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CASE NOTE: FILE-SHARING
SI 646: Information Economics

I. Issues Presented

- A. Asserted: "Sharing files is largely non-rivalrous because the original owner retains his copy of a downloaded file" (p. 2). Because the goods are non-rivalrous, social welfare is maximized by allowing unrestricted file-sharing.
- B. Asserted: File sharing increases recording sales because users are able to sample more material and find out what they want to buy.
- C. Asserted: File sharing is no different than providing a public library service, and should be treated the same.
- D. "[Estimating equation (1)] is generally inappropriate because the number of downloads is likely to be correlated with unobservable album-level heterogeneity" (p. 14). What does this mean?
- E. "This is evidence consistent with a ubiquitous scarcity of supply" (p. 18). But on p. 2 (see above), the authors said that file sharing is "non-rivalrous". How can there be scarcity of non-rivalrous goods?

II. Facts

III. Argument

- A. "Sharing files is largely non-rivalrous"
 - 1. Q: Is it? **(DEFEND PRO AND CON)**
 - 2. Q: Does sharing cost uploader anything?
 - a) Q: What?
 - (1) bandwidth
 - (2) liability risk
 - (3) security risk (e.g., spyware)
 - 3. Q: Is the shared file diminished (rivalrous)?
 - 4. Q: Why do we care about whether it is rivalrous?
 - 5. Q: Is complementary cost relevant to what we care about?
- B. Q: Why do uploaders share?
 - 1. Q: How much sharing is going on?
 - a) CHECK %: 66% of Gnutella users did not contribute; 1%-7% contributed more than all others combined (Adar & Huberman 2000; Saroiu et al 2002; see Jian P2P paper)
- C. Q: "File sharing increases recording sales due to tasting / browsing"
 - 1. **DEFEND PRO AND CON**
 - 2. Q: Is sales the right thing to care about? (revenues, profits)
 - 3. Q: Why might sharing decrease revenues?
 - 4. Q: Why might sharing increase revenues?
 - a) May create market for renting / sharing, can sell copies wouldn't otherwise sell, raise prices (esp. if can discriminate):
 - (1) Cf. scholarly journals
 - (2) Video stores
 - (3) Book publishing and libraries

5. **Q: How is file-sharing similar to radio broadcast? Different?**

6. **Q: What do O&S find?**

a) Q: In all of their models?

b) **Q: Why do they estimate so many different models?**

D. "[Estimating equation (1)] is generally inappropriate because the number of downloads is likely to be correlated with unobservable album-level heterogeneity" (p. 14).

Sales = a_0 (album characteristics) + a_1 (downloads) + unobservables

1. **Q: What does this mean? (mis-attribute effect of album characteristics and downloads)**

2. **Q: Example of how this could lead to spurious negative effect (downloads decrease sales)? (high-expectations album that disappoints on hearing: lots of sampling, but low sales)**

E. What's all this about instruments? Is this something to do with the focus on downloading music files? (Why are instruments necessary? What makes a good instrument? Identify an instrument used by the authors, and explain what evidence they have that it's a good instrument.)

1. **Suppose we see price of bread in two years: low, then high.**

Quantity consumed: low then high. (DRAW ON BOARD)

a) Do we conclude that demand for bread slopes up?

b) What else might explain this? (Demand curve shifted up, say, due to health news about eating fiber)

2. **How could we get the right effect?**

a) $Q = a_0 + a_1P + \text{unobservables}$

b) Get an instrument that is correlated with P, but is not correlated with demand shifters: e.g., a cost shifter! (say, price of wheat)

c) Roughly, a proxy, but can't actually just replace P (that causes error in variables problem)

d) Then we are measuring demand due to changes in price independent of other determinants of demand

3. **Q: What instruments do O-S use, and why might they be good instruments?**

a) Fixed effects: have downloads and sales over time, so if the unobserved effects are album-specific, put in a dummy variable that measures the average sales for that album over weeks, and then the variation in downloads week-to-week might measure independent downloads effect (but might not if my story above is right! O-S note this p. 13)

b) Download cost shifters!

(1) odd spellings in titles (search cost for downloading)

(2) length of songs (download time)

(3) availability (tracks with multiple releases)

(4) # of German kids on school holiday (net uploaders, so holidays increase uploads)

(5) Internet weather (congestion)

F. "This is evidence consistent with a ubiquitous scarcity of supply" (p. 18). But on p. 2 (see above), the authors said that file sharing is "non-rivalrous". How can there be scarcity of non-rivalrous goods?

All citations are from the case study Second Workshop on the Economics of Peer-to-Peer Systems, 2004. Revised June 2005; available at http://www.unc.edu/~cigar/papers/FileSharing_June2005_final.pdf.