

Economics 311
Problem Set #8

Fall 2017
Due: Wednesday, December 6

This introductory text is taken from another econometrics textbook:

“The Fulton Fish Market has operated in New York City for over 150 years. The prices of fish are determined daily by the forces of supply and demand. [An economist] collected daily data on the price of whiting (a common type of fish), quantities sold, and weather conditions during the period December 2, 1991, to May 8, 1992. These data are in the file *fultonfish.dta*.

“Fresh fish arrive at the market about midnight. The wholesalers, or dealers, sell to buyers for retail shops and restaurants. ... [Because] whiting can be kept for several days before going bad, and dealers can decide to sell less, and add to their inventory, or buffer stock, if the price is judged too low, in hope for better prices the next day. Or, if the price is unusually high on a given day, then sellers can [augment] the day’s catch with additional fish from their buffer stock. Thus, despite the perishable nature of the product and the daily resupply of fresh fish, daily price is simultaneously determined by supply and demand forces.”

The author of the study speculates that demand depends on the day of the week and that supply depends on ocean weather conditions. The dataset includes dummies for Monday through Thursday (Friday is omitted) and a variable *stormy* that indicates stormy weather during the previous three days. There are several additional variables in the dataset that you may wish to explore.

<i>date</i>	date
<i>lprice</i>	log(Price) of whiting per pound
<i>quan</i>	Quantity of whiting sold, pounds
<i>lquan</i>	log(Quantity)
<i>mon</i>	Monday
<i>tue</i>	Tuesday
<i>wed</i>	Wednesday
<i>thu</i>	Thursday
<i>stormy</i>	High wind and waves in previous 3 days
<i>mixed</i>	Mixed wind and waves in previous 3 days
<i>rainy</i>	Rainy day on shore
<i>cold</i>	Cold day on shore
<i>totr</i>	Total received
<i>diff</i>	Inventory change = $\text{totr} - \text{quan}$
<i>change</i>	= 1 if diff large

Based on the author's assumption, a basic double-log demand equation might be

$$lquan = \alpha_0 + \alpha_1 lprice + \alpha_2 mon + \alpha_3 tue + \alpha_4 wed + \alpha_5 thu + \varepsilon^D$$

and supply might be

$$lquan = \beta_0 + \beta_1 lprice + \beta_2 stormy + \varepsilon^S.$$

1. In the specification suggested above, is the demand equation identified? How do you know? What assumptions are crucial to this conclusion? (Think about the three conditions for valid instruments and assess whether they are likely to be satisfied here.)
2. Is the supply equation identified? How do you know? What assumptions are crucial to this conclusion? (Again, use the three conditions.)
3. Estimate the demand equation using appropriate econometric techniques. Discuss the results and your estimate of the elasticity of demand.
4. Estimate the supply equation using appropriate econometric techniques. Discuss the results and your estimate of the elasticity of supply. If sellers do not use changes in buffer stocks (inventories) to respond to price changes, then the quantity supplied will just be the daily catch and will not be responsive to price. Can you reject the null hypothesis of zero supply elasticity?
5. Conduct any additional regressions you think are appropriate using the dataset and explain the results. Once you are finished, summarize your conclusions about demand and supply in the Fulton Fish Market.