



“Understanding Human Response to Risk” *Discussion*

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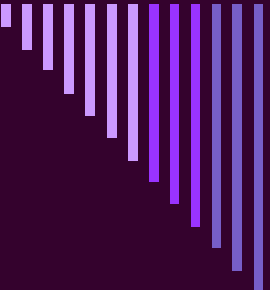
Why get involved in ...

- Neuroscience
 - Interested in neurobiological networks
 - Genetics
 - Interested in genetic variations
 - Endocrinology
 - Interested in endocrine responses to various stressors
 - Agricultural (Applied) Economics
 - Interested in decisions of economic agents involved in agriculture (other applications)
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Critique of Neuroeconomics

- Neurobiological data does not add anything new to the economics data; cheaper and more intuitive behavioral data can provide the same information
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How to add value by doing interdisciplinary research?

- Understand disciplinary limitations
 - Ask right questions
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Lets see...

- Farmers are involved in activities that are *ALWAYS* risky
 - Understanding the nature of risk attitudes is a central question of Agricultural Economics
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From behavioral research

- Risk preferences vary:
 - loss vs. gains (*Tversky & Kahneman, 1979*)
 - across types of risks (*Ellsberg, 1961*)
 - across gender (*Kass, 1964*)
 - over life-time (*Leigh, 1986*)
 - over task domains (*Weber et al., 2002*)

 - *H0: Risk preferences are stable*
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Question:

Are all preferences simply “situational”

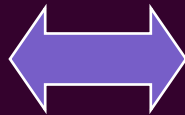
or

Are there any stable individual differences?



Value added by interdisciplinary research

□ Agricultural Economics can design tasks to be investigate; and provide theories of economic behavior



□ Neuroscience, Genetics & Endocrinology collect data about neurobiological and endocrine responses to risky tasks, and about correlations between genetic variations and (dis)preferences toward risks



The research question:

- Are the risk preferences stable across:
 - Time
 - Life-time
 - Domains
 - Environments ?

H0: Risk preferences are not determined biologically



Question for Neuroscience

- Are neurobiological responses to risky choices stable over time and across different types of gambles?
- Are neurobiological responses vary with individual (dis) preferences toward risky choices?

If the research finds that neurobiological responses to risky choices are stable over time and across risky tasks, but varies with individual (dis)preferences toward risky tasks, it might indicate the possible existence of underlying neurobiological characteristics.



Question for Genetics

- Are there any genetic variations that are associated with individual (dis)preferences toward risky choices?

If the research finds that genetic structure varies with individual (dis)preferences toward risky tasks, it might indicate the possible existence of underlying dispositional characteristics.



Question for Endocrinology

- Are endocrine responses to risky choices stable over time and across different types of stressors (gamblers)?
- Are endocrine responses vary with individual (dis)preferences toward risky choices?

If the research finds that physiological responsiveness to risky choices is stable over time and across risky tasks, but varies with individual (dis)preferences toward risky tasks, it might indicate the possible existence of underlying dispositional characteristics.



Implications for economics models

- Subjective Expected Utility Theory (Savage, 1954) assigns each option an expected value based on individual (dis)preferences to risk r_i .
 - For econometric models it is important to understand whether r_i is a fixed parameter, or it is a function of independent variables included in the model.
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Good Luck!
