Crying Wolf in the Lab

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Abstract

Keywords:

1 Introduction

A   Tables

Table 1: WTP for Information (Discrepancy)

	(1)	(2)	(3)	(4)	(5)	(6)
FP costs	.251*	.305**	.0991	.136	.404**	.439**
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)
FN costs	.356***	.292***	.397***	.348***	.425***	.375***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Risk-averse			.0046	-.154		
			(0.3)	(0.4)		
Risk-averse × FP costs			.187	.227		
			(0.2)	(0.3)		
Risk-averse × FN costs			-.066	-.118		
			(0.2)	(0.1)		
Accur. beliefs					.212	.335
					(0.3)	(0.4)
Accur. beliefs × FP costs					-.361	-.339
					(0.2)	(0.2)
Accur. beliefs × FN costs					-.143	-.166
					(0.1)	(0.1)
Constant	-.233	.288	-.237	.336	-.331	.145
	(0.2)	(0.2)	(0.3)	(0.3)	(0.2)	(0.3)
Prior dummies	No	Yes	No	Yes	No	Yes
Observations	630	630	588	588	630	630
Adjusted R^2	0.05	0.21	0.04	0.22	0.05	0.22

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: WTP for Information (Discrepancy, demographic variables)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8) est8	(9) est9
FP costs	.251*	.283	.352*	.117	.215	.263*	.307**	.479**	.515*
	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.2)
FN costs	.356***	.322***	.247***	.395***	.303***	.307***	.251***	.493***	.453*
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Male		-.251	-.238						
		(0.3)	(0.4)						
Male × FP costs		-.122	-.159						
		(0.2)	(0.2)						
Male × FN costs		.0857	.117						
		(0.1)	(0.1)						
Stat. class				-.28	-.194				
				(0.3)	(0.4)				
Stat. class × FP costs				.218	.145				
				(0.3)	(0.3)				
Stat. class × FN costs				-.0785	-.0188				
				(0.1)	(0.1)				
>23 yrs						-.335	-.606		
						(0.4)	(0.4)		
>23 yrs × FP costs						-.0837	.00811		
						(0.3)	(0.3)		
>23 yrs × FN costs						.346	.275		
						(0.2)	(0.2)		
Good quiz								.493	.453
								(0.3)	(0.4)
Good quiz × FP costs								-.441*	-.41
								(0.3)	(0.3)
Good quiz × FN costs								-.253*	-.295
								(0.1)	(0.1)
Constant	-.233	-.126	.391	-.0579	.419	-.188	.356	-.5**	.045
	(0.2)	(0.2)	(0.3)	(0.3)	(0.4)	(0.2)	(0.2)	(0.3)	(0.3)
Prior dummies	No	No	Yes	No	Yes	No	Yes	No	Yes
Observations	630	630	630	630	630	630	630	630	630
Adjusted R^2	0.05	0.05	0.21	0.05	0.21	0.05	0.21	0.05	0.22

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4

Table 3: WTP for Information (Discrepancy, by prior)

	(1)	(2)	(3)	(4)
	0.1	0.2	0.3	0.5
FP costs	.472***	.585***	.0821	-.326
	(0.2)	(0.2)	(0.2)	(0.3)
FN costs	-.609**	.192	.26**	.379***
	(0.2)	(0.1)	(0.1)	(0.1)
Constant	.412*	-.715***	-.968***	.671**
	(0.2)	(0.2)	(0.2)	(0.3)
Observations	162	153	162	153
Adjusted R^2	0.04	0.05	0.01	0.09

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: WTP for Information (Tobit, by prior)

	(1)	(2)	(3)	(4)
	0.1	0.2	0.3	0.5
model				
FP costs	-.624**	-.519**	-1.24***	-1.3**
	(0.2)	(0.3)	(0.3)	(0.5)
FN costs	-1.22**	-.682***	-.612***	-.365***
	(0.6)	(0.3)	(0.2)	(0.1)
Constant	1.72***	2.33***	2.63***	3.32***
	(0.2)	(0.2)	(0.2)	(0.3)
sigma				
Constant	1.86***	1.7***	1.77***	2.16***
	(0.1)	(0.1)	(0.1)	(0.2)
Observations	162	153	162	153
Adjusted R^2				

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: WTP for Information (Tobit, by prior)

| | (1) | (2) | (3) | (4) |
	0.1	0.2	0.3	0.5
model				
FP rate	-2.81**	-2.08**	-4.35***	-3.25**
	(1.1)	(1.0)	(1.0)	(1.3)
FN rate	-2.45**	-2.73***	-3.67***	-3.65***
	(1.1)	(1.0)	(1.0)	(1.3)
Constant	1.72***	2.33***	2.63***	3.32***
	(0.2)	(0.2)	(0.2)	(0.3)
sigma				
Constant	1.86***	1.7***	1.77***	2.16***
	(0.1)	(0.1)	(0.1)	(0.2)
Observations	162	153	162	153
Adjusted R^2				

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: WTP of Information (discrepancy, by prior)

| | (1) | (2) | (3) | (4) |
	0.1	0.2	0.3	0.5
FP rate	2.12***	2.34***	.287	-.816
	(0.8)	(0.8)	(0.8)	(0.9)
FN rate	-1.22	.768	1.56*	3.79***
	(0.8)	(0.8)	(0.8)	(0.9)
Constant	.412**	-.715***	-.968***	.671***
	(0.2)	(0.2)	(0.2)	(0.2)
Observations	162	153	162	153
Adjusted R^2	0.04	0.05	0.01	0.09

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: WTP for Information (different risk aversion)

	(1) $\theta = 0$	(2) $\theta = 0.5$	(3) $\theta = 1.0$	(4) $\theta = 1.5$	(5) $\theta = 2.5$	(6) Heterogeneous θ
FP costs	.295**	.322**	.316**	.271*	.151	.29**
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
FN costs	.243***	.346***	.46***	.559***	.69***	.343***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Constant	.254	-.146	-.664***	-1.32***	-1.81***	-.411
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)
Prior dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	504	504	504	504	504	504
Adjusted R^2	0.21	0.27	0.28	0.32	0.37	0.19

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: WTP for Information (different risk aversion)

	(1) $\theta = 0$	(2) $\theta = 0.5$	(3) $\theta = 1.0$	(4) $\theta = 1.5$	(5) $\theta = 2.5$
FP costs	.305**	.337***	.336***	.292**	.176
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
FN costs	.292***	.393***	.502***	.596***	.724***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Constant	.288	-.111	-.629***	-1.29***	-1.78***
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Prior dummies	Yes	Yes	Yes	Yes	Yes
Observations	630	630	630	630	630
Adjusted R^2	0.21	0.28	0.29	0.32	0.37

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Belief Elicitation: Discrepancy

	(1)	(2)	(3)	(4)	(5)	(6)
False neg. rate	-.0101	-.0101	.05	.05	.0886	.0876
	(0.0)	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)
False pos. rate	-.606***	-.606***	-.75***	-.749***	-.664***	-.66***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Good quiz			-.0299	-.0538		
			(0.0)	(0.0)		
Good quiz × False neg. rate			-.102	-.102		
			(0.1)	(0.1)		
Good quiz × False pos. rate			.269**	.266**		
			(0.1)	(0.1)		
Stat. class					.0203	.0391
					(0.0)	(0.0)
Stat. class × False neg. rate					-.172*	-.171*
					(0.1)	(0.1)
Stat. class × False pos. rate					.104	.0999
					(0.1)	(0.1)
Constant	.0616***	.0279	.0779***	.0566	.0499**	.00222
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Prior prob dummies	No	Yes	No	Yes	No	Yes
Observations	1260	1260	1260	1260	1260	1260
Adjusted R^2	0.09	0.09	0.09	0.10	0.09	0.09

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Belief Elicitation: Decomposition

	(1) OLS	(2) FE	(3) OLS	(4) FE	(5) OLS	(6) FE
lt_prior	.257***	.202***	.15*	.191**	.0946	.0403
	(3.8)	(4.0)	(1.9)	(2.5)	(1.3)	(0.6)
signalB	.447***	.86***	.388	.654***	.905***	1.08***
	(4.1)	(6.3)	(1.4)	(3.2)	(5.4)	(5.3)
signalW	.413***	0	.266	0	.174	0
	(4.6)	(.)	(1.2)	(.)	(1.0)	(.)
>2 wrong answers			0	0		
			(.)	(.)		
Good quiz			-.367	0		
			(-1.3)	(.)		
>2 wrong answers × lt_prior			0	0		
			(.)	(.)		
Good quiz × lt_prior			.134	.0207		
			(1.2)	(0.2)		
>2 wrong answers × signalB			0	0		
			(.)	(.)		
Good quiz × signalB			.528	.387		
			(1.5)	(1.4)		
>2 wrong answers × signalW			0	0		
			(.)	(.)		
Good quiz × signalW			-.141	0		
			(-0.5)	(.)		
No					0	0
					(.)	(.)
Stat. class					.152	0
					(0.6)	(.)
No × lt_prior					0	0
					(.)	(.)
Stat. class × lt_prior					.179*	.264***
					(1.7)	(2.8)
No × signalB					0	0
					(.)	(.)
Stat. class × signalB					-.328	-.333
					(-1.0)	(-1.2)
No × signalW					0	0
					(.)	(.)
Stat. class × signalW					-.00496	0
					(-0.0)	(.)
Constant		-.514***	-.107	-.513***	-.425***	-.508***
		(-5.3)	(-0.5)	(-5.3)	(-2.9)	(-5.5)
Observations	280	280	280	280	280	280
Adjusted R^2	0.31	0.31		0.32		0.32

Decomposition works only for imperfect signals

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Informed Protection: Response to Reported Beliefs

	(1)	(2)	(3)	(4)
Informed protection				
Belief	2.36***	2.67***	2.63***	2.85***
	(0.2)	(0.2)	(0.4)	(0.4)
Belief error		1.3***	1.17***	1.44***
		(0.2)	(0.2)	(0.3)
Good quiz			.184	
			(0.2)	
Good quiz × Belief			.105	
			(0.5)	
Good quiz × Belief error			.34	
			(0.4)	
Stat. class				.0954
				(0.2)
Stat. class × Belief				-.287
				(0.5)
Stat. class × Belief error				-.212
				(0.4)
Constant	-.813***	-.914***	-1.01***	-.973***
	(0.1)	(0.1)	(0.2)	(0.1)
Observations	1259	1259	1259	1259
AIC	1287.47	1196.40	1194.29	1201.09

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Informed protection by prior

	(1)	(2)	(3)	(4)	(5)
	All	0.1	0.2	0.3	0.5
Informed protection					
Gremlin says Black	2.53***	2.65***	2.66***	2.77***	2.27***
	(0.2)	(0.3)	(0.3)	(0.4)	(0.3)
Gremlin says Black=1 × False pos. rate	.0938	-.536	-.564	.569	1.81
	(0.6)	(0.8)	(1.0)	(1.4)	(1.1)
Gremlin says Black=1 × False neg. rate	.0247	-.625	.727	-.239	.689
	(0.4)	(0.6)	(1.0)	(0.7)	(1.0)
Constant	-1.49***	-1.85***	-1.58***	-1.44***	-1.3***
	(0.1)	(0.3)	(0.2)	(0.2)	(0.2)
Observations	1259	323	306	324	306
Adjusted R^2					

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

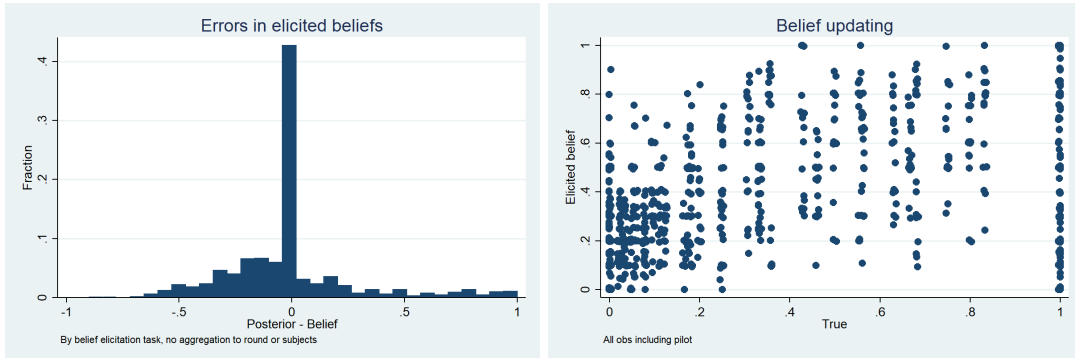# B Figures

Figure 1: Belief Updating

Table 13: Expected costs discrepancy

	(1)	(2)	(3)	(4)	(5)	(6)
FP costs	.0627	.0297	.153	.135	-.00302	-.0796
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)
FN costs	-.0285	.011	-.103	-.081	.134	.243*
	(0.1)	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)
Risk-averse			-.167	.121		
			(0.3)	(0.3)		
Risk-averse × FP costs			-.143	-.161		
			(0.3)	(0.3)		
Risk-averse × FN costs			.169	.198		
			(0.1)	(0.2)		
Accur. beliefs					.557*	.231
					(0.3)	(0.3)
Accur. beliefs × FP costs					.18	.279
					(0.3)	(0.3)
Accur. beliefs × FN costs					-.329**	-.46***
					(0.1)	(0.2)
Constant	-.872***	-.708***	-.781***	-.797***	-1.15***	-.82***
	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Prior prob dummies	No	Yes	No	Yes	No	Yes
Observations	629	629	587	587	629	629
Adjusted R^2	-0.00	-0.00	-0.00	-0.01	0.02	0.03

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Expected costs discrepancy (without 10% outliers)

	(1)	(2)	(3)	(4)	(5)	(6)
FP costs	-.241***	-.217***	-.165*	-.137*	-.274***	-.121
	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
FN costs	-.112***	-.127***	-.0913**	-.116***	-.0678	-.103**
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Risk-averse			-.128	.0384		-.119
			(0.1)	(0.1)		(0.1)
Risk-averse × FP costs			-.073	-.0708		-.0814
			(0.1)	(0.1)		(0.1)
Risk-averse × FN costs			-.0302	-.0167		-.0358
			(0.1)	(0.1)		(0.1)
Accur. beliefs					.219***	.259***
					(0.1)	(0.1)
Accur. beliefs × FP costs					.0905	
					(0.1)	
Accur. beliefs × FN costs					-.0851	
					(0.1)	
Constant	-.2***	-.101	-.152***	-.137	-.315***	-.174*
	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Prior prob dummies	No	Yes	No	Yes	No	Yes
Observations	557	557	522	522	557	522
Adjusted R^2	0.05	0.07	0.05	0.08	0.06	0.09

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 15: Expected costs discrepancy by prior

	(1)	(2)	(3)	(4)
	0.1	0.2	0.3	0.5
FP costs	.00323	-.331*	.33	.831*
	(0.2)	(0.2)	(0.3)	(0.5)
FN costs	-1.37***	-.13	-.297***	.18
	(0.4)	(0.2)	(0.1)	(0.1)
Constant	-.366***	-.671***	-.821***	-1.44***
	(0.1)	(0.2)	(0.2)	(0.4)
Observations	161	153	162	153
Adjusted R^2	0.08	0.01	0.02	0.02

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 2: Following beliefs vs following posterior probabilities in IP
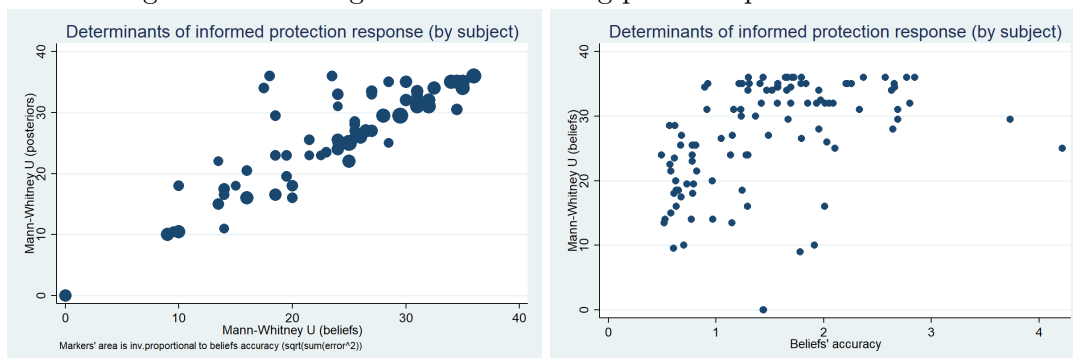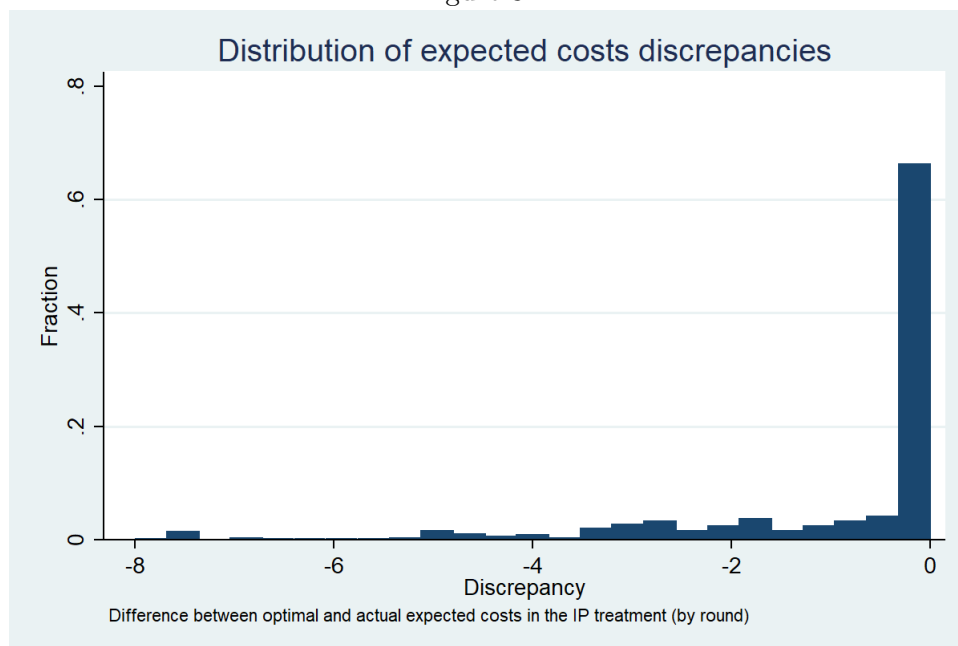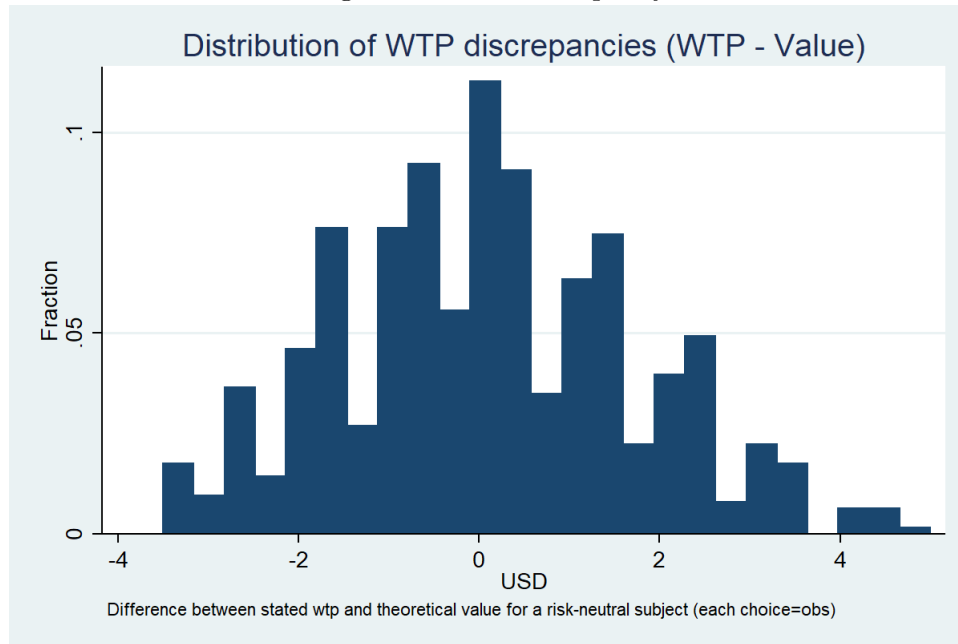

Figure 3: x

Figure 4: WTP discrepancy

Figure 5: Base rate fallacy for WTP: FN rate sensitivity by prior