Logit and Probit Models in EViews

Ass.Prof. Andriy Stavytskyy

File:Binary.WF1

- GRADE represents improvement on grades following exposure to the new teaching method PSI
- GPA and TUCE – controlling for alternative measures of knowledge

EViews - [Group: UNTITLED Workfile: BINARY::undated\]

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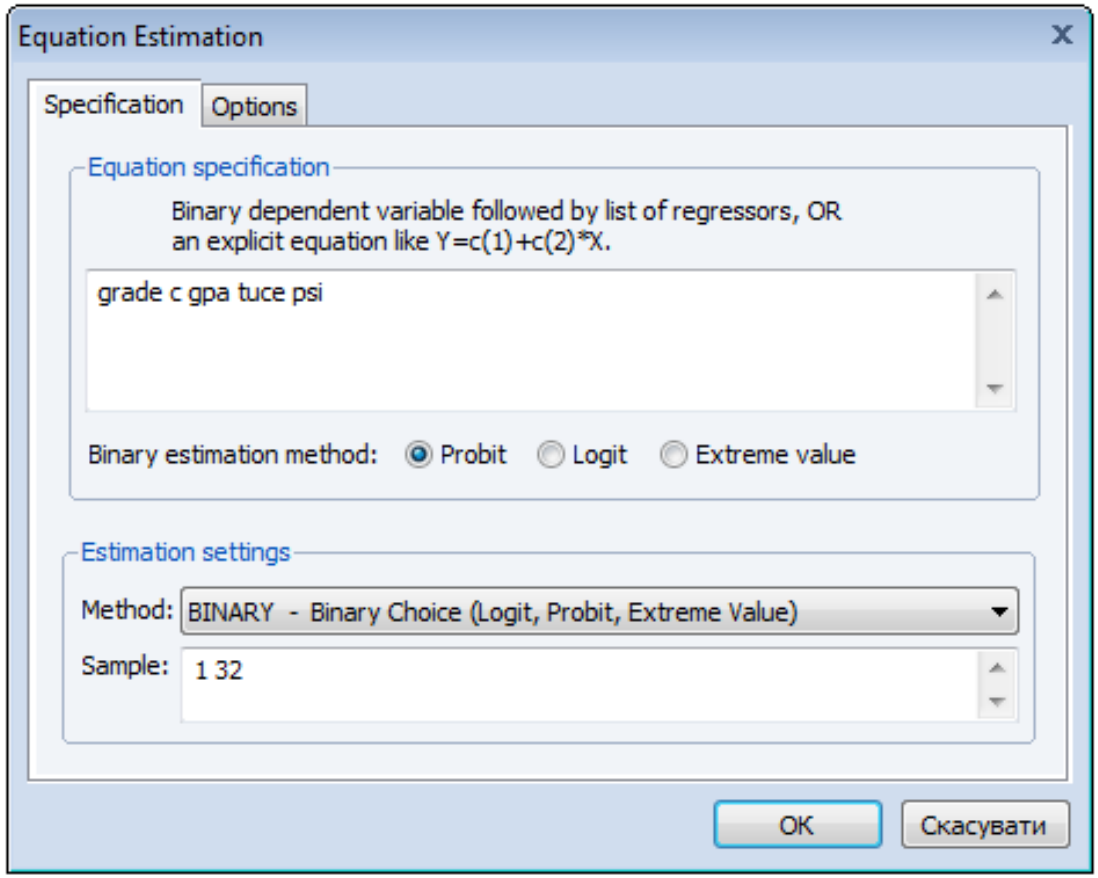
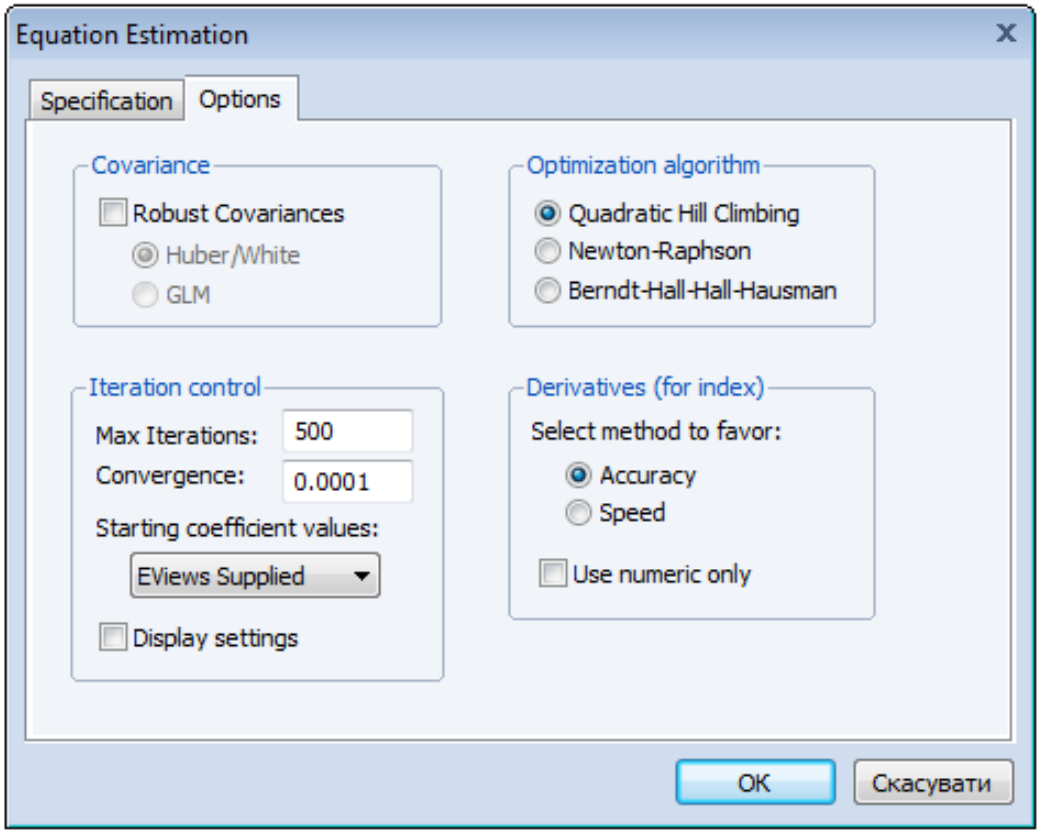
obs	GRADE	GPA	TUCE	PSI
1	0.0000	2.6600	20.000	0.0000
2	0.0000	2.8900	22.000	0.0000
3	0.0000	3.2800	24.000	0.0000
4	0.0000	2.9200	12.000	0.0000
5	1.0000	4.0000	21.000	0.0000
6	0.0000	2.8600	17.000	0.0000
7	0.0000	2.7600	17.000	0.0000
8	0.0000	2.8700	21.000	0.0000
9	0.0000	3.0300	25.000	0.0000
10	1.0000	3.9200	29.000	0.0000
11	0.0000	2.6300	20.000	0.0000
12	0.0000	3.3200	23.000	0.0000
13	0.0000	3.5700	23.000	0.0000
14	1.0000	3.2600	25.000	0.0000
15	0.0000	3.5300	26.000	0.0000
16	0.0000	2.7400	19.000	0.0000
17	0.0000	2.7500	25.000	0.0000
18	0.0000	2.8300	19.000	0.0000
19	0.0000	3.1200	23.000	1.0000
20	1.0000	3.1600	25.000	1.0000
21	0.0000	2.0600	22.000	1.0000
22	1.0000	3.6200	28.000	1.0000
23	0.0000	2.8900	14.000	1.0000
24	0.0000	3.5100	26.000	1.0000
25	1.0000	3.5400	24.000	1.0000
26	1.0000	2.8300	27.000	1.0000
27	1.0000	3.3900	17.000	1.0000
28	0.0000	2.6700	24.000	1.0000
29	1.0000	3.6500	21.000	1.0000
30	1.0000	4.0000	23.000	1.0000
31	0.0000	3.1000	21.000	1.0000
32	1.0000	2.3900	19.000	1.0000

Model specification



Options


Equation Estimation
Specification
Options
Covariance
Robust Covariances
Huber/White
GLM
Optimization algorithm
Quadratic Hill Climbing
Newton-Raphson
Berndt-Hall-Hall-Hausman
Iteration control
Max Iterations:
500
Convergence:
0.0001
Starting coefficient values:
EViews Supplied
Display settings
Derivatives (for index)
Select method to favor:
Accuracy
Speed
Use numeric only
OK
Скасувати

Model estimation

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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Dependent Variable: GRADE
Method: ML - Binary Probit (Quadratic hill climbing)
Date: 03/24/13 Time: 17:42
Sample: 1 32
Included observations: 32
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-7.452320	2.542472	-2.931131	0.0034
GPA	1.625810	0.693882	2.343063	0.0191
TUCE	0.051729	0.083890	0.616626	0.5375
PSI	1.426332	0.595038	2.397045	0.0165

McFadden R-squared	0.377478	Mean dependent var	0.343750
S.D. dependent var	0.482559	S.E. of regression	0.386128
Akaike info criterion	1.051175	Sum squared resid	4.174660
Schwarz criterion	1.234392	Log likelihood	-12.81880
Hannan-Quinn criter.	1.111907	Deviance	25.63761
Restr. deviance	41.18346	Restr. log likelihood	-20.59173
LR statistic	15.54585	Avg. log likelihood	-0.400588
Prob(LR statistic)	0.001405		

Obs with Dep=0	21	Total obs	32
Obs with Dep=1	11		

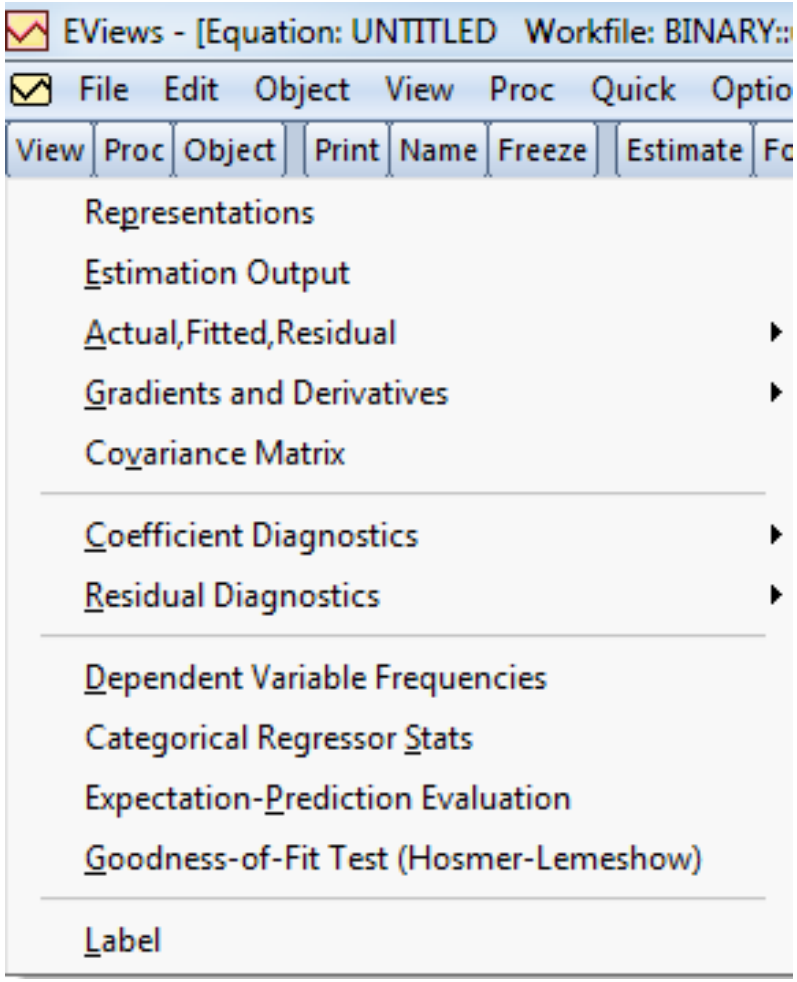
Characteristics

- **Log likelihood** is the maximized value of the log likelihood function .
- **Avg. log likelihood** is the log likelihood divided by the number of observations .
- **Restr. log likelihood** is the maximized log likelihood value, when all slope coefficients are restricted to zero. Since the constant term is included, this specification is equivalent to estimating the unconditional mean probability of "success".
- The **LR statistic** tests the joint null hypothesis that all slope coefficients except the constant are zero. This statistic, which is only reported when you include a constant in your specification, is used to test the overall significance of the model. The degrees of freedom is **one less than the number of coefficients** in the equation, which is the number of restrictions under test.
- **Probability(LR stat)** is the *p*-value of the LR test statistic. Under the null hypothesis, the LR test statistic is asymptotically distributed as a χ^2 variable, with degrees of freedom equal to the number of restrictions under test.
- **McFadden R-squared** is the likelihood ratio index, this is an analog **R-squared** of to the reported in linear regression models. It has the property that it always lies between zero and one.

Estimation Errors

- Error message "Dependent variable has no variance." This error means that there is no variation in the dependent variable .This error most often occurs when EViews excludes the entire sample of observations for which takes values other than zero or one, leaving too few observations for estimation.
- Error message of the form "[xxxx] perfectly predicts binary response [success/failure]", where xxxx is a sample condition. This error occurs when one of the regressors contains a separating value for which all of the observations with values below the threshold are associated with a single binary response, and all of the values above the threshold are associated with the alternative response. In this circumstance, the method of maximum likelihood breaks down.
- Error message "Non-positive likelihood value observed for observation [xxxx]." This error most commonly arises when the starting values for estimation are poor.
- Error message "Near-singular matrix" indicates that EViews was unable to invert the matrix required for iterative estimation. This will occur if the model is not identified. It may also occur if the current parameters are far from the true values.

Views of Binary Equations



Dependent Variable Frequencies

- This view displays a frequency and cumulative frequency table for the dependent variable in the binary model.

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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Dependent Variable Frequencies
Equation: UNTITLED
Date: 03/24/13 Time: 18:10

Dep. Value	Count	Percent	Cumulative Count	Cumulative Percent
0	21	65.63	21	65.63
1	11	34.38	32	100.00

Categorical Regressor Stats

- This view displays descriptive statistics (mean and standard deviation) for each regressor. The descriptive statistics are computed for the whole sample, as well as the sample broken down by the value of the dependent variable.

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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Categorical Descriptive Statistics for Explanatory Variables
Equation: UNTITLED
Date: 03/24/13 Time: 18:08

	Mean		
Variable	Dep=0	Dep=1	All
C	1.000000	1.000000	1.000000
GPA	2.951905	3.432727	3.117188
TUCE	21.09524	23.54545	21.93750
PSI	0.285714	0.727273	0.437500

	Standard Deviation		
Variable	Dep=0	Dep=1	All
C	0.000000	0.000000	0.000000
GPA	0.357220	0.503132	0.466713
TUCE	3.780275	3.777926	3.901509
PSI	0.462910	0.467099	0.504016
Observations	21	11	32

Expectation-Prediction (Classification) Table – 1

- This view displays tables of correct and incorrect classification based on a user specified prediction rule, and on expected value calculations. It's necessary to specify a prediction cutoff value, lying between zero and one. Each observation will be classified as having a predicted probability that lies above or below this cutoff.
- After you enter the cutoff value, EViews will display four (bordered) tables, each table corresponds to a contingency table of the predicted response classified against the observed dependent variable.

Expectation-Prediction (Classification) Table – 2

- In the left-hand table, we classify observations as having predicted probabilities that are above or below the specified cutoff value (here set to the default of 0.5).

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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Expectation-Prediction Evaluation for Binary Specification
Equation: UNTITLED
Date: 03/24/13 Time: 18:14
Success cutoff: C = 0.5

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)<=C	18	3	21	21	11	32
P(Dep=1)>C	3	8	11	0	0	0
Total	21	11	32	21	11	32
Correct	18	8	26	21	0	21
% Correct	85.71	72.73	81.25	100.00	0.00	65.63
% Incorrect	14.29	27.27	18.75	0.00	100.00	34.38
Total Gain*	-14.29	72.73	15.63			
Percent Gain**	NA	72.73	45.45			

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
E(# of Dep=0)	16.89	4.14	21.03	13.78	7.22	21.00
E(# of Dep=1)	4.11	6.86	10.97	7.22	3.78	11.00
Total	21.00	11.00	32.00	21.00	11.00	32.00
Correct	16.89	6.86	23.74	13.78	3.78	17.56
% Correct	80.42	62.32	74.20	65.63	34.38	54.88
% Incorrect	19.58	37.68	25.80	34.38	65.63	45.12
Total Gain*	14.80	27.95	19.32			
Percent Gain**	43.05	42.59	42.82			

*Change in "% Correct" from default (constant probability) specification
**Percent of incorrect (default) prediction corrected by equation

Expectation-Prediction (Classification) Table – 3

- In the left-hand table, we classify observations as having predicted probabilities

$$Prob(Y_i = 1) = F(\hat{\beta}_0 + \hat{\beta}_1 X_{1i} + .. \hat{\beta}_K X_{Ki})$$

that are above or below the specified cutoff value (here set to the default of 0.5).

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Expectation-Prediction Evaluation for Binary Specification
Equation: UNTITLED
Date: 03/24/13 Time: 18:14
Success cutoff: C = 0.5

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)<=C	18	3	21	21	11	32
P(Dep=1)>C	3	8	11	0	0	0
Total	21	11	32	21	11	32
Correct	18	8	26	21	0	21
% Correct	85.71	72.73	81.25	100.00	0.00	65.63
% Incorrect	14.29	27.27	18.75	0.00	100.00	34.38
Total Gain*	-14.29	72.73	15.63			
Percent Gain**	NA	72.73	45.45			

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
E(# of Dep=0)	16.89	4.14	21.03	13.78	7.22	21.00
E(# of Dep=1)	4.11	6.86	10.97	7.22	3.78	11.00
Total	21.00	11.00	32.00	21.00	11.00	32.00
Correct	16.89	6.86	23.74	13.78	3.78	17.56
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% Incorrect	19.58	37.68	25.80	34.38	65.63	45.12
Total Gain*	14.80	27.95	19.32			
Percent Gain**	43.05	42.59	42.82			

*Change in "% Correct" from default (constant probability) specification
**Percent of incorrect (default) prediction corrected by equation

Expectation-Prediction (Classification) Table – 4

- "Correct" classifications are obtained when the predicted probability is less than or equal to the cutoff and the observed y=0, or when the predicted probability is greater than the cutoff and the observed y=1.
- In the example above, 18 of the Dep=0 observations and 8 of the Dep=1 observations are correctly classified by the estimated model.

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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Expectation-Prediction Evaluation for Binary Specification
Equation: UNTITLED
Date: 03/24/13 Time: 18:14
Success cutoff: C = 0.5

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)<=C	18	3	21	21	11	32
P(Dep=1)>C	3	8	11	0	0	0
Total	21	11	32	21	11	32
Correct	18	8	26	21	0	21
% Correct	85.71	72.73	81.25	100.00	0.00	65.63
% Incorrect	14.29	27.27	18.75	0.00	100.00	34.38
Total Gain*	-14.29	72.73	15.63			
Percent Gain**	NA	72.73	45.45			

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
E(# of Dep=0)	16.89	4.14	21.03	13.78	7.22	21.00
E(# of Dep=1)	4.11	6.86	10.97	7.22	3.78	11.00
Total	21.00	11.00	32.00	21.00	11.00	32.00
Correct	16.89	6.86	23.74	13.78	3.78	17.56
% Correct	80.42	62.32	74.20	65.63	34.38	54.88
% Incorrect	19.58	37.68	25.80	34.38	65.63	45.12
Total Gain*	14.80	27.95	19.32			
Percent Gain**	43.05	42.59	42.82			

*Change in "% Correct" from default (constant probability) specification
**Percent of incorrect (default) prediction corrected by equation

Expectation-Prediction (Classification) Table – 5

- The estimated model improves on the Dep=1 predictions by 72.73 percentage points, but does more poorly on the Dep=0 predictions (-14.29 percentage points). Overall, the estimated equation is 15.62 percentage points better at predicting responses than the constant probability model. This change represents a 45.45 percent improvement over the 65.62 percent correct prediction of the default model.

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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Expectation-Prediction Evaluation for Binary Specification
Equation: UNTITLED
Date: 03/24/13 Time: 18:14
Success cutoff: C = 0.5

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)<=C	18	3	21	21	11	32
P(Dep=1)>C	3	8	11	0	0	0
Total	21	11	32	21	11	32
Correct	18	8	26	21	0	21
% Correct	85.71	72.73	81.25	100.00	0.00	65.63
% Incorrect	14.29	27.27	18.75	0.00	100.00	34.38
Total Gain*	-14.29	72.73	15.63			
Percent Gain**	NA	72.73	45.45			

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
E(# of Dep=0)	16.89	4.14	21.03	13.78	7.22	21.00
E(# of Dep=1)	4.11	6.86	10.97	7.22	3.78	11.00
Total	21.00	11.00	32.00	21.00	11.00	32.00
Correct	16.89	6.86	23.74	13.78	3.78	17.56
% Correct	80.42	62.32	74.20	65.63	34.38	54.88
% Incorrect	19.58	37.68	25.80	34.38	65.63	45.12
Total Gain*	14.80	27.95	19.32			
Percent Gain**	43.05	42.59	42.82			

*Change in "% Correct" from default (constant probability) specification
**Percent of incorrect (default) prediction corrected by equation

Expectation-Prediction (Classification) Table – 6

- In the bottom left-hand table, we compute the expected number of y=0 and y=1 observations in the sample, where the cumulative distribution function is for the normal, logistic, or extreme value distribution.

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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Expectation-Prediction Evaluation for Binary Specification
Equation: UNTITLED
Date: 03/24/13 Time: 18:14
Success cutoff: C = 0.5

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)<=C	18	3	21	21	11	32
P(Dep=1)>C	3	8	11	0	0	0
Total	21	11	32	21	11	32
Correct	18	8	26	21	0	21
% Correct	85.71	72.73	81.25	100.00	0.00	65.63
% Incorrect	14.29	27.27	18.75	0.00	100.00	34.38
Total Gain*	-14.29	72.73	15.63			
Percent Gain**	NA	72.73	45.45			

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
E(# of Dep=0)	16.89	4.14	21.03	13.78	7.22	21.00
E(# of Dep=1)	4.11	6.86	10.97	7.22	3.78	11.00
Total	21.00	11.00	32.00	21.00	11.00	32.00
Correct	16.89	6.86	23.74	13.78	3.78	17.56
% Correct	80.42	62.32	74.20	65.63	34.38	54.88
% Incorrect	19.58	37.68	25.80	34.38	65.63	45.12
Total Gain*	14.80	27.95	19.32			
Percent Gain**	43.05	42.59	42.82			

*Change in "% Correct" from default (constant probability) specification
**Percent of incorrect (default) prediction corrected by equation

Expectation-Prediction (Classification) Table – 7

- In the lower right-hand table, we compute the expected number of and observations for a model estimated with only a constant.

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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Expectation-Prediction Evaluation for Binary Specification
Equation: UNTITLED
Date: 03/24/13 Time: 18:14
Success cutoff: C = 0.5

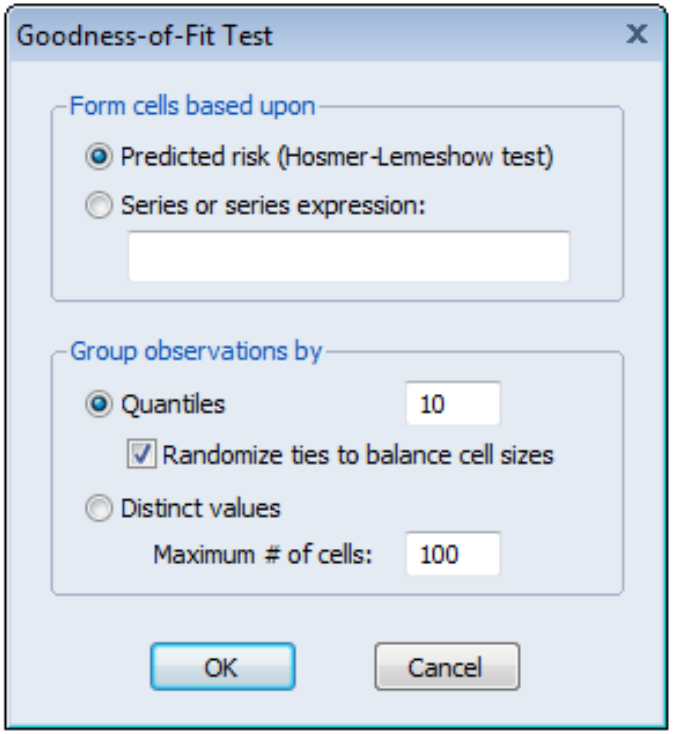
	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)<=C	18	3	21	21	11	32
P(Dep=1)>C	3	8	11	0	0	0
Total	21	11	32	21	11	32
Correct	18	8	26	21	0	21
% Correct	85.71	72.73	81.25	100.00	0.00	65.63
% Incorrect	14.29	27.27	18.75	0.00	100.00	34.38
Total Gain*	-14.29	72.73	15.63			
Percent Gain**	NA	72.73	45.45			

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
E(# of Dep=0)	16.89	4.14	21.03	13.78	7.22	21.00
E(# of Dep=1)	4.11	6.86	10.97	7.22	3.78	11.00
Total	21.00	11.00	32.00	21.00	11.00	32.00
Correct	16.89	6.86	23.74	13.78	3.78	17.56
% Correct	80.42	62.32	74.20	65.63	34.38	54.88
% Incorrect	19.58	37.68	25.80	34.38	65.63	45.12
Total Gain*	14.80	27.95	19.32			
Percent Gain**	43.05	42.59	42.82			

*Change in "% Correct" from default (constant probability) specification
**Percent of incorrect (default) prediction corrected by equation

Goodness-of-Fit Tests – 1

- This view allows you to perform Pearson χ^2-type tests of goodness-of-fit. EViews carries out two goodness-of-fit tests: Hosmer-Lemeshow and Andrews.
- The idea underlying these tests is to compare the fitted expected values to the actual values *by group*. If these differences are "large", we reject the model as providing an insufficient fit to the data.
- The tests differ in how the observations are grouped and in the asymptotic distribution of the test statistic.



Goodness-of-Fit Tests – 2

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

File Edit Object View Proc Quick Options Add-ins Window Help

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Goodness-of-Fit Evaluation for Binary Specification
Andrews and Hosmer-Lemeshow Tests
Equation: UNTITLED
Date: 03/24/13 Time: 18:38
Grouping based upon predicted risk (randomize ties)

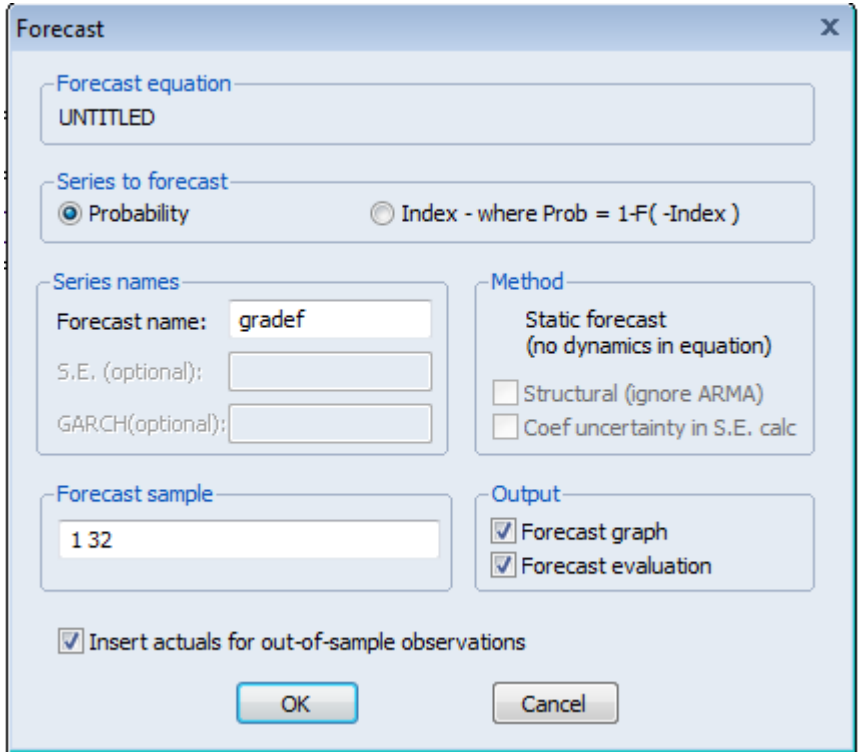
	Quantile of Risk		Dep=0		Dep=1		Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.0161	0.0185	3	2.94722	0	0.05278	3	0.05372
2	0.0186	0.0272	3	2.93223	0	0.06777	3	0.06934
3	0.0309	0.0457	3	2.87888	0	0.12112	3	0.12621
4	0.0531	0.1088	3	2.77618	0	0.22382	3	0.24186
5	0.1235	0.1952	2	3.29779	2	0.70221	4	2.90924
6	0.2732	0.3287	3	2.07481	0	0.92519	3	1.33775
7	0.3563	0.5400	2	1.61497	1	1.38503	3	0.19883
8	0.5546	0.6424	1	1.20962	2	1.79038	3	0.06087
9	0.6572	0.8342	0	0.84550	3	2.15450	3	1.17730
10	0.8400	0.9522	1	0.45575	3	3.54425	4	0.73351
		Total	21	21.0330	11	10.9670	32	6.90863

H-L Statistic	6.9086	Prob. Chi-Sq(8)	0.5465
Andrews Statistic	20.6045	Prob. Chi-Sq(10)	0.0240

The *p*-value for the HL test is large while the value for the Andrews test statistic is small, providing mixed evidence of problems.

Forecast

- **Proc/Forecast (Fitted Probability/Index)…,** computes the fitted probability or index.



Probit

EViews - [Equation: UNTITLED Workfile: BINARY::undated\]

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View Proc Object Print Name Freeze Estimate Forecast Stats Resids

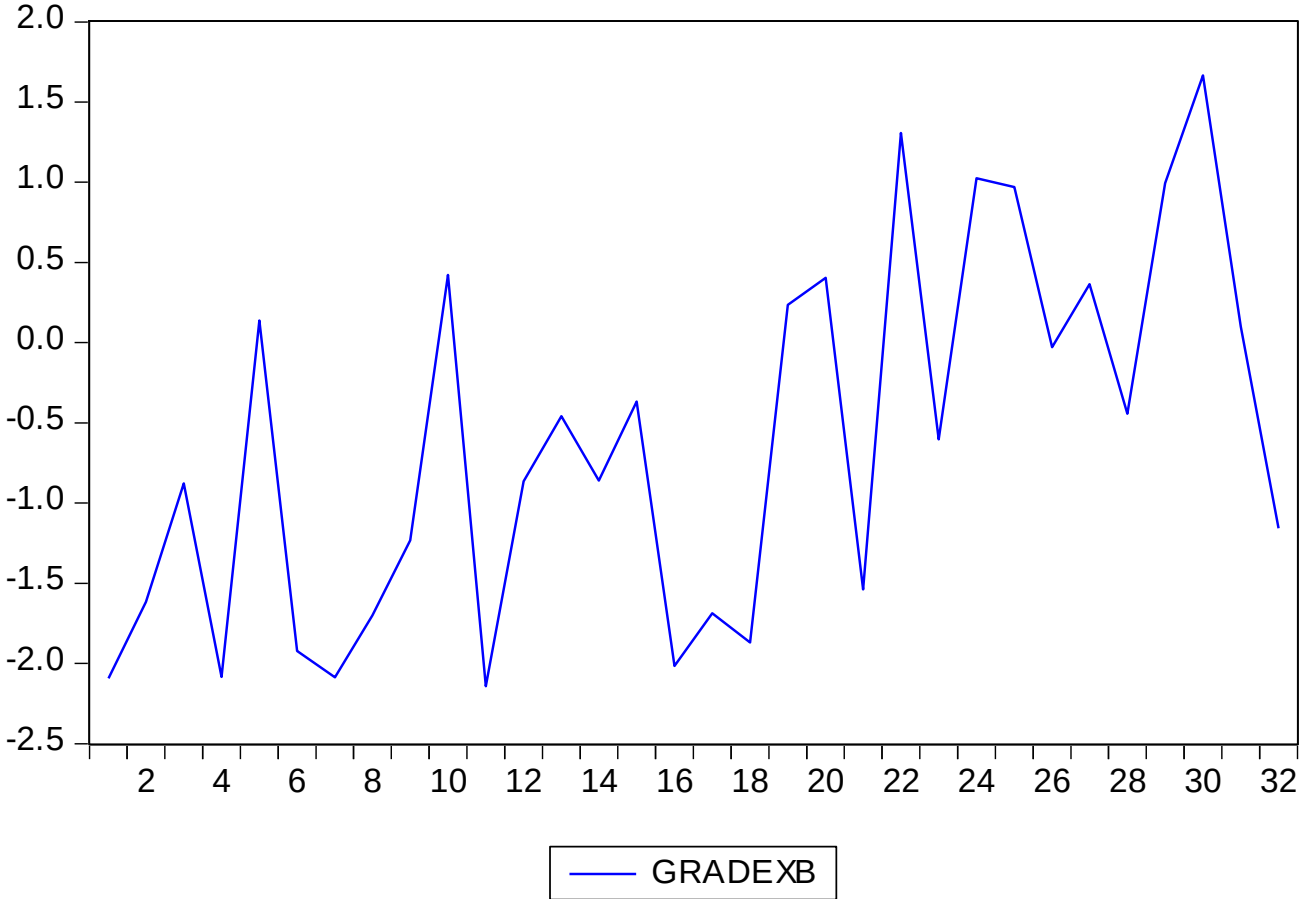
Dependent Variable: GRADE
Method: ML - Binary Probit (Quadratic hill climbing)
Date: 03/24/13 Time: 17:42
Sample: 1 32
Included observations: 32
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-7.452320	2.542472	-2.931131	0.0034
GPA	1.625810	0.693882	2.343063	0.0191
TUCE	0.051729	0.083890	0.616626	0.5375
PSI	1.426332	0.595038	2.397045	0.0165

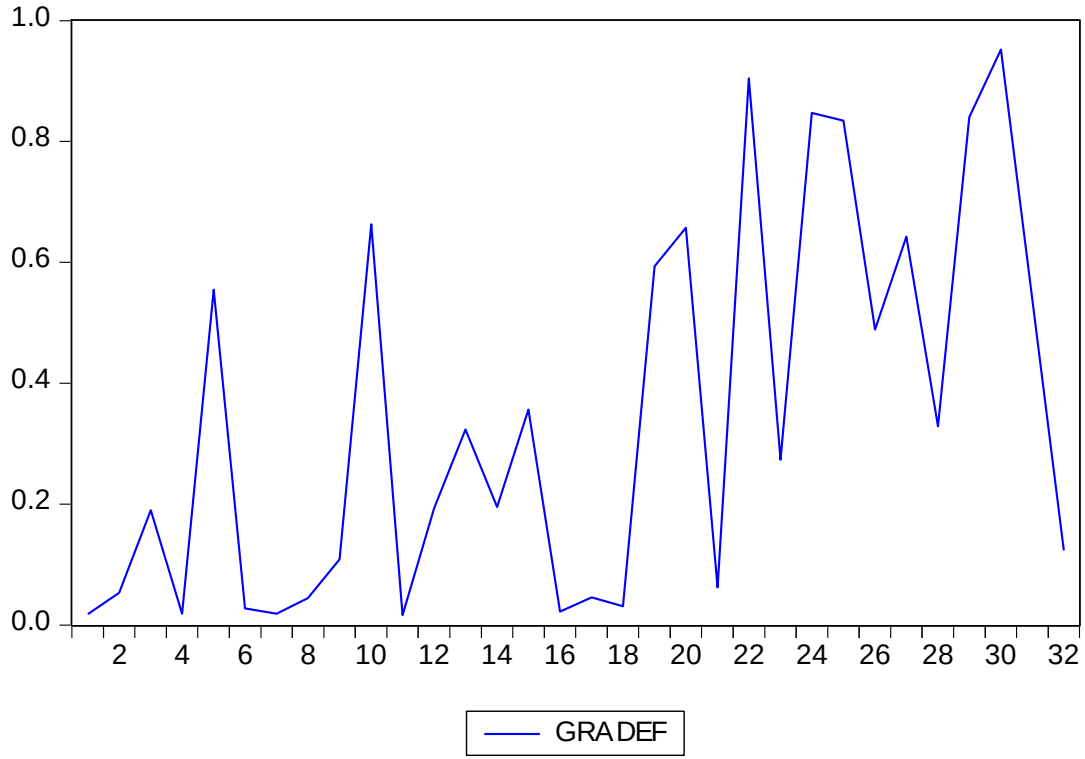
McFadden R-squared	0.377478	Mean dependent var	0.343750
S.D. dependent var	0.482559	S.E. of regression	0.386128
Akaike info criterion	1.051175	Sum squared resid	4.174660
Schwarz criterion	1.234392	Log likelihood	-12.81880
Hannan-Quinn criter.	1.111907	Deviance	25.63761
Restr. deviance	41.18346	Restr. log likelihood	-20.59173
LR statistic	15.54585	Avg. log likelihood	-0.400588
Prob(LR statistic)	0.001405		

Obs with Dep=0	21	Total obs	32
Obs with Dep=1	11		

Forecast result: index



Forecast result: probability



Forecast: GRADEF	
Actual: GRADE	
Forecast sample: 1 32	
Included observations: 32	
Root Mean Squared Error	0.361190
Mean Absolute Error	0.257987
Mean Abs. Percent Error	12.95082
Theil Inequality Coefficient	0.343928
Bias Proportion	0.000008
Variance Proportion	0.201997
Covariance Proportion	0.797995

Relation between index and probability

- For the first person (t=1):
- $\log[P_1] = -2.093086$,
- $P_1 = \exp(-2.093086) = 0.123306$.

Logit

EViews - [Equation: EQ01 Workfile: BINARY::undated\]

File Edit Object View Proc Quick Options Add-ins Window H

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

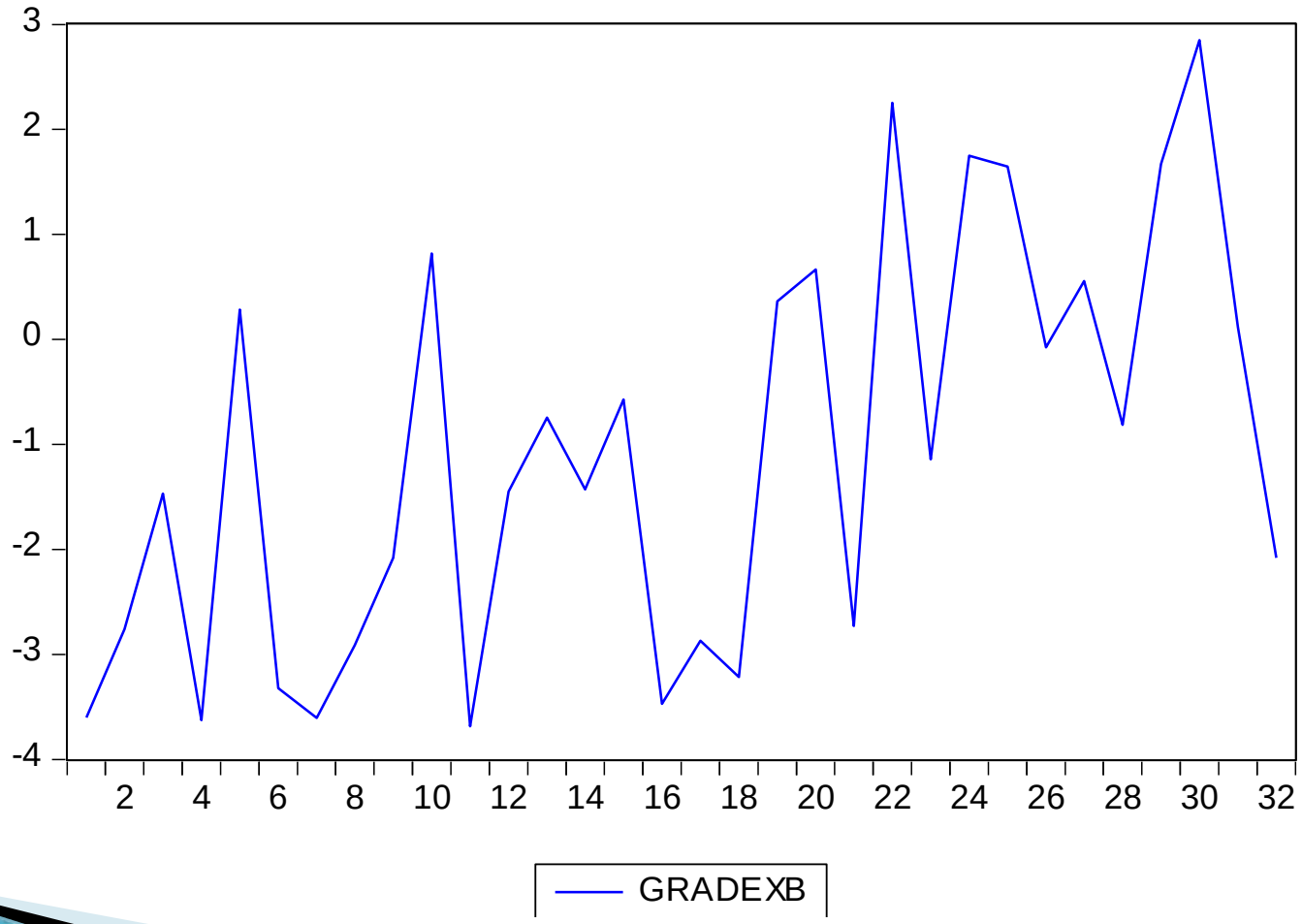
Dependent Variable: GRADE
Method: ML - Binary Logit (Quadratic hill climbing)
Date: 03/24/13 Time: 19:14
Sample: 1 32
Included observations: 32
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-13.02135	4.931324	-2.640537	0.0083
GPA	2.826113	1.262941	2.237723	0.0252
TUCE	0.095158	0.141554	0.672235	0.5014
PSI	2.378688	1.064564	2.234424	0.0255

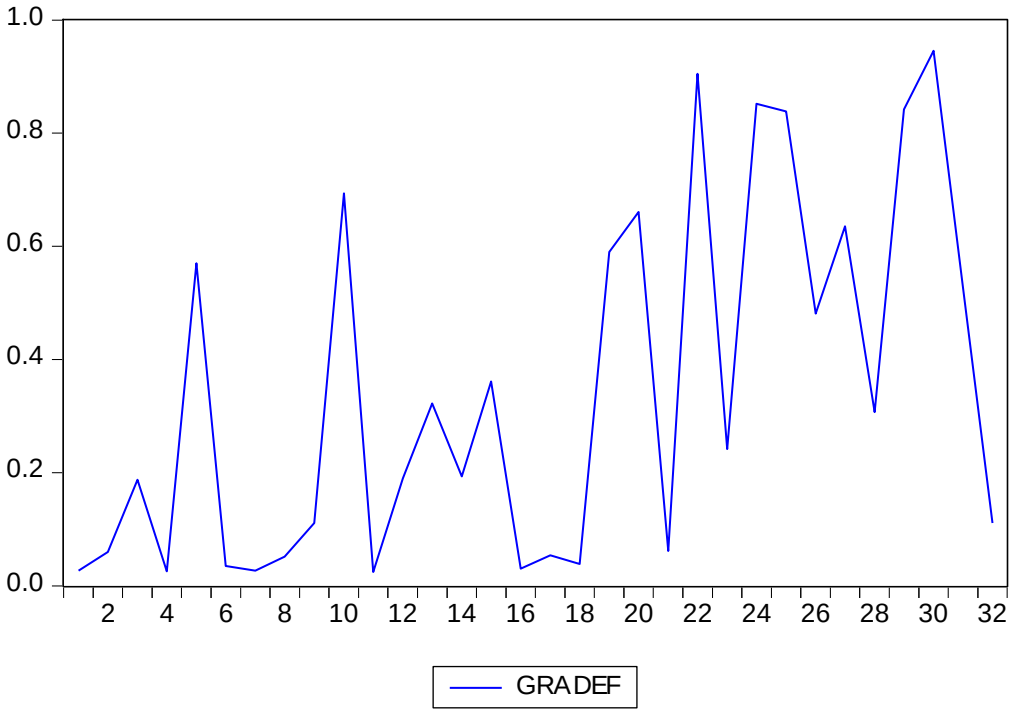
McFadden R-squared	0.374038	Mean dependent var	0.343750
S.D. dependent var	0.482559	S.E. of regression	0.384716
Akaike info criterion	1.055602	Sum squared resid	4.144171
Schwarz criterion	1.238819	Log likelihood	-12.88963
Hannan-Quinn criter.	1.116333	Deviance	25.77927
Restr. deviance	41.18346	Restr. log likelihood	-20.59173
LR statistic	15.40419	Avg. log likelihood	-0.402801
Prob(LR statistic)	0.001502		

Obs with Dep=0	21	Total obs	32
Obs with Dep=1	11		

Forecast result: index



Forecast result: probability



Forecast: GRADEF	
Actual: GRADE	
Forecast sample: 1 32	
Included observations: 32	
Root Mean Squared Error	0.359869
Mean Absolute Error	0.257802
Mean Abs. Percent Error	12.89010
Theil Inequality Coefficient	0.342578
Bias Proportion	0.000000
Variance Proportion	0.205275
Covariance Proportion	0.794725

Relation between index and probability

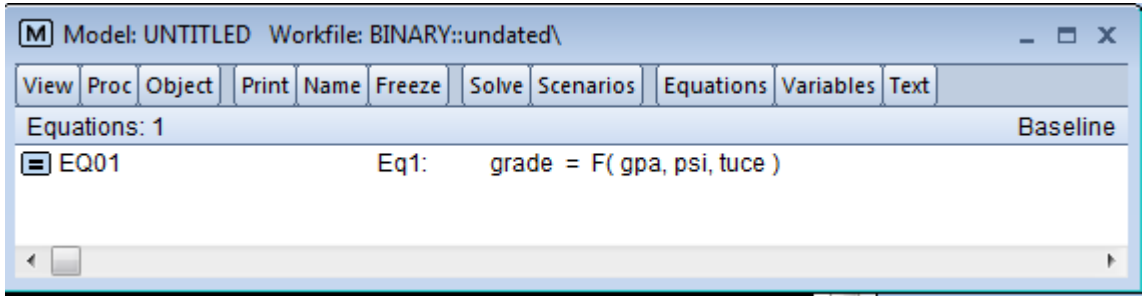
- For the first person (t=1)
- $\log[P_i/(1-P_i)] = -3.600734$,
- $P_i/(1-P_i) = \exp(-3.600734) = 0.027304$,
- $P_i = 0.027304/(1+0.027304) = 0.026578$.

Application: if PSI matters?

- We wish to plot the fitted probabilities of GRADE improvement as a function of GPA for the two values of PSI, fixing the values of other variables at their sample means.

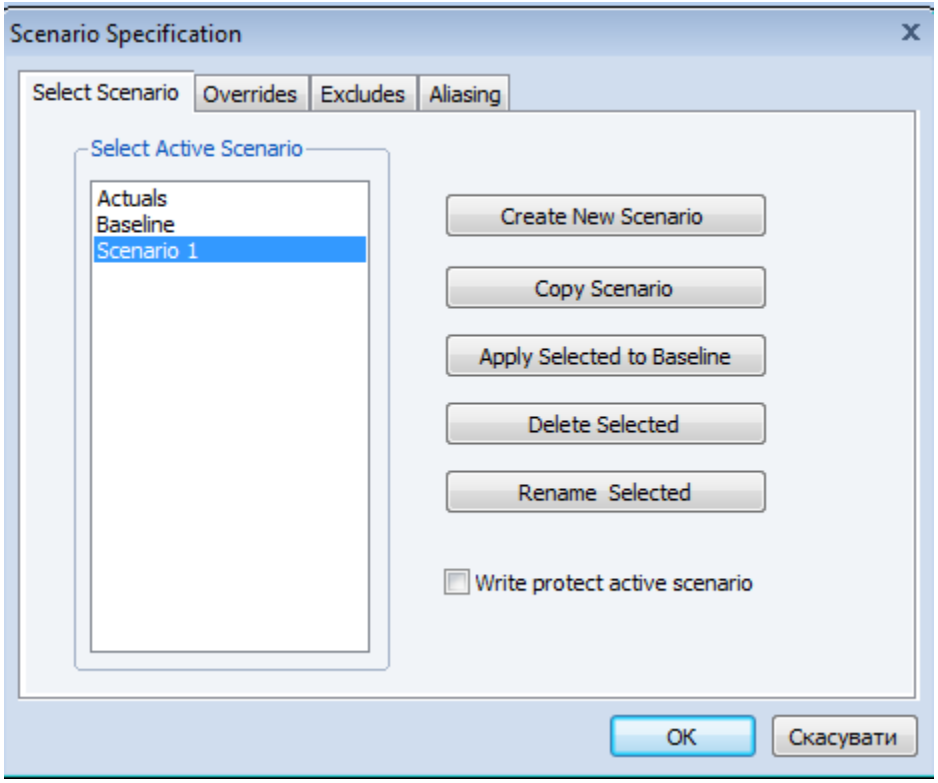
Solution – 1

- create a model out of the estimated equation by selecting **Proc/Make Model** from the equation toolbar.



Solution – 2

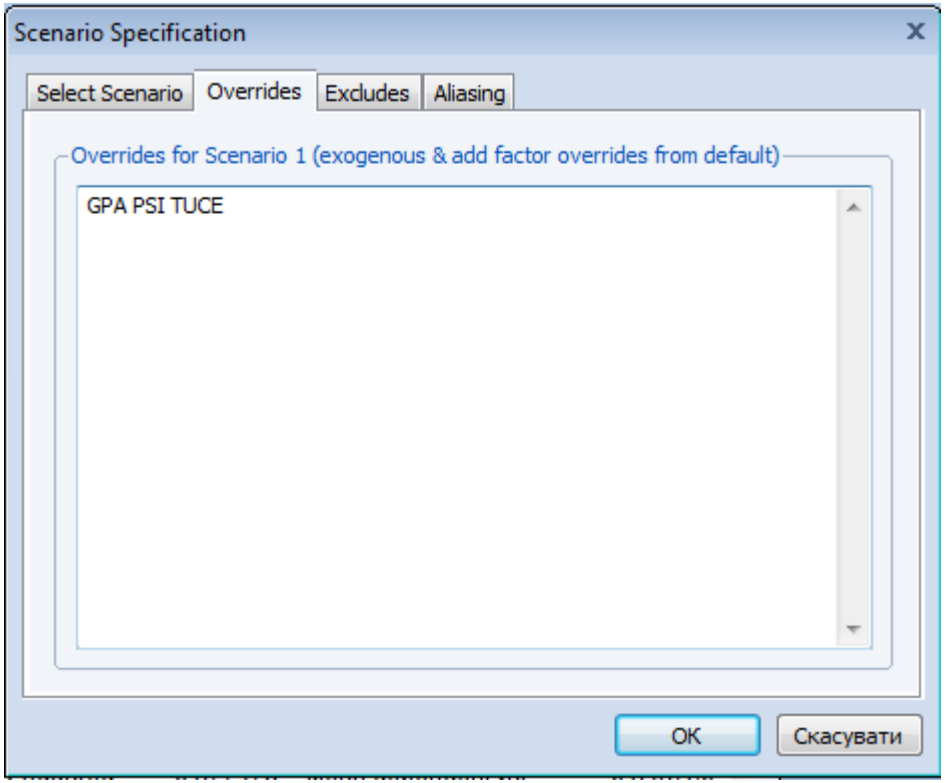
- Define scenarios in the model so that calculations are performed using the desired values (**Scenarios– Scenario Specification – Scenario 1**).



Solution – 3

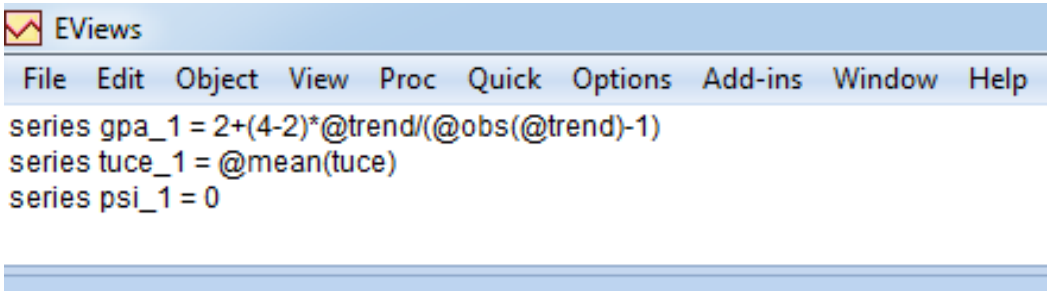
- The **Scenario Specification** dialog allows us to define a set of assumptions under which we will solve the model.
- Click on the **Overrides** tab and enter "GPA PSI TUCE". Defining these overrides tells EViews to use the values in the series GPA_1, PSI_1, and TUCE_1 instead of the original GPA, PSI, and TUCE when solving for GRADE under Scenario 1.

Solution – 4


Scenario Specification
Select Scenario
Overrides
Excludes
Aliasing
Overrides for Scenario 1 (exogenous & add factor overrides from default)
GPA PSI TUCE
OK
Скасувати

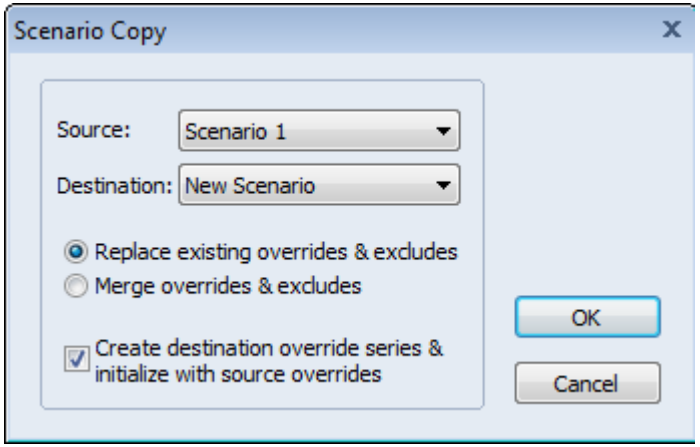
Solution – 5

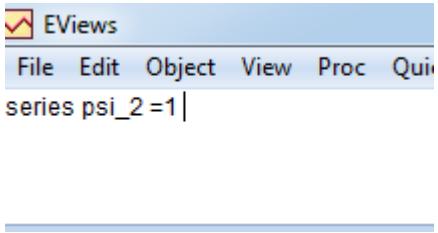
- Having defined the first scenario, we must create the series GPA_1, PSI_1 and TUCE_1 in our workfile. We wish to use these series to evaluate the GRADE probabilities for various values of GPA (a grid of values ranging from 2 to 4), holding TUCE equal to its mean value and PSI equal to 0:



Solution – 6

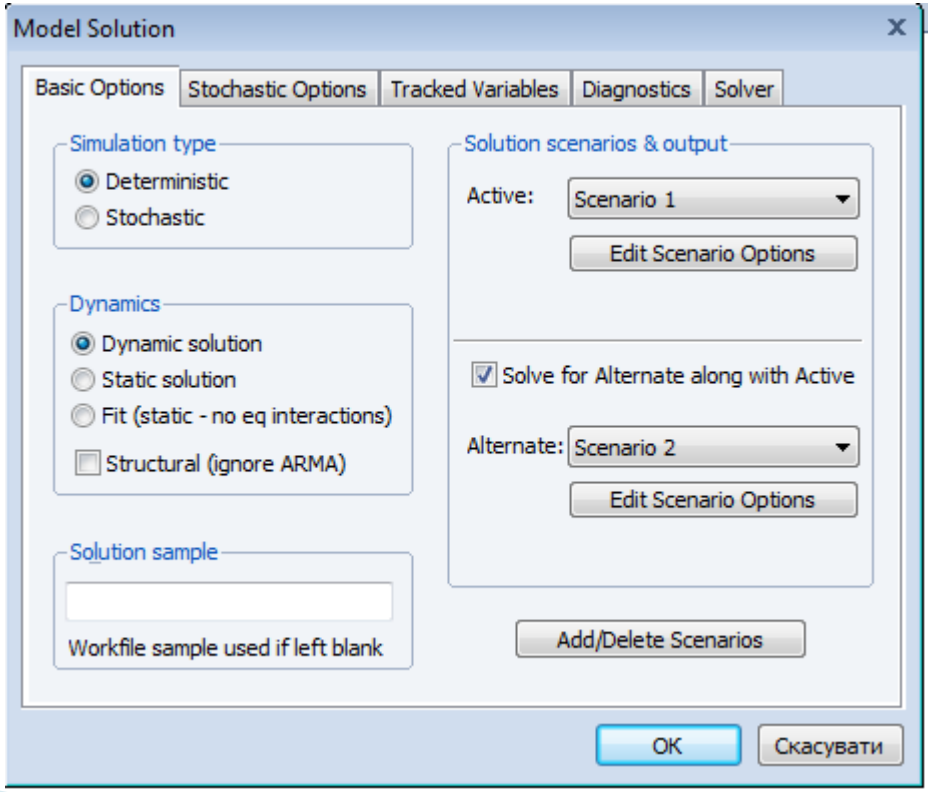
- Having prepared our data for the first scenario, we will now use the model object to define an alternate scenario where PSI=1.
- Return to the **Select Scenario** tab, select **Copy Scenario**, then select **Scenario 1** as the **Source**, and **New Scenario** as the **Destination.**
- Then set PSI_2 equal to 1





Solution – 8

- Solve the model under the two scenarios.

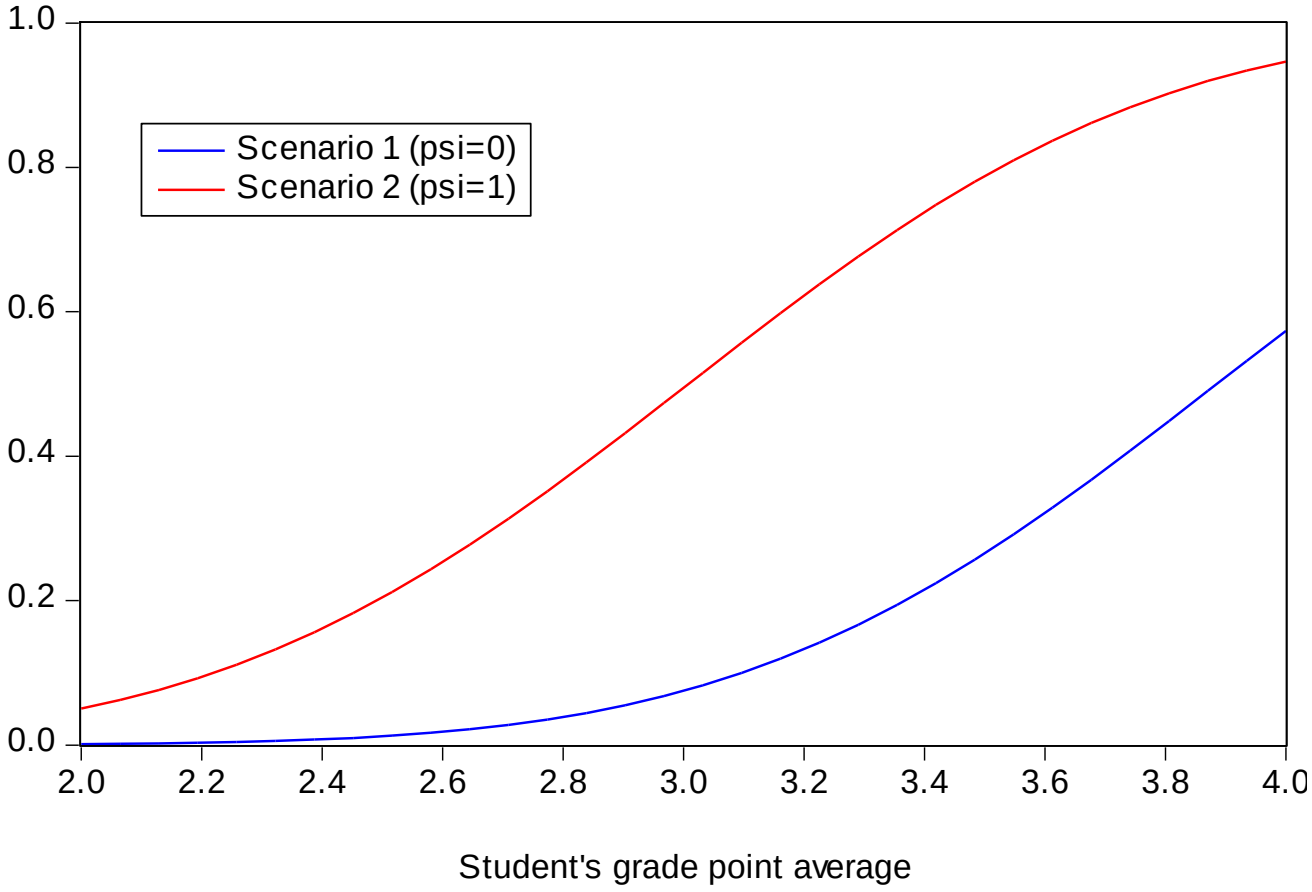


Solution – 9

- Display the results in group (**Object/New Object…/Group) for series**:

  gpa_1 grade_1 grade_2

Scenario comparison



Questions?

Self study