ECON 224, Professor Hogendorn

Problem Set 8 Answers

1. *Skyping.*

   (a) The demand curve has two solutions when $p = 4 = 40n - n^2$. These are approximtely $n = 0.1$ and $n = 39.9$.

   There is also the possibility that $n = 0$, in which case the network has 0 value and no one pays for it. This is stable, since someone accidentally joining the network would find it useless.

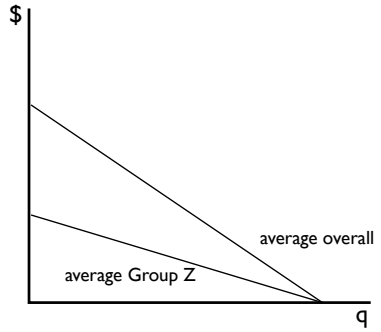
   If 0.1 people join, that is an equilibrium, but it is unstable because if 1 extra person joined, everyone would find the network worth more than 4, and even more people would sign up. So this is a threshold for explosive growth.

   Assuming the network gets beyond $n = 0.1$, it will reach a size of $n = 39.9$ which is the other stable equilibrium. Even with that large user base, the remaining 0.1 people do not find the network worth $4, so they will not join.

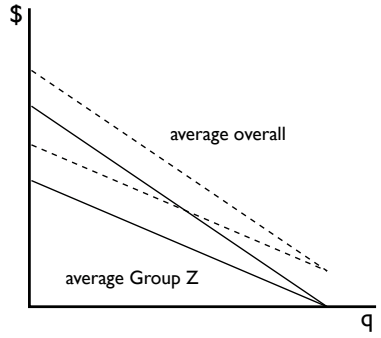
2. *Friendface.*

   (a) The way I suggested drawing the demand curves turns out to introduce some weird problems if you want to get technical about how they add up. The point of this problem is just to note the differences between *mass* media, where all groups see the same material, and *social* media where material is targeted and can even be "blamed" on the group that it's targeted to. Thus any reasonable shift of demand in the positive direction for Group Z and the appropriate direction for the service as a whole is an acceptable answer.

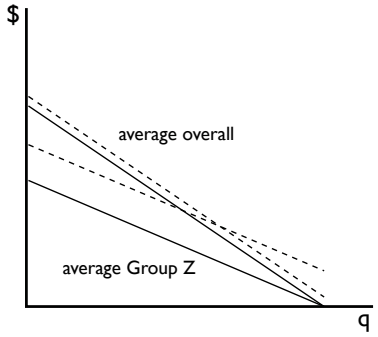
A better way to draw the demand curves is to think of them as the *average* member of Group Z and the *average* member of the service as a whole, and to have them slope down at different rates so that they meet at the same quantity intercept. In tht case, the diagram would look like this:



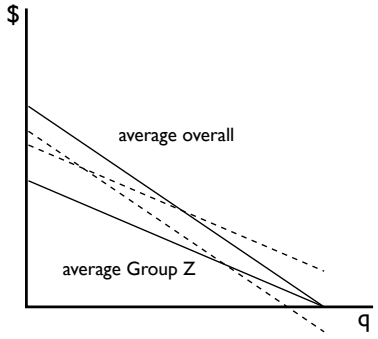
(b) Both the typical Group Z user and the typical user have the same increase in willingness to pay, so both curves shift up by the same amount.



(c) In this case, the typical Group Z demand curve shifts up, and the average user shifts up 1/4 as much since only those in Group Z affect the average.



(d) The typical Group Z user has a +1 shift in demand. The average user has a -0.50 shift in demand, since the effect on the average is $\frac{1}{4}(+1)+\frac{3}{4}(-1)=-0.50$.



(e) This is now the same as part (c). The big difference is that Friendface would have an incentive to introduce the feature in part (e) but not in part (d).

(f) Friendface is the incredibly addictive social network in *The I.T. Crowd,* a British commedy that I highly recommend.