, Cole, and Sarkar, 2017; Sane and Halan, 2017).

A consumer who scores very highly on general financial literacy may be ill-equipped to evaluate specific products by unshrouding its principal features, especially when faced with a salesperson with strong incentives.[2] Consumers are typically so far removed from the design of financial products that they do not even know where to begin with an evaluation, how to apply general financial literacy to specific instances, what to look for in the disclosures offered to them, or what questions to ask. In short, individuals do not know what they do not know and hence are not able to discover relevant product features, irrespective of their general financial literacy. To us, this is the challenge of product-specific financial education.

How does one design education such that individuals can apply lessons from it to instances where product features are hidden? That is, how do we transform individuals from being "uninformed" or "myopic" (about shrouded product features) to "informed" or sophisticated consumers? How does one ensure that consumers will be able to recall the lessons in the presence of a salesperson? Even if we are successful in designing an effective financial education strategy and in making newly informed consumers better-off, the key economic question is how would the education affect the well-being of those left behind and affect overall welfare? Is the positive effects of education sufficient to improve overall welfare? At what treatment effect sizes would an education intervention nudge firms to reveal all hidden

[1] For instance, see, Andersen, Campbell, Nielsen, and Ramadorai (2020); Gomes, Haliassos, and Ramadorai (2020); Cole, Sampson, and Zia (2011); Lusardi and Mitchell (2011); Tang, Mitchell, Mottola, and Utkus (2010); Lusardi (2008); Beshears, Choi, Laibson, and Madrian (2008); Benartzi and Thaler (2007, 2001); Iyengar and Lepper (2000).

[2] This, in part, could explain the muted effects of financial education on decisions. See meta-analysis of various academic work in Kaiser, Lusardi, Menkhoff, and Urban (2020) and Fernandes, Jr., and Netemeyer (2014).

information to everyone, in equilibrium?[3] This paper focuses on these questions and breaks new ground in delivering and evaluating financial education.

Our product-specific financial education experiment conducted in Delhi, India consists of showing videos to individuals. The videos are designed to help individuals to "ask the right questions", and provide "rules of thumb" to help evaluate the information provided in the responses. We evaluate two types of intervention – T1 that just provides the rules of thumb, and T2 that applies the unshrouded information to present an evaluation of how good the product is, in addition to the rules of thumb in T1. While T1 merely equips households to uncover hidden features themselves, T2 provides an explicit evaluation of the product. T1 is motivated by the effectiveness of rules of thumb in Drexler, Fischer, and Schoar (2014), while T2 is motivated by the idea that consumers may not be bayesian, or possess the cognitive capability to infer that if there are shrouded features to a product, it must be overpriced (or of lower value). We focus on a particular product in the Indian insurance market known as *endowment insurance* to study the role of product-specific literacy on potential demand.[4]

Our T1 intervention results in a three percentage point (pp) decline in the intention to purchase endowment insurance or an 8.3% increase in the base rate of rejecting endowment insurance observed in the control group. These individuals are more likely to have a higher knowledge of product features and are more likely to have been able to identify and unshroud specific characteristics of the endowment insurance presented to them in the experiment. Our T2 intervention resulted in similar magnitudes of decline in the intention to purchase endowment insurance, though not statistically significant at conventional levels. In T2, complete information disclosure and evaluation may have resulted in making the decision process complex, hitting cognitive constraints for the households in question, especially about unbundling the endowment insurance product, thus reducing the effectiveness of the intervention design. Overall, our results suggest that our product-specific rules of thumb

[3]Of course, firm dynamics, and responses to the presence of financial education matter. However, the first-order of evaluation requires that financial education "passes the test" at the very least, in a static context.

[4]Typically, endowment insurance contracts are designed to pay a lump-sum when the policy matures or on death. As such, these are multi-dimensional bundled products designed to respond to consumer misperception (Bar-Gill, 2007). These products are sub-optimal because at the price charged, households get better insurance cover with a term product, and better rates of return with their savings in a traditional product such as the provident fund.

approach have the potential to improve purchase decisions by meaningful magnitudes, especially in light of Kaiser, Lusardi, Menkhoff, and Urban (2020) who show that financial education interventions with insurance decisions have thus far not been effective.

The welfare gains to consumers who are successfully educated depend on whether a reduction in potential demand for the sub-optimal product translates into increases in potential demand for the alternative, i.e., purchasing term insurance. Using a follow-up, blinded telephone survey, we find that T1 individuals are significantly more likely to demand term insurance, while T2 individuals are no different from the control group in their potential demand for term insurance.

To formally assess how large a change in demand is required to improve information provision in these product markets, we introduce financial education intervention into a model of shrouded product markets, inspired by Gabaix and Laibson (2006). We assume that such an education is delivered by a non-for-profit third-party provider. We formally derive the fraction of newly informed consumers required in such bundled product markets to move to an unshrouded equilibrium. We then evaluate whether our treatment effects have the potential to achieve this economically significant transformation to the product market space. If financial education is not able to convert a large enough fraction of uninformed individuals to being informed, it may make those who remain uninformed, *worse-off*. The higher the fraction of uninformed consumers in a market, the higher the fraction of newly informed consumers required to ensure "effective financial education", i.e., one that does not adversely affect uninformed consumers. The results from our experiment translate into a narrow range of improvement to the possibility of an unshrouded equilibrium. The experiment and the simple theoretical benchmark suggest that positive treatment effects may not be sufficient to improve welfare. What is needed, especially in a market with high levels of uninformed consumers is a substantially large treatment effect – magnitudes guided by our model.

Our work contributes to the literature on household finance, and in particular, financial education. The literature so far has focused on improving general financial literacy, through workshops and seminars, rules of thumb, with mixed results (Kaiser, Lusardi, Menkhoff,

and Urban, 2020; Kaiser and Menkhoff, 2017; Fernandes, Jr., and Netemeyer, 2014; Drexler, Fischer, and Schoar, 2014; Hastings, Madrian, and Skimmyhorn, 2013; Gale, Harris, and Levine, 2012; Collins, 2011; Hira, 2010). The effects of financial education often also tend to dissipate with time (Fernandes et al., 2014), and some have called into question whether few hours of seminars and "education" may be sufficient to move the needle (Duflo and Saez, 2003; Lusardi and Mitchell, 2014). More recent work, however, suggests that the effect sizes may be larger (Kaiser, Lusardi, Menkhoff, and Urban, 2020), although find no education that is successful in the specific domain of retail insurance markets. We contribute through a novel way of delivering financial education programs that focus on product-specific financial literacy. We also provide a framework to think about effects of financial literacy on equilibrium outcomes in the market for financial products with shrouded features – an aspect that has been relatively ignored in the literature, to the best of our knowledge.

The rest of the paper is organised as follows. Section 2 documents the setting for the experiment, and Section 3 details the intervention and experimental design. Section 4 presents the empirical strategy and the results, while section 5 presents our theoretical framework to evaluate product-specific financial education. Section 6 concludes.

2 The Setting: Endowment Insurance

We test the role of rules-of-thumb based product-specific financial literacy on the intention to purchase a bundled product known as "endowment insurance" in India. The information material for endowment insurance in India is generally complex, and shroud its true value from households. Typically, such documents are rife with technical terms, and couched in legal formulations.[5] Additionally, sales brochures typically focus on making returns look large. For instance, product brochures showcase returns by saying, "returns will be 200% of sum assured in 15 years", thus computing returns to a number other than on the amount invested.

The extent of shrouding of the actual value to consumers can be measured by looking at

[5]See, for instance, the information provided in a sales brochure for one of the endowment products sold by the largest insurance provider in India, here: https://www.dropbox.com/s/pf6z2hls7cegszn/LICSalesBrochure.pdf?dl=0.

a replicating portfolio using the sub-components of endowment insurance. At the core of this product is a combination of an insurance component and a savings component. Each can be individually purchased by a consumer in India. As an example, consider the "Jeevan Labh" (Plan: 836) endowment plan of the Life Insurance Company of India (LIC), a government entity that is the largest insurance company in India. Jeevan Labh is a premium paying plan, say for a sum assured of ₹600,000 at the end of 16, 21 or 25 years. Individuals can choose the number of premium-paying years and this varies for different coverage periods. For 16 years of coverage, individuals will pay premiums for 10 years. Based on the cash flow, the rate of return from this product for a 30-year old non-smoking adult is, 1.41% at maturity, in addition to the insurance cover of ₹600,000 before maturity. The return is *without* any bonus returns that may accrue to the individual.

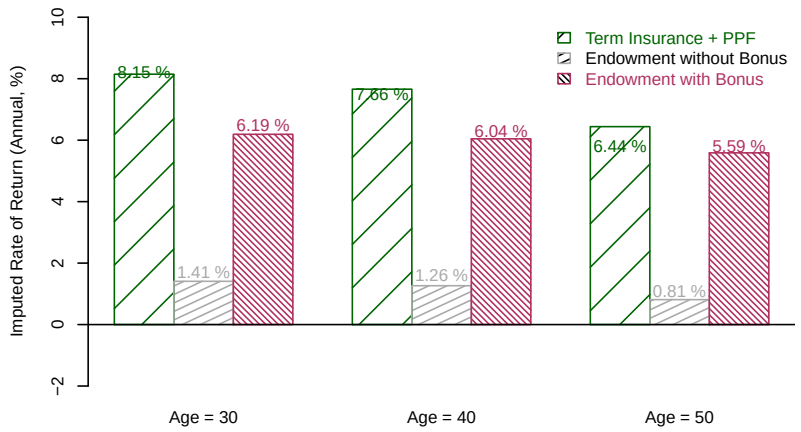
The term insurance plan from the same firm, Anmol Jeevan II plan (Plan: 822), has a minimum sum assured of ₹600,000, with a minimum age of entry at 18, and maximum age at entry of 55. The policy term can vary from 5 to 25 years, and premiums can be paid either at yearly, half-yearly intervals. To obtain a relevant comparison to *Jeevan Labh*, we choose a cover sum of ₹600,000, for 16 years.

As an alternative for the savings component, we consider the Public Provided Fund (PPF) scheme of the Government of India which allows individuals to invest from ₹500 to ₹150,000 per financial year either as a lump sum or in a maximum of 12 installments per year. The original duration of this scheme is 15 years, extendable for one or more blocks of 3 years each. The PPF provides tax benefits along the same lines as endowment insurance, with a guaranteed annual interest rate of 7.9%.[6]

To illustrate the nature of returns on investment in endowment plans and in purchasing term insurance alongside a saving in the PPF, we collected the premiums required by a male, non-smoking adult for both "Jeevan Labh" (endowment product, henceforth), and "Anmol Jeevan" (term product, henceforth) at ages 30, 40, and 50. Holding the payout in the event of death the same (₹600,000), we compute the gains from the strategy of investing the difference between endowment and term products premiums in the PPF scheme for 15

[6]The rate of interest as of October 2019. However, this is subject to changes yearly with the Government of India annual budgets presented in February every year.

Figure 1 Internal rate of return comparison: Endowment Insurance vs. Term + PPF



years.[7] Figure 1 plots the implied rate of return for the endowment product and the term + PPF products, for these three ages, male, non-smoking adult in India, with and without a bonus. The figure shows that at no point in the age distribution, the guaranteed gains (without bonus) from investing in the endowment product are better than investing in a combination of PPF and term insurance coverage. The differences in the imputed rate of return between term + PPF and endowment product is non-trivial. At age 30, 40 and 50, these are 6.56%, 6%, and 4.74% per annum, respectively. The reduction in gains relative to the endowment product arises primarily due to an increase in the premium required for term insurance when an individual is aged 50, thus reducing the yearly investment in PPF by this individual. Endowment insurance plans typically pay out a simple bonus, without any compounding, each year. In this example, Jeevan Labh has paid a simple bonus of ₹43 for every ₹1000 sum assured in the past three years (or 4.3% of the amount assured).[8] Assuming that the bonus accrues every year of the policy's life, it yields a bonus of ₹387,000, substantially improving the returns from endowment insurance. The internal rate of return from endowment insurance increases to 6.19% for a 30-year old individual, but still 1.8% lower than the Term + PPF strategy. The bonus does improve the relative gains from the endowment plan for investors over 50 years of age due to the rising costs of term insurance. However, we note here that the pricing of the endowment product *does not* include the "bonus return" since it is not a guaranteed feature of the product.

[7] This is the minimum and closest period of maturity available in the market.

[8] Simple reversionary bonus information: https://www.licindia.in/Customer-Services/Bonus-Information

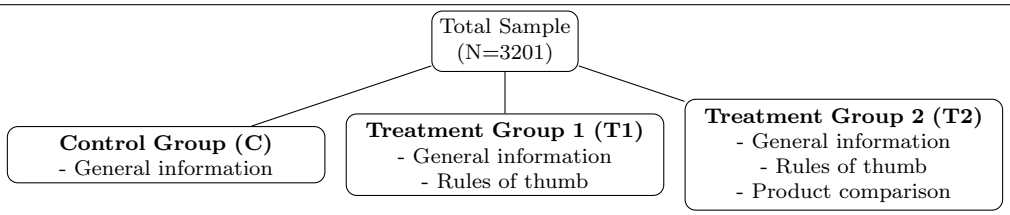
The magnitude of cover proposed in endowment insurance contracts also raises important welfare questions. A single-earner household with an annual income of ₹250,000 may need about ten times its annual income as an insured sum if there are dependents. A term product provides a cover for ₹2.5 million for an annual premium of ₹7,675 (16 years, 30-year-old male, non-smoker). However, to obtain the same level of cover, the endowment product demands that the household invests all of its annual income in an endowment plan, thus raising questions of whether the cover is even actuarially fair. Other non-monetary considerations also suggest that the endowment insurance, like other bundled products, penalize lapsed policies more strongly than other products such as term insurance.

This example highlights that households ought to ask themselves at least four questions before deciding on an insurance product. They need to think about how much cover is desirable, whether and what return is guaranteed or not, what is the difference between the nominal and the real rates of return, and lastly, think about terms of surrender and the process of claiming insurance. These observations form the core of our intervention strategy to set up at rules of thumb for households to evaluate insurance products.

3 The Experiment

Our experiment consists of three groups of households. The intervention to these groups (discussed later) is an information video and sheet delivered in person at the household's residence. The content of the video and sheet vary across the three groups. Figure 2 presents the experimental design and the intervention content across the three groups. The marginal difference in the information provided to the groups C, T1, and T2 of households in our research design allows us to identify the effect of rules of thumb (T1) separately from rules of thumb alongside an explicit evaluation of the product (T2).

Figure 2 Experimental Design and Intervention Content



The intervention video and sheet for the control group (C), contain general information on why insurance matters, and pay more attention to the standard disclosure made during a sale. The video is in Hindi, which is the language all our households are most comfortable with.[9] In addition to the information provided to group C, the first treatment group (T1) receives information on specific questions that they should ask before making purchase decisions.[10] This involves the four areas described in Section 2, namely, cover, guaranteed and non-guaranteed components of endowment insurance contracts, nominal and real returns for bundled insurance products, and lastly, surrender clauses. The intervention for the second treatment group (T2), contains all of the information provided to group C and T1, and also contains a direct comparison of the endowment product to alternatives in the market.[11] Group T2, additionally, is provided with a direct example explaining the replicating portfolio, and unshrouding the product value with an explicit evaluation.

All the groups are offered the same hypothetical endowment insurance product as an information brochure and as a video.[12] This hypothetical product is called "Jeevan Mitr", and mimics a popular endowment product sold in India, and is presented in the exact same way insurance agents sell them in India.[13] The information sheet for the groups C, T1, and T2, and the hypothetical product "Jeevan Mitr" sheet are available in the Appendix.[14] The information sheet uses the same typeset, colors, language style, and information as in the video. All households had a copy of the information sheet and could review the video and the sheet even after the household visit was complete. The intervention video was 1, 3:34 and 4:50 minutes long for C, T1, T2, respectively. The product video was 3:50 minutes long for every household. A copy of the brochure was left with the household at the end of the intervention.

Finally, we follow up with all individuals with a phone survey that pitched a term insurance product widely available in the market without ascribing the call to the project.

[9]The control group intervention video can be viewed at https://tinyurl.com/y6rmx3gr.
[10]The T1 group intervention video is available at https://tinyurl.com/y6sj25ds.
[11]The T2 group intervention video is available at https://tinyurl.com/y67jolk4.
[12]The product video is available at https://tinyurl.com/yc74ydrw.
[13]To design the video, we learned how insurance agents sell the product by asking an agent in Delhi to pitch the product.
[14]The information sheets are in Hindi.

This interaction for three to four minutes on the phone was with interviewers that *did not* make the first two visits, and were trained separately. After recording the responses over the phone, interviewers mentioned that this was a follow-up call as a part of the same study the individuals consented to participate. This design allows us to measure household responses independent of the first two visits and creates a test closest to a real-world setting. Furthermore, the phone survey allows us to check whether our intervention could improve the demand for an objectively a better insurance product in the market. Finally, the phone interviewers also documented whether the household was distracted, was busy, or was in a noisy environment during the conversation, which enables us to measure participation and attrition in a precise manner.

3.1 Information content in the treatment

Indian insurance markets govern the information contained in each of our treatment-arms. We unpack the essential features of insurance contracts in India and the rules of thumb that should help households approach these features. Broadly, the information provided to group T1, in addition to general information provided to group C, can be used to uncover distinct aspects of endowment insurance.

Cover The sum of money available when the insured risk occurs is at the heart of any insurance contract. Any individual considering a life insurance contract needs to assess how much coverage she needs. The cover depends on the number of dependents, number of earning members in the family, and whether the household has liabilities such as mortgages that may not be affordable if such earnings are no longer available. As a rule of thumb, we urge that households consider a cover of at least ten times the individual's annual income while assessing insurance products.

Returns: Guaranteed and Real Returns are a vital component of decision-making in finance. Previous studies suggest that purchase decisions are significantly affected by how returns are disclosed (Shaton, 2014). In guaranteed products such as endowment insurance, firms compute returns with the premium amount or the sum assured as the base. The advertised returns tend to consistently show whatever results in a higher

number, typically on the annual premium. Gross returns – without any inflation adjustment – are the mainstay in such information materials. Considering that the minimum time horizon of investment is at least 16 years, inflation-adjustments are sizeable and non-trivial.

While market-linked financial products have an additional component of risk adjustment to returns, we aim to keep the experiment simple and hence only study products that have "guaranteed" returns, with no risk associated with such an investment. Being a state-run firm, the Government of India fully-guarantees liabilities of the Life Insurance Corporation. The "bonus" component of endowment insurance contracts depends on how "well" the company does and therefore is not a guaranteed cash flow for a contract holder. The Public Provident Fund enjoys the same level of guarantee from the Government as LIC. Therefore, the extent of risk in these products is the same.

As a rule of thumb, we suggest that households enquire about the nature of returns – guaranteed, or not – and think about whether such returns are nominal or real.

Early exit The provisions related to early exit may make it very expensive to quit the product before the duration is over. This feature is vital as there may be occasions when the customer is unable to pay for a few years in between or wants to surrender the product entirely. The repercussions of missed payments or early exit should be known to the customer.

There are generally two costs associated with an early exit. One, in losing the tax deduction if redeemed earlier than the prescribed lock-in. Two, costs in the form of surrender charges. In an endowment product, the policyholder would lose the tax benefit if they lapse the policy after two years for policies with a tenure of 10 years or less, and after three years for longer-term plans. Polices lapsed in the first two years generally have 100 percent of costs deducted. Surrendered polices after year two could return between 30 and 40 percent of premiums paid till year four.

As a rule of thumb, we highlight that households should enquire and learn about

penalties for an early exit, and surrender terms and conditions.

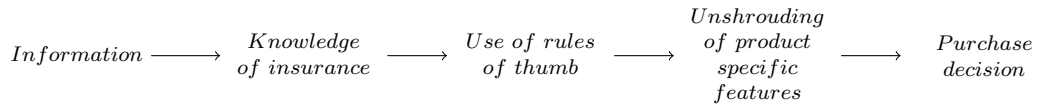
Explicit product evaluation Individuals may need to be informed about alternative products with the same if not better outcome along the shrouded dimensions in the bundled product. Such evaluation is hardly spoken about during the sale of a financial product. While agents are trained typically to talk about similar products sold by competitors, they do not veer into other types of financial products or a combination of products that could provide the same outcome.

In the case of the endowment insurance, the alternatives are straightforward: It is a combination of term insurance and a guaranteed deposit of some kind with the same risk-coverage and a pay-out at the maturity as a bundled product. Once such alternative pathways are clarified, individuals may recognize the cost of shrouded attributes to a bundled product.

If these interventions are successful, an endowment product will seem less attractive to households. Moreover, a term product may attract greater interest from households.

Figure 3 presents the logic that guides the experiment in this study. We posit that the information provided to households generates instrument-specific knowledge, which then enables households to use rules of thumb while evaluating insurance products. By using these rules of thumb, households can unshroud product features when a product is presented to them, thereby adjust their purchase decisions.

Figure 3 Theory of Change



The experiment consisted of the following key stages: baseline survey, randomization, information intervention, end-line survey, follow-up phone survey. The baseline survey took place over four weeks, after which we randomized households into the three groups C, T1, and T2. The intervention and the end-line happened in one visit after the households were randomized into different treatment groups. The experiment concluded with the phone survey. Appendix Section A presents the procedures followed to conduct the experiment,

respondent recruitment, sample size, attrition, and other details on the actual fieldwork conducted for this paper. We find that the randomisation achieves balance across the groups and the attrition was not selective. Finally, we have a sample size of 2838 households across C, T1, and T2 in our study.

3.2 Empirical Strategy

The empirical strategy is an intention-to-treat (ITT), that is, all households are analysed with the assumption that they remained in the intervention group to which they were initially assigned. The impact of the two treatments can be evaluated by comparing outcomes across groups in a simple regression framework. For each household-level outcome, the main specification is given by:

$$y_i = \alpha + \beta_1 t_{1i} + \beta_2 t_{2i} + \gamma X_i + \sum_s \delta_s I(S = s) + \epsilon_i \tag{1}$$

where y_i denotes the outcome for household i, t_{1i} is a dummy variable equal to 1 for households in the T1 group; t_{2i} is a dummy variable equal to 1 for households in the T2 group; with the reference group as the control group C, and ϵ_i is a robust error term. The randomization is stratified on some variables. [15] To adjust our standard errors for stratification we add a dummy variable for each stratum with δ_s denoting the randomization stratum fixed-effect. X_i represents household or respondent level controls that could potentially explain the outcome but are not influenced by the intervention. The following variables measured at baseline are used as controls in our study: age, education level, occupation, number of dependents/children, number of earning members, geographical zone, household income, assets, financial investments, insurance ownership, personal financial stability, financial literacy score, understanding of insurance, risk and time preferences.

For each outcome variable, we present regression results with and without controls. We use the ordinary least squares (OLS) estimator for all outcomes. For binary outcomes, we also run the logit estimator and present these results if the result is different than the OLS

[15] Appendix Section A.2 details the variables the randomization was stratified by.

estimator. The outcomes analyzed are such that they capture each step in the theory of change as detailed in Figure 3. These are measured both at the end-line and follow-up phone survey.

4 Results

4.1 Purchase decisions

The ultimate aim of most financial literacy programs as well as our interventions is to enable households to make optimal purchase decisions. In our setting, this would be to decrease the purchase (stated and revealed) of the endowment insurance product and increase the purchase of the term insurance product. We measure these main outcomes through responses to the following two questions in the end-line and follow-up survey respectively,

1. Having been introduced to "Jeevan Mitr", would you be interested in purchasing this product? (yes, no, cannot say)

2. Having been introduced to this term insurance product, would you be interested in purchasing this product? (yes, no, cannot say)

Note that "Jeevan Mitr" is a hypothetical insurance product that resembles the endowment products in the market and the households are aware of this, while the term insurance product is introduced as a real product the households could potentially purchase. Table 1 presents the results. As we hypothesize, there is a decrease (increase) in the intention to purchase the endowment (term) product, as measured by the response "no" ("yes") to purchase questions.

Table 1 Purchase decisions

	Dependent variable:			
	Buy Endow = No		Buy Term = Yes	
	(1)	(2)	(3)	(4)
T1	0.029*	0.030**	0.052*	0.056**
	(0.015)	(0.015)	(0.027)	(0.027)
T2	0.025	0.023	−0.005	−0.005
	(0.015)	(0.015)	(0.026)	(0.026)
Constant	0.140**	0.359***	0.292***	0.157
	(0.054)	(0.096)	(0.082)	(0.158)
Controls	No	Yes	No	Yes
Observations	2,838	2,838	1,650	1,650
Adjusted R^2	0.089	0.096	0.022	0.019
Note:		*p<0.1; **p<0.05; ***p<0.01		

We find that the rules of thumb intervention, T1, leads to a 2.9 percentage points increase in households saying "no" to purchasing the endowment product compared to the control group. In column 1 without any controls, we note that this effect is on the base of the control group having 14% households that say "no", making it a sizeable effect. The effect on the T2 intervention group is statistically insignificant, mainly due to a small downward revision in the magnitude of the treatment effect.

Columns 3 and 4 of Table 1 present the treatment effect on the intention to purchase the term product from the follow-up survey. We find that the T1 group has a 5.2 percentage points increase in saying "yes" to buying the term product than the control group. Although the magnitude of the effect is larger than the effect on purchase propensity for the endowment product, we note here that as a percent of the base rate of intention to purchase, the effect sizes are similar.

In line with the effect on the T2 group for the endowment product, we document that there is no effect of the second intervention video on the intention to buy the term product. However, the treatment effect magnitude is nearly zero for "Buy Term = Yes". This suggests that detailed product evaluation has a strong counter-veiling force against the rules of thumb intervention for households in this group, and likely counter-productive.

The difference in sample size for the estimates between Columns 1, 2 and 3, 4 stem from the fact that our interviewers could not engage in a clear phone conversation with the respondents. However, such a concern equally affected respondents across all treatment

arms, laying to rest concerns of selective compliance and attrition in our data.

4.2 Mechanism: Knowledge

If our intervention leads to a change in the purchase probabilities, we should see an improvement in the knowledge for our sample. We use three methods of testing whether knowledge has improved. First, we test if the respondents understood how much coverage should be purchased, and how to calculate real returns. Second, we measure what features are important to households when buying insurance, and whether they change after the intervention. Third, we test if right after the intervention, households can correctly choose a hypothetical term over a hypothetical endowment product. Estimation of changes in knowledge would confirm whether the interventions had a significant impact on the decision to (non) purchase the insurance products.

Knowledge about insurance coverage and real returns: We measure insurance knowledge gained right after the intervention with the following questions:

1. If your income is ₹300,000 per annum, then what would be the minimum amount of insurance you would need for your family?

2. If inflation is 4%, and an insurance product gives you 6%, what would be the rate of return after deducting inflation?

Both these concepts of minimum cover and the real rate of return are explained in the T1 and T2 videos, but not mentioned in the video for control households. Based on the videos the appropriate answer is greater than ₹3,000,000 and 2% respectively.

Table 2 presents T1 and T2 intervention effects on knowledge of cover (Column 1), and the real rate of return (Column 2). The T1 intervention results in an 11.2 percentage point increase in correct answers on minimum cover relative to the control group – a 36.6% increase from the base rate of correct answers. Similarly, the T2 intervention results in an 8 percentage point increase, albeit a much smaller increase as a percent of the base rate of correct answers. Consistent with our other results, the difference between T1 and T2 is not statistically significant. On the real rate of return (Column 2, Table 2), we do not

Table 2 General Insurance Knowledge

	Dependent variable:	
	Minimum cover	Real rate of return
	(1)	(2)
T1	0.112***	0.023
	(0.022)	(0.015)
T2	0.080***	0.018
	(0.021)	(0.015)
Constant	0.306**	0.917***
	(0.135)	(0.096)
Controls	Yes	Yes
Observations	2,838	2,838
Adjusted R^2	0.135	0.100
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 3 Insurance Features Importance at Baseline

	Dependent variable:			
	Cover	Surrender	Bonus Return	Guaranteed Return
	(1)	(2)	(3)	(4)
T1	−0.000	0.002	0.015	−0.001
	(0.000)	(0.017)	(0.020)	(0.022)
T2	−0.000	−0.018	0.020	−0.022
	(0.000)	(0.017)	(0.019)	(0.022)
Constant	−0.000***	0.391***	−0.103	0.647***
	(0.000)	(0.106)	(0.122)	(0.140)
Controls	Yes	Yes	Yes	Yes
Observations	2,838	2,838	2,838	2,838
Adjusted R^2	1.000	0.119	0.079	0.083
Note:				*p<0.1; **p<0.05; ***p<0.01

observe any statistically or economically significant increases in correct answers. We note here that this may be because the answer required a simple arithmetic calculation on the part of households that was easy to compute in the first place. This is reflected in the fact that 91.7% of the control group also answered correctly. While we set out to measure an increase in "knowledge", this measure is at best a noisy proxy because households may give a correct answer despite not understanding the significance of returns net of inflation.

Features of insurance that are important: In our study, we ask households both at the baseline and in the end-line survey the following question on the various product features that they would lookout for:

1. If/when you were to buy a life insurance policy, what product features would you look out for?

Table 4 Insurance Features Importance at Endline

	Dependent variable:			
	Cover	Surrender	Bonus Return	Guaranteed Return
	(1)	(2)	(3)	(4)
T1	0.030	0.021	0.051***	−0.015
	(0.023)	(0.015)	(0.015)	(0.022)
T2	0.041*	0.019	0.024	−0.033
	(0.022)	(0.015)	(0.015)	(0.022)
Constant	0.563***	0.298***	0.327***	0.242*
	(0.141)	(0.094)	(0.094)	(0.137)
Controls	Yes	Yes	Yes	Yes
Observations	2,838	2,838	2,838	2,838
Adjusted R^2	0.032	0.010	0.019	0.036
Note:				*p<0.1; **p<0.05; ***p<0.01

Question 1 allows us to assess the role of the intervention in the importance of various features covered by the intervention. Table 3 shows the four features covered in our intervention videos for T1 and T2 group of households and whether these were considered important by them *before* the intervention. We note here that all the coefficients on T1 and T2 are statistically insignificant across the four features, namely, cover (Column 1), surrender (Column 2), bonus return (Column 3) and guaranteed return (Column 4). It is noteworthy that nearly no household selects cover as an important feature during the baseline survey. However, 39.1% and 64.7% of the households in the control the group considered surrender terms and guaranteed return, respectively, as relevant features while considering insurance. Lastly, nearly no household considered the "bonus return" – non-guaranteed returns from investment – as a feature they would look out for, suggesting that households tend to be blind-sided by contracts like endowment insurance where most of the action in terms of its viability come from "bonuses" that are not guaranteed by the insurance company.

Table 4 shows the four features covered in our intervention videos for T1 and T2 group of households and whether these features were considered important by households *after* the intervention. We observe that the fraction of households in the control group that consider all four features important are statistically significant and meaningfully large. This is primarily since the control group video urges households to pay attention to *all* product features, and hence households recognize that these are likely to be important when posed as features of insurance products.

Column 1 of Table 4 presents results on "cover" as an important feature of insurance products. We document a 3 (4.1) percentage point increase relative to the control group for T1 (T2) intervention groups. While the increase is only $\approx 5\%$ of the base rate, relative to the benchmark results *before* the intervention presented in Table 3, this is a substantial increase in the knowledge of insurance features. Additionally, the importance of surrender increases by 2.1 and 1.9 percentage points for T1 and T2 respectively, although it is statistically insignificant. Lastly, the bonus return (Column 3) and guaranteed return (Column 4) feature bear significant patterns after the intervention. The T1 and T2 intervention cause meaningfully large increases in the importance of looking out for bonus returns with 5.1 and 2.4 percentage points respectively. However, the T2 intervention effect is statistically insignificant, and substantially lower than the effect for the T1 group, suggesting that the product comparison may not have aided in households recognizing the importance of the bonus feature in insurance products. Correspondingly, the role of guaranteed return is negative, though statistically insignificant. This suggests that households recognize that all the action may be in the bonus feature as opposed to the guaranteed return feature that is highlighted and marketed in endowment insurance contracts.

Hypothetical choice between products: After the educational video and *before* we introduce "Jeevan Mitr", we measure whether households are able to discern an endowment insurance product from a term insurance product before measuring the knowledge gained by households. We ask the household to choose between an endowment and term product when cover, guaranteed return at maturity, and the premium costs are highlighted clearly. The question asked is as follows:

1. If you were in a situation where you could choose to buy only one of the following products (endowment and term), what would you pick? (Answers: Endowment, Term, Don't know)

	Endowment	Term
Cover	₹185,000	₹2,500,000
Guaranteed money at the end	₹170,000	₹0
Policy term	15 years	15 years
Annual premium	₹15,600	₹4,300
No. of years to pay	10	15
Total premium	₹156,000	₹64,500

Table 5 Choice between Endowment and Term Insurance

	Dependent variable:			
	Choose = Endowment		Choose = Term	
	(1)	(2)	(3)	(4)
T1	−0.064***	−0.059***	0.049**	0.048**
	(0.022)	(0.022)	(0.020)	(0.020)
T2	−0.066***	−0.067***	0.060***	0.061***
	(0.022)	(0.022)	(0.020)	(0.020)
Constant	0.466***	0.382***	0.410***	0.506***
	(0.079)	(0.138)	(0.072)	(0.126)
Controls	No	Yes	No	Yes
Observations	2,838	2,838	2,838	2,838
Adjusted R^2	0.074	0.095	0.056	0.074
Note:			*p<0.1; **p<0.05; ***p<0.01	

Columns 1 and 2 of Table 5 present results on endowment insurance as a preferred choice for households, with and without controls. The T1 intervention led to a 6.4 percentage points *decrease* in endowment insurance being the preferred choice – 13.7% of the base rate of preference for endowment insurance. The T2 intervention led to a 6.6 percentage points reduction in endowment insurance being the preferred choice – 14.1% of the base rate of preference for endowment insurance. The difference in treatment effects between T1 and T2 in Column 1 are not statistically and economically meaningful. However, the difference is large, but statistically insignificant, once controls are introduced (Column 2). The lack of difference in treatment effects between T1 and T2 suggests that product comparison – the only component that differentiates the first intervention from the second – has little role to play in the estimated effects.

Columns 3 and 4 of Table 5 present the results on the preference for term insurance. Interest in term insurance as a choice for households increases by 4.9 percentage points (11% of the base rate) for T1 intervention, and by 6 percentage points for the T2 intervention

Table 6 Unshrouding Product Information

	Dependent variable:					
	Guaranteed Return	Bonus Return	Return net of inflation	Cover	Surrender	Total
	(1)	(2)	(3)	(4)	(5)	(6)
T1	−0.018	0.057**	0.041*	0.022	0.011	0.048**
	(0.021)	(0.022)	(0.022)	(0.022)	(0.020)	(0.020)
T2	0.006	0.022	0.014	0.010	0.002	0.024
	(0.021)	(0.022)	(0.022)	(0.022)	(0.020)	(0.020)
Constant	0.305**	0.675***	0.570***	0.610***	0.040	1.053***
	(0.133)	(0.139)	(0.137)	(0.139)	(0.125)	(0.124)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,838	2,838	2,838	2,838	2,838	2,838
Adjusted R^2	0.156	0.041	0.095	0.068	0.065	0.109
Note:						*p<0.1; **p<0.05; ***p<0.01

(Column 3). However, the difference between T1 and T2 is not statistically significant, even with additional controls (Column 4). It is important to also note that the percent of households in the control group that prefer term insurance is much higher than the unconditional estimates of insurance ownership in India. This in part reflects the conditional sample (due to our eligibility criteria) we use for the study and the fact that our video for the control group does provide generic information about insurance that is otherwise unavailable to a large majority of Indian households.

Two distinct and relevant facts emerge from these estimates. First, we observe that our intervention videos help a reasonably meaningful fraction of households identify less with endowment insurance and be more inclined to purchase term insurance. Second, we observe that additional product comparison does not meaningfully alter household preferences as much as the rules of thumb intervention, and if anything could potentially reverse any meaningful positive effect from the rules of thumb intervention.

4.3 Mechanism: Unshrouding

Unshrouding Product Information: Our theory of change assumes that once the household has gained knowledge on insurance, it will be able to better understand an insurance product and potentially unshroud the exact product features. We test this by posing questions on the features of our hypothetical product, "Jeevan Mitr".

Table 6 shows whether respondents were able to unshroud five specific product features that are included in the product description. The T1 group, consistent with the estimates

Table 7 Results summary

	T1	T2
Purchase decision	✓	×
Knowledge	✓	✓
Unshrouding	✓	×

on knowledge created due to the intervention, focus on bonus return, return net of inflation, cover, and surrender terms. The T1 group is 5.7 percentage points and 4 percentage points more likely to get the answer on bonus return and overall return net of inflation correct compared to the control group while the T2 group does not see a significant effect. Column (6) of the table presents the effect on the overall score of correct answers and establishes that households in the T1 group are more likely to successfully unshroud product information than T2 households, relative to the control group. However, households seem to have effectively unshrouded features concerning bonus, and return net of inflation, while the effects from cover and surrender, though positive, are not statistically significant. The journey from education to being able to uncover the hidden information is not easy and may not be that obvious, although the T1 intervention has resulted in households getting to the half-way point on unshrouding relevant features of "Jeevan Mitr".

The fact that individuals in the T2 intervention see no significant unshrouding raises important questions about the role of detailed product evaluation. One may argue that such a comparison is meant to bypass the need for households to evaluate the implications of unshrouded features, thereby has a lower cognitive expectation on them. However, we believe that the opposite may be true; T2 is more cognitively demanding or was too complex to process and distill a signal to rely on while making purchase decisions.

Collectively, these results point to effective T1 intervention and an ineffective T2. As Table 7 shows, although T2 generates knowledge, it fails to unshroud our hypothetical "Jeevan Mitr" product features and affect the intention to purchase, although it generates knowledge.

4.4 Effectiveness of financial education

The results of the experiment show that our financial education approach leads to significant improvement in the financial decision-making of participants. But how does one measure the general effectiveness of the educational program and compare it to other programs? In their meta-analysis of the financial education literature Kaiser, Lusardi, Menkhoff, and Urban (2020) describe key considerations from recent work on in education interventions (Kraft, 2020) in determining whether or not programs are effective. First, only the results of studies with a causal interpretation (e.g., RCTs) can be evaluated by the "effect sizes". Second, the "effect size" interpretation depends on what, when, and how the outcomes are measured with larger effects on outcomes that are easier to change, proximal to the intervention, administered soon after the intervention is completed, and measured with more precision. Third, effect sizes from lower-cost interventions are more impressive than similar effects from costlier programs. And lastly, programs that are easy to scale up are more likely to maintain their effectiveness.

Based on these factors, we can set up an evaluation of our study. The experiment is a randomized control trial, a research design that guarantees a casual interpretation of the results. The experiment targets a very specific problem associated with an insurance product. However, that problem is widespread among the Indian population and causes significant loss in wealth.[16] The outcomes are measured close in time to the intervention and we do not evaluate the long-run effects of the education. According to Kraft (2020), our study should provide results with relatively large "effect size". Our intervention is low cost. For studies discussed in Kaiser, Lusardi, Menkhoff, and Urban (2020) the mean and median cost per participant was \$60.40 and \$22.90, respectively. The total cost of our intervention amounts to \$40,000, which is equivalent to \$14 per participant with 2800 individuals taking part in the study. Finally, the main instrument of our interventions is the set of videos in detail and in easy-to-understand language describing a well-known product and providing rules of thumb to unveil some of its hidden features. These videos are easily scalable, not just in terms of reaching a greater proportion of the population, but also in producing targeted

[16] Over 80% of the retail insurance revenue for firms in India stem from similar bundled products.

intervention on other retail products in India.[17]

According to the criteria described above our intervention is effective. As highlighted by Kaiser, Lusardi, Menkhoff, and Urban (2020), the RCT design leaves little debate regarding the internal validity of the study. And in this context, the effect of positive financial education on the treated consumers is positive, and welfare-improving. In the next section of the paper, we attempt to set up a new criteria, that would allow us to evaluate the market equilibrium implications of financial education interventions, and apply it to our case.

5 How large should the treatment effect be?

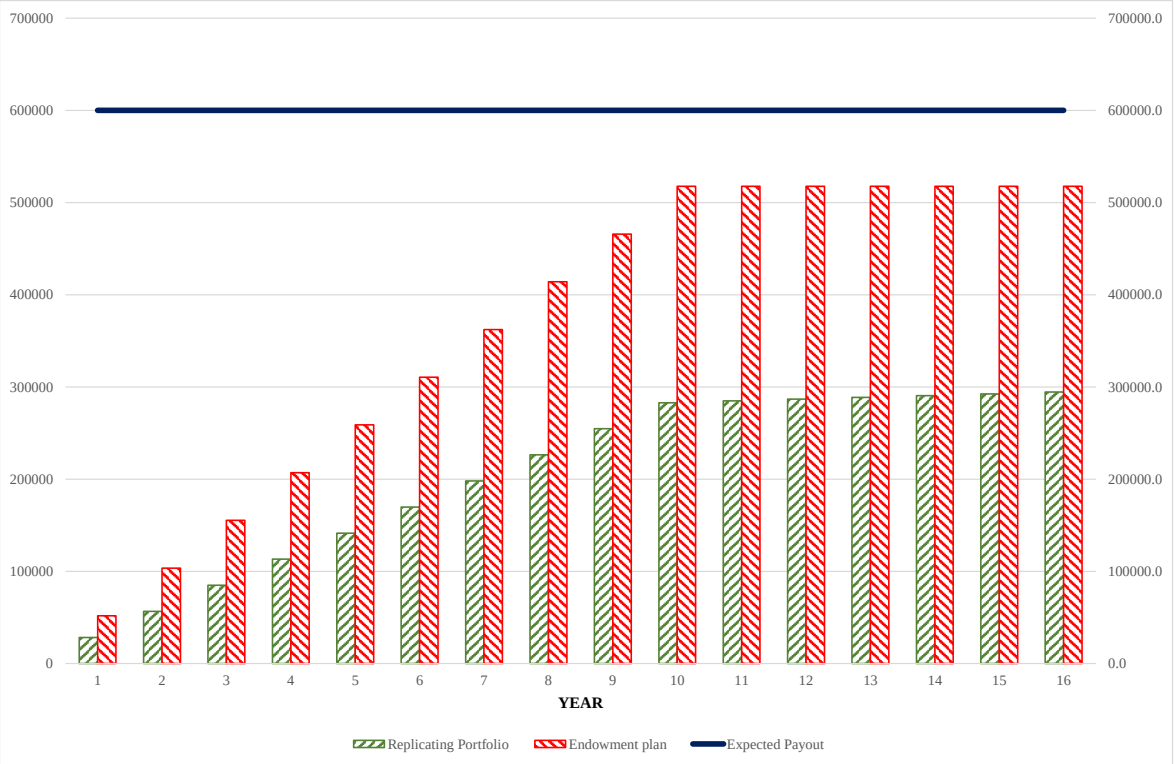
It is straightforward to see that the economic gains for individuals who shy away from the bundled endowment contract are large. However, the key economic question is whether such gains are a result of more informed consumers being subsidized by uninformed consumers as expounded in Gabaix and Laibson (2006). If so, our intervention may have increased the costs for households who remain uninformed to benefit those who are now informed. The true test of our approach, therefore, is not only a significant treatment effect, but a large enough treatment effect to change the nature of information provision at the market level. Intuitively, our approach determines the size of the treatment effect required to expand the likelihood of an unshrouded equilibrium in the market.

Endowment insurance is a good example of a sub-optimal financial product with shrouded quality. The price of endowment insurance is equal to the sum of the insurance cost and saving, which guarantees a fixed payout at contract maturity. However, the expected payout from the savings component of this contract is lower than from a replicating portfolio, suggesting that the price of endowment product is too high. Firms do not inform consumers that a simple replicating strategy of separately buying term insurance and investing in a risk-free saving account with the same maturity is much cheaper for them. Figure 4 demon-

[17] Kraft (2020) also provides a schema for interpreting effect sizes from causal studies of education interventions. Kraft (2020) suggests that effects larger than 0.20 standard deviations are "large," effects between 0.05 and 0.20 standard deviations are "medium," and effects under 0.05 standard deviations are "small." The effect of the intervention on purchase education falls into the "medium" category being 0.14 satndard deviations. According to this schema our intervention is a low cost easy-to-scale program with a medium "effect size".

strates that the cumulative costs for endowment insurance are substantially larger than for the replicating strategy. Unfortunately, firms exploiting consumers' lack of knowledge, and overcharging them is a feature of many financial products, not just endowment insurance. Our approach to evaluate how large the treatment effect ought to be can be generalized to other product-specific education interventions.

Figure 4 Cash Outflows Comparison: Endowment Insurance vs. Replicating Portfolio



The goal of financial education is to make consumers aware of the actual value of the product and to stop them from overpaying for it. If a sufficient number of consumers become aware of firms' misleading pricing, this may change the incentives for firms to adjust their prices and to provide truthful information about the gains from the bundled products. To evaluate the consequences of financial education for equilibrium prices in the market, we set up a theoretical model of a market for a financial product with shrouded quality.

Our set-up closely relates to the world of products with shrouded attributes. Gabaix

and Laibson (2006), GL henceforth, introduce a model where a product has an add-on with a hidden cost. A share of consumers in the market knows about the cost of the add-on and can opt-out of purchasing it. The rest of the consumers are unaware of the add-on cost and are forced to pay it. In our set up firms instead of shrouding prices choose to shroud the quality, the actual pay-out, of the financial product.[18] A share of the population is aware of the actual value of the sub-optimal product and with some effort can substitute away from it. The remaining consumers, instead, purchase the overpriced product. The equilibrium prices depend on the share of informed consumers, with a higher level of sophistication in the population leading firms to provide transparent information about the product.

In the model, there is a finite number of profit-maximizing firms selling a financial product - endowment insurance product.[19] The total price of the endowment product P on the market, the sum of all premiums includes the price of the insurance contract p_{ins} and the cost of saving s. The endowment insurance product promises a total pay-out of V, which is equal to the sum assured in case of death before maturity and at maturity if no death occurred. Firms can decide to shroud the actual value of saving part by declaring that its value is equal to V_s, when the true pay-out is $V_s - q$, where $q > 0$.[20] The pay-out from the insurance is never shrouded and equals to V_{ins}. Therefore, q is a hidden loss in value for the consumer. This loss can emerge, for example, if consumers evaluate the nominal rate of return instead of the real rate, or believe their savings to be exposed to compounding interest rate instead of simple interest rate while calculating the profitability of the investment. In the case of the Indian endowment products market, a clear example of such a hidden loss is a non-guaranteed bonus, that is presented to the consumer as a certain future gain.

By shrouding the quality of the endowment product, a firm makes an additional profit. Consider a firm that charges consumers P as a sum of premiums for the endowment product. The firm can invest P in a combination of a term-insurance and a risk-free saving with the same maturity and pay-out V as the endowment product, and extract an arbitrage profit

[18] Anagol et al. (2017) make the same assumption for the endowment insurance products in India.

[19] The endowment insurance in India is sold by commission-motivated agents. In the model, we treat the agent as a representative of a firm.

[20] We use the pay-out from the investment product as a characteristic of its quality. The overpriced product would be considered lower in quality, therefore sub-optimal.

equal to q.

The hidden loss in quality q is not revealed to the consumers by firms directly, but some consumers ex-ante know about it. Let's assume that the mass of consumers in the economy is normalized to 1, and all consumers aim to receive a risk-coverage and saving provided by the endowment contract. There are two types of consumers: A fraction α of all consumers are myopic and only consider the stated price of the endowment product $P = p_{ins} + s$, and the pay-out $V = V_{ins} + V_s$. The remaining fraction $(1-\alpha)$ are sophisticated consumers and consider the price of the contract P, the expected pay-out V, and the loss in quality q, imposed by the firm.[21] In a real-world setting, myopic consumers would be, for example, the ones who consider bonus-payments in the endowment insurance as guaranteed. Whereas sophisticated consumers would distinguish between guaranteed and non-guaranteed pay-outs.[22]

The division between sophisticated and myopic consumers in the economy is a common knowledge. However, while pricing the product firms can not distinguish between sophisticated and myopic individuals, making price discrimination impossible. In Indian market insurance firms do not interact directly with customers. Thus, they can not illicit the level of individual's financial sophistication. Agents, even when receiving a signal about the type of the customer, do not offer different pricing or alternative products (Anagol et al., 2017).[23]

Sophisticated investors know about the discount in quality of the endowment product, q. They infer that it is different from zero, $q > 0$, and can opt-out of paying it by substituting the endowment insurance product with a combination of term insurance with the same risk coverage, purchased for the price p_{ins} and requesting a saving with guaranteed return $V_s - S$ from the firm. Substitution comes at a cost, e. As shown by Anagol et al. (2017) the agents selling the endowment insurance are motivated by a large commission from it. Thus a sophisticated consumer needs to compensate agents' forgone commission to gain access to only the term-insurance contract. Such compensation would be a part of the cost of

[21] When the information is unshrouded, expectations for the hidden loss q are equal to its true value. When the information is shrouded, sophisticated consumers anticipate perfectly the value of q that the firm sets in equilibrium.

[22] In the context of financial knowledge, myopic consumers consider a nominal rate of return on their investment and sophisticated consumers know the difference between nominal and real rates of return.

[23] The version of the model and potential price equilibria are discussed in Kosfeld and Schüwer (2017).

substitution, e.

All consumers in the economy have a maximum willingness to pay for the hidden discount in quality, $\overline{q}$, which sets an upper bound for q, that is, $q \leq \overline{q}$.[24] The cost of substitution is lower or equal than the maximum willingness to pay, $e \leq \overline{q}$.[25]

5.1 Timeline

The timing of the model is the following:

Period 0: The firm decides what information about the bundled product to make public. It sets prices for insurance p_{ins} and for the saving s, and determines the pay-outs for each part of the product. The pay-out for insurance is equal to V_{ins} and the value of the saving part when shrouded is equal to V_s, and when it is unshrouded is equal to $V_s - q$.

The firm decides whether to shroud the true value of the saving. Unshrouding is free for the firm: it simply needs to show $V_s - q$ to the consumers. The total price of the endowment product P comprises of investment in savings, and expenditure on the insurance premium, i.e, $P = p_{ins} + s$. And the total value of the product is equal to $V = V_{ins} + V_s - q$ when unshrouded, and $V = V_{ins} + V_s$ when shrouded.

Period 1: Sophisticated (informed) and myopic (uninformed) consumers make decisions. Sophisticated consumers recognize that the endowment insurance product is a combination of term-insurance and saving. While evaluating their decision to purchase, sophisticated consumers always take the true value of the saving, $V_s - q$, into account. If the information is shrouded, then they form Bayesian posteriors about this unobserved information, i.e. consider $\mathbb{E}q$.

If the value of the saving is shrouded, sophisticated consumers have an option to purchase term-insurance from the firm, and request a saving with a return $V_s - S$. The cost of substitution from the endowment product is equal to e. The net gain for the sophisticated

[24] GL call $\overline{q}$ maximum willingness to pay for the add-on. The value of $\overline{q}$ can correspond to legal and regulatory constraints limiting the penalties/ fees that firms can charge.

[25] If $e > \overline{q}$ sophisticated consumers will never opt-out of the endowment product, and the market for the suboptimal product would exist.

consumer is equal to:

$$\text{Net Gain}_{sophisticated} = -p_{ins} - s + V_{ins} + (V_s - min\{\mathbb{E}q, e\}) \tag{2}$$

Myopic consumers only consider the value of the bundled product revealed by the firm. When the true value is shrouded, all myopic consumers stay uninformed and only observe the total reported gain from the bundled product.

$$\text{Net Gain}_{myopic} = -p_{ins} - s + V_{ins} + V_s \tag{3}$$

However, when the true value of the bundled product is unshrouded a fraction λ of myopic consumers becomes informed. These newly informed myopes behave just like sophisticated consumers towards all firms. Nonetheless, even when the information is unshrouded, a fraction $(1 - \lambda)$ of myopic consumers remains uninformed.

Period 2: Myopic consumers pay the full price and get the bundled product. Sophisticated consumers pay their prices and get a combination of insurance and saving. In the case of shrouding sophisticated consumers pay the firm for the term-insurance and bargain for the new saving product. In the case of unshrouded values, sophisticated consumers purchase the bundled product from the firm.

5.2 Price Equilibria

Let x_i represent a consumer's average gain from acquisition of insurance and saving combination from a firm i less a consumer's average gain from the best alternative firm. Following GL, throughout the paper we use starred variables to represent the (symmetric) prices set by other firms. For a sophisticated consumer x_i is equal to:

$$x_i = [-p_{ins,i} - s_i + V_{ins,i} + V_{s,i} - min\{q_i, e\} + p^{\star}_{ins} + s^{\star} - V^{\star}_{ins} - V^{\star}_{s} + min\{q^{\star}, e\}] \tag{4}$$

For myopic consumer the following is true,

$$x_i = [-p_{ins,i} - s_i + V_{ins,i} + V_{s,i} + p^{\star}_{ins} + s^{\star} - V^{\star}_{ins} + V^{\star}_{s}].$$

$D(x_i)$ represents the probability that an individual buys a bundles product from firm i or the demand for one type of the consumers for the product sold by firm i.[26] The degree of competition in the industry can be defined as $\mu = \frac{D(0)}{D'(0)}$ or average profit per individual.

The firms would decide to shroud or unshroud the true value of the bundled product depending on the share of myopic consumers in the economy, α. Extending GL for our set-up, we have

Proposition 1:

Let

$$\alpha^{\dagger} = \frac{e}{\overline{q}} \quad \text{and} \quad \mu = \frac{D(0)}{D'(0)}$$

If the fraction of myopic individuals α is greater than $\alpha^{\dagger}$, there exists symmetric equilibrium in which firms keep hidden the true value of the product. Following GL, we call this equilibrium Shrouded Prices Equilibrium. The equilibrium prices are respectively:

$$p_{ins} - V_{ins} + s - V_s == -\alpha\overline{q} + \mu \quad \text{and} \quad q = \overline{q} \tag{5}$$

If the fraction of myopic individuals α is less than $\alpha^{\dagger}$, there exists a symmetric equilibrium in which firms do not hide information and provide the true value of the pay-out to all consumers. This constitutes Unshrouded Prices Equilibrium. The equilibrium prices are respectively:

$$p_{ins} - V_{ins} + s - V_s = -e + \mu \quad \text{and} \quad q = e \tag{6}$$

[26]The demand function D is strictly increasing, bounded below by zero, and bounded above by one. The assumptions in Gabaix and Laibson (2006) are still valid for our case and are described in Appendix 2 of GL paper.

5.3 Comparing Equilibria

The type of equilibria matters for the economy. In Shrouded Prices Equilibrium not only the firms are hiding the information from consumers, but myopic consumers are strictly worse-off and subsidize the sophisticated consumers.

Proposition 2: In Shrouded Prices Equilibrium sophisticated individuals are better-off than myopic individuals. The surplus differential between myopes and sophisticates is equal to $\overline{q} - e > 0$. Besides, in Shrouded Prices Equilibrium, the welfare loss is $(1 - \alpha)e$. Whereas in Unshrouded Prices Equilibrium there is no inefficiency and all individuals are equally well-off.

Proof: First, let's compare the net gains of sophisticated and myopic consumers in different types of equilibria.

Consider a case of Shrouded Prices Equilibrium when a sophisticated consumer gives her business to a firm with shrouded market prices. She substitutes away from the bundled product and benefits from the low equilibrium prices of insurance and saving available. Then sophisticated consumer surplus will be

$$\begin{aligned} \textit{Sophisticated Surplus Shrouded} &= -p_{ins} - s + V_{ins} + V_s - e \\ &= \alpha\overline{q} - \mu - e \\ &= \alpha\overline{q} - \mu - e \end{aligned} \tag{7}$$

At the same time myopic consumer ends up with high loss of the value of the endowment product. The myopic consumer surplus is the following:

$$\begin{aligned} \textit{Myopic Surplus Shrouded} &= -p_{ins} - s + V_{ins} + V_s - \overline{q} \\ &= \alpha\overline{q} - \mu - \overline{q} \\ &= \alpha\overline{q} - \mu - \overline{q} \end{aligned} \tag{8}$$

The difference between surpluses is equal to $\overline{q} - e$ and is greater than zero. In that case, firms exploit the lack of knowledge from myopic consumers. A firm can offer a better product

to the sophisticated consumer, the product with higher value, and compensate its losses by setting the hidden discount of the value of the product for the myopic consumers at the highest level $\overline{q}$. In Shrouded Prices Equilibrium myopic consumers subsidize sophisticated consumers.

Besides, the cost of effort from sophisticated consumers, $(1-\alpha)e$, constitutes the dead-weight welfare loss since the cost of shrouding the information about the true value of the saving is equal to zero.

In Unshrouded Prices Equilibrium all consumers face the same prices, i.e. myopic and sophisticated consumers have the same surplus. Furthermore, when values are unshrouded sophisticated consumers do not need to exert any effort to find a better deal. Thus, in Unshrouded Prices Equilibrium, there is no inefficiency and all consumers are equally well-off.

From **Proposition 2**, we know that Unshrouded Equilibrium is a desirable equilibrium for the market for a product such as an endowment insurance. There are two ways of how the market can achieve the Unshrouded Prices Equilibrium: the firms can unshroud the values themselves or a third-party can educate myopic consumers and decreases their share in the population.

First, let's consider the strategy when a firm decides to unshroud the true values of the pay-outs from the bundled products. To do so the firm informs consumers that the true value of the saving in the bundled product, $V_s - q$, is lower than the value stated before, V_s.

A firm that shrouds values receives maximum profit equal to

$$\pi = (p_{ins} + s - V_{ins} - V_s + \alpha\overline{q})D(p^{\star}_{ins} + s^{\star} - p_{ins} - s) \tag{9}$$

If a firm unshrouds the true value, it educates some myopic consumers and the new share of myopes becomes $\alpha' = (1-\lambda)\alpha$. By revealing the hidden loss, the firm aims to attract sophisticated consumers, who in their turn will tolerate the loss only if it is lower than the cost of effort, $q \leq e$.

- If $q \leq e$, the unshrouding firm's profit is equal to

$$\begin{aligned}\pi = &\underbrace{(1-\alpha')(p_{ins}+s-V_{ins}-V_s+q)D(p^{\star}_{ins}+s^{\star}+e-p_{ins}-s-q)}_{\text{sophisticated demand}} \\ &+\underbrace{\alpha'(p_{ins}+s-V_{ins}-V_s+q)D(p^{\star}_{ins}+s^{\star}-p_{ins}-s)}_{\text{myopic demand}}\end{aligned} \tag{10}$$

The demand of the sophisticated share of consumers, $(1-\alpha')$, is equal to, $D(p^{\star}_{ins}+s^{\star}+e-p_{ins}-s-q)$, where $p^{\star}_{ins}+s^{\star}+e$ is the cost that a sophisticated consumer pays to a shrouding firm by choosing to substitute and $p_{ins}+s+q$ is the cost that she faces at the unshrouding firm. The profit is maximized at $q=e$. Hence, the profit is equal to

$$\pi = (p_{ins}+s-V_{ins}-V_s+e)D(p^{\star}_{ins}+s^{\star}-p_{ins}-s) \tag{11}$$

The following is true in the market:

$$\text{If } \alpha > \alpha^{\dagger}$$

$$\underbrace{(p_{ins}+s-V_{ins}-V_s+e)D(p^{\star}_{ins}+s^{\star}-p_{ins}-s)}_{\text{Unshrouded Profit}} < \underbrace{(p_{ins}+s-V_{ins}-V_s+\alpha\overline{q})D(p^{\star}_{ins}+s^{\star}-p_{ins}-s)}_{\text{Shrouded Profit}} \tag{12}$$

If the share of myopic consumers is large enough, firms do not have an incentive to reveal the true values of the bundled products and educated consumers.

- If $q > e$, the profit of the unshrouding firm is equal to

$$\pi = (p_{ins}+s-V_{ins}-V_s+\alpha'\overline{q})D(p^{\star}_{ins}+s^{\star}-p_{ins}-s) \tag{13}$$

If the hidden loss in value, set up by the unshrouding firm, is larger than the substitution cost, sophisticated consumers will choose to pay a cost of effort to substitute the saving component. Also, the new share of myopic consumers α' is lower than before the unshrouding. Thus, the profit of the firm that reveals that the true value of the

bundled product is strictly lower than the profit of a firm shrouding that information.

Thus, if $\alpha > \alpha^{\dagger}$ no firm has an incentive to unshroud the true value of the bundled product. This is true no matter how many consumers a firm can educate itself. The firm-education does not change the demand for the term-insurance, $D(p^{\star}_{ins} + s^{\star} - p_{ins} - s)$. Firm education does not affect the profit of unshrouding firm when $q \leq e$ in (11) and strictly decreases the profit when $q > e$ (13).

Another possible way to accelerate the unshrouding or make firms reveal the hidden values is to provide third party education (Kosfeld and Schüwer, 2017; Gabaix and Laibson, 2006). The main aim of such education would be to increase the ex-ante number of sophisticated individuals, thus to move α beyond $\alpha^{\dagger}$, and, consequently, make firms choose unshrouded equilibrium prices.

5.4 Financial Education in the Model

More formally, suppose now that a policymaker can educate a fraction of myopic individuals before firms decide on their information and pricing strategy. This intervention increases the share of sophisticated individuals in the population from $1-\alpha$ to $(1+\gamma)(1-\alpha)$ before, and independent of, any potential educational effect of a firm's unshrouding strategy.[27]

In the presence of the third-party financial education, the price equilibria are no longer the same. Now the share of myopic individuals is equal to:

$$\alpha^{\S} = 1 - (1+\gamma)(1-\alpha)$$

Shrouded Prices Equilibrium exists if $\alpha^{\S} > \alpha^{\dagger}$, and firms set up the following prices

$$p^{\S}_{ins} + s^{\S} - V^{\S}_{ins} - V^{\S}_{s} = -\alpha^{\S}\overline{q} + \mu \quad \text{and} \quad q^{\S} = \overline{q}. \tag{14}$$

[27] Gabaix and Laibson (2006) raise a concern that such education would be costly and its provider might have biased incentives. To abstract from implementation costs, we assume that the cost of educating individuals is negligibly low and the policymaker is a non-profit organization with well-designed incentive structures independent of financial firms.

Unshrouded Prices Equilibrium exists if $\alpha^{\S} < \alpha^{\dagger}$, and the prices are the following

$$p_{ins}^{\S} + s^{\S} - V_{ins}^{\S} - V_{s}^{\S} = -e + \mu \quad \text{and} \quad q^{\S} = e. \tag{15}$$

Important to notice that if the effect of education is not sufficient then the market will stay in Shrouded Prices Equilibrium (14) and (15). With these prices, myopic consumers become worse-off than before education. After the "not-enough" education myopic surplus is equal to

$$-\mu - \overline{q}(1 - \alpha^{\S})$$

The myopic surplus in Shrouded Prices Equilibrium before the education is equal to

$$-\mu - \overline{q}(1 - \alpha)$$

Given that $\alpha > \alpha^{\S}$, the myopic surplus before the education is greater than the surplus after "not-enough" education:

$$\underbrace{-\mu - \overline{q}(1 - \alpha)}_{\text{Myopic Before Education}} > \underbrace{-\mu - \overline{q}(1 - \alpha^{\S})}_{\text{Myopic After Education}} \tag{16}$$

Sophisticated consumers are also worse-off after the "not-enough" education when the market stays in Shrouded Prices Equilibrium:

$$\underbrace{(\alpha\overline{q} - e) - \mu}_{\text{Sophisticated Before Education}} > \underbrace{(\alpha^{\S}\overline{q} - e) - \mu}_{\text{Sophisticated After Education}} \tag{17}$$

Both myopic and sophisticated consumers are worse-off after the "not-enough" education. Since the values stay shrouded, myopic consumers continue cross-subsidize sophisticated consumers. Similar logic is provided by Kosfeld and Schüwer (2017), who show that unless the education moves the market to the Unshrouded Prices Equilibrium, myopic

consumers bear higher losses compared to the time before the education.

Thus it is important to understand what effect makes a third-party education effective on the market-level.

To guarantee unshrouded prices equilibrium education provider needs to make sure that the education ensures that the new share of myopic consumers in the economy is lower then the threshold, i.e. $\alpha^{\S} < \alpha^{\dagger} < \alpha$. Thus, the effect of the education should satisfy the following conditions:

$$1 + \gamma \geq 1 + \gamma^{\star} = \frac{1}{1-\alpha}\left[1 - \frac{e}{\overline{q}}\right] \quad \text{s.t.} \quad \frac{\alpha}{1-\alpha} \geq \gamma \geq 0 \tag{18}$$

where e is the price of substitution, α is a share of myopic individuals before the educational campaign and $\overline{q}$ is an upper bound for the hidden value discount. The value of γ is constrained from above since the intervention can educate at most all the myopic investors. Note that the threshold $\gamma^{\star}$ is invariant to equilibrium prices and does not depend on the level of competition in the economy.

From equation (18), if the effect of the education, γ, is larger than the threshold $\gamma^{\star}$, then the following is true:

$$\underbrace{\gamma\,(1-\alpha)\,\overline{q}}_{Firm\ \ Loss\ \ from\ \ Education} \geq \underbrace{\alpha\overline{q} - e}_{Gain\ \ from\ \ Shrouding} \tag{19}$$

If the effect of the intervention is large enough, the losses that a firm suffers become greater than the profit from shrouding. Thus, the firm has an incentive to reveal the true value of the bundled product.

Some key facts emerge from equations (18) and (19). The increase in the cost of substitution e leads to lower gain from shrouding, thus making the unshrouding more likely after the educational campaign. The higher willingness to pay, $\overline{q}$, on the other hand, increases the gains from hiding the true values, requiring a higher effect of education to change firms' pricing. Lastly, the threshold value increases in the "before-education" fraction of myopic consumers in the economy, α. That is, if the starting level of sophistication is low, to change the market prices the educational campaign has to be more effective.

While interventions can do little to affect $\overline{q}$, well designed technology-enabled interventions can lower e, thus improving the prospects of an unshrouded equilibrium in the economy.

5.5 Evaluating education interventions

In the model, we show that third-party financial education can be an effective measure to combat the suboptimal financial products. Increasing the share of financially sophisticated consumers might not only improve the wellbeing of newly educated consumers but decrease the misinformation on the market coming from firms. However, we have to point out that if the effect of financial education is not sufficient, all consumers are worse-off and market inefficiencies persist.

The threshold for effective financial education intervention $\gamma^\star$ depends on two parameters: the ratio between the price of substitution and the upper bound of the value discount, $\frac{e}{\overline{q}}$, and the share of myopic consumers before the intervention α.

Before education, the equilibrium in the economy depends on the relations between the share of myopic consumers α and the ratio between the cost of substitution and the maximum achievable hidden value discount, $\frac{e}{\overline{q}}$.

Figure 5 Effect of Financial Education and the Resulting Equilibria

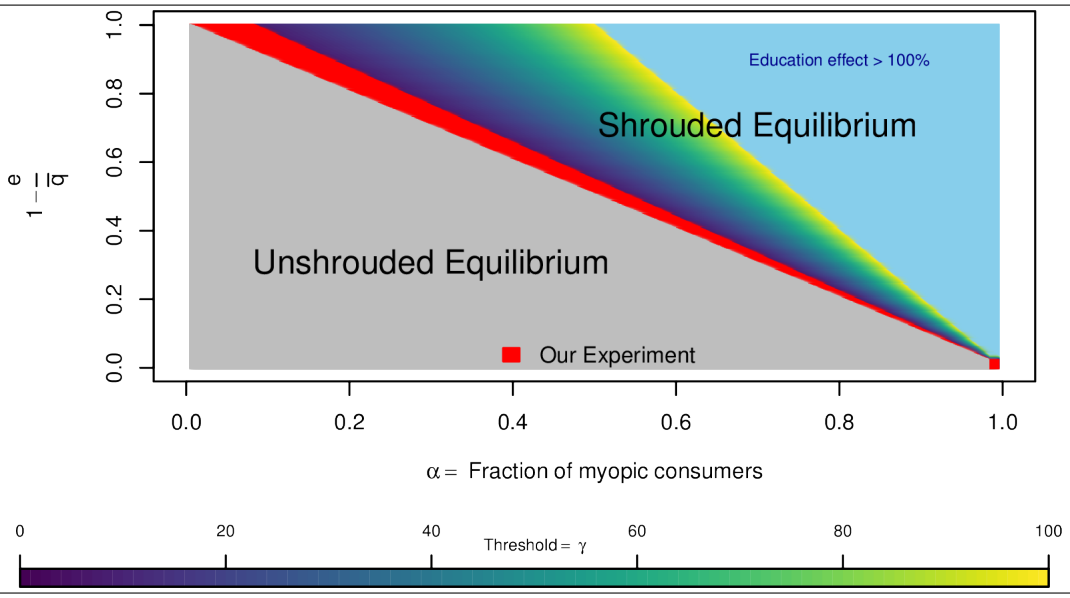


Figure 5 presents the equilibria at all possible levels of those two parameters. On the $x-$

axis, this figure plots the fraction of myopic consumers. One may think of α as the proxy for the extent of uninformed consumers in different countries or specific product markets. As this value increases, the likelihood of an unshrouded equilibrium without any financial education is reduced to zero. On the $y-$axis, this figure plots $1-\frac{e}{q}$, the minimum achievable hidden value discount. As this value increases, the likelihood of an unshrouded equilibrium without any financial education is reduced to zero. For example, when 60% of the consumers in a product market, or an economy, are myopic, and the cost of substitution is 60% cheaper than the maximum loss of value, the required effect of the intervention is about 50%. That is, financial education has to increase the level of informed consumers by 50% of the initial level to achieve an unshrouded equilibrium.

The goal of financial education is to effectively increase the region of unshrouded equilibrium for various parameter values. The shaded regions from dark blue towards yellow maps the value of γ (minimum effect size required from financial education) to move away from a shrouded equilibrium. Beyond yellow, the sky blue color maps the region in which the education effect has to be greater than 100%, i.e., the need to at least double the fraction of informed consumers to achieve unshrouded equilibrium. The region in red is the gain from our financial education experiment.[28]

In the meta-analysis of financial education RCTs, Kaiser, Lusardi, Menkhoff, and Urban (2020) show that the maximum effect of the educational intervention on financial behavior is equal to about 12 percentage points.[29] If an intervention has an effect of that magnitude in our setting, we would observe an increase in the share of sophisticated consumers by about 33% and would see the "effective zone" of the education widen. But in other settings, it is still unclear if the education would be enough to change the market equilibria.

The main takeaway from this exercise is that our treatment effect of three percentage points can potentially help move away from a shrouded equilibrium to an unshrouded equilibrium. As discussed in GL and Kosfeld and Schüwer (2017), the form and the scope of provided education are very important. Third-party consumer education should be unbiased

[28] Our experiment demonstrates that an educational intervention increases the number of individuals not buying a sub-optimal product by 3 percentage points, which is equivalent to $\gamma = 0.083$ or 8.3%.

[29] For a group called "Youth (age 14 to 25)". The result is presented in Table 2, page 39 of their working paper.

and not-profit-motivated. But we should be careful and keep in mind that "not-enough" education even with significant effects can be harmful to the market. The nature of changes to equilibrium information provision in markets is an important consideration while evaluating the role of financial education.

6 Conclusion

Between April and May 2019, we implemented a randomized evaluation of our two interventions – the rules-of-thumb intervention (T1) and the rules-of-thumb intervention with product comparison (T2) in Delhi, India. These interventions were all in the form of short videos that incrementally increased the information provided to the Control group (C) and then (T1) and (T2). Our T1 intervention resulted in a three percentage point (pp) decline in the intention to purchase endowment insurance or an 8.3% increase in the base rate of rejecting endowment insurance observed in the control group. It also resulted in a 5.6 pp increase in the intention to purchase term product or a 17.8% increase in the base rate observed in the control group. Our T2 intervention resulted in similar magnitudes of decline in the intention to purchase endowment insurance, although not statistically significant on the margin.

Our results suggest that product-specific rules of thumb approach has the potential to improve purchase decisions by meaningful magnitudes. With an explosion of financial technology, creating and delivering financial knowledge as in this experiment just before individuals make purchase decisions is no longer expensive or infeasible.

Although our intervention shows a significant decrease in the demand for a sub-optimal financial product, we strive to understand what would be the market implications of such education. We construct a model of financial product market with shrouded attributes, inspired by Gabaix and Laibson (2006). Using the model, we define how large the educational impact should be to change the market pricing and what are the consequences of the "not-enough" education. Using the model we conclude that the magnitude of our intervention has the potential to change the equilibrium in the market, albeit marginally.

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Appendix

A Experiment Details

This section presents the details of how the experiment was designed, and conducted in Delhi, India.

A.1 Recruiting Households and Baseline Survey

We divided Delhi into four zones – North, South, East, and West. In each of the zones, households were recruited based on a random sampling strategy, with each surveyor following a right-hand rule in a given location and knocked on every fifth household on his path. In the recruitment conversation, surveyors were asked to determine whether they fulfill the eligibility criterion with appropriate consent. Household heads that were between 20 and 55 years old with a net individual salary between ₹250,000 and ₹500,000 per annum, and had dependents (currently married, or at least one under-18 child, or at least one retired parent) were recruited for the study. At this stage, we also ensure that these households are available in the city during the period of study.

Once a household was eligible, we conducted the baseline survey and gathered information on household composition, demographics, income band, investment and asset market participation, general financial literacy, and specific questions on experience with retail insurance markets such as past and current participation, understanding of insurance, risk preferences, and rate of time preference.

Sample size: The minimum effect size, i.e., the difference in the probability of insurance take-up between any two groups, detectable by the experiment is 0.035 (3.5 percentage points). Based on our power calculations, we need 1000 households in each group to detect an effect of 3.5 between any two groups. In the power calculations, the probability of take-up in the control group in our target population is 0.10 – the unconditional insurance take-up rate in the All India Debt and Investment Survey as of 2012 (Badarinza et al., 2016).

Our final recruited sample was 3201 households; over-sampled by 6.2 percent, to allow

for potential attrition in the subsequent stages of the experiment.

A.2 Randomization & Balance across Treatment Arms

We divided all households equally into three treatment arms, C, T1 and T2 by randomly allocating households, using baseline data. We follow a household-level randomized control trial design and do not cluster treatment since there are minimal concerns of spill-overs in our design.

The randomization exercise was stratified by geographical zone, age, prior insurance ownership stated preference for insurance and an index of household type. This index of household type is the first principal-component of low/high financial literacy score, low/high risk preference, low/high time preference, income bins, a self-reported measure of financial stability, employment type (self-employed or salaried), gender, education, number of dependents and number of earning members in the household.

A critical element of a well designed randomized experiment is the element of balance across the various groups. Panel A of Table A.1 presents the ordinary least squares estimates of predicting treatment using an array of respondent characteristics. The overall model fit suggests that the experiment is well randomized. Panel B, Table A.1 conducts an alternative test of whether there is significant predictability of treatment assignment using a multinomial logit estimator. The probability of rejecting the null of no differences between a model with survey covariates compared to a baseline model without any covariates (last row of Panel B, Table A.1) suggests that there is no significant predictability in the treatment assignment. The randomization design is robust and the treatment effects estimated in this study are indeed causal.

A.3 Endline and Follow-up Phone Survey

After randomization, the second visit to households took place. In the second visit, households in the three treatment arms saw the appropriate intervention video. Surveyors then documented their responses to questions that were designed to test the video contents.

Table A.1 Balance Test

Panel A: Joint Test of Orthogonality (OLS)

	Dependent variable:	
	Treatment 1	Treatment 2
Age (in years)	−0.001 (0.002)	0.001 (0.002)
I(Female)	0.043 (0.085)	0.003 (0.087)
Education: UG	−0.009 (0.026)	−0.010 (0.026)
Education: Diploma	−0.060 (0.078)	−0.054 (0.077)
Education: Postgraduate or above	0.008 (0.055)	0.026 (0.053)
Occupation: Self-employed	0.024 (0.025)	0.005 (0.025)
Zone: North	0.031 (0.041)	0.066 (0.040)
Zone: South	0.007 (0.036)	−0.014 (0.036)
Zone: West	−0.011 (0.036)	0.006 (0.036)
Zone: East		
No. of dependents in family	0.001 (0.013)	−0.016 (0.012)
No. of earning members in family	−0.016 (0.016)	−0.003 (0.015)
Asset Index: Low	0.001 (0.028)	−0.001 (0.028)
Asset Index: Medium	0.007 (0.044)	−0.041 (0.044)
Financial Assets Index: Low	0.012 (0.030)	0.020 (0.030)
Financial Assets Index: Medium	−0.012 (0.038)	0.013 (0.037)
I(Own Insurance)	−0.003 (0.029)	−0.002 (0.029)
Financial Stability: Unstable	−0.085 (0.074)	−0.030 (0.076)
Financial Stability: Somewhat stable	−0.077 (0.075)	−0.019 (0.076)
Financial Stability: Stable	−0.034 (0.073)	−0.042 (0.076)
Financial Stability: Very stable	−0.017 (0.086)	−0.105 (0.090)
I(Has a loan)	0.044 (0.036)	0.068* (0.036)
Financial Literacy Score	−0.139 (0.294)	−0.516 (0.360)
Insurance Knowledge: 'Not Term'	−0.034 (0.026)	−0.022 (0.026)
Insurance Knowledge: 'Term'	−0.051 (0.039)	−0.030 (0.039)
Insurance Knowledge: 'Cover is important'	−0.028 (0.028)	0.009 (0.028)
Risk loving: Yes	0.006 (0.024)	0.021 (0.024)
Patient: Yes	−0.052 (0.035)	0.024 (0.034)
patient1	−0.033 (0.025)	0.003 (0.025)
Constant	0.615*** (0.118)	0.474*** (0.116)
Observations	1,864	1,898
R^2	0.011	0.011
Adjusted R^2	-0.004	-0.004
Residual Std. Error	0.501 (df = 1835)	0.501 (df = 1869)
F Statistic	0.721 (df = 28; 1835)	0.730 (df = 28; 1869)

Panel B: Joint Test of Orthogonality (Multinomial Logit)

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Resid. df	2	5,646.000	39.598	5,618	5,632	5,660	5,674
Resid. Dev	2	6,211.697	32.034	6,189.045	6,200.371	6,223.023	6,234.349
Df	1	56.000		56.000	56.000	56.000	56.000
LR stat.	1	45.303		45.303	45.303	45.303	45.303
Pr(Chi)	1	0.846		0.846	0.846	0.846	0.846

After the intervention and the questionnaire on the video contents, a hypothetical product (called "Jeevan Mitr") was introduced. The product pitch focused more on the returns of the product (as is typical in sales practices in India), without specifying what is guaranteed, and without emphasizing the amount of cover that accompanies the product. The last set of questions measured households interest in purchasing the product and whether they were able to unshroud the product features.

At the end of the second visit, the surveyors were required to fill up "exit forms" where they took notes on whether the household saw the intervention video entirely, and whether there are any notable distractions (disturbances) during the intervention.

As a last step in the study, households were followed-up with a phone survey that pitched a term product available widely in the market without ascribing the call to the project. This interaction for three to four minutes on the phone was with surveyors that *did not* make the first two visits, and was trained separately and did not have any direct prior experience with the respondents. Once the phone surveyor recorded household responses, they mention that this was a follow-up call as a part of the same study the households consented to participate. This design allows us the benefit of measuring household responses independent of the first two visits, and as a test closest to a real-world setting. Not only does this have the advantage of being very close to a real-life setting, but it also allows us to check whether our intervention could improve demand for what objectively was a better insurance product in the market. Finally, the phone surveyors also documented whether the household was distracted, were in a noisy environment, or busy, which enables us to measure participation and attrition in a precise manner.

A.4 Sample Attrition

Table A.2 Phone Survey: Compliance Test

	Dependent variable:			
	Treatment 1		Treatment 2	
Compliance	0.00005	−0.010	−0.005	−0.004
	(0.026)	(0.027)	(0.025)	(0.027)
Constant	0.494***	0.590***	0.515***	0.571***
	(0.021)	(0.193)	(0.020)	(0.187)
Controls	*No*	*Yes*	*No*	*Yes*
Observations	1,674	1,660	1,733	1,721
Adjusted R^2	-0.001	-0.040	-0.001	-0.044
Note:	*p<0.1; **p<0.05; ***p<0.01			

Notes: This table presents regression results of whether compliance to treatment can predict treatment assignment. * p < 0.1; ** p < 0.05; *** p < 0.01

Our study required multiple visits to the household - first at baseline, and then at the end-line, and finally at the time of the phone survey. The attrition between baseline to end-line was 10.6%, and between baseline to phone survey was 41%. We test whether this attrition was selective, i.e., affected any of the treatment arms more significantly than the other. The attrition between baseline to end-line, and between end-line and the follow-up survey did not affect any of the treatment arms disproportionately more than the other. We test whether participating in the phone survey additionally predicts treatment assignment and finds that compliance is not selective across the treatment arms. Table A.2 documents a statistically insignificant coefficient on a dummy variable "Compliance" that takes the value one if the respondent participated without any distraction in the phone survey, and zero otherwise.

B Proof 1: Non-Zero Discount Rate

Let us assume that all the consumers in the economy have the same discount factor, β, and it is common knowledge. Today all the consumers pay the cost $-p_{ins} + s$, and tomorrow they receive the payoff $V_{ins} + V_s$ minus the hidden value discount q. In addition, we assume that sophisticated consumers bear the cost of substitution, e. For the endowment insurance product the hidden value loss q takes its effect at the maturity of the contract, whereas the cost of substitution e is paid at the time of the purchase. In period zero a consumer makes a decision which insurance product to buy taking into account the present values of both q and e. Thus, for the sophisticated investor, the expected net gain from the insurance

product is equal to

$$-p_{ins} - s + \beta(V_{ins} + V_s) - min\{\beta \mathbb{E}q, e\}. \tag{20}$$

A myopic consumer's net gain is

$$-p_{ins} - s + \beta(V_{ins} + V_s). \tag{21}$$

Let

$$\alpha^{\diamond} = \frac{e}{\beta \overline{q}} \quad \text{and} \quad \mu = \frac{D(0)}{D'(0)}$$

If the fraction of myopic individuals α is greater than $\alpha^{\diamond}$, there exists symmetric equilibrium in which firms keep the hidden cost hidden. The equilibrium prices of the base good an the hidden costs are respectively:

$$p_{ins} + s - \beta(V_{ins} + V_s) = -\alpha\beta\overline{q} + \mu \quad \text{and} \quad q = \overline{q}$$

If the fraction of myopic individuals α is less than $\alpha^{\diamond}$, there exists a symmetric equilibrium in which firms do not hide the cost of the add-on and provide full information about the product future pay-off. The equilibrium prices of the base good and the hidden costs are respectively:

$$p_{ins} + s - \beta(V_{ins} + V_s) = -e + \mu \quad \text{and} \quad q = e.$$

In the presence of this third party financial education, the price equilibria is no longer the same. Now the share of myopic individuals is equal to:

$$\alpha^{\S} = 1 - (1 + \gamma)(1 - \alpha)$$

Shrouded Prices Equilibrium exists if $\alpha^{\S} > \alpha^{\diamond}$, and *Unshrouded Prices Equilibrium* exists if $\alpha^{\S} < \alpha^{\diamond}$.

To guarantee unshrouded prices equilibrium the policymaker needs to make sure that the effect of the education in the form of γ is such that $\alpha^{\S} < \alpha^{\diamond} < \alpha$. Thus, the effect of the education should satisfy the following conditions:

$$1 + \gamma \geq 1 + \gamma^{\diamond} = \frac{1}{1-\alpha}\left[1 - \frac{e}{\beta \overline{q}}\right] \quad \text{s.t.} \quad \frac{\alpha}{1-\alpha} \geq \gamma \geq 0 \tag{22}$$

where e is the price of substitution, α is a share of myopic individuals before the educational campaign, and $\overline{q}$ is an upper bound for the hidden cost.

C Information Sheets

Figure C.6 Information sheet for Group C

Figure C.7 Information sheet for Group T1

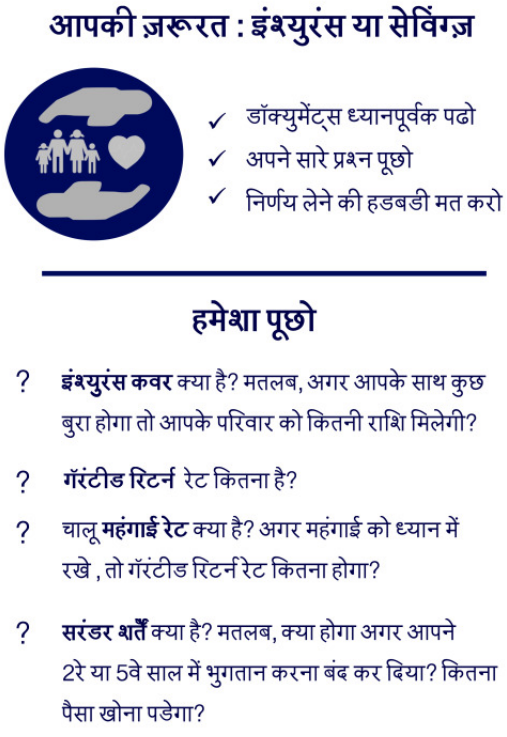

Figure C.8 Information sheet for Group T2

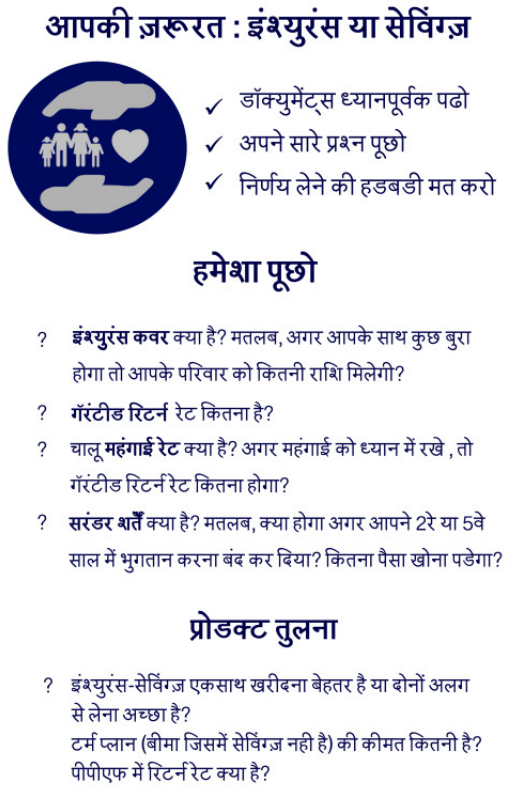

Figure C.9 Product Brochure

D Detailed calculations of threshold effect

The market price of the saving part of the endowment plan is equal to the maximum willingness to pay, $\overline{q}$. Thus $\overline{q}$ is equal to the sum of discounted cash-flows over 16 years, with each of the cash-flows being equal to the difference of the endowment plan premium and term-insurance contract premium. The cost of substitution, e is equal to the sum of the price of PPF investment and the agent's commission. To replicate the endowment plan premium payment scheme, we save equal amounts in a PPF for 10 years and then keep the total amount of saving for 6 more years until the maturity of the endowment plan. The interest rate for PPF is equal to 7.9%. The amount of saving in the PPF account after 16 years is set to be ₹600,000. This way the replicating portfolio consisting of a term-insurance contract and a PPF account closely replicates the risk coverage and the pay-off of the endowment plan.

Figures D.10, D.11, D.12, and D.13 describe the cash-flows from the endowment plan and the replicating portfolio and resulting values of $\overline{q}$ and e for the 30-year old non-smoking male with discount factors of 1, 0.98, 0.95, and 0.9.

Table D.3 describes the resulting values of the threshold $\gamma^\star$ for different levels of the discounting. The values of the threshold vary, but all of them stay below the effect captured in the experiment.

Table D.3 Educational Campaign Effect Threshold

Discount Factor	Maximum Willingness to Pay	Cost of Substitution	Gamma
1	486826	298372.2	0.075
0.98	437912.9	271037.4	0.059
0.95	374151.2	235715.8	0.028
0.9	289299.9	189248.1	-0.039

Figure D.10 Example with no discounting

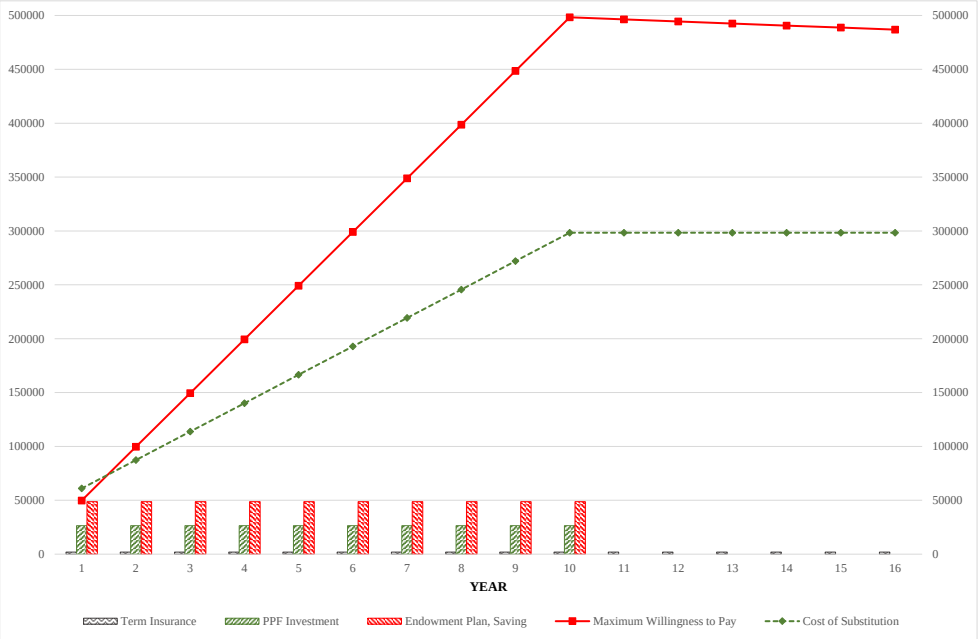

Figure D.11 Example with no discounting

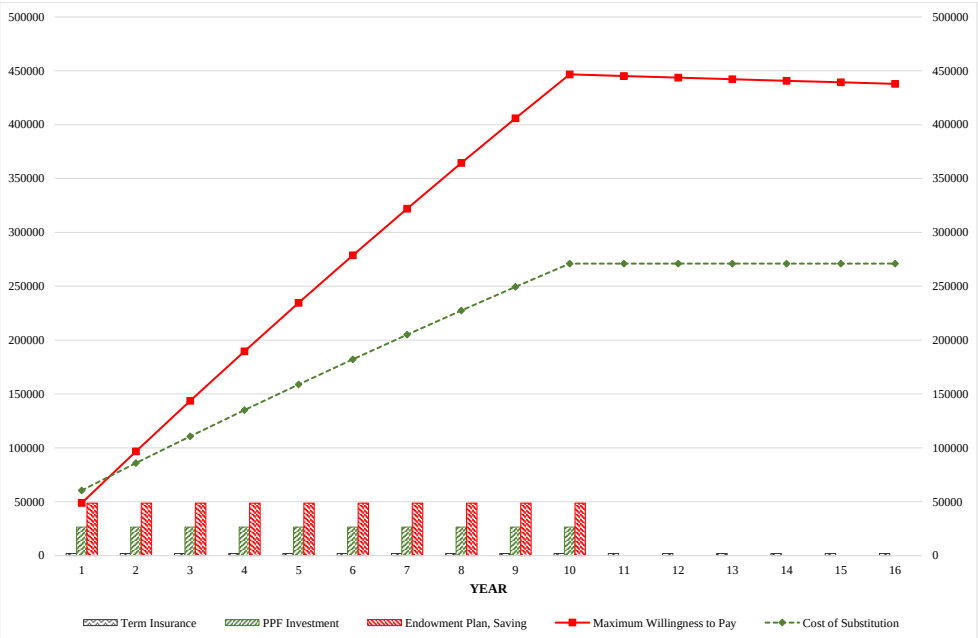

Figure D.12 Example with no discounting

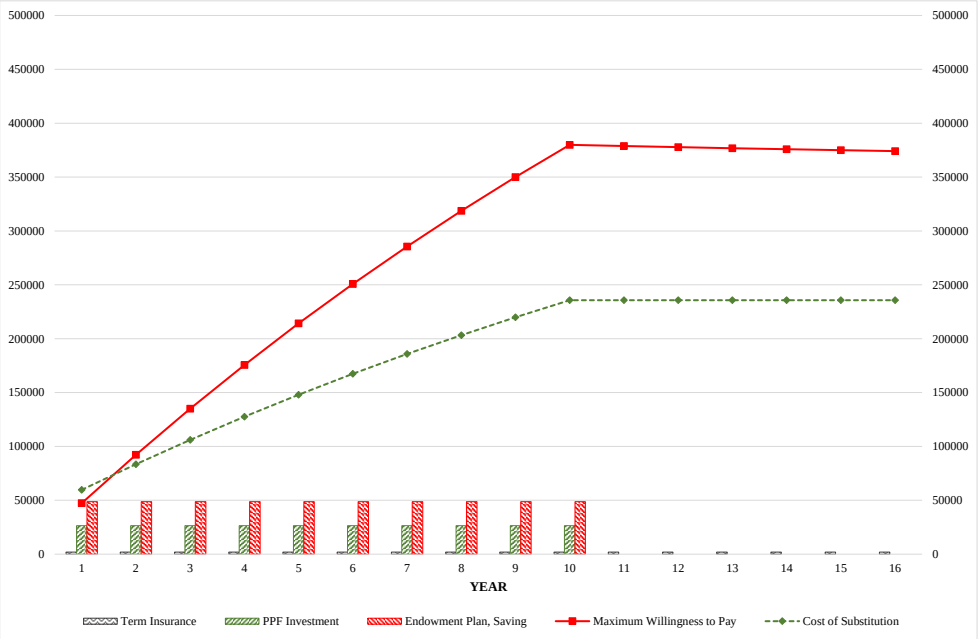

Figure D.13 Example with no discounting