1. The cost of attending your college has once again gone up. Although you have been told that education is investment in human capital, which carries a return of roughly 10% a year, you (and your parents) are not pleased. One of the administrators at your university/college does not make the situation better by telling you that you pay more because the reputation of your institution is better than that of others. To investigate this hypothesis, you collect data randomly for 100 national universities and liberal arts colleges from the 2000-2001 U.S. News and World Report annual rankings. Next you perform the following regression

\[
\hat{\text{Cost}} = 5,450.35 + 3,538.84 \times \text{Reputation} + 10,935.7 \times D_{\text{Private}} - 2,783.31 \times D_{\text{Religion}}
\]

\[
(1,772.35) (664.58) (875.51) (1,180.57)
\]

\[
R^2 = 0.72
\]

\[
SER = 3,773.35
\]

where Cost is Tuition, Fees, Room and Board in dollars, Reputation is the index used in U.S. News and World Report (based on a survey of university presidents and chief academic officers), which ranges from 1 (“marginal”) to 5 (“distinguished”), and DPrivate and DReligion are binary variables indicating whether the institution is private and has a religious affiliation. The numbers in parentheses are heteroskedasticity-only standard errors.

(a) Explain the interpretation of the coefficients of the dummy variables DPrivate and DReligion.

(b) Test the administrator’s hypothesis that the Reputation of universities is significantly associated with higher tuition at the 1%.
(c) Now, suppose you manage to get additional information on the Size of the institution or the number of undergraduates, and on whether the institution is a Liberal Arts College, where DLiberalArts is a binary variable which takes the value of 1 if the institution is a liberal arts college and zero otherwise. Then, you are able to estimate the following regression with the additional data:

\[
\hat{Cost} = 7,311.17 + 3,985.2 \times \text{Reputation} - 0.2 \times \text{Size} + 0.156 \times D_{Private} \\
- 416.38 \times D_{LiberalArts} - 2,376.51 \times D_{Religion} \\
R^2 = 0.72 \\
SER = 3,773.35
\]

Explain how the slope on the Reputation coefficient changes and whether it remains significant. Can you explain whether the regression in (a) suffered from omitted variable bias and in which direction the bias went.

(d) You are currently in a private liberal arts college, which has no religious affiliation, a size of 1,500 students and a reputation level of 4.5. However, given, the recession, you are considering switching from a private university to a public university, which has a ranking of 0.5 less and 10,000 more students. Predict the cost of each attending each university and calculate the savings per year from changing from the private liberal arts college to the public university.

2. On my website (http://www.uh.edu/~adkugler/ProblemSets.html) you will find a file called Growth, with data on average growth rates over 1960-1995 for 65 countries along with variables that are potentially related to growth. Here, I have attached a detailed description of the data. Use these data set to examine the economic and political determinants of growth, but remember to exclude Malta from these estimations.

(a) Construct a table that shows the sample mean, standard deviation and minimum and maximum values for the series Growth, TradeShare, YearsSchool, Oil, Rev_Coups, Assasinations, and RGDP60.

(b) Run a regression of Growth on TradeShare, YearsSchool, Rev_Coups, Assasinations and RGDP60. Interpret the value of the coefficient on Rev_Coups and explain whether it is large or small in a real-world sense.
(c) Use the regression to predict the average annual growth rate for a country that has average values for all regressions.

(d) Interpret the coefficient on YearsSchool and test whether the coefficient on this variable is significant at the 1% level. What does this result tell us about the importance of human capital in terms of explaining growth?
Documentation for Growth Data

**Growth** contains data on average growth rates over 1960-1995 for 65 countries, along with variables that are potentially related to growth. These data were provided by Professor Ross Levine of Brown University and were used in his paper with Thorsten Beck and Norman Loayza “Finance and the Sources of Growth” *Journal of Financial Economics*, 2000, Vol. 58, pp. 261-300.

**Variable Definitions**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
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<tbody>
<tr>
<td><em>Country name</em></td>
<td>Name of country</td>
</tr>
<tr>
<td><em>growth</em></td>
<td>Average annual percentage growth of real Gross Domestic Product (GDP)* from 1960 to 1995.</td>
</tr>
<tr>
<td><em>rgd60</em></td>
<td>The value of GDP* per capita in 1960, converted to 1960 US dollars</td>
</tr>
<tr>
<td><em>tradehare</em></td>
<td>The average share of trade in the economy from 1960 to 1995, measured as the sum of exports plus imports, divided by GDP; that is, the average value of <em>(X + M)/GDP</em> from 1960 to 1995, where <em>X</em> = exports and <em>M</em> = imports (both <em>X</em> and <em>M</em> are positive).</td>
</tr>
<tr>
<td><em>yearsshcool</em></td>
<td>Average number of years of schooling of adult residents in that country in 1960</td>
</tr>
<tr>
<td><em>rev_coups</em></td>
<td>Average annual number of revolutions, insurrections (successful or not) and coup d’etats in that country from 1960 to 1995</td>
</tr>
<tr>
<td><em>assasinations</em></td>
<td>Average annual number of political assassinations in that country from 1960 to 1995 (per million population)</td>
</tr>
<tr>
<td><em>oil</em></td>
<td>= 1 if oil accounted for at least half of exports in 1960 &lt;br&gt; = 0 otherwise</td>
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