

The Intellectual Property Index for the Information Technology Sector (IP-IT Index)



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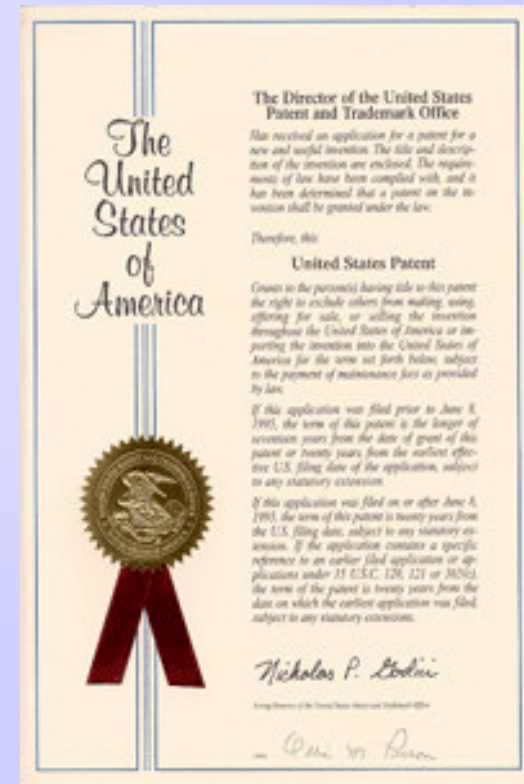
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What are IPRs? Stating the obvious

Intellectual property rights (IPRs) = a general term describing various forms of legal protection of knowledge-based & informational-based products and technologies:

- Patents
- Copyrights
- Trade marks
- Trade secrets
- Designs
- Topographies of semiconductor products



What is an IP environment? Measuring what cannot be measured?

- First model by **Gadbaw and Richards** (1988). Cross-national comparison of IP protection was provided by constructing a matrix of countries *vis-à-vis* various IP components
 - Covered Argentina, Brazil, India, Mexico, S.Korea, Singapore, and Taiwan and looked at copyrights, patents, trademarks, semi-conductors, chip design and trade secrets
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- IP protection in the above countries was lower than the minimum IP standards provided by developed countries (ICC standards)
 - Taiwan, S.Korea and Singapore had a level of IP protection that is nearly consistent with minimum IP standards
 - Argentina, Brazil and India had a very weak system of IP protection

Relationship between economic development and strength of IP environments – RR Index

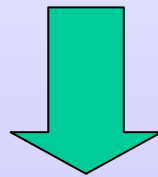
- First ordinal index by **Rapp and Rozek** (1990) = **RR Index**
- RR Index - cross-country ordinal analysis of IP regimes, based on the patent laws of 157 countries
- The perceived strength of national patent protection was based on the recommendations of the U.S Chamber of Commerce Intellectual Property Task Force:

Ranking Order



- 0 = no patent protection;
- 1 = inadequate protection laws; no laws prohibiting piracy;
- 2 = seriously flawed laws;
- 3 = flaws in laws; some enforcement laws;
- 4 = generally good laws;
- 5 = protection and enforcement laws fully consistent with the minimum standards proposed by the U.S. Chamber of Commerce.

- RR Index "predicts" the level of IP strength of a given country based on its state of economic development (per capita GDP; percentage of households with electricity; infant mortality rate, etc)
- Finds a positive correlation between the state of economic development and the level of patent protection
- Countries that score the value of 5 include the U.S., the U.K. France, Germany, Switzerland and Sweden...
- Countries that receive a low score, either 1 or 0, include China, Brazil, India, Indonesia, Peru, Turkey and Oman



“It is significant that the theoretical linkage between efficient intellectual property protection and economic development is born out of fact”

Relationship between IP strength and Foreign Direct Investment - GP Index

- First interval-based statistical index by **Ginarte and Park** (1997)
- **GP Index**- the most widely used and the most acceptable standard for measuring cross-national strength of patents
- The index originally measured the cross-national strength of patent rights in 110 countries for the period of 1960 to 1990 but has since been extended.
- The index was coded on the basis of five categories of patent law

GP Index
Criteria



1. Extent of coverage
2. Membership in international patent agreements
3. Provisions for loss of protection
4. Enforcement provisions
5. Duration of protection

GP Index

	Index of Patent Rights, 2000	Index of Patent Rights, 1995	% Change
Argentina	3.33	3.19	4.5
Brazil	3.05	3.05	0
China	2.48	1.55	59.8
France	4.05	4.05	0
Germany	4.52	3.86	17.3
India	2.18	1.51	44.55
Israel	4.05	3.57	13.3
Singapore	4.05	3.9	3.7
United Kingdom	4.19	3.57	17.3
United States	5	4.86	2.9

OECD Study (Park & Lippoldt, 2005) on Patent Rights, Trade & FDI in Developing Countries

- Using regression analysis, the authors examined the association of change in the index of patent rights with change in trade & FDI
- Patent rights **had positive effects on inward FDI**: a 1% increase in the patent rights index is associated with a 0.5% increase in the stock of FDI
- The effect **is stronger for LDCs** than for other developing countries
- For US outward FDI, the impact of IPRs varies by industry and destination (ability to imitate); strong influence in such sectors as petroleum, finance, services, computer-related, and R&D

Strengths and weaknesses of current IP indices

- **Provide more accurate tools for assessing the level of IP protection in a given country**
 - **Can be applied on a large sample of countries**
 - **Over time allow to track trends of protection in various countries**
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- **Tend to focus mostly on patents and less on other components**
 - **Analysis of national IP regimes is more general and much less sector specific (for example does not take into account components that are extremely relevant to the pharmaceutical industry)**
 - **Overall tend to look at the “text-book” level (though there are also other more “experience-based” indices**

Proposed *IT-IP Index* – Categories and Indicators



Term of exclusivity - (1) term of patent protection; (2) term of software copyright protection; (3) term of protection of topographies of semiconductor products;

Scope and coverage of essential components - (4) patentability of computer implemented inventions; (5) legislation that allows for the use of digital rights management (DRM); (6) database protection; (7) ban on parallel imports without the IP owner's consent;

Strength of exclusivity - (8) restrictions on the use of compulsory licenses in copyrighted & patented products; (9) clear limitations on the principle of 'fair-use'; (10) non-discrimination against IP-based standards;

Enforcement - (11) level of piracy rates; (12) effective civil and procedural remedies; (13) effective criminal procedures and (14) dedicated policing actions against piracy and counterfeiting.

Proposed *IT-IP Index* - Scores

Each category can score values between 0 and 1 and the cumulative score of the Index ranges between 0 and 4.

Similarly to the GP index, each category is assigned either the value of "0" - if the particular IP component does not exist in a given country - or "1" - if the particular IP component does exist in a given country.

The category '*term of exclusivity*' is calculated numerically. This is done by dividing the actual term of exclusivity of each sub-category by a maximum standard baseline

Term of exclusivity	Baseline in Years	Legislation Model
Patents	20	WTO TRIPS AGREEMENT
Software copyrights	95	UNITED STATES
Topographies of semiconductor products	10	WTO TRIPS AGREEMENT
BSA Piracy Rates (2005)	Level of piracy rates	0%-100%



Proposed *IT-IP Index* - Weights



- It is assumed that the major categories of this Index should have an equal weighting (based on previous GP sensitivity analysis). Therefore, the weight of each category equals 25% (and in total 100%).

- But there is a need to apply weights to the different sub-categories:

Core component - a component that is fundamental to the existence of an Information Technology IP regime in a given country - weight equals 40%.

Significant component - a component that greatly contributes to the level of Information Technology IP regime in a given country – weight equals 20%.

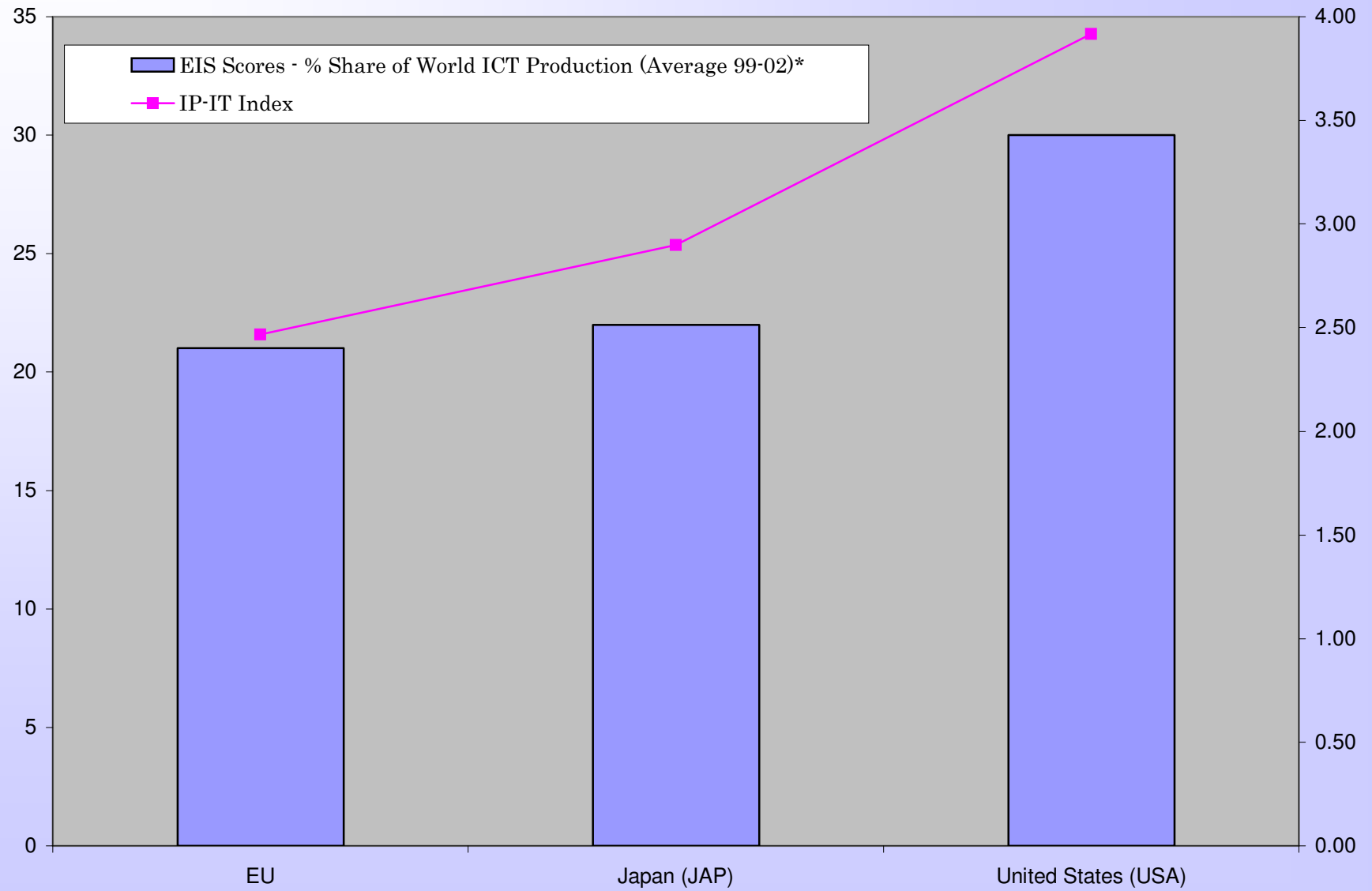


Category	Sub-categories - explained	Weight (%)
Term of exclusivity (total 25%)	Term of patent protection	40%
	Term of software copyright protection	40%
	Term of protection of topographies of semiconductor products	20%
Total		100%
Scope and coverage of essential components (total 25%)	Patentability of computer implemented inventions	40%
	Legislation that allows for the active use of digital rights management (DRMs)	20%
	Database protection (either via copyrights or via sui-generis rights)	20%
	Ban on parallel imports without the IP owner's consent	20%
Total		100%
Strength of exclusivity (total 25%)	Restrictions on the use of compulsory license in copyrighted & patented products (use of the 'essential facilities' doctrine is restricted to exceptional cases and the 'refusal to supply' an IPR is not treated as an abuse as such)	40%
	Clear limitations on the principle of 'fair-use' based on the Berne 'three-step test'	40%
	Government procurement policies are not biased towards standards that are based on open-source and/or do not discriminate against the use of proprietary standards	20%
Total		100%
Enforcement (total 25%)	Level of piracy rates (based on BSA figures)	40%
	Effective civil and procedural remedies (injunctions, damages for injuries, destruction of infringed and counterfeited goods)	20%
	Effective criminal procedures, including the possibility of imprisonment	20%
	Dedicated policing actions against piracy and counterfeiting	20%
Total		100%

Proposed *IT-IP Index* - Results

$0 < IP-IT Index < 4$	Term of exclusivity	Scope and coverage of essential components	Strength of exclusivity	Enforcement	Total
United States (USA)	1.00	1.00	1.00	0.92	3.92
Singapore (SGP)	0.89	1.00	1.00	0.84	3.73
Germany (GER)	0.89	0.80	1.00	0.89	3.59
United Kingdom (UK)	0.81	0.80	1.00	0.89	3.50
Sweden (SWE)	0.89	0.80	0.80	0.89	3.39
Norway (NOR)	0.89	0.80	0.80	0.88	3.37
France (FRA)	0.89	0.80	0.80	0.81	3.31
Japan (JAP)	0.81	0.80	0.40	0.89	2.90
EU	0.81	0.40	0.40	0.86	2.47

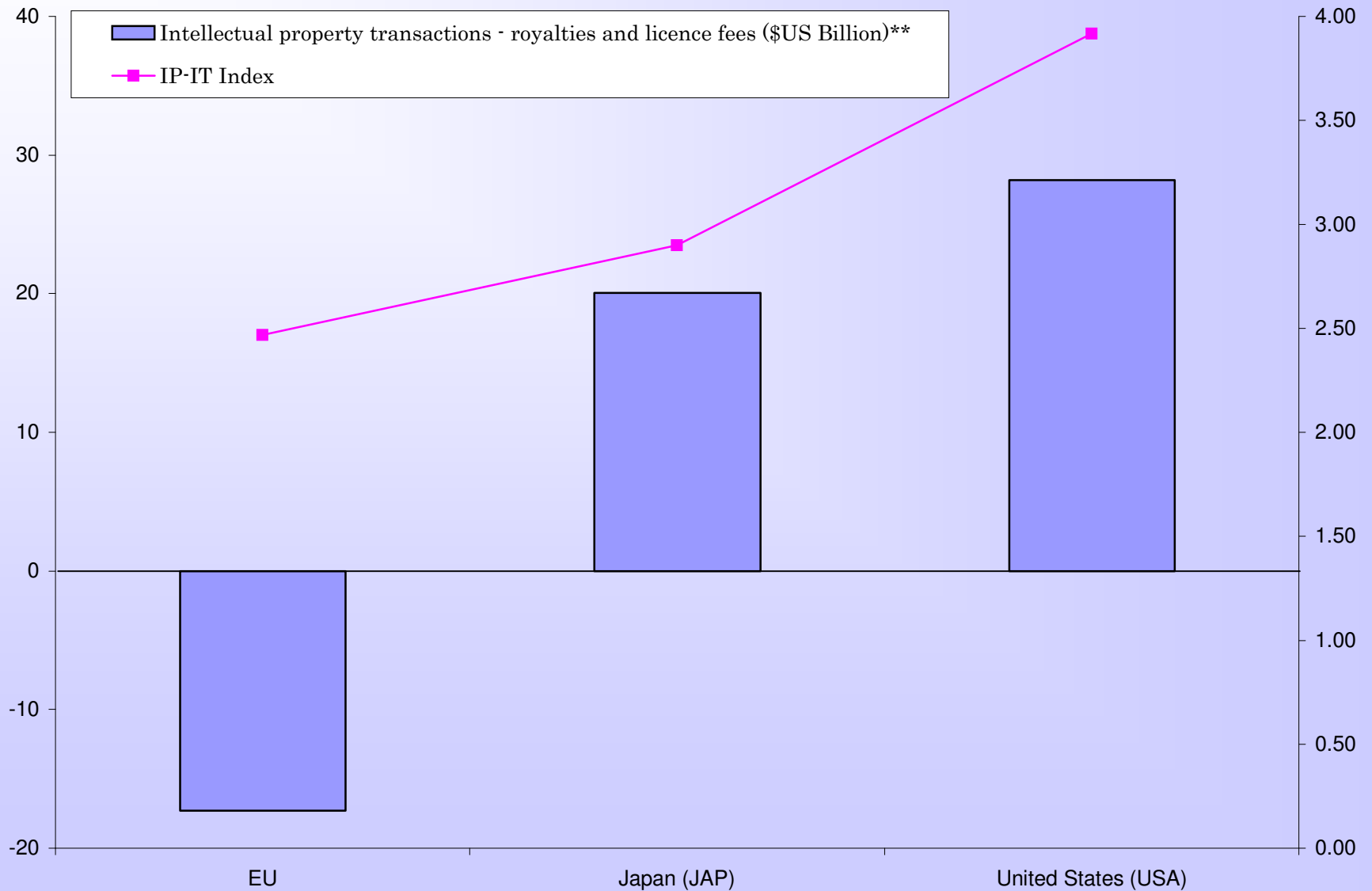
IT-IP Index Vs. % Share of World ICT Production*



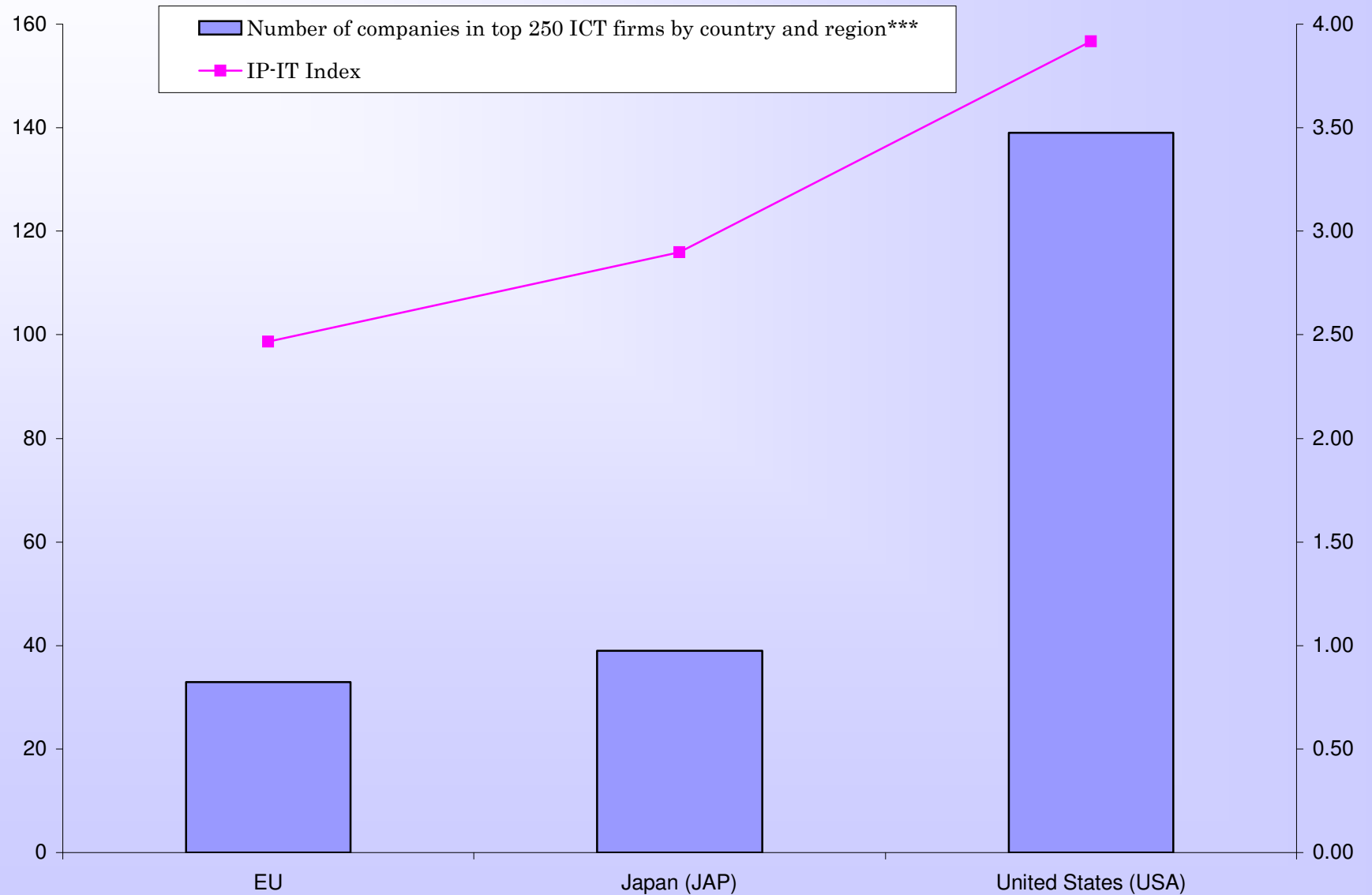
Source: European Innovation Scoreboard 2005 - Giovanni Dosi, Patrick Llerena, Mauro Sylos Labini. Evaluating and Comparing the innovation performance of the United States and the European Union (29 June 2005)

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IT-IP Index Vs. IP-Transactions - Royalties and License Fees (\$US Billion)*



IT-IP Index Vs. Top 250 ICT firms by country and region*



Proposed *IT-IP Index* - Strengths

- Provides a more sector-specific tool for the measuring of national IP environments relevant to the IT sector
- Based on a previous model that measured the national strength of pharmaceutical IP rights [Pugatch, M. P "Measuring the Strength of National Pharmaceutical Intellectual Property Regimes: Creating a New Pharmaceutical IP Index", *Journal of World Intellectual Property*, vol. 9: 4 (July 2006)]
- Expands beyond the measurement of patents
- May enable both policy makers and companies to compare and evaluate the level of IT-related IP protection in different countries



Proposed *IT-IP Index* - Weaknesses

- **Discretionary weighting (though confined to three groups, as explained above) makes the IT-IP Index more arbitrary**
- **It is possible that the 14 indicators above do not fully represent the entire Information Technology IP spectrum**
- **Sample is still quite limited to determine the accuracy of the Index - there is a need for more countries and more time points**



And some self-reservations...

- **While the IT-IP Index may tell us which countries have stronger or weaker Information Technology IP environments compared to other countries, it does not intend to conclude that such regimes are good or bad.**
- **It is not in the capacity of this Index, nor is it our interest, to link the resultant IT-IP Index to any kind of moral judgement.**
- **Clearly each person can draw his own conclusions based on his or her sets of beliefs about the link between the IT-sectors and IPRs.**
- **In this context, it should also be noted that the strength of the index is based on right-holders' perspective.**

Thank you for your attention

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IT-IP Index - UK and the EU - Key Issues

Patentability of computer implemented inventions (CIID)

UK = “Yes” [Section 1(2)(c) of the Patents Act 1977]

- **Court of Appeal’s judgment in *Aerotel v Telco* and *Macrossan’s Application*, October 2006** [<http://www.patent.gov.uk/2006ewcaciv1371.pdf>]
- **UK Patent Office “Practice Notice on Patentability of Computer Programs and Business Methods” November 2006:**
The [patentability] test approved by the Court comprises the following steps: (1) properly construe the claim;
(2) identify the actual contribution;
(3) ask whether it falls solely within the excluded subject matter;
(4) check whether the actual or alleged contribution is actually technical in nature.

EU = “No” - Directive on the patentability of computer-implemented inventions (2002/0047/COD) ends in failure - July 2005

IT-IP Index - UK and the EU - Key Issues

Existence of digital rights management (DRMs) legislation

- DRMs “understood to be the generic term for a set of technologies for the identification and protection of intellectual property in digital form.”
- DRMs also includes technological protection measures” (TPMs) and Rights Management Information” (RMI) [Source: All Party Parliamentary Internet Group, UK, June 06]

UK = “Yes” - Copyright, Designs and Patents Act 1988 (as revised in 2003), Part VII

EU = “Yes” – European Copyright Directive (DIRECTIVE 2001/29/EC), Chapter III, Article 6:

Obligations as to technological measures

1. Member States shall provide adequate legal protection against the circumvention of any effective technological measures, which the person concerned carries out in the knowledge, or with reasonable grounds to know, that he or she is pursuing that objective.

IT-IP Index - UK and the EU - Key Issues

Restrictions on the use of compulsory - refusal to supply an IPR is not treated as an abuse as such

UK = “Yes”

The OFT recognises the role of IPRs in encouraging creative and innovative activity. The legitimate exercise of an IPR by a dominant undertaking is not an abuse. It is, however, possible that the way in which an IPR is exercised may give rise to concern if it goes beyond the legitimate exploitation of the IPR; for example, if it is used to leverage market power from one market to another or to prevent the development of a new market.

Source: Office of Fair Trading, Abuse of Dominant Position, 2004, p. 18

OFT: “In general refusal to licence an intellectual property right is not an abuse” Assessment of conduct, 2004, p.30

IT-IP Index - UK and the EU - Key Issues

Restrictions on the use of compulsory - refusal to supply an IPR is not treated as an abuse as such

EU = “No”

Article 82 EC Treaty

Any abuse by one or more undertakings of a dominant position within the common market or in a substantial part of it shall be prohibited as incompatible with the common market in so far as it may affect trade between Member States.

Such abuse may, in particular, consist in -

- (a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions;
- (b) limiting production, markets or technical development to the prejudice of consumers;
- (c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;
- (d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.

European Commission’s Interpretation of Article 82 seems to be shifting away from the Magill (1995) principle [“CL will invoked in exceptional circumstances and when the refusal to licence prevents the launch of a new product for which there was proven consumer demand], and even from the criteria set by the European Court of Justice (ECJ) in the IMS Health case

Does the European Commission seek to re-define the concept of “Abuse of IPRs” given its legal battle against MS?

DG Competition discussion paper on the application of Article 82 of the Treaty to exclusionary abuses

“Only under exceptional circumstances can the refusal to license an IPR be considered an abuse....[But] the refusal by a dominant company to license access to the IPR could be considered abusive when the five conditions described above are all fulfilled and, furthermore, the refusal to grant a license prevents the development of the market for which the license is an indispensable input, to he detriment of consumers.” (p.67)

A special case arises ... for information necessary for interoperability between one market and another. Although there is no general obligation even for dominant companies to ensure interoperability, leveraging market power from one market to another by refusing interoperability information may be an abuse of a dominant position. Even if such information may be considered a trade secret it may not be appropriate to apply to such refusals to supply information the same high standards for intervention as those described in the previous subsection. (p.68)

Source: <http://ec.europa.eu/comm/competition/antitrust/others/discpaper2005.pdf>

IT-IP Index - UK and the EU - Key Issues

Government procurement policies do not discriminate against the use of proprietary standards

UK = “Yes”: e-Government Interoperability Framework - Open Source Software Use Within UK Government (2004)

There is a need to always procure a solution that gives value for money. This may be an OSS solution, or a proprietary one, or a mixture of both. Decisions should be made on a case by case basis.

There is a need to ensure that interoperability of systems is provided and maintained. The e-GIF is mandated across the public sector and compliance with that is essential to the provision of e-services and joined-up Government.

Every effort should be made to reduce the cost and risk to government systems. Adopting this policy helps achieve that by:

- acquiring best value for money solutions
- removing the reliance on individual IT suppliers
- providing more flexibility in the development, enhancement and integration of systems
- vesting the ownership of bespoke and tailored software code with Government where this offers value for money.

Source http://www.govtalk.gov.uk/documents/oss_policy_version2.pdf

IT-IP Index - UK and the EU - Key Issues

EU = “No”: EUROPEAN INTEROPERABILITY FRAMEWORK FOR PAN-EUROPEAN eGOVERNMENT SERVICES - 2004

To attain interoperability in the context of pan-European eGovernment services, guidance needs to focus on open standards¹⁷. The following are the minimal characteristics that a specification and its attendant documents must have in order to be considered an open standard:

- The standard is adopted and will be maintained by a not-for-profit organisation, and its ongoing development occurs on the basis of an open decision-making procedure available to all interested parties (consensus or majority decision etc.).
- The standard has been published and the standard specification document is available either freely or at a nominal charge. It must be permissible to all to copy, distribute and use it for no fee or at a nominal fee.
- The intellectual property - i.e. patents possibly present - of (parts of) the standard is made irrevocably available on a royalty-free basis.

Source: <http://ec.europa.eu/idabc/servlets/Doc?id=19528>

IT-IP Index - UK =3.5

Category	Sub-category	Weight (%)	Input - yes=1; no=0	Calculation	Weighted
Term of exclusivity	Basic patent protection	40%	20.00	1.00	0.40
	Basic software copyright	40%	50.00	0.53	0.21
	Topographies of semiconductor products	20%	10.00	1.00	0.20
Total		100%			0.81
Scope and coverage of essential components	Patentability of computer implemented inventions (CIID)	40%	1		0.40
	Existence of digital rights management (DRMs) legislation	20%	1		0.20
	Database protection (either via copyrights or via sui-generis rights)	20%	1		0.20
	Prohibition of parallel imports without the IP owner's consent	20%	0		0.00
Total		100%			0.80
Strength of exclusivity	Restrictions on the use of the compulsory license in copyrighted & patented products (use of the "essential facilities" doctrine is restricted to exceptional cases and the concept of "refusal to supply an IPR" is not treated as an abuse)	40%	1		0.40
	Clear limitations on the "fair-use" paradigms based on the Berne three-step test	40%	1		0.40
	Government procurement policies are not biased towards standards that are based on open-source and/or do not discriminate against the use of proprietary standards	20%	1		0.20
Total		100%			1.00
Enforcement	Piracy rates (based on BSA figures)	40%	27%	0.73	0.29
	Civil and procedural remedies (injunctions, damages for injuries, destruction of infringed and counterfeited goods)	20%	1		0.20
	Criminal procedures	20%	1		0.20
	Dedicated policing actions against piracy and counterfeiting	20%	1		0.20
Total		100%			0.89
Total					3.50

IT-IP Index - EU =2.47

Sub-category	Weight (%)	Input - yes=1; no=0	Calculation	Weighted
Basic patent protection	40%	20.00	1.00	0.40
Basic software copyright	40%	50.00	0.53	0.21
Topographies of semiconductor products	20%	10.00	1.00	0.20
	100%			0.81
Patentability of computer implemented inventions (CIID)	40%	0		0.00
Existence of digital rights management (DRMs) legislation	20%	1		0.20
Database protection (either via copyrights or via sui-generis rights)	20%	1		0.20
Prohibition of parallel imports without the IP owner's consent	20%	0		
	100%			0.40
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Government procurement policies are not biased towards standards that are based on open-source and/or do not discriminate against the use of proprietary standards	20%	0		0.00
	100%			0.40
Piracy rates (based on BSA figures)	40%	36%	0.64	0.26
Civil and procedural remedies (injunctions, damages for injuries, destruction of infringed and counterfeited goods)	20%	1		0.20
Criminal procedures	20%	1		0.20
Dedicated policing actions against piracy and counterfeiting	20%	1		0.20
	100%			0.86
Total				2.47