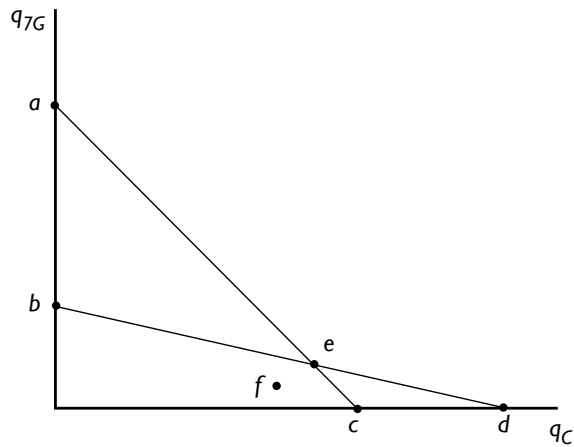


ECON 224, Prof. Hogendorn

Problem Set 2

1. *HomeDepot*. Suppose that Home Depot has 70% market share and Lowe's has 30%.
 - (a) What is the HHI? What is the CR4?
 - (b) Suppose the firms are charging the monopoly price. Give two reasons why this might happen and what the US government could do under the law in each case.
 - (c) Suppose Home Depot decides that they will not sell to TruGreen ChemLawn, a national lawn-care company. Can they just refuse to deal with them?
 - (d) Do you think that in a typical local market, Home Depot is a (Baumol) (normative) natural monopoly? Temporary or permanent? Or perhaps subadditive but unsustainable? Explain and draw a graph for your answer.
 - (e) Suppose the government decided to regulate Home Depot. Describe and illustrate with graphs two alternatives for this regulation, including prices, economic efficiency, and any revenue to or subsidies from the government.
2. *GreenClean*. Suppose that your research indicates the following Cournot reaction functions for quantities of two cleaning products, Clorox Green Works (denoted q_C) and Seventh Generation (denoted q_{7G}). (Assume there are no other green cleaning products.)



- (a) Describe in words the meanings of the points a , b , c , and d .
 - (b) What is special about point e ?
 - (c) Suppose the US Department of Justice found that the firms were producing quantities given by point f . Could any antitrust action be taken? Explain.
 - (d) Which of the following HHIs is most plausible if the firms are at point f , 1400, 5000, or 8200? Explain.
 - (e) Suppose that in a Congressional hearing, the CEO of Clorox states that there is substantial competition for Clorox's green cleaning products from its own and others' non-green cleaning products. How does this relate to the "Cellophane fallacy" that "a monopoly creates its own competition?"
3. You should know how to do Chapter 5, problems 1, 2, 5.
 4. You should know how to do Chapter 8, problems 3, 4.
 5. Review the problems at the end of Chapter 9.
 6. You should know how to do Chapter 10, problems 1, 3, 5.

Answers:

1. *HomeDepot_a*. Suppose that Home Depot has 70% market share and Lowe's has 30%.

(a) $HHI = 70^2 + 30^2 = 5800$. $CR4 = 100\%$.

(b) There are at least three possible reasons:

- i. The firms are explicitly colluding. This is *per se* illegal under the Sherman Act, and could lead to stiff fines or jail time. It is difficult to prove, however, because it requires evidence of communication to fix prices.
 - ii. The firms are tacitly colluding. This is not *per se* illegal, but it is a bad form of industry conduct. If there were a merger proposal in the industry, the government could use tacit collusion as a reason for denying any further mergers.
 - iii. Home Depot effectively has a monopoly, and is setting a monopoly price. The government could potentially bring suit against Home Depot for misusing monopoly power under the Sherman Act. In the worst case for Home Depot, the company could be broken up. Probably a 70% market share would not be high enough to make this a good case.
- (c) Yes, Home Depot is a private company and it does not have a duty to sell to everyone. In the past, it might have been considered a "common calling," but this type of legal obligation is no longer used. Since the Chicago School's one monopoly profit theory, this type of refusal has been considered efficiency-enhancing unless there is evidence to the contrary.

However, if Home Depot provides any lawn-care services, this could be a case of vertical foreclosure in favor of Home Depot's in-house services. In that case, the refusal to deal could be used against Home Depot in an antitrust case or in a merger approval.

- (d) The main issue here is that Home Depot has a lot of fixed costs (store, parking lot, delivery logistics, etc.) that are spread over its output. That gives it economies of scale, the question is how much. If the economies of scale are substantial no matter what, then the AC curve slopes down forever and there is a permanent natural monopoly. If the economies of scale eventually run out and costs become constant, then the natural monopoly is temporary. If the economies of scale not only run out, but diseconomies set in, then Home Depot could be subadditive but unsustainable. If there are enough diseconomies of scale, then Home Depot isn't even subadditive.
- (e) Several forms of regulation are possible:
- i. Under marginal cost pricing, Home Depot is required to set price equal to marginal cost. This removes any inefficiency; there is no deadweight loss. The problem is that with economies of scale, marginal cost is below average cost, so Home Depot cannot cover its fixed costs. There will be a need for a government subsidy or some other measure to keep Home Depot from going bankrupt.
 - ii. Under average cost pricing, Home Depot would have its price regulated so equal average cost. The advantage is that Home Depot would then be self-liquidating – no subsidy would be needed. However, there would be some deadweight loss since quantity would be lower than under marginal cost pricing. One way to implement average cost pricing is through rate of return regulation. This would attempt to determine Home Depot's marginal cost and its capital or “rate base.” The price would then equal the marginal cost plus a “fair rate of return” on the rate base. The downside is that Home Depot would have an incentive to over-invest in capital in order to “pad the rate base.” This is called the Averch-Johnson effect. Another way to implement average cost pricing is through a

price cap. This would attempt to determine Home Depot's average cost and then cap price at that level. Home Depot would have an incentive to figure out ways to cut costs, because they could keep the resulting profits.

- iii. The government could sell Home Depot a monopoly franchise. It could ask Home Depot to bid to offer the lowest possible prices, which would be equivalent to average cost pricing, or it could simply ask for the highest possible bid, which would be equivalent to monopoly pricing but with the monopoly profit going to the government.

2. *GreenClean_a*.

- (a) At point a , Seventh Generation's quantity is so high that Clorox does not produce anything. At point b , Clorox is producing 0 so Seventh Generation optimally responds with the monopoly quantity. We know it must be this way round and not the other because the monopoly quantity is smaller and more restrictive, whereas the quantity that pushes the other firm out of the market is much bigger.

By the same reasoning, point d is where Clorox drives Seventh Generation's quantity to 0, and point c is where Seventh Generation has produced 0 so Clorox responds with the monopoly quantity.

- (b) Point e is the one point which is on both reaction functions at the same time. Each company is doing the best it can given what the other company is doing. No company wants to change quantities. This is called the Cournot equilibrium.
- (c) Point f is not on the reaction functions, it involves smaller-than-Cournot quantities for both firms, and thus probably higher profits. This may be cause for concern. However, this could be the result of *tacit* collusion, which is legal, instead of *explicit* collusion which is illegal. If Clorox is not considered a "monopoly," and if only tacit

collusion is observed, the only antitrust remedy would be to prevent mergers (or to put conditions on them). But with its large market share, it is possible that Clorox will be deemed a monopoly, in which case the tougher remedies under the Sherman Act might come into force. In the most extreme case, Clorox might be split into separate companies.

- (d) At point f , the quantity for Clorox is very high while the quantity for Seventh Generation is much lower. This means the market is heavily skewed toward Clorox, and the HHI will be indicative of a near monopoly. This is most consistent with the HHI of 8200.
- (e) If Clorox really does have such a huge market share, it is likely that its high prices are forcing marginal consumers to buy non-green cleaners even though they would have wanted green cleaners at lower prices. Thus, the Cellophane fallacy may very well apply: the only reason the non-green cleaners are substitutes is the high prices being charged.