Technology, Information Goods, and Network Externalities

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Reading: Chapter 22

This topic discusses some new issues raised by new technology and information goods. We revisit the problem of covering costs in natural monopolies, and discuss the idea of network externalities and examine their implications for government policy.

Technology, information goods and network externalities

a. Economics of information goods
b. Intellectual property rights
c. Network externalities
d. Government policies

Economics of Information Goods

Information goods are products whose value comes not from their physical characteristics but from the information they embody.

Information goods have low or even zero marginal cost. But they have high fixed cost, cost of creation of the product. They may not be created unless the producer can cover cost of production. But if a price (above marginal cost is charged) like monopoly, this leads to an inefficiently low quantity of output.

Examples: Software, musical recordings, movies on dvd, some kinds of medicine.

Should they be free, or is it okay for a price be charged?

Intellectual Property Rights

Governments react to tension between deadweight losses and slowing of progress by granting temporary monopolies, protecting intellectual property rights in the form of:

Patents, which give an inventor a temporary monopoly in the use or sale of an invention.

Copyrights, which give the creator of a literary or artistic work sole rights to profit from that work.

Patents are of shorter duration than copyrights.

Now also being done internationally, through World Trade Organization (WTO). Results in efficiency and equity problems for the world as a whole. Lobbying by rich country corporations. Effects on poor countries

Intellectual Property Rights

Problems

Although in some cases it is a good idea, there are many problems with this which should be remembered:

1. In many cases inventions are made and works of art created without profit – other motives may well exist.
2. Governments, as in the US, fund research; cost often not borne by firms.
3. Profits often appropriated by large corporations, not actual inventors or creators.
4. Duplication in research to obtain winner-take-all patent and to avoid patent infringement
5. Slows down progress: not allowed to incorporate patented ideas in new discoveries; sometimes new things patented just to shelve ideas.
6. Lengthy litigation expenses of the system. Uses up resources.
7. Patents can be a matter of life and death – high price medicines that can save lives.
Network Externalities

Many information goods are also characterized by network externalities: the value of the good to an individual is greater when a large number of people also use the good. eg. fax machines, cell phones. So if the number of users increases, more people will want it.

Network externalities cause positive feedback, in which either initial success or initial failure is self-reinforcing.

Two implications are critical mass and industry take-offs and tipping and lock-in.

Network Externalities
Tipping and Lock-In

Tipping can affect the quantity demanded of two competing goods or technologies over time. Demand for one of the goods can suddenly explode as customers decide en masse to switch to that good and away from its competitor. Simultaneously, the demand for the competitor will suddenly fade. Percentage, rather than quantity, may be relevant.

A problem with this is that sometimes consumers may become locked in to an intrinsically inefficient product or system. Governments can play a role here.

Government Policy Toward Information Goods

Information goods pose difficulties for antitrust policy because firms investing in new technologies may be engaging in aggressive tactics to establish monopolies, tactics the legality of which is unclear. For instance, bundling products. Problems due to monopoly can become more widespread.

For efficiency, industries need coordinate on standards that let competing goods work together. Firms have incentive to have different standard from other firms, to sell only their own products. Government can play a useful role both in helping an industry establish a standard and in helping it avoid getting trapped in an inferior standard, as in the case of QWERTY. It increases competition and allows consumers to benefit from network externalities.