State Dependence and Commitment: Experimental Evidence from Crop Insurance in Uganda

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Abstract

According to standard economic arguments, state dependence generates the value of flexibility. This paper proposes that it can instead generate demand for commitment when individuals anticipate that future states will distort their decisions. A conceptual framework models two broad channels—state-dependent valuations (e.g., projection bias) and state-dependent decision mistakes (e.g., scarcity effects)—and shows that sophistication about such future distortions can generate demand for commitment. We test this prediction in a field experiment in Uganda, where we exclude present bias as a source of commitment demand by design. Farmers are offered pay-at-harvest crop insurance for two seasons and can choose upfront whether to commit to second-season insurance or maintain flexibility. Forty percent of farmers choose commitment. An intervention increasing sophistication raises commitment by 11 percentage points. Additional evidence suggests that both channels matter with substantial heterogeneity across farmers. Our results highlight the importance of individuals' sophistication about future state dependence for welfare analysis and policy design, particularly in environments with high state variability.

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1. Introduction

In many economic decisions, individuals face choices that depend fundamentally on the state of the world—be it consumption in response to income fluctuations, health investments based on current health status, or reactions to environmental shocks and other personal circumstances. Standard economic arguments suggest that maintaining flexibility for such decisions is desirable because it enables one to best respond to states that will be realized later. As such, the presence of state dependence has long been proposed as an explanation for the *lack* of demand for commitment (e.g., Laibson, 2015).

This paper proposes and formalizes the hypothesis that *future* state dependence may itself be undesirable because realized states may distort future decisions, generating a demand for commitment. Individuals may anticipate two classes of forces driving undesirable future state dependence: *state-dependent valuations*, where the future self's valuation of an option shifts with the realized state in ways the current self would not endorse, and *state-dependent decision quality*, where certain states impair the ability to make good choices. Both forces generate internal conflicts between the preferences of the current self and those of future selves. For individuals who are sophisticated about these tendencies, commitment can become attractive precisely in environments where standard theory emphasizes the value of flexibility. We provide experimental evidence for the proposed mechanisms in a randomized controlled trial in Uganda, in which smallholder farmers can choose ex ante to commit to a two-season crop insurance by forgoing the option to cancel after the first season.

Isolating the role of state dependence in demand for commitment requires studying a product that transfers income across states, but not across time, and thus turning off the potential role of dynamically inconsistent intertemporal preferences (e.g., present bias, as in Laibson, 1997; O'Donoghue and Rabin, 1999) or the anticipation thereof—one of the leading explanations for commitment demand in economics (Bryan et al., 2010). We therefore focus on demand for two-seasons of pay-at-harvest crop insurance (Casaburi and Willis, 2018), a product that aligns the timing of payment and payouts. Our focus on commitment in the take-up of crop insurance is also of direct policy and industry relevance: crop insurance offers large welfare gains in developing countries (Cole and Xiong, 2017), but inducing and sustaining demand has repeatedly proven hard (Cai et al., 2020).

We begin by formalizing the effects of anticipating undesirable state dependence in a conceptual framework built around the most salient state in agriculture, the harvest. In such an environment, the standard flexibility argument is particularly appealing: farmers might want to retain

the cancellation option to be able to adjust their insurance coverage after seeing how the first season goes, e.g., due to wealth effects or learning. Our key insight, however, is that some forms of state dependence can be undesirable. Our model nests two broad classes of forces: (i) *state-dependent valuations*, where the future self's valuation of insurance is distorted by the realized harvest (for instance, due to projection bias (Loewenstein et al., 2003) or incorrect beliefs about serially correlated states),[1] and (ii) *state-dependent decision quality*, where financial stress or scarcity impairs the ability to make good decisions in certain states (Fehr et al., 2022; Mullainathan and Shafir, 2013). Farmers may want to commit to insurance to avoid having to reconsider insurance decisions in states where future decisions will be influenced by realized harvests in ways that contradict current assessments. For example, farmers may anticipate undervaluing insurance after a good harvest or making poorer decisions after a bad harvest. Depending on the forces farmers are subject to or are aware of, they may prefer to commit to insurance today instead of making insurance decisions in those future states. The framework delivers a main prediction: an intervention that increases sophistication about state dependence can increase farmers' demand for commitment, the type of which depends on the forces that exist in our setting.

We test this prediction in a pre-registered field experiment in Uganda, where small-holder farmers are offered pay-at-harvest insurance for the next two consecutive seasons. We implement our experiment in partnership with Uganda's largest agricultural insurance association, which provides the insurance, and a crop offtaker, which is liable for the payment to the insurer and deducts premiums from farmers' harvest revenues. Farmers have the option to cancel the coverage for the second season after the first season has concluded and must decide upfront whether to retain this option to cancel or to forgo it. If a farmer forgoes the option, they commit to automatically renew the insurance for the second season. We set up the experiment so that we can rule out several purely mechanical explanations for commitment demand, such as peace-of-mind considerations, fear of forgetting to renew, hassle costs of renewal, or mechanical features of the product. Throughout the experiment, we collaborated closely with our field partners and invested substantial back-end effort, including extra group meetings and follow-up phone calls with farmers, to ensure comprehension and contract enforcement.

Guided by our conceptual framework, we designed a randomized intervention aimed to increase sophistication about state dependence and study its effects on demand for commitment. Before insurance and commitment choices are elicited, treated farmers are prompted to mentally simulate how good versus bad harvest experiences shape expectations, valuations of insurance, and decision quality, and to reflect on whether letting past states influence current choices is de-

[1]Part of our model proposes a way to understand sophistication about projection bias (Loewenstein et al., 2003).

sirable. These reflections are then linked to simple, non-prescriptive evidence from prior research on state-dependent insurance demand and decision-making under financial stress, and finally to a balanced discussion of the trade-offs between flexibility and commitment.[2]

Initial analysis provides descriptive evidence on the role of state dependence and on demand for commitment. First, treated farmers' responses when thinking through good- and bad-harvest scenarios point to both types of state dependence highlighted in our framework. Farmers report valuing insurance significantly more after a bad season than after a good season when answering these hypothetical scenarios ($p < 0.01$), which is consistent with state-dependent valuations driven by projection bias. They also report lower perceived decision-making quality after a bad season than after a good season ($p < 0.01$), in line with state-dependent decision-making driven by financial stress or scarcity. In contrast, farmers do not think a good (bad) harvest makes another good (bad) harvest more likely; if anything, they explicitly view belief in positive serial correlation as incorrect.

Second, we document substantial demand for commitment in the control group: 78% of farmers signed up for pay-at-harvest insurance for two consecutive seasons and 40% opted for commitment, meaning they preferred not to have the flexibility to cancel their insurance plan after the first season. When asked to explain their choice, 60% of committed farmers gave explicitly preventive reasons, such as "preventing cancellation" or "avoiding regret", which is consistent with concerns about internal conflict and a non-trivial degree of sophistication. Commitment appears to be consequential—renewal of insurance in the second season is 9 percentage points higher among those choosing commitment ($p < 0.01$)—and most farmers reported being satisfied with their commitment decision, suggesting welfare improvement.[3] While our design minimized many other reasons for commitment demand, the results of the control group do not explicitly demonstrate our proposed mechanism. There may be other possibilities that we cannot fully rule out. Therefore, we turn to our experimental intervention.

The intervention shifts farmers' sophistication about how harvest states shape future insurance decisions and, in turn, their normative attitudes toward state dependence as well as demand for commitment to purchase insurance in the second season. Manipulation-check questions on a normalized scale assessing whether "changing one's interest in insurance depending on the cur-

[2]This type of light-touch intervention based on the idea of mental simulation has recently been used in other settings, for example, see Alan and Ertac (2018); Ashraf et al. (2025); Augenblick et al. (2023); John and Orkin (2022); Orkin et al. (2023). See also Bordalo et al. (2025) for a memory-based model.

[3]Overall renewal is already high (89%) even without commitment, likely reflecting selection: farmers who intended to cancel are less likely to choose commitment ex ante. Moreover, pay-at-harvest insurance is perceived as a good deal in risky, liquidity-constrained environments. The overall levels are comparable to take-up of similar products in Kenya (Casaburi and Willis, 2018).

rent season" is (un)desirable suggest that the intervention shifts farmers' normative views against state dependence: treated farmers rate such state dependence as 0.29σ less desirable ($p < 0.05$).[4] By contrast, the treatment does not significantly affect trust in insurance, perceived ability to mentally simulate counterfactual states, self-reported frequency of contingent thinking, or the general propensity to intervene among those who already view state dependence as undesirable, suggesting that it operates by increasing sophistication rather than through these alternative channels.

The treatment further increases the share of farmers choosing commitment by 11 percentage points, from a control mean of 40% ($p < 0.05$). Consistent with our mechanism, when asked to explain their choice, a higher percentage of farmers in the treatment group than in the control group cite preventive reasons, but not other non-preventive reasons, indicating that the intervention raises sophistication about state dependence. Notably, the intervention has a small and non-significant impact on overall insurance uptake, mitigating concerns about alternative explanations for treatment effects on commitment, such as experimenter demand or enhanced valuation of the insurance.

Both forces of state dependence modeled in the conceptual framework—state-dependent insurance valuation and decision-making quality—appear to contribute to the demand for commitment. In our experiment, we offer state-contingent commitment: farmers can choose not only whether to commit, but also whether that commitment should bind after a payout (i.e., a "bad state"), no payout (a "good state") or in both harvest states. According to our conceptual framework, farmers primarily worried about state-dependent valuations may prefer a commitment that binds only after a good harvest, while retaining flexibility after a bad harvest. By contrast, farmers concerned about state-dependent decision quality may want commitment precisely for those states in which they expect their decision-making capacity to be impaired. Farmers concerned about both may want commitment in both states. In our data, most farmers who choose commitment do so in a way that binds in both states (26% of the entire sample), consistent with many of them being averse to both forms of future state dependence. A non-trivial minority, however, opt for good-state-only commitment (5%) or bad-state-only commitment (8%), indicating meaningful heterogeneity in which types of concerns are most salient.

Treatment heterogeneity further supports the above interpretation and shows that farmers'

[4]We ask these manipulation-check questions only to the treatment group and randomize whether they are asked before or after the intervention. We adopt this design to limit spillovers, since the manipulation-checks themselves mention harvest states and could therefore act as a (weaker) form of treatment. In this sense, they can be viewed as part of the intervention. In the manipulation-check questions, we also explore other potential channels that might be inadvertently affected by the treatment.

primary concerns differ—leading them to demand different forms of state-contingent commitment. Specifically, farmers with higher pre-treatment projection bias, measured as in Zhang (2025), are relatively more likely to demand commitment that binds after a good harvest, whereas financially stressed farmers, measured as in Sergeyev et al. (2025), exhibit a stronger tendency to demand commitment that binds after a bad harvest. We also discuss other explanations, such as costly decision-making, the failure of contingent thinking, and channels specific to our insurance product or setting, and show that none of these explanations can accommodate the full set of results without invoking some forms of state dependence.

While we study commitment in the context of crop insurance, the mechanism applies broadly to decisions where valuations or decision quality depend on realized states. In such settings—labor markets, credit markets, health behavior, or education policy—the dominant argument emphasizes the value of flexibility: individuals should retain discretion to respond optimally once uncertainty is resolved. However, our results show that when people anticipate distorted decision-making under certain states, flexibility can backfire. For instance, unemployed workers under financial stress may prefer structured job-search commitments; patients expecting stress-driven lapses may value commitment to treatment adherence; or students facing recurrent shocks may benefit from binding enrollment or progress requirements. In contrast to standard prescriptions that value flexibility unconditionally, our evidence highlights the importance of understanding agents' sophistication and normative views toward their own state dependence—since for some, (state-contingent) commitment can be welfare-improving. These implications are especially important in environments with shocks, even in the absence of self-control problems or present bias. We provide a broader discussion of these implications in the conclusion.

We contribute to a large literature on commitment devices (e.g., Bryan et al., 2010; Carrera et al., 2022; Della Vigna and Malmendier, 2006; Ericson and Laibson, 2019; John, 2020; Sadoff et al., 2020; Schilbach, 2019) by providing field evidence of commitment demand in an environment where dynamically inconsistent time preferences, i.e., present bias—the primary mechanism proposed for commitment demand at least within economics (Laibson, 1997; O'Donoghue and Rabin, 1999)—are ruled out by design. In doing so, our results add to recent evidence on commitment and dynamic inconsistency in other domains, such as moral decisions (Saccardo and Serra-Garcia, 2023) and risky choices (Heimer et al., 2025). In controlled settings, Toussaert (2018) documents commitment demand with dynamically consistent preferences in support of the dual-self representation (Gul and Pesendorfer, 2001), and Dykstra (2025) documents that commitment demand can differ across payday cycles. By identifying a specific atemporal mechanism that drives commitment demand, our findings complement evidence from controlled settings showing

that intertemporal choice can be influenced by bounded rationality and perceptions (e.g., Enke et al., 2025; Imas et al., 2022; Zhang, 2025).

On the applied side, we contribute to a large literature considering determinants of insurance demand, especially its sensitivity to recent events (e.g., Cai et al., 2020; Cole et al., 2014; Gallagher, 2014; Karlan et al., 2014), salient environmental factors such as pollution (Chang et al., 2018), experience with insurance (Cai and Song, 2017), timing of the payment (Casaburi and Willis, 2018), and clearer displays of payoff consequences (Samek and Sydnor, 2025), among others. On top of demonstrating state dependence in our setting, we focus on sophistication about the existence of such behavior, and, correspondingly, the potential for commitment devices to boost insurance demand. Moreover, while much of the existing research has focused on the initial take-up, we instead focus on the renewal decision in a multi-season context, similarly to Cai et al. (2020). Specifically, we examine whether farmers wish to commit to renewing their insurance, which allows us to investigate a novel mechanism: sophistication about (anticipated) state dependence. This factor, which is mechanically less relevant for one-time insurance decisions, appears to play a critical role in multi-season settings.

2. Conceptual Framework

In this section, we develop a simple model to demonstrate how *undesirable* state dependence can push against the option value benefit of flexibility and generate demand for commitment.[5]

We do so in the context of our experimental setting, where a farmer decides whether to sign up for pay-at-harvest insurance for the next two agricultural seasons. The state in question is thus one of the most salient states of farmers' economic lives: the harvest.[6] The key decision is whether, upfront, farmers choose to commit to insurance for the second season or to maintain flexibility to decide after observing the first season's harvest. Since pay-at-harvest insurance only involves cross-state transfers—removing any role for time preferences—its demand depends only on beliefs about future (decision) utility, not current (experience) utility.[7]

Our empirical setting motivates two broad classes of forces that can generate *undesirable* state dependence. First, *state-dependent valuations*, where the (predicted) future self's valuation of an

[5] This trade-off has been formalized in the context of temptation and self control, see Amador et al. (2006).

[6] We consider the harvest to be the most relevant state as it influences income, liquidity, food consumption, and many other important decisions in agriculture (e.g., see Fink et al., 2020). In practice, this can be approximated by weather conditions, such as temperature and/or rainfall, both of which predict agricultural performance. Of course, other states may also be relevant, and it is ultimately an empirical question which states have first-order effects. In principle, our mechanism of sophistication should apply to other types of states as well.

[7] See Kahneman et al. (1997) and the references therein for discussions about decision utility and experienced utility.

option changes with the realized state, in ways the current self would not endorse. A motivating example is projection bias (Loewenstein et al., 2003), whereby people project valuations from their current state onto valuations when making decisions under potentially different states in the future, which has been argued to affect insurance demand in other settings (Chang et al., 2018; Kremer et al., 2019). Second, *state-dependent decision quality*, where the ability to make good choices is impaired in certain states. A motivating example is the scarcity effect, whereby cognition is impaired by pressing financial concerns when money is tight (Carvalho et al., 2024; Mullainathan and Shafir, 2013).[8]

We proceed in three steps. First, we formalize the classic option-value argument favoring flexibility. Then, we introduce each undesirable force and define naivety and sophistication about them—important both to characterize decision-making and to understand our experimental treatment, which aimed to induce sophistication. Finally, we combine both forces to show how, for sophisticated individuals, commitment can become attractive precisely where standard theory emphasizes the value of flexibility.

2.1. Basic Setup

Time and states. There are three time periods, $t \in \{0,1,2\}$, representing agricultural seasons, and no time discounting. Within each period, decisions are made at the start of the period, then a state $s_t \in \{G,B\}$ is realized, representing a good or bad harvest, with states independently identically distributed with probabilities p_G and $p_B = 1 - p_G$.[9] We denote by h_t the vector of state realizations up to the start of period t, $h_t = \{s_1,..,s_{t-1}\}$ and assume that $h_0 = \emptyset$.

Insurance. Insurance is available to farmers for periods 1 and 2, with $I_t \in \{0,1\}$ denoting whether farmers are insured for period t. Insurance is a purely cross-state transfer; indeed there are no intertemporal transfers in the model.[10] The (ex post) value of insurance, net of the premium payment $\pi > 0$, depends on the realized state and potentially also the history:[11]

$$\Delta(s_t,h_t) \equiv u(I_t = 1;s_t,h_t) - \pi - u(I_t = 0;s_t,h_t) \tag{1}$$

[8]While these two forces are intended to capture broad classes of undesirable state dependence, we do not claim that the framework spans all forms studied in the literature. In particular, we focus on the *instrumental* role of states—how realized states shape valuations and decision quality—rather than on preferences over states (or over the act of choosing in different states) per se (e.g., Bernheim et al., 2024).

[9]To demonstrate our force cleanly, we assume away state serial correlations. In practice, the presence of such correlations would strengthen the argument for option value and push against commitment.

[10] This removes demand for commitment that could arise from intertemporal preferences, and removes any ex-ante value of insurance, for instance through changing investment decisions.

[11]For simplicity we denote $\Delta(s_0) \equiv \Delta(s_0,\emptyset)$ throughout. For an example of why the benefit of insurance may depend on the history, farmers may have more wealth and hence less need for insurance after multiple good harvests.

We naturally assume that, for each h_t,

$$\Delta(B, h_t) > 0 > \Delta(G, h_t)$$

Faced with a decision of whether to buy insurance for period t at the beginning of period $\tau \leq t$, the agent would thus buy insurance if

$$\mathbb{E}_\tau[\Delta(s_t, h_t)] \geq 0$$

where $\mathbb{E}_\tau[\cdot]$ denotes their beliefs at time τ.

Decisions. The decisions in the model reflect those in the experiment. State s_0 is realized prior to the intervention, and farmers do not make a decision in period $t = 0$.

Self 1 has two decisions to make at the start of $t = 1$ (before observing s_1). They decide whether to take up insurance for period $t = 1$, $I_1 \in \{0, 1\}$. Then, only if $I_1 = 1$, they decide whether to commit to insurance for period $t = 2$. Specifically, they decide between: flexibility - defer the choice of $I_2 \in \{0, 1\}$ to Self 2; or commitment - commit to $I_2 = 1$

Self 2, if Self 1 chose flexibility, has one decision to make at the start of $t = 2$ (after observing s_1, i.e., given h_2): whether to take up insurance for period $t = 2, I_2 \in \{0, 1\}$.

Our framework could in principle allow a richer menu of insurance choices, including (i) a symmetric commitment option to *not* insure (commit to $I_2 = 0$) and (ii) renewal-stage decision of I_2 even when $I_1 = 0$. Both extensions would operate through the same conceptual channel, and a fully general model could study optimal choices over the entire menu. We do not pursue these extensions here, and instead focus on the empirically more relevant tension between commitment and flexibility, conditional on initial insurance take-up. This restriction is motivated by implementation considerations: in our context of widespread underinsurance, offering commitment to forgo insurance is ethically questionable; many insurance products require continuous coverage, making "skip-then-enroll" an unnatural feature; and limiting the menu reduces choice complexity, which is particularly important in our setting.

2.2. The Option Value of Flexibility

Standard economic intuition tells us that state dependence generates a benefit from flexibility, in the form of option value, because Self 2 can condition on additional information. This can be seen in our framework by comparing Self 1 and Self 2's decisions if faced with the choice to purchase insurance for period 2.

Self 1 has not yet observed s_1, so, if she had to decide whether to buy insurance in period 2,

she would do so based on whether

$$\mathbb{E}_1[\Delta(s_2, h_2)] > 0$$

Self 2, in contrast, has observed s_1 (i.e., h_2), so she would decide about I_2 based on whether, conditional on the realized s_1

$$\mathbb{E}_2[\Delta(s_2, h_2)] > 0$$

The option value of flexibility in this rational benchmark can thus be defined as

$$OV(h_1) = \mathbb{E}_1[\max\{\mathbb{E}_2[\Delta(s_2, h_2) \mid h_2], 0\}] - \max\{\mathbb{E}_1[\Delta(s_2, h_2)], 0\} \geq 0 \tag{2}$$

In this rational benchmark, the option value is weakly positive. It is strictly positive if the realized s_1 can change the sign of the expected value of insurance, in which case Self 1 will prefer not to commit, instead allowing Self 2 the flexibility to decide on I_2.

2.3. Undesirable State Dependence through (Predicted) Valuations

We first introduce undesirable state dependence that operates through (predicted) *valuations*. The motivating example is projection bias (Loewenstein et al., 2003), the tendency for agents to project their current utility in the current state when predicting their future utility in a different state. This could lead to undervaluation of insurance following a good harvest.

2.3.1. State-dependent valuations

We model state-dependent valuations following the formulation of projection bias (Loewenstein et al., 2003) [12] When forecasting the value of insurance for period t at time $\tau \leq t$, the agent with bias $\alpha \in [0, 1]$ uses a convex combination of the current perceived utility of insurance—the (ex post) benefit they would have received from insurance the previous season—and the benchmark perceived value of insurance. Thus, the predicted value of insurance in future state s_t is:

$$\widehat{\Delta}^t_\tau(h_\tau, s_t) := \underbrace{\alpha\, \Delta(s_{\tau-1}, h_{\tau-1})}_{\text{current taste at } \tau} + \underbrace{(1-\alpha)\, \Delta(s_t, h_t)}_{\text{(perceived) benchmark}} . \tag{3}$$

Importantly, for our application, we think of it as belief about future preferences but remain agnostic on whether $\widehat{\Delta}^t_\tau(h_\tau)$ is a misbelief or not ex ante. That is, we treat the above formulation as a reduced-form intended to capture a broad class of forces that can make valuation of insurance excessively anchored to the (most recent) harvest state, such as false or justified beliefs about

[12] For empirical evidence of projection bias in durable-goods consumption, see Conlin et al. (2007) and Busse et al. (2015), among others.

positive serial correlation in harvest states, temptation, contextual cues, or outcome bias, and so on.

Self 1, if they had to decide whether to buy insurance for period 2, would do so based on their prediction of the expected value of insurance for $t = 2$:

$$\mathbb{E}_1[\widehat{\Delta}_1^2(h_1)] = \alpha\,\Delta(s_0) + (1-\alpha)\mathbb{E}_1[\Delta(s_2, h_2)],$$

Self 2, facing the same decision, would have observed s_1 and would base their decision on it. They would thus have an informational advantage, as before, but now they would also base their decision on potentially different valuation of insurance—that based upon the state realized in period 1:

$$\mathbb{E}_2[\widehat{\Delta}_2^2(h_2)] = \alpha\,\Delta(s_1, h_1) + (1-\alpha)\mathbb{E}_2[\Delta(s_2, h_2)].$$

Thus, relative to the benchmark, Self 2 may under-value insurance after a good harvest $s_1 = G$ (since $\Delta(G, h_1) < 0$). The choice of Self 1's decision to either commit to buying insurance ($I_2 = 1$) or defer this choice to Self 2 is thus a trade-off between the option value of the extra information that arrives as s_1 is realized versus Self 1's beliefs about the potentially undesirable change in Self 2's valuations of insurance.

2.3.2. Naivety and sophistication about state-dependent valuations

Self 1's beliefs about how Self 2 will value insurance, and whether that valuation conflicts with their own (predicted) valuation, are central to Self 1's commitment decision. These beliefs will be directly targeted in our experiment later on. To proceed, we need to define sophistication over state-dependent (predicted) valuations, which proves to be nuanced because it involves beliefs about beliefs. Before presenting our approach, we briefly review how naivete and sophistication are defined in the canonical model of present bias, and contrast that setting with ours.

In the β–δ model of present bias (Laibson, 1997; O'Donoghue and Rabin, 1999), the bias ($\beta < 1$) affects experienced utility. Since it affects preferences directly, when making intertemporal decisions, the current self cares about *first-order* beliefs about whether future selves will have different preferences when they become "present". Sophistication is therefore a first-order object. In our setting, in contrast, state-dependence enters through a distortion in *beliefs about* future utility: the distorted object is the forecast of the future utility of insurance, rather than the future utility itself. In addition, since insurance decisions are always about future payments and payouts, commitment to future insurance depends on beliefs about its future valuation. Sophistication is thus inherently a *second-order* object—we are interested in individuals' beliefs about their own

first-order (potentially distorted) beliefs in future periods.

Above discussion highlights a conceptual separation between (i) awareness of one's *current* state-dependent valuations and (ii) sophistication about one's *future* state-dependent valuations; in the $\beta-\delta$ model, in contrast, there is no analogous empirical role for (i) since the period-t objective already incorporates present bias and sophistication is defined only over future selves.[13] We focus on explicitly modeling (ii) and do not separately parameterize (i) sophistication about *current* state-dependent valuations. To the extent that awareness today induces partial correction or counteracting behavior, this would show up as a reduced-form attenuation of the current projection weight α.[14] Since our focus is on commitment—which depends on beliefs about how renewal-stage valuation will differ from today's benchmark—it is the sophistication about the future tendency that is central for commitment demand, whereas changes in current awareness primarily shift the level of state dependence in valuations today.

To model this (second-order) sophistication, we therefore introduce $\lambda_1 \in [0,1]$ to capture Self 1's degree of sophistication about *future* state-dependent valuations.

- α-**Naivety** ($\lambda_1 = 0$): Self 1 believes Self 2 will evaluate insurance the same way as Self 1 does at $t=1$, and thus does not anticipate any impact of the realized s_1 on renewal-stage valuation.

- α-**Sophistication** ($\lambda_1 > 0$): Self 1 anticipates that renewal-stage valuation will be additionally pulled toward the realized renewal state s_1, *over and above* Self 1's current forecast.

Formally, Self 1 believes that the Self 2's renewal-stage valuation places weight $\hat{\alpha} := \lambda_1\alpha \in [0,\alpha]$ on $\Delta(s_1,h_1)$ and the remaining weight on Self 1's own (possibly distorted) first-order prediction $\mathbb{E}_1[\widehat{\Delta}_1^2(h_1)]$. Self 1's belief about Self 2's valuation of insurance can be written as

$$\begin{aligned}\widehat{\widehat{\Delta}}_2^2(h_2) &= \hat{\alpha}\,\Delta(s_1,h_1) + (1-\hat{\alpha})\mathbb{E}_1[\widehat{\Delta}_1^2(h_1)] \\ &= \lambda_1\alpha\,\Delta(s_1,h_1) + (1-\lambda_1\alpha)(\alpha\,\Delta(s_0) + (1-\alpha)\mathbb{E}_1[\Delta(s_2,h_2)])\end{aligned} \tag{4}$$

This formulation yields a recursive notion of sophistication about state-dependent valuations. λ_1 is Self 1's second-order belief about Self 2's valuation at the *future* renewal stage. Self 1 may anticipate that Self 2 will place additional weight on the realized renewal state s_1 through $\hat{\alpha} =$

[13] Loewenstein et al. (2003) emphasize that sophistication about projection is subtle: people may commit mispredictions on a case-by-case basis while nevertheless having meta-awareness of their general tendency to do so.

[14] In the empirical section, we return to the possibility that an intervention designed to increase sophistication about future state dependence may also affect sophistication about the current tendency and hence the effective α, and we discuss how this would alter interpretation.

$\lambda_1\alpha$. However, we assume that this anticipation does not remove Self 1's own first-order state dependence in forming the benchmark prediction, so the residual weight $(1-\hat{\alpha})$ falls on Self 1's (possibly distorted) first-order forecast $\mathbb{E}_1[\widehat{\Delta}_1^2(h_1)]$ rather than on a fully rational benchmark.[15]

Concretely, when $\lambda_1 = 0$, Self 1 expects no impact of the realized state s_1 at renewal and thus predicts that Self 2 will evaluate insurance using the same forecasting rule as at $t = 1$. On the other hand, when $\lambda_1 > 0$, Self 1 expects Self 2's renewal-stage valuation to be influenced by the realized state s_1 *relative to Self 1's period-1 benchmark*, implying that even conditional on the same realized good harvest state, Self 1 anticipates Self 2 to be excessively state-sensitive and therefore more likely to undervalue insurance after $s_1 = G$.[16]

2.4. Undesirable State Dependence through Decision Quality

We next introduce undesirable state dependence that operates through *decision quality*: the reliability with which the farmer implements the insurance decision based on his evaluation may itself depend on the harvest state. A motivating mechanism is scarcity or financial stress—after a poor harvest, pressing liquidity concerns can impair attention or deliberation (Carvalho et al., 2024; Mullainathan and Shafir, 2013).[17]

2.4.1. State-dependent decision quality

We model state-dependent decision quality as an idiosyncratic decision-quality shock that is realized at the beginning of each period and affects only the *contemporaneous* insurance decision. Specifically, recall that in period $t \in \{1,2\}$, Self t evaluates whether to buy insurance for period t based on the perceived value $\mathbb{E}_t[\widehat{\Delta}_t^t(s_t,h_t)]$, but this perceived value may be flipped in sign by a tremble. Let $\xi_t \in \{+1,-1\}$ denote the tremble, so that the object governing the period-t insurance decision for period-t becomes

$$\xi_t \cdot \mathbb{E}_t[\widehat{\Delta}_t^t(h_t)].$$

[15] This differs from the β–δ model, where naivety is often parameterized as believing $\hat{\beta} = 1$, which simultaneously (and mechanically) implies behavior according to a time-consistent benchmark. In our environment, such a formulation would be conceptually awkward: it would amount to Self 1 believing that Self 2 will form "rational" forecasts that Self 1 does not himself hold today. Our formulation instead makes naivety mean "the future self uses my current forecasting rule," whether or not that rule is distorted.

[16] An alternative formulation of sophistication would focus solely on *cross-state* conflict: e.g., how a Self in state G predicts valuation in state B, and vice versa. Implementing this approach would place the residual weight $(1-\hat{\alpha})$ on a rational benchmark. While this formulation captures cross-state conflict, it does not generate the *within-state*, across-time conflict that arises from the recursive structure above. Taken literally in our setting, it would also correspond to a more extreme form of sophistication: Self 1 fully corrects (or debiases) their own current forecasting distortion, yet still expects Self 2 to be subject to it at renewal. We adopt the recursive formulation, which both reflects the inherently intertemporal nature of the commitment decision and yields a more realistic notion of sophistication.

[17] Scarcity has also been shown to improve rationality in some exchange settings (Fehr et al., 2022).

We allow the probability of the flip to depend on the relevant harvest state. While such a tremble could in principle occur at any state, motivated by empirical findings on scarcity and financial stress, we assume that the shock is more likely to happen after a bad state. For simplicity, we normalize the probability of a good state shock to zero, i.e., after a good harvest decision quality is essentially unimpaired.

$$\Pr(\xi_t = -1 \mid s_{t-1}) = \mu_{s_{t-1}}, \qquad \mu_G \approx 0, \quad \mu_B > 0.$$

These probabilities therefore capture the idea that scarcity and financial stress in bad states may impair attention or deliberation, causing the agent to occasionally make decisions about insurance that he himself deems inferior.

Importantly, we assume that the decision-quality shock affects only the agent's *contemporaneous* insurance decision but does not distort the evaluation of other objects, such as the desirability of commitment, the reliability of one's judgment, or the interpretation of the state itself.[18] Under this restriction, the decision-quality shock at $t = 1$ primarily introduces noise into insurance take-up for $t = 1$, whereas the consequences of decision-quality shocks at $t = 2$ are central for the value of flexibility and thus for demand for commitment.[19]

2.4.2. Naivety and sophistication about state-dependent decision quality

Central to Self 1's decision to commit is his belief about the reliability of Self 2's renewal-stage decision. We therefore introduce $\lambda_2 \in [0, 1]$ to capture Self 1's degree of sophistication about *future* state-dependent decision quality.[20] The parameter λ_2 scales beliefs about the probability that the renewal-stage evaluation is flipped.

- ξ-**Naivety** ($\lambda_2 = 0$): Self 1 expects renewal-stage decisions to implement renewal-stage valuations reliably, i.e., he believes $\xi_2 = +1$ with probability one.
- ξ-**Sophistication** ($\lambda_2 > 0$): Self 1 anticipates that renewal-stage decision quality may be impaired, especially in bad states, and therefore believes the renewal-stage flip probability is $\lambda_2 \mu_{s_1}$.

[18] This is the case, for instance, if Self 1 chooses between commitment and flexibility in a relatively "cold" and deliberative environment. At this time, the farmer is not under immediate liquidity pressure and hence can plan without being influenced by the decision quality shock.

[19] Since the commitment choice is elicited only conditional on $I_1 = 1$. If decision-quality shocks at $t = 1$ reduce take-up of I_1, then some individuals who would have demanded commitment had they reached the commitment stage are not observed as commitment choosers. Consequently, the observed prevalence of commitment among decision-makers naturally represents a lower bound on the population's unconditional commitment demand.

[20] The distortion to decision-quality is modeled as part of the period-t objective, just like in the β–δ model. Therefore, sophistication about current state-dependent decision quality has no empirical content.

Formally, under Self 1's beliefs, the renewal-stage evaluation relevant for I_2 is

$$\widetilde{\Delta}_2^2(h_2) := \begin{cases} \widehat{\widehat{\Delta}}_2^2(h_2) & \text{with probability } 1-\lambda_2\mu_{s_1}, \\ -\widehat{\widehat{\Delta}}_2^2(h_2) & \text{with probability } \lambda_2\mu_{s_1}, \end{cases} \tag{5}$$

where $\widehat{\widehat{\Delta}}_2^2(h_2)$ denotes Self 1's belief about Self 2's renewal-stage valuation absent decision-quality problems (as defined in the previous subsection). Increasing λ_2 therefore makes Self 1 expect flexibility to be less reliable precisely in bad states, increasing demand for commitment, particularly for ones that bind in the bad state.

2.5. Commitment vs. Flexibility

Formally, incorporating both types of undesirable state dependence and the corresponding α-sophistication (λ_1) and ξ-sophistication (λ_2), Self 1's belief about Self 2's valuation of insurance at the renewal stage is

$$\widetilde{\Delta}_2^2(h_2) = \begin{cases} \lambda_1\alpha\,\Delta(s_1,h_1) + (1-\lambda_1\alpha)(\alpha\,\Delta(s_0) + (1-\alpha)\mathbb{E}_1[\Delta(s_2,h_2)]) & \text{prob. } 1-\lambda_2\mu_{s_1}, \\ -\lambda_1\alpha\,\Delta(s_1,h_1) - (1-\lambda_1\alpha)(\alpha\,\Delta(s_0) + (1-\alpha)\mathbb{E}_1[\Delta(s_2,h_2)]) & \text{prob. } \lambda_2\mu_{s_1}. \end{cases} \tag{6}$$

Self 1 compares the expected payoff consequences of allowing renewal-stage flexibility versus committing to $I_2 = 1$ at $t = 1$. The key trade-off is between (i) the informational advantage of deciding at $t = 2$ (conditioning on s_1), and (ii) the possibility that renewal-stage choices are distorted either because renewal-stage valuations become excessively influenced by s_1 (e.g., undervaluing insurance after a good harvest) or because renewal-stage decision quality is impaired (e.g., worse decision quality after a bad harvest).

2.5.1. Full commitment

We first consider the decision about full commitment. To capture the trade-off above, the *perceived* option value of flexibility is now given by

$$\widetilde{OV}(h_1;\lambda_1,\lambda_2) = \mathbb{E}_1[\mathbb{E}_2[\widehat{\Delta}_1^2(h_1)\mathbf{1}\{\widetilde{\Delta}_2^2(h_2) > 0\} \mid h_2]] - \mathbb{E}_1[\widehat{\Delta}_1^2(h_1)\mathbf{1}\{\widehat{\Delta}_1^2(h_1) > 0\}] \tag{7}$$

This perceived option value now balances two potential forces, and hence may be positive or negative from Self 1's perspective. As before, there is an informational advantage of making the decision in period 2 because Self 2's decision can depend on s_1. However, Self 2 is now basing that decision upon $\widehat{\widehat{\Delta}}_2^2$ rather than $\widehat{\Delta}_1^2$, and hence may not purchase insurance when Self 1 would have wanted to, or vice versa. As a result, Self 1 strictly prefers commitment to flexibility if $\widetilde{OV}(h_1;\lambda_1,\lambda_2) < 0$.

Proposition 1. *i) Under full naivete ($\lambda_1 = \lambda_2 = 0$), Self 1 believes that Self 2 will make decisions exactly as Self 1 would, i.e., $\widetilde{\Delta}_2^2(.) = \widehat{\Delta}_1^2(.)$. Hence, the perceived option value is weakly positive, and Self 1 does not wish to commit:*

$$\widetilde{OV}(h_1; 0, 0) \geq 0$$

ii) Starting from full naivety, inducing sophistication decreases the perceived option value of flexibility and can therefore generate demand for commitment:

$$\frac{\partial}{\partial \lambda_1} \widetilde{OV}(h_1; \lambda_1, \lambda_2)|_{(h_1;0,0)} < 0$$
$$\frac{\partial}{\partial \lambda_2} \widetilde{OV}(h_1; \lambda_1, \lambda_2)|_{(h_1;0,0)} < 0$$

Proposition 1 states that under full naivety ($\lambda_1 = \lambda_2 = 0$), flexibility is weakly valuable because Self 1 expects the future self to behave exactly the same way. When undesirable state dependence is anticipated, sophistication can generate demand for commitment. Note that this result characterizes the marginal effects on commitment *locally* around full naivety $(\lambda_1, \lambda_2) = (0, 0)$. Away from this point, the two forces can interact because decision-quality shocks apply to a renewal-stage valuation that itself shifts with λ_1. In extreme cases, there may exist histories for which renewal-stage tremble partially offsets severe valuation distortions, so global monotonicity need not obtain. Establishing a global version of the proposition would therefore require additional structure on how valuation of insurance varies with history, which could shed light on the circumstances under which such interaction effects are empirically relevant. Given the paper's empirical focus, we retain the local results as a simple but sufficiently rich starting point throughout.

2.5.2. State-contingent commitment

In addition to allowing Self 1 to commit to purchasing insurance for period 2 regardless of the state that is subsequently revealed at the end of period 1, we could also allow them to make *state-contingent* commitments. Namely, we allow them to choose to only commit to purchasing insurance if $s_1 = G$, or if $s_1 = B$, thus maintaining flexibility to cancel insurance in the other state. Denote by $\widetilde{OV}^{s_1}$ the perceived option value of flexibility in state s_1, such that, for each s_1 Self 1 will choose to commit themselves to buying insurance in state s_1 if $\widetilde{OV}^{s_1}(h_1) < 0$.[21] Importantly for our empirical tests, sophistication about the two forms of state dependence affects demand for state-contingent commitment differently by state:

Proposition 2. *i) Sophistication about state-dependent valuations (λ_1) decreases the perceived op-*

[21] We note that, in the model, there is no option value benefit of allowing for flexibility once we allow for state-contingent commitment, but for simplicity we keep the same notation and could imagine, for instance, an orthogonal state realization which generates option value.

tion value of flexibility particularly in the future good state and can generate demand for commitment when $s_1 = G$:[22]

$$\frac{\partial}{\partial \lambda_1} \widetilde{OV}^G(h_1; \lambda_1, \lambda_2)|_{(h_1;0,0)} < 0$$

ii) Sophistication about state-dependent decision quality (λ_2) decreases the perceived option value particularly in the future bad state and can generate demand for commitment when $s_1 = B$:

$$\frac{\partial}{\partial \lambda_2} \widetilde{OV}^B(h_1; \lambda_1, \lambda_2)|_{(h_1;0,0)} < 0$$
$$\frac{\partial}{\partial \lambda_2} \widetilde{OV}^G(h_1; \lambda_1, \lambda_2)|_{(h_1;0,0)} = 0$$

Proposition 2 characterizes sharper predictions about the form of commitment and connects them directly to the two types of undesirable state dependence. Specifically, increasing α-sophistication about state-dependent valuations (λ_1) increases demand for commitment in the future good state ($s_1 = G$), where the renewal-stage valuation is predicted to undervalue insurance. This force may be particularly strong among those indeed subject to state-dependent valuations, i.e., high-α individuals. Conversely, increasing ξ-sophistication about state-dependent decision quality (λ_2) increases demand for commitment in the future bad state ($s_1 = B$), where the renewal-stage decision is predicted to be less reliable. This force may be particularly strong among those indeed subject to state-dependent decision qualities, i.e., high-μ individuals.

3. Study Setting and Experimental Design

In this section, we first introduce the study setting and the project partners. We then describe the crop insurance product and the randomized intervention. We conclude by providing summary statistics and balance.

3.1. Setting: Farming Activities and Project Partners

Our experiment takes place in rural villages in Western Uganda. Farming in the region is mostly smallholder based, centered around the production of maize and beans, with a small share of households producing other crops. Agriculture is the main economic activity and the decisions we study—whether to insure and whether to restrict future flexibility—are therefore high stakes.

There are two growing seasons per year. The long-rain season runs approximately from March to July; the short-rain season runs from August to December/January. Due to climate patterns, expected yields are higher in the first season. The experiment takes place during the short-rain

[22] As discussed earlier, if we were to allow commitment not to insure, increasing λ_1 can generate demand for such commitment particularly in the future bad states.

season of 2024 (August–December) and the long-rain season of 2025 (March–July).

To offer crop insurance, we partner with Uganda's largest agricultural insurance association, the Agricultural Insurance Consortium (AIC), a coalition of thirteen insurance companies granted the exclusive license to operate crop insurance in Uganda. In addition, we collaborate with a crop purchase company, Yield Harvest—henceforth YH— which buys farmers' crops at harvest time and provides inputs on credit to a subset of farmers, recouping these costs directly from farmers' harvest revenues. Sales often occur at the group level, with YH agents visiting a central collection point where farmers and intermediaries deliver their crops. While YH has long-standing relationships with many of the farmer groups included in the experiment, other crop buyers operate in the area, limiting YH's market power.

3.2. Study Sample

YH initially provided an unverified list of contract farmers. We conducted short verification calls to confirm each farmer's intention to sell to YH over the next two seasons. This yielded a pool of approximately 500 eligible farmers. Before individual visits, we mobilized these farmers to attend group meetings. At these meetings, the insurance company gave a general introduction to the product, distributed a toll-free helpline number, and informed farmers about the upcoming household visits at which they would make their insurance decisions.

Not all farmers on the initial lists could be reached during baseline field visits. After the initial round of fieldwork, we defined a final experimental sample of 374 farmers, organized into 32 groups across six districts (Kabarole, Kamwenge, Kasese, Kikuube, Kyegegwa, Rukungiri). Average farm size is 2.8 acres (median 2 acres). 282 farmers report growing maize and 328 report growing beans. These farmers are experienced smallholders with ample exposure to harvest risk but little prior familiarity with crop insurance. The insurance and commitment decisions therefore involve meaningful financial stakes.

Given the importance of comprehension and enforceability in our setting, we also pre-registered a "high-quality" subsample. Farmers qualify for this subsample if they: (i) attended the group meetings, (ii) correctly answered all comprehension questions on their first attempt—covering both insurance in general and the pay-at-harvest timing of the product—and (iii) reported being "likely" or "very likely" to sell to YH in each of the next two seasons in separate verification calls. In Appendix B, Table B1 shows that 67% of farmers meet all of these criteria and breaks down the percentage by criterion. Throughout the analysis, we report results for both the full sample and the high-quality subsample to assess robustness and mitigate concerns about mechanical drivers of commitment (e.g., misunderstanding).

3.3. The Insurance Product

Farmers were offered a *pay-at-harvest* (Casaburi and Willis, 2018) index insurance for one acre of land. This product allows interested producers to pay premiums at harvest time through a deduction from crop revenues, rather than upfront at planting time. By aligning the timing of payments and payouts, pay-at-harvest insurance removes the intertemporal transfer and the role of present bias within each season, a feature that is critical for testing our proposed hypothesis of commitment against state dependence. Only 1% of the farmers had purchased crop insurance before our experiment.

In our context, farmers are offered pay-at-harvest insurance for two consecutive crop seasons. For each season, the premium is deducted from harvest revenues at the end of that season. The value of the premium is identical across the two insured seasons, and farmers are explicitly assured that the insurer will not change its terms midway and that the single-season premium will remain constant over both seasons. From the perspective of the insurer, the two seasons differ primarily in the realized harvest state. Purchasing the crop insurance does not affect other terms of the farmer relationship with YH (e.g., crop purchase, input provision).

The insurance contract is between AIC and YH, which harnesses its relationship and network of farmer agents for premium collection and payout distribution. In both study seasons, YH paid the entire premium amount to AIC within the specified time frame. According to YH's administrative data, it purchased crops from 83% of farmers who bought insurance during the experiment in season 1 and 85% in season 2.[23] However, as transactions occur through group sales and intermediary agents, these numbers should be taken cautiously. Farmers who did not sell to YH did not receive a payout in that season. Farmers who did not sell to YH in the first season were still eligible for insurance in the second season.

Farmers can purchase a fixed insurance package, whose premium for one season is USH 60,300 (approximately USD 17), equivalent to approximately 5% (10%) of the mean (median) seasonal farm revenues. Approximately two-thirds of insurance policies cover maize production, with the remainder covering beans and rice (the latter only in the first experimental season). Payouts depend on an area-yield index, which is based on a crop-cutting exercise. Payouts are triggered if the realized yield is below 70% of the season-crop-specific expected yield, which is approximately twice as large in the second experimental season as in the first one. If the payout is triggered, its amount is equal to the product of the percent yield gap and a pre-specified amount, which

[23] Farmers may not sell to YH because they consume their production, they sell to other buyers, or because YH did not visit their village in time. This purchase rate is higher than for farmers who did not buy the insurance.

is fixed ex ante and does not depend on prices or other season-specific realizations. In the first experimental season, 53% of insured households received a payout, worth on average twice the premium value. In the second experimental season, 8% of insured households received a payout, worth on average 12% of the premium.

3.4. Insurance Purchase Decisions

In August 2024, before the first experimental season, eligible farmers were visited at home, completed a baseline survey (described in more detail in Section 3.7), and were offered the two-season pay-at-harvest insurance contract. Farmers then made two main choices:

1. **Insurance take-up**: whether to enroll in the two-season pay-at-harvest insurance product.
2. **Commitment**: conditional on enrolling, whether to retain or forgo the option to cancel second-season coverage after observing the first-season harvest and payout. In addition, farmers could also choose to commit only if they received or did not receive a payout after the first season, which we refer to as *state-contingent commitment*.

We framed commitment as a decision to forego the cancellation option, rather than as a decision to buy in advance for the second season, because cancellation makes the availability of second-season insurance explicit and contractually guaranteed, while the decision of buying in advance for the second season would hinge on farmers' beliefs about future access to the product at the end of the first season.

The cancellation option is financially costless: a farmer retaining the cancellation option can decide at the end of Season 1 whether to stop or continue insurance in Season 2. If she forgoes it, insurance for the second season is automatically renewed. Turning down the cancellation option, therefore, is a commitment choice, which removes flexibility in a high-stakes decision.[24]

To ensure demand for commitment was not driven by potential hassle costs of exerting the cancellation option, we informed the farmers that, regardless of their decision, they would have a follow-up meeting with the insurer and receive a follow-up call and detailed guidance before the next season. An information flyer and toll-free helpline were provided to all farmers to keep decision costs constant.

We additionally allow farmers to choose different forms of commitment, depending on whether they received a payout after the first season. This variation allows us to empirically identify dif-

[24]Farmers can, in principle, walk away from the arrangement if, after the first season, they switch to a crop that YH does not purchase or stop farming, although doing so is costly in practice, so the commitment is effectively binding for most, as we document below.

ferent forms of state dependence that farmers may want to prevent, as described in Proposition 2. Specifically, demand for commitment after a good state in season one (i.e., after not receiving a payout), where the renewal-stage valuation is predicted to undervalue insurance, is likely aimed at preventing state-dependent valuations. Conversely, demand for commitment after a bad state in season one (i.e., after receiving a payout), where the renewal-stage decision is predicted to be less reliable, is likely aimed at dealing with low state-dependent decision quality.

Because pay-at-harvest insurance does not shift income across time, the commitment demand in this setting cannot arise from standard intertemporal motives. To gather suggestive evidence on possible motives, we ask farmers to explain their reasoning behind their choices.

3.5. Intervention: Increasing Sophistication about State Dependence

Guided by the conceptual framework, our aim is to induce an increase in sophistication about future state dependence and to test its effects on demand for commitment. To this end, we design an intervention that prompts farmers to think through how different harvest states shape their decisions in different scenarios.

During the baseline visit, after the general explanation of the insurance product and before eliciting insurance take-up and commitment decisions, treated farmers go through three blocks aimed at increasing their awareness of state dependence.

Block 1: Simulating scenarios. First, the enumerator guides farmers to think through their farming activities and insurance demand in two hypothetical scenarios: one in which they have just experienced a *good* harvest and one in which they have just experienced a *bad* harvest.[25] Within each scenario, farmers are asked to imagine how each of these scenarios would affect: their expectations about the upcoming season (e.g., whether they think another good or bad season is more likely); whether state correlation across years is the right way of thinking; how much they value having insurance; their perceived decision capacity; etc. Farmers are encouraged to elaborate on their reasoning throughout. The contrast across good and bad scenarios within individuals provides a direct diagnostic of specific forms of state dependence, including state-dependent valuations (e.g., undervaluation of insurance after a good harvest), and state-dependent decision quality (e.g., impaired decisions after a bad harvest).

Block 2: Prior evidence on state dependence. Second, the intervention makes state dependence explicit by presenting simple and relatable findings from prior studies in neutral language. We briefly describe two stylized patterns from the literature: that farmers are more likely to pur-

[25]The order of the two scenarios is randomized at the individual level.

chase insurance after a poor season (e.g., Cole et al., 2014) and that financial stress after a bad season can impair decision-making (e.g., Mani et al., 2013). Farmers are asked whether these patterns resonate with their own experience and whether they think it is good or bad for people in their situation to let past events affect current choices. This step links their own reflections in Block 1 to broader evidence without prescribing any particular behavior.

Block 3: Flexibility and commitment. Finally, the last block connects the previous two blocks to the choice between flexibility and commitment. In a brief, balanced discussion, we emphasize that flexibility allows people to adapt to their current preferences and needs, which may legitimately change over time, whereas commitment gives them control over future decisions and may protect them from making choices in states they consider problematic. We explicitly note that both flexibility and commitment can be reasonable, depending on one's circumstances and concerns, and we conclude by stressing that only farmers themselves know what is best for them.

Simulation-based modules and diagnostic perceptions. The three-block intervention is light-touch and enumerator-led, and it is based on the idea of mental simulation, similar in spirit to interventions used in other contexts, such as in Alan and Ertac (2018); Ashraf et al. (2025); Augenblick et al. (2023); John and Orkin (2022); Orkin et al. (2023). The intervention is thus designed to increase sophistication about potential future state dependence, not to pass judgment on whether it is desirable. Unlike conventional information treatments that provide new facts or recommendations (see Haaland et al. (2023) for a review), our module offers no normative advice on commitment and only contains new information about prior evidence on state dependence.

This simulation-based design has several advantages. First, our framework implies that the direction of the treatment effect on commitment is *a priori* ambiguous: it depends on farmers' own normative attitudes toward state dependence. Second, the balanced presentation mitigates experimenter-demand concerns, since the intervention pushes toward neither more nor less commitment. If anything, because it portrays insurance in a somewhat positive light, any experimenter-demand effect should primarily show up in insurance take-up; however, we later show that insurance take-up is largely unaffected by treatment.

Importantly, farmers' perceptions when going through different scenarios in Block 1 provide direct diagnostic evidence on the presence of the two state-dependence channels in our setting, i.e., state-dependent valuations and state-dependent decision quality as in our conceptual framework. The module elicits, by harvest state, (i) beliefs about state persistence, (ii) perceived incremental value of insurance, and (iii) self-assessed decision-making quality. [26]

[26] In principle, one might try to infer these two channels directly from observed insurance choices. The conceptual

Randomization. We randomly assigned the 374 farmers of our experimental sample to either the treatment or the control group. Randomization was implemented at the individual level.[27] In total, 182 farmers were assigned to the control group and 192 to the treatment group. Before data collection began, we pre-registered our design and analysis plan with the AEA RCT registry.

3.6. Channels Potentially Affected by the Intervention

To understand the mechanisms through which the treatment affects commitment, we include a set of manipulation-check questions within the treatment group. The goal of the intervention is to increase awareness and sophistication about *future* state dependence, i.e., to make farmers more aware that their future behavior—such as their demand for insurance at the end of the upcoming crop season—may depend on the realized harvest.[28]

The aspects that map directly onto the conceptual framework are those about state dependence. To get at farmers' **normative attitudes towards state dependence**, we asked farmers, "How do you judge one's changing interest in insurance depending on whether the current season is good or bad?" on a scale from 1 (not at all desirable) to 5 (very desirable). To understand whether farmers already feel **currently influenced by the state** beyond the general sophistication, we asked them "Do you think that whether the past crop season was good or bad will affect your interest in insurance for the upcoming season?"

Because farmers may differ in which harvest states they view as more problematic for decision-making, we elicited a **state-desirability judgment**: "When deciding whether to purchase insurance, in which season do you find it more sensible to do so?" Respondents choose among good season, both seasons equally, and bad season.

In addition, we also measure several additional channels that might be influenced by the intervention and could, in principle, affect commitment for channels other than sophistication about state dependence. These other channels include trust in the insurance, counterfactual imagination, self-reported frequency of contingent thinking, and broader propensity to intervene (i.e., to preemptively constrain future choices versus leaving future decisions unconstrained). These

framework clarifies why this can be difficult when multiple forces coexist: state dependence in realized take-up need not map one-to-one into state dependence in valuations. In particular, if decision-quality shocks affect contemporaneous insurance decisions, low take-up in bad states may reflect impaired decision quality rather than lower perceived value.

[27] Note that any potential spillover within farmer groups would have weakened the treatment effect.

[28] As discussed in the conceptual framework, an intervention that increases sophistication about future state dependence may also increase awareness of *contemporaneous* state dependence. To the extent such awareness induces meta-cognitive correction, it would attenuate state dependence of current insurance demand. This is a hypothesis that we test directly and find no evidence for, as we discuss in Section 5.3.

measures help us assess the importance of alternative explanations unrelated to our conceptual framework:

- **Trust in insurance:** "How much do you trust crop insurance offered by your off-taker?" (1 = fully distrust, 5 = fully trust).
- **Counterfactual imagination:** "How hard is it for you to imagine circumstances in agriculture (like a good or bad crop season) that have not yet happened?" (1 = very easy, 5 = very hard).
- **Frequency of contingent thinking:** "How often do you think about what you will do in different scenarios when you make plans for your farming activities, e.g., when things go as expected and when things do not go as expected?" (0 = never, 5 = always).
- **Tendency to intervene:** For farmers who judge state dependence as undesirable, we ask: "Would you want to tie your hands on future crop insurance decisions or leave it alone?" (options: tie hands, leave it alone, no preference).

To avoid priming in the control group, we only ask these manipulation-check questions to treatment farmers. We randomize the order of the intervention and the manipulation-checks: some farmers answer the manipulation-checks *before* the intervention, others *after*. By comparing answers across these two groups, we obtain "as-if" treatment effects on the manipulation-check variables. This design allows us to understand through which channels our treatment influences commitment demand and to avoid contaminating the pure control group (since the manipulation-checks themselves mention state dependence). With this in mind, the manipulation-check questions can also be considered part of the intervention.

3.7. Data Collection

The timeline of our activities is as follows:

- August 2024: Baseline survey in-person, randomized intervention manipulation-checks, insurance purchase choice
- September–December 2024: Experimental Crop Season 1
- February 2025: Midline phone survey, insurance cancellation/renewal for Crop Season 2 (if no commitment)

- March–August 2025: Experimental Crop Season 2
- June 2025: Endline follow-up phone survey

Baseline survey. In the baseline survey, which was administered before introducing the insurance product, we collect detailed information on household and farm characteristics, including demographics (age, household size), farm profiles (crop mix, farming plans, relationship with YH), financial variables (income, assets, debt, and self-reported financial stress, trust in insurance), and behavioral measures (memory, self-reported risk attitudes, time preferences, etc.).

To proxy state-dependent valuation, we include a measure of projection bias following Zhang (2025), as the extent to which farmers underestimate their adaptation, and then construct a binary indicator for above-median projection bias.[29] To proxy state-dependent decision quality, we construct a financial-stress index as the first principal component of several self-reported questions (Sergeyev et al., 2025): how often farmers have spent time thinking about and dealing with issues related to household finances; perceived need to borrow to cover unexpected emergencies; concern about the household's financial situation; and the presence/type of debt.

Midline survey. We conduct a midline phone survey with all farmers after the first season ends and the insurer has determined whether payouts are due. We re-collect information on farming plans and the previous season and remind farmers of their original insurance and commitment decisions. For farmers who did not commit, or whose state-contingent commitment did not bind in the realized state, we elicit their actual cancellation or renewal decisions for the second season and ask about the reasons for their choice. These midline data shed light on how ex ante commitment choices translate into insurance coverage.

Endline survey. Finally, after the second season ends, we conduct an endline phone survey with all farmers. The primary goal is to understand how farmers view their initial commitment decision in retrospect. We ask if they regret their initial commitment decision and if they would have chosen differently, which provides an ex post welfare proxy. The endline survey also helps us assess whether the intervention affected commitment through channels not captured by the manipulation-checks. For instance, we ask farmers to evaluate the complexity and effort involved in making renewal decisions to understand the role of decision costs. We also explicitly ask farmers to guess the purpose of the study to further address experimenter-demand effects.

[29] To aid comprehension and avoid double-loaded questions, we adapt the original measure into a concrete example and elicit (i) anticipated difficulty of adapting to the change and (ii) realized difficulty of adapting to the change in separate questions. A positive difference between anticipated and realized difficulty captures underestimation of adaptation.

3.8. Regression Specification

To identify causal effects of our experimental treatment on outcomes available for the full sample — such as the demand for insurance and for commitment — we leverage the randomized assignment at the individual level. Our main specification is:

$$y_i = \beta_0 + \beta_1 T_i + \epsilon_i, \tag{8}$$

where y_i is an outcome for farmer i — insurance purchase and commitment decisions — and T_i is a binary indicator equal to one if the farmer was assigned to the treatment described in Section 3.5 and zero otherwise.[30] We also test for heterogeneity in treatment effects by adding baseline variables X_i and their interactions with treatment to the regression model:

$$y_i = \gamma_0 + \gamma_1 T_i + \gamma_2 X_i + \gamma_3 X_i \cdot T_i + \upsilon_i, \tag{9}$$

3.9. Balance

Table 1 presents summary statistics and balance tests. The first two columns describe the sample. Panel A (Demographics) shows that respondents are on average about 37 years old, with roughly 56% women. Households are moderately large (about six members) with just over one child on average, and respondents have relatively low formal education. A large majority report farming as their main occupation, though non-agricultural work is also common. Panel B (Agriculture) indicates that farmers typically manage close to two parcels, most of which are cultivated, with a non-negligible share rented in. Total cultivated land averages just under three acres, and farming revenues in the previous season are substantial but highly dispersed. Panel C (Financial) shows that usual annual income is sizeable and variable and that non-farm income represents an important additional source of earnings. We also report the financial-stress index that we constructed.

The rest of the table shows that treatment and control are overall well-balanced on these baseline covariates, although the treatment group respondents are more likely to be women and have lower non-agricultural income. In the analysis, we show that treatment effects are very robust to the inclusion of alternative sets of control variables.

[30] For the study of manipulation-checks, we restrict the analysis to farmers in the treatment group and leverage the random variation in whether the manipulation-check outcomes (m_i) are elicited before or after the administration of the treatment module: $m_i = \delta_0 + \delta_1 Post_i + \delta_2 X_i + \xi_i$ where $Post_i$ is a binary indicator equal to one if the question about outcome y_i was asked after the administration of the treatment.

4. Descriptive Evidence on Perceptions and Commitment

This section provides descriptive evidence of the existence and form of undesirable state dependence in our setting, as well as evidence of commitment demand in our experiment. We first document that, when thinking through hypothetical scenarios, farmers expect that harvest realizations will affect their valuations of insurance and decision-making quality, but not the likelihood of the next harvest realization. Second, we show that, even absent our experimental intervention, 40% of the control group demands commitment for pay-at-harvest insurance, a demand that cannot be explained by sophistication about inconsistent intertemporal preferences or many other mechanical reasons that we can rule out by design.

4.1. Perceptions of State Dependence

We first present results from farmers' scenario responses to directly assess how they perceive harvest states as affecting valuations, decision quality, and beliefs.[31]. Table 2 summarizes their answers when asked to imagine beliefs and behaviors after a bad harvest (Panel A) versus a good harvest (Panel B).

The first row shows pronounced state-dependent valuation: farmers report higher insurance valuations after a bad season than after a good season (0.90 vs. 0.40: $p < 0.01$). At the same time, the second row shows that farmers report lower perceived decision-making quality after a bad season than after a good season (0.30 vs. 0.50: $p < 0.01$), consistent with state-dependent decision quality driven by financial stress or scarcity.

The third and fourth rows of Table 2 capture beliefs about serial correlation of weather. As discussed in our conceptual framework, serial correlation provides one of many rational grounds for state dependence: the current-season realization may help predict the outcome of the next season. On average, farmers do not believe that a bad season is more likely to be followed by another bad season, nor that a good season is more likely to be followed by another good one. If anything, farmers tend to regard beliefs in strong positive serial correlation as "the wrong way of thinking." Interestingly, these beliefs contrast with the existence of a small positive correlation in crops-season weather realizations across years at the subcounty level.[32] Panel C also shows

[31] As discussed in Section 3.5, these questions are part of the first block of our intervention, and are therefore asked only to farmers in the treatment group

[32] Accounting for subcounty fixed effects (N=13): i) a one s.d. increase in crop-season average rain increases average rain in the next year by 0.1 s.d., with cluster wild-bootstrapping p<0.001; ii) a one s.d. increase in crop-season average temperature increase average temperature in the next year by 0.32 s.d. (p<0.001) — an effect which, however, is entirely explained by a linear time trend. In the conceptual framework of Section 2, the presence of such a correlation would increase the option value argument of waiting— i.e., it would provide an additional motive for Self 1 to defer to Self 2 the choice of whether to purchase insurance for season — but it would not alter the key

that, on average, farmers do not think current choices should be influenced by the outcome of the previous seasons and that they have a positive assessment of the net benefits of commitment.

In Appendix A, we also complement our analysis with experimental data by exploring whether weather realizations in the crop season before our experiment affect demand for insurance. This part of the analysis should be interpreted with caution as our sample spans only twelve subcounties, and therefore we have very limited variation. In Table A1, Column 1 provides suggestive evidence that better weather realizations – higher standardized rain and lower standardized temperature — *increase* demand for insurance in our experiment.[33] These results, which contrast previous evidence from (Browne and Hoyt, 2000; Cai et al., 2020; Cole et al., 2014; Karlan et al., 2014; Kunreuther et al., 1985), are consistent with scarcity-induced decision-making, i.e., the second form of state dependence discussed in our conceptual framework: farmers are less willing to sign up for insurance when they have lower income likely due to decision mistakes. This effect appears to dominate the first force, state-dependent valuations, which would predict lower demand for insurance after a good season. As discussed in the conceptual framework, when multiple forces coexist, the relationship between realized take-up and valuations is not necessarily one-to-one, and the dominant channel is ultimately setting-specific.

Taken together, these responses suggest that in our setting: (i) state-dependent valuations are present but are not primarily driven by biased beliefs in serial correlation, and (ii) financial stress in bad states is perceived to impair decision quality. Both channels correspond closely to the forms of state dependence captured in our conceptual framework.

4.2. Demand for Commitment in the Control Group

Next, we provide descriptive evidence on demand for commitment by focusing on the control group of our experiment. Take-up of the two-season pay-at-harvest insurance is high. As shown in Figure 1, 78 percent of the 182 control farmers chose to insure both seasons. Among those who enrolled, 40 percent opted for the commitment option, forgoing the ability to cancel after the first harvest, even though retaining flexibility would have allowed them to adjust to realized conditions after Season 1.

As previously discussed, the costs (premium) and potential benefits (payout) of signing up for pay-at-harvest insurance for any given season occur at its end, with no intertemporal transfer. Therefore, inconsistency in intertemporal preferences (Laibson, 1997; O'Donoghue and Ra-

comparative statics with respect to sophistication.

[33] Normalized rain (temperature) is positively (negatively) correlated with harvest quantity of maize and beans, although the coefficients are significant only for maize.

bin, 1999) cannot explain demand for commitment. When asked to explain their choice, 60% of farmers gave explicitly *preventive* reasons, such as “preventing cancellation" or “avoiding regret," consistent with a non-trivial degree of sophistication about internal conflict. In contrast, only around 8% of farmers mentioned “for peace of mind".

One concern is that commitment choices could reflect misunderstanding or noisy take-up rather than the state-dependence channel (e.g., Carrera et al., 2022). Two features of our context make this less likely. First, farmers demonstrate strong understanding of the pay-at-harvest product in pre-specified comprehension checks, and demand for commitment in the control group is similar in the restricted “high-quality" subsample, as shown in Figure B1 in Appendix B. Second, baseline demand for insurance is strongly positive—farmers predominantly view insurance as beneficial—so it is implausible that farmers would value (or demand) a commitment not to insure, if such an option were available.

We also point out that mechanical or practical features beyond the state-dependence channel may influence demand for commitment in the control group. We designed the experiment to minimize many of these concerns. For instance: renewal is the default to rule out forgetting and default effects; all farmers receive the same follow-up call and detailed guidance before the next season to keep the hassle constant; an information flyer and toll-free helpline are available to keep decision costs constant; we guarantee that contract terms and premiums will not change midway through the contract and that commitment is unrelated to the farmer–agent relationship. Despite these efforts, other practical considerations may remain. To more clearly test the role of undesirable state dependence, Section 5 presents the results of the treatment effects.

5. Commitment against Future State Dependence

In this section, we discuss treatment effects of our intervention: increasing sophistication about state dependence induces more negative attitudes toward state dependence and increases demand for commitment. We then explore the mechanisms underlying this treatment effect, demonstrating that both forms of state dependence in our setting—state-dependent valuations and state-dependent decision quality—drive demand for commitment. Lastly, we consider and rule out alternative explanations for the observed treatment effects.

5.1. Treatment Effects of Increasing Sophistication

5.1.1. Normative attitudes toward state dependence

We first investigate through which channels our intervention may affect demand for commitment. As we discussed in Section 3.6, within the treatment group, we randomized whether manipulation-check questions were administered *before* or *after* the intervention, allowing us to estimate "as-if" treatment effects on these measures by comparing responses across the two groups.[34] Figure 2 plots the effects on standardized manipulation-check measures.

More than half of the farmers in the treatment group regard state dependence as undesirable. The intervention makes farmers more likely to regard state dependence as normatively undesirable —state dependence desirability falls by 0.29σ (S.E.=0.14). Consistent with this more negative normative view, farmers are also less likely to report that they are *currently* influenced by the state (-0.24σ, S.E.=0.15). Note that this latter question is about self-assessed susceptibility in the present, which is conceptually distinct from sophistication about *future* state dependence. Treated farmers both judge state dependence more negatively and are less willing to describe themselves as currently affected — a pattern that is in line with reduced cognitive dissonance.

The intervention further appears to sharpen farmers' judgments about which states are most sensible for making insurance decisions. Before the intervention, a large majority of farmers view it as "equally sensible" to decide in good and bad seasons. After the intervention, the share choosing "equally sensible" falls from 73% to 51% (-0.5σ, S.E. = 0.15), with a corresponding increase in farmers who single out one state as the more sensible moment for deciding about insurance. Interestingly, before the intervention, most farmers judge the *current* harvest state as the most sensible moment to make a decision. After the intervention, these judgments become less anchored to the present and more balanced across states.

By contrast, we find no significant changes in other potential channels. First, it does not significantly affect trust in insurance (+0.16σ, S.E.=0.14), suggesting that the treatment does not simply make farmers more or less confident in the product or insurer. Second, it does not change farmers' perceived ability to mentally simulate counterfactual agricultural states (+0.14σ, S.E.=0.15), i.e., whether imagining a good or bad season feels easier or harder. Therefore, the treatment is unlikely to operate by expanding imagination per se. Third, the treatment does not affect the frequency with which farmers report engaging in contingent thinking (+0.06σ, S.E.=0.15). Thus,

[34] The order of these manipulation-check questions has no significant effect on demand for insurance (β=0.03, S.E.=0.06) or commitment (β=0.04, S.E.=0.07). This evidence also mitigates concerns that the ordering of the manipulation-check questions independently influences responses, irrespective of whether the treatment precedes or follows the questions.

improved contingent thinking is unlikely to be the main channel driving our later results. Finally, among farmers who already view state-dependent decision-making as undesirable, we do not detect a shift in their broader propensity to intervene, i.e., to preemptively constrain future choices versus leaving future decisions unconstrained (+0.01σ, S.E.=0.19). This is consistent with the idea that our treatment affected sophistication, but not the propensity to demand commitment conditional on the degree of sophistication. [35]

5.1.2. Treatment effects on the commitment demand

The intervention increased demand for commitment. Figure 3 shows that, relative to the control group, the intervention raises the share of farmers who choose any form of commitment by 11 percentage points, from a control mean of 40 percent (S.E.=0.05). Table 3 presents regression results and shows that our results are robust to adding sample restrictions (Row 2) and demographic, agricultural, and financial controls (Row 3-6). Notably, when focusing on the "high-quality" subsample that we pre-specified (last row)—farmers who are less subject to contracting imperfections and have a better understanding of insurance according to baseline comprehension checks—the treatment effect on commitment is even larger in magnitude (see also Figure B2 in Appendix B). Combined with the evidence from the manipulation-checks, this result suggests that raising farmer sophistication about state dependence increases their willingness to give up flexibility, while leaving overall insurance demand largely unchanged.

Notably, the intervention had no significant effect on overall insurance uptake. Figure 3 shows that the share of farmers not buying insurance falls by 3 p.p., from a control mean of 22% (S.E.=0.04). Enrollment in the two-season, pay-at-harvest product is similarly high in both groups, a result robust to various specifications presented in Table 3. This result suggests that the intervention does not simply make insurance more attractive and help rule out alternative explanations that would predict an effect on insurance, as we discuss in 5.3.

Finally, we look at how treatment affects farmers' stated motives to demand commitment. Figure 4 shows that, in the control group, 60% of committed farmers cite preventive reasons (e.g., "prevent cancellation" or "avoid regret") and 68% mention non-preventive reasons (e.g., "I don't want to cancel" or "for peace of mind"), with multiple responses allowed. In the treatment group, the share citing preventive reasons rises to 74% ($p = 0.052$), while the share citing non-preventive reasons remains essentially unchanged at 69%. This suggests that the intervention increases commitment by raising farmers' awareness of the need to protect themselves from

[35] Analysis of this variable should be interpreted with caution, as the question is conditioned on respondents' stated undesirability of state dependence, which is itself affected by the treatment.

making undesirable, state-dependent choices rather than by increasing peace of mind or other non-preventive motives.

5.2. Unpacking State Dependence

In this section, we unpack the role of the two forms of state dependence — state-dependent valuations and state-dependent decision quality — in commitment demand. Section 4.1 provided suggestive evidence of both of these forms in farmers' perceptions. We now look at demand for state-contingent commitment and at treatment heterogeneity by survey measures of projection bias (our proxy for state-dependent valuation) and financial stress (our proxy for state-dependent decision quality). The resulting patterns are consistent with the predictions in Proposition 2.

5.2.1. Demand for state-contingent commitment

As described in Section 3.4, farmers can demand state-contingent commitment: they may forgo the cancellation option only if they receive a payout (bad-harvest state), only if they do not receive a payout (good-harvest state), or in both states. This design allows us to empirically determine which forms of (future) state dependence farmers are concerned about. Conceptually, farmers who are primarily concerned about state-dependent valuations may want commitment that binds after good harvests (to avoid undervaluation), whereas those worried about impaired decision quality may want commitment that binds in bad states; farmers concerned about both will choose commitment in both states. The coexistence of both forms of state dependence is mirrored in the types of commitment farmers choose, captured in Figure 5.

Panel A on the left shows the commitment demand of farmers in the control group, divided into different types of commitment. We observe heterogeneity: two-thirds of farmers demand commitment (i.e., 26% out of 39%) that binds in both states — consistent with many exhibiting both forms of state dependence — and one-third demands commitment in only one state: 5% demand commitment only after a good state, hence, 31% (26%+5%) of farmers demanding commitment after a good state; 8% demand commitment only after a bad state, hence 34% (26%+8%) demand commitment after a bad state. Panel B on the right breaks down the effects of the treatment on the different forms of commitment. This breakdown shows how the overall increase in commitment demand is distributed across "both-states" versus state-contingent commitment. These patterns are similar in the restricted "high-quality" subsample, and if anything, the intervention has a stronger effect on good-state commitment in the subsample than in the full sample, as shown in Figure B3 in Appendix B.

5.2.2. Heterogeneity by two forms of state dependence

In heterogeneity analyses, we further ask whether the demand for state-contingent commitment documented above varies systematically with two proxies for the two forms of state dependence. If some farmers are subject to state-dependent valuations (e.g., due to projection bias), they would be more prone to *undervaluing insurance in good states* hence may disproportionately benefit from and therefore demand commitment that binds in good states. Conversely, if other farmers are more prone to state-dependent decision qualities (e.g., due to financial stress or scarcity), they may tend to *make poorer decisions in bad states* hence may value commitment that binds in bad states.

Recall that in Section 3.7, we proxy state-dependent valuations using *projection bias*, which is one of the primary reasons why farmers may undervalue insurance after a good harvest. We also proxy state-dependent decision quality using *financial stress*, as scarcity is one of the primary reasons why farmers may make worse decisions after a bad harvest.

Table 4 reports heterogeneous treatment effects on the demand for state-contingent commitment. We regress demand for commitment that binds in a good state (Cols. 1 and 3) and in a bad state (Cols. 2 and 4) on the treatment indicator, the two heterogeneity indicators, and their interactions. The interaction terms capture how the treatment effect varies for farmers with projection bias and for farmers with financial stress. Two patterns emerge. First, we find suggestive evidence that farmers with projection bias are more likely to demand commitment that binds when the harvest is good: The interaction coefficient is 0.27 (S.E.=0.12) in the regression where the dependent variable is commitment after a good harvest, and 0.08 (S.E.=0.13) after a bad harvest. This pattern is consistent with the interpretation that projection-biased farmers are particularly prone to undervaluing insurance when currently in a good state, and hence place greater value on mechanisms that protect them from foregoing coverage in those states.

Second, we find that financial stress amplifies the treatment effect on commitment demand, with suggestive evidence that the amplification is larger for commitment that binds in the bad state (0.09 vs. 0.07, although the difference is not significant). This is consistent with scarcity-driven state dependence: financially stressed farmers may anticipate that decision quality deteriorates in adverse states, and therefore respond more strongly to our intervention by choosing commitment that binds precisely when the bad state is realized.

We interpret these findings cautiously. The heterogeneity analysis is exploratory, not preregistered, and relies on noisy, survey-based proxies and median splits, and the estimates are correspondingly imprecise. Nonetheless, the patterns align with the conceptual distinction be-

tween state-dependent valuations (proxied by projection bias) and state-dependent decision quality (proxied by financial stress), and they suggest that the demand for state-contingent commitment may be shaped by the particular form of state dependence that farmers perceive as most problematic for their own insurance decisions.

5.3. Alternative Explanations

Although our treatment is tailored to test the role of sophistication and normative attitudes toward future state dependence, and we have made various design choices and built in manipulation-check questions to rule in and rule out different explanations, there are still interesting alternative explanations that may partly also explain our results, which we now discuss below.

Sophistication about current state dependence. As discussed in the conceptual framework, while our primary focus is on sophistication about future state dependence and we design our intervention to target this specific channel, the intervention may inevitably also influence sophistication about current state dependence. In such cases, meta-cognitive correction should attenuate state dependence in current insurance demand. In Appendix, Column 2 of Table A1 shows an absence of a significant interaction between treatment and weather realizations in the pre-experimental season on insurance demand, which provides no positive evidence for this possibility, though the small number of subcounties limits the power of this test.

Enhanced valuation of insurance. The intervention might simply help farmers appreciate the general value of insurance, prompting greater commitment as a means of securing coverage. Yet we consistently find no significant treatment effect on overall insurance take-up, even though commitment demand rises. This pattern suggests that it is unlikely that the desirability of insurance drives the demand for commitment.

Channels specific to our insurance product or setting. Field settings introduce additional potential channels. For instance, basis risk could make farmers skeptical of index insurance, and farmers may care about maintaining good relationships with agents or the offtaker. However, such considerations should primarily influence initial insurance take-up and renewal, rather than the choice between flexibility and commitment for a given product. We detect no treatment effects on insurance take-up or on trust in the insurance, and our intervention does not change the underlying product features, making these channels unlikely explanations for the observed shift in commitment.

Thinking and deciding about insurance is costly. An alternative explanation is that commitment is valued simply because making insurance decisions is itself costly: farmers may prefer

commitment to avoid the hassle of revisiting the renewal decision, remembering deadlines, or repeatedly weighing the same choice, yielding psychological comfort (peace of mind"). As discussed in Section 4, however, our design deliberately holds such hassle costs largely constant (e.g., renewal is the default and all farmers receive the same follow-up support), and very few farmers cite peace of mind" as their primary motive for commitment relative to preventive reasons.

A related but conceptually distinct possibility is that the intervention reduces the *cognitive cost of contemplating* insurance and commitment.[36] Because our intervention helps farmers think through future scenarios, it could in principle increase commitment demand by making the decision problem easier, rather than by improving sophistication about future state dependence. To assess this possibility, we elicited at endline how easy or complex farmers found deciding about insurance again on a five-point scale (1 = very easy, 5 = very complex). Overall, 87% of farmers describe the insurance decision as very easy or somewhat easy, and we find no treatment effect on self-reported decision complexity (treatment: 1.70 vs. control: 1.76; two-sided t-test: $p = 0.54$).[37] Taken together with the design features above, these results suggest that reduced decision cost is unlikely to be the primary driver of the increase in commitment demand.

Failures of contingent thinking. A complementary explanation is that the intervention mitigates failures of contingent thinking—the difficulty of reasoning through contingencies and conditioning choices on different states, especially in uncertain environments (e.g., Martínez-Marquina et al., 2019). While there is not yet a consensus theoretical construct, recent work defines such failures broadly and operationally as settings in which decision aids that make contingencies more explicit improve performance (Niederle and Vespa, 2023). In this sense, a contingent-thinking channel is broadly consistent with our main treatment effect from the sophistication intervention, which guides farmers to think through state dependence. However, we find no evidence that the intervention increases self-reported frequency of contingent planning in our context (Section 5.1). Even if this self-report is imperfect and context-specific, contingent thinking alone is unlikely to account for our full set of findings, particularly the state-contingent patterns of commitment demand and heterogeneity across farmers.

Experimenter demand effect. The demand effect is very unlikely in our setting for several reasons. First, it is unclear a priori how we expect farmers to behave since our intervention also extensively discusses the benefits of flexibility. In fact, our main prediction hinges on farmers'

[36] This mechanism relates to a theoretical literature in which costly cognition about contractual contingencies affects ex ante contract design (e.g., Tirole, 2009) and to Ergin and Sarver (2010)'s axiomatic representation of "costly contemplation," under which agents may avoid contingent decision rules in favor of simpler choices.

[37] Notably, insured farmers report finding the decision easier than those who turned down insurance (insured: 1.73 vs. non-insured: 2.19; two-sided t-test: $p < 0.01$).

normative attitudes toward state dependence. If they view state dependence as desirable, then sophistication should increase demand for flexibility. On the other hand, since farmers are making high-stakes decisions (the average insurance payout accounts for around 15% of their seasonal harvest revenue), it is also unlikely that they would change their behavior just to accommodate researchers or our field agents. Admittedly, our intervention portrayed insurance in a positive light. If the demand effect were at play, our treatment would have increased demand for insurance in the first place. However, we do not find this to be the case. Lastly, we took an extra step by following the canonical approach and asking farmers to guess the purpose of the study in our endline survey (De Quidt et al., 2018). We found that most farmers interpreted our study as being about agricultural activity or insurance in general, and almost no one mentioned that we expected people to commit.[38]

5.4. Consequential Commitment and Farmers' Satisfaction

Lastly, we briefly describe farmers' cancellation and renewal behavior in the midline survey, as well as a few self-reported variables regarding satisfaction in the endline survey.[39] These variables shed light on the difficult welfare question of commitment, which we discuss in the conclusion.

We highlight that commitment appears to be a consequential choice. In the midline survey we observe that 98 percent of those who pre-committed renew their coverage for the second season, compared to an 89 percent renewal rate among non-committed farmers. While this 9-percentage-point gap ($p = 0.01$) is not identified causally, since commitment was not randomly assigned, it suggests that commitment has meaningful consequences for follow-through. Notably, even non-committed farmers renew at high rates, reflecting the attractiveness of pay-at-harvest insurance in this high-risk environment. This finding is consistent with the high take-up rate of the same product in a different setting (Casaburi and Willis, 2018) once the role of intertemporal preferences is removed.

Farmers who take up commitment appear satisfied with having done so. We ask all endline farmers to evaluate the quality of their baseline decision on a five-point scale (1 = very poor, 5 = very good) and ask all insured farmers to further report their level of regret for their baseline insurance choice on a five-point scale (1 = Definitely no, 5 = Definitely yes). Among insured farmers, while more than 80% of farmers think they made a (somewhat) good decision at the baseline, commitment is associated with lower ex-post regret, whether or not we control for the

[38] The most common responses mentioned crop insurance (45%) and farming methods or education (28%), consistent with farmers' understanding of the study as a general agricultural support program.

[39] Of the 374 farmers in our sample, 365 completed the endline survey. The average attrition rate is 2.4%, and balanced between the treatment and control groups.

treatment (committed: 1.57 vs. non-committed: 2.07; two-sided t-test: $p < 0.01$).[40] When asked whether they would have preferred to have had the option to cancel, 94.3% of the committed farmers responded "Definitely no" or "Probably no".

To understand the impact of our treatment on those who would have preferred a state-dependent insurance plan, we ask farmers to describe their typical decision-making strategy for insurance. 34% reported they would typically decide based on how the previous season went (state-dependent strategy), compared to 58% who would typically follow a fixed rule (state-independent strategy). This decision-making strategy does not differ by our sophistication treatment (two-sided t-test: $p = 0.50$), which mitigates the concern that the treatment induces differential sorting, potentially harming those who would find a state-dependent insurance plan optimal.

6. Discussion and Conclusion

This paper provides field evidence on the demand for commitment against undesirable future state dependence in a high-stakes setting in which the potential role of dynamically inconsistent intertemporal preferences (e.g., present bias, as in Laibson, 1997; O'Donoghue and Rabin, 1999) or the anticipation thereof is minimized. We document substantial demand for commitment and show that sophistication about state dependence—combined with negative normative attitudes toward it—is an important driver of this demand. Crucially, it is precisely these negative normative attitudes that qualify the conventional economic argument that state dependence motivates flexibility. Why do people find state dependence undesirable? We provide evidence for two broad classes of undesirable state dependence: one based on state-dependent valuations that is consistent with projection bias, and the other based on state-dependent decision quality that is consistent with the scarcity effect.

We conclude with a discussion of welfare implications, recognizing that our framework and analysis inform—but do not settle—the welfare question when behavioral distortions are present (Bernheim and Taubinsky, 2018). First, we ask: under state dependence, which state is normatively relevant? As in Bernheim and Rangel (2007), one might argue that the welfare-relevant benchmark is the state (i.e., "decision frame") in which choices are most consistent. In our setting, however, farmers' valuations and decision quality both vary across harvest states, so no single state emerges as an "unambiguous" benchmark. In that sense, our findings echo their conclusion: identifying the normatively relevant state when behavioral frictions are present is fundamentally difficult. In practice, the appropriate benchmark depends on the policy objective.

[40] Those who turned down the insurance are significantly less satisfied with their decision than those who took up insurance (insured: 4.21 vs. not insured: 3.01; two-sided t-test: $p < 0.01$).

If one adopts the view that more insurance is unambiguously better—plausible in our context of widespread underinsurance—then states in which insurance is valued more (the bad harvest state) appear more welfare-relevant. Alternatively, if one emphasizes state-dependent decision quality, then good harvest states, in which farmers report making better decisions, may be normatively preferable as the moment at which choices should be made. More generally, farmers differ both in the forms of state dependence they experience and in which states they see as most sensible for deciding about insurance, suggesting that heterogeneity in these meta-preferences is itself policy-relevant.[41]

A second, harder, question is whether commitment is welfare-improving. Recent evidence cautions that commitment demand can reflect noisy valuations and miscalibrated beliefs about follow-through, generating self-inflicted financial harm when commitment takes the form of penalty-based contracts (Carrera et al., 2022). While this is a possibility in our setting, baseline valuations of insurance are strongly positive, making it unlikely that farmers would also demand commitment *not* to insure were such an option available—a pattern that would more naturally indicate noisy valuations. A related point is that, even if farmers value commitment, they may misperceive its net benefits.[42] For example, as we document in our setting, farmers may understate the option value of flexibility if they do not fully account for the correlation in weather realizations across years. Whether and how people misperceive the correlation in stochastic processes is by itself an interesting question.

The insights of the paper have several implications for policy and product design. First, the *timing* of key contract decisions—in particular, when individuals first enroll and when they are asked to renew, adjust, or cancel—can itself be a policy lever. When decision quality or valuations vary predictably with states, product design can reduce the influence of "bad" states by shifting consequential choices into calmer periods (e.g., scheduling renewal or plan-review windows outside peak stress seasons) and by limiting in-the-moment cancellations that are most likely to be regretted. Second, products can embed *flexible commitment* features that allow individuals to target the specific states they view as most troublesome.[43] Beyond default renewal with an ex ante option to opt into a harder commitment, contracts can offer state-contingent commitments

[41] We find suggestive evidence that normative attitudes toward state dependence are malleable. Before the intervention, most farmers judge the *current* harvest state as the most sensible moment to decide. This congruence with the current state is reminiscent of projection bias, but applied to normative rather than predictive judgments. After the intervention, these judgments become less anchored to the present and more balanced across states.

[42] See Bronchetti et al. (2023) for evidence that individuals may misperceive the returns to future decision aids that reduce attention costs.

[43] This echoes recent evidence that personalized policies are often effective in addressing self-control problems (Aggarwal et al., 2022; Dizon-Ross and Zucker, 2025).

that bind only in specified circumstances. For example, pre-authorizing automatic renewal after adverse shocks (such as a bad harvest, hospitalization, or job loss) while preserving the option to cancel after favorable realizations. Our evidence suggests that such designs can increase coverage persistence without distorting initial take-up.

Third, light-touch mental-simulation interventions like ours offer a low-cost tool to raise sophistication. Asking people to explicitly consider how shocks will affect their beliefs, valuations, and decision quality can alter demand for commitment in predictable ways while leaving overall product demand largely unchanged. Importantly, our design is deliberately non-prescriptive: whether commitment is desirable for a given individual depends on their own normative attitudes toward state dependence. More broadly, similar interventions could be applied in settings such as consumption smoothing under income risk, health behaviors under stress, or financial planning under market volatility, where the timing of decisions and the design of commitment options are key policy levers.

In sum, our results highlight the joint role of sophistication and normative attitudes toward state dependence in generating demand for commitment, even when present bias is absent. Individuals not only anticipate that their valuations and decision quality may change across states, but may also wish to constrain themselves when those changes are seen as undesirable. Recognizing this mechanism enriches our understanding of commitment beyond time inconsistency, suggests a more nuanced welfare analysis that incorporates meta-preferences over state dependence, and points to practical designs that harness state-dependent reasoning to improve long-run outcomes.

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Tables and Figures

Table 1: Balance table

Variables:	Sample		Control		Treatment		C vs. T
	N	Mean	N	Mean	N	Mean	P.value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Demographics							
Age	374	36.612	182	36.637	192	36.589	0.969
		(0.620)		(0.831)		(0.919)	
Female	374	0.559	182	0.495	192	0.620	0.015**
		(0.026)		(0.037)		(0.035)	
Household size	374	5.922	182	5.813	192	6.026	0.457
		(0.144)		(0.181)		(0.222)	
Children number	374	1.238	182	1.247	192	1.229	0.869
		(0.054)		(0.084)		(0.070)	
Education level	374	1.725	182	1.753	192	1.698	0.656
		(0.061)		(0.090)		(0.084)	
Farming occupation	374	0.845	182	0.841	192	0.849	0.825
		(0.019)		(0.027)		(0.026)	
Non-agricultural work	374	0.618	182	0.637	192	0.599	0.446
		(0.025)		(0.036)		(0.035)	
Panel B: Agricultural							
Number of parcels:							
Owned	374	1.877	182	1.901	192	1.854	0.709
		(0.063)		(0.090)		(0.087)	
Cultivated	374	1.632	182	1.672	192	1.594	0.500
		(0.058)		(0.084)		(0.079)	
Rented	374	1.138	182	1.174	192	1.104	0.577
		(0.063)		(0.092)		(0.086)	
Total acreage farming	373	2.823	181	2.927	192	2.725	0.448
		(0.132)		(0.208)		(0.166)	
Farming revenue last season	367	1135.145	178	1247.917	189	1028.936	0.137
		(73.232)		(114.835)		(91.961)	
Panel C: Financial							
Usual year income	370	2972.312	181	3249.008	189	2707.328	0.043**
		(133.312)		(205.673)		(169.523)	
Usual non-farming year income	369	1001.491	179	1088.380	190	919.632	0.240
		(71.427)		(107.414)		(94.774)	
Financial stress (pc)	374	0.000	182	-0.003	192	0.002	0.970
		(0.065)		(0.092)		(0.092)	

Notes: This table reports summary statistics and balance tests for baseline covariates. Columns (1)–(2) report the number of observations and the sample mean (standard error in parentheses) for the full sample. Columns (3)–(4) and (5)–(6) report the corresponding statistics for the control and treatment groups, respectively. Column (7) reports the p-value from a two-sided t-test of equality of treatment and control means. Variables are largely self-explanatory and grouped into panels: *Demographics* (Panel A), *Agricultural* characteristics (Panel B), and *Financial* characteristics (Panel C). Farming occupation is an indicator for farming being the respondent's main occupation; non-agricultural work is an indicator for engaging in any non-agricultural work. We construct a financial-stress index as the first principal component of several self-reported questions as in Sergeyev et al. (2025). Farming revenue last season and income measures are reported in USD. Statistical significance is denoted by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 2: State dependence of hypothetical insurance decisions

	Bad season			Good season			p-value
	Mean	SD	Obs.	Mean	SD	Obs.	(Good=Bad)
Panels A–B: Current/after/if season (bad vs. good)							
Valuation insurance	0.901	0.874	191	0.398	0.845	191	0.000
Decision making capacity	0.304	0.642	191	0.497	0.522	191	0.000
Perception next season	0.649	0.745	191	0.304	0.919	191	0.000
Correct to believe next season same	-1.325	1.015	191	-0.173	1.575	191	0.000
Panel C: Additional questions							
Good to be influenced by past season	-0.335	1.254	191				
Costs vs. benefits of commitment	0.377	0.736	191				

Notes: The table reports farmer responses during the intervention of thinking through state dependence. Panel A and B reports farmers' perceptions and judgments following a hypothetical bad or good seasons. *Perception next season* captures perceived serial correlation in harvest outcomes: respondents report how a just-experienced season affects their expectations about the next season on a five-point scale from −2 (much more likely the next season is bad) to +2 (much more likely the next season is good). *Correct to believe next season the same* measures perceived correctness of believing the next season will be as good/bad as the last one, elicited on a five-point Likert scale from −2 (very incorrect) to +2 (very correct). *Valuation insurance* measures how a just-experienced season affects the respondent's valuation of PAH insurance for the next season, elicited on a five-point scale from −2 (value much less) to +2 (value much more). *Decision-making capacity* measures perceived decision quality in that state: how a just-experienced season affects the ability/capacity to make important decisions (e.g., about farming or insurance), elicited on a three-point scale taking values from −1 (worse decisions) to +1 (better decisions). The final column reports the p-value from a test of equality between the good- and bad-season responses (Good=Bad) within respondent. Panel C reports additional questions related to normative attitudes toward state dependence. *Good to be influenced by past season* elicits whether it is good or bad that insurance decisions are influenced by the last harvest realization, on a five-point scale from +2 (very good) to −2 (very bad). *Costs vs. benefits of commitment* captures whether farmers perceive the benefit of commitment to be greater (+1) or the cost of commitment to be greater (−1).

Table 3: Treatment effects on insurance decisions

Variables:	Insurance decision		
	No insurance	Cancelation	Commitment
	(1)	(2)	(3)
Treatment	-0.032	-0.077	0.109**
	(0.042)	(0.049)	(0.051)
+ Restrictions	-0.031	-0.076	0.108**
	(0.040)	(0.049)	(0.051)
+ Demographics	-0.028	-0.073	0.101**
	(0.041)	(0.050)	(0.050)
+ Agriculture	-0.045	-0.081	0.126**
	(0.043)	(0.050)	(0.052)
+ Financial	-0.039	-0.090*	0.129**
	(0.043)	(0.050)	(0.052)
+ All controls	-0.032	-0.096*	0.128**
	(0.040)	(0.050)	(0.051)
Restricted sample	0.004	-0.148**	0.145**
	(0.047)	(0.065)	(0.064)

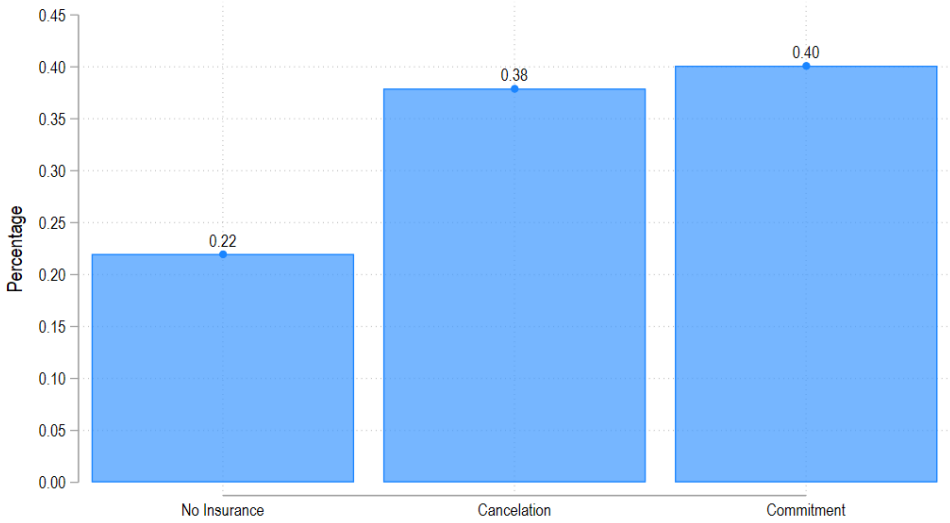
Notes: This table reports robustness to the inclusion of controls of the treatment effects reported in Figure 3: the effects of the sophistication intervention on demand for insurance and commitment. The first row reports regression results without controls. Subsequent rows expand the set of controls, using those reported in the balance table, table 1. The final row, "restricted sample", reports the results restricting the sample to the "high quality" farmer sample as defined in the text and as reported as an option in the pre-registration.

Table 4: State-contingent commitment by projection bias and financial stress

	(1) Commit Good State	(2) Commit Bad State	(3) Commit Good State	(4) Commit Bad State
Treatment	0.080	0.080	0.134***	0.096*
	(0.056)	(0.057)	(0.050)	(0.050)
Treatment*Projection Bias	0.268**	0.077		
	(0.124)	(0.125)		
Treatment*Financial Stress			0.068*	0.090**
			(0.040)	(0.040)
Control Mean	0.32	0.35	0.32	0.35
Observations	374	374	374	374

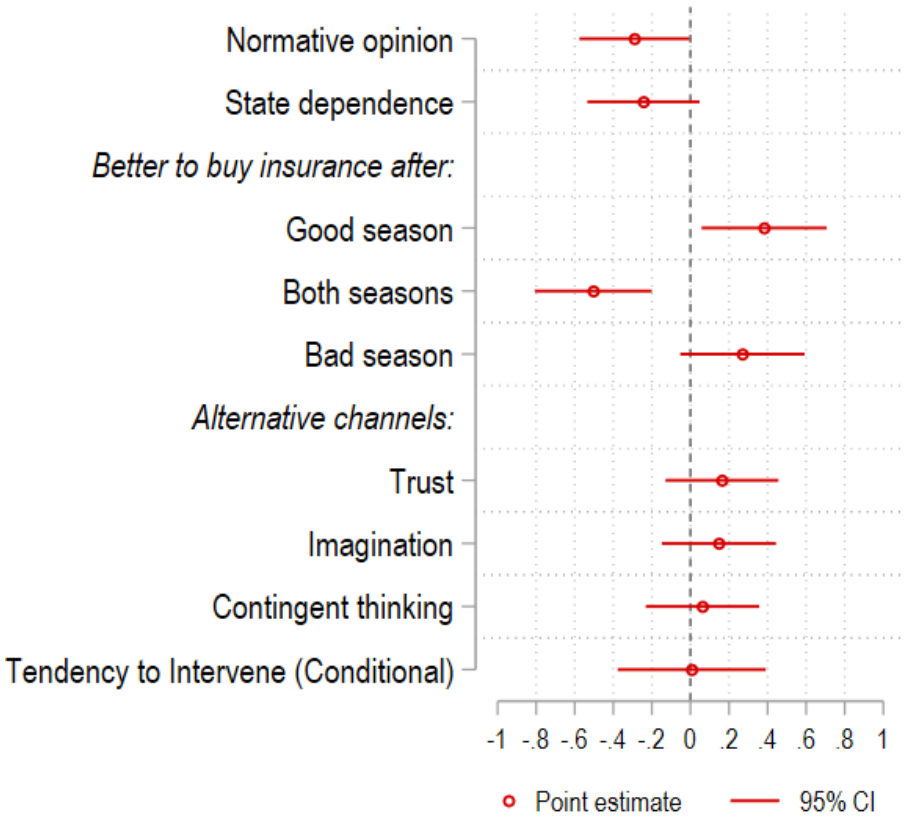
Notes: This table examines demand for state-contingent commitment that binds conditional on the realized harvest state in the first season. The dependent variable is a binary indicator for choosing a commitment option that binds only in a good harvest state or in both states (Columns 1 and 3), and for choosing a commitment option that binds only in a bad harvest state or in both states (Columns 2 and 4). The main regressor is the binary treatment indicator, interacted with two proxies for the two forms of state dependence introduced in the conceptual framework. *Projection bias* is measured as underestimation of adaptation and coded as having higher tendency for projection-bias based on a median split following Zhang (2025). *Financial stress* is measured using the first principal component of several self-reported financial-stress questions following Sergeyev et al. (2025). Interaction terms show how treatment effects differ for farmers with above-median projection bias or higher financial stress. Robust standard errors are reported in parentheses. Statistical significance: $*p < 0.10, **p < 0.05, ***p < 0.01$.

Figure 1: Demand for insurance and commitment in control group



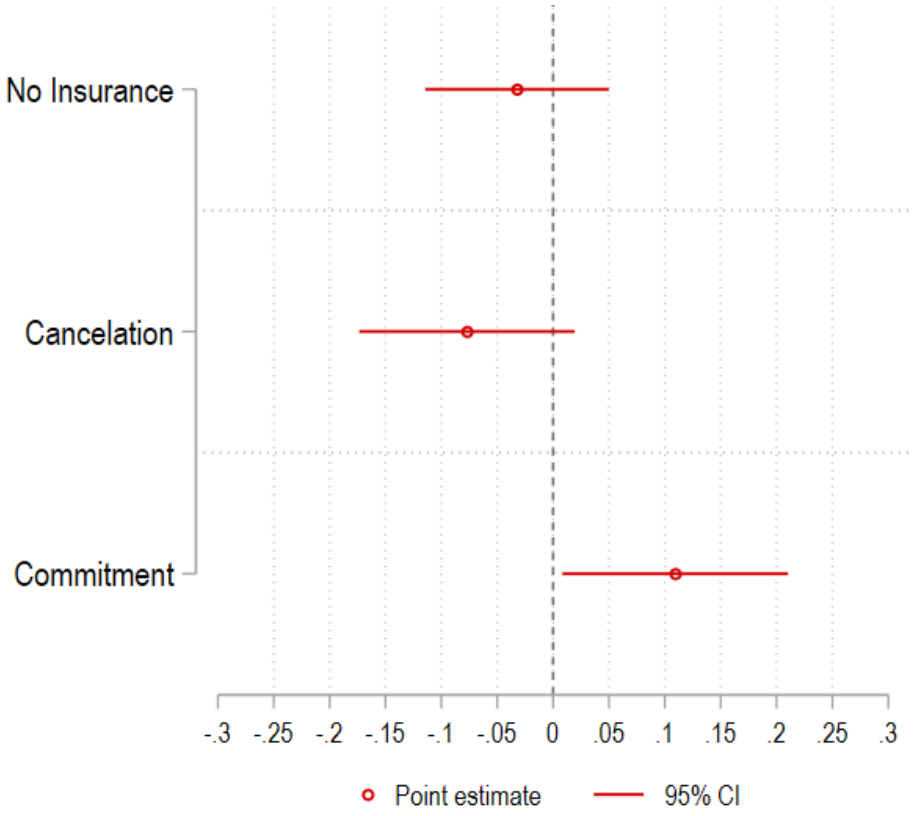
Notes: This figure presents farmers' insurance decisions in the control group, without the intervention. At the beginning of the first season, farmers are offered insurance for the following two seasons, as well as the option to keep or to turn down the option to cancel the insurance at the start of the second season. Turning down the cancellation option represents committing to insurance. The figure shows the proportion of farmers choosing no insurance, insurance with cancelation, and insurance with commitment.

Figure 2: “As-if" treatment effects on manipulation checks



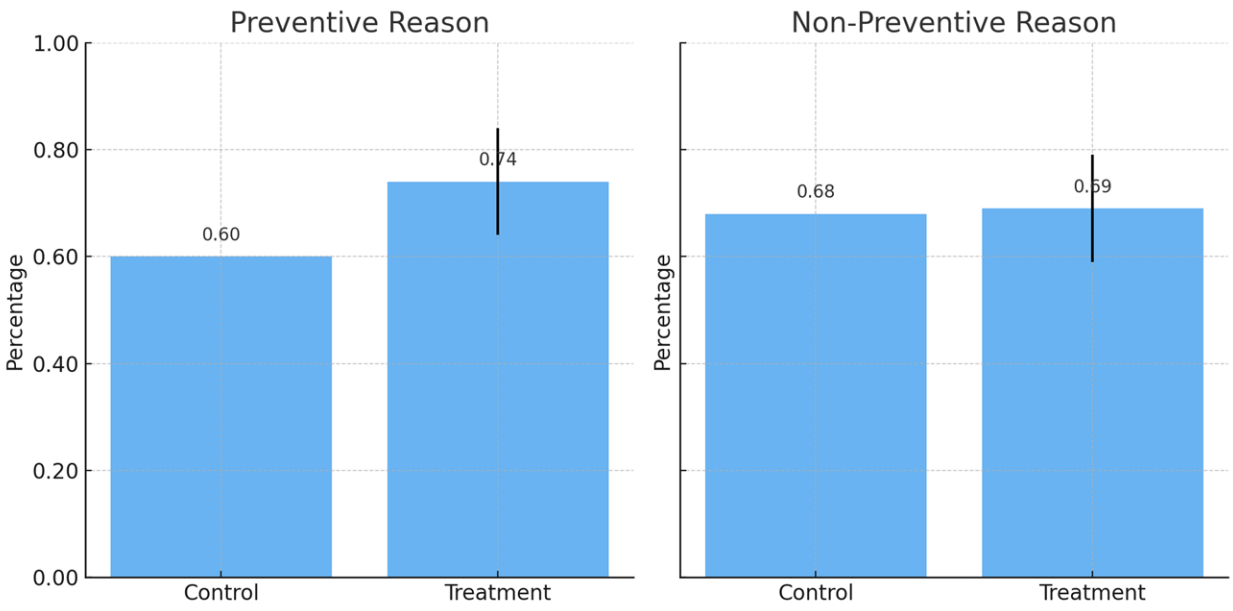
Notes: This figure reports within-treatment “as-if” treatment effects of the sophistication intervention on multiple potential channels. The corresponding manipulation-check questions were asked only to treated farmers, and we randomized at the individual level whether they were asked *before* or *after* the intervention. Each point is the coefficient from a regression of the standardized variables on an indicator for being asked *after* (vs. before) the intervention; bars show 95% confidence intervals. All variables are standardized using the mean and standard deviation among treated farmers asked *before* the intervention, and represent the following questions. *Normative opinion* measures how desirable respondents judge “changing one’s interest in insurance depending on whether the current season is good or bad” (higher values indicate viewing state dependence as more desirable). *State dependence* measures self-reported likelihood that the respondent is currently influenced by the harvest state. *Better to buy insurance after* reports which season is considered most sensible for making an insurance decision; the plotted coefficients correspond to indicators for choosing *Good season*, *Both seasons equally*, or *Bad season*. *Trust* elicits trust in crop insurance offered through the offtaker. *Imagination* elicits how difficult it is to imagine agricultural circumstances (e.g., good or bad seasons) that have not yet occurred. *Contingent thinking* elicits how often respondents consider different scenarios when planning farming activities. *Tendency to intervene (conditional)* asks, among respondents who state that state-dependent decision-making is undesirable, whether they would prefer to constrain their future insurance choice (tie hands) versus leave future decisions unconstrained.

Figure 3: Treatment effects on insurance decisions



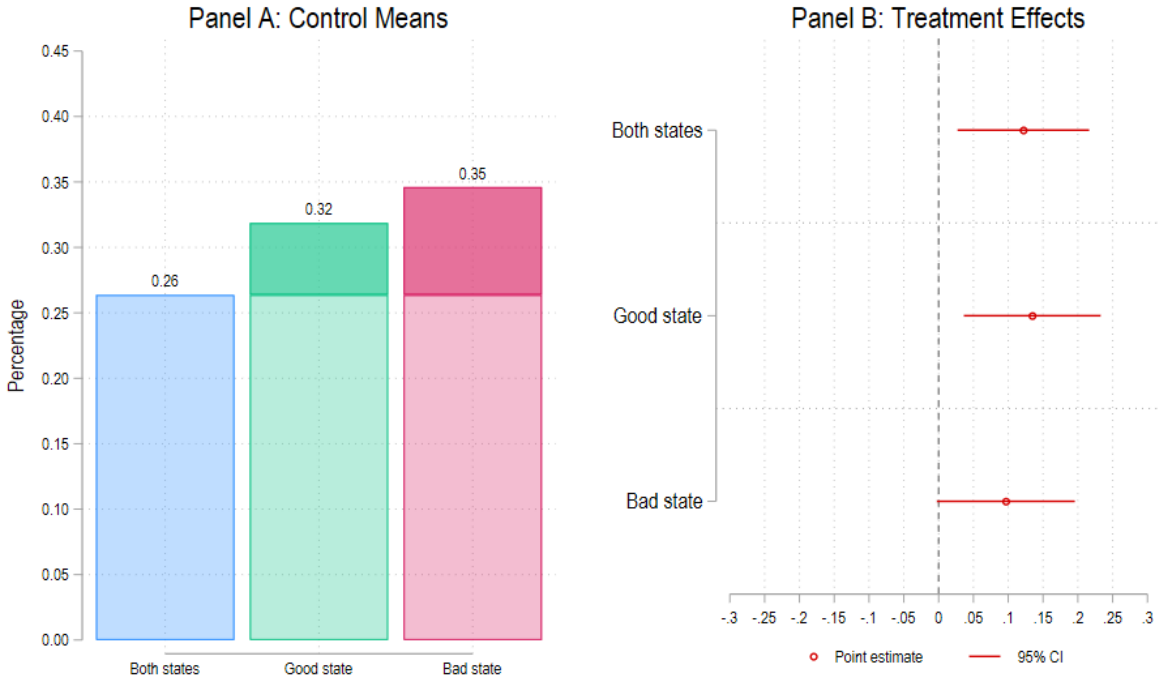
Notes: This figure reports treatment effects on farmers' insurance decisions. Each dot is the coefficient on the treatment indicator from a separate OLS regression with the dependent variable equal to an indicator for the corresponding outcome: *No insurance* (not interested in insurance), *Cancellation* (prefer insurance for two seasons and keep the option to cancel after the first season), and *Commitment* (prefer insurance for two seasons and turn down the option to cancel after the first season). Randomization was at the individual level, hence standard errors are not clustered. Horizontal bars show 95% confidence intervals.

Figure 4: Reasons for demanding commitment



Notes: This figure reports reasons given by farmers who wanted commitment, separated by control and treatment groups. Farmers could offer multiple answers to the question; we classified their answers conservatively into "Preventive reasons" (I want to prevent myself from canceling, I want to avoid regretting) and "Non-preventive reasons" (I don't plan to cancel anyway, Not having to decide again gives me peace of mind, I want to follow what others are doing). The treatment bar displays a 95% confidence interval regressing a dummy for giving at least one such reason on a treatment dummy.

Figure 5: Demand for state-contingent commitment



Notes: This figure presents farmers' demand for state-contingent commitment. When farmers decide on insurance for the following two seasons at the beginning, they are also offered the option to keep or to turn down the option to cancel the insurance at the start of the second season, by state (whether there is an insurance payout in the first season) if desired. Panel A on the left reports the commitment demand of farmers in the control group, divided into different types of commitment: (i) demand for commitment that binds in both harvest states; (ii) demand for commitment in the good state, which mechanically includes those who also commit in both states; and (iii) demand for commitment in the bad state, also including the both-states group. Panel B on the right breaks down the treatment effects on the three types of commitment.

Appendix A. Supplement Analysis with Weather Data

Table A1: State dependence in insurance demand

	Insurance	
	(1)	(2)
Rainfall pre-experimental season (normalized)	0.249	0.245
	(0.074)	(0.109)
Treat * Rainfall		0.001
		(0.150)
Temperature pre-experimental season (normalized)	-0.075	-0.091
	(0.030)	(0.044)
Treat * Temperature		0.029
		(0.061)
Mean Y	0.797	0.797
Wild-bs p-value: Rain	0.264	0.149
Wild-bs p-value: Treat * Rain		0.991
Wild-bs p-value: Temperature	0.165	0.098
Wild-bs p-value: Treat * Temperature		0.577
Observations	374	374

Notes: This table regresses take-up of insurance in the first season (with or without commitment) on weather-based proxies for the agricultural state in the previous season. Specifically, independent variables are the average weather in that location during the previous season, normalized by subtracting the long-run average. Since weather variables are measured at the sublocation location, of which there are 13, we report standard errors clustered at the sublocation level in parentheses and p-values from wild t-bootstrapping separately below.

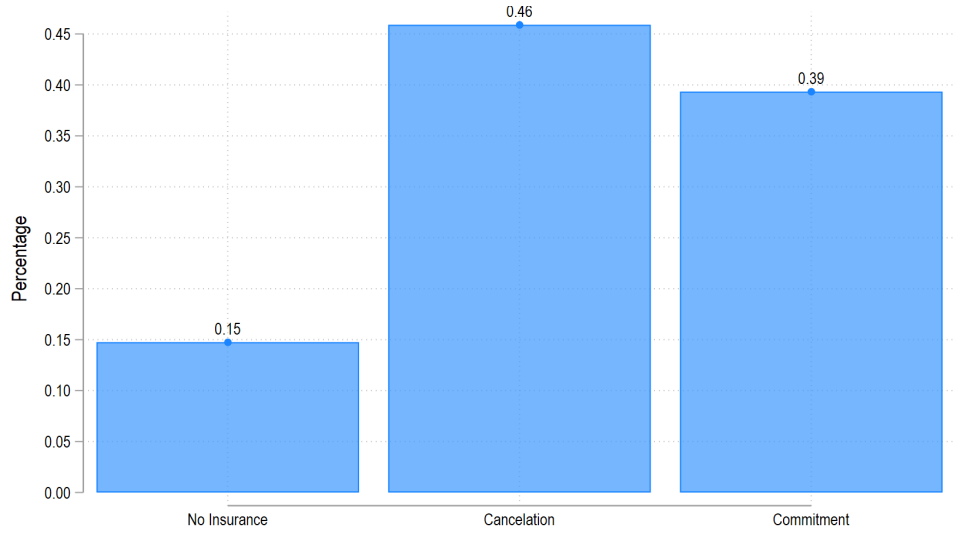
Appendix B. Results from the High-quality Subsample

Table B1: Overview of pre-registered “high-quality" subsample

Variables:	Sample		Control		Treatment		C vs. T
	N	Mean	N	Mean	N	Mean	P.value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample restriction indicator	374	0.671	182	0.670	192	0.672	0.975
		(0.024)		(0.035)		(0.034)	
Informed about insurance	374	0.872	182	0.874	192	0.870	0.912
		(0.017)		(0.025)		(0.024)	
Likelihood sell to YH	374	0.939	182	0.934	192	0.943	0.929
		(0.048)		(0.074)		(0.062)	
PAH correct	374	0.968	182	0.973	192	0.964	0.622
		(0.009)		(0.012)		(0.014)	

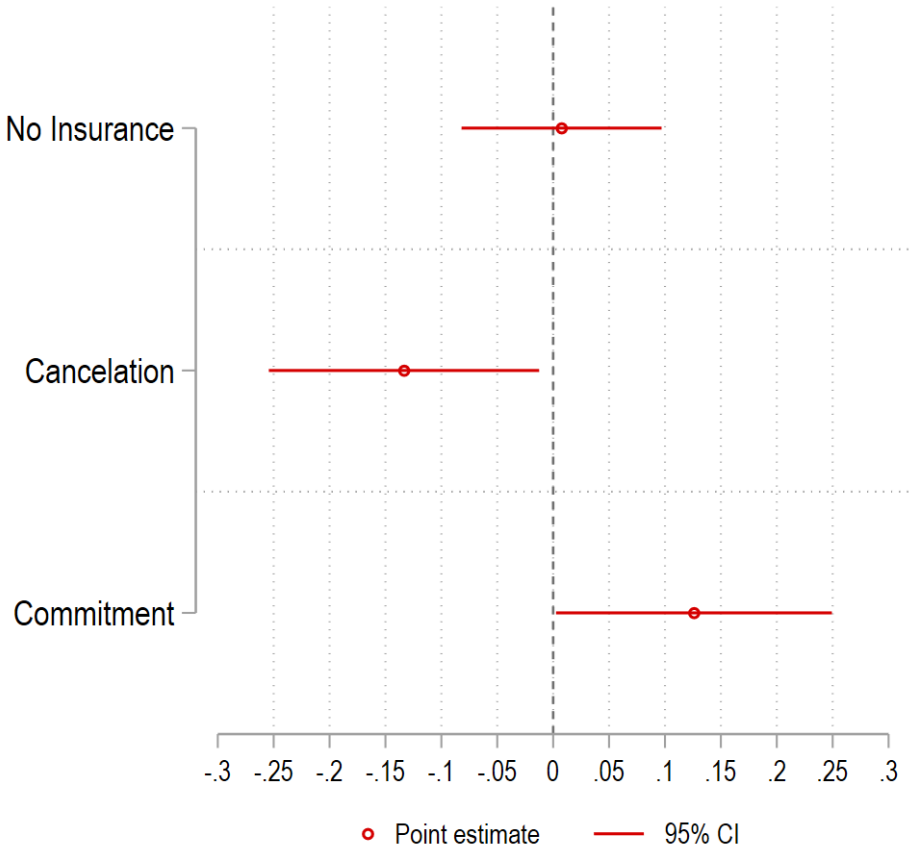
Notes: This table summarizes the pre-registered criteria used to define the “high-quality” subsample and tests balance across experimental arms. The sample restriction indicator equals 1 if the farmer satisfies all criteria: (i) attended the group meetings hence were informed about insurance, (ii) correctly answered all insurance comprehension questions on the first attempt (including questions on the pay-at-harvest timing), and (iii) reported being “likely” or “very likely” to sell to YH in each of the next two seasons in separate verification calls. Columns (1)-(2) report the number of observations and the sample mean (standard error in parentheses) for the full sample. Columns (3)-(4) and (5)-(6) report the corresponding statistics for the control and treatment groups, respectively. Column (7) reports the p-value from a two-sided t-test of equality of treatment and control means. Statistical significance is denoted by * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure B1: Demand for insurance and commitment in control group (subsample)



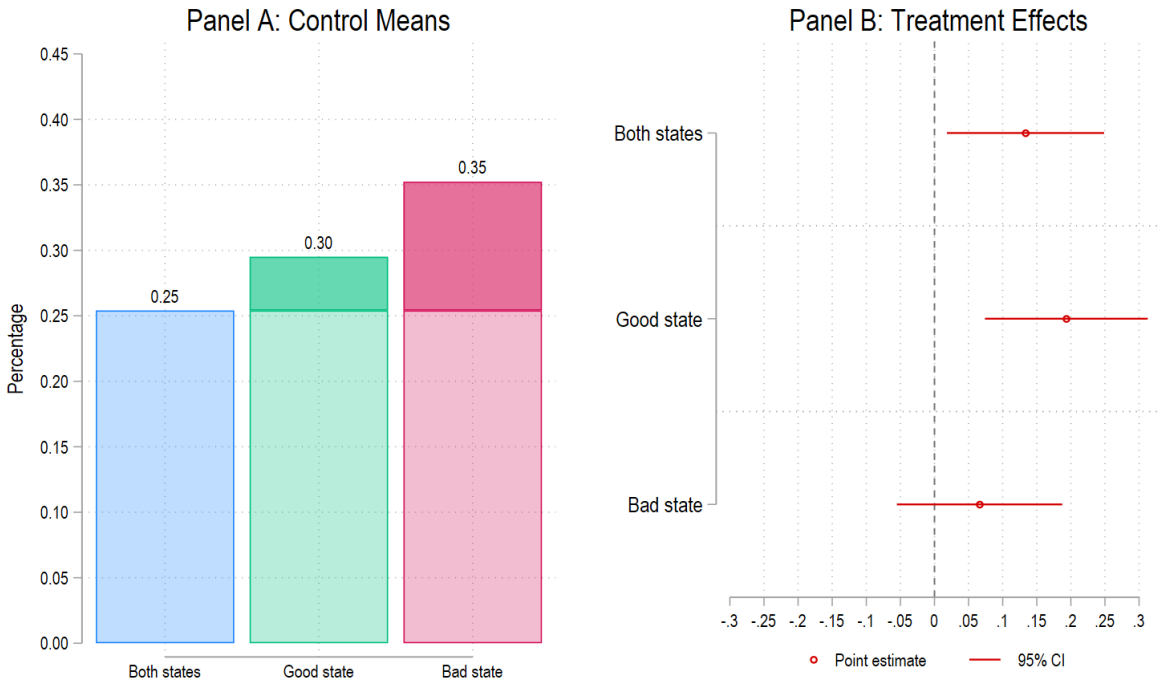
Notes: This figure presents farmers' insurance decisions in the control group, without the intervention, as in Figure 1 but using the pre-registered high-quality subsample. At the beginning of the first season, farmers are offered insurance for the following two seasons, as well as the option to keep or to turn down the option to cancel the insurance at the start of the second season. Turning down the cancellation option represents committing to insurance. The figure shows the proportion of farmers choosing no insurance, insurance with cancelation, and insurance with commitment.

Figure B2: Treatment effects on insurance decisions (subsample)



Notes: This figure reports treatment effects on farmers' insurance decisions, as in Figure 3 but using the pre-registered high-quality subsample. Each dot is the coefficient on the treatment indicator from a separate OLS regression with the dependent variable equal to an indicator for the corresponding outcome: *No insurance* (not interested in insurance), *Cancellation* (prefer insurance for two seasons and keep the option to cancel after the first season), and *Commitment* (prefer insurance for two seasons and turn down the option to cancel after the first season). Randomization was at the individual level, hence standard errors are not clustered. Horizontal bars show 95% confidence intervals.

Figure B3: Demand for state-contingent commitment (subsample)



Notes: This figure presents farmers' demand for state-contingent commitment, as in Figure 5 but using the pre-registered high-quality subsample. When farmers decide on insurance for the following two seasons at the beginning, they are also offered the option to keep or to turn down the option to cancel the insurance at the start of the second season, by state (whether there is an insurance payout in the first season) if desired. Panel A on the left reports the commitment demand of farmers in the control group, divided into different types of commitment: (i) demand for commitment that binds in both harvest states; (ii) demand for commitment in the good state, which mechanically includes those who also commit in both states; and (iii) demand for commitment in the bad state, also including the both-states group. Panel B on the right breaks down the treatment effects on the three types of commitment.