Understanding the Incentives of Commissions Motivated Agents: Theory and Evidence from the Indian Life Insurance Market

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Abstract

We conduct a series of field experiments to evaluate two competing views of the role of financial intermediaries in providing product recommendations to potentially uninformed consumers. The first argues that financial intermediaries may provide valuable product education, helping consumers decide which of many complicated products is right for them. Even if commissions influence intermediary recommendations, consumers are sufficiently sophisticated to discount advice. The second, more sinister, view, argues that intermediaries recommend and sell products that maximize the agents well-being, with little regard to the need of the customer. Audit studies in the Indian insurance market find evidence consistent with the second view: agents recommend a product that provides them high commissions, though it is strictly dominated by alternative products. Consumers demonstrating lower levels of sophistication are more likely to be offered the wrong product. Agents also appear to cater to the initial preferences of consumers even those initial preferences are for products that are not suitable for the consumer. Finally, we exploit a natural experiment that occurred during our audits to test how disclosure requirements affect product recommendations. We find that requiring disclosure of commission levels makes agents less likely to recommend the product for which disclosure is required.

1 Introduction

This paper examines the market for life insurance in India. We study how commissions motivated agents provide advice and reveal information about financial products, and whether agent behavior depends on customers needs and characteristics. This topic is timely given the role of complex mortgage products in the recent financial crisis, and informs recent proposals to increase regulation of agent behavior in retail finance.

We focus on the market for life insurance in India for the following reasons. First, given the complexity of life insurance, consumers likely require help in making purchasing decisions. Second, popular press accounts suggest the market may not function well: life insurance agents in India engage in unethical business practices, promising unrealistic returns or suggesting only high commission products.[1] Third, the industry is large, with approximately 44 billion dollars of premiums collected in the 2007-2008 financial year, 2.7 million insurance sales agents who collected approximately 3.73 billion dollars in commissions in 2007-2008, and a total of 105 million insurance customers. Approximately 20 percent of household savings in India is invested in whole life insurance plans (IRDA 2010). Fourth, agent behavior is extremely important in this market, as approximately 90 percent of insurance purchasers buy through agents. Finally, regulatory bodies around the world are seeking guidance on how to improve consumer decisions.

Commissions motivated sales agents are of particular importance in emerging economies where a large fraction of the population currently does not have access to household financial services such as life insurance, mutual funds, and bank accounts. Supporters of commission-based distribution often argue that commissions give brokers the incentive to educate households. Emerging markets, in particular, have a large number of newly middle-class households without any prior experience with such financial products. Systematic empirical evidence is needed to inform the policy debate about whether commissions motivated agents are suitable for encouraging the adoption of complicated household financial products.

This project consists of three closely related field experiments. All of these experiments use an audit study methodology, in which we hired and trained individuals to visit life insurance agents, express interest in life insurance policies, and seek recommendations. The goal of the first set of

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[1]See for example, "LIC agents promise 200% return on '0-investment' plan," Economic Times, 22 February 2008.

audits was to test whether, and under what circumstances, agents recommend products suitable for consumers. In particular, we focused on two common life insurance products: whole life and term life. We chose these two products because, in the Indian context, consumers are always better off purchasing a term life insurance product than whole life. In section II, we detail how the combination of a savings account with term insurance policy provides up to four times more value to the consumer than a whole life policy.

A range of evidence suggests that individuals with low levels of financial literacy make poor investment decisions (Lusardi and Mitchell, 2007). One of the most frequently advocated policy responses is to provide individuals with financial advice. This solution makes sense only if those with limited literacy receive good advice. In our first experiment, auditors visit agents, explain they are primarily interested in risk coverage, not investment, and request a suitable product. On average, we find that agents receive terrible advice. We also test whether the quality of advice received varies by the level of sophistication the clients demonstrate. We find that less sophisticated agents are more likely to receive a recommendation for the wrong product, suggesting that agents discriminate in the types of advice they provide. We also test whether agents provided better advice 'to prospective buyers who signaled that they were "shopping around." Overall, the evidence from the first set of 229 audits suggests that life insurance agents provide bad advice.

An important source of friction in financial product markets is that consumers may not know which products are best for them. An important role of agents may be to identify suitable products. In a second set of audits, we randomly vary both the stated belief of the customer as to which product is most suitable, as well information the client provides about his or her actual needs. Thus, we have some treatments where the customer has an initial preference for term insurance but where whole insurance is actually the more suitable product, and vice versa (whole insurance could be a suitable product for an individual who has difficulty committing to saving). If agents role is to match clients to suitable products, only the latter information should affect agent recommendations. In fact, we find agents are just as responsive to consumers self-reported (and incorrect) beliefs as they are to consumers needs.

Interestingly, this is true even when the commission on the more suitable product is higher, and hence the agent has a strong incentive to de-bias the customer. We view this result as important because it suggests that agents have a strong incentive to cater to the initial preferences of customers

in order to close the sale; contradicting the initial preference of customers, even when they are wrong, may not be a good sales strategy. Thus, salesmen are unlikely to de-bias customers if they have strong initial preferences to products that may be unsuitable for them.

In the third set of audits we test how disclosure regulation affects the quality of advice provided by life insurance agents. Mandating that agents disclose commissions has been a popular policy response to perceived mis-selling. In theory, once consumers understand the incentives faced by agents, they will be able to filter the advice and recommendations, improving the chance they choose the product best suited for them, rather than the product that maximizes the agents commissions. We take advantage of a natural experiment: as of July 1, 2010, the Indian insurance regulator mandated that insurance agents disclose the commissions they earned on equity linked life insurance products. We have data on 140 audits conducted before July 1, and 118 audits conducted after July 1. We find that following the implementation of the regulation, life insurance agents are much less likely to propose the unit-linked insurance policy to clients.

This paper speaks directly to the small, but growing, literature on the role of brokers and financial advisors in selling financial products. This literature is based on the premise that, in contrast to the market for consumption goods such as pizza, buyers of financial products need advice and guidance both to determine which product or products are suitable for them, and to select the best-valued product from the set of products that are suitable.

The theoretical literature can be divided into two strands: one posits that consumers are perfectly rational, understand that incentives such as commissions may motivate agents to recommend particular products, and therefore discount such advice. A second set of literature argues that consumers are subject to behavioral biases, and may not be able to process all available information and make informed conclusions.

Bolton et al. (2007) develops a model in which two intermediaries compete, each offering two products, one suitable for one type of clients, the other for the other type of clients. While intermediaries have an incentive to mis-sell, competition may eliminate misbehavior. Indeed, while one might presume that in a world with competition, in which consumers can rationally discount biased advice, commissions to agents would not play an important role in consumer decisions, this is not necessarily so. Inderst and Ottaviani (2010) show that even in a fully rational world, producers of financial products will pay financial advisors commissions to promote their products.

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Del Guerico and Reuter (2010) take a different tack, argue that sellers of mutual fund products in the US that charge high fees may provide intangible financial services which investors value.

A second, more pessimistic, view, argues that consumers are irrational, and market equilibria in which consumers make poorly informed decisions may persist, even in the face of competition. Gabaix and Laibson (2005), develop a market equilibrium model in which myopic consumers systematically make bad decisions, and firms do not have an incentive to debias consumers. Carlin (2009) explores how markets for financial products work in which being informed is an endogenous decision. Firms have an incentive to increase the complexity of products, as it reduces the number of informed consumers, increasing rents earned by firms. Inderst and Ottaviani (2011) present a model where naive consumers, where naivete is defined as ignoring the negative incentive effects of commissions, receive less suitable product recommendations.

The theoretical work is complemented by a small, but growing, empirical literature on the role of competition and commissions in the market for consumer financial products. In a paper that precedes this one, Mullainathan, Noth, and Schoar (2010) conduct an audit study in the United States, examining the quality of financial advice provided by advisors. Woodward (2008) demonstrates mortgage buyers in the U.S. make poor decisions while searching for mortgages. A series of papers (e.g. Choi et al 2009, 2010) demonstrate that consumers fail to make mean-variance efficient investment decisions, paying substantially more in fees for mutual funds, for example, than they would if they consistently bought the low-cost provider. In work perhaps most closely related to this paper, Bergstresser et al. (2009) look at the role of mutual fund brokers in the United States. They find that funds sold through brokers underperform those sold through other distribution channels, even before you account for substantially higher fees (both management fees and entry/exit fees). Buyers who use brokers are slightly less educated, but by and large similar to those who do not. They do not find that brokers reduce returns-chasing behavior.

In the next section we describe the basic economics of the life insurance industry in India including detailed calculations on why whole insurance policies are dominated by term policies and economic theories of why individuals might still purchase whole policies. In Section III discusses the theoretical framework that guides our empirical tests. Section IV presents the experimental design, while Section V and VII presents our results. Section VII concludes.

2 Term and Whole Life Insurance in India

Life insurance products may be complicated. In this section, we lay out key differences between term and whole life insurance products, and demonstrate that the insurance offerings from the largest insurance company in India violate the law of one price, as long as an individual has access to a bank savings accounts. Rajagopalan (2010) conducts a similar calculation and comes to the same conclusion that purchasing term insurance and a savings account strongly dominates purchasing whole or endowment insurance plans.

We start by comparing two product offerings from the Life Insurance Corporation of India (LIC), the largest insurance seller in India. For many years, LIC was the government-run monopoly provider of life insurance. We consider the LIC Whole Life Plan (Policy #2), and LIC Term Plan (Policy #162), for a coverage amount of Rs. 500,000 (approximately USD $12,000), for a 34 year old male with no adverse health conditions, commencing coverage in 2010.

For a whole life policy, such a customer would make 47 annual payments of Rs. 13,574 each (ca. $260 at 2010 exchange rates). The policy pays Rs. 500,000 if the client dies before age 80. In case the client survives until age 80, which would be the year 2056, the product pays a maturation benefit equal to the coverage amount (Rs. 500,000). In addition, the coverage amount may be increased via "bonus" policy, which the insurance company may declare if it earns profits. Unlike interest or dividends, these bonus payments are not paid to the client directly. Rather the bonus is added to the notional coverage amount, paid in case of death of the client, or, at maturity. The insurance company does not make any express commitment as to whether, and how much, bonus it will offer, but historically has offered bonuses of approximately 2-3 percent. We assume in our analysis that the bonus will be three percent each year the client is alive.

A critical point to be made here is that the bonus is not compounded.[2] Rather, the bonus added is simply the amount of initial coverage, multiplied by the bonus fraction. For example,

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[2]It is somewhat surprising that an insurance company has not entered this market and won a substantial amount of business by offering a whole insurance product that does pay compounded bonuses. In fact, there are some whole life products that pay a compounded bonus (i.e. the bonus rate is applied to both the sum assured amount plus all previously accumulated bonus); thus, it is not the case that the insurance industry is unaware that consumers might like these products. Rather, it seems that it is not possible for an insurance company to win substantial amounts of business by aggressively selling whole products that pay compounded bonuses. One explanation for this may be that competition really occurs along the margin of selling effort, as opposed to the quality of the product. In this case, the products that have highest sales incentives will sell, and any particular insurance firm will have an incentive to pay the highest commissions on the highest profit products. A formal model of this is beyond the scope of this paper, and we leave it to future research.

if the company declares a 3% bonus each year, the amount of coverage offered by the policy will increase by .03*500,000=Rs. 15,000 each year. Thus, after 47 years, when the policy matures, its face value will be Rs. 500,000 + 47*15,000=Rs. 1,205,000.

If these 3 percent bonuses were in fact compounded, the policy would have a face value of Rs. 500,000*1.03^47, or Rs. 2,005,947, roughly 66% higher. Stango and Zinman (2009) describe evidence from psychology and observed consumer behavior that individuals have difficulty understanding exponential growth, which households may not truly appreciate the economic importance of the fact that the bonus payments are not compounded.

In Appendix Table 1, we evaluate whole life insurance product by creating a replicating portfolio, which consists of a term insurance policy plus savings. Each year, the replicating portfolio provides at least as much coverage (savings plus insurance coverage) as the whole policy, while requiring the exact same stream of cash flows from the client. A 34-year old man seeking coverage of Rs. 5000,000 would pay Rs. 13,754 per year for whole insurance. If instead he bouhgt term for 2,507, and saved the difference (Rs. 11,067 for the first 25 years) Rs. less for the first twenty-five years, and 13,754 Rs. less for each year from 26 to 47 years in the future. The replicating portfolio places these savings in term deposits at a government-owned bank, earning an assumed interest rate of 8 percentage points.

By the time term policy expires (2036), the whole policy will have a face value of Rs. 890,000, while the replicating portfolio (by now, containing only the savings account, as the term policy will have expired without value) will have Rs. 958,351. This difference understates the true difference in value, as a savings account is more liquid and therefore more valuable. In each subsequent year, the savings account will grow at an 8% compounded rate, while the whole policy will increment in value by Rs. 15,000. The savings account will always be more valuable, and by 2056, the maturation date of the whole policy, dramatically so: the savings account will be worth Rs. 5.56 million, compared to the whole policy value of Rs. 1.2 million.

One commonly made argument for whole life insurance is that it provides protection for the individual's whole life, and thus eliminates the need to purchase new term insurance plans in the future. If there is substantial risk that future term insurance premiums might increase due to increases in the probability of death, then term insurance might be seen as more risky than whole insurance. However, this argument does not affect our replication strategy, because the term plus

savings plan does *not* require the individual to purchase another term insurance policy 25 years later.[3] The individual has saved up enough in the savings account to provide self-insurance after 25 years, which is equivalent to the amount of insurance that the whole life policy is providing.

How much more expensive is the whole policy? Prior to maturity, the comparison is difficult, because the savings account is liquid, while the insurance policy is not. However, on the buyer's 80th birthday, the savings account will have a balance of approximately 5.1 million Rs., which is 4.2 times higher than the maturity value of the life insurance product.

Thus, for an equivalent investment, the buyer receives four times as much benefit if she purchase term plus savings, relative to whole. We are not aware of many violations of the law of one price that are this dramatic. A benchmark might be the mutual fund industry: $1 invested in a minimal fee SP500 fund might earn 8% per annum, and therefore be worth $21 after 47 years. If an investor invested $1 in a "high cost" mutual fund that charged 2% in fees, the value after 47 years would be 10.3, or about half as large. The life insurance mark-up is thus in some sense twice as large as the mark-up on the highest cost index funds.

It is interesting to note that life insurance agents typically do not conduct the type of calculations we have just discussed to persuade clients towards or away from term insurance policies. They tend to rely on general statements about the differences between products. For example, two agents claimed that term insurance is not for women, while others report that term is not appropriate for any number of (outlandish) reasons. Appendix Table 2 8 presents some anecdotes on particularly outlandish claims real life insurance agents made during our audits to persuade clients towards whole policies away from term.

2.1 Whole Life Insurance as a Commitment Device

One potential advantage of the whole life policy over term plus savings is that the whole life policy contains committment features that some consumers value?. The structure of whole life plans impose a large cost in the case where premium payments are lapsed, and thus consumers that are sophisticated about their commitment problems may prefer saving in whole life plans versus standard savings accounts where there are no costs imposed when savings are missed. In particular,

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[3]Cochrane (1995) discusses this issue in the context of health insurance proposes an insurance product that also insures against the risk of future premium increases due to changes in risk.

the LIC Whole Insurance Plan No. 2 discussed in the previous section returns nothing if the policy "lapses' within the first three years . If the customer lapses after paying premiums for three or more years are paid, the plan guarantees a recovery value of only 30% of premiums paid (less the first year's premiums) in case of lapse. [4]

However, it is not clear that the commitment feature alone is sufficient to explain the popularity of whole life insurance. ? finds only 25% of the population exhibit hyperbolic preferences. Moreover, there are other savings products in the Indian context that offer similar commitment device properties but substantially higher returns. Public provident fund accounts require a minimum of Rs. 500 per year contribution, and allow the saver no access to the money until 7 years after the account is opened. If a saver does not contribute the 500 rupees in a particular year the account is consider discontinued, and the saver has to pay a 50 rupee fine for each defaulting year plus the 500 rupees that were missed as installments.

Finally, there is no reason a financial services provider could not offer commitment savings accounts without an insurance component; the fact that this product does not exist suggests that commitment savings demand is likely not the only reason individuals purchase whole life insurance.

To rule out the possibility that agent recommendations were driven by concern about the buyer's time inconsistency, most treatments involved the auditor explicitly explaining that they are not seeking a savings vehicle, but rather only risk coverage to protect his family. Even in those interactions approximately 60 percent of agents recommend whole insurance.

3   Theoretical Framework

Our empirical work is motivated by recent theoretical work on the provision of advice to potential customers. Our paper tests two types of predictions that arise from this class of models. The first set of predictions concerns the quality of advice provided by commissions motivated agents. These models predict that at least some consumers will receive low quality advice; i.e. they will be encouraged to purchase an advanced product that has higher commissions but no real benefits to them (Inderst and Ottaviani (2011), Gabaix and Laibson (2006)). [5] We test this by measuring the

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[4]The LIC website, however, does state that it is possible that more than the guaranteed surrender value will be returned to the customer. However, it is not clear on exactly how this amount is determined.

[5]While the Gabaix and Laibson (2006) paper does not explicitly deal with commissions, it does show that firms will not necessarily have the incentive to unshroud product attributes (such as commissions, low rates of return in

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fraction of agents that recommend customers purchase term insurance, even in the case where the customer is only seeking insurance for risk protection (i.e. we shut down any commitment savings channel).

The second set of predictions relates to how regulation and market structure affect the quality of advice. We test three predictions from the theoretical literature. First, a large literature in economics predicts that competition will induce firms to disclose all relevant information regarding products (Diamond (1985), Grossman (1989)). In these models, mandatory disclosure enforced by the government does not change consumer decisions and does not improve welfare. However, Inderst and Ottaviani (2011) argue that disclosure requirements can improve the quality of advice by essentially converting unaware customers into customers that are aware of how commissions can bias advice. We test how a disclosure requirement on commissions impacts financial advice by studying a particular type of insurance product, a ULIP, where agents were forced to disclose the commissions they earned after July 1, 2010.

Our second test centers on the role of competition on the provision of advice. Inderst and Ottaviani (2011) and Bolton et. al. (2007) show that increased competition amongst agents who provide products and advice can improve the quality of advice for customers. On the other hand, Gabaix and Laibson (2006) show that increasing competition need not lead firms to unshroud product characteristics that hurt niave consumers. Our auditors vary the level of competition perceived by agents, by reporting their information about insurance comes from a friend (low competition), or from another agent from which our auditor is thinking of purchasing insurance (high competition).

Lastly, a key feature of the recent theoretical models in Inderst and Ottaviani (2011) and Gabaix and Laibson (2006) is the presence of two types of agents, with different levels of sophistication. Inderst and Ottaviani (2011) predict that these sophisticated types will receive better advice. We test this prediction inducing variation in the level of sophistication demonstrated by the agent during the sales visit.

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our case) because unshrouding these will not necessarily win the firm business. In our case, the analogy would be that life insurance firms do not have the incentive to unshroud these attributes of whole insurance products because they would lose a substantial proportion of business to banks and other financial service providers if individuals move their savings out of life insurance.

4   Experimental Design

4.1   Setting

In this section we describe the basic experimental setup common to the three separate experiments we ran in this study. All of the auditors used are at least high school graduates. Intensive introductory training in the life insurance was provided by a former financial products sales manager, and a principal investigator. Subsequently, each auditors was trained in the specific scripts they were to follow when meeting with the agents. Each agent's script was customized to match the agents true life situation (number of children, place of residence, etc.). However, agents were given uniform and consistent language to use when asking about insurance products, and seeking recommendations. Auditors memorized the scripts, as they would be unable to use notes in their meetings with the agents. Following each interview, auditors completed an exit interview form immediately, which was entered and checked for consistency. The auditors and their manager were told neither the purpose of the study, nor the specific hypotheses we sought to test.

Life insurance agents were identified via a number of different sources, most of which were websites with national listings of life insurance agents. We also included a small number of life insurance agents in our initial audits, which our auditors identified via outdoor advertising, as well as through a corporate list of LIC agents serving our study cities.

Auditors were instructed not to lie during any of the sessions–upon completion of the study, all were given a cash bonus which they used to purchase a life insurance policy from the agent of their choice upon. All of our auditors chose to purchase term insurance.

In each experiment, treatments were randomly assigned to auditors, and auditors to agents. Note that because the randomizations were done independently, this means that each auditor did not necessarily do an equivalent number of treatment and control audits for any given variable of interest (i.e. sophistication and/or competition). In the appendix we present summary statistics for each of the experimental treatments in each experiment, to show that the randomization did lead to balanced samples in each treatment. Since we were acquiring agents as the experiment proceeded, we randomized in daily batches. To facilitate treatment fidelity, auditors were assigned to use only one particular treatment script on a given day.

Of the 930 agents for whom we obtained information, our auditors were able to reach 333

unique agents.[6] Contact procedures were identical across the treatments. While some agents were visited more than once, care was taken to ensure no auditor visited the same agent twice, and to space any repeat visit at least four weeks apart, both to minimize the burden on the agents, and to reduce the chance the agent would learn of the study.

Experiment 1 was conducted in one major Indian city, and Experiments 2 and 3 were conducted in a second major Indian city. Table **??** presents summary statistics across the three experiments we report results on this paper. Across the experiments, between 60 and 80 percent of the audits were conducted with agents who work for a government insurance provider. The vast majority of these agents work for the Life Insurance Company of India (LIC), which is the primary state owned life insurance firm. This is consistent with LIC's market share, 66 percent of total premiums collected in 2010.

In Experiment 1, 68 percent of audits took place at locations other than either the agent or auditor's home or office. These other locations were typically a restaurant, cafe, railway or bus station, or public park. In Experiments 2 and 3, the majority of audits took place at the agent's office. On average, each audit lasted about 35 minutes, suggesting these audits do represent substantial interactions between our auditors and the life insurance agents.

Audit studies used to identify discrimination have been criticized (matched pair studies) on methodological grounds–a black and white car buyers, even if they stick to identical scripts, may exhibit other differences (apparent education, income, etc.) that could lead sales agents to treat buyers differently for reasons other than the buyers race or sex (Heckman, 1998). While our study is not subject to this criticism–our treatments were randomized at the auditor level, so we can include auditor fixed effects–we took great care to address potential threats to internal validity. Outright fraud from our employees was impossible, as auditors were obliged to hand in business cards of the sales agents. To monitor script compliance, we paid insurance agents within the principal investigators' social network to "audit the auditors"–these agents reported that our auditors adhered to scripts. The outcome we measure, policy recommended, is relatively straightforward, and auditors were instructed to ask the agent for a specific recommendation. To prevent auditor demand effects, we did not inform the auditors of the hypotheses we were interested

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[6]This was overwhelmingly due to inability to reach agents over the phone, rather than agent unwillingness to meet; most listings indicated mobile phone numbers, which change frequently in India.

in testing.

5   Quality of Advice

5.1   Quality of Advice: Catering to Beliefs Versus Needs

In this experiment we test the sensitivity of agents' recommendations to the actual needs of consumers, as well as to consumers potentially incorrect beliefs about which product is most appropriate for them. In particular, one reason agents may recommend whole is a belief that customers will value the commitment savings features. To examine this, we vary the expressed need of the agent, by assigning them one of two possibilities. In half of the audits, the auditor signals a need for a whole insurance policy by stating: "I want to save and invest money for the future, and I also want to make sure my wife and children will be taken care of if I die. I do not have the discipline to save on my own." Good advice under this treatment might plausibly constitute the agent recommending whole insurance. In the other half of the audits, the auditor says "I am worried that if I die early, my wife and kids will not be able to live comfortably or meet our financial obligations. I want to cover that risk at an affordable cost." In this case the auditor demonstrates a real need for term insurance. By comparing agent recommendations across these two groups, we can measure whether agent recommendation responds to agents true needs.

We also randomized the customer's stated beliefs about what the correct product is for them. In audits where the auditor was to convey a belief that whole insurance was the correct product for them, the auditor would state "I have heard from [source] that whole insurance may be a good product for me. Maybe we should explore that further?" In the audits where the auditor was to convey a belief that term insurance was the correct product for them, the auditor would state "I have heard from [source] that whole insurance may be a good product for me. Maybe we should explore that further?"

To understand the role of competition, we also varied the source auditors mentioned when talking about their beliefs. In the low competition treatment, the auditor named a friend as a source of the advice. In the high competition treatment, the auditor said the suggestion had come from another agent from whom the auditor was considering purchasing.

Each of these three treatments (product need, product belief, and source of information) was

assigned orthogonally, so this experiment includes eight treatment groups.

Figure 5 presents a randomization check to see if there are important differences in the audits that were randomized into different groups. The first two columns compare audits that were randomized such that the auditor had either a bias for term (Column (1)) or a bias for whole (Column (2)). As would be expected given the randomization, there are not systematic differences across the two groups, though one auditor did approximately 9 percent more audits in the treatments where the auditor was biased towards whole. We control for auditor fixed effects in all our specifications, which helps to deal with the fact that auditors may have randomly been assigned to some treatments more than others. [7]

Columns (3) and (4) present the pre-treatment characteristics of audits where the auditor was randomized into having a need for term insurance (Column (3)) or a need for whole insurance (Column (4)). There are no statistically significant differences in the pre-treatment characteristics across these groups. Columns (5) and (6) present the pre-treatment characteristics of audits where the source of the bias was another agent (Column (5)) or a friend (Column (6)). There are also no statistically significant differences in the pre-audit characteristics across these groups.

Table ?? presents our main results on how variation in the needs of customers and biases of customers affect the quality of financial advice.[8] Column (1) presents results on whether the agent's final recommendation included a term insurance policy. We find that agents are 10 percentage points more likely to make a final recommendation that includes a term insurance policy if the agent states that they have heard term insurance is a good product. We also find that agents are 12 percentage points more likely to make a recommendation that includes a term insurance policy if the agent says they are looking for risk coverage. Both of these results are statistically significant at the 1 percent level. The interaction of these two variables is statistically insignificant. This suggests that agents do not respond substantially differently if a customer's beliefs are consistent with what they need out of an insurance product.

Agents from the government owned insurance underwriters (primarily the Life Insurance Corporation of India) are 12 percentage points less likely to recommend a term insurance plan

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[7]The differences for Auditor 5 and Auditor Home variables are also significant but our results are essentially the same if these observations are excluded because so few audits are affected.

[8]In this section we focus on the quality of advice given, and thus report results on how advice responds to a customer's needs versus beliefs. Later, we discuss the impact of the source of advice treatments when we focus on how quality of advice might be improved.

as a part of their recommendation. The auditor fixed effects are mostly insignificant. Auditor 1 is substantially more likely to receive a term insurance recommendation; however, this auditor conducted only 19 audits and our results are very similar if those audits are excluded.

Column (2) presents the same exact specification as Column (1), however now the dependent variable takes a value of one if the agent recommended only a term insurance plan. We find must less strong results here. A customer stating that they have heard that term insurance is a good product is only 2 percentage points more likely to receive a recommendation to only purchase term insurance. We find that stating a need for risk coverage only causes a 1.6 percentage point increase in the probability that the agent will recommend a term insurance policy. This effect is not statistically significant at the 10 percent level. When the auditor both states that they need risk coverage and they have heard that term is a good product we find an increase of 5 percentage points.

Thus, comparing Columns (1) and (2) it appears that agents do respond to both the biases and needs of customers, however, they primarily do it by recommending term insurance products as an addition to whole insurance products. Agents appear to cater to the demands of customers by adding term insurance as an add on product to whole insurance products, instead of suggesting customers only purchase term insurance.

Columns (3) and (4) present results on the agents' recommended amounts of risk coverage and premiums respectively. Column (3) shows that stating an initial bias towards whole insurance causes the agent to recommend the customer purchase approximately 13 percent more risk coverage; Stating a need for risk coverage causes an approximate 17 percentage point increase in the amount of risk coverage the agents recommends purchasing. The interaction between these variables is not significant. Both of these results are statistically significant at the 5 percent level. Again, these results suggest will cater approximately equally to the stated preferences of a customer (even if those preferences are inconsistent with their actual needs), about as much as they cater to the actual stated needs of customers.

Column (4) tests whether the recommended premium amounts are statistically different across the treatments. We find that the bias and need treatments have small and statistically insignificant effects on the level of premiums the agent recommends that customers pay to purchase insurance. This suggests that although agents are recommending higher risk coverage amounts for

those who either have a bias towards term or a need for term (Column (3)), customers are not paying higher premiums to obtain this additional coverage. Instead, the increase in risk coverage observed in Column (3) is due primarily to the fact that agents are more likely to recommend term insurance when customers have a bias or need towards term; and term insurance provides substantially more risk coverage per rupee of premiums paid because it does not include a savings component.

Further evidence of this interpretation is obtained from the average amounts of risk coverage and premium amounts when agents recommended term versus whole insurance. In the case where the auditor stated they need risk coverage and they had heard risk coverage was a good product for them, agents who recommended term insurance recommended the customer purchase 2.3 million rupees of risk coverage with an annual premium of approximately 31,000 rupees. Agents who recommended whole insurance recommended customers purchase 522,000 rupees of risk coverage, with an annual premium of approximately 28,000 rupees. In the case of our audits, there are not statistically important differences across individuals within the treatment cell of a bias towards term insurance and a need for risk coverage; nonetheless, agents who recommend term recommend more than four times more risk coverage than those who recommend whole insurance. One explanation for this result, consistent with the bad advice hypothesis, is that agents primarily base their recommendations on the amount of premiums customers can pay, as opposed to the amount of risk coverage customers actual need. Our finding here is consistent with anecdotal evidence from discussions with our auditing team, that agents typically start the life insurance conversation by estimating how much the individual can afford to put into life insurance per month.

6 Financial Advice and Market Structure

The previous section presented four findings on the quality of advice provided Indian life insurance agents. First, despite the fact that we and others have shown that whole insurance can be dominated by a package of term insurance plus a regular savings account, between 60 and 80 percent of audits with real life insurance salesmen result in customers being recommended term insurance. Second, we find that even when customers signal that they are most interested in term insurance and need risk coverage, still more than 60 percent of audits result in whole insurance being recommended. Third,

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we find that agents primarily cater to customers (either their beliefs or needs) by recommending that they purchase term insurance in addition to whole insurance, as opposed to recommending term insurance alone. It is difficult to see how combining term and and whole insurance makes sense for someone who is seeking risk coverage.

These results are consistent with the models of Inderst and Ottaviani (2011), Gabaix and Laibson (2006) and Bolton et al. (2007) who show that commissions motivated salesmen will have an incentive to recommend more complicated, but potentially unsuitable, products to customers who are not wary of the agency problems that commissions create (at least under some market structures). In the next section we turn to testing theoretical predictions on advice responds to the regulatory and market structure. Given our experimental setup where we can observe the type of advice given, we focus on three predictions. First, increasing consumers awareness of commissions will reduce the tendency to recommend unsuitable products. Second, the threat of increased competition from another agent will reduce the recommendation of an unsuitable product. Third, agents will provide different advice to sophisticated versus unsophisticated consumers.

6.1 Disclosure

On July 1, 2010, the Indian Insurance Regulator mandated that insurance agents must disclose the commissions they would earn when selling a specific type of whole insurance product called a ULIP. ULIPs are very similar to whole insurance policies, except the savings component is invested in equity instruments with uncertain returns. This regulation was enacted as the Indian insurance regulator faced criticism from the Indian stock market regulator that ULIPs should be regulated in the same was as other equity based investment products. The insurance regulator responded to these criticisms by increasing their oversight of the sales process of ULIPs including forcing agents to disclose commissions.

There are two specific features of this policy we emphasize before discussing our empirical results. First, it is important to note that the disclosure of commissions required on July 1st is in addition to a disclosure requirement on total charges that came into effect earlier in 2010. In other words, prior to July 1, agents were required to disclose the total charges (i.e. the total costs) of the policies they sell, but they were *not* required to disclose how much of those charges went to commissions versus how much went to the life insurance company. Thus, the new legislation

requiring the specific disclosure of commissions gives the potential life insurance customer more information on the agency problem between himself and the agent, but does not change the amount of information on total costs. This allows us to interpret our results mainly as the effect of better information about agency versus just information about costs more generally.

The experimental design here involves two components. First, we conducted audits before and after this legal change to test whether the behavior of agents would change due to the fact that they were forced to disclose commissions. Second, we also randomly assigned each of these audits into two groups, where in one group the auditor conveys knowledge of commissions and in the other group the auditor does not mention commissions. We created these two treatments as we believed only customers who have some awareness of these commissions were likely to be affected by this law change. In one group, we had the auditor explicitly mention that they were knowledgeable about commissions by stating: "Can you give me more information about the commission charges I'll be paying?" In the control group, there was no statement made about commissions.

Table ?? presents summary statistics on the two dimensions along which we are interested in studying. Columns (1) and (2) compare the audits that were conducted before and after the law change. Columns (3) and (4) compare the audits that were randomized into having the auditor mention their knowledge about commissions (or not). Columns (1) and (2) show that there are important differences in with whom these audits were conducted before and after the law change. In particular, post disclosure change audits were more likely to be conducted with government underwriters, more likely to be conducted with the Life Insurance Company of India, more likely to be conducted by Auditor 1, and more likely to be conducted by Auditor 4. These differences suggest that the results of pre-post comparisons must be interpreted with caution, and we discuss this further when we present the results. Columns (3) and (4) show that there are no major differences in the pre-treatment characteristics in comparing audits that were randomized into the different disclosure knowledge groups.

6.2   Did the Disclosure Requirement Change Products Recommended?

We first test whether audits conducted after the disclosure requirements were made public were less likely to result in the agent recommending a ULIP policy. Before presenting the empirical specification, Figure 1 shows the time trend in the fraction of audits in this experiment that

resulted in a ULIP product being recommended. Prior to the commissions disclosure reform, agents recommended ULIPs in eighty to ninety percent of the audits. After the reform, we see a discrete drop in the rate of recommending ULIPs down to between forty and sixty-five percent of audits. The fact there appears to be a substantial discrete drop in the percentage of ULIPs recommended right around the policy change suggests that our results are not due to a simple downtrend in the rate of recommending ULIP policies over time.

Table **??** presents the formal empirical results. The dependent variable in all specifications in this table takes a value of one if the agent recommended a ULIP product and zero otherwise. The independent variable Post Disclosure indicates whether or not the audit occurred after the legislation went into effect, July 1st (our earliest post-disclosure audits occurred on July 2nd). The variable Disclosure Knowledge equals one where the client expresses awareness that agents receive commissions and zero otherwise. Finally, we control for whether the agent is from a government underwriter, Auditor fixed effects, and the location of the audit. We control for these variables because there were statistically significant differences across the the pre and post disclosure law audits (Table **??**).

Column (1) presents a regression of whether a ULIP was recommended on the Post Disclosure variable, the Disclosure Knowledge variable, their interaction, and a constant. Here we find that in the post period a ULIP product was 25 percentage points less likely to be recommended. This finding is consistent with the prediction that agents treat customers who are wary of commissions differently than those who are not, and that disclosure policy can make customers more aware. We do not find the randomized treatment of the auditor demonstrating knowledge of the commissions significant (Disclosure Knowledge), nor do we find the interaction to be significant.

This result that agents are less likely to recommend ULIP products in the post disclosure period must be interpreted with caution, however, as it is based on a pre-post comparison. There are important differences across the pre and post audits as shown in Table **??**. While we cannot fully rule out that omitted variables explain our results, Columns (2) attempts to provide some supportive evidence. In Column (2) we control for all the variables for which Table **??** showed that the pre and post audits differed along. Here we find that the post disclosure effect is approximately 6 percentage points smaller; however, the effect is still quite sizeable at 19 percentage points.

In Columns (3) and (4) we estimate the same model but focus either on audits only conducted

with government underwriters (Column (3)) or only with private sector underwriters (Column (4)). We find that amongst government underwriters there is a 30 percent decrease in the likelihood of recommending a ULIP policy after the disclosure law change. Amongst private underwriters (Column (4)), we find there is also a negative point estimate, although the coefficient is not significant at standard levels. The result in Column (3) is important in that it suggests that our primary result is not being determined by the fact that there were more audits with government life insurance agents in the pre-period versus the post-period (Table (8)). Given that we find this result primarily within audits with government agents, we do not believe that differences in who the audits were conducted with in the pre versus post periods explains our main finding on the impact of disclosure.

In terms of magnitudes, given the overall percentage of ULIP recommendations in this sample was 71 percent, the approximately 20 percent decrease in ULIP recommendations once disclosure commission became mandatory is an economically large effect.[9]

We do not find that audits where our agents showed knowledge of the new disclosure requirements are associated with lower levels of ULIP recommendations. The coefficient on the Disclosure Knowledge variable is small and statistically insignificant in all of the specifications shown here. In the "Disclosure Knowledge" treatment the auditor explicitly asked for more information about the commission levels; it is possible that asking about these commission levels had no effect because agents realized that commissions would have to be disclosed when they provided the illustration sheet of the policy. We also find no evidence that asking for commission information had a differential effect on whether a ULIP policy was recommended before and after July 1st.

Columns (3) - (6) are included in this table to provide a sense of what products agents substituted towards after the disclosure requirements were changed for ULIP policies. The dependent variable in Columns (3) and (4) take a value of one if a term insurance product was recommended and a value of zero otherwise. The coefficient on the Post variable in these columns shows that agents were not substantially more likely to recommend term insurance products after they were forced to disclose commissions on ULIP products. Columns (5) and (6) present the same specification, however the dependent variable equals one if a whole or endowment plan was recommended.

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[9]In unreported regressions, we find that in the post period underwriters were approximately 20 percentage points more likely to recommend whole insurance type products. However, there was no change in their propensity to recommend term insurance products. Thus, it appears that the ULIP disclosure law change primarily led to substitution away from high commission ULIP products to high commission whole insurance products.

Here we find that whole and endowment policies were approximately 20 percentage points more likely to be recommended after the policy change. Thus, the policy to disclose commissions on the high commission ULIP products seems to have led agents to recommend other high commission products as opposed to the lower commission term insurance.

6.3   Competition

In this section we discuss how competition amongst agents affects the quality of advice. One way agents may compete with each other is to offer better financial advice. Standard models of information provision suggest that competition amongst advice providers will lead to the optimal advice being given; customers will avoid salesmen who give low quality advice and thus in equilibrium on high quality advice will be given.

In any given interaction between an agent and a customer, it is likely that the agent perceives he has some market power, in that the customer would have to pay additional search costs to purchase from another agent. In this treatment we attempted to experimentally reduce the agent's perceived amount of market power by varying whether the customer mentions that they have spoken to another agent already. Audits randomized into the high competition treatment stated that they heard from another agent term (whole) might be a good product for them. Audits randomized into the low competition treatment state that they heard from a friend that term (whole) might be a good product for them.

The audits for which these data are based on are the same as those used Experiment 1. The specifications reported here are the same as those in Table **??**, but we now introduce a dummy variable that takes the value of 1 if the auditor's bias came from a competing agent, and zero if the bias came from a friend. Columns (1) and (2) show that overall the induced competition does not seem to have an important effect on whether agents recommend term insurance as part of their package recommendation. Columns (5) and (6) show that the competition treatment also did not have an overall increasing effect on whether only a term policy was recommended.

Columns (3) and (4) introduce a set of interaction terms between the bias treatment, the need treatment, and the competition treatment. We are particularly interested in the treatment where the customer is biased towards whole insurance but demonstrates a need for term insurance. In this treatment the agent has the potential to "de-bias" the auditor as their beliefs are inconsistent with

their insurance needs. In Columns (3) and (4) we find that the agent is substantially more likely to recommend term as a part of their package if the consumer's bias is towards whole insurance, but they demonstrate a need for term insurance. This effect is captured by the coefficient on the the variable (Need=Term)*Competition; we find that agents are 11 to 13 percentage points more likely to recommend term insurance when the consumer has a bias towards whole insurance but needs risk coverage, and the bias towards whole insurance came from another agent. This result suggests that agents do compete with the advice of other agents, and will attempt to provide better advice as a way of competing.

We do not, however, find that competition increases the possibility that agents will de-bias customers who have a belief that term insurance is a good product but need a help with savings. We find that the coefficient on the interaction (Bias=Term)*Competition is small and statistically insignificant.

Columns (7) and (8) report the same specification as those in Columns (3) and (4), however the dependent variable takes the value of one if the agent recommended the customer purchase only term insurance. We do not find any evidence that agents attempt to de-bias consumers by recommending they only purchase term insurance. The coefficient on the interaction term (Need=Term)*Competition is small and insignificant in Columns (7) and (8). We find that the competition treatment is only effective, in this case, when the agent has both a bias and a need towards term insurance. One interpretation of this result is that agents assume that a customer who has the knowledge to know that term insurance is the best product for someone who needs risk coverage is almost surely going to purchase term insurance from the other agent. Thus, the agent in the audit chooses to compete by recommending only a term insurance purchase as well.

6.4   Customer Sophistication

In this experiment we attempted to randomized the life insurance agent's perception of how sophisticated the customer is. Each audit was randomly assigned to have a sophisticated consumer or an unsophisticated consumer.

Sophisticated auditors say:

"In the past, I have spent time shopping for the policies, and am perhaps surprisingly somewhat familiar with the different types of policies: ULIPs, term, whole life insurance. However, I

am less familiar with the specific policies that your firm offers, so I was hoping you can walk me through them and recommend a policy specific for my situation."

Unsophisticated agents, on the other hand, state:

"I am aware of the complexities of Life Insurance Products and I don't understand them very much; however I am interested in purchasing a policy. Would you help me with this?"

As mentioned earlier, endowment/whole life policies usually have larger commissions and thus are a more lucrative recommendation for the agent. Initial pilots yielded very few term recommendations. We therefore built into the auditors script several statements that suggest a term policy is a better fit for the client. Specifically, the agent expressed a desire to maximize risk coverage, and stated that they did not want to use life insurance as an investment vehicle.

We predict that individuals that are sophisticated about life insurance products will be more likely to receive truthful information from life insurance agents; agents internalize that sophisticated agents are not swayed by false claims, and thus presenting dishonest information to sophisticated agents is wasted persuasive effort. In the specific context of our audits this prediction suggests that life insurance agents should be more likely to recommend the term policy to sophisticated agents. Note that we designed our scripts so sophistication here only means that the potential customer is knowledgeable about life insurance products; both sophisticated and unsophisticated agents state that they have the same objective needs in terms of life insurance.

Table **??** presents a randomization check for the Sophistication experiment. The only statistically significant different between the sophistication and non-sophisticated treatments is that the sophisticated treatments were about nine percentage points more likely to occur at other venues. Overall, the randomization in this experiment appears to be successful.

The results from the sophistication experiment, reported in **??**, provide some evidence in support of this prediction. We use the same specification as in the previous experiments to analyze this data. In Column (1) the dependent variable takes a value of one if the agent's recommendation included a term insurance plan, and zero otherwise. We find that the sophisticated treatment causes a nine percentage point increase in the likelihood that an agent includes term insurance as a

part of their recommendation. This result is close to being significant at the 10 percent significance level (p-value .118). Thus, we do see that agents make some attempt to cater to sophisticated individuals by offering term insurance.

However, in Column (2), where the dependent variable takes a value of one if the agent recommended the auditor purchase only a term a insurance plan, we find there is no statistically significant effect of sophistication. Similar to the results in bias versus needs experiment, it appears that agents attempt to cater to more sophisticated types by mentioning term as a part of a recommendation. However, they do not completely switch to recommending only term insurance even to customers who signal sophistication.

7   Conclusion and Discussion

A critical question facing emerging markets with large swaths of the population entering the formal financial system is how these new clients will receive good information on how to make financial decisions. Clearly, the private sector will be important in educating new investors and providing suitable products. Recent events in developed economies suggest that regulation may be necessary to ensure that the private sector's own incentives do not compromise the quality of financial decisions made by private individuals. This issue is of particular importance emerging markets where new investors have little experience with formal financial products to begin with.

First, we show that whole life insurance is economically inferior to a combination of investing in savings accounts and purchasing term insurance. Despite the large economic losses associated with investing in whole insurance we find that life insurance agents overwhelmingly encourage the purchase of whole insurance. This is likely due to the larger commissions offered to agents for selling whole insurance.

Second, we find that government underwriters are much more likely to recommend the dominated product. We view the government underwriter result as important: government underwriters, in particular the Life Insurance Company of India, enjoys a reputation as a very trustworthy firm because of its government backing. The fact that agents representing it were much less likely to recommend a suitable product seems inconsistent with the view that a government owned-firm includes social welfare in its objective function.

Third, we find that requiring disclosure of commissions on one particular product led to that product being recommended less but did not increase verbal disclosure of commission levels. This result is interesting in that it suggests that hiding information is an important part of life insurance agents' business, and that disclosure requirements can change the optimal strategy of agents. However, in this case it appears that the disclosure requirement on one product simply had the effect of pushing agents to recommend more opaque products. These results suggest that the disclosure requirements for financial products need to be consistent across the menu of substitutable products.

Fourth, we find that agents who demonstrate some knowledge of insurance products get better advice. Auditors that stated they had a deep understanding of insurance products were fourteen percentage points less likely to receive a recommendation of whole life insurance, a financially inferior product. This result suggests that the poor or ill-educated might be the most harmed by financial product agents.

Fifth, we find that agents cater to agents pre-conceptions of what the right product is for them as much (if not more) than to objective information about what the right product is. This suggests that, at least in our sample, agents do not actively try to de-bias customers away from their initial beliefs completely. This result holds even in the case where an agent has an incentive to de-bias the customer because a de-biased customer would purchase a higher commission product. These results suggest that relying on competition to de-bias consumers of their mis-conceptions may not lead to markets that inform consumers.

Overall, our results suggest that for life insurance, which is a large and important savings cum insurance product in India, that agents primarily work to maximize their commissions and play little role in educating the public about optimal decisions.

We, and others, have argued that whole life insurance is dominated by term insurance for individuals who seek insurance mainly for risk coverage. While the goal of this paper is to understand commissions motivated agent behavior (rather than offer a competitive analysis of the Indian insurance industry), we speculate here on how a dominated product could survive in a competitive equilibrium.

We present a simple model, based on Gabaix and Laibson (2006), which provides one explanation for how a dominated financial product might exist in competitive equilibrium. The model

takes the basic empirical result found in this paper, that commissions motivated agents appear to provide poor financial advice, and shows how it is possible that if at least some consumers are persuaded by bad advice then it is possible that a dominated product like whole insurance could persist in competitive equilibrium. The model may be particularly relevant for a country like India with a large number of new insurance customers entering the market who are still learning about these products and may be less sensitive to important differences in the long run returns available.

In the model, whole and term insurance are the same product. In other words, whole insurance can be replicated by purchasing term insurance and investing in a savings account. Thus, the model is set up such that buyers should choose whole insurance only if it is cheaper than term insurance. However, we show that an equilibrium is possible where whole insurance has a higher price than term insurance.

The model has two types of consumers. Sophisticated consumers understand that whole and term insurance are the same product (and thus would always just choose the cheaper one), know their own optimal amount of insurance, given prices, and are immune to persuasive efforts of agents. There is a fixed, exogenous number of sophisticated consumers, s, who want to purchase term insurance, and each has a demand function for term insurance equal to $\alpha - p_t$, where p_t is the price of term insurance.

Unsophisticated consumers, in contrast, can be persuaded to purchase a dominated product if there is an agent that exerts enough effort. In particular, we assume unsophisticated agents demand an amount of insurance $\alpha - p$ once they have met with a commissions motivated agent. Agents must exert effort to identify and sell to unsophisticated consumers. We assume that the number of customers they find is equal to the commission on whole insurance set by the insurance company, c_w. Intuitively, the higher that the insurance firm sets commissions, the more incentive agents have to approach customers and sell insurance. The insurance firm also incurs a cost k per unit of either term insurance or whole insurance sold. This represents the cost of bearing the risk of the policy.

The game play is as follows. In period 0, the firm(s) choose whether to offer term, whole, or both insurance products. They also choose the prices p_w and p_t and the commissions they will pay agents to sell whole and term insurance (c_w, c_t). In period two, consumers make decisions on how much whole and term insurance to purchase and insurance firms realize their profits. An Appendix

contains the proofs of all the results discussed here.

7.1 Monopolist Insurance Company

A monopolist insurance firm has three possible options (1) offer only term insurance (2) offer whole and term insurance (3) offer only whole insurance. In the Appendix we show that the monopolist insurance firm will choose to offer both term and whole insurance. The monopolist firm will pay zero commissions for the sale of term insurance (as paying commissions on term insurance does not increase demand) and will charge a price of $\frac{\alpha+k}{2}$. for term insurance. The monopolist firm will pay positive commissions for the sale of whole insurance, because demand is increasing in commissions. The firm will set the whole insurance price (p_w) equal to $\frac{1}{3}(2\alpha + k)$ and will pay commissions $\frac{1}{3}(\alpha - k)$. Note that as long as $\alpha > k$, which must be true for there to be a possibility of trade in insurance, that the price of whole insurance will be higher than the price of term insurance.

The intuition for this solution is that offering both term and whole insurance offers the monopolist firm a way to set different commissions and prices for sophisticated versus unsophisticated customers. Sophisticated consumers cannot be persuaded by commissions motivated agents, and thus the firm chooses to set commissions to zero and charge lower prices for term insurance. However, unsophisticated consumers can be persuaded to purchase insurance. Thus, the insurance firm chooses to pay higher commissions to encourage agents to persuade consumers to purchase insurance, and then passes these higher commissions onto the consumer in terms of higher prices.

7.2 Two Competing Insurance Companies

We now analyze the impact of competition by considering a Bertrand pricing game where two firms compete by setting term and whole commissions and prices. This game has two players, firm i and firm j. A strategy in this game consists of (1) a choice of which products to offer (term, whole, or both) (2) prices and commissions for each product offered. A firm's payoff function is the profit it earns given its choice of what products, prices, and commissions to offer as well as the other firm's choices.

The payoffs are defined as follows. For term insurance, we use the usual Bertrand pricing game (with homogenous products) assumption that firm i obtains the full market of all s sophisticated consumers if $p_i < p_j$ (and vice versa). For whole insurance, consumers can be influenced to purchase

both by higher commissions and lower prices. The number of unsophisticated consumers that firm i sells to given it pays commissions c_i is $c_i - bc_j$. The parameter b, which we assume is always greater than zero, measures the degree to which firm i and j's insurance products compete with each other for customers. If b equals zero then the fact that firm j is paying high commissions does not change the demand for firm i's insurance. If b is large, however, then firm j raising its commissions causes a fraction of consumers to switch from firm i's insurance product to firm j's product.

Note, however, that once unsophisticated consumers have been persuaded to purchase from a particular firm because of commissions, the insurance company can charge them the monopoly price. In this sense, competition for unsophisticated consumers happens primarily through commissions, and not through prices. The intuition is that unsophisticated consumers respond strongly to the persuasiveness and effort of agents in choosing what product to buy, but less strongly to the level of prices.

In the Appendix we show that the Nash equilibrium commissions are $c_i^* = c_j^* = \frac{\alpha - k}{3 - 2b}$, and the Nash equilibrium prices are $p_i^* = p_j^* = \frac{(2-b)\alpha + (1-b)k}{3 - 2b}$. Note that for commissions and prices to be positive we need $b \leq \frac{3}{2}$.

This equilibrium has the following interesting features. First, when paying commissions causes the competitor to lose more business (b increases), commissions increase and prices increase.[10] Thus, when insurance firms attract customers mainly through commissions, competition can actually lead to higher prices (and commissions), relative to a monopoly provider. The intuition for this result is that as a monopoly provider, paying higher commissions loses more in due to higher costs than it gains in extra business. However, when firms compete over commissions, then it becomes necessary to pay higher commissions to win business, although the profits for each sale are lower because more commissions have to be paid. Even though term and whole insurance are the same product in this model, an equilibrium exists where whole insurance has a higher price than term insurance, and where competition between firms will not eliminate this dominated product. Analogous to the result in Gabaix and Laibson (2006), a strategy of un-shrouding the whole policy does not work because selling the dominated term policy does not offer the margins necessary to pay large commissions.

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[10]See appendix for the proof that prices increase.

We believe this model is a plausible explanation for why a dominated product like whole insurance can persist in this market given the empirical evidence presented in this paper that commissions motivated agents provide poor advice. Further empirical work is necessary to distinguish the model presented from other potential explanations for the existence of dominated products, such as entry barriers or other market frictions.[11]

We believe our study opens some important questions for further research. Here we briefly mention two such questions. First, what types of consumers are actually persuaded by the recommendations of life insurance agents? Second, do dominated whole insurance products exists because because a firm taking a strategy of attempting to educate consumers would ultimately not win business? Answering these questions will eventually help formulate better regulatory policy to improve the quality of household financial decision making.

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[11]It is important to note that the Indian insurance industry is characterized by significant barriers to entry, including licensing restrictions and capital requirements, as well as scale economies.

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Table 1: Comparing Whole and Term Life Insurance Policies

Panel A: Financial Products			
	LIC WHOLE LIFE	**LIC Term Life**	**Savings Account**
Policy Description	An individual purchases a policy for a pre-specified term, which promises a pre-specified benefit in case of death until the buyer turns 80. If the respondent lives until the age of 80, the policy matures, and the agent can obtain the coverage amount in cash. The coverage amount increases by Rs. 15,000 per year via bonuses.	An individual purchases a policy for a pre-specified term, which promises a pre-specified benefit in case of death during the term only. Once the policy expires, it has no residual value. The coverage amount is constant.	Fixed term deposit for five years or longer, State Bank of India
Plan Name	The Whole Life Plan	Anmol Jeevan - I	SBI Fixed Deposit
LIC Plan Number	Plan # 2	Plan # 164	
	POLICY TERMS	POLICY TERMS	Terms
Annual Rate	8%		
Bonus Percentage	3%		
Coverage Amount	500,000	500,000	
Interest Rate			8%
Age	34	34	
Payment Term (years)	47	25	
Yearly	13574	2507	
Total Nominal Payments	637,978	62,675	

Table 2: Comparing Whole and Term Life Insurance Policies

Panel B: Replicating Portfolio

Calendar Year	Age	Policy Year	Premium Paid	Coverage	Premium Paid	Savings Deposit	Savings Balance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2010	34	1	13574	515000	2507	11067	11952.36
2011	35	2	13574	530000	2507	11067	24860.9088
2012	36	3	13574	545000	2507	11067	38802.1415
2013	37	4	13574	560000	2507	11067	53858.67282
2014	38	5	13574	575000	2507	11067	70119.72665
2015	39	6	13574	590000	2507	11067	87681.66478
2016	40	7	13574	605000	2507	11067	106648.558
2017	41	8	13574	620000	2507	11067	127132.8026
2018	42	9	13574	635000	2507	11067	149255.7868
2019	43	10	13574	650000	2507	11067	173148.6098
2020	44	11	13574	665000	2507	11067	198952.8585
2021	45	12	13574	680000	2507	11067	226821.4472
2022	46	13	13574	695000	2507	11067	256919.523
2023	47	14	13574	710000	2507	11067	289425.4448
2024	48	15	13574	725000	2507	11067	324531.8404
2025	49	16	13574	740000	2507	11067	362446.7477
2026	50	17	13574	755000	2507	11067	403394.8475
2027	51	18	13574	770000	2507	11067	447618.7953
2028	52	19	13574	785000	2507	11067	495380.6589
2029	53	20	13574	800000	2507	11067	546963.4716
2030	54	21	13574	815000	2507	11067	602672.9093
2031	55	22	13574	830000	2507	11067	662839.1021
2032	56	23	13574	845000	2507	11067	727818.5902
2033	57	24	13574	860000	2507	11067	797996.4375
2034	58	25	13574	875000	2507	11067	873788.5125
2035	59	26	13574	890000		13574	958351.5134
2036	60	27	13574	905000		13574	1049679.555
2037	61	28	13574	920000		13574	1148313.839
2038	62	29	13574	935000		13574	1254838.866
2039	63	30	13574	950000		13574	1369885.895
2040	64	31	13574	965000		13574	1494136.687
2041	65	32	13574	980000		13574	1628327.542
2042	66	33	13574	995000		13574	1773253.665
2043	67	34	13574	1010000		13574	1929773.878
2044	68	35	13574	1025000		13574	2098815.709
2045	69	36	13574	1040000		13574	2281380.885
2046	70	37	13574	1055000		13574	2478551.276
2047	71	38	13574	1070000		13574	2691495.298
2048	72	39	13574	1085000		13574	2921474.842
2049	73	40	13574	1100000		13574	3169852.75
2050	74	41	13574	1115000		13574	3438100.89
2051	75	42	13574	1130000		13574	3727808.881
2052	76	43	13574	1145000		13574	4040693.511
2053	77	44	13574	1160000		13574	4378608.912
2054	78	45	13574	1175000		13574	4743557.545
2055	79	46	13574	1190000		13574	5137702.069
2056	80	47	13574	1205000		13574	5563378.154
Final Value, 2056 in 2056 Rs.:				1205000			5563378.154

Notes: Panel A of this table gives the policy details for two standard life insurance policies, one whole and one term, providing Rs. 500,000 coverage to a 34-year old man.Panel B represents the flow of payments from the household to the insurance agency if she or he buys whole life , or if she or he buys term life and saves the difference between the higher whole premium and the term premium. The whole life insurance policy is replicated using a term policy and a savings account. The final line of the table indicates a households net asset position after paying Rs. 13,574 per annum, for a whole left policy (Column (5)), and for a term policy plus savings account (column (8)).

Table 3: Examples of False and Misleading Statements

The auditor cannot buy insurance because her husband is diabetic. No insurer will insure him.

The auditor, who is a muslim, should invest in a ULIP because his religion doesn't allow receiving interest income.

"Term insurance is not for Women."

"There is no such thing as a free look period. The agent should purchase insurance and then forget about it."

The agent, when asked for a term policy, offered an endowment life policy, describing it as term.

"Term plan is for people with high income and people who wants to hide their income."

"Term is not for people from middle class."

"Term is for people with high risk."

"Term is worthless."

"Term has low premium, so it is not a good product."

"Term is not for middle class."

"Term is only good for businessman."

"Term is difficult for women."

When asked about the "free look" period: "Once the policy is entered in the system, nothing can be done."

"Women don't get insurance more than 300000 Rs."

When asked about the "free look" period: "Policy can be cancelled only if one provided good reason for it."

"Jeevan Anand [an Endowment/Whole policy] ' is a ULIP."

"Term is offered to women who has government jobs."

"If you take a ULIP, you may take a loan against the value." In fact, it is prohibited to borrow against ULIPS.

"Term is for Government Employees."

"Term is for big businessman and people who invest in capital markets."

The above statements were noted by our auditors in the course of their meetings with Life Insurance agents.

Table 4: Summary Statistics On Three Field Experiments

		Experiment 1 Debiasing and Competition	Experiment 2 Disclosure Requirements	Experiment 3 Consumer Sophistication
Agent Works For:				
	Government Underwriter	0.80	0.60	0.71
	Life Insurance Company of India	0.73	0.62	0.69
Audit Location:				
	Agent's Home	0.18	0.18	0.12
	Agent's Office	0.12	0.63	0.55
	Auditor Home	0.01	0.05	0.03
	Auditor Office	0.01	0.01	0.18
	Other Location	0.68	0.12	0.12
Other Audit Details:				
	Audit Duration (minutes)	37.1	36.7	33.2
Recommendation:				
	Only Term	0.03	0.01	0.14
	Included Term	0.13	0.02	0.22
	Only Whole	0.74	0.97	0.74
	Included Whole	0.90	0.98	0.82
	Only ULIP	0.08	0.64	0.16
	Included ULIP	0.10	0.64	0.18
Observations		559	432	217

This table presents summary statistics from our three experiments. Experiment 1 refers to the experiment where we varied the auditor's needs (savings vs. risk), beliefs (whole vs. term) and the source of their beliefs (competing agent or friend). Experiment 2 refers to the experiment where agents were forced to disclose the commissions they earned from selling ULIP products. Experiment 3 refers to the experiment where we varied the sophistication of the auditor.

Table 5: Experiment 1 (Bias,Needs,Competition): Randomization Check

Treatment Type:	Bias		Need		Source of Bias	
Treatment:	Term	Whole	Term	Whole	Agent	Friend
Government Underwriter	0.82	0.79	0.79	0.82	0.82	0.79
Life Insurance Company of India	0.74	0.73	0.71	0.75	0.74	0.72
Auditor 1	0.04	0.03	0.03	0.04	0.03	0.03
Auditor 2	0.30**	0.39	0.35	0.34	0.35	0.34
Auditor 3	0.30	0.25	0.27	0.28	0.30	0.26
Auditor 4	0.37	0.31	0.35	0.33	0.31	0.37
Auditor 5	0.00***	0.01	0.00	0.00	0.00	0.00
Agent Home	0.19	0.18	0.17	0.19	0.21	0.16
Agent Office	0.13	0.11	0.12	0.12	0.11	0.13
Auditor Home	0.00***	0.02	0.01	0.01	0.01	0.01
Auditor Office	0.01	0.01	0.01	0.02	0.01	0.02
Other Venue	0.67	0.68	0.69	0.65	0.66	0.69
Observations	280	279	258	301	263	296

*, **, *** indicates that treatments are statistically significantly different at the 1 percent, 5 percent, or 10 percent levels.

Table 6: Catering and Term Product Recommendations

Dep Var:	Any Term		Only Term		Ln(Coverage)		Ln(Premium)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bias=Term	0.10***	0.10***	0.02*	0.02**	0.13**	0.13**	-0.01	-0.02
	[0.03]	[0.03]	[0.01]	[0.01]	[0.06]	[0.06]	[0.05]	[0.05]
Need=Term	0.12***	0.13***	0.02	0.02*	0.17**	0.18**	0.00	0.00
	[0.03]	[0.03]	[0.01]	[0.01]	[0.07]	[0.07]	[0.05]	[0.05]
(Bias=Term)*(Need=Term)	0.02	0.01	0.05*	0.05*	0.00	-0.01	0.04	0.04
	[0.06]	[0.05]	[0.03]	[0.03]	[0.12]	[0.11]	[0.07]	[0.06]
Govt Underwriter		-0.12***		-0.02		-0.24**		-0.04
		[0.04]		[0.02]		[0.09]		[0.05]
Agent Home		0.01		-0.02		-0.07		-0.11
		[0.05]		[0.03]		[0.10]		[0.07]
Auditor Home		-0.13		-0.02		-0.51*		-0.67
		[0.10]		[0.03]		[0.28]		[0.52]
Auditor Office		0.33**		0.21		0.30		-0.55***
		[0.15]		[0.14]		[0.25]		[0.21]
Other Venue		-0.02		-0.02		-0.09		-0.12**
		[0.04]		[0.02]		[0.09]		[0.05]
Constant	0.02*	0.06	0.00	0.03	13.02***	12.95***	10.17***	11.10***
	[0.01]	[0.06]	[0.00]	[0.03]	[0.04]	[0.27]	[0.04]	[0.57]
Auditor FE	NO	YES	NO	YES	NO	YES	NO	YES
Observations	559	557	559	557	537	537	538	538
Adjust R-Squared	0.06	0.13	0.03	0.05	0.02	0.08	0.00	0.05

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. Robust standard errors included in brackets. The dependent variable in Columns (1) and (2) is whether the agent recommended any term insurance policy. The dependent variable in Columns (3) and (4) is whether the agent recommended only a term insurance policy. The dependent variable in Columns (5) and (6) is the logarithm of risk coverage recommended. The number of observations in Columns (5) and (6) are less than those in (1) and (2) because we did not obtain a coverage recommendation in 21 audits. The dependent variable in Columns (7) and (8) is the premium amount recommended. The number of observations in Columns (7) and (8) are less than those in Columns (1) and (2) because we did not obtain a premium recommendation in 20

audits.

Table 7: Improving Advice: Competition Amongst Agents

Dep Var:	Any Term				Only Term			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bias = Term	0.10***	0.11***	0.09**	0.09**	0.04***	0.05***	0.03	0.03
	[0.03]	[0.03]	[0.04]	[0.04]	[0.01]	[0.01]	[0.02]	[0.02]
Need = Term	0.12***	0.12***	0.07*	0.06*	0.04***	0.04***	0.03	0.03
	[0.03]	[0.03]	[0.04]	[0.04]	[0.01]	[0.01]	[0.02]	[0.02]
Competition	0.03	0.03	-0.01	-0.01	0.01	0.01	0.00	0.00
	[0.03]	[0.03]	[0.02]	[0.02]	[0.01]	[0.01]	[0.00]	[0.00]
(Bias=Term)*Competition			0.01	0.03			-0.01	-0.01
			[0.06]	[0.06]			[0.02]	[0.02]
(Need=Term)*Competition			0.11*	0.13**			-0.03	-0.03
			[0.07]	[0.07]			[0.02]	[0.02]
(Bias=Term)*(Need=Term)			0.05	0.06			-0.01	-0.01
			[0.08]	[0.07]			[0.04]	[0.04]
(Bias=Term)*(Need=Term)*Competition			-0.08	-0.13			0.12**	0.12**
			[0.12]	[0.11]			[0.06]	[0.06]
Government		-0.13***		-0.13***		-0.02		-0.01
		[0.04]		[0.04]		[0.02]		[0.02]
Constant	0.00	0.05	0.03	0.04	-0.02	0.00	0.00	0.01
	[0.02]	[0.07]	[0.02]	[0.08]	[0.01]	[0.03]	[0.00]	[0.02]
Auditor FE	NO	YES	NO	YES	NO	YES	NO	YES
Observations	558	556	558	556	558	556	558	556
Adjusted R-squared	0.05	0.12	0.05	0.12	0.03	0.03	0.04	0.04

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. Robust standard errors included in brackets.

Table 8: Experiment 2 (Effect of Disclosure): Comparison of Audit Characteristics Before and After Law Change

	Pre-Disclosure	Post-Disclosure	Disclosure Knowledge = 0	Disclosure Knowledge = 1
Government Underwriter	0.63***	0.44	0.50	0.56
Life Insurance Company of India	0.58***	0.44	0.49	0.52
Agent Home	0.19***	0.09	0.17*	0.10
Auditor Home	0.04	0.07	0.06	0.05
Auditor Office	0.01	0.02	0.00	0.03
Agent Office	0.67	0.75	0.68	0.76
Other Venue	0.09*	0.04	0.07	0.05
Auditor 1	0.00***	0.07	0.04	0.05
Auditor 2	0.31	0.34	0.37*	0.27
Auditor 3	0.26	0.34	0.27	0.33
Auditor 4	0.43***	0.26	0.32	0.35
Observations	108	147	142	113

*, **, *** indicates that treatments are statistically significantly different at the 10 percent, 5 percent, or 1 percent levels.

Figure 1: Effect of Disclosure: Proportion of ULIP Recommendations Over Time

This figure plots the average proportion of audits in the disclosure natural experiment that resulted in a ULIP product being recommended (ULIPs are equity linked whole insurance products for which the law change required agents to disclosure their commissions). The thick vertical dashed line indicates the last week where agents were allowed to sell ULIPs without disclosing their commissions. The thin dashed lines indicate 95 percent confidence intervals of the estimated proportion of ULIP recommendations in each week.
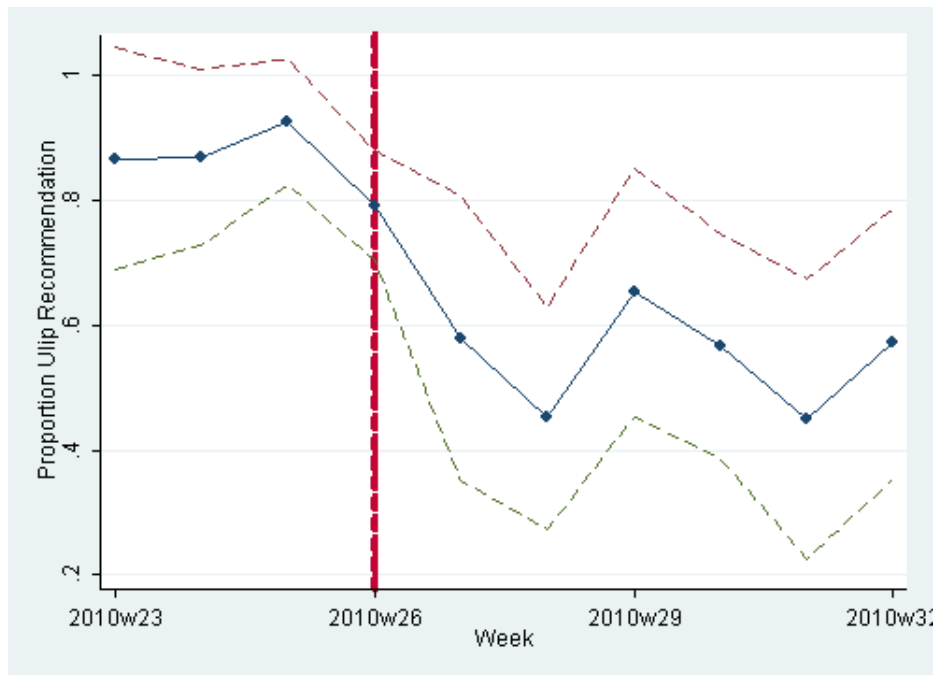
Table 9: Effect of Disclosure

Dep Var:	ULIP Recommended				Ln(Risk Coverage)	Ln(Premium)
Sample:	All	All	Govt Underwriter	Private Underwriter	All	All
Post Disclosure	-0.25***	-0.19**	-0.30**	-0.07	0.15	0.03
	[0.09]	[0.08]	[0.12]	[0.08]	[0.13]	[0.07]
Disclosure Knowledge	0.05	0.02	0.07	0.00	0.02	0.00
	[0.06]	[0.06]	[0.13]	[0.05]	[0.11]	[0.06]
Post*Disclosure Knowledge	-0.06	-0.02	-0.06	0.07	0.02	-0.01
	[0.12]	[0.10]	[0.17]	[0.11]	[0.17]	[0.09]
Government Underwriter		-0.42***			0.29***	0.01
		[0.05]			[0.10]	[0.05]
Agent's Home		-0.07	-0.06	0.01	-0.01	0.05
		[0.12]	[0.15]	[0.03]	[0.16]	[0.10]
Auditor's Home		-0.08	-0.29*	-0.03	0.58	0.25
		[0.13]	[0.16]	[0.06]	[0.38]	[0.22]
Auditor's Office		0.12	0.61***	-0.01	0.55**	0.31*
		[0.15]	[0.16]	[0.04]	[0.23]	[0.18]
Agent Office		-0.06	-0.04	-0.06*	-0.07	0.01
		[0.09]	[0.13]	[0.04]	[0.14]	[0.07]
Constant	0.81***	1.24***	1.08***	1.03***	11.90***	9.99***
	[0.05]	[0.15]	[0.18]	[0.05]	[0.41]	[0.23]
Observations	257	257	134	123	214	253
Adjusted R-Squared	0.09	0.29	0.10	-0.06	0.13	0.14

* Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level. Robust standard errors included in brackets. The dependent variable equals

Columns (1) - (4) equals 1 if a ULIP product was recommended and 0 if a non-ULIP product was recommended. The ULIP product is the product where disclosure of

commissions was made mandatory on July 1, 2010. The dependent variable in Column (5) is the logarithm of the amount of risk coverage recommended. The dependent

variable in Column (5) is the logarithm of the amount of premium recommended.

Table 10: Experiment 3 (Effect of Sophistication): Randomization Check

	Sophisticated Treatment (1)	Non-Sophisticated Treatment (2)
Government Underwriter	0.72	0.71
Life Insurance Company of India	0.68	0.70
Agent Home	0.11	0.14
Agent Office	0.52	0.58
Auditor Home	0.04	0.03
Auditor Office	0.18	0.18
Other Venue	0.16**	0.07
Auditor 1	0.07	0.12
Auditor 2	0.35	0.32
Auditor 3	0.36	0.33
Auditor 4	0.01	0.04
Auditor 5	0.01	0.01
Auditor 6	0.01	0.00
Auditor 7	0.19	0.18

***,**,* indicates that treatments are statistically significantly different at the 1 percent, 5 percent, or 10 percent levels.

Table 11: Improving Advice: Effect of Sophistication on Agent Recommendations

Dep Var	Recommended Any Term		Recommended Only Term		Ln(Coverage)		Ln(Premium)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sophisticated	0.10*	0.09	0.03	0.03	0.22*	0.19	-0.03	-0.04
	[0.06]	[0.06]	[0.05]	[0.05]	[0.12]	[0.12]	[0.09]	[0.09]
Govt Underwriter		-0.07		-0.09		-0.22		0.05
		[0.07]		[0.06]		[0.16]		[0.10]
Agent's Office		-0.09		0.02		-0.19		0.20
		[0.10]		[0.06]		[0.18]		[0.18]
Auditor Home		-0.08		-0.09		0.11		0.23
		[0.17]		[0.07]		[0.32]		[0.23]
Auditor Office		0.05		0.13		0.09		0.02
		[0.12]		[0.09]		[0.22]		[0.21]
Other Venue		-0.15		0.02		-0.49*		0.01
		[0.11]		[0.09]		[0.25]		[0.22]
Constant	0.18***	0.33**	0.12***	0.23**	12.97***	13.67***	9.69***	9.72***
	[0.04]	[0.13]	[0.03]	[0.11]	[0.08]	[0.25]	[0.05]	[0.23]
Auditor FE	NO	YES	NO	YES	NO	YES	NO	YES
Observations	217	217	217	217	209	209	209	209
Adjusted R-Squared	0.01	0.01	0.00	0.05	0.01	0.10	0.00	0.04

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level. Robust standard errors included in brackets.

9   Appendix

10   Model of a Dominated Financial Product

10.1   Monopolist Insurance Company

The monopolist has three possible options. One option is to offer only term insurance. If he chooses this option he chooses prices and commissions to maximize:

$$\max_{\{p_t, c_t\}} s(p_t - c_t - k)(\alpha - p_t) + c_t(p_t - c_t - k)(\alpha - p_t)$$

The first order condition with respect to price p_t is $(s+c_t)(p_t - c_t - k)(-1) + (s+c_t)(\alpha - p_t) = 0$, which simplifies to $p_t = \frac{\alpha + k + c_t}{2}$. The first order condition with respect to c_t is $(s + c_t)(p_t - \alpha) + (\alpha p_t - \alpha k - p_t^2 - c_t \alpha + k p_t + c_t p_t) = 0$. Solving this system of equations yields the solution $c_t = \frac{\alpha - k - 2s}{3}$ and $p_t = \frac{2\alpha + k - s}{3}$. Note that we need $s \leq \frac{\alpha - k}{2}$ to guarantee that commissions are non-negative (this condition also guarantees that prices are non-negative).[12]

The monopolist's second option is to offer both term and whole insurance. This option essentially constitutes price discrimination, where low prices and zero commissions are associated with term insurance for sophisticated consumers, and high prices and commissions are associated with whole insurance and unsophisticated consumers. The firm will pay zero commissions for the sale of term insurance; paying commissions does not increase demand but it does increase costs. The monopolist firm chooses the term insurance price p_t to maximize $s(p_t - k)(\alpha - p_t)$. The first order condition for p_t is $\alpha - 2p_t + k = 0$. The firm will choose to charge a price $\frac{\alpha + k}{2}$ for term insurance. Total profits from the sale of term insurance will equal $\frac{s(\alpha - k)^2}{4}$.

The firm will pay positive commissions for the sale of whole insurance, because demand is increasing in commissions. The firm maximizes the total profit function from selling whole insurance to unsophisticated customers: $c_w(p_w - k - c_w)(\alpha - p_w)$. The first order condition with respect to price is $c_w \alpha - 2p_w c_w + c_w k + c_w^2 = 0$. The first order condition with respect to the commission level c_w is $c_w(p\alpha - k\alpha - 2c\alpha - p^2 + pk + 2cp) = 0$. Solving these two first order conditions we find that the firm will set the whole insurance price (p_w) equal to $\frac{1}{3}(2\alpha + k)$ and will pay commissions

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[12]Intuitively, this condition rules out a situation where there are a large number of sophisticated consumers and thus the firm would choose to pay negative commissions (i.e. force agents to pay the firm for selling to sophisticated consumers). If commissions were negative, agents would have no incentive to sell insurance in this model.

$\frac{1}{3}(\alpha - k)$.

We now show that when both products are offered and prices and commissions are chosen separately for each, that the price of term insurance will be higher than the price of whole insurance:

$$\frac{\alpha + k}{2} < \frac{1}{3}(2\alpha + k)$$

This expression can be simplified to $\alpha > k$, which must be true for their to be any positive demand for either insurance product. Thus, the monopolist will always choose higher prices for the whole insurance product versus the term insurance product. Intuitively, the monopolist pays higher commissions on whole insurance to attract consumers, and then passes on those commissions as higher prices. Total profits from the sale of whole insurance under the price discrimination strategy is $\frac{(\alpha-k)^3}{27}$. Total profits from the strategy of offering both term and whole products is $\frac{s(\alpha-k)^2}{4} + \frac{(\alpha-k)^3}{27}$.

The monopolist's third option is to offer only whole insurance. The sophisticated types never buy this, and the chosen p_w and c_w would be equivalent to those in Case 2. Thus, the firm can always add term insurance paying zero commissions and increase its profits. Thus, the monopolist firm will never offer only whole insurance.

We now show that the monopolist firm will always choose to offer both products as opposed to offering just term insurance. Intuitively, the monopolist can offer term and whole insurance products to price discriminate amongst the two types of consumers. In this case, price discrimination takes the form of offering higher commissions for sales of whole insurance to unsophisticated customers, and commissions equal to zero for sales of term insurance to sophisticated customers. We begin by showing that the profits from term consumers will always be lower when only term insurance is offered versus when both term insurance and whole insurance are offered.

The total profits from selling term insurance when both products are offered is $\frac{s(\alpha-k)^2}{4}$. The total profit from sophisticated consumers when only term insurance is offered is $s[\frac{1}{3}(2\alpha + k - s) - \frac{1}{3}(\alpha - k - 2s)][\alpha - \frac{1}{3}(2\alpha + k - s)]$. We wish to show that:

$$\frac{s(\alpha - k)^2}{4} > s[\frac{1}{3}(2\alpha + k - s) - k - \frac{1}{3}(\alpha - k - 2s)][\alpha - \frac{1}{3}(2\alpha + k - s)]$$
$$\frac{(\alpha - k)^2}{4} > \frac{1}{9}(\alpha - k + s)^2$$

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Taking the square root of both sides we have $\frac{\alpha-k}{2} > \frac{1}{3}(\alpha - k + s)$ which simplifies to $\frac{\alpha-k}{2} \geq s$. Note that this is the same condition we needed to guarantee that commissions and prices are positive. Thus, the profits from selling to sophisticated consumers will be higher when both term and whole insurance products are offered, with different commissions and prices, then when term is sold to all customers.

We now show that the profits from unsophisticated consumers are also higher when the price discrimination strategy is followed. The profits on unsophisticated consumers under the price discrimination strategy are $\frac{(\alpha-k)^3}{27}$. The total profits from unsophisticated consumers when only term insurance is offered are $[\frac{1}{3}(\alpha - k - 2s) - \frac{1}{3}(\alpha - 2s)][\alpha - \frac{1}{3}(2\alpha - s)]$. Simplification shows that the price discrimination strategy yields higher profits as long as $3(\alpha - k) + 2s > 0$, which must be true as both $\alpha - k$ and s are non-negative.

Thus, we have shown that a monopolist firm will choose to sell both term and whole insurance, at different prices, to sophisticated and unsophisticated customers respectively. We have also shown that the monopolist will choose higher prices and commissions for whole insurance than for term insurance.

10.2 Two Competing Insurance Companies

The setup of this problem is defined in the Conclusion and Discussion section of the main text. We first solve for firm i's optimal behavior given firm j's possible behavior. Suppose firm j only offers whole insurance paying commission c_j and charging price p_j. In this case firm i will always choose to sell both whole and term insurance. If he chose to sell only one of these products, he could increase his profits by entering the term insurance market as a monopoly provider. Thus, there cannot be an equilibrium where both firms only sell either only term insurance or whole insurance.

Now suppose firm j offers both term and whole insurance. We show that there is one possible equilibrium in this case. Bertrand competition in the market for term insurance gives a Nash equilibrium $p_{i,t} = p_{j,t} = k$. In the term insurance market prices get driven down to marginal cost. Competition in the market for term insurance leads to lower prices, as sophisticated consumers are not persuaded by commissions in their decisions to purchase insurance products.

We now solve for a Nash equilibrium in the market for whole insurance. A price and commissions pair $(c_1^*, p_1^*, c_2^*, p_2^*)$ is a Nash equilibrium in the market for whole insurance if (c_i^*, p_i^*), for

each firm i, solves the following problem (we suppress w subscript, but the commission and price term refer to whole insurance):

$$\max_{c_i, p_i}(c_i - bc_j^*)(p_i - k - c_i)(\alpha - p_i)$$

The first order condition with respect to p_i can be simplified to: $\frac{1}{2}(p_i - k + bc_j)$. The first order condition with respect to c_i an be simplified to $c_i^* = \frac{1}{2}(p_i - k + bc_j)$. Solving these two equations in two unknowns we find that firm i's optimal choices given firm j's choices are: $c_i^* = \frac{\alpha - k + 2bc_j}{3}$ and $p_i^* = \frac{1}{3}(2\alpha + k + bc_j)$. In a Nash equilibrium, firm j plays the same best responses given firm i's behavior, and thus we have: $c_j^* = \frac{\alpha - k + 2bc_i^*}{3}$ and $p_j^* = \frac{1}{3}(2\alpha + k + bc_i^*)$.

Solving this system of equations we find that the Nash equilibrium commissions are $c_i^* = c_j^* = \frac{\alpha - k}{3 - 2b}$, and the Nash equilibrium prices are $p_i^* = p_j^* = \frac{(2-b)\alpha + (1-b)k}{3-2b}$. Note that for commissions and prices to be positive we need $b \leq \frac{3}{2}$.

It is clear from the expression $c_i^* = c_j^* = \frac{\alpha - k}{3 - 2b}$ that the level of commissions paid will increase in the degree to which the insurance products compete with each other (b). We now show that prices are also increasing in b. We wish to show that the derivative of the expression for equilibrium prices with respect to b is greater than zero:

$$(3 - 2b)^{-1}(-\alpha - k) - (3 - 2b)^{-2}((2 - b)\alpha + (1 - b)k) > 0$$

This expression can be simplified to $\alpha > k$, which must be true for there to be any positive demand for the insurance product.