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Patents and Technology Transfer: An Overview

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Overview

- A few conceptual considerations
- Stylized facts on technology transfer
- Results of empirical research
- Data needs

A few conceptual considerations

- Markets for technology differ from markets for other goods and services in several key ways:
  - Codified versus non-codified knowledge
  - Absorptive capacity of technology acquirer
  - Information asymmetry
  - Appropriability problem

The role of patents

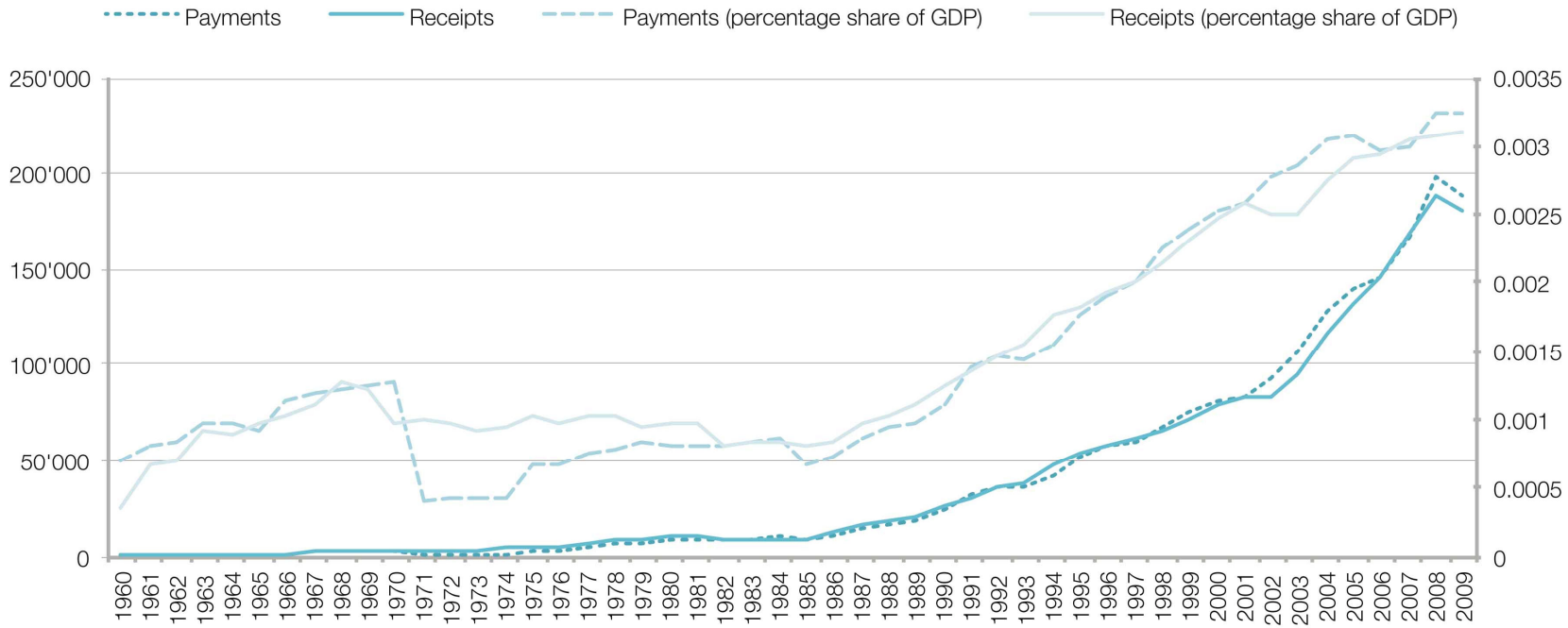
- Patents codify technological knowledge
- Patent rights can facilitate technology transfer
  - Firms are confident to disclose technology when negotiating a licensing contract
  - Patents offer a delineation of technological assets combined with the assurance of market exclusivity
- Depending on business models, it may or may not be in the interest of patent owners to transfer their technologies on different terms

Main modes of international technology transfer

- Trade
- Foreign direct investment (FDI)
- Licensing and other forms of formal technology trade
- Movement of people
- Cross-border information flows (for example, through online patent databases)

Stylized fact #1: rapid growth of technology markets

RLF payments and receipts, in USD millions (left) and as a percentage share of GDP (right), 1960-2009



Note: GDP data are from the World Bank.

Source: WIPO based on data in Athreye and Yang (2011).

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Stylized fact #2: uneven distribution

Income groups	1999		2009		1999	2009		
	RLF receipts and payments, in million USD				**Share of total RLF, in percent**		**Growth, 1999 to 2009, in percent**	
	Nominal	Deflated	Nominal	Deflated			Nominal	Deflated
High-income economies								
RLF receipt values	70,587	71,959	176,716	151,119	99	98	9.6	7.7
RLF payment values	67,965	70,371	155,881	135,163	91	83	8.7	6.7
Middle-income economies								
RLF receipt values	759.883	736.771	3,765	2,055	1	2	17.4	10.8
RLF payment values	6,705	6,931	3,2428	17,942	9	17	17.1	10
Low-income economies								
RLF receipt values	16	14	34	16	0.02	0.02	7.7	1.
RLF payment values	84	72	67	34	0.1	0.04	-2.3	-7

Note: The GDP deflator provided in The World Bank's World Development Indicators is used to compute the deflated values.

Source: WIPO based on data in Athreye & Yang (2011).

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Empirical studies

- Economic literature on the channels and determinants of technology transfer is too rich to be concisely summarized
- Many studies suffer from measurement and simultaneity problems:
  - Price versus quantity
  - Transfer pricing
  - Cross-country measures of IP protection

A few broad conclusions

- Trade, FDI, and licensing seem to respond positively to “stronger” patent rights, though empirical significance is small
- These effects are confined to high- and middle-income countries that already have innovative capacity and are capable of imitation
- Survey evidence suggests that firms primarily fear disclosure of proprietary information; trade secrecy may often matter more than patent protection

Branstetter, Fisman, and Foley (2006)

- Analyze technology transfer within U.S. multinational companies in response to a series of IP reforms undertaken by 16 countries over the 1982-1999 period
- Use of detailed firm-level data
- Main results:
  - Royalty payments for intangible assets increase in the wake of strengthened IP protection
  - R&D spending by affiliates increases after reform
  - Non-resident patent applications in reforming countries increase as well

Data needs

- Key challenge: technology transactions often do not leave a statistical trace
- Make better use of balance-of-payments data:
  - Offer additional breakdowns (especially intra-firm versus inter-firm)
  - Find ways for researchers to access full micro data
- Innovation and inventor surveys:
  - Already a rich source of information
  - More surveys in low- and middle-income countries
- Reporting requirement for some licensing transactions (e.g., FRAND licenses)?

Thank you!

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