

Homework 3

Due Tuesday, 11/14/2016 IN LECTURE. Please type your final answers.

The Marketing Sector Download the excel sheet titled ‘Coffee Prices’ on Smartsite. This sheet contains monthly average farm gate coffee prices in Colombia (Columbian Milds), U.S. monthly city average retail prices, the Fair Trade price floor (Arabicas Floor), and the Fair Trade price premium (Arabicas Premium). Use the information in this sheet to answer the following questions (All prices are in cents/lb):

1. Construct the Marketing Margin for the farm gate to retail level and graph them. What do you see? Do the margins change over time?
2. Now let us estimate a simple pass through equation from the farm gate to the retail level. This entails first getting the differenced values of the farm gate and retail prices, which you can do by constructing a column which is the change in the farm gate (retail) price over time. (i.e. subtract last periods price from this periods, notice this will reduce the number of periods you have by 1.)

Once you have columns for the two price differences, perform a regression by utilizing the equation:

$$D.Retail_t = \beta_0 + \beta_1 \cdot D.farm\ gate_t + \epsilon_t$$

What does β_1 represent? Report the regression output, what percentage of the price change is transmitted?

3. Now we would like to add a few more lags to the equation, you can do this by simply constructing a new column, which is the first lagged column shifted up by one cell. Construct two of these columns (one for the first lag, and one for two lags, note that each time you do this you lose a period, only use periods with full information for the regressions).

This corresponds to the equation:

$$D.Retail_t = \beta_0 + \beta_1 \cdot D.farm\ gate_t + \beta_2 \cdot D.farm\ gate_{t-1} + \beta_3 \cdot D.farm\ gate_{t-2} + \epsilon_t$$

Before running the regression, what do the coefficients represent? Please explain what it would mean if $\beta_1 = 0.7$, $\beta_2 = 0.3$ and $\beta_3 = 0$. Report the regression output, what percentage of the price change is transmitted over the three periods? Which ones are statistically significant?

4. Fair Trade certification has two main features that increase profits for certified producers: the price floor and the price premium. The price floor establishes a minimum price that certified producers will receive so that when market prices are low, they receive at least the floor price, and when market prices are high they receive the market price. Using the Colombia farm gate prices and the FT price floor, determine the years in which the price floor was binding.
5. The price premium is an additional payment that producers receive for every pound of coffee they sell (so that the total price producers receive is market price + price premium, or price floor + price premium when the floor is binding). Combining the FT price premium, FT price floor, and Colombia farm gate prices, make a new column for the Fair Trade farm gate

price. Using this and the U.S. retail price, construct the new marketing margins. Graph these margins, how do they compare with the conventional margins from (1)?

6. Finally, what if, as in reality, the retail prices for Fair Trade coffee are not equal to the prices for conventional coffee? Using the regression coefficients from (3) and the Fair Trade coffee price, predict differenced Fair Trade retail prices. Then, assuming that the March 1990 Fair Trade coffee retail price is 320.50 cents/lb, predict the monthly average Fair Trade retail prices using the differenced values. Calculate the Fair Trade marketing margins using these prices and graph the margins. Discuss how this graph compares to the previous one.