Finance 30210
Midterm #1 Practice Questions

1) Suppose that you have estimated the following regression (standard errors associated with each are below in parentheses):

\[ Q_d = 300 - 4P + \varepsilon \]

(6.5) (1.2) (60.5)

a) Calculate your forecast at the sample average of $50.
b) Calculate the 95% confidence interval for your forecast.
c) Calculate your estimated demand elasticity at the sample average of $50.
d) Why might you be worried about calculating an estimate of demand at a price of $70?

2) Suppose that you have the following data on heating oil usage:

<table>
<thead>
<tr>
<th>Heating Oil Usage (in Thousands of Barrels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995Q1</td>
</tr>
<tr>
<td>1995Q2</td>
</tr>
<tr>
<td>1995Q3</td>
</tr>
<tr>
<td>1995Q4</td>
</tr>
<tr>
<td>1996Q1</td>
</tr>
<tr>
<td>1996Q2</td>
</tr>
<tr>
<td>1996Q3</td>
</tr>
<tr>
<td>1996Q4</td>
</tr>
</tbody>
</table>

a) Calculate a forecast for usage in the first quarter of 1999 using a moving average with a length of 4.
b) Repeat (a) using an exponential smoothing model with a smoothing parameter of .4 (assume that your forecast for 1998Q4 was 24,500).
c) How would you compare the performance of the methods in (a) and (b)?
d) Why should you be careful to check for the presence of a trend or seasonality before using the methods in (a) and (b)?

3) Suppose that you have the following data:

<table>
<thead>
<tr>
<th>Gasoline Sales (in Thousands of Barrels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995Q1</td>
</tr>
<tr>
<td>1995Q2</td>
</tr>
<tr>
<td>1995Q3</td>
</tr>
<tr>
<td>1995Q4</td>
</tr>
<tr>
<td>1996Q1</td>
</tr>
<tr>
<td>1996Q2</td>
</tr>
</tbody>
</table>
You have already estimated a linear trend as follows:

\[ Q_s = 23,000 - 120t + \varepsilon \]

Where \( t = 1 \) refers to 1995Q1.

a) Calculate your forecast for 1999Q1 (\( t = 17 \)).

b) Using the ratio to trend method. Revise your estimate in (a) for seasonality.

4) Suppose that you have the following demand and supply curve for sneakers:

\[
\begin{align*}
Q_d &= 400 - 3P \\
Q_s &= 200 + 2P
\end{align*}
\]

a. Solve for the equilibrium price and quantity.

b. Calculate consumer expenditures on sneakers

c. Calculate the elasticity of demand at the equilibrium found in (a)

d. Would a 5% increase in price cause consumer expenditures to rise or fall?

5) Consider the following productivities:

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services</td>
<td>6 Units/hr</td>
<td>3 Units/hr</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2 Units/hr</td>
<td>6 Units/hr</td>
</tr>
</tbody>
</table>

a) Calculate the opportunity cost of services in the US and England

b) Calculate the opportunity cost of manufacturing in the US and England. Who has the comparative advantage in services?

c) Between what prices will trade occur?

d) Suppose that the relative price of services was one. What trading pattern would emerge?

e) Why do we only concern ourselves with relative prices in economics?
6) Suppose that you have estimated the following demand curve:

\[ Q = 120 - 4P + 0.001I \]

You know that the current market price is $10 and average income is $40,000.

a) Calculate the market’s total willingness to pay.
b) Calculate the market’s consumer surplus.

7) Suppose that you estimated the following demand curve.

\[ Q = 400 - 6P + 0.005I \]

\( Q \) represents quantity demanded, \( P \) represents price and \( I \) represents average income.

You know that the current market price is $20 and average income is $20,000

a) Calculate current demand.
b) Calculate the price elasticity of demand.
c) Calculate the income elasticity of demand

How would your answers change if you estimated this demand curve in log form?

\[ \ln(Q) = 45 - 1.6\ln(P) + 2.56\ln(I) \]

8) Suppose that you observed the following set of data:

Average Business School tuition: $30,000
Average Salary for non-MBA’s: $50,000 per year
Average MBA salary: $90,000 per year.

The length of an MBA program is 2 years and is assumed that an MBA will have a working career of 20 years after graduation.

a) Is this set of data consistent with market equilibrium?
b) If your answer to (a) is no, how will markets adjust?