Kiel

Working Papers

Kiel Institute
for the World Economy

Pricing risk and ambiguity: The effect of perspective taking

by Stefan T. Trautmann, and
Ulrich Schmidt

No. 1727 | August 2011

Web: www.ifw-kiel.de

Kiel Working Paper No. 1727 | August 2011

Pricing risk and ambiguity: The effect of perspective taking

Stefan T. Trautmann, and Ulrich Schmidt

Abstract:

There is a large literature showing that willingness-to-accept (WTA) is usually much higher than willingness-to-pay (WTP) in empirical studies although they should be roughly equal according to traditional economic theory. A second stream of literature shows that people are typically ambiguity averse, i.e. they prefer lotteries with known probabilities over lotteries with unknown ones. Our study combines both streams of literature and analyzes whether there is an interaction between the WTP-WTA disparity and ambiguity aversion.

Keywords: WTP-WTA disparity, ambiguity aversion, comparative ignorance

JEL classification: C91, D81

Stefan T. Trautmann
Department of Social Psychology
Tilburg University
PO BOX 90153
5000 LE Tilburg / The Netherlands
E-mail: s.t.trautmann@uvt.nl

Ulrich Schmidt
Kiel Institute for the World Economy
24100 Kiel, Germany
Telephone: +49 431 8814-337
E-mail: uschmidt@bwl.uni-kiel.de

The responsibility for the contents of the working papers rests with the author, not the Institute. Since working papers are of a preliminary nature, it may be useful to contact the author of a particular working paper about results or caveats before referring to, or quoting, a paper. Any comments on working papers should be sent directly to the author.

Coverphoto: uni_com on photocase.com

Running head: Pricing risk and ambiguity

Pricing risk and ambiguity: The effect of perspective taking

Stefan T. Trautmann[1] and Ulrich Schmidt[2, 3]

[1] Tilburg University, the Netherlands

[2] University of Kiel, Germany

[3] Kiel Institute for the World Economy

Correspondence should be addressed to Stefan Trautmann, Department of Social Psychology, Tilburg University, PO BOX 90153, 5000 LE Tilburg, the Netherlands, Email: s.t.trautmann@uvt.nl

Risk and ambiguity in decisions under uncertainty

In decisions under uncertainty, people often prefer actions for which they can attach objectively known probabilities to the potential outcomes to actions for which only subjective beliefs exist. For instance, drugs from established brands with a known record are often preferred to newer and cheaper generic drugs, although the latter contain identical active substances and should be expected to perform equally good (Muthukrishnan, Wathieu, & Xu, in press). Decision theory therefore distinguishes between *risk* (known probabilities) and *ambiguity* (unknown probabilities), and a preference for risky over normatively equivalent ambiguous prospects is often called ambiguity aversion (Ellsberg 1961). Ambiguity averse preferences have been demonstrated in numerous studies, suggesting that the phenomenon is highly robust with respect to variations in the experimental design. Theoretical accounts of ambiguity aversion have offered hypothesis based on the relative knowledge of the decision maker (Frisch & Baron, 1988; Heath & Tversky, 1991), low tolerance for uncertainty (Pulford & Colman, 2008), and anchoring and adjustment in the formation of subjective beliefs (Einhorn & Hogarth, 1985). More recently, ambiguity aversion has also successfully been applied to explain behaviour in a wide range of social settings, including strategic games (Pulford & Colman, 2007), financial markets (Easley & O'Hara, in press), and medical decisions (Frank & Zeckhauser, 2007; Wakker, 2000).

Pricing uncertain prospects: the effect of the perspective

For all empirical applications of decision making under uncertainty, the quantitative measurement of preferences becomes relevant. Valuations of uncertain prospect are usually elicited through pricing tasks (Birnbaum & Stegner, 1979; Sagristano, Trope, & Liberman, 2002; Simonsohn, 2009). Two methods, requiring the decision maker to take the seller or the buyer perspective, respectively, are the *willingness-to-accept* (WTA) and the *willingness-to-pay* (WTP) method. In particular, the WTA elicits the lowest price for which the decision maker would accept to sell the prospect if she owns it. WTP elicits the highest price the decision maker would be willing to pay to acquire the prospect. The two perspectives should elicit the same, true valuation for the prospect under a mild auxiliary assumption: the wealth of the decision maker should not be affected by the transaction significantly enough to influence her uncertainty attitudes. Empirically, however, a valuation difference is commonly observed (see e.g. Birnbaum, Coffey, Mellers & Weiss, 1992; Knetsch & Sinden 1994), even

if wealth effects are precluded (Schmidt & Traub, 2009). The seller perspective systematically leads to higher valuations than the buyer perspective. This causes problems in empirical work because it is not obvious which of the two methods elicits prices closer to the true valuation of the decision maker, an important input in many managerial and policy analyses.

A WTA-WTP difference has been observed in many studies for risky prospects and can been explained by configural weighting (Birnbaum & Stegner 1979; Birnbaum & Beeghley, 1997) or loss aversion (Birnbaum & Zimmermann, 1998; Sugden, 2003; Schmidt, Starmer, & Sugden, 2008). There exist, however, only few studies on the pricing of ambiguous prospects. Ambiguity is a more complex domain than risk, suggesting that biases are more prevalent in pricing such prospects. Two streams in the literature in particular suggest that the WTA-WTP differences *increases* under ambiguity. First, inaction bias suggests that people are hesitant to sell in the WTA task and hesitant to buy in the WTP task. (Ritov & Baron, 1990). Anticipation of post-decision regret makes inaction preferable to action (Mellers, Schwartz, Ho, Ritov, 1997; Roese, 1997; Zeelenberg, van den Bos, van Dijk, & Pieters, 2002). This effect becomes stronger under ambiguity because the range of possible counterfactual outcomes increases. Selling an ambiguous prospect it may turn out ex-post that winning chances for the prospect were very high. Similarly, buying the ambiguous prospect can lead to strong regret if the true chances turn out low. Inaction bias and anticipation of counterfactual thinking therefore predict an increase in the WTA-WTP difference for ambiguous vs. risky prospects.

A similar prediction can be made on the basis of research on preference reversals across elicitation methods under ambiguity (Trautmann, Vieider, & Wakker, 2009). Trautmann et al. (2009) show that WTP measurements are much stronger influenced by comparative ignorance effects (Fox &Tversky, 1995, Fox & Weber, 2002) than either WTA or direct choice methods. The comparative ignorance hypothesis states that ambiguity aversion is stronger if ambiguous prospects are presented jointly with risky prospect than if they are presented in a isolation. In WTP measurements this leads to a stronger depression of the valuation for ambiguous than in WTA measurement, predicting an increase in the WTA-WTP difference.

Testing perspective effects in pricing of risky versus ambiguous prospects

In contrast to the prediction of the inaction bias and the comparative ignorance hypothesis, the only empirical measurement comparing WTA-WTP differences under risk and ambiguity, finds no increase in the difference under ambiguity (Eisenberger and Weber,

1995). Eisenberger and Weber's study has two design features, however, that may reduce any effects on the WTA-WTP difference under ambiguity: first, a within person design is used to elicit valuations. Taking both the seller's perspective and the buyer's perspective gives participants a different informational base for their valuations (Batson, Early, & Salvarani, 1997). As sellers they will more easily simulate negative aspects of the prospects, and vice verse, as buyers they will more easily simulate reasons why they would like to acquire the prospects. This constrains a potential increase in the selling and buying price difference under ambiguity compared to a between person design with a one-sided view unconstrained by the opposite perspective. A second feature of Eisenberger and Weber's study is that they use counterbalancing of risky and ambiguous prospects in the decision process. Presenting the ambiguous prospect separately and before the risky prospect in a counterbalanced design, however, leads to a non-comparative evaluation situation (Fox &Weber, 2002). As we discussed above, comparative evaluation plays an important role in recent models of preference reversal under ambiguity that predict stronger depression of the valuation for the ambiguous prospect under WTP measurement. The within person design and partly non-comparative evaluation may therefore have eliminated the increase in WTA-WTP difference predicted by the theoretical accounts presented above.

The aim of the current study was to test the theoretical prediction of increasing valuation differences under ambiguity without the possible confounds discussed. We also evaluate the possible influence of within person multiple perspectives and non-comparative evaluation, applying a design that differentiates between these two factors. In particular, we hypothesize that under comparative evaluation with no dual seller-buyer perspective the WTA-WTP difference is larger for ambiguity than for risk. Further, we predict that under either the dual perspective taking or non-comparative evaluation, the increase in WTA-WTP difference under ambiguity is reduced.

Method

Participants. Our sample consists of 614 undergraduate students from the University of Tilburg, having various fields of study as their major. Participants were asked to give either one, two, or four pricing valuations for risky and uncertain prospects, providing a total of 981 observations. 39 observations from 20 participants were excluded because they specified prices equal to or larger than the maximum payoff of the prospect, leaving us with 942 valid observations from 594 participants.

Design and Procedures. The experiment was designed to elicit valuations for a risky and an ambiguous prospect under three conditions: comparative evaluation between person (CB), non-comparative evaluation between person (NB), and comparative evaluation within person (CW). CB is our main condition in which we expect the strongest increase in the WTA-WTP difference under ambiguity, and CW and NB test the effect of the dual seller-buyer perspective and the non-comparative evaluation on this increase separately.

Participants were given the description of a risky prospects and (or) an ambiguous prospects modeled upon the classic Ellsberg (1961) two-color problem: predicting the color of a ball drawn from an urn that contains 100 balls, exactly 50 red and 50 black (risky urn). Or predicting the color of a ball drawn from an urn that contains 100 balls, each ball either red or black, with exact number unknown (ambiguous urn). Predicting the color correctly yields a prize of 100 Euro. The exact wording of the two prospects was as follows:

> You are allowed to make one draw from an urn which contains (exactly 50 red and 50 black balls) [100 balls, each ball either red or black. The exact numbers of balls of each color are unknown]. Before you draw, you must choose a color and announce it. Then you draw. If the color you announced matches the color you draw, you win 100 Euro. If the colors do not match, you get nothing.

Participants read the description of one of the prospects in the non-comparative condition or of both prospects in the comparative conditions. In the between-person condition they then gave their maximum willingness to pay for the prospect (WTP) or the smallest amount they would accept to sell the prospect assuming they already hold the right to play (WTA). Those assigned to the within-person condition gave both pricing valuations.

All pricing questions were counterbalanced in the conditions where participants had to specify more than one value. In the comparative conditions, description of both prospects always preceded the pricing questions, and the risky prospect was presented first. This order was implemented to prevent a reduction in ambiguity salience and comparative evaluation observed in Fox and Weber (2002). Further, note that the above version of the Ellsberg problem explicitly allows the participant to choose the color on which they want to bet. This is crucial to make the two prospects normatively equivalent, and to eliminate possible confounds through beliefs that the ambiguous urn was rigged against them by the experimenter (Pulford, 2009). If the winning color is predetermined, it is impossible to

disentangle the effect of ambiguity from the effect of beliefs regarding the number of willing color balls, with the latter influenced by evaluations of trustworthiness.

Results

Considering all observations, we find clear ambiguity aversion with average price €35 for the risky prospect and €26 for the ambiguous prospect (t=7.05, p<.01). We also replicate the WTA-WTP difference, with WTA valuations €18 larger than WTP under risk, and WTA valuations €20 larger than WTP under ambiguity (t=11.49, p< .01). Table 1 and Figure 1 show detailed results for our three conditions.

Table 1: average valuations for the risky and ambiguous prospect under three conditions

	CB		NB		CW	
	risk	ambiguity	risk	ambiguity	risk	ambiguity
WTP	31(30)	15(10)	25(20)	18(10)	23 (20)	12(10)
WTA	48(50)	38(40)	44(50)	39(50)	41 (50)	29 (25)
difference	17	23	19	21	18	17

Median in brackets

As can be observed from the figure, the whole WTA-WTP gap shifts downwards under ambiguity for each of the conditions. The slope of the valuation between risk and ambiguity is more shallow for the non-comparative condition NB compared to the two comparative conditions, suggesting reduced ambiguity aversion under non-comparative pricing. In the CW conditions, all valuations are lower than in the between person conditions. Table 1 and Fig. 1 show a clear increase in the WTA-WTP difference in the CB condition, a much smaller increase in NB and a slight decrease in CW. We test these observations statistically in a regression framework.

In Table 2 we regress valuations on a set of dummy variables for direct effects of WTA valuation and presence of ambiguity, and an interaction term for WTA and ambiguity. The dummies measure deviations from the benchmark of a WTP valuation for the risky prospect. In particular, the interaction term measures by how much the WTA-WTP difference increases under ambiguity. Depending on the condition, participants submitted either one valuation (NB), two valuations (CB), or four valuations (CW). We control for within person clustering by using random effects panel regression.

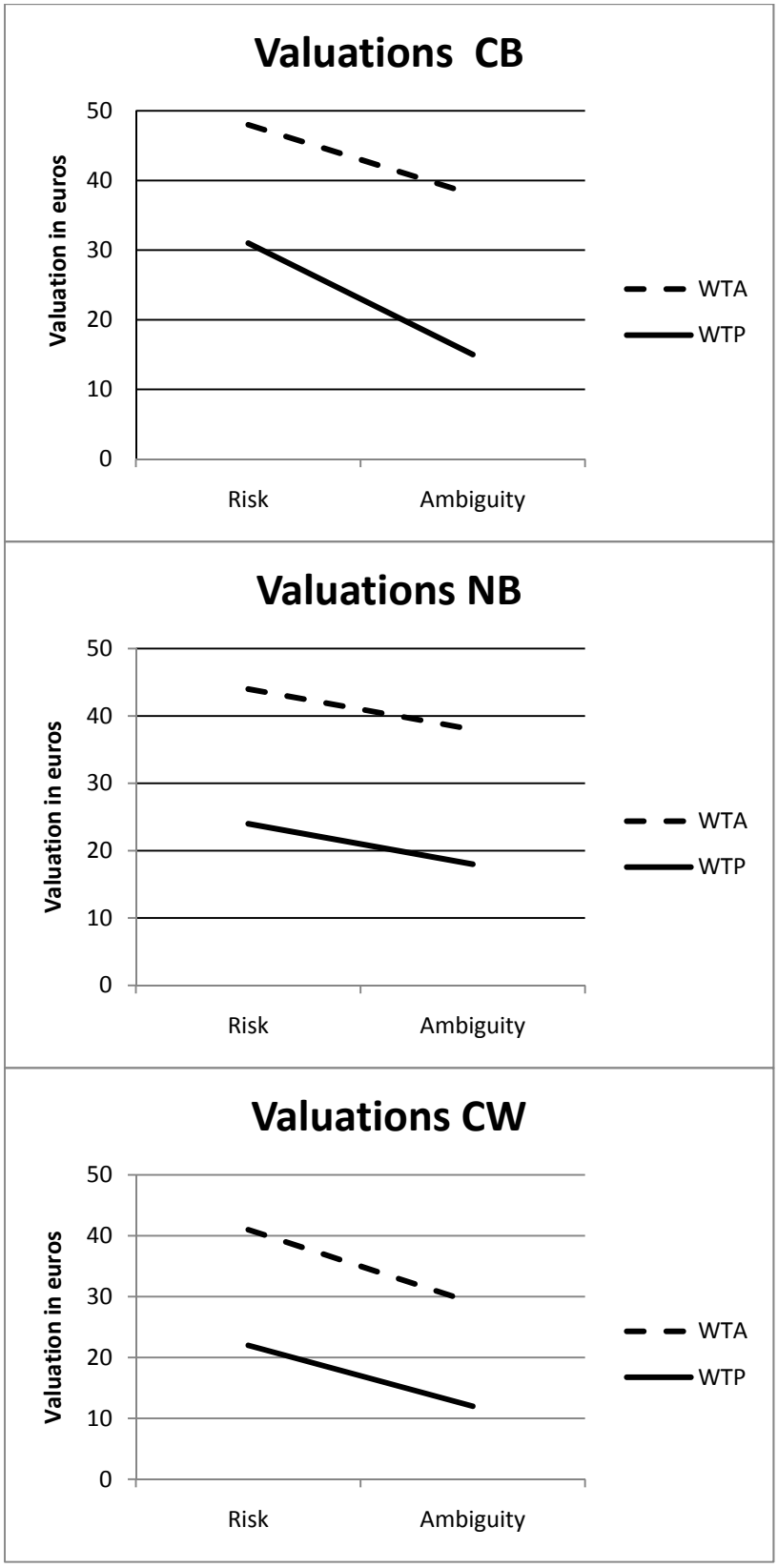

Figure 1: Average valuations for the risky and ambiguous prospect under three conditions

Table 2: Regression analysis of pricing valuations

	Dependent variable: valuation		
Explanatory variables	CB	NB	CW
WTA	17.43 (2.92)**	19.79 (2.99)**	18.73 (2.52)**
Ambiguity	-15.12 (1.83)**	-6.52 (2.91)*	-10.17 (2.48)**
WTA*Ambiguity	5.30 (2.66)*	.78 (4.22)	-2.20 (3.58)
Constant	31.13 (2.02)**	24.89 (2.07)**	22.63 (2.10)**
#participants	175	356	63
#observations	342	356	244
R^2	.28	.22	.28

Regression analysis confirms a clear effect of the seller versus the buyer perspective, with WTA valuations being significantly larger than WTP in all three conditions. Similarly, ambiguity has a significant negative effect on valuation in all three conditions. Under the non-comparative condition NB, however, the ambiguous prospect is priced only €6.52 lower than the risky prospect, compared to a €15.12 discount of ambiguity under the comparative condition CB.

There is a significant interaction between ambiguity and pricing perspective of €5.30 for the condition CB. The regression confirms the qualitative analysis from Fig. 1 that the WTA-WTP difference becomes larger in this condition. For NB the regression shows no significant interaction term. In the within person condition, the interaction is negative (larger difference for risk), but insignificant.

Average valuations are lower in the within person condition CW than in either CB or NB (ts> 2.87, ps<.004). Closer examination of the effect of comparative evaluation in the between conditions CB and NB shows that the increase in ambiguity aversion is not due to the valuation of the ambiguous prospect decreasing under comparative pricing, but mainly due to the valuation of the risky prospect increasing (ambiguous: t=0.5, p=.62; risky: t=2.05, p=0.041).

Discussion

In the elicitation of valuations though pricing tasks differences in the perspective taken strongly influence values. Seller and buyer perspectives lead to large differences, establishing a positive WTA-WTP difference in all conditions and prospects. Regarding the interaction of the seller-buyer perspective and ambiguity, we find a clear increase in the WTA-WTP difference in the comparative condition with between-person manipulation of the seller-buyer perspective. No interaction is found in either the non-comparative condition or the comparative condition involving within-person elicitation of both seller and buyer valuations. These findings explain the difference of our results to those of Eisenberger & Weber (1995) in the light of more recent theoretical and empirical work predicting a widening of the seller-buyer difference under ambiguity. Eisenberger and Weber elicit within-person valuation differences and have comparative evaluation diluted by an order effect (Fox & Weber, 2002).

Comparative evaluation and multiple perspectives

The results show that both the comparative evaluation and the separation of the seller and buyer perspectives are necessary ingredients for the increase in the WTA-WTP difference. The mechanism by which either manipulation eliminates the effect are very different. In the between person design with non-comparative evaluation, ambiguity aversion is significantly reduced. The interaction of ambiguity and pricing perspective therefore has little effect on valuations. A closer look at the effect of comparative versus non-comparative evaluation modes shows that ambiguity effects are mainly observed under the buyer perspective (WTP). This is consistent with the results in Trautmann et al. (2008). These authors suggest that comparative ignorance (Fox & Tversky, 1995) is emphasized if subjects take the easier to evaluate risky prospect as a reference point in the buyer evaluation of the ambiguous prospect. In the seller perspective, on the other hand, the effect is reduced because of the endowment (ownership) with the ambiguous prospect, discouraging the assumption of the risky prospect as a reference point (Roca, Hogarth, & Maule, 2006).

The within-person design in which participants have to take both the seller and the buyer perspective, but under a comparative evaluation, does not reduce ambiguity aversion significantly compared to the CB condition. However, all valuations are in general lower in this condition. In this condition participants need to take two perspectives that provide them with very different information on which to base their expectation about the value of the

prospect (Batson et al., 1997). In particular, under ambiguity sellers may hold rather more positive expectations about the outcomes of the prospect, while buyers are more pessimistic. Thus, sellers demand relatively more than buyers would be willing to pay. Such self-serving evaluations under ambiguity have been observed in the context of other-regarding behaviour and fairness under uncertainty (Haisley & Weber, in press). Haisley and Weber let participants in a dictator game choose between a fair division of money between themselves and a passive receiver, and a selfish allocation that gives them a larger payoff and gives the receiver the possibility to play an ambiguous prospect. They show that dictator players often hold self-servingly optimistic, ambiguity seeking beliefs, assuming that the receiver obtains a very attractive prospect through their selfish choice. The effect of the dictator perspective was reversed, however, if participants had to make a simple Ellsberg urn choice first. In this choice, most participants revealed ambiguity aversion, which in the following constrained their beliefs regarding the attractiveness of the ambiguous gamble for the receiver. The within perspective in our study had a similar effect: first, the WTA-WTP difference did not increase under ambiguity. In each perspective, the influence of the other perspective taken served as a constraint on valuation. Consistent with Haisley and Weber's result, the multiple perspective taking leads to overall lower evaluations. That is, the more pessimistic evaluation from the buyer perspective dominates.

Consumer behavior and market interactions

In today's markets, consumers regularly make choices as buyers, but also often as sellers. People buy houses and sell houses, they buy cars and sell cars. For less expensive items, most of us have at some point acted as both sellers and buyers on online market places like eBay and Amazon. In most situations, however, the consumer assumes either the position of the seller or the position of the buyer of a good. Often consumers have only a vague idea of their own valuation of an item. In a recent study on WTA and WTP judgments for consumer products, Simonson and Drolet (2004) showed that uncertainty about the value of the product increases consumers' revealed difference between the two evaluations. This result is consistent with our findings for uncertain prospects and suggests that a common mechanism underlies both effects: In evaluations of uncertain prospects ambiguity directly leads to more value uncertainty than for risky prospect where information of probabilities and therefore of summary statistics like the expected value are readily available.

In real world markets sellers and buyers normally differ with respect to the information they have about the product. Such information differences have been shown to very harmful for the working of the market, and may even lead to a breakdown of the market (Akerlof, 1970). This can happen although trade would be optimal, namely if there is a buyer who values the item more than the seller, conditional on all relevant information being publicly available, but does not accept the price of the seller because of information asymmetries. We have shown differences between sellers' and buyers' valuations that are purely driven by the perspective taken. As a consequence, economically efficient trades may not be implemented even in the absence of information asymmetry (Kahneman, Knetsch & Thaler, 1990). Our results suggest that this effect will be worst in markets with high uncertainty.

Most real world situations involve settings where people either sell or buy an item, and where alternatives of different degree of ambiguity are present and provide a comparative setting. In such a setting, the current study predicts a beneficial effect of perspective taking, similar to the one discussed above for social choices involving ambiguity (Haisley & Weber 2009). If people get more experienced in determining valuations as both sellers and buyers, for instance by using online platforms to sell items directly instead through a intermediary (e.g., a second hand store, car dealer or real estate agent), we predict that the increase in seller-buyer valuation differences will be constrained by the opposite perspective. This will mitigate the effect of ambiguity on valuation differences and the harmful effects of uncertainty on efficiency of market interactions.

References

Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *Quarterly Journal of Economics,* 84, 488–500.

Batson, C. D., Early, S., & Salvarani, G. (1997). Perspective Taking: Imagining How Another Feels Versus Imaging How You Would Feel. *Personality and Social Psychology Bulletin*, 23, 751–758.

Birnbaum, M. H., Coffey, G., Mellers, B. A., & Weiss, R. (1992). Utility Measurement: Configuralweight Theory and the Judge's Point of View. *Journal of Experimental Psychology: Human Perception and Performance*, 18, 331–346.

Birnbaum, M. H., & Beeghley, D. (1997). Violations of Branch Independence in Judgments of the Value of Gambles. *Psychological Science, 8,* 87–94.

Birnbaum, M. H., & Stegner, S. E. (1979). Source Credibility in Social Judgment: Bias, Expertise, and the Judge's point of view. *Journal of Personality and Social Psychology*, 37, 48–74.

Birnbaum, M. H., & Zimmermann, J. M. (1998). Buying and Selling Prices of Investments: Configural Weight Model of Interactions Predicts Violations of Joint Independence. *Organizational Behavior and Human Decision Processes, 74,* 145–187.

Easley, D. & O'Hara, M. (in press). Ambiguity and Nonparticipation: The Role of Regulation. *Review of Financial Studies*.

Einhorn, H. J., & Hogarth, R. M. (1985). Ambiguity and Uncertainty in Probabilistic Inference. *Psychological Review*, 92, 433–461.

Eisenberger, R. & Weber, M. (1995). Willingness to Pay and Willingness to Accept for Risky and Ambiguous Lotteries. *Journal of Risk and Uncertainty*, 10, 223–233.

Ellsberg, D. (1961). Risk, Ambiguity and the Savage Axioms. *Quarterly Journal of Economics*, 75, 643–669.

Fox, C. R. & Tversky, A. (1995). Ambiguity Aversion and Comparative Ignorance. *Quarterly Journal of Economics,* 110, 585–603.

Fox, C. R. & Weber, M. (2002). Ambiguity Aversion, Comparative Ignorance, and Decision Context. *Organizational Behavior and Human Decision Processes,* 88, 476–498.

Frank, R. G. and Zeckhauser, R. J. (2007). Custom-made versus ready-to-wear treatments: Behavioral propensities in physicians' choices. *Journal of Health Economics*, 26, 1101–1127

Frisch, D. & Baron, J. (1988). Ambiguity and Rationality. *Journal of Behavioral Decision Making*, 1, 149–157.

Haisley, E. C. & Weber, R. A. (in press). Self-serving interpretations of ambiguity in other-regarding behavior. *Games and Economic Behavior*.

Heath, C. & Tversky, A. (1991). Preference and Belief: Ambiguity and Competence in Choice under Uncertainty. *Journal of Risk and Uncertainty*, 4, 5–28.

Hertwig, R., Barron, G., Weber, E. U., & Erev, I. (2004). Decision From Experience and the Effect of Rare Events in Risky Choice. *Psychological Science*, 15, 534–539.

Kahneman, D., Knetsch, J., & Thaler, R. (1991). Experimental Tests of the Endowment Effect and the Coase Theorem. *Journal of Political Economy*, 98, 1990, 1325–1348.

Mellers, B., Schwartz, A., Ho, K. & Ritov, I. (1997). Decision Affect Theory: Emotional Reactions to the Outcomes of Risky Options. *Psychological Science*, 8, 423–429.

Muthukrishnan, A.V., Wathieu, L., & Xu, A. J. (in press). Ambiguity Aversion and Persistent Preference for Established Brands. *Management Science.*

Pulford, B. (2009). Is luck on my side? Optimism, pessimism, and ambiguity aversion. *Quarterly Journal of Experimental Psychology*, 62, 1079–1087.

Pulford, B. & Colman, A. (2007). Ambiguous games: Evidence for strategic ambiguity aversion. *Quarterly Journal of Experimental Psychology*, *60*, 1083–1100.

Pulford, B. & Colman, A. (2008). Size Doesn't Really Matter: Ambiguity Aversion in Ellsberg Urns with Few Balls. *Experimental Psychology* 55, 31–37.

Ritov, I. & Baron, J. (1990). Reluctance to vaccinate: Omission bias and ambiguity. *Journal of Behavioral Decision Making,* 3*,* 263–277.

Roca, M., Hogarth, R. M., & Maule A. J. (2006). Ambiguity Seeking as a Result of the Status Quo Bias. *Journal of Risk and Uncertainty,* 32, 175–194.

Roese, N. J. (1997). Counterfactual thinking. *Psychological Bulletin,* 121, 133–148.

Sagristano, M. D., Trope, Y., & Liberman, N. (2002). Time-Dependent Gambling: Odds Now, Money Later. *Journal of Experimental Psychology: General*, 131, 364–376.

Schmidt, U., Starmer, C., & Sugden, R. (2008). Third Generation Prospect Theory. *Journal of Risk and Uncertainty*, 36, 203–223.

Schmidt, U. & Traub, S. (2009). An Experimental Investigation of the Disparity Between WTA and WTP for Lotteries. *Theory and Decision*, 66, 229–262.

Simonsohn, U. (2009). Direct Risk Aversion: Evidence from Risky Prospects Valued Below Their Worst Outcome. *Psychological Science*, 20, 686–692.

Simonson, I. and Drolet, A. (2004). Anchoring Effects on Consumers' Willingness-to-Pay and Willingness-to-Accept. *Journal of Consumer Research*, 31, 681–690.

Trautmann, S. T., Vieider, F.M., & Wakker, P. P. (2008). Preference Reversals For Ambiguity Aversion. Mimeo.

Wakker, P. P. (2000). Uncertainty Aversion: A Discussion of Critical Issues in Health Economics. *Health Economics*, 9, 261–263.

Zeelenberg, M., van den Bos, K., Van Dijk, E. & Pieters, R. (2002). The inaction effect in the Psychology of Regret. *Journal of Personality and Social Psychology*, 82, 314–327.