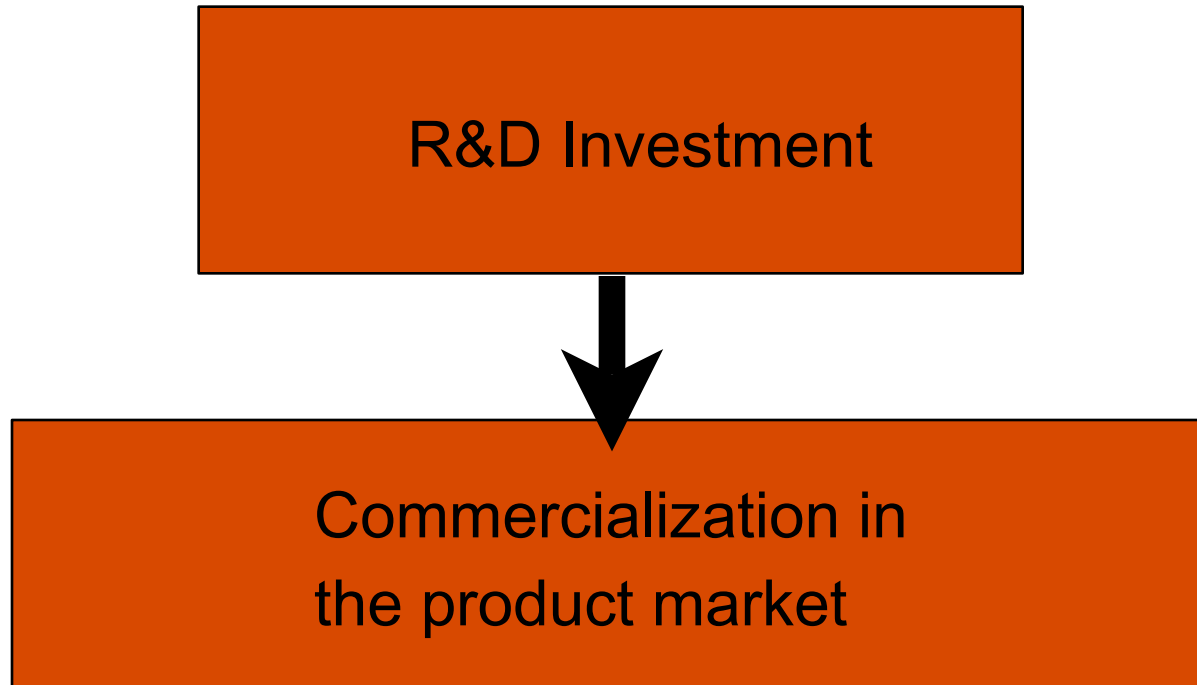


Traditional approach

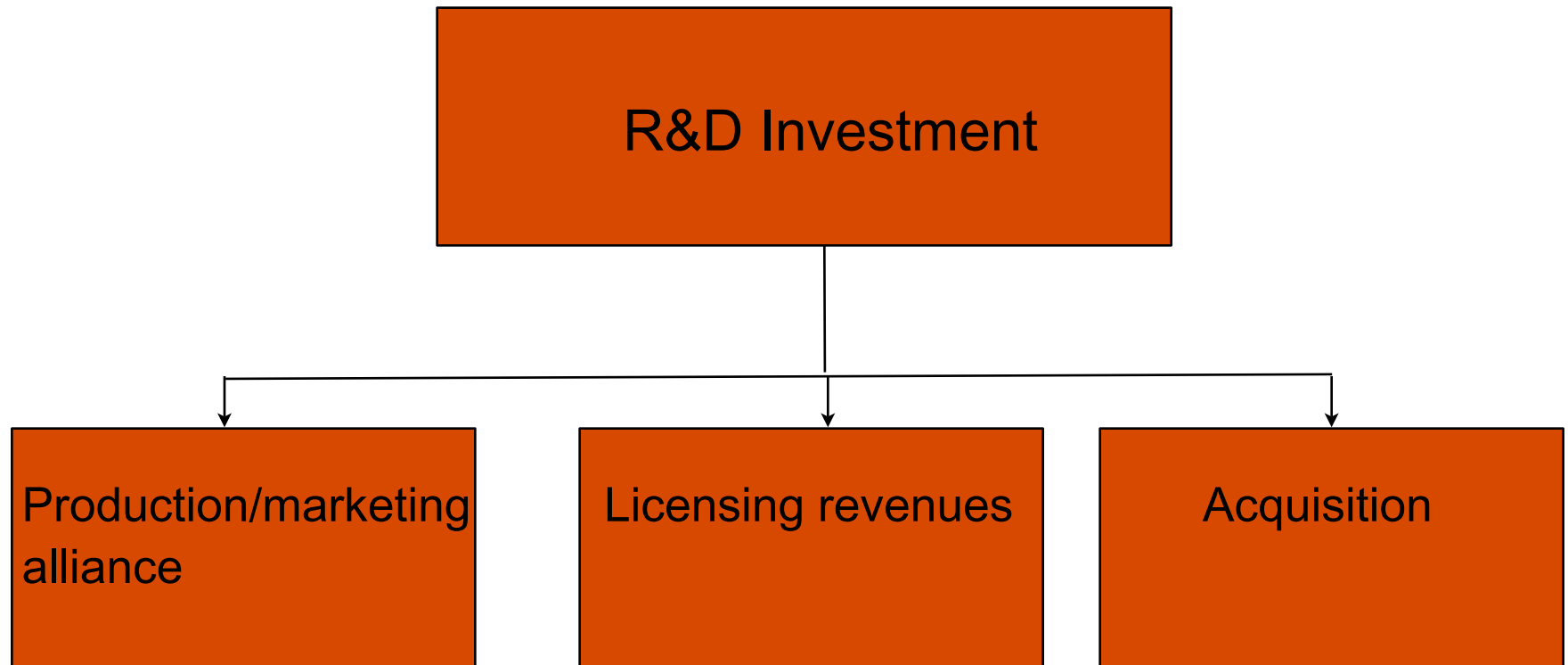


Profiting from innovation involves vertical integration:
R&D and Manufacturing/Sales within the same firm

Why vertical integration?

- Complementarities (synergies) between functions
 - Marketing learns what customers want -> influence what R&D works on
 - Serendipity
 - Close communication, aligned incentives (?)
- Innovation at the intersection of functions
- Outsourcing is problematic
 - Monitoring is hard...contracting is difficult...etc.

New approach



Profiting from innovation involves contracting out ideas
THIS REQUIRES A "MARKET FOR TECHNOLOGY"

Increasing importance

S. Athreye, J. Cantwell / Research Policy 36 (2007) 209–226

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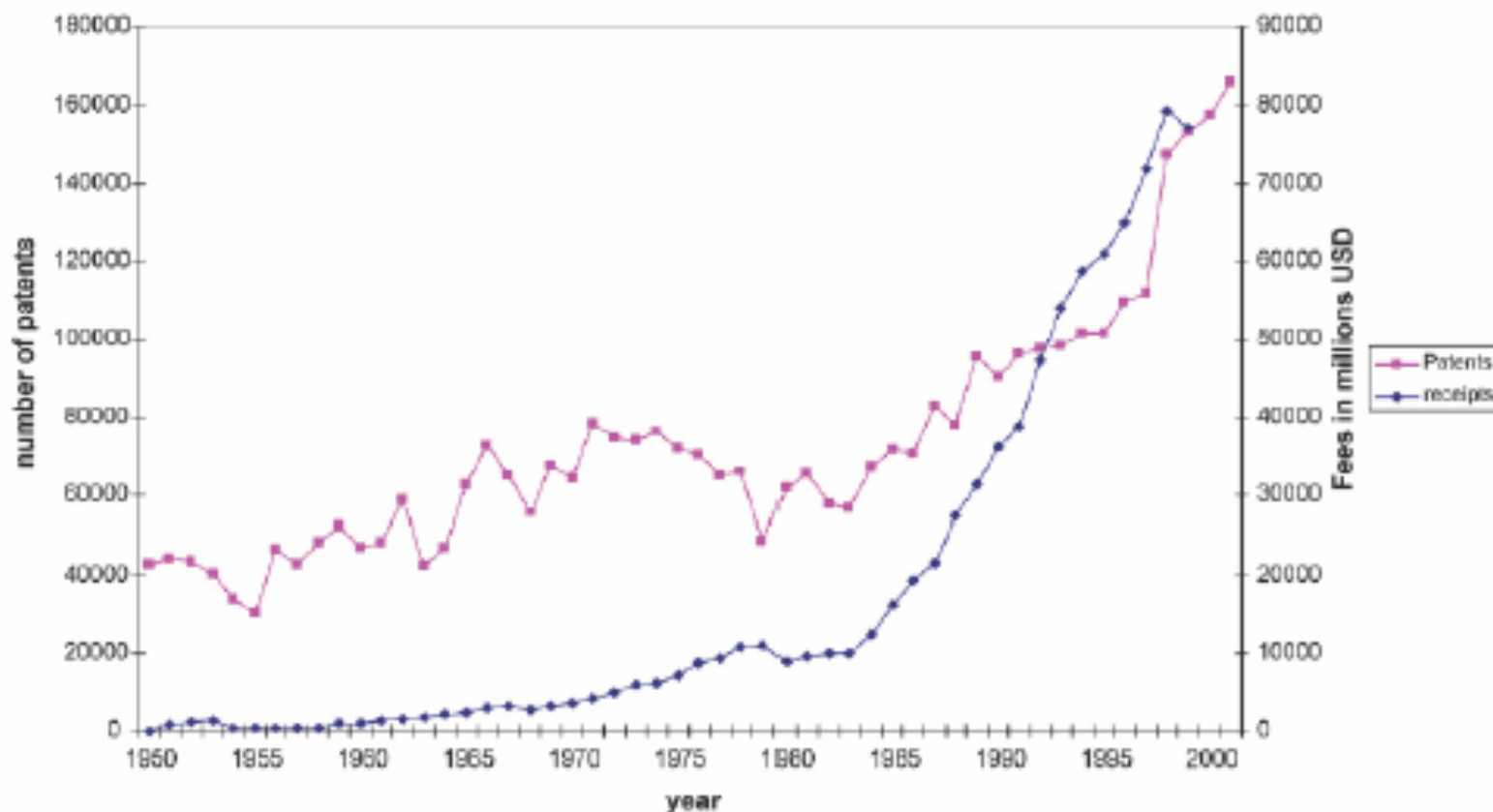


Fig. 2. Growth in non-US held patents and worldwide royalty and license revenues.

Estimates

- 1990-2000, US: \$15-100B (expert opinions)
- 1996-2002, US: \$70-115B (IRS)
- Licensing revenues = 15-25% of total R&D spending in US (Robbins, 2006)

- OECD survey 2003:
 - Licensing most prevalent in IT and pharma
 - Markets for technology better developed in US and Japan than in EU

Why are markets for technology special?

- Many goods and services are rivalrous
 - You can't have your cake and eat it too
 - Consumption or use by one removes the option for others
- But ideas & knowledge are non-rivalrous
 - My use of a differential equation doesn't prevent you from using it
- It is also usually hard to contract
 - High uncertainty and other problems
- Can there be trade in ideas?

Gains from trade

- Some firms may be very good at generating ideas, but lack other “complementary assets”
 - Marketing, distribution, manufacturing...
 - Networks
 - Brand, reputation, global experience
- Other firms may have those assets, but struggle to develop ideas
- Efficiency differences -> gains from trade

What are the benefits (in terms of profits for firms) of markets for technology?

- Economies of scale
 - If there are scale economies in R&D, scale economies in manufacturing, and scale economies in marketing, it is more efficient to have one firm focused on each rather than 3 firms doing all 3 activities
 - Reduces duplication of R&D effort and complementary assets
- “High-Powered” Research Incentives in Small Firms
 - Recall from yesterday that entrepreneurial firms can implement higher powered incentives than large ones
- Softening product market competition
 - License in or acquire competing ideas before they get to market and compete!

Open innovation

- Traditional model is CLOSED
 - “Not invented here” (NIH) -> not commercialized
 - Greater reliance on trade secrets
 - No licensing
 - From other firms
 - To other firms
- New model is OPEN
 - One firm can't do it all: must look to the outside
 - License in key ideas
 - License out some ideas that aren't central

Why markets for technology are complicated

- The Disclosure Problem
 - Figuring out the “price” for an idea requires information which intrinsically reduces its value
- The Lemons Problem
 - If it’s such a good idea, why is it for sale?
- The Contingency Problem
 - Value of ideas depends on factors such as market demand, existence of other technologies
 - Can firms contract on all these states of the world?
- The Perception Problem
 - Different individuals will perceive the value of an idea differently... difficult to benchmark in the absence of product market experience

Disclosure Problem

- aka “Arrow’s information paradox”
- Convincing you of the value of my idea requires me to disclose the details
- Now you know. How much are you willing to pay me?

Formal IP (like patents) is absolutely essential to avoid this!

Lemons Problem

- aka “adverse selection”
- Inventors will want to keep the great ideas for themselves and only sell the “lemons”
 - Just like used cars
- I must know more about my idea than you do, and that should worry you.
 - What am I hiding?

Contingency Problem

- aka “moral hazard”
- The value of my idea depends on the effort of both of us.
 - If you pay me everything upfront, will I help you out when you have a problem? Will I explain my code? Will I share my tricks?
 - If you pay me only if everything works out, will you work really hard to make sure my idea gets developed?

Perception problem

- What assumptions go into your NPV calculations?
 - "I think there is a world market for maybe five computers." (attributed to IBM head Watson in 1943)
- Much recent academic work on “overoptimistic” entrepreneurs

Making these markets work

- Strong IP rights
- Use of contracting intermediaries
 - Venture capitalists
 - Specialized lawyers and dealmakers
- Using mixtures of fixed fees and royalty payments
 - These help align incentives and monitor performance
- Developing a reputation for ideas dealmaking
 - Building a successful licensing track record
 - Alliances and limited participation to build trust
- Other facilitating factors now include:
 - Online trade in patents
 - Other mechanisms to make such markets “thick”

Some examples

China's First Large Patent Market to Open
China's first large-scale patent trading market will go into trial operation here this month, according to Chinadaily.

The patent market will be "a bridge between patentees and investors", offering patent holders a public trading place to translate their research findings into real products, said an official with the State Intellectual Property Office.

Patentees had no place to sell their ideas before the construction of the trading center, which leads to the low number of patents resulting in actual products, he said....

The market will set up a service system providing global archives of related patents and its own website to offer on-line service, the official said.

People's Daily, August 2000

<http://www.innocentive.com/>

yet2.com's mission is to help you identify and capture the full value of your intellectual assets.

Intangibles such as intellectual property (IP) comprise as much as 75% of the market value of many companies. Yet, many companies do a less-than-optimal job of leveraging and extracting value from their IP.

Our principal services are assisting our clients in:

- * Realizing a return on their IP investments--yet2.com excels at locating unrealized IP value potential, especially in situations where IP and technology offer substantial market opportunities for products, services or cooperative relationships with third parties.

- * Acquiring IP and accessing technology solutions--yet2.com finds IP and technology around the globe, enabling clients quickly and efficiently to enhance their own resources and to address gaps in their IP portfolios.

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November 27, 2008

Ocean Tomo Auctions

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Spring 2009 IP Auction
March 26-27
San Francisco

Listing Fees
Bidding Procedures/
Conditions of Sale
Conference/Event
Conference Program
Venues
Gala Dinner
Sponsors & Media

Summer 2009 IP Auction
June 11-12
Hong Kong

Open Call for IP Submissions

We are now accepting submissions for our upcoming auctions and have identified the following areas of interest:

- Computer Systems & Software
- Digital Music & Video
- Digital Rights Management
- e-Commerce & Web Services
- Insurance & Financial Services
- Integrated Advertising
- Integrated Circuits & Semiconductors
- Integration Technology
- Interactive Media / Touch-Screen Interface Technology
- Interactive TV & VOD
- Location Based Technologies
- Memory & Data Storage
- Online & Mobile Commerce
- RFID & Barcode Technology
- Social Networking & Web 2.0
- Streaming Video
- User Interface Technology
- Voice-Recognition Technology
- Wireless/Network Communications

To submit IP, please [click here](#) or contact us at auctions@oceantomo.com or 312.377.4851. Submissions for the Spring 2009 Live IP Auction should be received by **DECEMBER 10**.

SUBMIT IP

Implications for buying/selling ideas

- When complementary assets and R&D capacity are held by different firms, there is value to trade
 - I.e., there's a role for a market for technology or ideas
- Ability to contract depends on existence of market for ideas
 - Strong IP: relatively easy to trade
 - Weak IP: requires reputation and trust
- Both sellers and buyers of technology can influence their share of the value created
 - Ensuring that outside options are also attractive
 - Avoiding specialized investments in the absence of very well-written contracts