

Industrial Organization and Data Science

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Course Assignments & Reading

Course assignments should be printed (code, output and descriptive answers) and turned in at the start of class unless otherwise noted. Feel free to work in groups but everyone is required to turn in their own work with answers written in your own words. In both calculations and complex ideas, write down each step of logic used in reaching your conclusion. Keep in mind that in most cases a good answer is one precise sentence; quality is heavily favored over quantity. This will be graded on a full credit, half credit and no credit basis. All work must be typed

This assignment can replace one of your past HWs for the course, so if you missed an assignment, it will replace a 0 otherwise it will replace your lowest grade.

Bonus assignment, due June 8 (turn in at final)

Please turn in your R script.

In this assignment we are going to combine what we have done in HW 7-9 in one dataframe. To prepare you'll want to first:

- 1) Return to your code from HW7, question 3, that created a dataframe in "wide format":
<price_dom>, <price_MM>, <price_T>, <logmove_dom>, ... <demographics>
- 2) Return to your code from HW9 that added lagged quantity and prices into the dataset.

The assignment is to create a dataframe that has lagged (2 weeks) quantity and prices for every brand all in one row. So it is just like (1), except now we'll have the lagged prices and quantities for each brand as well.

Once you have that dataframe, run a regression for each brand (e.g. $\text{logmove_Dom} \sim \text{regressors}$) on own prices, lagged own prices, cross prices, featured (interacted as you see fit), lagged cross prices and demographics. Note, there are many functional forms we could choose. Write down the functional form you choose to estimate and report the coefficient output and R-squared.

- 1) How well did this regression predict OJ sales as compared to the simpler approaches we use earlier?
- 2) What are the most important cross-price effects?
- 3) How big are the intertemporal effects (effect of own price in the past)?