



‘Protests in earnest: an analysis of protest responses and WTP to avoid an oil spill in a contingent valuation experiment’

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Outline

- Research questions
- Theoretical framework
- Case study: Prestige and beyond
- Methods
- Preliminary survey results
- Conclusions

Research questions. Work in Progress

- Are there statistically significant differences in WTP results depending on the classification of protest answers used?
- If so, how big is the size of the effect?
- Are parameter estimates different depending on the classification of protest answers used?

POLICY RELEVANCE?

- Findings could be useful in deciding on funding prevention programs
- Rational Choice Theory: Acting according to voter preferences in highly visible/highly politicised situations

Theoretical framework: Protests

■ Definition

- 'a response to a valuation question which does not give the respondent's genuine WTP (or willingness to accept, WTA), but either a zero value or an unrealistically high (or low) value' (Bateman *et al.*, 2002: 441)

■ Reasons

- Strategic behaviour
- Disagreement with features of the hypothetical scenario
- Lack of understanding of the valuation question (Boyle, 2003)
- Ethical beliefs (Meyerhoff and Liebe, 2008)
- Fairness issues (Jorgensen *et al.*, 1999)

■ Problems

- Protest responses introduce biases into WTP answers
- No generally agreed rules to determine classification of protest responses (Boyle and Bergstrom, 1999, Jorgensen *et al.*, 1999, Meyerhoff and Liebe, 2006)
- Classification of protest answers used may not be clearly specified when reporting CV results

Theoretical framework: Protests

■ Treatment

- State-of-the-art: eliminate them from the sample

Meyerhoff and Liebe (2008) Morrison *et al.*,(2000).

- Other approaches (Halstead *et al.*,1992)

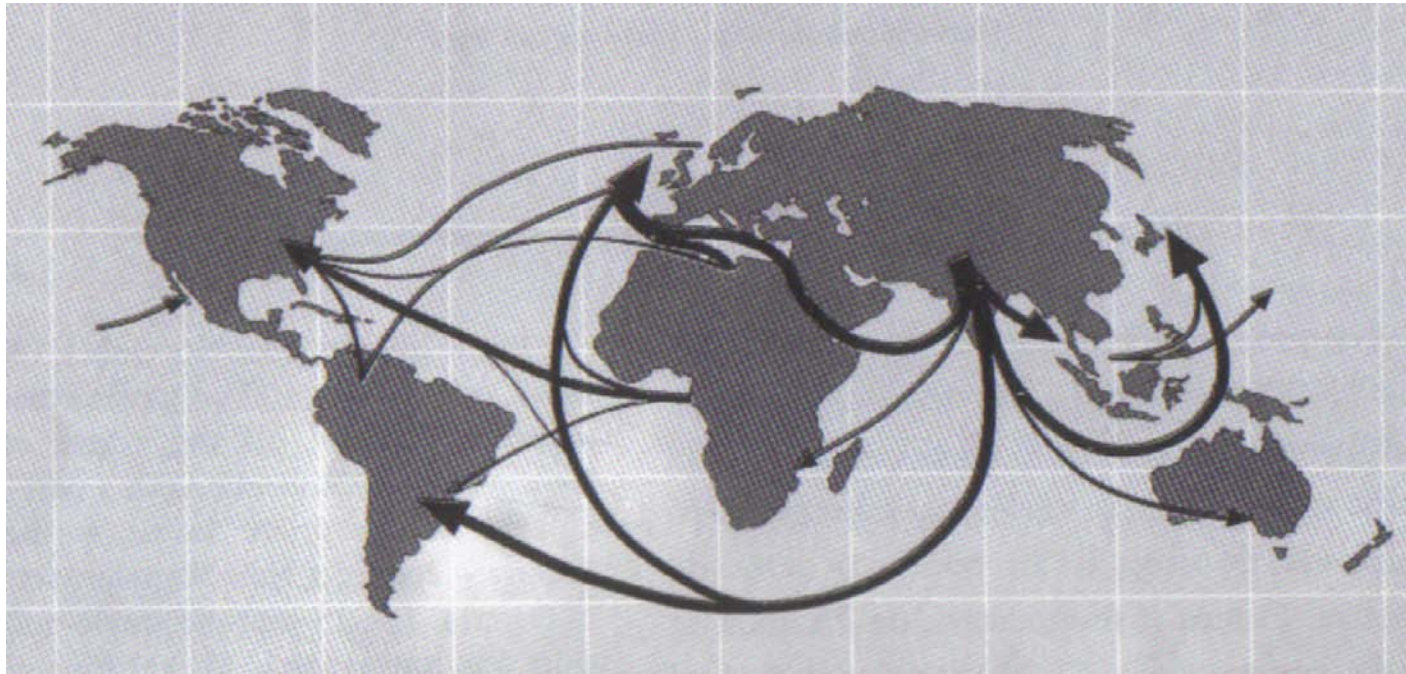
- Treat protest zeros as legitimate zeros ...which can bias WTP results.
- Assign the WTP amount to protesters according to their socio-economic characteristics.

Theoretical framework: Protests

Reasons for NOT being WTP	Bateman <i>et al.</i> , (2002)	Brouwer <i>et al.</i> , (2008)
I need more information	Protest	Protest
I already pay enough	Protest	Valid
Others should pay	Protest	Protest
The polluter should pay	Protest	Protest
It is not a serious problem	Valid	Valid
I cannot afford to pay	Valid	Valid
They should manage money better	Protest	Valid

Case study: Prestige & beyond

- 70% of hydrocarbon traffic to Central & Northern EU navigates through the Fistera maritime corridor

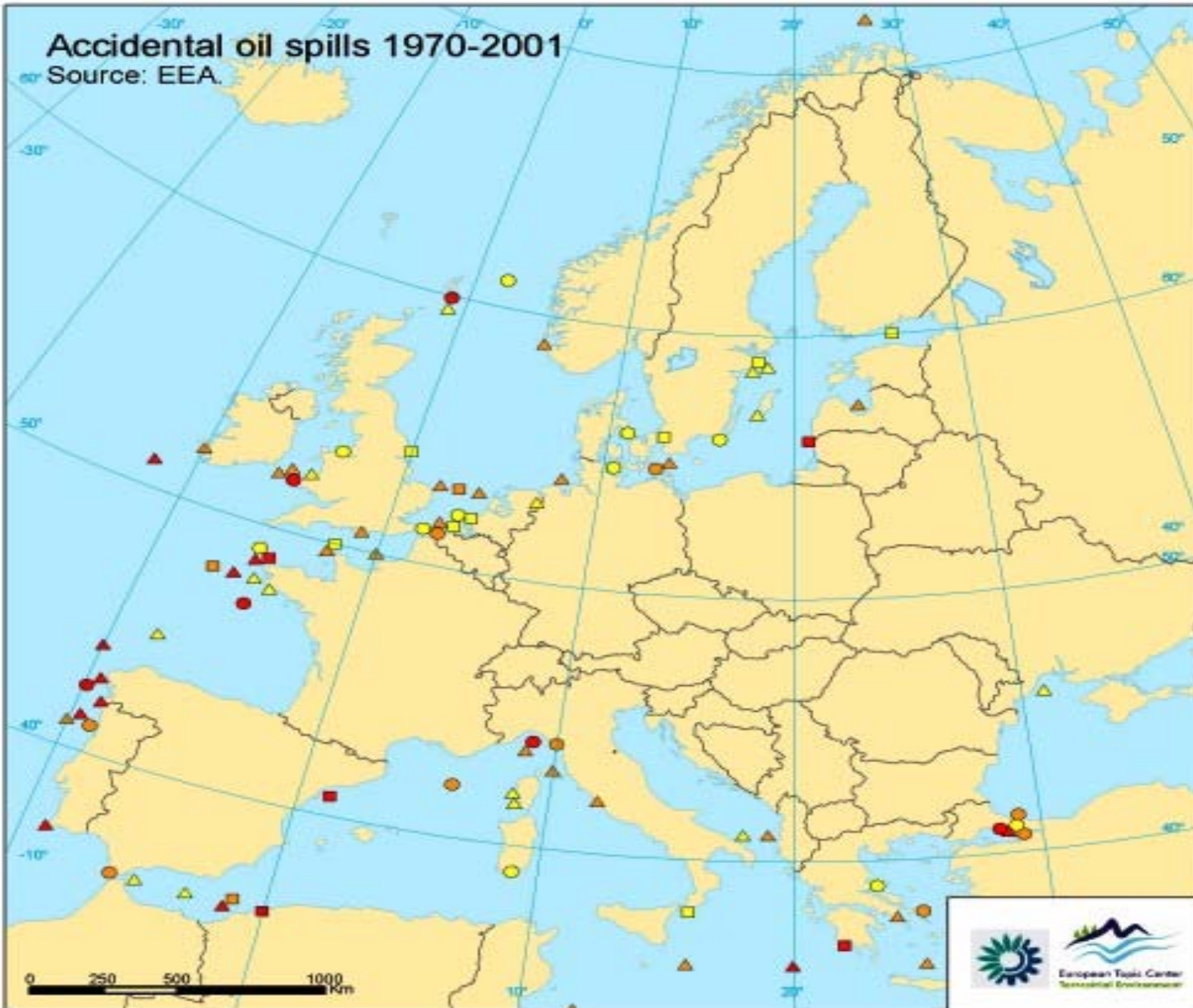


- 10% of the world's oil spills have taken place in the Galician coast

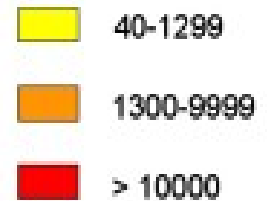
Accidental oil spills in the EU

Accidental oil spills 1970-2001

Source: EEA.



Large oil spills (Tn)

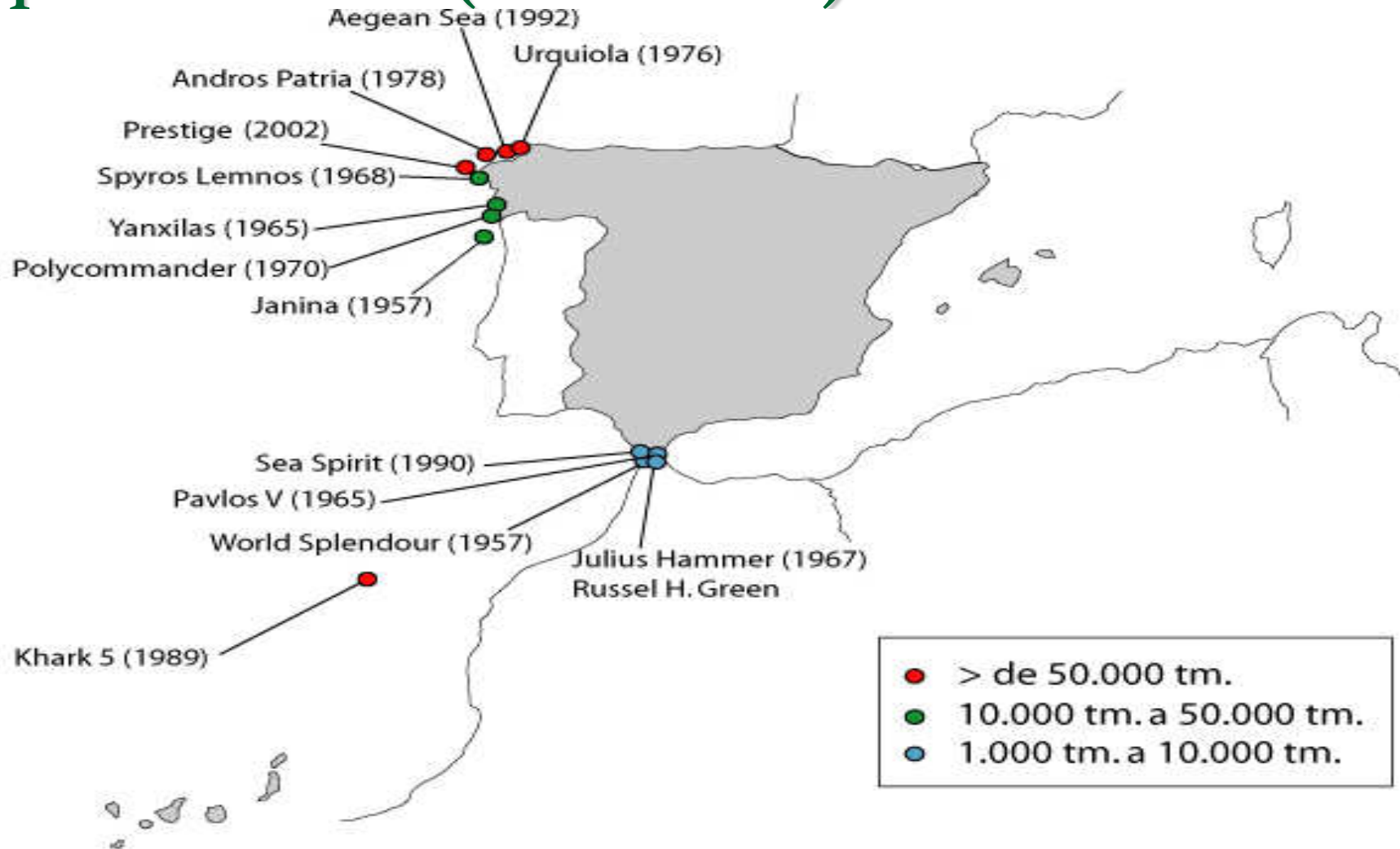


Time series



European Topic Center
Temporal Environment

Largest (>1000tons) accidental oil spills in Spanish coasts (1957 – 2002)



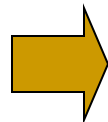
Methods


- Elite interviews – Exploratory research
 - Expert views & policy context
- Focus groups
 - Non-expert views
 - Testing scenarios
- Pilots
 - Testing questionnaire
- Survey

The valuation scenario

- Three spills
 - Small– Sierra Nava type
 - Medium – Prestige type
 - Large – Threshold trespassing, irreversible damage

PREVENTION PROGRAM



Example	SMALL
QUANTITY SPILLED	70 tons
COASTLINE AFFECTED	2Km
ENVIRONMENT 	<ul style="list-style-type: none"> • 2 beaches polluted • Full recovery after 2 years • 253 dead birds • No risk of species extinction
HEALTH +	<ul style="list-style-type: none"> • 20 people affected • Breathing diseases, head aches and skin irritation for 1 month • No increase in the risk of cancer

According to experts, in order to avoid these spills we should invest in:

- Personnel and equipment to fight against spills.
- Implementing oil spill prevention plans all around the Spanish coast.
- Use maps to tell us which areas should be protected in case of a new spill.

Non-parametric WTP results

Results. Bateman *et al.*, (2002) Classification of protest answers

Mean WTP to avoid spill	Observations	Mean (€)
Small	196	65.82
Medium	377	79.95
Large	180	98.22

Results. Brouwer *et al.*, (2008) Classification of protest answers

Mean WTP to avoid spill	Observations	Mean (€)
Small	246	52.44
Medium	482	62.54
Large	235	75.23

Non-parametric WTP results

- Statistically significant differences depending on the classification of protest answers used **FOR THE MEDIUM AND LARGE SPILLS**
- Size of the effect is low
- So...do classifications really matter?

Logit: independent variables & values

Independent variable	Possible values
City	0= if resident of Coruña 1= if resident of Madrid
Age	= (18-79)
Income	= midpoint of the income band
Known spills	= 0 if none = 1 if one or more
Aggregated NEP score	15 - 75
Previously volunteered to protect the environment	= 0 if No = 1 if Yes

Logit results

Variables	Protest classification	
	Bateman <i>et al.</i> , (2002)	Brouwer <i>et al.</i> , (2008)
Constant	-1.007 (2.15)	-1.752 (1.26)
City	-0.813** (0.42)	-0.691*** (0.24)
Age	-0.0007 (0.01)	-0.015** (0.007)
Income	3.91e ⁻⁰⁶ (0.00001)	9.47e ⁻⁰⁷ (7.78e ⁻⁰⁶)
Known spills	1.386** (0.66)	1.133** (0.51)
Aggregate NEP score	0.041 (0.03)	0.048*** (0.02)
Volunteered to protect the environment	0.423 (0.51)	0.546* (0.31)
Pseudo R ²	0.051	0.064
Number of observations	358	449

Where : Standard error in parentheses

* =The coefficient is significantly different from zero at a 90% confidence level

** =The coefficient is significantly different from zero at a 95% confidence level

***=The coefficient is significantly different from zero at a 99% confidence level

Interval data models: Independent variables & values

Independent variable	Possible values
City	0= if resident of Coruña 1= if resident of Madrid
Age	18-79
Income	Midpoint of the income band
Known spills	= 0 if none known = 1 if one or more spills known
Aggregated NEP score	15 – 75
WTP response influenced by environmental consequences described	= 0 if No = 1 if Yes
Previously volunteered to protect the environment	= 0 if No = 1 if Yes

Interval data models: Bateman *et al.*, (2002)

	Small spill	Medium Spill	Large spill
Constant	0.797 (1.67)	-0.232 (1.18)	-2.154 (1.41)
City	0.429* (0.24)	0.527*** (0.18)	0.616** (0.27)
Age	-0.013 (0.008)	-0.009* (0.005)	-0.007 (0.008)
Income	6.81 ^{e-06} (9.54 ^{e-06})	0.00001** (7.18 ^{e-06})	0.00002*** (9.53 ^{e-06})
Known spills	0.495 (0.91)	0.985 (0.64)	1.597** (0.79)
Aggregate NEP score	0.026 (0.02)	0.033** (0.01)	0.054** (0.02)
Environmental consequences	0.313 (0.27)	0.485*** (0.18)	0.511** (0.24)
Previously volunteered to protect the environment	0.632** (0.29)	0.445** (0.20)	0.318 (0.29)
σ	1.588	1.565	1.558
Log pseudo likelihood	-410.87	-823.73	-405.01
N	168	331	162

Where: Dependent variable: log WTP

Standard error in parentheses

* =The coefficient is significantly different from zero at a 90% confidence level

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Interval data models: Brouwer *et al.*, (2008)

	Small spill	Medium Spill	Large spill
Constant	-0.593 (1.56)	-0.691 (1.10)	-.0879 (1.56)
City	0.105 (0.25)	0.242 (0.18)	0.345 (0.28)
Age	-0.017** (0.008)	-0.017*** (0.005)	-0.018** (0.008)
Income	9.21 ^{e-06} (8.89 ^{e-06})	0.000012* (6.62 ^{e-06})	0.00001 (0.00001)
Known spills	0.445 (0.77)	1.089** (0.47)	1.710*** (0.52)
Aggregate NEP score	0.049** (0.02)	0.039** (0.01)	0.032 (0.02)
Environmental consequences	0.171 (0.27)	0.391** (0.19)	0.410 (0.29)
Previously volunteered to protect the environment	0.680** (0.31)	0.630*** (0.22)	0.653** (0.34)
σ	1.778	1.839	1.914
Log pseudo-likelihood	-515.39	-1056.55	-532.49
N	211	420	208

Where: Dependent variable: log WTP
Standard error in parentheses

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Parametric mean and median WTP

- Bateman *et al.*, (2002)

	Small	Medium	Large
Median	15.95	20.49	25.79
Mean	56.26	69.75	86.48

- Brouwer *et al.*, (2008)

	Small	Medium	Large
Median	9.20	10.80	12.42
Mean	44.70	58.55	77.47

Conclusions: Work in progress

- Non-parametric mean WTP:
 - Statistically significant differences
 - Effect: Low!
- Logit
 - Differences in significant parameters
 - Expected sign
- Interval data models
 - Differences in significant parameters
 - Differences in parametric WTP estimates
 - Policy relevance...
- Future work: More analysis, entreaties, neuroeconomics??

‘it is likely that protest bids and their meaning will vary according to the good being valued, the elicitation technique, the CV model, and the interaction between these elements and other external factors. (Jorgensen *et al.*, 1999)

Will a sectoral/Taylor made approach be better (i.e. agreed protest classification for oil spill WTP questions??)

Work in progress... Thank you!