

Property Rights II: Intellectual Property

- Types of intellectual property (IP)
- Why protect IP?
- Weak IP protections and firm strategy

Types of Intellectual Property

Patent

Copyright

Trademark

Trade Secret

Types of Intellectual Property

Patent

- Granted for inventions that are new and useful
- Right to exclude others from using invention
- Right granted in exchange for publishing details of technology
- Duration of 20 years from date of application

Copyright

Trademark

Trade Secret

Types of Intellectual Property

Patent

Copyright

- Protects creative work of artists and authors
- Grants sole right to print, copy, sell, and distribute the work
- Duration is 70 years beyond the death of the creator

Trademark

Trade Secret

Types of Intellectual Property

Patent

Copyright

Trademark

Trade Secret

- Protects brands
- Motive: to reduce confusion and search costs among consumers
- Duration is perpetual as long as firm actively seeks to protect usage of the mark

Types of Intellectual Property

Patent

Copyright

Trademark

Trade Secret

- Applies automatically to any formula, device, process, or information that gives firm advantage over its competitors and firm seeks to keep secret
- Avoids public disclosure that patents require
- Duration is perpetual as long as firm actively protects secret

Property Rights II: Intellectual Property

- Types of intellectual property (IP)
- **Why protect IP?**
- Weak IP protections and firm strategy

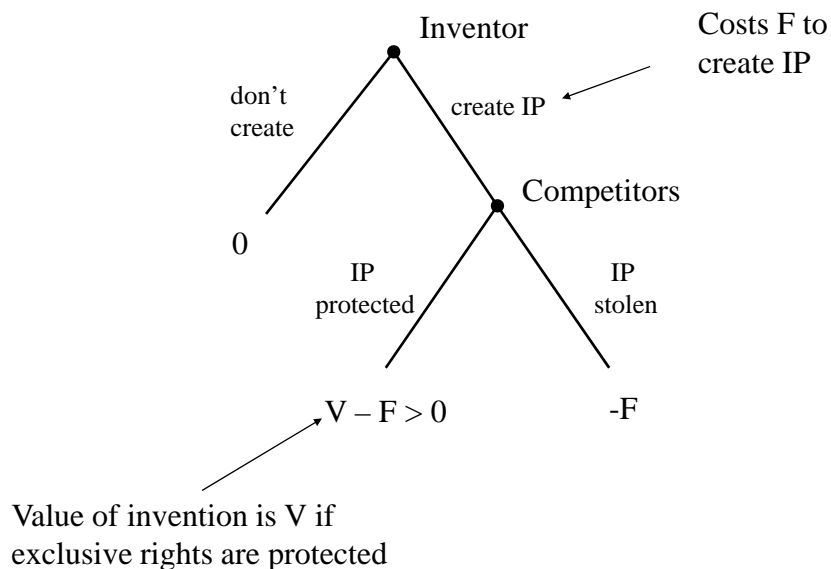
Property Rights II: Intellectual Property

- Why protect IP?
 - Knowledge is a special good
 - IP and economic progress
 - The tradeoff in protecting IP
 - Do developing countries want IP protection?

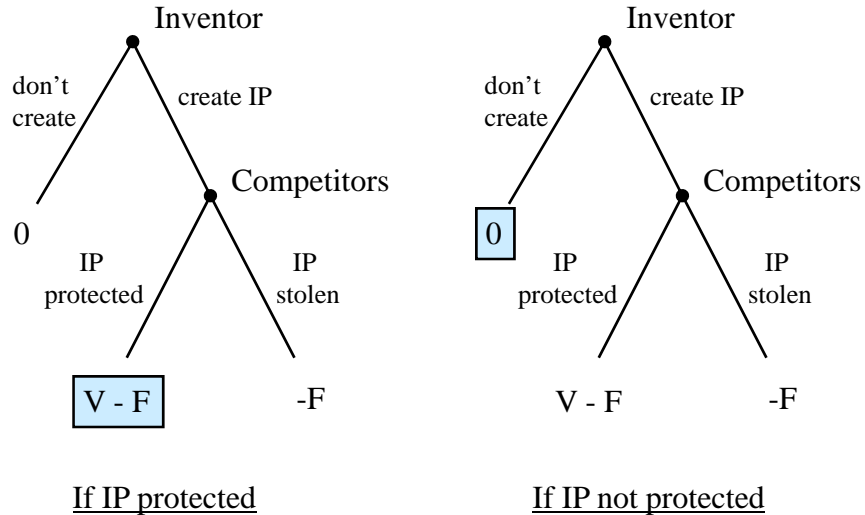
Knowledge is a Special Good

- Knowledge is a *non-rival* good
 - Unlike physical goods/assets, the use of an idea by one party does not preclude its use by another party
- Knowledge can bring *positive externalities*
 - One piece of knowledge, produced once, may be useful across many sectors of the economy
 - Social return from idea creation may be much larger than private return
- Knowledge is *easy to expropriate*
 - IP requires investment to produce, but is relatively easy for others to copy
 - Underinvestment problem if property rights not protected

IP and Expropriation



IP and Expropriation

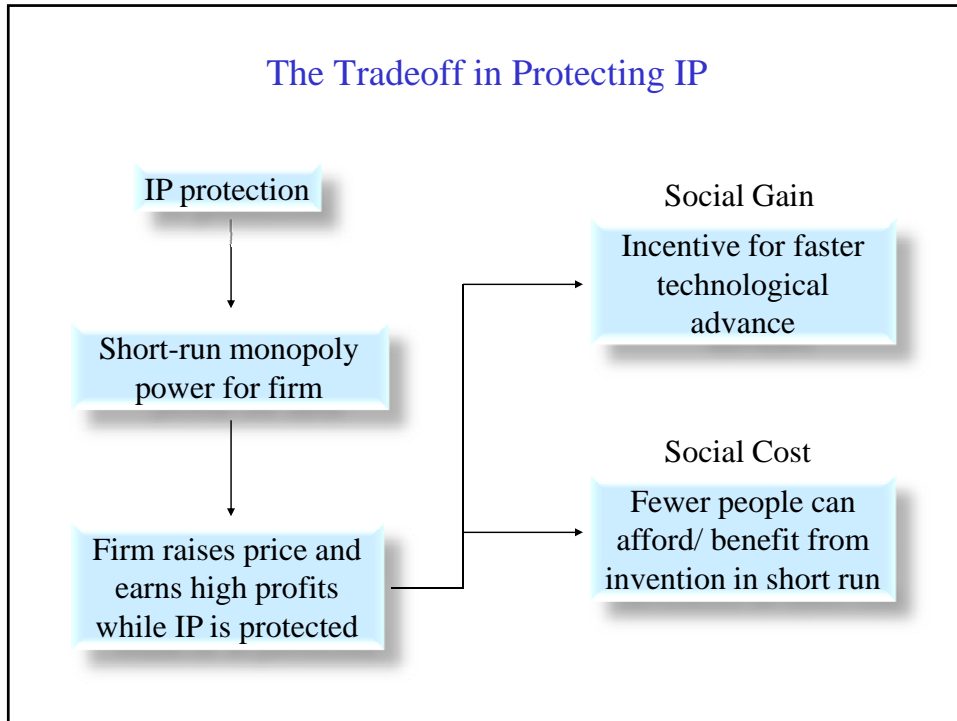


- Inventors won't invent if their intellectual property won't be protected

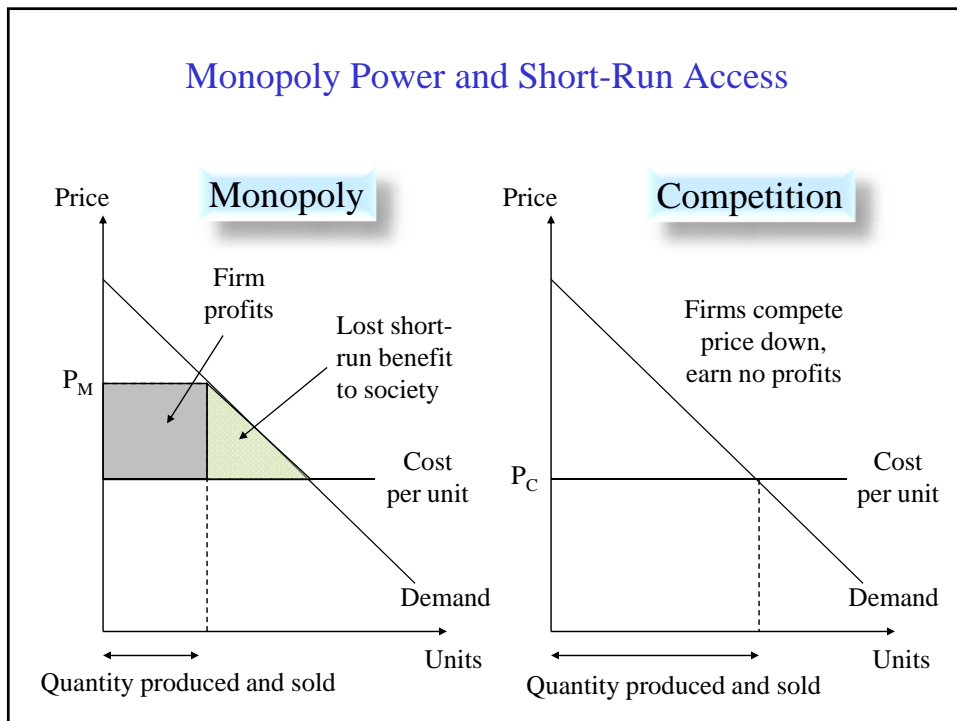
IP and Economic Progress

- In *advanced economies* growth is largely due to *technological progress*, not to the accumulation of physical and human capital (Solow 1957)
 - Recall “diminishing returns to capital” from Session #2
- The rate of technological progress has been unprecedented since the Industrial Revolution
- Technological progress is the result of inventions
 - The greater the rate of invention, the greater the rate of technological progress
- *Intellectual property rights promote technological progress*

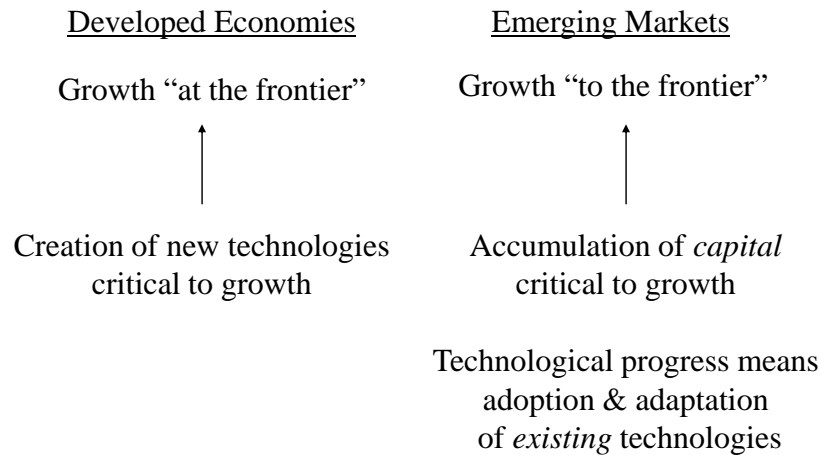
The Tradeoff in Protecting IP



Monopoly Power and Short-Run Access

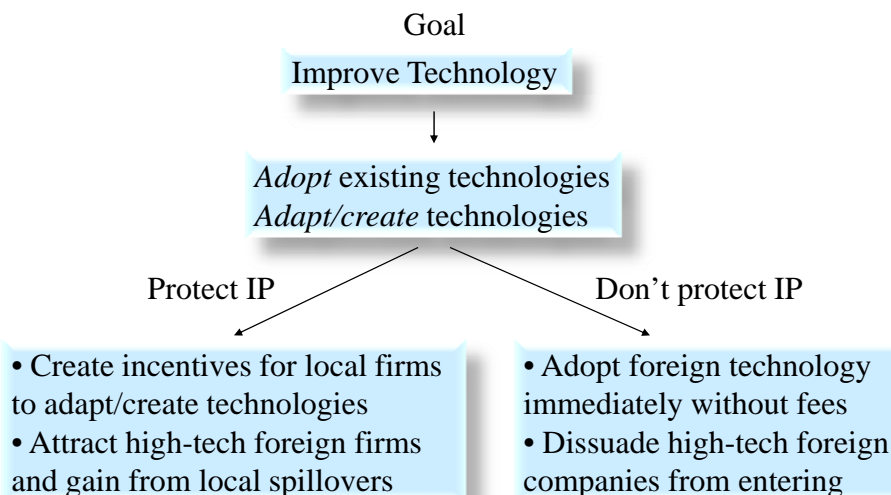


Advanced Economies vs. Emerging Markets



IP and Economic Progress in Emerging Economies

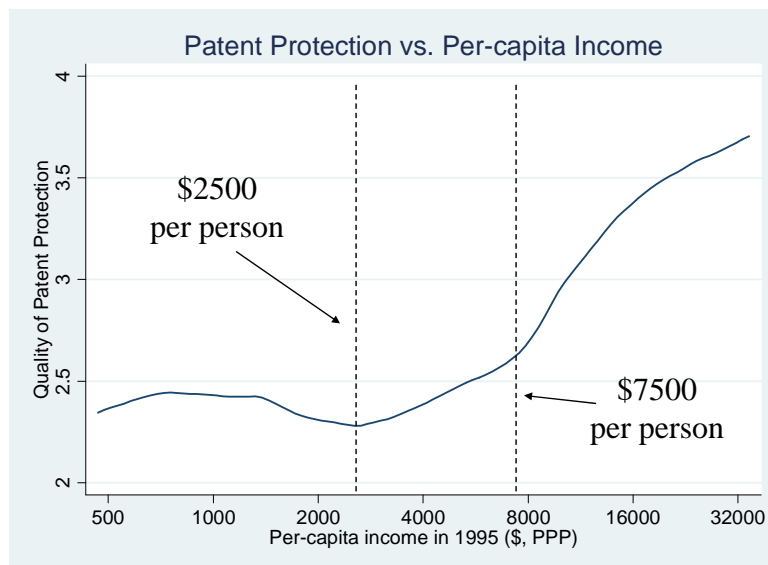
- Do governments in emerging markets want to protect IP?



IP and Economic Progress in Emerging Markets

- Emerging economies have less motive to protect IP
 - Adoption motive relatively strong
 - Creation motive relatively weak
- As economies catch up to frontier
 - More able to adapt/create technologies
 - Domestic firms more interested in protecting *their* IP
 - Stronger IP law makes more sense
- Can emerging markets protect IP, even if they want to?
 - Need strong court system, and technical expertise
- Strategic implication: Governments in emerging markets are often key player in disputes, but not your natural ally with regard to IP

Evidence: Patent Protection around the World



• Data source: Girante & Park (1997)

Property Rights II: Intellectual Property

- Types of intellectual property (IP)
- Why protect IP?
- **Weak IP protections and firm strategy**

Property Rights II: Intellectual Property

- Weak IP protections and firm strategy
 - The scope of expropriation risk
 - Strategies to limit risk

The Scope of Expropriation Risk

- Lose profits in local market
 - Key technology falls into hands of local competitors
 - Brand is copied by local competitors
- Lose profits in other markets
 - New competitors in country A may use *your technology* to compete with you in countries B, C, D, ...
 - May lose profits in *all markets* where your IP is not protected
- The expropriation of your IP in one market may create much broader dangers beyond that one market

Location Choices to Limit Risk

- Most basic strategy

Design international production chain so that sensitive technologies are only used in countries where IP protection is strong

- Problems with this strategy
 - Prevents use of other forms of comparative advantage
 - Low-wage environments may go untapped
 - Transportation costs to end market may be increased
 - Local non-market issues may demand local production

Technological Trick #1: Complementarity

- Many goods/production processes require several *complementary* procedures to make the final good
- Without knowledge of a critical subset of these procedures, a competitor cannot reproduce your final good
- Strategic implication

Keep key subset of complementary technologies in national environment with strong IP protection. Outsource all other aspects of production, even if they use patented technologies.

Evidence: Complementarity

- Zhao (2006)
 - Data on 1,500 multinationals, plus interviews with managers
 - Focuses on research and development (R&D) outsourcing
- Results
 - Firms that outsource R&D to weak IP environments have stronger internal linkages in their technologies
 - Innovations created in weak IP environments are more likely to be used internally by firm only, not as an independent product for use outside firm
 - Chinese firms do very little R&D, while multinationals in China do a lot

Technological Trick #2: Obfuscation

- Complicated production processes may be very difficult to reverse engineer
- Firms can design their production process to hide specific operating details from even close observers (e.g. workers)
- Strategic implication

Obfuscate production process to make reverse engineering impossible. Outsource everything.

Technological Trick #3: Staging

- Relevant to Research & Development (R&D) only
- “Research”: Basic research may have less obvious commercialization possibilities
- “Development”: Development attempts to leverage research into specific products or production processes
- Strategic implication

As R&D turns from research toward development, relocate R&D away from weak IP environments.

Evidence: Staging

- Zhao (2006)
 - Goals of multinational R&D in China
 - IBM: “create world-class information technologies and the underlying science which propels world advances”
 - Microsoft: “attract the most talented researchers in the field of computing” and “advance the state-of the-art in computer science research”
 - “Once a project gets close to commercialization, it may be considered ‘too risky’ to stay in China”

Summary: Strategy

- Simple strategy: locate all sensitive production and R&D in nations with strong IP protection
- Sophisticated strategies allow firms to harness advantages of certain locations despite weak IP protections
 - complementarity
 - technological obfuscation
 - staging
- Bottom Line:

“We don’t count on the legal system for protection; we count on the technologies themselves.”

Coda: “Easy to Copy” Products

- Some goods are easy to copy
 - Trademark: Handbags, shoes, motorcycles
 - Copyright: CDs, DVDs, software, books
 - Patent: Drugs, iPhone (!)



Coda: “Easy to Copy” Products

- Technology-based strategies harder, but careful production and distribution management can still help
 - #1 Avoid spare factory capacity in emerging markets
 - #2 Product tracking and registration, especially to protect against fakes in developed markets
 - #3 Regularly update packaging + market new packaging
- Non-market strategies
 - Private investigations and harness courts (tough!)
 - Change non-market environment: International lobbying, harness WTO, etc (more later...)