

Econometrics Project: Choice of sports in France for rugby

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- ① Why this subject?
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- ③ Practicing rugby in French clubs
 - First model
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 - Conclusion

1. Why this subject?

- First choice: Sports choice in universities...
- Final choice: Practicing rugby in universities
- Extension to French rugby clubs' members

2. Practicing rugby in universities

First model

- First equation

$$\begin{aligned} \text{Rugby}_i = & \beta_1 + \beta_2 \text{Sex}_i + \beta_3 \text{Age}_i + \beta_4 \text{Size}_i + \beta_5 \text{Weight}_i + \beta_6 \text{Originloc}_i \\ & + \beta_7 \text{Originsport}_i + \beta_8 \text{Actualloc}_i + \beta_9 \text{Actualsport}_i + \beta_{10} \text{Campus}_i \\ & + \beta_{11} \text{Club}_i + \beta_{12} \text{Friend}_i + \beta_{13} \text{Injuries}_i + u_i \quad (1) \end{aligned}$$

2. Practicing rugby in universities

First model

- First equation

Dependent Variable: RUGBY
Method: Least Squares
Date: 05/17/13 Time: 14:32
Sample: 1 149
Included observations: 149

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.468845	1.066214	1.377626	0.1706
SEX	0.031112	0.114098	0.272680	0.7855
AGE	-0.013293	0.011821	-1.124475	0.2628
SIZE	-0.009169	0.005845	-1.568646	0.1191
WEIGHT	0.007160	0.004699	1.523614	0.1299
ORIGINLOC	0.009461	0.009986	0.947403	0.3451
ORIGINSPORT	0.221363	0.114939	1.925918	0.0562
ACTUALLOC	-0.002810	0.026843	-0.104684	0.9168
ACTUALSPORT	0.018499	0.231533	0.079899	0.9364
CAMPUS	-0.039746	0.083628	-0.475277	0.6354
CLUB	-0.191046	0.074561	-2.562297	0.0115
FRIEND	0.209964	0.073671	2.850033	0.0051
INJURIES	0.279948	0.076764	3.646865	0.0004
R-squared	0.244969	Mean dependent var		0.322148
Adjusted R-squared	0.178348	S.D. dependent var		0.468875
S.E. of regression	0.425012	Akaike info criterion		1.209806
Sum squared resid	24.56639	Schwarz criterion		1.471896
Log likelihood	-77.13058	Hannan-Quinn criter.		1.316289
F-statistic	3.677083	Durbin-Watson stat		1.755241
Prob(F-statistic)	0.000085			

2. Practicing rugby in universities

First model

- Wald test

Wald Test:

Equation: EQ01

Test Statistic	Value	df	Probability
F-statistic	0.096699	(4, 136)	0.9834
Chi-square	0.386796	4	0.9835

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	0.031112	0.114098
C(8)	-0.002810	0.026843
C(9)	0.018499	0.231533
C(10)	-0.039746	0.083628

Restrictions are linear in coefficients.

- Null Hypothesis not rejected

2. Practicing rugby in universities

Second model

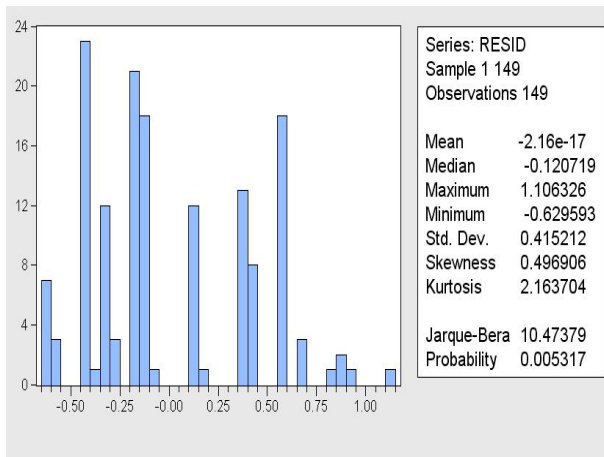
Dependent Variable: RUGBY
Method: Least Squares
Date: 05/17/13 Time: 14:52
Sample: 1 149
Included observations: 149

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.978257	0.723114	1.352839	0.1783
AGE	-0.008161	0.010912	-0.747934	0.4557
CLUB	-0.193561	0.073029	-2.650475	0.0090
FRIEND	0.233979	0.070404	3.323375	0.0011
INJURIES	0.303107	0.074184	4.085850	0.0001
ORIGINLOC	0.008558	0.009710	0.881347	0.3796
ORIGINSPORT	0.228032	0.112767	2.022142	0.0451
SIZE	-0.004396	0.003925	-1.120108	0.2646
R-squared	0.229006	Mean dependent var		0.322148
Adjusted R-squared	0.190729	S.D. dependent var		0.468875
S.E. of regression	0.421798	Akaike info criterion		1.163614
Sum squared resid	25.08577	Schwarz criterion		1.324900
Log likelihood	-78.68926	Hannan-Quinn criter.		1.229142
F-statistic	5.982961	Durbin-Watson stat		1.733001
Prob(F-statistic)	0.000004			

2. Practicing rugby in universities

Second model

- Residual normality?



2. Practicing rugby in universities

Conclusion

- Problem of dummy variables
- Problem of data

3. Practicing rugby in French clubs

First model

- First equation

$$\begin{aligned} \text{Rugby}_i = & \beta_1 + \beta_2 \text{Age}_i + \beta_3 \text{Club}_i + \beta_4 \text{Loc}_i + \beta_5 \text{PP}_i + \beta_6 \text{Titles}_i \\ & + \beta_7 \text{Urb}_i + \beta_8 \text{Wage}_i + \beta_9 \text{Alcohol}_i + u_i \quad (2) \end{aligned}$$

3. Practicing rugby in French clubs

First model

Dependent Variable: LIC
Method: Least Squares
Date: 05/16/13 Time: 09:32
Sample: 1 96
Included observations: 96

	Coefficient	Std. Error	t-Statistic	Prob.
C	31.85602	10.66671	2.986489	0.0037
AGE	-0.559740	0.211135	-2.651097	0.0095
CLUB	0.157324	0.025839	6.088670	0.0000
LOC	-0.612041	0.100964	-6.061982	0.0000
PP	-8.56E-07	1.40E-06	-0.611059	0.5428
TITLES	-0.088901	0.139072	-0.639243	0.5243
URB	-0.116046	0.019828	-5.852570	0.0000
WAGE	0.000142	0.000147	0.969237	0.3351
ALCOOL	0.097806	0.099165	0.986302	0.3267
R-squared	0.759119	Mean dependent var		4.726638
Adjusted R-squared	0.736969	S.D. dependent var		4.217553
S.E. of regression	2.163036	Akaike info criterion		4.469963
Sum squared resid	407.0491	Schwarz criterion		4.710370
Log likelihood	-205.5582	Hannan-Quinn criter.		4.567139
F-statistic	34.27182	Durbin-Watson stat		1.735738
Prob(F-statistic)	0.000000			

3. Practicing rugby in French clubs

First model

- Correlation matrix:

	AGE	ALCOOL	CLUB	DEP	LIC	LOC	PP	TITLES	URB	WAGE
AGE	1.000000	0.388480	0.156665	-0.297736	0.430978	-0.616009	0.104361	0.121232	-0.546289	-0.575079
ALCOOL	0.388480	1.000000	0.487404	-0.275673	0.579200	-0.553840	0.010337	0.428537	-0.148044	-0.287994
CLUB	0.156665	0.487404	1.000000	-0.045823	0.637120	-0.482738	0.069172	0.724514	0.305996	0.158643
DEP	-0.297736	-0.275673	-0.045823	1.000000	-0.159543	0.182389	-0.026987	-0.029724	0.367248	0.337608
LIC	0.430978	0.579200	0.637120	-0.159543	1.000000	-0.733763	0.173264	0.509645	-0.242960	-0.236700
LOC	-0.616009	-0.553840	-0.482738	0.182389	-0.733763	1.000000	-0.365184	-0.451265	0.169957	0.367955
PP	0.104361	0.010337	0.069172	-0.026987	0.173264	-0.365184	1.000000	0.034897	-0.012392	-0.167020
TITLES	0.121232	0.428537	0.724514	-0.029724	0.509645	-0.451265	0.034897	1.000000	0.203026	0.149589
URB	-0.546289	-0.148044	0.305996	0.367248	-0.242960	0.169957	-0.012392	0.203026	1.000000	0.646449
WAGE	-0.575079	-0.287994	0.158643	0.337608	-0.236700	0.367955	-0.167020	0.149589	0.646449	1.000000

3. Practicing rugby in French clubs

First model

- Wald test

Wald Test
Equation: EQ01

Test Statistic	Value	df	Probability
F-statistic	0.359388	(2, 87)	0.6991
Chi-square	0.718777	2	0.6981

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(5)	-8.56E-07	1.40E-06
C(6)	-0.088901	0.139072

Restrictions are linear in coefficients.

- Null Hypothesis not rejected

3. Practicing rugby in French clubs

Second model

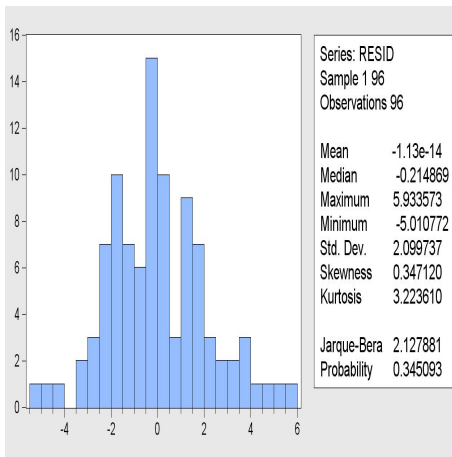
Dependent Variable: LIC
Method: Least Squares
Date: 05/16/13 Time: 10:33
Sample: 1 96
Included observations: 96

	Coefficient	Std. Error	t-Statistic	Prob.
C	33.77057	9.294938	3.633221	0.0005
AGE	-0.564131	0.201206	-2.803756	0.0062
ALCOOL	0.088680	0.094345	0.939955	0.3498
CLUB	0.154486	0.021091	7.324568	0.0000
LOC	-0.557692	0.086769	-6.427316	0.0000
URB	-0.108009	0.018028	-5.991235	0.0000
R-squared	0.754548	Mean dependent var		4.726638
Adjusted R-squared	0.740912	S.D. dependent var		4.217553
S.E. of regression	2.146763	Akaike info criterion		4.426261
Sum squared resid	414.7732	Schwarz criterion		4.586532
Log likelihood	-206.4605	Hannan-Quinn criter.		4.491045
F-statistic	55.33418	Durbin-Watson stat		1.741043
Prob(F-statistic)	0.000000			

3. Practicing rugby in French clubs

Second model

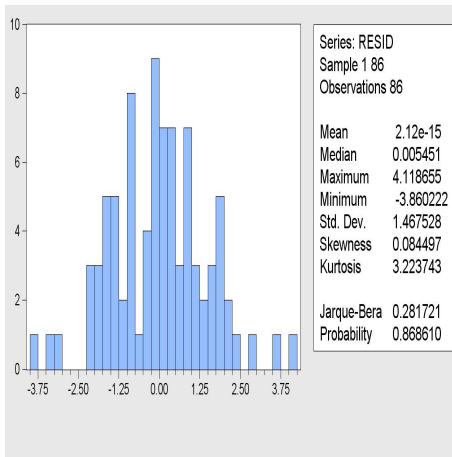
- Normality of residuals?



3. Practicing rugby in French clubs

Second model

- Removing few departments



3. Practicing rugby in French clubs

Second model

- Homoscedasticity:

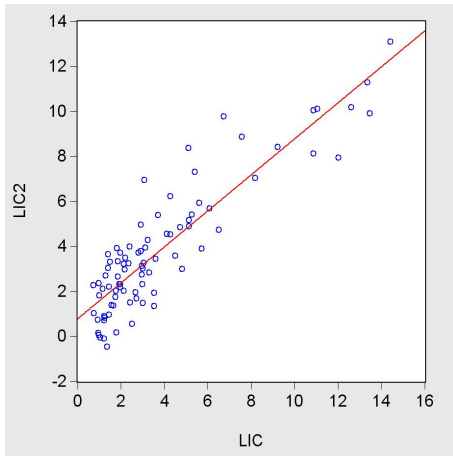
Heteroskedasticity Test: White

F-statistic	4.221244	Prob. F(14,71)	0.0000
Obs*R-squared	39.06594	Prob. Chi-Square(14)	0.0004
Scaled explained SS	38.53240	Prob. Chi-Square(14)	0.0004

- Heteroscedasticity of residuals

Conclusion

- Comparison with reality



END

- Thank you for your attention
Questions?