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The Role of Intellectual Property in Economic Growth

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technology culture music health

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IIPI INTERNATIONAL INTELLECTUAL PROPERTY INSTITUTE

- About IIPI
  - A not-for-profit institution
  - Promotes the use & enforcement of intellectual property systems around the world
  - Intellectual property as a tool for technology transfer;
  - Training, research, technical assistance

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Overview

- Innovation Drives Economic Growth
- Intellectual Property Rights Spur Innovation
- What IP Policies Can Be Used to Support Innovation and Economic Growth

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What is Innovation?

The ability of a country to create and absorb new technology, and implement such technology into economic production.

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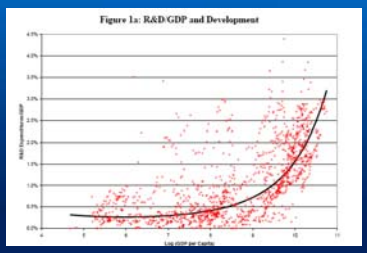
Economic Growth and Innovation



Source: World Bank, Maloney 2003

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Economic Growth and Innovation

Total Factor Productivity (TFP) – Efficiency of inputs

- "More than half" of growth rate disparities between countries are the result of differences in the efficiency of using of inputs as opposed to endowments (resources, capital, labor)
- Technological innovation drives the productivity of labor, a key input (Solow 1956, 1957)*
- Many believe innovation dominates changes in TFP, more so than the accumulation capital for example:

"Since the second half of the 19th century, THE major source of economic growth in the developed countries has been science-based technology" - Stanley Kuznets

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Economic Growth and Innovation

Exogenous (Solow) v. Endogenous (Arrow) Technological Change:

- **Exogenous: constant, unaffected by factors within the given economy**
- **Endogenous: dynamic, dependent on specific activities**

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Economic Growth and Innovation

Exogenous (Solow) v. Endogenous (Arrow) Technological Change:

- Effective property rights protections and learning-by-doing (Arrow 1962) are two factors that affect the *rate* of technological change.
- Learning affects the diffusion of new technology, which displays increasing returns to use
- Property rights create incentives to produce new technology
- **Thus, the rate of technological change can be affected by specific institutions and activities within the economy**.

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Intellectual Property and Innovation

Yale – Evenson (2001)

Research Question: Do IPRs spur technological change *within* a given market?

- 30 countries
- IPR strength index
- Technological change is proxied by R&D/GDP ratio

Conclusions

- Correlation shows "unambiguous significance" of IPRs in encouraging R&D investment expenditure.
- Countries with stronger IPRs invest a greater percentage of their GDP in R&D than countries that do not.

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Mansfield (1994)
Research Question: Do IPRs attract foreign technology inflows via FDI?
- Survey/Interview based research

Conclusions
- Perceived IPR strength has a "substantial effect" for FDI inflows.
- The effects are particularly strong for particular industries with highly sensitive technology, such as the chemicals and pharmaceuticals industries.
- It is also true that *within* industries, the transfer of the newest technologies are less likely if there are few IPR protections.

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Park and Lippoldt (2004)
Research Question: Do stronger IPRs increase international technology transfer flows via licensing specifically?
- Aggregate Data and Firm Level Data
- Indices of IPR strength
- Focus on licensing activities
  - Licensing indicates true transfer of technology (uncontrollable as opposed to controllable assets like FDI and joint ventures)
  - Greater threat of piracy with licensing

Conclusions
- "Overall, the analysis presented here indicates that where developing countries have moved to address weaknesses in these areas in recent years, they have tended to experience enhanced access to technology through licensing."

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IBRD – Maskus (2005)
Research Question: How do IPRs affect arms-length licensing?
- 23 countries
- Use Park's index of IPR strength, correlate with US MNEs licensing fees
- US firm data from US Department of Commerce

Conclusions:

- US receipts of unaffiliated royalty and licensing fees increase with the IPR strength of the technology recipient country
- Patents promote arms-length technology trade

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Effective IP Policies

- Establish intellectual property laws that support industry
- Provide effective administration and enforcement of IPRs so that industry can rely on the rights they are granted
- Implement policies that help companies use IP to establish competitive advantages

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Effective IP Policies

Provide Patent Intelligence

- What is it?
- Consulting Firms in US, EU, Japan
- Lack of Comparable Service Providers in Developing World
- Lack of Appreciation of Importance of R&D and IP in Industry in the Developing World

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Effective IP Policies

Patent Intelligence Case Study

- Moi University – KIPO Project
- Phase I
  - Provide basic patent data
  - Educate local companies on value of IP by demonstrating importance of data gathered
- Phase II
  - Spinout of Consulting Firm

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Effective IP Policies

Domestic Technology Transfer - Basic Premises

- Technological Innovation can happen anywhere in the world
- Technological Innovations can be generated by private companies, public research organizations or in someone's garage
- One of the key factors in innovation generation is funding

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Effective IP Policies

	R&D as a % of GDP	Breakdown		
		Government	Business	Other
Brazil (2000)	1.04%	60.2%	38.2%	1.6%
China (2000)	1.0%	33.4%	57.6%	2.7%
India (2000)	0.85%	74.7%	23.0%	2.4%
Israel (2000)	4.72%	24.7%	69.6%	5.4%
South Korea (2002)	2.91%	23.9%	74.0%	2.1%
Kuwait (2002)	0.19%	80.0%	20.0%	
Malaysia (2002)	0.69%	32.1%	51.5%	16.4%
Mexico (2002)	0.43%	61.0%	30.6%	8.4%
South Africa (2000)	0.64%	29.7%	35.0%	35.3%
Tunisia (2002)	0.63%	51.1%	8.0%	39.9%
Germany (2002)	2.64%	31.6%	65.5%	2.9%
Japan (2002)	3.11%	18.2%	73.9%	7.9%
United States (2002)	2.67%	30.0%	64.6%	5.4%

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Effective IP Policies

Domestic Technology Transfer: US Style

- Gives universities/federal labs the option of securing and owning patents on inventions
- Applies to inventions created with support of federal funding, regardless of support in overall research
- If technology is commercialized, requires royalty sharing with inventors


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Effective IP Policies
Domestic Technology Transfer:
Why the US System Works
• Interests are Aligned
Academic – University – Private Sector – Government
• Research Funding Available
• Intellectual Property System
• Private Sector sees value in R&D
technology
culture
music
health


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