UC Berkeley
Economics 121
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Midterm 2 – Suggested Solutions.
1.a. True. A higher pre-merger markup arises from a smaller demand elasticity (less elastic). A smaller elasticity implies a larger predicted price effect for any given diversion ratio.

Note that it is possible that there will be a merger efficiency effect that will offset this price effect, but the predicted price increase is still decreasing in elasticity.

1.b. True, as shown in class. Recall also the example in problem set 2. There, the presence of captive consumers increased the price of the indifferent consumer, making a central purchasing organization (a tool to credibly commit to ignoring product differentiation) more attractive.

1.c. False. In the Cournot model, lower-cost firms have the larger market shares.

1.d. False. Random errors in measuring true economic profitability (dependent or left-hand-side variable) result in estimates that are more random (higher variance) and so are less likely to look statistically significant.

2.a. There are two main reasons that we might think quantity-setting is realistic. (Remember that the issue is not so much whether a firm sets its own price or its own quantity—those are equivalent if it knows its residual demand curve—but whether it takes as given its rivals' quantities, prices, or what.):
i) If capacity is relatively cheap to use once it is built, a firm will use all of its capacity as long as its marginal revenue exceeds the cost to use the capacity. In this way, firms essentially choose a quantity when they decide how much capacity to build.
ii) If firms expect that their rivals have price responses that preserve their output decisions, they are implicitly choosing quantity (choosing a (p,q) pair).

2.b. The main criticism of Cournot, beyond the quantity-setting assumption, is that it is a one-shot (static) model. In the real world, firms have continued relationships. Thus it may be desirable to incorporate dynamics into the model.

2.c.i. Graph with concentration on the horizontal axis and profitability on the vertical axis. Observations are a noisy cloud of points, maybe generally rising as concentration rises, but definitely not a clean relationship.
2.c.ii. There is a theoretical connection in Cournot models between concentration *as measured by the Herfindahl index* H and industry profitability *as measured by the share-weighted average of proportional gross markups L*. Thus we would be apt to find a closer relationship if we used those measures than if we used other measures of either.

2.c.iii. It would be better to adjust for market demand elasticity e, because that too enters into the theoretically predicted relationship, $L = H/e$. After adjusting for the market demand elasticities of different industries, we would expect to see a clearer (less noisy, or lower-variance) relationship between profitability and concentration – points clustered around a line with positive slope.

3.a. Industry demand: $Q = \dfrac{K}{b} - \dfrac{ap}{b}$

Firm demand: $\dfrac{Q}{N} = \dfrac{K}{Nb} - \dfrac{ap}{Nb}$

3.b. Recall that in a monopolistically competitive industry firm elasticity equals industry elasticity.

$$\varepsilon_{ind} = \frac{p}{Q}\frac{dQ}{dp} = \frac{p}{\dfrac{K}{b} - \dfrac{ap}{b}} \bullet (-\frac{a}{b}) = -\frac{ap}{K - ap} = \varepsilon_{firm}$$

3.c. Because firm elasticity equals industry elasticity, the price is the monopoly price (even though firms do not make profits). That is,

$$p = \frac{1}{2}[c + (K/a)].$$

You can derive this by maximizing profits for the firm in the usual way. Or, calculate it by solving for p in the Lerner equation.