

Homework Questions

(Due Friday of Week 9, Hilary Term)

Question 1

I have estimated an ordered multinomial logistic model to explore how characteristics of citizens impact their vote choice. I surveyed 1000 citizens before an election in which the Socialists, Conservatives, and Christian Democrats were running. The main explanatory variables are left/right, ideology and gender.

Data: surveys responses for 1000 respondents

Dependent Variable: coded 1 if voter voted for Socialists , 2 for Conservatives, 3 Christian Democrats

Independent variables:

ideology = scale of 1 to 10 with 1 being most left and 10 most right (mean = 5, sd = 2)

male = 1 identifies respondent was a male

Table 1: Results

	Coefficient
<hr/> <hr/>	
Socialist	
Ideology	-0.3
Male	0.3
Constant	0.88
<hr/> <hr/>	
Conservative	
Ideology	0.2
Male	0.02
Constant	-0.9
<hr/> <hr/>	

Baseline group is Christian Democrats

1. What is the stochastic component of this model?
2. What is the systematic component of this model?
3. What is the predicted probability of voting for each party for a male with ideology score 5?

Question 2

I have replicated below the poisson regression results for the veto override example employed in class.

```
Poisson regression                               Number of obs   =       26
                                                LR chi2(4)      =       29.21
                                                Prob > chi2     =       0.0000
Log likelihood = -37.907938                    Pseudo R2      =       0.2781
```

nover	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
nveto	.0406958	.0090975	4.47	0.000	.0228651	.0585265
janpop	-.0296944	.0158098	-1.88	0.060	-.0606811	.0012923
presmaj	-1.167975	.6312272	-1.85	0.064	-2.405158	.0692071
pressmaj	.0084897	.4738788	0.02	0.986	-.9202958	.9372751
_cons	1.718194	.8871924	1.94	0.053	-.0206716	3.457059

1. What is the stochastic component of this model?
2. What is the systematic component of this model?
3. Here are the summary statistics for the independent variables employed in that example.

```
. summarize nover nveto janpop presmaj pressmaj
```

Variable	Obs	Mean	Std. Dev.	Min	Max
nover	26	1.730769	2.050516	0	8
nveto	26	15.61538	14.54119	0	70
janpop	26	58.23077	11.09705	36	74
presmaj	26	.3846154	.4961389	0	1
pressmaj	26	.5	.509902	0	1

What is the expected number of veto overrides for a President over the course of a Congressional term that had the following political characteristics:

4. the president's party controls neither the House nor the Senate.
5. the president's approval rating stands at 35 percent.
6. congress has exercised 35 vetoes.

What is the probability of 1 veto override in this context?

Question 3

The dataset `conflict.dta` on the website is a subset of the Cross-National Time-Series Data Archive compiled by Arthur Banks. The dataset has the following variables:

year year

country country name

popdens population density

defexpgdp defense expenditure as a proportion of national expenditure

phonespc telephones per 100,000 people

tvpc televisions per 100,000 people

gdppcfc gdp/capita (factor costs)

conflictevent number of conflict events (riots, guerrilla wars, revolutions, assassinations, coups and government crises)

1. The variable `conflictevent` will be your dependent variable. Without running a regression, assess if the Poisson model will be sufficient or if you will need the negative binomial model to get efficient results.
2. We want to test three hypotheses.
 - H₁** Structure in the way of gdp and population density are significant predictors of conflict
 - H₂** Defense spending should decrease conflict because citizens then know that the government is well-armed.
 - H₃** People really engage in conflict because there is nothing better to do so giving them phones and televisions will reduce the number of conflict events.

Run a Poisson model with `conflictevent` as the dependent variable and `defexpgdp`, `phonespc`, `tvpc`, `gdppcfc` as the independent variables and test these three hypotheses above. Do you believe the Poisson model? Without running a negative binomial, how could you test to see whether your dependent variable is still overdispersed? Interpret your results in terms of percent changes holding all other variables constant.

3. Run a negative binomial regression similar to the one above. How do the results change and why do they change this way? What does the test of overdispersion in the NBR tell you?
4. Using the `prcounts` routine in stata, generate a graph that shows, on average, how close each model gets to the observed probability of the counts for the values 0-10.