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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 <u>sales</u> the right thing to care about? (revenues, profits)**
3. **Q: Why might sharing <u>decrease</u> revenues?**
4. **Q: Why might sharing <u>increase</u> 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 <u>negative</u> 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) $Q = a_0 + a_1P$ + unobservables
    b) Get an instrument that is correlated with P, but is <u>not</u> 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 <u>average</u> 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.