Deeper Habits and Excess Smoothness

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Outline

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Use experimental data to address those difficulties.

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- Show that our subjects condition on past actions: *inertia* $\rightarrow$ *excess smoothness*.
- Agents condition on past actions as a way to economize on scarce cognitive resources.
- Inertia is state-dependent: excess smoothness is increasing in wealth.

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- Game ends after every turn with probability 0.002


Budget: $9,000,000
+ $4,000,000
Pay day!

Budget: $11,000,000

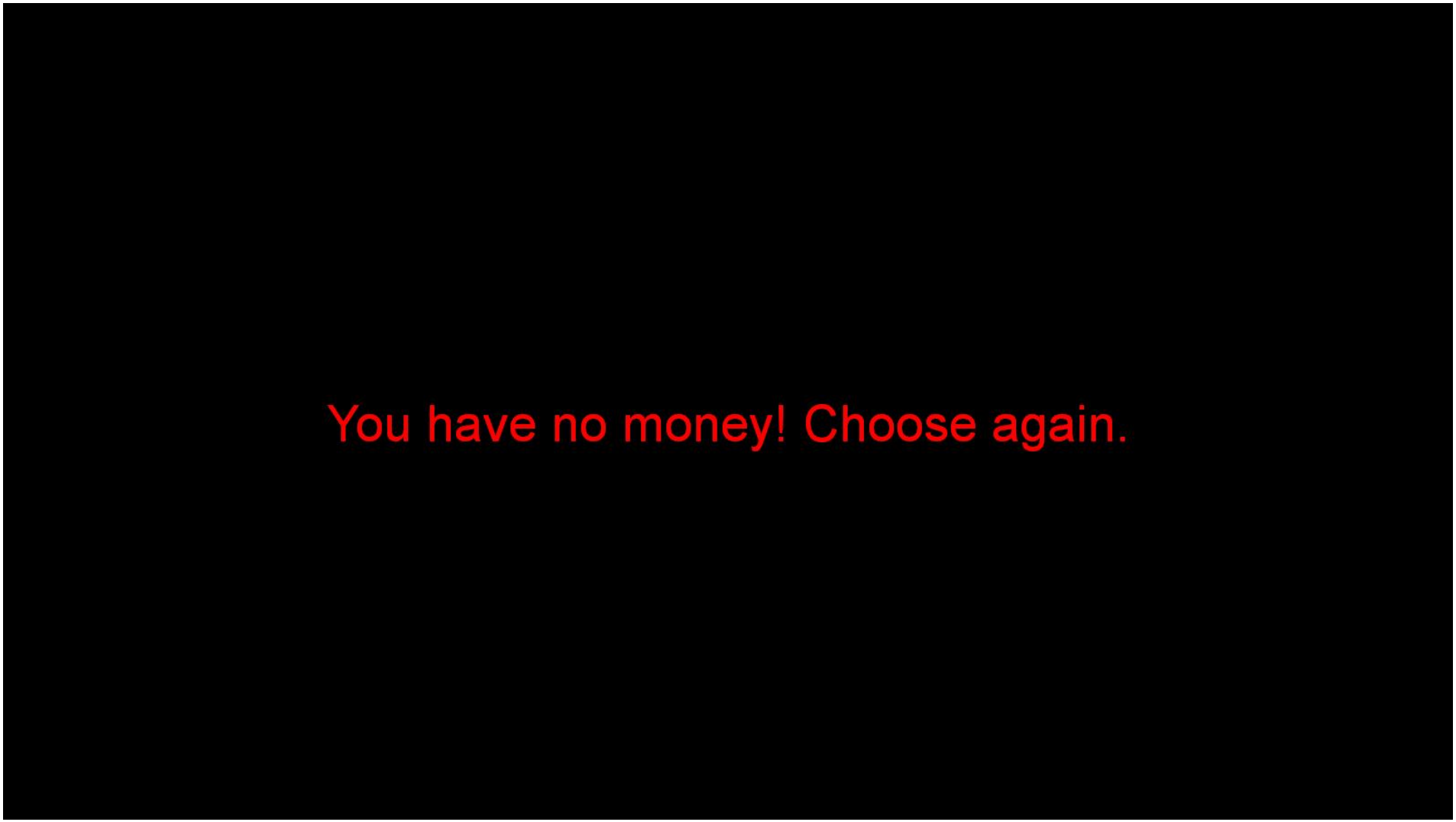
Total Rent
from Properties Owned:
$0

Property #1

Rent:
$5,000

Buy

Pass


You have no money! Choose again.

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- **Objective:** Maximize the expected sum of rent payments.
- Cash and properties are different instruments like wealth and consumption in the classic savings problem.
- Tradeoff between additional rental payment now and the possibility of being unable to purchase a property with higher rents in the future.
- Marginal value of each extra unit of cash wealth is decreasing in wealth.

Policy Function

- Consider a wealth, rents pair (x, r).
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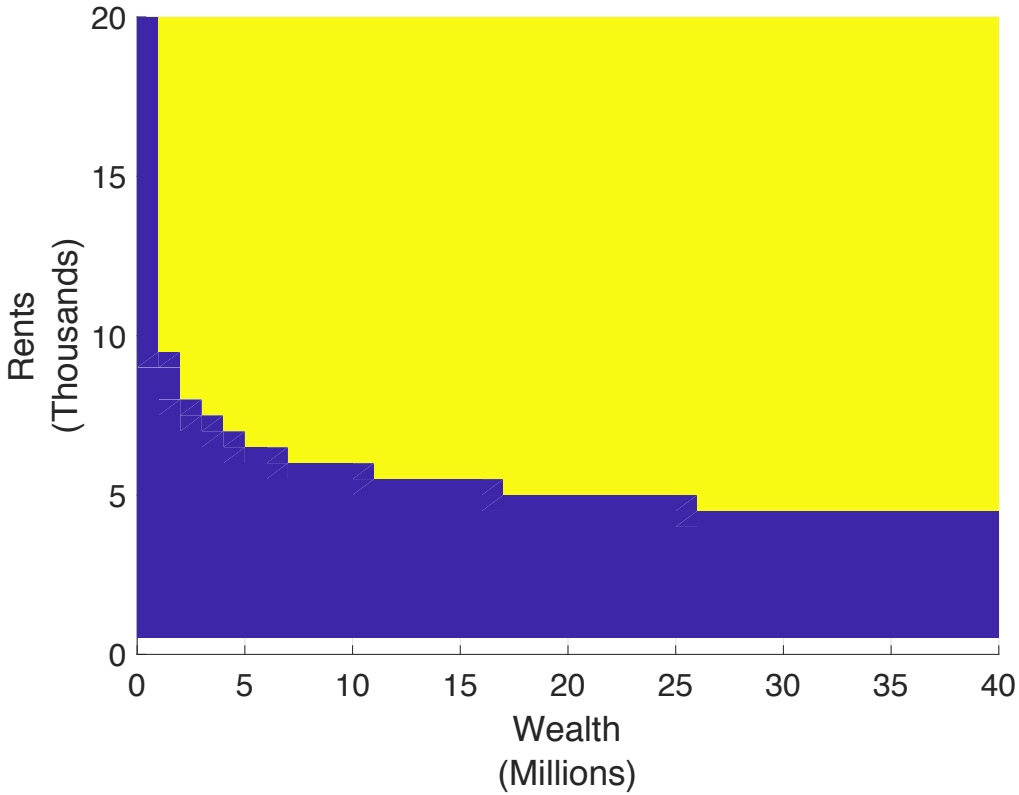


Outline

Excess Smoothness

- Do subjects underreact to changes in x?

$$\hat{\pi}(x) = \alpha_0 + \alpha_1 \pi^{re}(x)$$

where $\hat{\pi}$ denotes empirical Pr(buy$|x$) and π^{re} denotes theoretical under (RE).

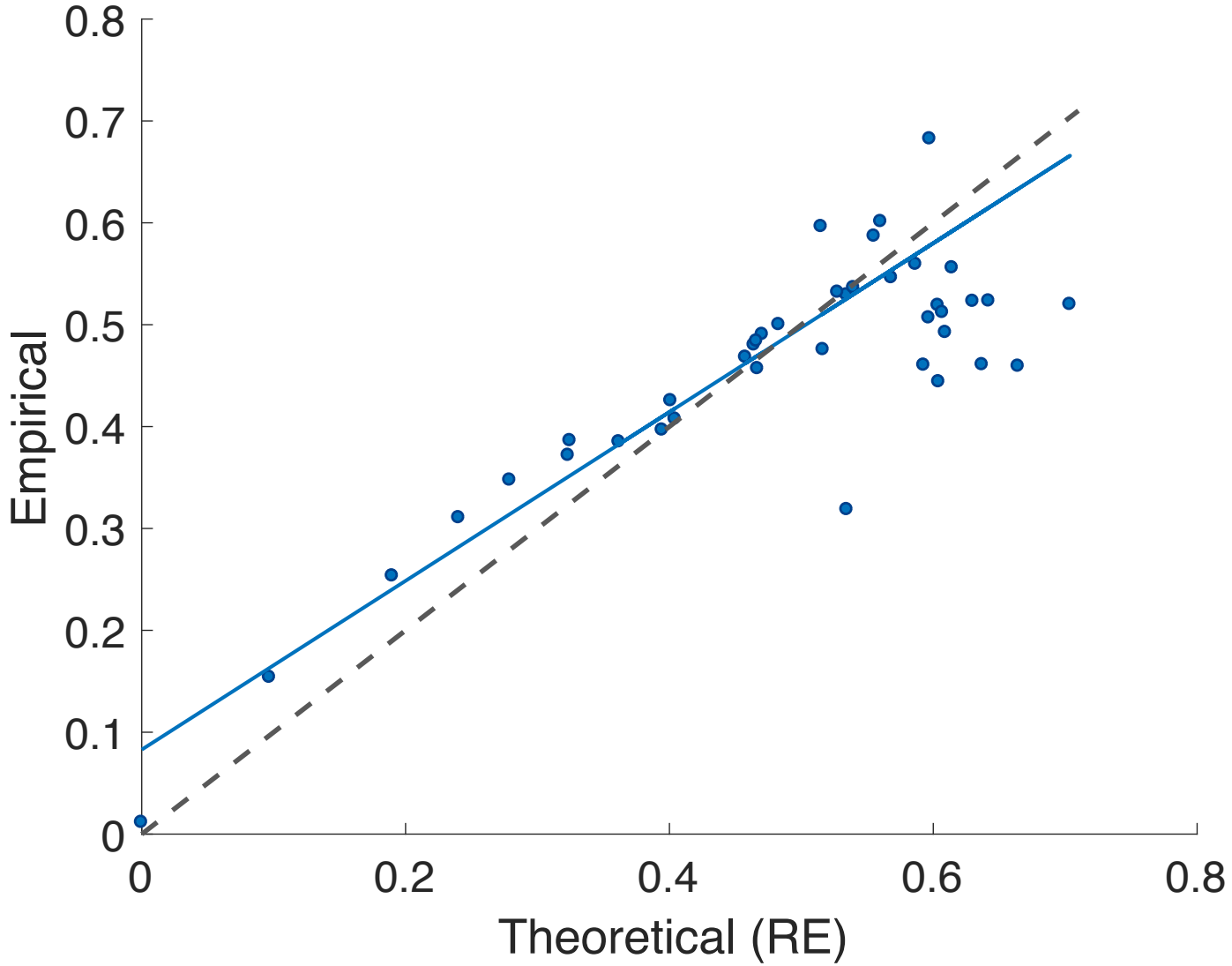
- Under the null of no excess smoothness $\alpha_1 = 1$.

- Excess smoothness if $\alpha_1 < 1$.

$$\hat{\pi}(x) - \hat{\pi}(x') < \pi^{re}(x) - \pi^{re}(x')$$

- $\hat{\alpha}_1 = .83$, $ci = [.73, .92]$

$\Pr(\text{buy}|x)$



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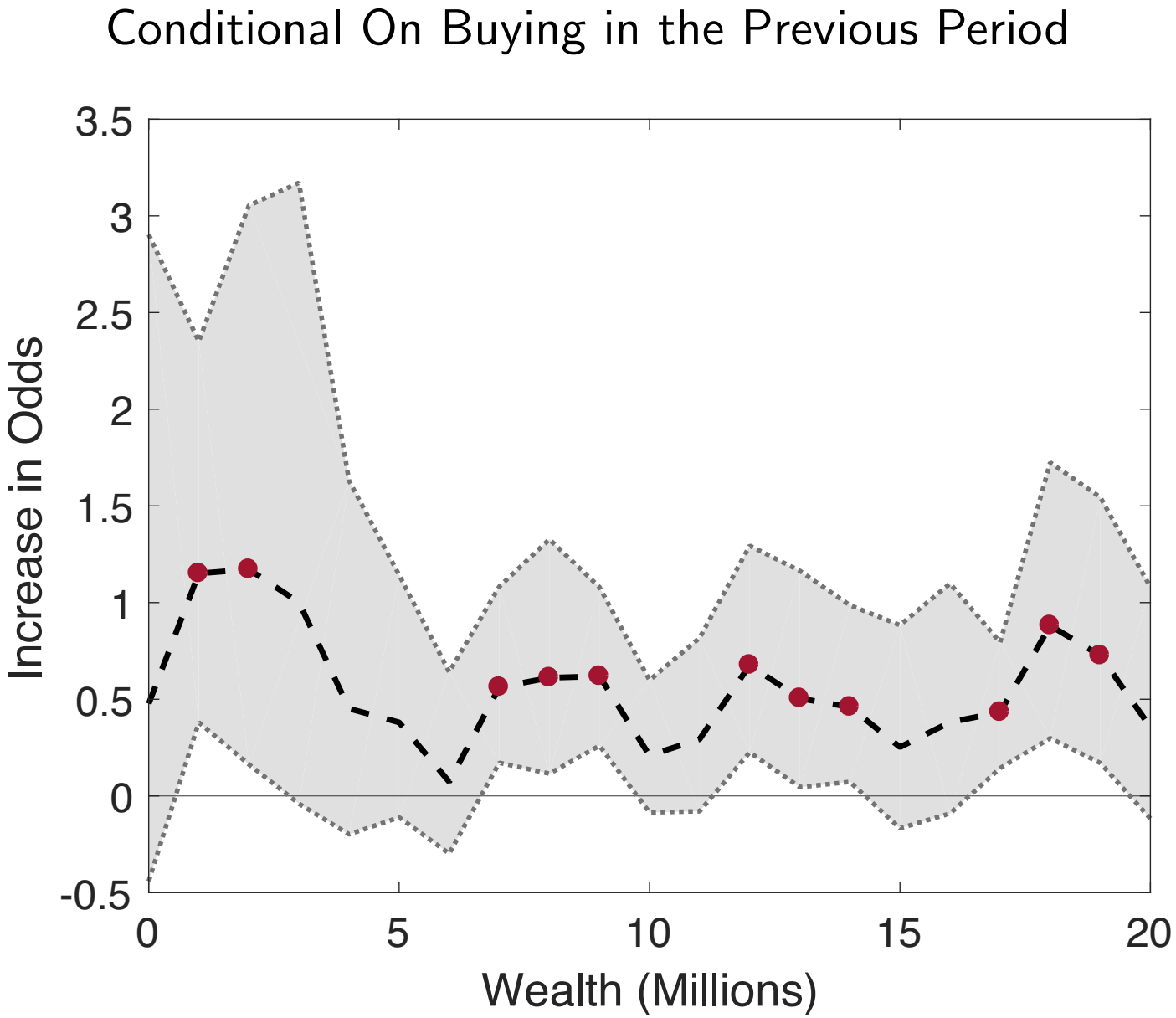
- ρ should be *independent* of past actions.
- Yet ρ goes up by 50 percent if subjects bought in the previous period.

Increase in Odds of Buying



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- Allow for a nonlinear function of x: $0.0142\ (0.0028)^{***}$
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- Random Effects and Turn Polynomial.

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- $\hat{\gamma}_1 = .075 \quad (.019)^{***}$
- Decisions that lead to different actions are *slower*.

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Introduce an interim choice: whether to reconsider.

- Take same action as before.
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- $\pi(x, r)$ probability of buying.
- $I(\cdot)$ information cost function.
- γ^{rec} fixed cost of reconsidering.
- γ^{buy} behavioral bias toward choosing "buy" or "not buy."

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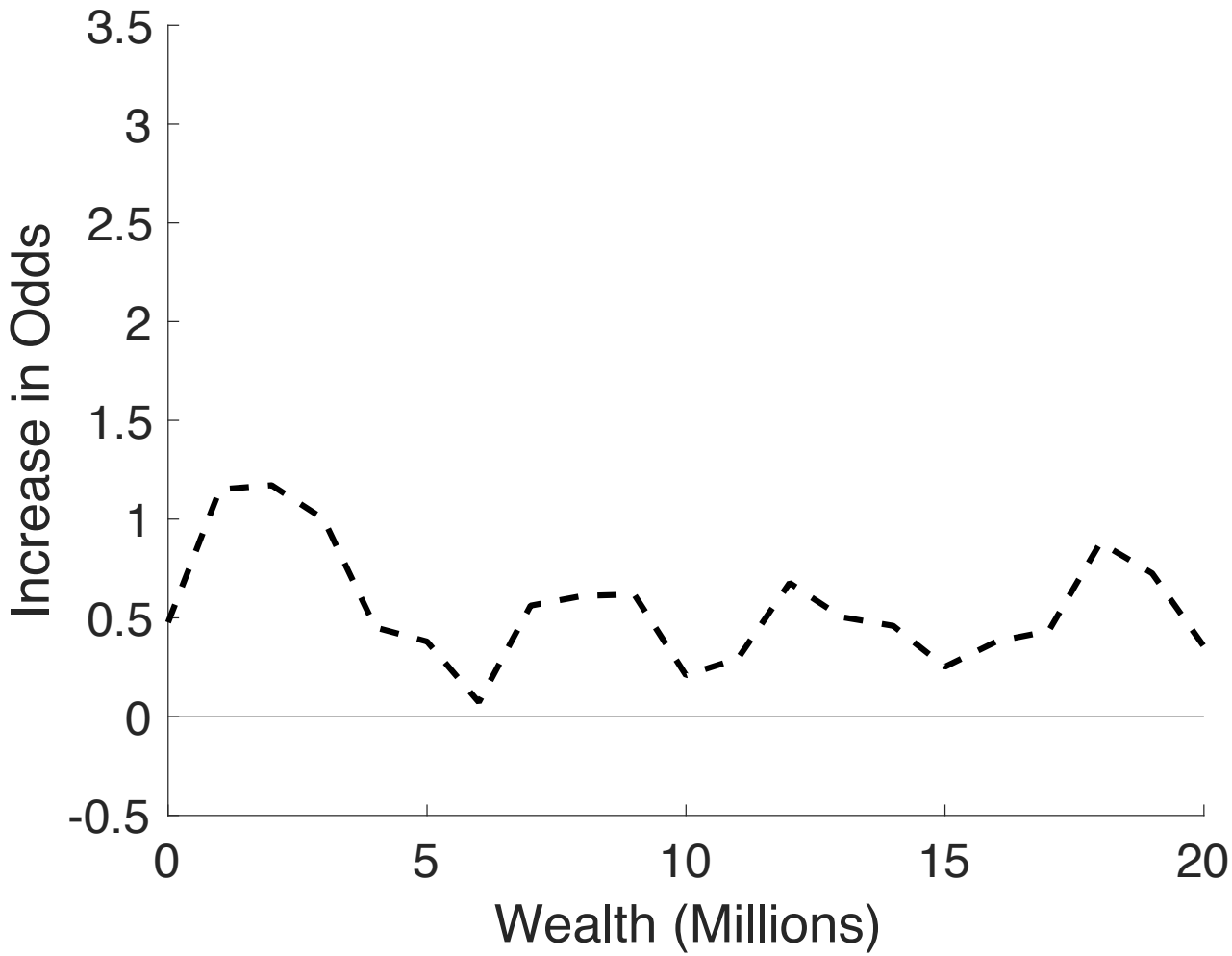
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
Increase in Odds
0
5
10
15
20
Wealth (Millions)

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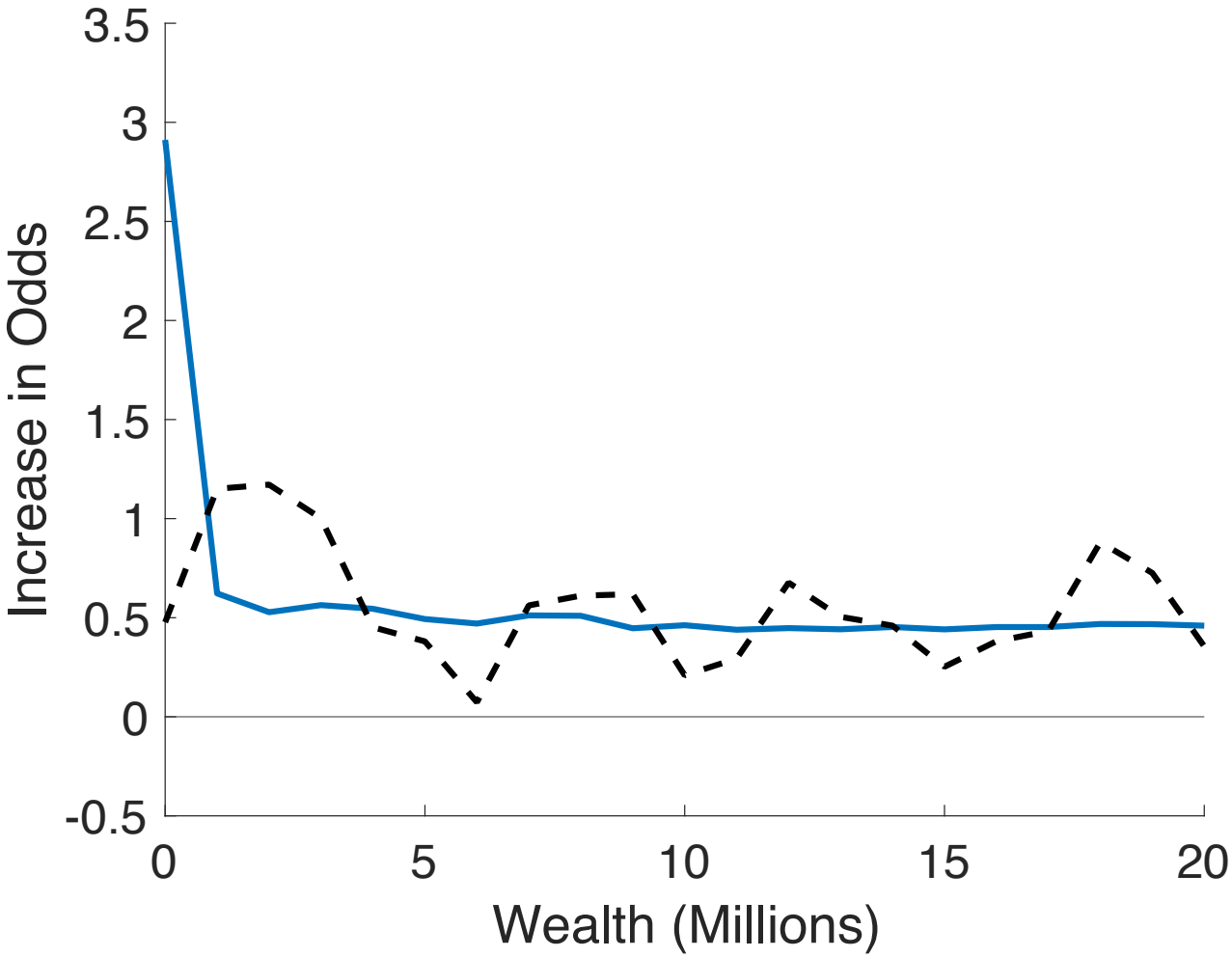
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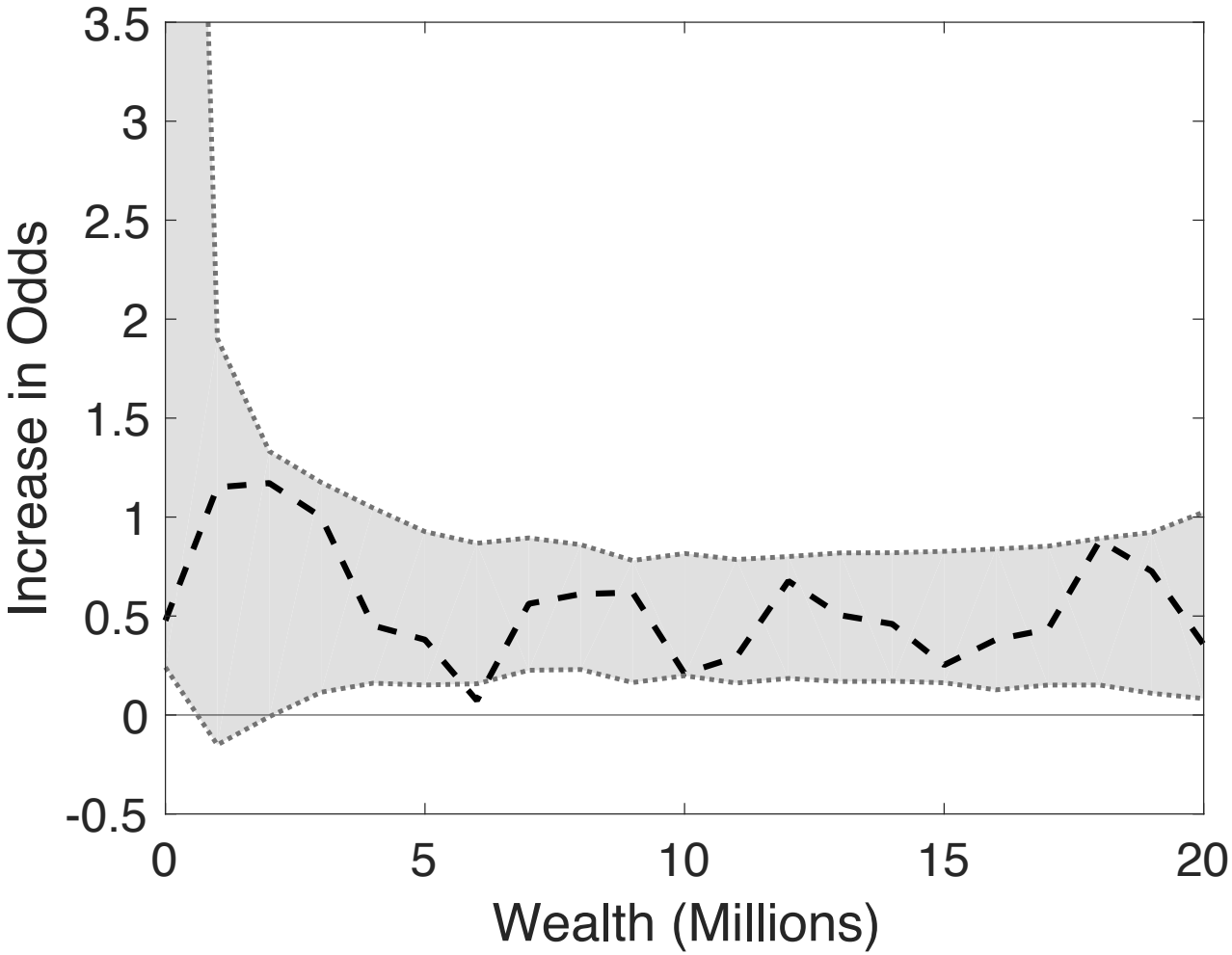
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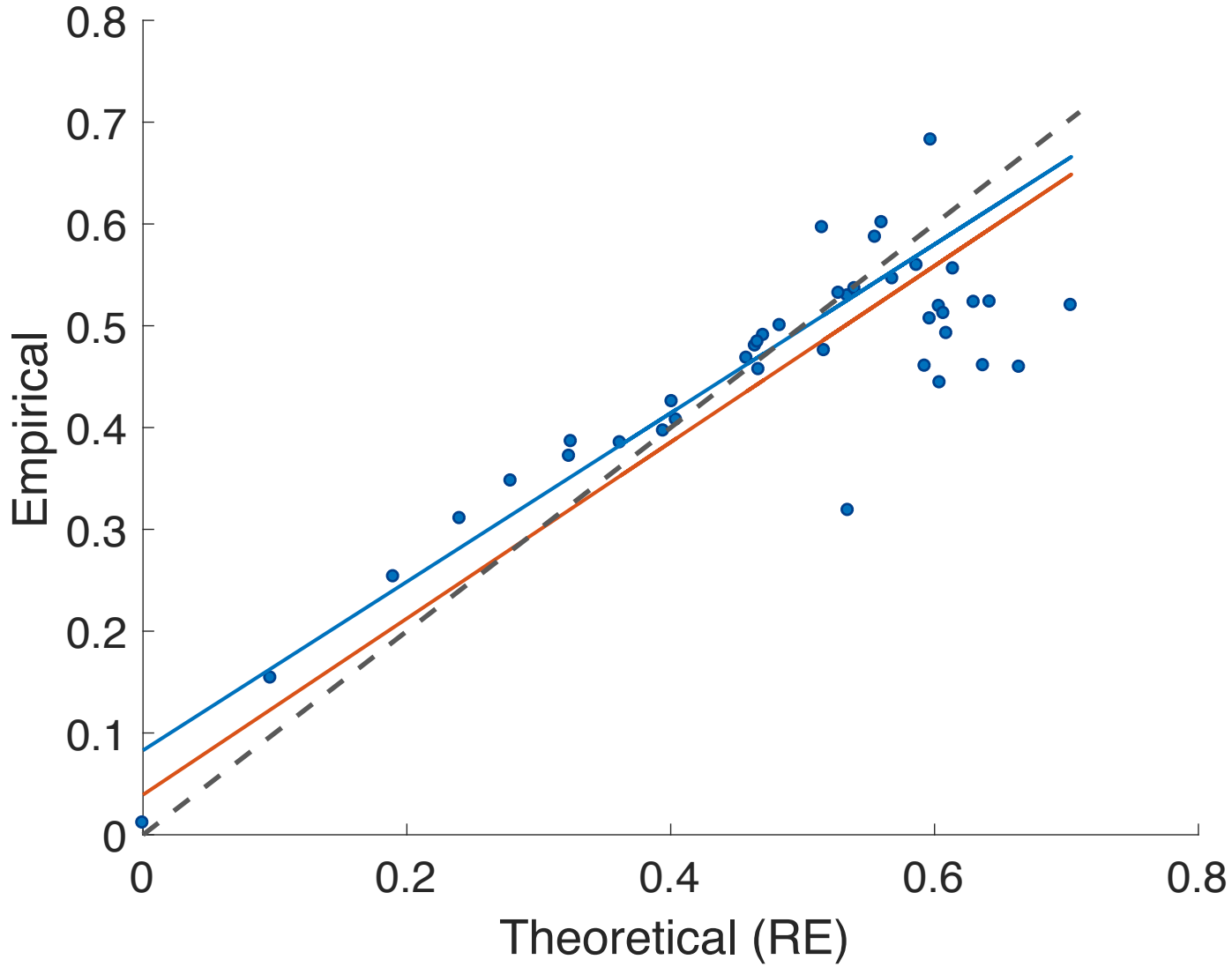
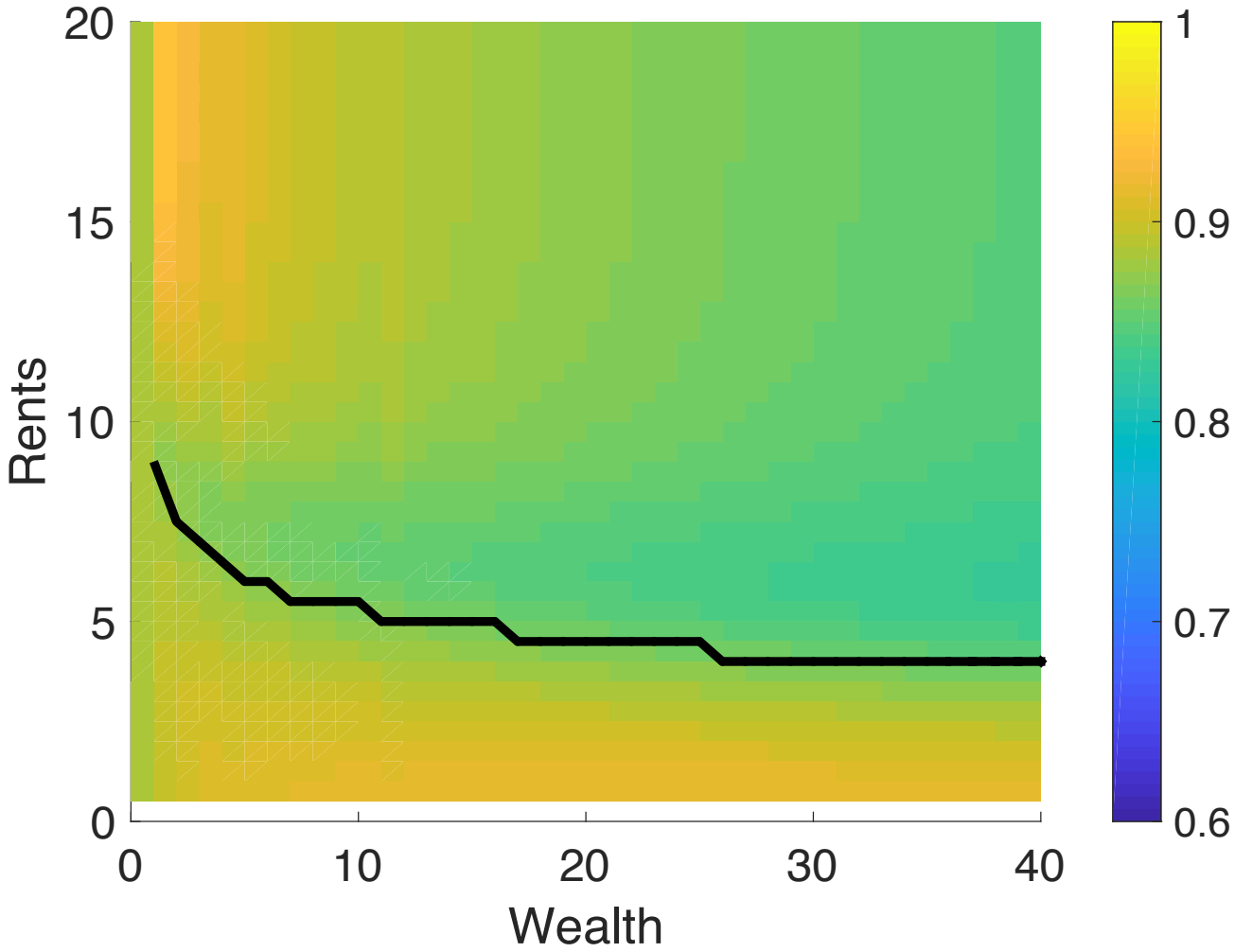


Probability of Reconsideration



Conclusion

- Design an experiment analogous to a consumption/savings problem.
- Sharp test of excess smoothness.
- Cognitive costs $\rightarrow$ Inertia $\rightarrow$ excess smoothness.
- Implication: inertia is state-dependent.
- Future Research: what about excess sensitivity?