List 11: Marginal effects

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Содержание


```
## Warning in find.package(package, lib.loc, verbose = verbose): there is no
## package called 'Ecdat'
```

```
## Warning in data(loanapp, SwissLabor, Mroz, package = c("wooldridge", "AER", :
## data set 'Mroz' not found
```

1 Marginal effects

1.1 for probit

Consider a probit-regression $P(y=1) = \Phi(x'\beta)$, where $x'\beta = \beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k$

Marginal effects $\frac{\partial P(y=1)}{\partial x_j} = \phi(x'\beta)\beta_j$, where $\phi(z) = \frac{1}{\sqrt{2\pi}} exp\{-z^2/2\}$

1.2 for logit

Consider a logit-regression $P(y=1) = \Lambda(x'\beta)$, where $x'\beta = \beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k$

Marginal effects $\frac{\partial P(y=1)}{\partial x_j} = \lambda(x'\beta)\beta_j$, where $\lambda(z) = \frac{exp(z)}{(1+exp(z))^2}$

1.3 Average marginal effects

Usually we consider

- marginal effects at the mean of each regressor :
  - $\phi(\bar{x}'\beta)\beta_j$ for probit
  - $\lambda(\bar{x}'\beta)\beta_j$ for logit
- The average of the marginal effects at each observation:
  - $\overline{\phi(x'\beta)\beta_j}$ for probit
  - $\overline{\lambda(x'\beta)\beta_j}$ for logit

2 labour force equation

For the dataset `TableF5-1` consider regression **LFP на WA, log(FAMINC), WE, KL6, K618, CIT, UN** of the following specifications:

- logit
- probit

The marginal effects at the mean of each regressor for logit model **Round the answer to 3 decimal places.**

	effect	error	t.value	p.value
(Intercept)	-0.454	0.411	-1.105	0.270
WA	-0.015	0.003	-5.006	0.000
log(FAMINC)	0.083	0.042	1.982	0.048
WE	0.044	0.010	4.450	0.000
KL6	-0.353	0.048	-7.395	0.000
K618	-0.023	0.016	-1.416	0.157
CIT	-0.052	0.043	-1.219	0.223
UN	-0.004	0.006	-0.675	0.500

The marginal effects at the mean of each regressor for probit model. **Round the answer to 3 decimal places.**

	effect	error	t.value	p.value
(Intercept)	-0.434	0.399	-1.089	0.277
WA	-0.015	0.003	-5.066	0.000
log(FAMINC)	0.081	0.041	1.966	0.050
WE	0.042	0.009	4.504	0.000
KL6	-0.340	0.044	-7.663	0.000
K618	-0.022	0.016	-1.402	0.161
CIT	-0.049	0.042	-1.179	0.239
UN	-0.004	0.006	-0.669	0.504

The average of the marginal effects at each observation for logit модели. **Round the answer to 3 decimal places.**

	effect	error	t.value	p.value
(Intercept)	-0.395	0.358	-1.105	0.270
WA	-0.013	0.003	-5.006	0.000
log(FAMINC)	0.073	0.037	1.982	0.048
WE	0.038	0.009	4.450	0.000
KL6	-0.307	0.042	-7.395	0.000
K618	-0.020	0.014	-1.416	0.157
CIT	-0.052	0.043	-1.219	0.223
UN	-0.004	0.005	-0.675	0.500

The average of the marginal effects at each observation for probit модели. **Round the answer to 3 decimal places.**

	effect	error	t.value	p.value
(Intercept)	-0.388	0.357	-1.089	0.277
WA	-0.013	0.003	-5.066	0.000
log(FAMINC)	0.072	0.037	1.966	0.050
WE	0.038	0.008	4.504	0.000
KL6	-0.304	0.040	-7.663	0.000
K618	-0.020	0.014	-1.402	0.161
CIT	-0.049	0.042	-1.179	0.239
UN	-0.004	0.006	-0.669	0.504

3 approve equation

For the dataset `loanapp` consider regression **approve на appinc/100, mortno, unem, dep, male** of the following specifications:

- logit
- probit

The marginal effects at the mean of each regressor for logit model **Round the answer to 3 decimal places.**

```
              effect error t.value p.value
(Intercept)    0.210 0.019  10.915   0.000
I(appinc/100) -0.011 0.007  -1.583   0.114
mortno         0.077 0.014   5.451   0.000
unem          -0.007 0.003  -2.260   0.024
dep           -0.011 0.006  -1.741   0.082
male           0.019 0.020   0.945   0.345
```

The marginal effects at the mean of each regressor for probit model. **Round the answer to 3 decimal places.**

```
              effect error t.value p.value
(Intercept)    0.237 0.020  12.009   0.000
I(appinc/100) -0.011 0.008  -1.468   0.142
mortno         0.077 0.014   5.415   0.000
unem          -0.007 0.003  -2.272   0.023
dep           -0.011 0.007  -1.650   0.099
male           0.019 0.020   0.953   0.341
```

The average of the marginal effects at each observation for logit модели. **Round the answer to 3 decimal places.**

```
              effect error t.value p.value
(Intercept)    0.217 0.020  10.915   0.000
I(appinc/100) -0.011 0.007  -1.583   0.114
mortno         0.077 0.014   5.451   0.000
unem          -0.007 0.003  -2.260   0.024
dep           -0.011 0.006  -1.741   0.082
male           0.019 0.020   0.945   0.345
```

The average of the marginal effects at each observation for probit модели. **Round the answer to 3 decimal places.**

```
              effect error t.value p.value
(Intercept)    0.239 0.020  12.009   0.000
I(appinc/100) -0.011 0.008  -1.468   0.142
mortno         0.077 0.014   5.415   0.000
unem          -0.007 0.003  -2.272   0.023
dep           -0.011 0.007  -1.650   0.099
male           0.019 0.020   0.953   0.341
```

4 swiss labour force equation

For the dataset `SwissLabour` consider regression **participation на income, age, age^2, youngkids, oldkids** of the following specification:

- logit
- probit

The marginal effects at the mean of each regressor for logit model **Round the answer to 3 decimal places.**

```
            effect error t.value p.value
```

```
(Intercept)  2.083 0.576   3.617   0.000
income      -0.330 0.053  -6.249   0.000
age          0.965 0.165   5.849   0.000
I(age^2)    -0.136 0.020  -6.633   0.000
youngkids   -0.264 0.041  -6.458   0.000
oldkids     -0.062 0.020  -3.052   0.002
```

The marginal effects at the mean of each regressor for probit model. **Round the answer to 3 decimal places.**

```
            effect error t.value p.value
(Intercept)  2.000 0.547   3.657   0.000
income      -0.318 0.050  -6.419   0.000
age          0.934 0.157   5.961   0.000
I(age^2)    -0.131 0.019  -6.794   0.000
youngkids   -0.253 0.039  -6.567   0.000
oldkids     -0.060 0.020  -3.048   0.002
```

The average of the marginal effects at each observation for logit модели. **Round the answer to 3 decimal places.**

```
            effect error t.value p.value
(Intercept)  1.762 0.487   3.617   0.000
income      -0.279 0.045  -6.249   0.000
age          0.817 0.140   5.849   0.000
I(age^2)    -0.115 0.017  -6.633   0.000
youngkids   -0.224 0.035  -6.458   0.000
oldkids     -0.053 0.017  -3.052   0.002
```

The average of the marginal effects at each observation for probit модели. **Round the answer to 3 decimal places.**

```
            effect error t.value p.value
(Intercept)  1.745 0.477   3.657   0.000
income      -0.278 0.043  -6.419   0.000
age          0.815 0.137   5.961   0.000
I(age^2)    -0.115 0.017  -6.794   0.000
youngkids   -0.221 0.034  -6.567   0.000
oldkids     -0.053 0.017  -3.048   0.002
```