

# Are there enough forest reserves in Switzerland? A contingent valuation

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# Framework

## Forest policy 2020

- Harmonize forest policy across cantons
- Optimize wood harvest
- Guarantee forest multifunctionality
- → Creation of new forests reserves (to 10% of total surface)

# Survey

## Survey objectives

- Analyse preferences and trade-offs among Swiss forest services
- Identify economic values of forest services: TCM and CVM

## Survey framework

- Pre-tested with focus-groups and pilot survey
- November-December 2014
- Telephone survey

Sample: 1200 observations, representative of the Swiss adult population

# Contingent valuation method (CVM)

## Contingent Valuation

- non-market valuation technique
- part of stated preferences methods
- Important success since the Exxon-Valdez oil spill (Carson et al. 1992)
- Since 1993, 47 CVM on forests published in industrialized countries (Meshreky et al. 2014)
- Important biases

# Hypothetical scenario

Forests reserves in Switzerland play a major role in biodiversity conservation but implies opportunity costs:

- Access restrictions (loss of recreation opportunities)
- Economic shortfalls (loss of economic opportunities)

"Would you pay a federal lump-sum tax of X CHF for the creation of new forests reserves in Switzerland (about twice as much as today)?" (Yes/No)

- X is randomly assigned in a predefined list of amounts (10-1000)
- Single-bounded-dichotomous choice (referendum, SBDC) + follow-ups

# Biases mitigation

- Hypothetical bias
  - Cheap talk (Cummings and Taylor, 1999)
  - Consequentiality (Herriges et al. 2010)
- Strategic bias
  - Mandatory tax limits free-riding (Baranzini et al. 2010)
  - Phone surveys limit yea-saying bias
- Insensitivity to scope
- Protests
  - Must be identified (follow-up) and treated (Meyerhoff et al. 2014)

# Empirical approaches

Parametric approach (Bishop and Heberlein, 1979)

- Assumes an a priori statistical distribution of WTP; normal, logistic (other distribution can also be used)

$$P(Yes) = \alpha + \beta_1 bid_i + \beta_2 Z_i + \epsilon_i$$

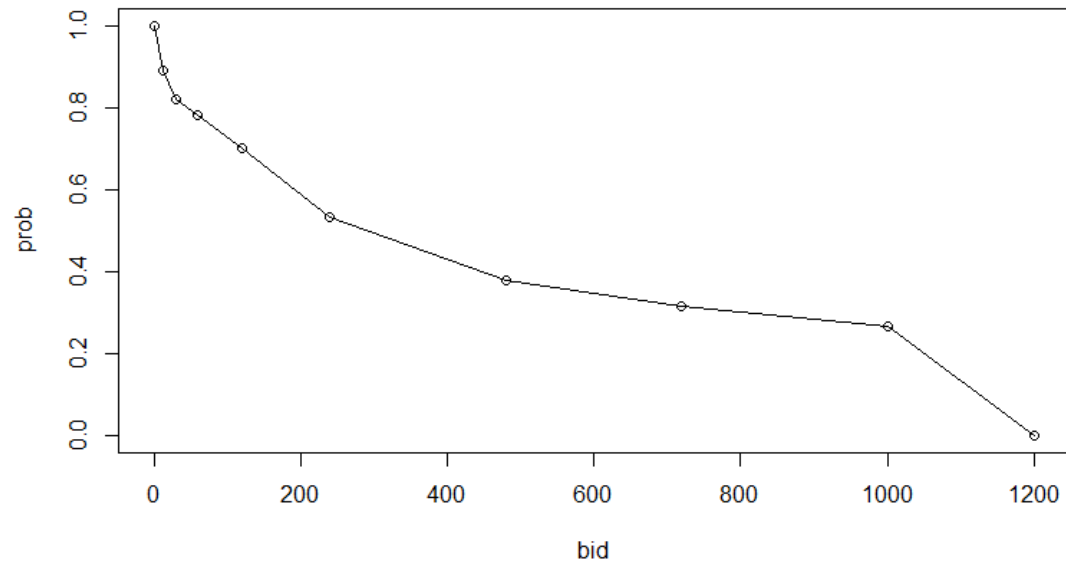
$$E(WTP|Z) = - \frac{\hat{\alpha} + \hat{\beta}_2 \bar{Z}}{\hat{\beta}_1}$$

With Z a vector of individual characteristics and  $\bar{Z}$  their sample means

# Empirical approaches

## Non-parametric approach (Kriström, 1990)

- No assumptions on WTP statistical distribution
- → survival function





# Parametric approach

	Probit	Logit	Probit	Logit
Bid	-0.003***	-0.002***	-0.003***	-0.002***
	(0.0002)	(0.0001)	(0.0002)	(0.0002)
Constant	1.30***	0.80***	0.12	0.08
	(0.11)	(0.06)	(0.33)	(0.20)
Controls	No	No	Yes	Yes
Observations	941	941	808	808
Pseudo-R <sup>2</sup>	0.14	0.14	0.21	0.21

Std. Err. in parenthesis

\* p<0.1, \*\* p>0.05, \*\*\* p<0.01

# Parametric approach: Results

- Bids have an expected negative impact on acceptance rate.
- Income has a positive but bounded impact on acceptance rate.
- French speaking accept less often than others.
- "Greener" and frequent forests users accept more often.

**Protest bidders characteristics have no impact on WTP**

# Willingness To Pay

Parametric approaches give robust results :  
**~470 CHF per year per household**

Non-parametric confirm it:  
**~470 CHF per year per household**  
lower bound **~400CHF per year per household**

Those benefits justify the program!

# Working papers

Meshreky A., Baranzini A. and Maradan D. (2014), *Forests contingent valuation studies in industrialized countries: A meta-analysis*

Borzykowski N., Baranzini A. and Maradan D. (2015), *Scope effects in Contingent Valuation: does the statistical distributional assumption matter?*

[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2663289](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2663289)

Borzykowski N., Baranzini A. and Maradan D. (2015), *Y a-t-il assez de réserves forestières en Suisse? Une évaluation contingente*, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2696865](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2696865)

Borzykowski N., Baranzini A. and Maradan D. (2015), *A travel cost assessment of the demand for recreation in Swiss forests*

Borzykowski N., Baranzini A., Maradan D. and Weber Sylvain (2015), *The market for energy wood in Switzerland: a time series analysis*

Borzykowski N., Baranzini A. and Carattini S. (2016), *Foreign offsets out of the wood? Acceptability of domestic vs. foreign reforestation programs in the lab*

Any questions?

Thank you for your attention!

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