

IPRs, Knowledge and Transfer of Technology

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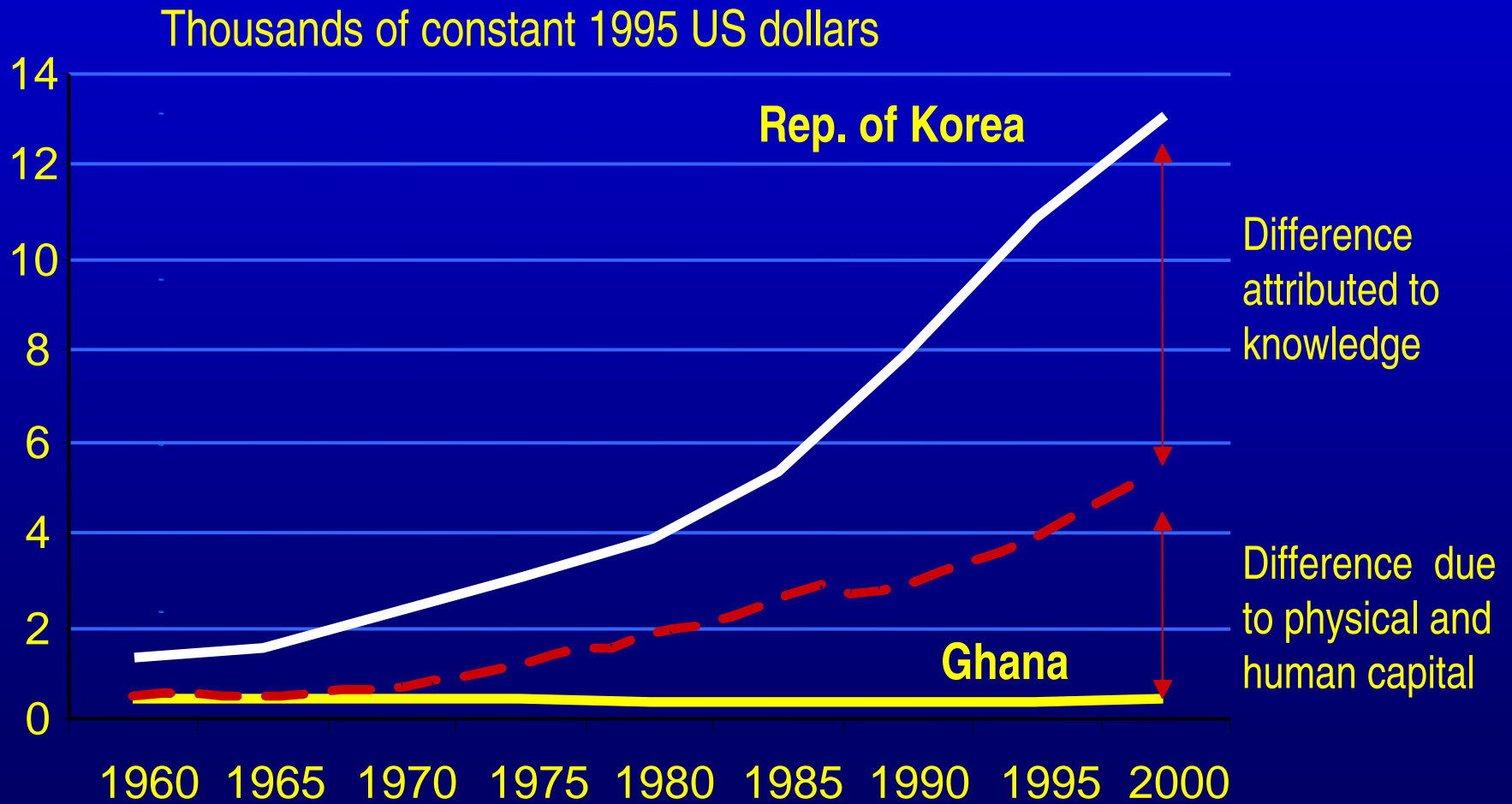
The World Bank

Intellectual Property and Development

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Knowledge Makes the Difference Between Poverty and Wealth

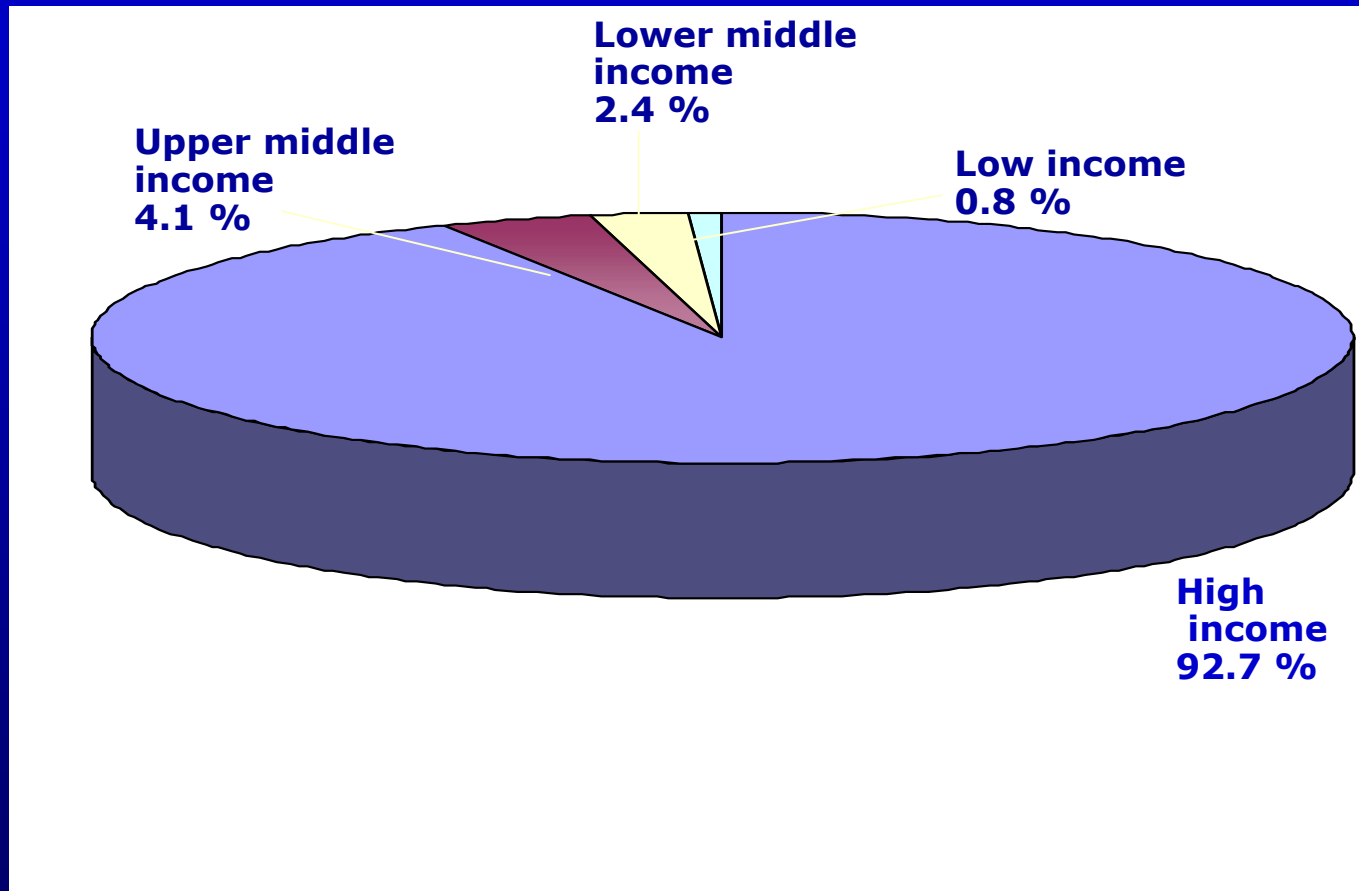


Source: World Development Report, 98/99

Economic functions of IPRs

- IPRs that stimulate inventive and creative activities
 - Patents, copyright, industrial designs, plant breeders' rights, layout designs for integrated circuits, utility models, trade secrets
- IPRs that resolve information asymmetries
 - Trademarks, geographical indications

Global Distribution of R&D Expenditures (1997)



Source: Calculated based on data from the World Bank SIMA Database, 2002

IPRs and Innovation in Developing Countries

- Optimists
 - IPRs can help reward risk-taking among domestic enterprises (role of utility models);
 - Promotes business development of local enterprises (TNCs can absorb temporary losses due to “piracy,” but local innovators are at a disadvantage in a weak IPRs environment);
 - Fosters FDI in R&D and more efficient investment in human capital, generating positive externalities;
 - Create markets for knowledge.
- Pessimists
 - Enhances market power of TNCs;
 - Curtails learning-by-doing;
 - Promotes rent transfers rather than local innovation.
- Bottom line: IPRs are just one piece of the innovation puzzle...

IPRs and Technology Transfer

- Empirical problem: impact on trade, FDI, licensing.
- Licensing: economic returns effect (IPRs reduce the cost of imitation, increasing the profitability of licensing) vs. market power (IPRs restrict competition, improving bargaining power of TNCs);
- Evidence from empirical studies: IPRs (particularly patents) had a net positive effect on international licensing between unaffiliated parties during the 1990s (Park and Lippoldt, 2005).

Knowledge and Networks

- **IT (and related communication networks) is changing the terms under which knowledge can be created and disseminated:**
 - IT facilitates the process of codification and transmission of knowledge about technology;
 - IT enhances the positive learning externalities of knowledge generation by magnifying the possibilities for recombination of ideas and information;
 - IT dilutes the “tyranny” of geography by providing new ways for researchers to escape national boundaries. The rate of international co-authorship of scientific and technical papers, for example, has increased significantly over the last decade;
 - IT increases the “distribution power” of innovation systems, diminishing the time to market of new products and services, while enhancing the dissemination, application, and use of “mature” technologies.

The Economics of “Information Goods”

- Data: anything that can be digitized...
- Information: data with a purpose (data embedded in a context of relevance to the recipient...)
- Knowledge: information acted upon by human beings (what we know...)

Characteristics of “information goods”: costly to produce, but cheap to reproduce (high fixed costs/low marginal costs); non-rival; value can be significantly influenced by network effects.

The Case of Software

- Background: Networks and digital technology dramatically reduce the costs of reproduction and distribution of software. At the same time, they facilitate decentralized cooperation.
- Polar views:
 - IPRs laws can be used to “organize” the economics of software production and consumption without any major adjustment. Problems currently faced by the industry can be dealt with by enforcement, technology (encryption...) and change in consumer culture.
 - To apply conventional IPRs laws to “information goods” is doomed to fail, given the high costs of enforcement and the dynamics of network effects.

Some Common Questions

- How to balance incentives for production (via intellectual property rights) and the social costs of non-competitive provision?
- How to minimize anti-competitive lock-in effects (associated, for example, with branding and interoperability issues)?
- How to explore network effects in a socially productive manner?

Software: The Orthodox View

- There is nothing new in the challenge posed by technology/networks. Copyright law, for example, can accommodate fair use without hampering the prospects for information dissemination. Transaction costs can be addressed via new technological “fixes.”
- The basic issues are:
 - to promote a change in culture among consumers about the negative effects of piracy;
 - to allocate resources to enforcement;
 - to foster convergence toward minimum levels of protection at international level, relying on international treaties negotiated under the WIPO and the WTO.

Software: The “Heterodox” View

- IPRs are being extended well beyond their original scope, increasingly becoming instruments to protect/leverage market power rather than instruments to promote innovation;
- There are alternative models to operate in a networked environment as illustrated by the Internet and the Open Source Software (OSS) movement.

Concluding Remarks

- **Creation and effective use of knowledge is key to rapid economic growth. IPRs can play an important role in this process, but one has to be attentive to the balance between creation and dissemination of knowledge;**
- **The empirical evidence suggests a positive role between IPRs and technology transfer (licensing) in broad terms;**
- **The continued expansion of networks poses new challenges to the conventional use of IPRs;**
- **Proprietary solutions can co-exist with OSS, but “maximalist” solutions in the protection of IPRs or in favoring OSS via procurement practices can be counterproductive.**

More information

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References:

- C. Fink and K. Maskus, 2005, Intellectual Property and Development (Washington, DC: The World Bank);
- W.G. Park and D. Lippoldt, 2005, “International Licencing and the Strengthening of IPRs in Developing Countries During the 1990s,” forthcoming OECD Economic Studies.
- C.A. Primo Braga, C. Fink, and C. Sepulveda, 2000. “IPRs and Economic Development,” WB Discussion Paper No. 412 (Washington, DC: The World Bank).
- C.A. Primo Braga, 2004, “La conoscenza in Rete: le implicazioni economic-sociali,” in A. Spaziante, ed., Knowledge as public common property: software, data, know-how (Turin: CSI-Piemonte).