Introduction to Reference-Dependent Preferences

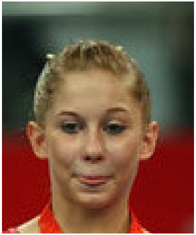
Economics for Neuroscientists Lecture, 2010

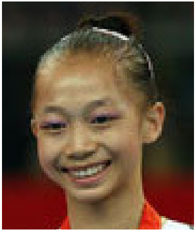
Botond Kőszegi, UC Berkeley

October 15, 2010

Happiness on the Medal Stand

One of these women won a silver medal, and one won a bronze medal. Which is which?





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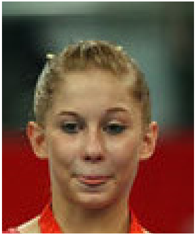

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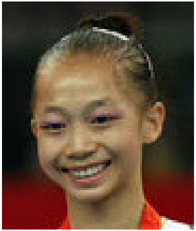

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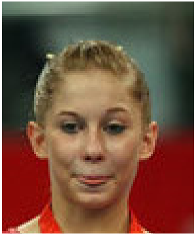
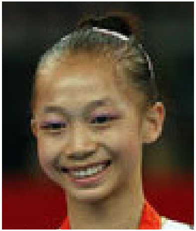


Won silver medal.

Counterfactual outcome: winning gold medal.



Won bronze medal.

Counterfactual outcome: missing medal stand.

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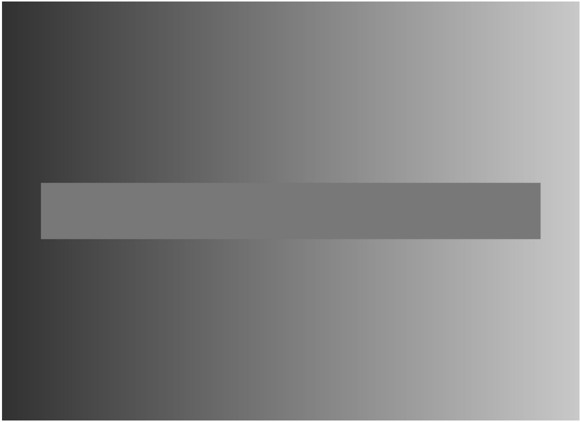

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- I'll go fast, but everything will be completely informal.

Properties of Reference-Dependent Preferences

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- Finding: selling prices are significantly higher than buying prices.
- This is called the *endowment effect*: endowing someone with a good makes her value it more highly.

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- Another manifestation of the endowment effect is the unwillingness to trade objects (Knetsch 1989).

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- Diminishing sensitivity is the less important of the two main properties of reference-dependent preferences.
- The primary original evidence for diminishing sensitivity comes from attitudes toward monetary gambles.

- Kahneman and Tversky (1979):

In addition to whatever you own, you have been given 1000. You are now asked to choose between receiving 500 for sure or 1000 with probability 0.5.

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- Much like reference dependence, diminishing sensitivity is a general feature of human perception:

visual	101 ft. vs. 100 ft.	1 ft. vs. 0 ft.
time	101 days from now vs. 100 days	1 day vs. 0 days
chance	19% vs. 18%	1% vs. 0%

Prospect Theory

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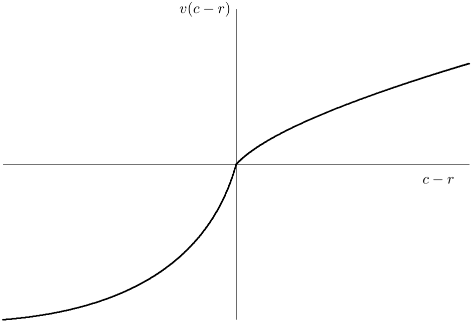

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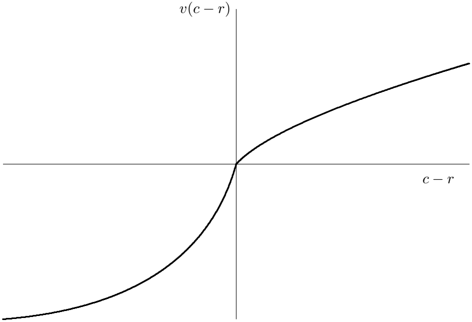

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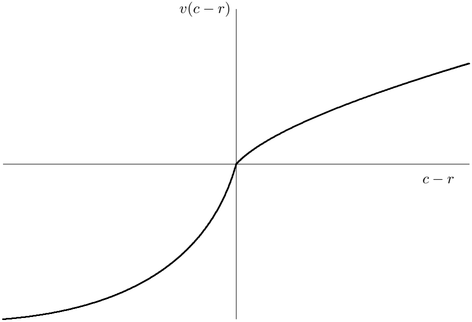

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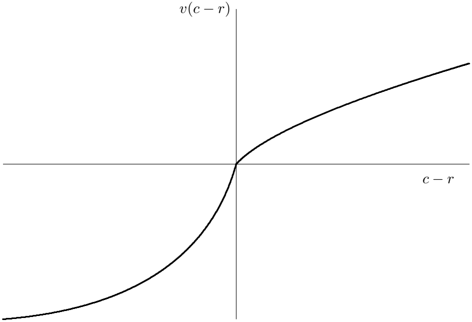

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- Concavity in gains and convexity in losses: diminishing sensitivity.
- The value function is much like the familiar utility function from economics, except that it's reference-dependent.

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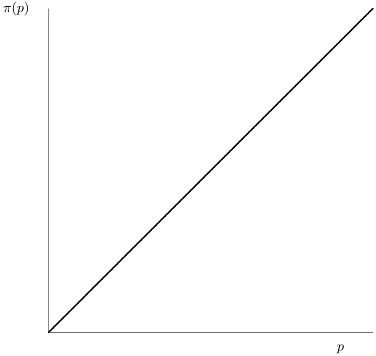

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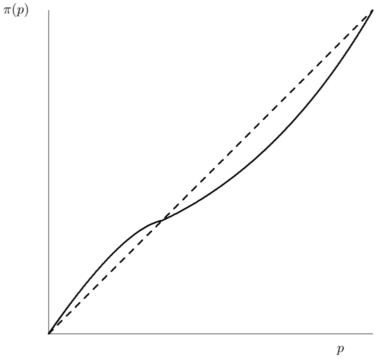

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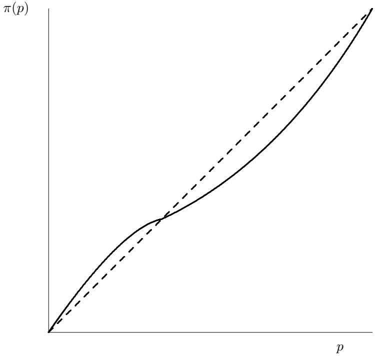

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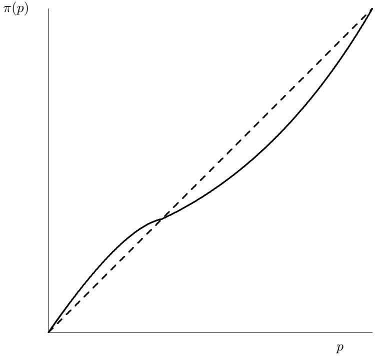

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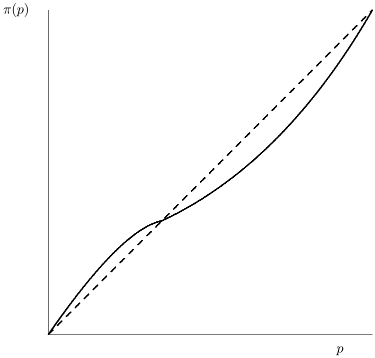

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- Flatness in the middle: unresponsiveness to intermediate probabilities.

Applications of Prospect Theory

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- Loss aversion provides a simple explanation: people are not willing to risk painful losses for not-as-pleasant gains.

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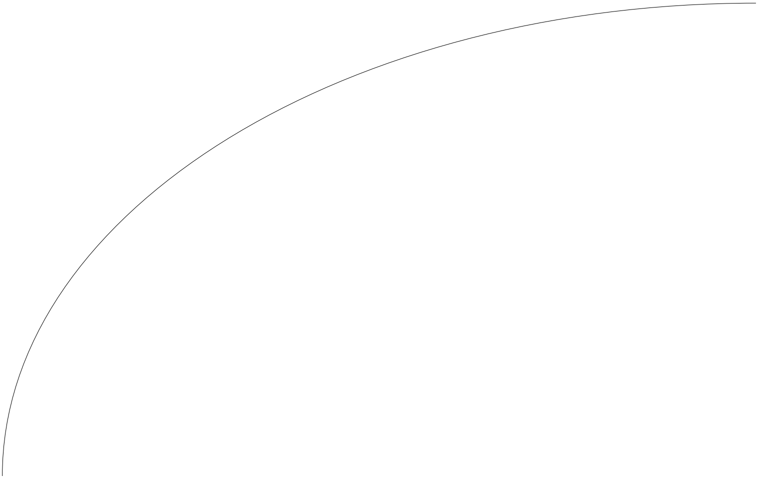
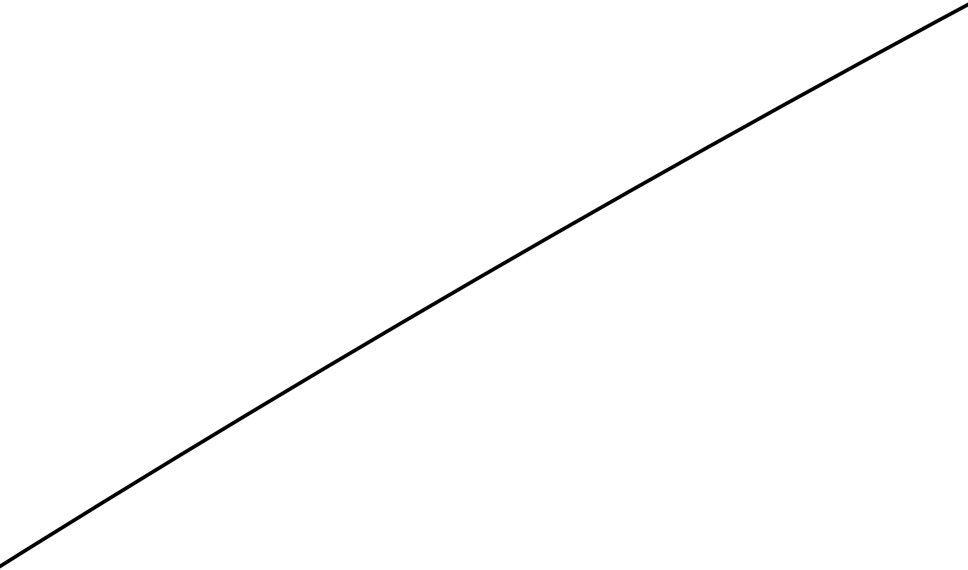
  - Say your lifetime wealth is between $1.8 million ($60K times 30) and $3.6 million ($120K times 30).
  - Let's graph your utility in this range.





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  - Diminishing marginal utility should not kick in over such a tiny range for any reasonable utility function over wealth.
- Reference-dependent utility isn't vulnerable to the same critique because it doesn't require preferences over risk to be described by a single function.
  - That is, how a person's utility function looks over a large range puts little restriction on how it looks over a small range.

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- Basic finding: hours are *negatively* related to wages.

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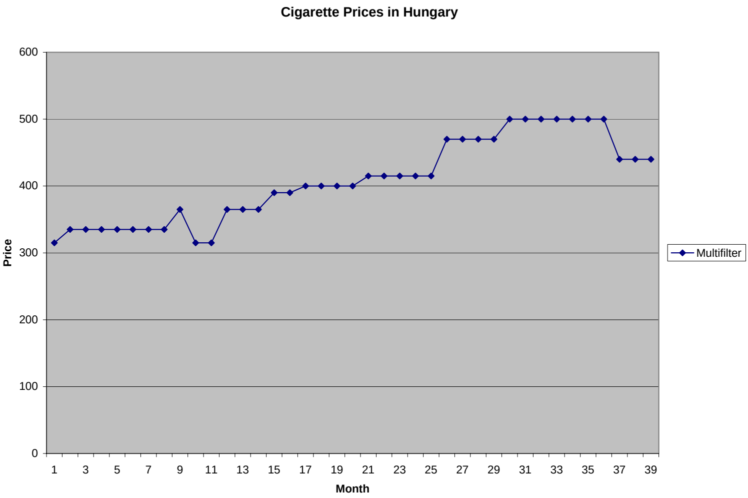
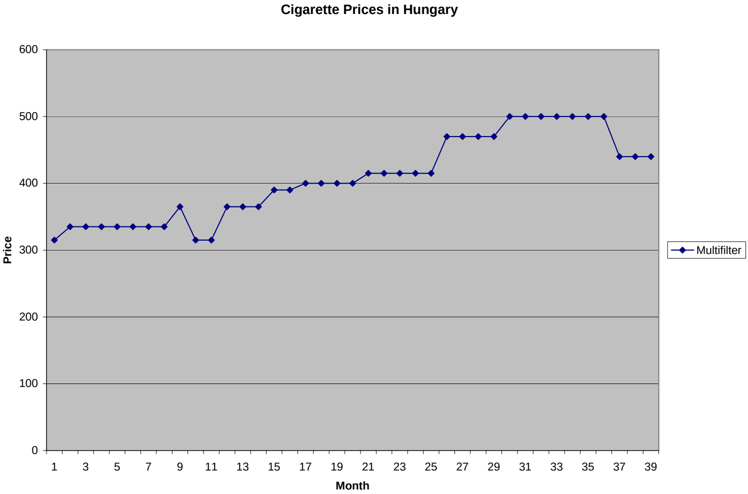
  - Loss aversion implies that it might make sense for drivers often stop at the daily income target.
  - A driver with a higher wage reaches his target faster, so he works fewer hours.

Skip Pricing and Stocks

Application III: Firm Pricing
Heidhues and Kőszegi (2008)





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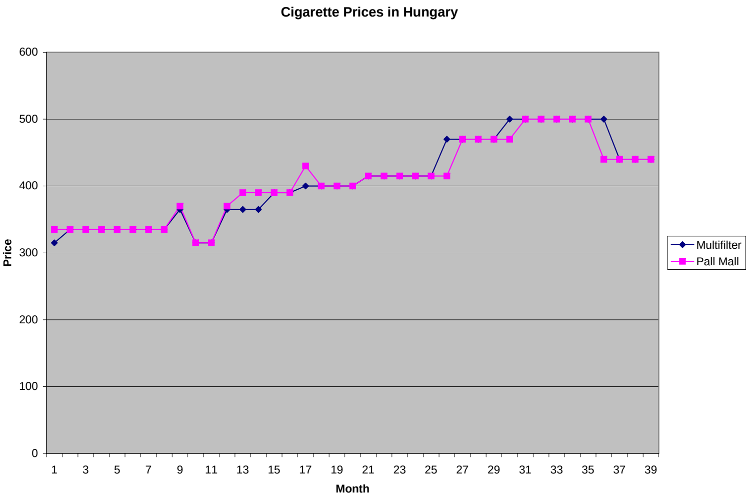

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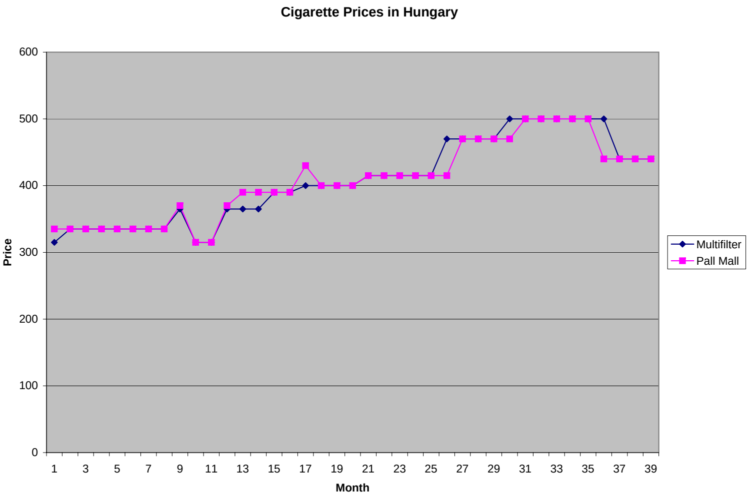

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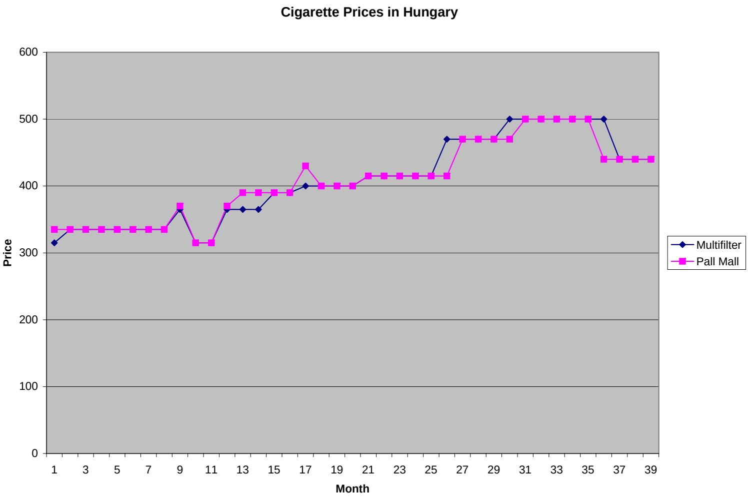

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▸ Skip Stocks

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  - He defines the proportion of losers realized as

$$\text{PLR} = \frac{\#\text{ of realized losses}}{\#\text{ of total losers}},$$

  and similarly for the proportion of gains realized (PGR).

- Key findings:

	Entire Year	December	Jan-Nov
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- The disposition effect has also been observed in the housing market (Genesove and Mayer 2001).

Open Questions

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- Furthermore, if we want to predict in advance what individuals will do, we better be able to predict their reference point.
- Unfortunately, research on reference-point determination is much less developed than research on preferences given a reference point.

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3. *Goals or Aspirations*. A somewhat less coherent literature in psychology argues that goals or aspirations can also serve as the reference point.

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  - For $x = 3.50$, lots of subjects stop working when they've earned €3.50, and for $x = 7.00$, lots of subjects stop when they've earned €7.00.
- Interpretation: the expected possibility of earning €x becomes part of subjects' reference point, so they stop working at €x.

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  2. Often, the outcomes similar others are getting affect expectations of what we'll get.
  3. It's difficult to set goals that you see no chance of reaching.
- But when expectations differ from the other candidates, typically expectations provide a better theory of reference-point determination.
  - This allows us to reconcile some seemingly contradictory findings and intuitions.

- Recall:
    - Kahneman and Tversky (1979) and others find that in laboratory experiments, subjects tend to be quite risk-loving in the loss domain. The disposition effect is also a kind of risk lovingness in the loss domain.
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Reference-Dependent Risk Attitudes

Kőszegi and Rabin (2007)

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- Reasonable explanation: unlike inexperienced traders, experienced traders expect to possibly trade acquired items.

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The Endowment Effect in the Market and in the Lab

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- But when subjects are repeatedly told they'll be able to trade their item (as in Plott and Zeiler 2004,2007), they might expect to trade it—they're like the experienced traders.

Skip Cabbies

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  - If wages are low, drivers hit their hours target before their income target.
    - So in this case labor supply is unrelated to the wage.

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  - *Preferred Personal Equilibrium* (PPE): the decisionmaker chooses the best state-contingent strategy she knows she will carry through given the preferences induced by the plan.

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- In as much as the reference point is expectations, we need careful empirical and theoretical work on expectations formation.

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- Implication: with reference dependence, how a broadly a person brackets her choices can greatly affect what she chooses.
- Yet theoretical and empirical work on how broadly people bracket decisions is almost non-existent.

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- Although Question 2 is important and interesting, Question 1 seems to be an order of magnitude more important.
- I think reference dependence and loss aversion do reflect some real hedonic experiences.
- But there's reason to believe that behavior might be an exaggerated response to true preferences.
- The main reason is *projection bias*: people underappreciate how changes in their circumstances will change their preferences.

Projection Bias in Hunger

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    - They project their current preferences onto their future selves.

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  - The same holds more generally for determining whether a particular pattern of behavior reflects a mistake.