Econ 220B, spring 2007
Professor Joseph Farrell
Handout on horizontal mergers

The Basic Idea

(This comes through pretty clearly in Kaplow-Shapiro, a bit more obscured by complications in Whinston, considerably less well in Motta.)

[I can't get my equation editor to behave itself, so the numbering below is pretty random—let me know if you're truly baffled.]

A single-product firm's price is related to (a) its marginal cost c, and (b) its residual or firm- (product-)specific demand elasticity *e*, by the Lerner equation, which we can write:

$$p = \frac{e}{e-1}c \tag{1.1}$$

So if something (like a merger) changes those values, we have:

$$\frac{\Delta p}{p} \approx \frac{\Delta c}{c} + \frac{\Delta h}{h} \tag{1.2}$$

where $h \equiv e/(e-1)$. As discussed in class, it's possible to view a horizontal merger as "effectively" replacing *e* with $(1-\delta)e$, if neither (a) movements along the demand curve nor (b) likely changes in rivals' behavior affect residual demand elasticity. In that case, it's simple to check that

$$\frac{\Delta h}{h} = \frac{\delta}{(1-\delta)e-1} \tag{1.3}$$

Thus (1.4) is an "estimate" of the (proportional) unilateral price increase if there is no effect on *c*. Equally, (1.5) says how big a (proportional) reduction in *c* is necessary for there to be no predicted price increase.

One can view this as a pass-through of the internalization of merger partner's pecuniary gain/loss from demand shifts; hence intimately linked with pass-through of changes in *c*. But important to keep straight whose costs are changing at once.

One could estimate δ from seeing where customers have actually substituted to following (not fully uniform) price changes in the past, or with surveys asking about second choices. One might also use some sophisticated demand-system estimation to do that.

I would argue, though, that extracting *e* from demand data is not a great idea. First, it will often be hard to find sustained-enough variation in the data to really call forth customers' longer-term demand responses.[1] More importantly, in order to handle

[1] For storable and/or durable goods, short-run responses may be an especially bad guide to long-run responses; see e.g. work of Hendel and Nevo.

industries where behavior is not one-shot Nash (and that's got to be most industries we'd be investigating), the purely demand-side *e* is simply the wrong concept. What we want to know is: if firm 1 raises its price by 1%, and *then the oligopoly dynamics adjust*, how much does firm 1's demand fall? Luckily, we have revealed-preference data on that: it is exactly the concept in (1.6). Well, not exactly, because the oligopoly dynamics will be affected by the merger. But it seems close (is it?). Following that idea, using (1.7) one can modify (1.8) to:

$$\frac{\Delta h}{h} = \frac{\delta m}{(1-\delta) - m} \tag{1.9}$$

where *m* is the gross margin, $m \equiv (p-c)/p$. For instance, if $\delta = 1/4$ and $m = 1/2$, (1.10) would predict a proportional price increase of 50%.

If there's a clearly defined market, a null hypothesis suggests $\delta = s_2/[1-s_1]$.

If 50% sounds too high, it probably is. Most observers think that demand curves tend to get more elastic as one moves up them. More sophisticated merger simulation incorporates that and other effects and tends to come up with smaller numbers. But there is a reason the prediction is big: when there is substantial pre-merger market power (e.g. $m = 1/2$), it's not very costly for one merger partner to increase its price substantially above its profit-maximizing level. Thus with a significant reward (or reduction in penalty) for steering profitable demand to its merger partner, it becomes profitable to do so. Bresnahan: interpret these equations as strength of incentive to raise price, not as prediction of how far price will rise.

One decision rule for horizontal mergers would be: let a merger through if either (a) the estimated proportional price increase is small (not necessarily defined as less than a SSNIP), or (b) one believes in big reductions in *c*. How does this rule fare if (1) it's hard to predict/verify merger efficiencies; (2) one wants to use the firms' private information on likely efficiencies by appropriate mechanism design?