1 Demand

- Uses AIDS (Deaton and Muellbauer; should read at some point)
- Two-step nested choice model; doesn't impose any restrictions on cross-price elasticties.
- Estimating Equations:

$$\omega_{Grt} = \alpha_G + \alpha_{Gr} + \sum_H \gamma_{GH} \ln P_{Hrt} + \beta_G \ln \left(\frac{X_{rt}}{P_{rt}} \right) + \varepsilon_{Grt} \qquad \text{(Upper Stage)}$$

At the lower level, we have

$$\omega_{irt} = \alpha_i + \alpha_{ir} + \underbrace{\gamma_{ii} \ln p_{irt}}_{\text{own price}} + \underbrace{\gamma_{i,10} \ln p_{jrt,j=D_i^{10}}}_{\text{same molecule; different country}} + \underbrace{\sum_{j \in D_i^{01}} [\gamma_{i,01} \ln p_{jrt}]}_{\text{different molecule; same country}} + \underbrace{\sum_{j \in D_i^{00}} [\gamma_{i,00} \ln p_{jrt}]}_{\text{different molecule, different country}} + \beta_i \ln \left(\frac{X_{Qrt}}{P_{Qrt}} \right) + \varepsilon_{irt}$$

- The authors estimate this with IV and OLS; IV is the right way to do it but they also confirm that OLS doesn't give *crazy* results.
- Add table of instruments and estimation
- These parameters, somehow (due to AIDS?) give us the elasticity of demand Check the AIDS algebra for this and check with classmates

2 Supply

- In order to do anything interesting, we need to know MC but we don't observe it.
- The usual approach in IO is to exploit firms' equilibrium conditions; general sketch:
  1. Assume something about MC_i for firms i
  2. Assume something about the competition structure (oligopoly market; compete via Bertrand)
  3. Assume something about firm behavior (period-by-period profit maximization)
  4. Derive first-order-conditions for firms
- The authors can't do this, even as a constrained optimization problem, because the existing price regulations make this too difficult. Why?
- Instead the authors do an exercise to bound marginal prices; two extreme assumptions for an upper and lower bound:
  1. Perfect competition $\implies$ highest marginal cost $\implies c_i^U = p_i$
  2. Perfect collusion $\approx$ monopoly $\implies$ lowest marginal cost $\implies c_i^L = p_i \cdot \left(1 + \frac{1}{\varepsilon_{ii}(p_i p_j)}\right)$
- Most of the exercises in the paper use the lower bound, since this represents the largest potential losses for firms under TRIPS (most to lose from patent enforcement)