EITM in Practice: On the Determinants of Individual Preferences for Social Insurance

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When do individuals support a given policy?

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When do individuals prefer policy *change*?

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When do individuals prefer policy *change*? (i.e. more or less spending)

Research Question

When do individuals prefer more (less) spending on unemployment insurance?

Our Contribution(s)

We take a prominent theory of individual social insurance preferences from the social welfare policy literature, and we borrow from behavioral economics to incorporate:

- time discounting (discount rate), and
- interdependence of risk and time discounting.

EITM Steps

1. Concepts:
   - Theoretical Concept: decision-making
   - Statistical Concept: ordinal choice

2. Analogues:
   - Behavioral: Utility maximization (discounted expected utility model)
   - Statistical: Discrete choice modeling

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2. Analogues:
   - Behavioral: Utility maximization (discounted expected utility model)
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3. Unite!

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Fundamental assumption: Individual support for a policy is decided by one's evaluation of its anticipated costs and benefits.

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1. income (w_j),
2. risk (u_j), and
3. institutional context (τ and b).

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Expected Utility

Individual support for a policy change will increase when that change improves their welfare (utility).

$$U(p) = E[V(c)] \tag{1}$$

where c = f(w, τ, b)

Consumption

If employed,

$$\begin{aligned} c^e &= w_j - w_j \cdot \tau \\ &= w_j(1-\tau) \end{aligned}$$

If not employed,

$$c^{\sim e} = b$$

Expected Utility

With uncertainty of employment (i.e., risk):

$$\begin{aligned} U(p) = E[v(c)] &= u_j \cdot c^{\sim e} + (1 - u_j) \cdot c^e \\ &= u_j \cdot b + (1 - u_j) \cdot w_j(1 - \tau) - \frac{\tau^2}{2} \end{aligned}$$

Some key assumptions

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Time

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People tend to discount future income.

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$$R = (1 + i_j)^{-t} \tag{2}$$

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Then,

$$\begin{aligned} U(p) &= \sum_{k=0}^{T} R(t+k)\,[v(c_{t+k})] \\ &= u(c_t) + \sum_{k=1}^{T-t} \frac{1}{(1+i_j)^{t+k}} \cdot u(c_{t+k}) \end{aligned} \tag{3}$$

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With a few more assumptions,

$$EU(p) = c_t + \frac{1}{(1+i_j)^{t+k}} \cdot \left[u_j \cdot b + (1-u_j) \cdot w_j(1-\tau) - \frac{\tau^2}{2}\right] \tag{4}$$

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The effect of risk

Risk increases the expected value of spending on this policy.

$$\frac{\partial V(p)}{\partial u_j} = \frac{1}{(1+i_j)^t} \cdot \left[\frac{(1-\bar{u})\bar{w}}{\bar{u}} + w_j \right] \tag{5}$$

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Hypothesis 1:

Risk increases demand for spending on the risk-relevant social insurance program.

The effect of time

Higher discount rates increase the expected value of spending on this policy.

$$\frac{\partial V(p)}{\partial i_j} = \frac{t}{(1+i_j)^{t+1}} \cdot \left[(1-u_j) w_j - \frac{u_j (1-\bar{u}) \bar{w}}{\bar{u}} \right] \tag{6}$$

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Hypothesis 2:

A larger discount rate increases demand for spending on social insurance.

The effects of risk *and* time

Although risk and the discount rate are exogenously and independently determined, their marginal effects are not independent in this model.

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(7)

Hypothesis 3a:

Increasing risk decreases the effect of time discounting on support for social insurance spending.

Hypothesis 3b:

Increased time discounting decreases the effect of risk on support for social insurance.

Rethinking risk and discounting

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- Uncertainty *diminishes the effect* of time.
- Unemployment is associated with stress, unhappiness, and overall anxiety.
- Shift attention to the near-term: meet the needs of the present.
- Evidence (from economics) that risk encourages impatience and myopia.

Unemployment risk should *increase* the discount that individuals apply to the future.

An extension in time discounting

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Risk increases the magnitude of the individual discount factor.

Hypothesis 4:

Risk of unemployment increases the positive effect of time-discounting on support for social insurance.

A Recap

We took an extant model of support for social insurance (e.g., Rehm 2011), and we extended it by:

1. allowing for time discounting, and
2. modeling one's discount factor as a function of their risk/uncertainty.

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    1. Increasing risk decreases the effect of time discounting on support for social insurance spending, ($\uparrow u_j \Rightarrow \downarrow \frac{\partial V}{\partial i_j}$).
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    2. Increased time discounting decreases the effect of risk on support for social insurance, ($\uparrow i_j \Rightarrow \downarrow \frac{\partial V(p)}{\partial u_j}$).
4. Risk of unemployment increases the negative effect of time-discounting on support for social insurance, ($\uparrow u_j \Rightarrow \uparrow R(t), \frac{\partial V(p)}{\partial i_j}$)

Experimental Design

- Prize of the "Harold Clarke Challenge": Questions on a single wave of the Continuous Monitoring Survey:
  - Nationally representative sample of UK adults
  - Implemented monthly (ours in Nov. 2014)
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- Challenges and limitations:
  - How to test four hypotheses with only two questions?
  - How to design the experiment (i.e. question wording, robustness tests, controls...)

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2. Determine preferences for changes in unemployment spending [split by $\frac{1}{3}$]
   - No manipulation of discount factor
   - Low discount factor
   - High discount factor

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1. Establish labor market insecurity [asked of all respondents; Our IV]
2. Determine preferences for changes in unemployment spending [split by $\frac{1}{3}$; Our DV]
   - No manipulation of discount factor
   - Low discount factor [Moderator Variable]
   - High discount factor [Moderator Variable]

All Respondents	"Using the 0 to 10 scale below where the end marked 0 means it is not at all likely that you will lose your job or be laid off in the next 12 months and the end marked 10 means it is very likely you will lose your job or be laid off in the next 12 months, where would you place yourself on this scale?" **0: Not at all likely to lose your job or be laid off in the next 12 months. 10: Very likely to lose your job or be laid off in the next 12 months.**
$N = 832$	

Experimental Research Design

Control Group $N = 263$ $R = R_{control}$	"Using the 0 to 10 scale below where the end marked 0 means that the government should spend much less on assistance to the unemployed and the end marked 10 means that the government should spend much more on assistance to the unemployed, where would you place yourself on this scale?" **0: Government should spend much less on assistance to the unemployed. 10: Government should spend much more on assistance to the unemployed.**

Experimental Research Design

Today Treatment $N = 281$ $R = R_{low}$	"Keeping in mind that *increasing spending in one area today may come at the cost of another*, using the 0 to 10 scale below where the end marked 0 means that the government should spend much less on assistance to the unemployed and the end marked 10 means that the government should spend much more on assistance to the unemployed, where would you place yourself on this scale?" **0: Government should spend much less on assistance to the unemployed, leaving more spending for other areas today. 10: Government should spend much more on assistance to the unemployed, even if it means less spending in other areas today.**

Experimental Research Design

Future Treatment	"Keeping in mind that *increasing spending in one area today may come at the cost of less spending in other areas in the future*, using the 0 to 10 scale below where the end marked 0 means that the government should spend much less on assistance to the unemployed and the end marked 10 means that the government should spend much more on assistance to the unemployed, where would you place yourself on this scale?" **0: Government should spend much less on assistance to the unemployed, leaving more spending for other areas in the future. 10: Government should spend much more on assistance to the unemployed, even if it means less spending in other areas in the future.**
$N = 288$ $R = R_{high}$	

Table 1 : Mapping Theoretical Hypotheses to Empirical Implications

Theoretical Hypothesis	**Empirical Test of Hypothesis**
Hypothesis 1	The relationship between spending support and labor market risk is positive
Hypothesis 2	Individuals given the "Future" treatment will prefer a larger increase in spending, on average
Hypothesis 3a	The marginal effect of time discounting (receiving the "future" treatment relative to the "today" treatment) decreases as risk increases
Hypothesis 3b	The marginal effect of risk is smaller when time discounting is greater (receiving the "future" treatment relative to the "today" treatment
Hypothesis 4	The slope of the relationship between spending support and risk will be larger for those who received the "future" treatment than for those who received only the "today" treatment

Results (H_1: ✓)

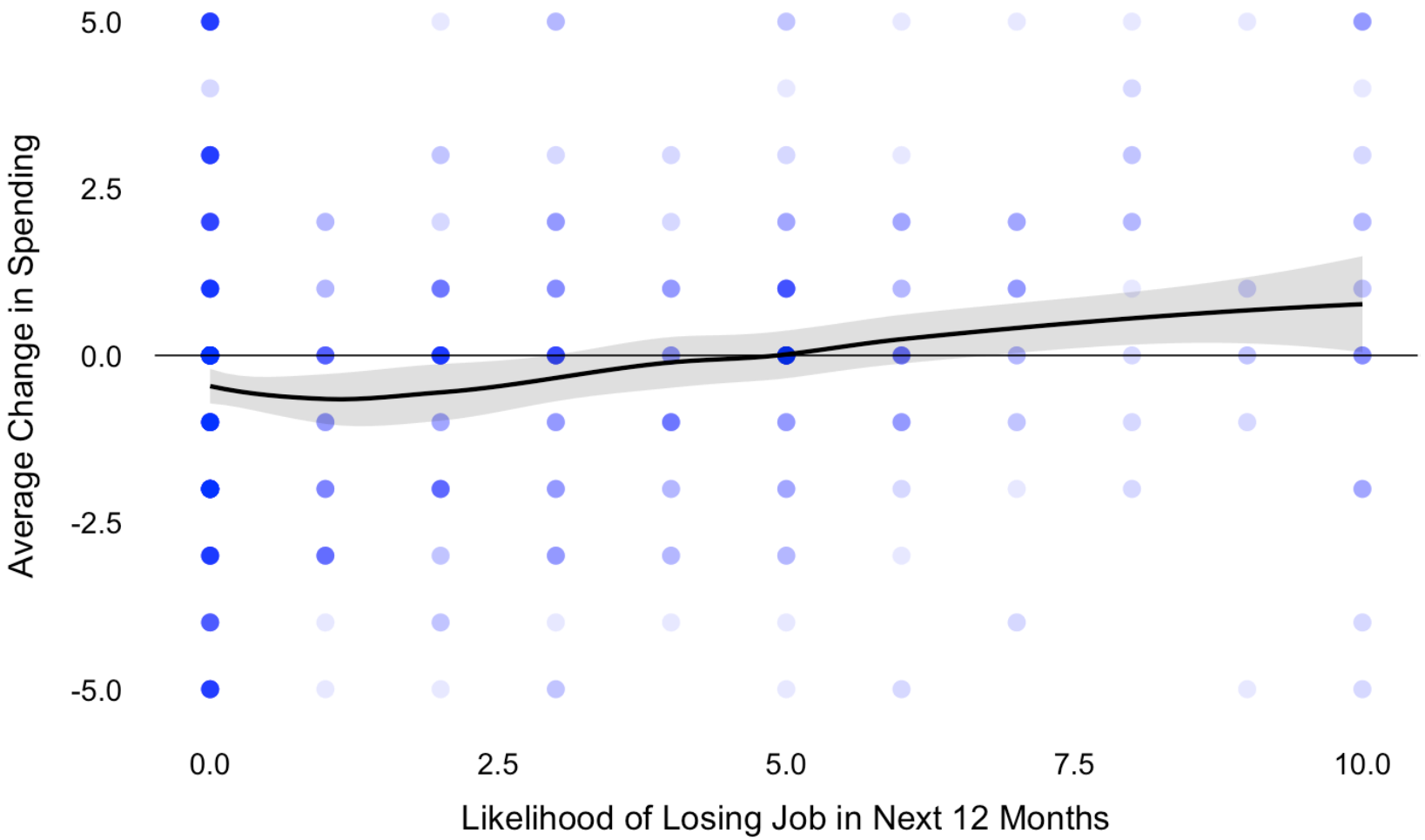


Figure 1 : Scatterplot and Lowess-Smoothed Estimate of Spending Preference as a Function of Risk ($N = 683$)

Results ($H_2 : X$)

	Mean (std. dev.)	Number of Respondents	T-Test Results
No Treatment ($R_{control}$)	0.33 (2.66)	263	Today – No Treatment = 0 -0.03*
Trade-offs Today (R_{low})	-0.36 (2.27)	281	Future – No Treatment = 0 -0.05*
Trade-offs Future (R_{high})	-0.40 (2.14)	288	Future – Today = 0 -0.04

Notes: Means shown along with standard errors in parentheses and number of observations. Values range from -5 (huge reduction) to 5 (huge increase) in spending on unemployment insurance with 0 equaling no change in spending. Significant differences represented by * $p < .05$ on two-tailed t-tests, despite directional hypotheses.

Means and t-tests of Experimental Results

Results ($H_{3b} : X$)

Treatment	Marginal Effect of Risk
Today (r_{low})	0.06 [-0.03 0.16]
Future (r_{high})	0.17* [0.08 0.26]

Notes: Average marginal effects of likelihood of losing job in the next 12 months across discount rate treatments on the change in unemployment spending. 95% confidence intervals in brackets. Values statistically significant from 0 represented by $*p < 0.05$ using two-tailed z-tests.

Average Linear Marginal Effects of Risk Across the Discount Factor

Results (H_{3a} : X, H_4 : ✓)

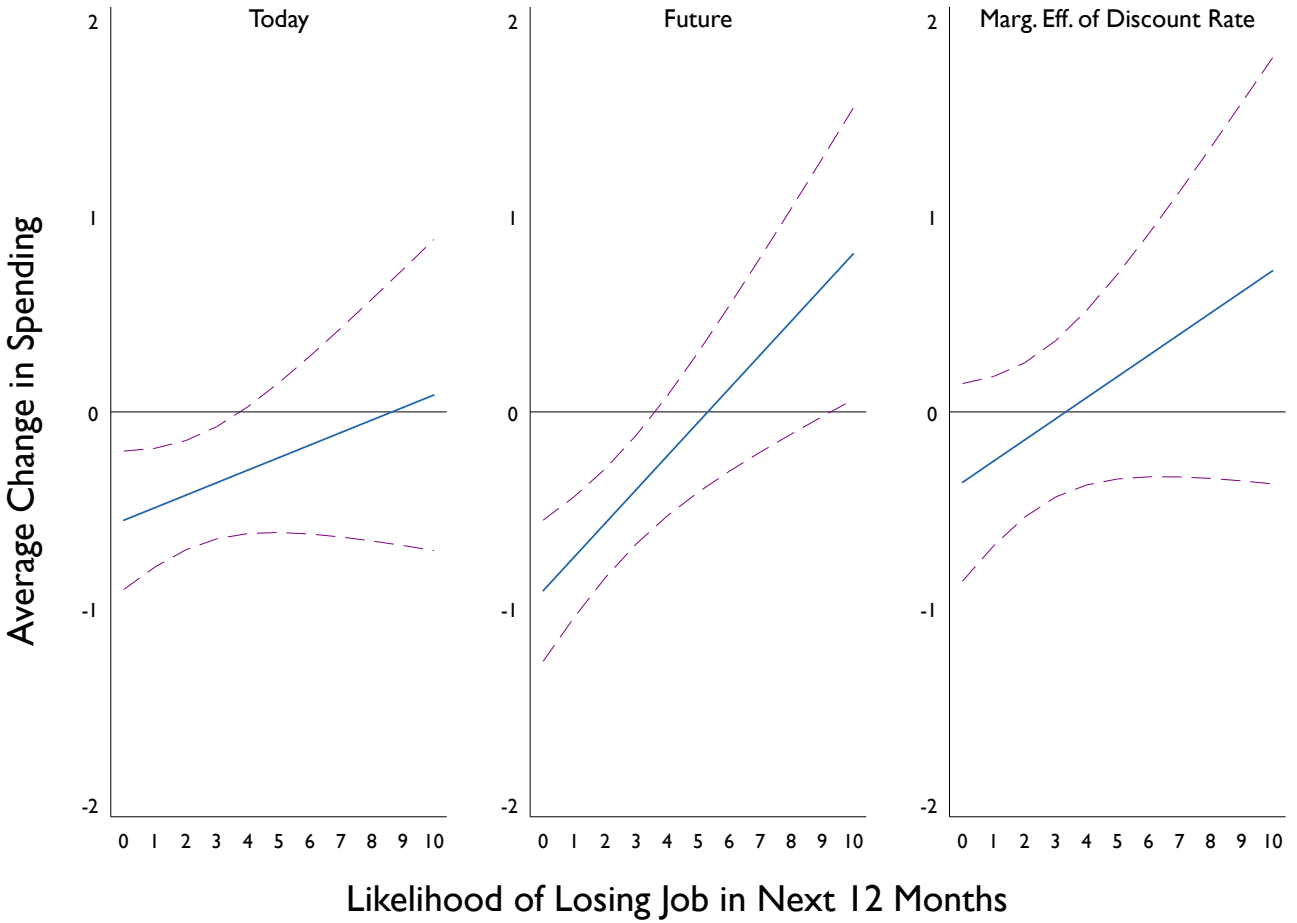


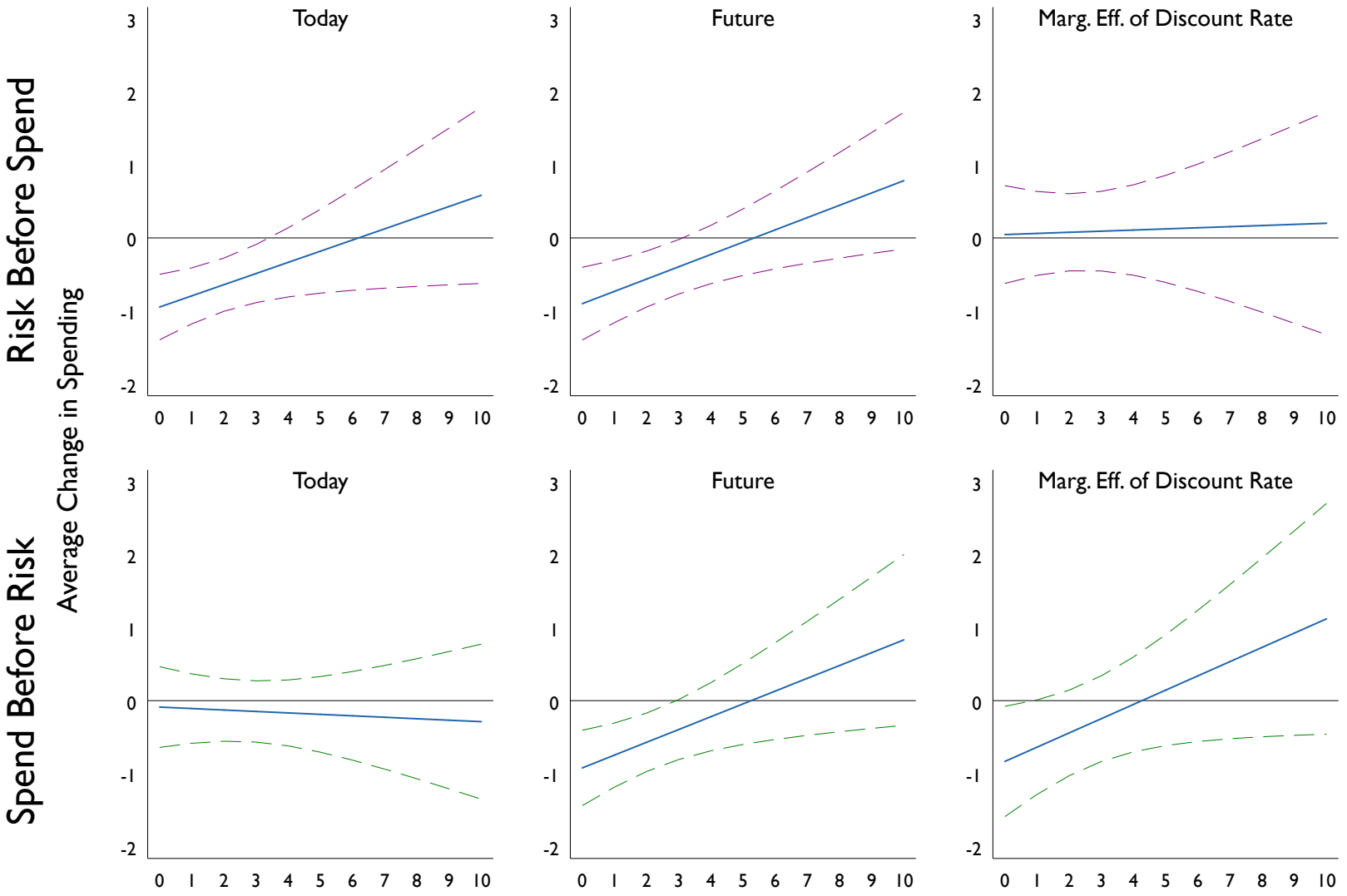
Figure 2 : Predicted Change in Spending Across Risk Levels

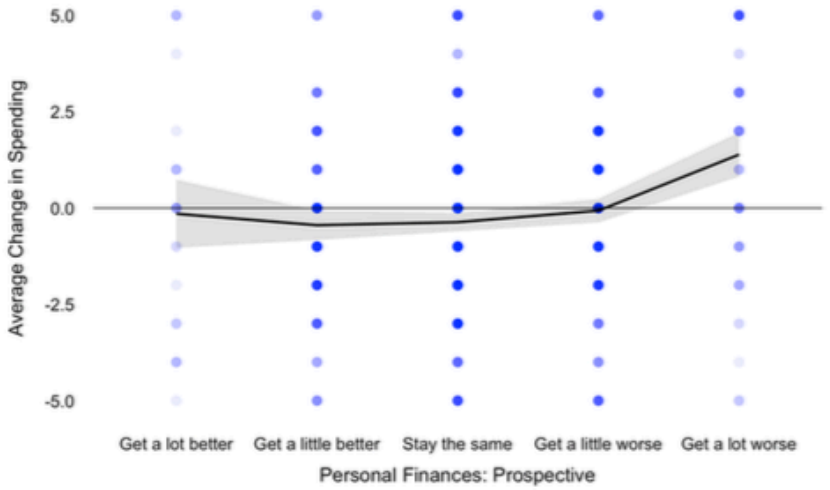
Robustness

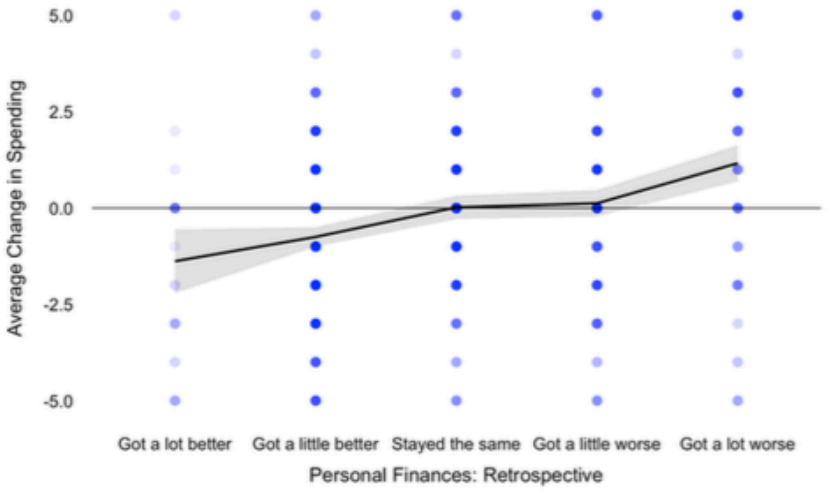
- Balance test of other covariates across treatment types (randomization "works")
- Examine non-linear marginal effects ($log(x)$, x^2, x^3, $\sqrt{(x)}$, $x(log(x))$

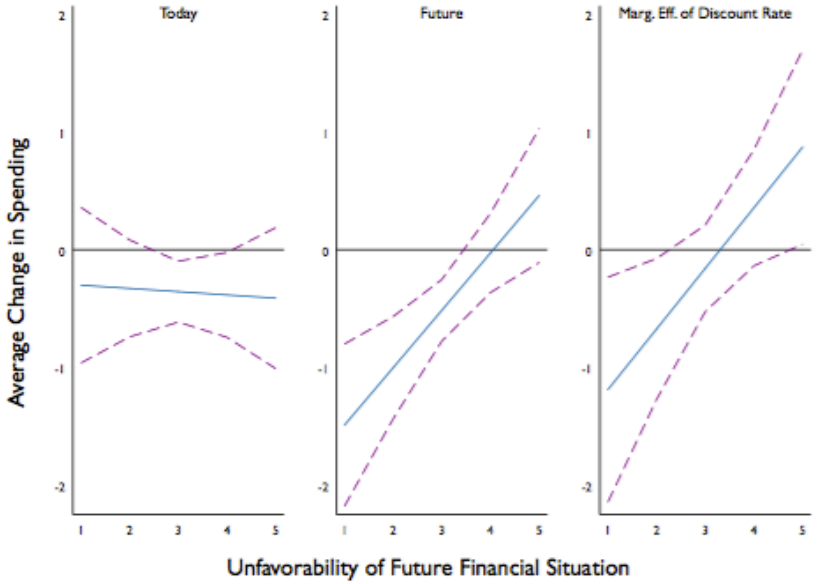
1. Question ordering
2. Operationalizing "risk"

Robustness: Question Ordering

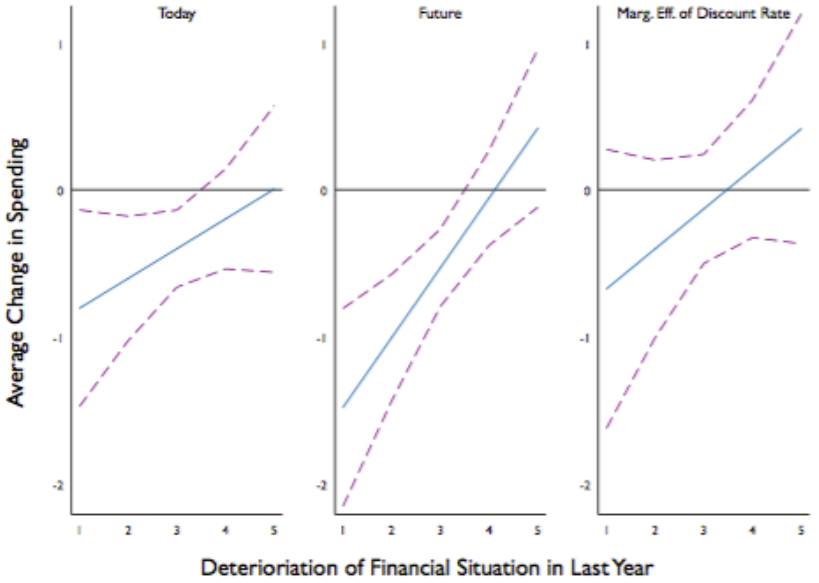








(a) Personal Finances: Prospective



(b) Personal Finances: Retrospective

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- ✓ H_4 : The slope of risk on spending is greatest for those who have high discount factors

Conclusions

- Interactive effects
  - So far implicitly assumed, untested
  - Findings run counter to previous models (hypotheses 3a and 3b)
  - *Time magnifies the effect of labor market risk on spending preferences*
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  - *Time magnifies the effect of labor market risk on spending preferences*
  - *Equivalently, high-risk respondents are most affected by the discount factor*
- Robustness
  - Making respondents aware of their self-risk washes out the marginal effect of the discount factor
  - Findings robust to alternative operationalizations of risk

Thinking More Broadly

Three main components

- Discount Rate
  - Applying temporal framework to other applications
  - Are costs and benefits discounted the same over time?
- Tradeoffs in Spending
- Evaluation of Risk
- Other Behaviors
  - Voting behavior, elite behavior, willingness to pay

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- Governments often give aid in the form of health care abroad. Typically, every $10 spent on health aid provides $20 in benefits in the first year. Given this, on a scale of 0 through 10, where 5 means no change in aid in the form of health spending, how would you like to see aid in the form of health spending changed, if at all?

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  - Hard to excel at formal modeling *and* empirical modeling
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- READ
  - We read *lots* of theoretical papers on social policy preferences, EITM approaches, and survey experiment designs
  - Lots of ways to form an EITM approach