

Some of the Simple Economics of P2P Networks

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The views expressed are my own.

A Theorem

- If (illegal) copies and (legal) originals are perfect substitutes for all users and
- If the marginal cost of copying (including the cost of finding an original to copy) is constant and
- If copying cannot be prevented by either legal or technological means
- Then, in equilibrium, the price of an original will equal the marginal cost of a copy.

Observations on P2P Networks

- They permit copies that are increasingly close substitutes for originals.
- They permit increasingly large number of copies to be made from the same original without significant increases in marginal cost.
- In other words, the assumptions of the theorem are increasingly being met.
- Nonetheless, the price of originals has not (yet?) declined to the marginal cost of a copy.

A Very Simple Numerical Example

- Annual U.S. unit CD sales declined by about 200 million units between 2000 and 2003.
- *Assume* that the entire decline was due to illegal downloading.
- Assume that 800 million tracks are downloaded in the U.S. each week.
- This implies that there is about a .005 reduction in unit sales for every downloaded track, i.e., it takes about 200 downloaded tracks to reduce CD sales by 1 unit.

Why hasn't there been a larger effect on unit sales?

- Many downloads are of copies that would not have been purchased as originals.
- Originals and copies are not perfect substitutes.
- Originals are sometimes hard to find.
- Spoofing has raised the costs of copying.
- Users are concerned about importing adware, spyware, etc.
- (Some) people are honest.
- (Some) people fear legal liability.
- (Some) people are not adept at copying.

A Final Observation

- Even good estimates of the effect of downloading on unit sales may understate its effect on copyright owners
 - Downloading may affect the price of originals.
 - The principal effect of illegal downloading may be on legitimate downloading services rather than on sales of physical products.