ECON 4101 Econometrics
CM08 Homework

Pranav Singh

March 24, 2017

```
df <- read.xlsx("../../Data_Woolridge/athlet1.xls", 1)
df <- data.frame(year = df[, 1], apps = df[, 2], stufac = df[, 6], bowl = df[, 7])
str(df)
```

```
## 'data.frame':    117 obs. of  4 variables:
##  $ year  : num  1993 1992 1993 1992 1993 ...
##  $ apps  : num  7677 13327 19860 10422 12809 ...
##  $ stufac: num  15 16 16 20 14 16 18 16 16 15 ...
##  $ bowl  : num  1 0 1 0 0 1 0 0 0 0 ...
```

```
summary(lm(log(apps) ~ log(stufac) + factor(bowl), df))
```

```
##
## Call:
## lm(formula = log(apps) ~ log(stufac) + factor(bowl), data = df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.92005 -0.32312 -0.01604  0.34990  0.96878
##
## Coefficients:
##               Estimate Std. Error t value           Pr(>|t|)
## (Intercept)    9.77350    0.40641  24.049 <0.0000000000000002 ***
## log(stufac)   -0.25978    0.15000  -1.732             0.0860 .
## factor(bowl)1  0.17110    0.08697   1.967             0.0516 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4679 on 114 degrees of freedom
## Multiple R-squared:  0.05917,    Adjusted R-squared:  0.04266
## F-statistic: 3.585 on 2 and 114 DF,  p-value: 0.03092
```

From the above regression analysis, we find at the 5% significance level, whether or not a university had a bowl game in the previous year has a nearly significant (it's p-value = .0516) impact on admissions ain the current year after accounting for the student-faculty ratio. The elasticity of demand for admissions using the student-faculty ratio is simply that variable's parameter estimate and is equal to -0.25978. That is, holding whether the university had a bowl game the previous year constant, a 1% increase in the student-faculty ratio corresponds to an estimated 0.25978% decrease in the applications for admissions.