



Who Are Opposed to Free Trade in the Philippines?

An Ordered Logit Estimation
of Survey Data

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The Question

What characteristics are possessed by individuals who are more anti-globalization than others?



Seeking An Answer

- Goal: To determine the socio-demographic traits that make people either more protectionist or more open to free trade
- Framework: The political market → policy demand and policy supply
 - Just as certain types of individuals prefer Good A to Good B in the goods market, so too do different types of individuals prefer certain forms of trade policies in the political market.



Existing Literature

- Studies in other countries
 - Scheve and Slaughter (2001): USA
 - Gender, union membership, political affiliation
 - Pasadilla (2002): Switzerland
 - Age, gender, unemployment, area of residence
 - Balistreri (1997): Canada
 - Age, union membership, income, area of residence
 - Mayda and Rodrik (2001): Cross-country
 - Age, gender, economic class, relative income, area of residence



Methodology

- Ordered logit approach employing data from the International Social Survey Programme's National Identity Survey of the Philippines



Primary Data Source

- ISSP National Identity Survey 2003
 - 1200 voting-age adults
 - 300 respondents each from
 - National Capital Region
 - Balance Luzon
 - Visayas
 - Mindanao
 - Conducted via face-to-face interviews



Sampling Scheme

- In the NCR
 - 60 precincts assigned to 17 cities and municipalities
 - Number of precincts per municipality → proportional to population size
 - Precincts then selected at random from each municipality → probability proportional to population size
 - 5 sample households per precinct: interval sampling
 - Random selection of houses nearest to street corners
 - 6 households in between sampled ones
 - 1 respondent among household adults using probability selection table



Notable Characteristics

Characteristics	Share
Male	50.2
Mean age	34.9 years
Self-employed	32.1
Employed in the public sector	8.9
Urban dwelling	54.1
Economic class	
Class AB (Richest)	0.4
Class C	8.6
Class D	66.1
Class E (Poorest)	24.9

75.5% with family incomes below the monthly national average of PhP12,003.25



The Dependent Variable

- Attitude Toward Trade

Scaled (1 to 5) agreement with:

The Philippines should limit the import of foreign products in order to protect its national economy

- 1: Strongly agree → More protectionist
- 5: Strongly disagree → More pro-trade



Ordered Logit Regression

- Note: Discrete and ordinal variable response
- Trade Attitude
 - Latent variable y^* : intrinsically not measurable, but related to other measurable factors
 - Function of a vector of characteristics X
 - Based on a marginal benefits/costs consideration
 - Regression:

$$y^* = X\beta + \varepsilon$$



Ordered Logit Regression

- If y_i is the trade preference vote of the individual and $y_i = 1, 2, 3, 4,$ and 5 :

$$\text{Prob}(y^* \leq \mu_1) = \text{Pr}(X\beta + \varepsilon \leq \mu_1) = \text{Pr}(\varepsilon \leq \mu_1 - X\beta) = F(\mu_1 - X\beta)$$

$$\text{Prob}(y = 1 | X) = \text{Prob}(y^* \leq \mu_1) = F(\mu_1 - X\beta)$$

$$\text{Prob}(y = 2 | X) = \text{Prob}(\mu_1 \leq y^* \leq \mu_2) = F(\mu_2 - X\beta) - F(\mu_1 - X\beta)$$

$$\text{Prob}(y = 3 | X) = \text{Prob}(\mu_2 \leq y^* \leq \mu_3) = F(\mu_3 - X\beta) - F(\mu_2 - X\beta)$$

$$\text{Prob}(y = 4 | X) = \text{Prob}(\mu_3 \leq y^* \leq \mu_4) = F(\mu_4 - X\beta) - F(\mu_3 - X\beta)$$

$$\text{Prob}(y = 5 | X) = \text{Prob}(y^* \geq \mu_4) = 1 - F(\mu_4 - X\beta).$$

where $\mu_1 < \mu_2 < \mu_3 < \mu_4$ are the cut-off values for the ordered logit model and F is the cumulative distribution function.



Ordered Logit Regression

- The marginal effects of changes in the independent variables are computed as follows:

$$\frac{\delta \text{Prob} (y = 1 | X)}{\delta X} = -f(\mu_1 - X\beta) \cdot \beta$$

$$\frac{\delta \text{Prob} (y = 2 | X)}{\delta X} = -[f(\mu_2 - X\beta) - f(\mu_1 - X\beta)] \cdot \beta$$

$$\frac{\delta \text{Prob} (y = 3 | X)}{\delta X} = -[f(\mu_3 - X\beta) - f(\mu_2 - X\beta)] \cdot \beta$$

$$\frac{\delta \text{Prob} (y = 4 | X)}{\delta X} = -[f(\mu_4 - X\beta) - f(\mu_3 - X\beta)] \cdot \beta$$

$$\frac{\delta \text{Prob} (y = 5 | X)}{\delta X} = f(\mu_4 - X\beta) \cdot \beta$$



Ordered Logit Regression

- Interpretation: A positive coefficient estimate = given an increase in the regressor X , the probability of the lowest category (individual chooses 1 or 2 and is anti-trade) decreases and the probability of the highest category (individual chooses 4 or 5 and is pro-trade) increases.



The Independent Variables

- Socio-demographic Variables
 - Gender (1 = male; 0 = female)
 - Age (actual)
 - Subjective economic class (1 = E; 2 = D; 3 = C; 4 = AB)
 - Union membership (1 = non-member; 0 = member)
 - Religion (1 = non-Catholic; 0 = Catholic)
 - Area of residence (1 = urban; 0 = rural)



The Independent Variables

- Socio-demographic Variables
 - Unemployment (1 = unemployed; 0 = otherwise)
 - Public employment (1 = government;
0 = non-government)
 - Self-employment (1 = self-employed; 0 = otherwise)
 - Political affiliation (1 = right and far right;
0 = otherwise)
 - Relative income (1 = above sample median; 0 = otherwise)



Regressions Run

- Model 1: age, gender, economic class, religion, affiliation with the right
- Model 2: Model 1 + unemployment, self-employment, employment in the public sector, membership in a trade union, area of residence
- Model 3: Model 2 + relative family income
- Model 4: Model 2 + relative personal income



Findings

- The variables found to be significant in different specifications were:
 - Gender
 - Economic class
 - Personal income
 - Area of residence
 - Employment in the public sector



Sample Regression Results

ologit protect gender ecoclass relpinc locale public

ORDERED LOGIT ESTIMATES

Prob > chi² = 0.0000

Pseudo R² = 0.0141

protect	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
gender	-.17497	.1171343	-1.49	0.135	-.404549	.054609
ecoclass	-.1996893	.0899919	-2.22	0.026	-.3760701	-.0233085
relpinc	-.2307843	.1186218	-1.95	0.052	-.4632789	.0017102
locale	-.4399437	.1131952	-3.89	0.000	-.6618022	-.2180852
public	-.4791941	.1990586	-2.41	0.016	.0890464	.8693417



Sample Regression Results

regress protect gender ecoclass relpinc locale public

ORDINARY LEAST SQUARES ESTIMATES

R-squared = 0.0320

Adj R-squared = 0.0278

protect	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gender	-.0936654	.0659947	-1.42	0.156	-.223147	.0358163
ecoclass	-.0982315	.0511825	-1.92	0.055	-.1986516	.0021886
relpinc	-.1108542	.0667831	-1.66	0.097	-.2418826	.0201742
locale	-.2346649	.0638148	-3.68	0.000	-.3598696	-.1094602
public	-.2856818	.110929	-2.58	0.010	.068039	.5033246
constant	2.253225	.1550178	14.54	0.000	1.94908	2.5573



Sample Regression Results

Variable	<i>protect</i>		
	Ordered Logit		
	dPr(y=5)	dPr(y=4)	Sum
<i>gender</i>	-0.0049352	-0.0122979	-0.01723
	-1.45	-1.48	
<i>economic class</i>	0.0056210	-0.014028	-0.01965
	-4.5	-2.19	
		-0.0160917	-0.02254
		-1.94	
<i>locale</i>	-0.0131207	-0.0321519	-0.04527
	-3.22	-3.6	
<i>public employment</i>	-0.0112656	-0.0291494	-0.040415
	-2.66	-2.74	

With urban = 1 and rural = 0, the sum indicates that rural dwellers are 4.5 percentage points more likely to be pro-trade than rural dwellers.



Findings of the Model

- Women in the Philippines are more likely to support a more open trade policy.
- Those belonging to higher economic classes are more protectionist.
- Those who earn above the median income are more protectionist.
- Rural dwellers are less disagreeable to opening the economy.
- Public sector employees are more reluctant to support free trade.



Model vis-à-vis Statistics

	No. Of Respondents	Mean	Percentage Pro-Trade	Percentage Anti-Trade
GENDER				
Male	592	2.02	11.15	75.68
Female	588	2.16	12.07	69.56
LOCALE				
Urban	733	1.99	10.78	76.53
Rural	439	2.2	11.39	67.65
EMPLOYMENT				
Public sector	98	1.79	6.12	84.69
Private sector	1074	2.12	12.1	71.6
ECONOMIC CLASS				
Class AB	8	1.88	0	75
Class C	129	1.8	5.43	83.72
Class D	750	2.1	12.53	71.87
Class E	293	2.18	12.29	69.97



An Interesting Note

- Several of the variables operated differently in the Philippines compared to countries covered by previous studies.
 - Highlights the differences among nations with regard to both economic terms and cultural backgrounds

	Ours	S&S	P	B	M&R
<i>Gender</i>	Y (-)	Y (+)	N	N/A	Y (+)
<i>Locale</i>	Y (-)	N/A	N	Y	Y (+)
<i>Public</i>	Y (+)	N/A	N/A	N/A	N/A
<i>Income</i>	Y (-)	N/A	N/A	Y	Y (+)
<i>Class</i>	Y (-)	N/A	N/A	Y	Y (+)



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