Problem Set #3

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1 Nevo's Code

The table below displays the estimates for the coefficient on price, α, for each specification. It is generated by the attached code, edgel_ps3.tex. Note that there are fewer observations than are in the data provided; this is due to the specification requiring an "outside option", for which I chose the first brand.

	(1) OLS	(2) OLS	(3) IV	(4) IV
α	1.303	-28.260	5.203	-19.050
	(0.615)	(0.971)	(0.661)	(1.367)
FE?		X		X
R^2	-0.09	0.39	-0.11	0.29
N	2162	2162	2162	2162

I calculate the multi-product Bertrand-Nash markups, $\mu \in \mathbb{R}^{j \times t}$, as

$$\mu = \Omega^{-1} s \mu_j = \frac{s_j}{\partial s_j / \partial \delta_j} = \frac{1}{(1 - s_j)\alpha}$$

Where s is the vector of market shares for each brand in each quarter and city, and

$$\Omega = \Omega^* \odot H, H_{ij} = \frac{\partial s_j}{p_j}$$

$$\Omega^*_{ij} = \begin{cases} 1, & i \text{ and } j \text{ are owned by the same firm} \\ 0, & \text{otherwise} \end{cases}$$

Thus, by decomposing price into marginal cost and markup, we can also back out firm j's marginal cost, c_j, and calculate its margin, m_j:

$$c_j = p_j - \mu_j, \quad m_j = \frac{p_j}{c_j} - 1$$

Using each $\hat{\alpha}$ from the table above, the mean, median, and standard deviation of markups, margins, and implied marginal costs under each specification are given in the table below.

	(1)	(2)	(3)	(4)
$\mathrm{E}[\mu_{jt}]$	-0.098	0.005	-0.025	0.007
$\mathrm{Var}(\mu_{jt})$	0.033	0.000	0.002	0.000
$\mathrm{E}[c_{jt}]$	0.224	0.121	0.150	0.119
$\mathrm{Var}(\mathrm{c}_{jt})$	0.035	0.001	0.003	0.001
$\mathrm{E}[m_{jt}]$	-0.299	0.044	-0.127	0.075
$\mathrm{Var}(\mathrm{m}_{jt})$	0.054	0.009	0.020	0.033

With