Do We Need to Protect Intellectual Property Rights?

Vladimir Popov

ABSTRACT

Strict protection of IPR can have a negative effect on economic development. Regression of economic growth on these indices produces conventional results (positive effect of stricter protection of IPR on growth) only if indices of institutional capacity (government effectiveness, control over corruption) are not included into the right hand side. If they are included, they kill the effect of IPR protection (because they are very much correlated with the IPR protection indices), so it is hardly possible to separate the effects of stricter IPR protection from the impact of the general strength of institutions.

The same procedure was used to evaluate the impact of the IPR protection regime on the average share of R&D expenditure in GDP and the results were largely the same: without control for the institutional capacity, IPR protection seems to stimulate R&D, but after controlling for the institutional indices the effect disappears.

There is also a strong negative effect of stricter regime of protection of IPR on the proliferation of the most crucial technology of recent decades – computers. The increase in the total number of PCs in 1995-2005, after controlling for the level of development, the size of the country and the institutional index, is negatively correlated with the IPR protection index.

If piracy of intellectual products allows to overcome the negative impact of IPR protection on the dissemination of new technologies, it is reasonable to talk not about *costs of piracy*, but about the benefits of piracy and the *costs of stricter IPR protection*.

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> "He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation."
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> Thomas Jefferson, in *Writings of Thomas Jefferson*, vol. 6, H.A. Washington, Ed.,1854, pp. 180-181.

Remember Mark Twain's "A Connecticut Yankee in King Arthur's Court"? Hank Morgan, a 19th-century worker at Hartford, CN, armament plant, starts civilizing medieval England by setting … a patent office. "…The very first official thing I did, in my administration -- and it was on the very first day of it, too -- was to start a patent office; for I knew that a country without a patent office and good patent laws was just a crab, and couldn't travel any way but sideways or backways" (Twain, 1889, Chapter 9)[1].

Today's conventional wisdom is no different: the strictness of the protection of intellectual property rights is often taken as a measure of "civilized behavior", even though the theoretical foundations of the protection of intellectual property rights in its current form are at best unclear.

[1] Mark Twain (Samuel Clements) himself was holding several patents. The first one (patent #121,992 on December 19, 1871 was granted for an "Improvement in Adjustable and Detachable Straps for Garments". This was a strap attached to the back of a shirt and fastened with buttons to keep it in place and was easy to remove. Twain's invention was not only used for shirts, but for underpants and women's corsets as well. His purpose was to do away with suspenders, which he considered uncomfortable. Twain also received patents for a self-pasting scrapbook in 1873, that was very popular and sold over 25,000 copies, and in 1885 for a history trivia game.

The argument in favor of the patents is that granting monopoly rights to the inventor for a period of time stimulates inventions. The argument against patents is that this same monopoly rights inhibit innovations.

Today TRIPs (trade related intellectual property) rules that resulted from WTO agreements require the protection of patents for no less than 20 years and the protection of copyrights for no less than 50 years.

Does stricter IPR protection promote development? Review of theoretical debates

Despite popular beliefs, theoretical economists are not at all united in the support for stricter intellectual property rights. Patents and copyrights are granted to creators of intellectual products in order to ensure that they are rewarded and thus have stimuli to create these products. The assumption is that there is a market failure in the area of production of intellectual products that should be corrected by the intervention of the government. The general idea may be OK, but the implementation leaves a lot to be desired. Granting a monopoly on the use of inventions and artistic products is a very primitive way to stimulate the creator. As every monopoly, this one is associated with a lot of negative consequences, the major one being building barriers to the dissemination of intellectual products.

Stricter protection of the intellectual property rights is a double-edged sword: it stimulates innovations (advancement of culture) by rewarding the inventor (artist) only at a price of inhibiting the dissemination of inventions (works of art). Many authors have cast serious doubt upon the usefulness of stricter protection of IPR - intellectual property rights (see, for instance: Chang, 2001; Boldrin, Levine, 2002).

May be the most powerful, persuasive and complete argument against intellectual property rights is made in a recent book "*Against Intellectual Monopoly*" by Michele Boldrin and David K. Levine – two American economists with very strong academic credentials (top 5% of the economists of the world). The full text of the book – in line with the authors' beliefs – was and is available online before and after its publication by the Cambridge University Press in July 2008 (Boldrin and Levine, 2008). They come to the conclusion that in most cases intellectual property protection does more economic harm than good and ought to be eliminated.

On the one hand, the usual justification for the IPR protection – the need to stimulate the creation of intellectual products – is generally wrong and is not supported by evidence.

BOX. Boldrin and Levine: "If intellectual property is the Viagra of innovation, then it has been prescribed on the basis of the wrong diagnosis to a patient who is not impotent"

In a famous 1958 study on the economics of the patent system, the distinguished economist Fritz Machlup concluded that

If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.

Almost fifty years later, the first half of this illustrious sentence is more valid than it has ever been. The other half is obsolete. At the time Machlup wrote his report the cancer that is intellectual property was detectable but its action seemed restricted to a few, possibly not vital, economic organs. Nowadays, this cancer is attacking the most vital centers of our economy: metastasis is near and so it is time to face the intellectual monopoly threat squarely, and to take action.

Intellectual monopoly apologists like to portray intellectual property as a cure, a powerful and beneficial medicine alleviating the innovative impotence of competitive markets. If intellectual property is the Viagra of innovation, then it has been prescribed on the basis of the wrong diagnosis to a patient who is not impotent. It may occasionally provide an initial spurt of innovational enthusiasm. Unfortunately, this subsides rather rapidly and is replaced by a rapacious desire to obtain economic satisfaction through the exclusion of as many people as possible from fruitful intellectual intercourse.

Source: Boldrin and Levine, 2008.

Analogies with "piracy" and "stealing the product" are inappropriate because the owner/creator of the intellectual product, unlike the owner of the physical product, does not stop to possess it after it has been "pirated". What IPR protection does is not preventing "stealing", but providing the inventor/creator with the monopoly, which is generally a very primitive, inefficient and full of negative consequences way to stimulate inventions. It has been demonstrated that the creation of most intellectual products was not stimulated by the IPR protection and that these products

would have been created anyway without any IPR protection because the creator always has the benefit of the first sale and the product cannot be copied instantly[2].

Try to answer the simplest question: where is the line separating the results of fundamental research (that are considered to be a public good that should provided at the society's expense and should be free for all) and the results of applied research (which are made the property of the inventor for the period of the duration of the patent)?

Think about TCP protocols on which Internet is based. Most observers agree today that the early decision not to patent these protocols contributed to the rapid spread on Internet. It is generally agreed, for example, that had the TCP-protocols been patented, the proliferation of the Internet would proceed much more slowly. Sakakibara and Bransletter (2001) studied the 1998 Japanese patent law reforms and did not find any evidence of its positive impact. These and a number of other results "…raise the possibility that strengthened intellectual property rights have led to the socially wasteful accumulation of defensive patent portfolios." (Sakakibara and Bransletter, 2001, p. 99).

The simultaneous deciphering of the genome by the The Human Genome Project that was an international scientific research project funded by governments and universities, and by a private *Celera* corporation that wanted to get patents for the particular genes, created a controversy in a scientific community. Is it fundamental research or applied research? And why the results of the applied research should be patented?

Patentability of genes has been legal since 1980. That year, in Diamond v. Chakrabarty, the Supreme Court found in favor of Ananda Mohan Chakrabarty, who used bacteria to engineer a microbe that dissolves oil. A striking 20 percent of all human genes have been patented. However, now that all 20,000 to 25,000 human genes have been mapped and sequenced through the Human Genome Project, they are in the public domain, meaning they would no longer be considered "new" for the purposes of patents. Now, patents on human genes must specify a new use, such as a diagnostic test (Landau, 2009).

[2] "…The initial print run for *Harry Potter and the Half-Blood Prince* was reported to be 10.8 million hardcover copies. So we can realistically conclude that if J. K. Rowling were forced to publish her book without the benefit of copyright, she might reasonably expect to sell the book to a publishing house for several million dollars – or more. This is certainly quite a bit less money than she earns under the current copyright regime. But it seems likely, given her previous occupation as a part-time French teacher, that it would still give her adequate incentive to produce her great works of literature." (Boldrin, Levine, 2008).

Why patents should be granted to companies that invent something, but largely at the expense of the taxpayers, and that are using the results of previous fundamental research and direct government funding as a supplement to their own research funds? In the US in the most R&D intensive pharmaceutical industry only 43% of funding for research comes from companies themselves, whereas 29% - from the state National Health Institute and the rest – from charitable foundations (Chang, 2001, p.31).

Even if natural advantages of the creator of the invention or the work of art are considered to be insufficient to provide appropriate stimuli for technical progress and the advancement of culture, one can imagine the alternative regime of stimulating creative efforts without impeding the dissemination. All inventions are registered by the state, but enter the public domain not in 20 years, like it is the case today, but immediately. Inventor is rewarded by the state – the reward is proportionate to the volume of output created in the first 20 years with the use of patented technology. The reward is paid from the government budget or from the non-budgetary Fund of Arts and Science to the inventor. Every resident firm can use the technology free of charge, whereas non-residents perhaps should pay for the patent to the state (that holds the patent/copyright). Inventor in this case is rewarded, but not at the expense of slowing down the dissemination of innovations[3].

In short, it is important to recognize that the current system of protection of intellectual property is very primitive and inefficient even from the point of view of developed countries themselves. There are political economy factors that explain why this sub-optimal system still exists (small organized groups, powerful lobbies, are more successful in pushing the government to pursue policies consistent with their interests than large unorganized groups, like the society as a whole).

Second, even if there is a need to protect intellectual property rights, there is no reason to force developing countries to protect them as strictly as developed countries do. There seems to be an agreement that the accelerated development of the poor countries is a priority for the world and for the rich countries in particular (since it reduces the threat of terrorism, for example). And there seems to be a consensus among economists and policymakers that the transfer of

[3] This system existed in centrally planned economies (former communist countries) and contributed to technical progress. The problem was that this strength was far outweighed by other weakness – the lack of appropriate stimuli for innovations: enterprises were not interested in introducing new products and technologies because this contradicted the main performance evaluation criteria – meeting the production quota. Stopping the plant for reconstruction in order to introduce new technologies and new products at the expense of not meeting the production quota was not a preferable option for the manager (Shmelev, Popov, 1989).

technology to the poor countries is the most efficient way of assistance. Yet, the TRIPs agreements are undoubtedly limiting the transfer of technology to the South.

There is a large body of literature that emerged in recent years and that questions the universality of recipes for optimal economic policy in developed and developing countries. Simply put, this literature states that what may be good for developed countries is not necessarily good for countries that are farther away from the technological frontier and are catching up with developed nations[4]. One of such areas is the protection of intellectual property rights – here Western regulatory requirements are perceived to be too strict for poorer countries.

The argument is that most Western countries 100 years ago did not have either *laissez faire* markets, or today's strict standards of protection of intellectual property rights. Advocating the acceptance of these standards in less wealthy parts of the world, and even threatening developing countries with economic sanctions in case they refuse to accept such standards, the West, whatever the good intentions may be, *de facto* undermines the competitiveness of poorer countries and preserves their backwardness. There are even accusations of double standard (when the West was industrializing, it was not maintaining these standards) and "kicking away the ladder" (after the West got rich through exploitation of colonies and child labor, it does everything to slow down the growth of "the other world"; Chang, 2002).

It has been suggested that trade negotiators are "captured" by industry and that intellectual property policies can become overprotective, even if trade policy negotiators are equally concerned with all domestic interests, those of both consumers and producers, because intellectual property is the only available tool by which cross-border externalities can be recaptured by the innovating country. To a trade policy negotiator, profit earned abroad is unambiguously a good thing, and the consumers' surplus conferred on foreign consumers does not count at all (Scotchmer, 2003). Whatever the reasons are, TRIPS are making it more difficult for the poor countries to develop not only in economic, but also in social terms. Copyrights hinder the dissemination of information, knowledge and culture, whereas patents on pharmaceutical products limit the ability of the poor countries to fight diseases and decrease mortality. It is only in cases of national emergency, such as a really bad AIDS epidemic in the South of Africa, that drugs can be purchased/produced with no regard to patent protection.

[4] Two recent papers (Acemoglu, Aghion, Zilibotti, 2002a, 2002b) suggested some theoretical explanations for these differences in optimal policies in the North and in the South looking at two areas – promotion of vertical integration and imitation of technology versus indigenous R&D. See for details: Polterovich, Popov, 2004, 2006).

Third, even if there is a need for protection of intellectual property rights in developing countries, there is no reason to link it to trade liberalization agenda as it is currently happening within the WTO. There is the World Intellectual Property Organization (WIPO) founded in the end of the XIX century, but TRIPS agreements were worked out and introduced within the WTO framework. The reason is that in WIPO Western countries are in the minority and have no leverage on developing countries, whereas in WTO the most crucial for developing countries issue of trade liberalization and the access to Western markets is linked to the protection of intellectual property rights.

Developing countries thus find themselves between the rock and the hard place: either the access to Western markets with no easy transfer of technology or easy transfer of technology without any access to the Western markets. Meanwhile, both technological transfers from the West and access to Western markets both play a crucial role for developing countries.

To an extent piracy alleviates these problems, which is the rationale to talk not about *costs of piracy*, but about the benefits of piracy and the *costs of stricter IPR protection*.

Total losses of Western companies from piracy were estimated by IIPA at $16.4 billion in 2007, ($2.9 billion – China, $2.7 billion – Russia). However, losses of developing countries from the implementation of TRIPs are several times higher, i.e. piracy compensates only a fraction of what developing countries are loosing from TRIPs. The former chief of trade policy research in the World Bank, Michael Finger, found that through the TRIPS Agreement, developing countries took on as legal obligation a cost of USD 60 billion per year, but there is no legal obligation in the agreement on any member to provide anything in exchange (Finger, 2002). World Bank report (2002) estimates that the net annual increase in patent rents resulting from TRIPS for the top six developed countries in this field will be USD 40 billion (with the top beneficiaries being the United States with USD 19 billion, Germany USD 6.8 billion, Japan USD 5.7 billion, France USD 3.3 billion, United Kingdom USD 3 billion and Switzerland USD 2 billion). Developing countries that will incur major annual net losses include South Korea (USD 15.3 billion), China (USD 5.1 billion), Mexico (USD 2.6 billion), India (USD 903 million) and Brazil (USD 530 million). In addition, there are financial and human resource costs for administering and enforcing IP laws and policies, requiring law reform, enforcement agencies and legal expertise that have to be borne by the developing country.

The costs of TRIPs for the global South are so high because developing countries are mostly importers/users of intellectual property. Out of 120, 000 applications in 2004 (WIPO statistics) US residents accounted for 35%, Japan – for 17%, Germany – 12%, France and UK – 4% each, whereas all developing countries – only for 6.3% (Shashikant, 2005).

By way of comparison, official development assistance of Western countries to developing countries ODA in 2001 was less than $60 billion and only in recent years, after 9/11 terrorist attack has increased to over $100 billion.

Recently WIPO's Japan Office concluded a major study of the economic impact of IP systems in six Asian countries – China, India, Japan, Malaysia, the Republic of Korea and Vietnam (WIPO, 2007). The reports examined the impact of the IP system on areas such as research and development, foreign direct investment and technology transfer. The research results indicate a positive correlation between the strengthening of the IP system and subsequent economic growth.

Other studies, however, do not find evidence that stricter patent protection contributed to technical progress and growth. Switzerland, for instance, experienced a peak in the innovation activity in late 19th century, when the national Patent law was non-existent or very weak (Chang, 2001). The surveys of the US companies suggest that most of them would have been financing the innovation activities in any case – whether the results of these activities would have been protected by patents or not. They claimed that the most important protection of their intellectual products results not from formal patents, but from their technological leadership that makes it impossible for the competitors to replicate their products/technologies for years, if not for decades (Chang, 2001).

Some authors even find that increased patent protection leads to less innovation. "We find evidence that patents substitute for R&D effort at the firm level; they are associated with lower R&D intensity. The results suggest that stronger patents may have facilitated entry by firms in niche product markets, while spawning "patent portfolio races" among capital-intensive firms (Bessen and Hunt, 2003; Hall and Ham, 1999, - cited in Boldrine and Levine, 2008). Econometric analysis of Japanese and U.S. patent data on 307 Japanese firms finds no evidence of an increase in either R&D spending or innovative output that could plausibly be attributed to patent reform (Sakakibara and Branstetter, 2001).

Boldrine and Levine (2008) in chapter 8 examine the intensity of creation of classical music before and after the introduction of the European copyright laws (around the end of the 18th century, first in Britain, then in continental Europe). They find that "the number of composers per million declined everywhere, but it declined considerably faster in the UK after the introduction of copyright than in Germany or Austria, and at about the same rate as Italy. So there is no evidence here that copyright increased musical output… Whatever the mechanism affecting composers' incentives, copyright protection was not an important part of it".

BOX: Did copyright law stimulate the musical genius of Giuseppe Verdi?

The evolution of copyright from an occasional grant of royal privilege to a formal and eventually widespread system of law should in principle have enhanced composers' income from publication. The evidence from our quantitative comparison of honoraria received by Beethoven, with no copyright law in his territory, and Robert Schumann, benefiting from nearly universal European copyright, provides at best questionable support for the hypothesis that copyright fundamentally changed composers' fortunes. From the qualitative evidence on Giuseppe Verdi, who was the first important composer to experience the new Italian copyright regime and devise strategies to derive maximum advantage, it is clear that copyright could make a substantial difference. In the case of Verdi, greater remuneration through full exploitation of the copyright system led perceptibly to a lessening of composing effort.

Source: Frederic Scherer, cited in Boldrin and Levine, 2008.

History of Intellectual Property Rights Protection

Britain was the first country to adopt a patent law in 1623, although the use of patents (privileges to inventors of new arts and machines) can be traced to 15th century Venice and 16th century Saxony. The popular view though is that the British patent law did not really exist before the revision of 1852 (Chang, 2002).

The US legal protection of intellectual property goes back to the Jefferson-Madison debates over the constitution (Thibadeau, 2004). England in early XIX century was the only country with patent and copyright laws. There was a notion of ownership of Literature (Copyright) and Art (Patents). The terms "copyright" and "patent" were in use. However, in England, these

Intellectual Properties were protected as ordinary property, owned for life and heirs. Jefferson was arguing vigorously against the English in-perpetuity model that Madison seems to not have much of a problem with (Thibadeau, 2004).

It is sometimes regarded as a historical irony that Thomas Jefferson, before becoming the third president of the US, was heading the first patent office (as a secretary of state under George Washington in 1790-93) after the first Patent Act was passed by Congress on April 10, 1790. As a slave owner Jefferson apparently did not object to ownership of people, but was opposed on philosophical and moral reasons to the ownership of ideas.

Most of Western countries adopted patent laws in the first half of the 19th century (Russia – 1812), but it was not until 1883 that the first international treaty (Paris Convention of the International Union for the Protection of Industrial Property) was signed by 11 countries (Guatemala, San Salvador and Serbia were on the list of original signatories, but not US and UK). Most countries joined the Convention in the 20th century, many – only in the 2nd half of the 20th century (USSR – 1965, Argentina – 1967, etc.).

The story of 19th and 20th century is the story of pervasive piracy among Western countries themselves. Britain after repealing the Corn Laws in 1848 was promoting free trade across the globe, but at the same time was accusing other countries, notably Germany, for stealing British inventions and trademarks. Germany herself, refusing to recognize British and American patents until 1877 (when the German Patent law was adopted) was threatening Switzerland with trade sanctions unless it adopts a Patent law. In late 19th century US was pushing other countries to improve their national patent systems, but until 1891 refused to recognize foreign copyrights (which was especially convenient for publishing British literature) even though works by US citizens were protected by copyright. Khan (2004) claims that the United States benefited from piracy of foreign literature in 1790-1891.

The Netherlands and Switzerland are two Western countries that longer than others were refusing to adopt a strict protection of IPR. Switzerland was not protecting IPR at all before 1888, whereas later the rules of protection were very lax (for instance, no protection of chemical substances, only chemical processes). It was not until 1954 that Swiss patent law was made consistent with that of other western countries, and it was not until 1978 that this law allowed registering patents for chemical substances. In Germany chemical substances were not patentable until 1967, in countries of Northern Europe – until 1968, in Japan – until 1976, in Spain – until 1992. And medical drugs became patentable in Germany and France in 1967, in Italy – in 1979, in Spain and Canada – in the 1990s (Chang, 2002).

BOX: "Happy Birthday to You!" If you sing it publicly, you are a pirate!

The melody of "Happy Birthday to You" comes from the song "**Good Morning to All**", which was written and composed by American sisters Patty Hill and Mildred J. Hill in 1893.[3] They were both kindergarten school teachers in Louisville, Kentucky, developing various teaching methods at what is now the Little Loomhouse. The sisters created "Good Morning to All" as a song that would be easy to sing by young children. The combination of melody and lyrics in "Happy Birthday to You" first appeared in print in 1912, and probably existed even earlier.[7] None of these early appearances included credits or copyright notices.

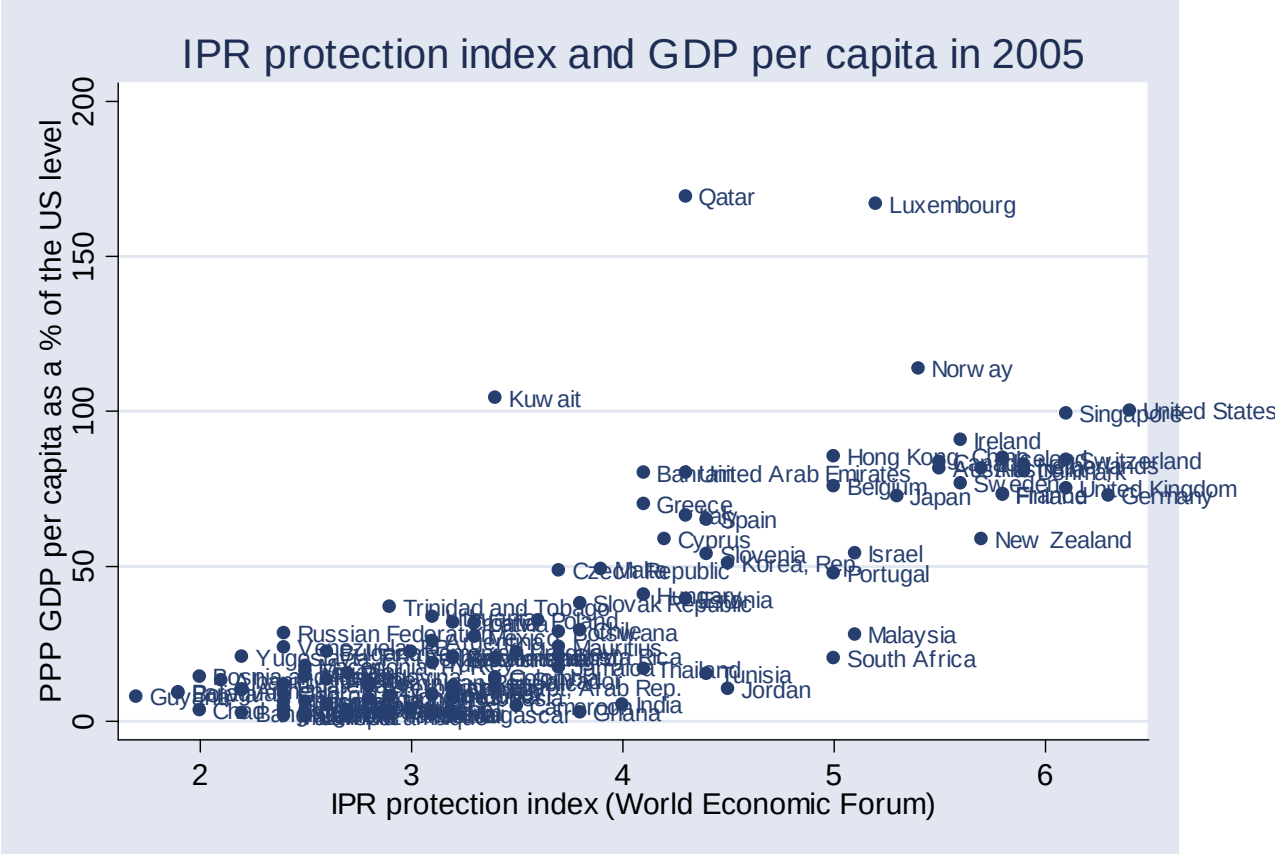
The Summy Company registered for copyright in 1935, crediting authors Preston Ware Orem and Mrs. R.R. Forman. In 1990, Warner Chappell purchased the company owning the copyright for US$15 million, with the value of "Happy Birthday" estimated at US$5 million. Based on the 1935 copyright registration, Warner claims that U.S. copyright won't expire until 2030, and that unauthorized public performances of the song are technically illegal unless royalties are paid to it. In European Union (EU) countries the copyright in the song will expire December 31, 2016.

The actual U.S. copyright status of "Happy Birthday to You" began to draw more attention with the passage of the Copyright Term Extension Act in 1998. When the U.S. Supreme Court upheld the Act in *Eldred v. Ashcroft* in 2003, Associate Justice Stephen Breyer specifically mentioned "Happy Birthday to You" in his dissenting opinion. Professor Robert Brauneis went so far as to conclude "It is doubtful that 'Happy Birthday to You', the famous offspring of 'Good Morning to All', is really still under copyright", in his heavily researched 2008 paper.

Source: Wikipedia.

Did technical progress stopped in countries that were latecomers to patenting and copyrighting business? It does not seem to be the case. The general argument of the defenders of IPR is that developed countries are on the edge of the technical progress, spend more on R&D than others, and hold the lion's share of all patents in the world because they have stricter protection of IPR. Fig. 1 that plots indices of IPR protection against PPP GDP per capita exhibits the strong positive correlation between the two. (The IPR protection indices are published regularly in the *Global Competitiveness Report* and come from the survey of about 8000 company executives in over 100 countries – unfortunately, available only for recent years).

Fig. 1

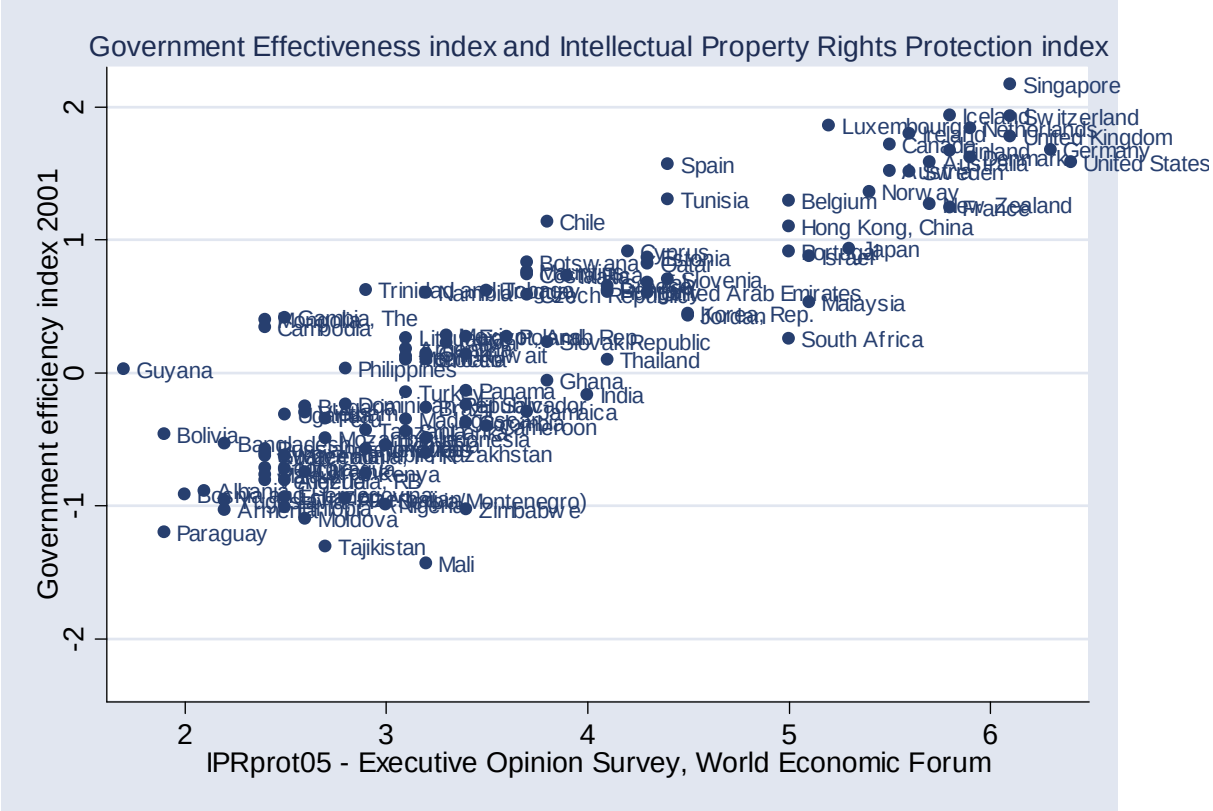


Source: World Development Indicators; Global Competitiveness Report.

But if one accounts for the better quality of institutions, the positive relationship disappears; i.e. we cannot tell with certainty, whether it is the good institutions that promote technical progress or the system of protection of IPR. The reason is that the IPR index is very much correlated with the government effectiveness WB index (fig. 2) and other measures of the institutional quality. Hence, if one uses the government effectiveness index as a measure of the quality of the institutions, the correlation with the per capita GDP would be even better than that of IPR protection index (fig. 3).

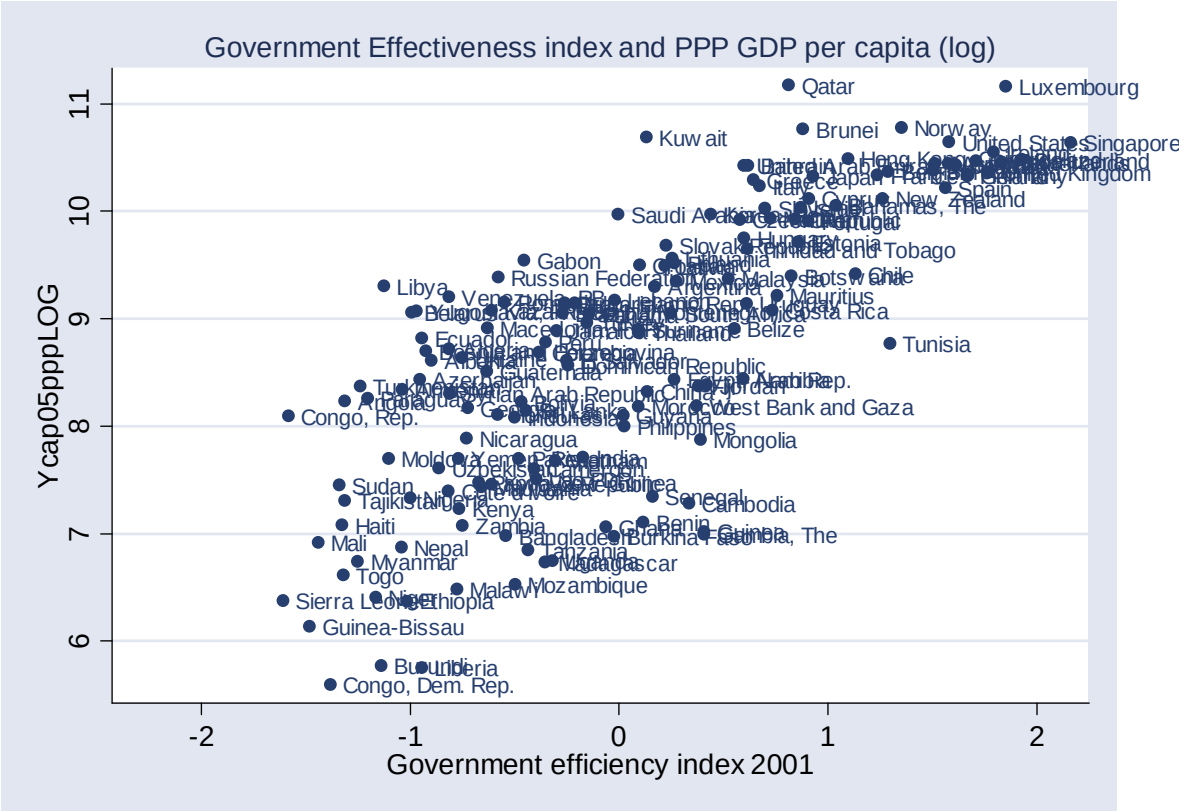
Later I report regressions showing that the effect of IPR protection on growth, the level of development (GDP per capita), and R&D expenditure as a % of GDP disappears, if one controls for the quality of institutions.

Fig. 2



Source: World Bank; Global Competitiveness Report.

Fig. 3



Source: World Bank.

BOX. “Mickey Mouse Protection Act”

The Copyright Term Extension Act (CTEA) of 1998 extended copyright terms in the United States by 20 years. It is also known as **Sonny Bono Copyright Term Extension Act**, **Sonny Bono Act**, or pejoratively, as “Mickey mouse protection Act” (Disney extensive lobbying efforts inspired the nickname).

It effectively 'froze' the advancement date of the public domain in the United States for works covered by the older fixed term copyright rules. Under this Act, additional works made in 1923 or afterwards that were still copyrighted in 1998 will not enter the public domain until 2019 or afterward (depending on the date of the product) unless the owner of the copyright releases them into the public domain prior to that or if the copyright gets extended again. Unlike copyright extension legislation in the European Union, the Sonny Bono Act did not revive copyrights that had already expired.

In addition to Disney, California congresswoman Mary Bono (Sonny Bono's widow and Congressional successor) supported the act. Mary Bono, speaking on the floor of the United States House of Representatives, said:

Actually, Sonny wanted the term of copyright protection to last forever. I am informed by staff that such a change would violate the Constitution. ... As you know, there is also [then-MPAA president] Jack Valenti's proposal for term to last forever less one day. Perhaps the Committee may look at that next Congress.

Opponents of the *Bono Act* consider the legislation to be corporate welfare and have tried (but failed) to have it declared unconstitutional, claiming that such an act is not "necessary and proper" to accomplishing the Constitution's stated purpose of "promot[ing] the progress of science and useful arts". They argue that most works bring most of the profits during the first few years and are pushed off the market by the publishers thereafter. Thus there is little economic incentive in extending the terms of copyrights except for the few owners of franchises that are wildly successful, such as Disney. They also point out that the Tenth Amendment can be construed as placing limits on the powers that Congress can gain from a treaty. More directly, they see two successive terms of approximately 20 years each (the Copyright Act of 1976 and the Bono Act) as the beginning of a "slippery slope" toward a perpetual copyright term that nullifies the intended effect and violates the spirit of the "for limited times" language of the

United States Constitution, Article I, section 8, clause 8.

Another argument against the Bono Act is an "offshore production" argument: that, for example, derivative works could be created outside the United States in areas where copyright would have expired, such works advancing science or the useful arts, and that US law would prohibit these works to US residents. For example, a movie of Mickey Mouse playing with a computer could be legally created in Russia and children worldwide could possibly benefit from watching it, but the movie would be refused admission for importation by US Customs because of copyright, resulting in a deprivation to American children. The first Winnie-the-Pooh book was published in 1926 and would have been public domain in 2001.

Source: Wikipedia.

Protection of IPR, economic growth and computerization – cross-country comparison

It may seem that protection of IPR stimulates growth: after controlling for the usual variables in the growth regressions (size of the country – total population, post-communist dummy, initial level of GDP per capita in 1975, share of investment in GDP, population growth rates) it turns out that GDP per capita growth rates in 1975-99 depend positively and significantly on IPR protection index:

$$\underset{}{\textbf{\textit{GROWTH}}} = \underset{(2.0)}{2.7*10^{-9}\textbf{\textit{POP}}} - \underset{(-2.7)}{2.2\textbf{\textit{TRANS}}} - \underset{(-4.6)}{0.05\textbf{\textit{Ycap75us}}} - \underset{(-3.1)}{0.7\textbf{\textit{n}} + \underset{(4.4)}{\textbf{\textit{0.13 INV}}} + \underset{(5.3)}{1.1\textbf{\textit{IPRprot05}}} - 2.8$$

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 76, R-squared = 0.6346

But IPR protection is very much correlated with the strength of institutions, so if institutional variables (such as government effectiveness index) are added to the right hand side, this kills the effect of IPR protection[5]:

$$\underset{}{\textbf{\textit{GROWTH}}} = \underset{(4.1)}{2.5*10^{-9}\textbf{\textit{POP}}} - \underset{(5.4)}{1.7\textbf{\textit{GE}}} - \underset{(1.9)}{0.04\textbf{\textit{IC}}} - \underset{(-5.2)}{0.05\textbf{\textit{Ycap75us}}} + \underset{(2.5)}{\textbf{\textit{0.08 INV}}} - \underset{(-0.3)}{0.08\textbf{\textit{IPRprot05}}} - 1.2$$

[5] Besides, there is an endogeneity problem – IPR protection indices are available only for the recent years, so they themselves are the result of previous growth.

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 72, R-squared = 0.7163

$$\textbf{\textit{GROWTH}} = 2.3\textbf{\textit{GE}} + 1.7*10^{-12}\textbf{\textit{Y75}} - 0.07\textbf{\textit{Ycap75us}} \quad -0.06\textbf{\textit{IPRprot05}} + 2.7$$

(5.4) (2.2) (-6.3) (0.2)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 76, R-squared = 0.5175, where:

GROWTH – annual average growth rate of GDP per capita in 1975-99,

n –annual average population growth rate in 1975-99, %,

INV – average share of investment in GDP in 1975-99, %,

Ycap75us – PPP per capita GDP in 1975 as a % of the US level, %,

Y75 – PPP GDP in 1975 in $,

POP – population of a country, average for 1980-99, persons,

IC – average investment climate index in 1984-90, ranges from 0 to 100, the higher the better (ICRG, World Bank),

GE- government effectiveness index, ranges from -2.5 to +2.5, the higher the better (World Bank),

TRANS – transition dummy variable (equals 1 for post-communist countries, China and Vietnam and 0 for all other states),

IPRprot05 – index of IPR protection, ranges from 1 to 7, the higher the better (Global Competitiveness Report).

The conventional wisdom that protection of IPR stimulates R&D is supported by evidence only if the institutional indices are not included as explanatory variables:

$$\textbf{\textit{R\&D}} = 6.7*10^{-13}\textbf{\textit{Y75}} + 0.5\textbf{\textit{TRANS}} + 0.08\textbf{\textit{Ycap75us}} + 0.3\textbf{\textit{IPRprot05}} - 0.9$$

(2.1) (2.3) (1.8) (3.2)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 56, R-squared = 0.6795, where:

R&D – average share of R&D expenditure in GDP in 1980-99, %.

If the corruption perception index (CPI) is included into the right hand side, the coefficient of the IPR protection index looses significance:

$$\textbf{\textit{R\&D}} = 6.2*10^{-13}\textbf{\textit{Y75}} + 0.5\textbf{\textit{TRANS}} + 0.01\textbf{\textit{Ycap75us}} + 0.05\textbf{\textit{CPI}} + 0.13\textbf{\textit{IPRprot05}} - 0.5$$

(2.1) (2.1) (4.3) (0.8) (1.0)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 53, R-squared = 0.7352.

And with CPI the results are no worse than with IPR:

$$\textbf{\textit{R\&D}} = 6.5*10^{-13}\textbf{\textit{Y75}} + 0.8\textbf{\textit{TRANS}} + 0.01\textbf{\textit{Ycap75us}} + 0.1\textbf{\textit{CPI}} - 0.2$$

(2.4) (2.8) (3.9) (2.9)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 35, R-squared = 0.6738, where:

CPI – corruption perception index from Transparency International in 1995 (ranges from 0 to 10, the higher, the less corrupt).

Does stricter IPR protection stimulate proliferation of new technologies? It is possible to show that dissemination of one of the most crucial IT technologies of recent decades – personal computers (PC) – is inhibited rather than assisted by the stricter protection of IPR.

The total number of computers does not appear to depend on the IPR protection after controlling for the size and the level of development of the country:

$$\textbf{\textit{PCtot05}}=851\textbf{\textit{PopDens}}-0.04\textbf{\textit{POP05}}+2216002\textbf{\textit{R\&D}}+0.00002\textbf{\textit{Y05}}-3190852\textbf{\textit{Ycap05log}}-5114866$$

(2.7) (-7.7) (2.6) (16.9) (-2.8)

$$\textbf{\textit{TRANS}} + 850173\textbf{\textit{HC}} + 243270\textbf{\textit{IPRprot05}} + 2.1*10^{7}$$

(-2.6) (2.4) (0.4)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 57, R-squared = 0.9665, where:

PCtot05 – total number of PCs in 2005,

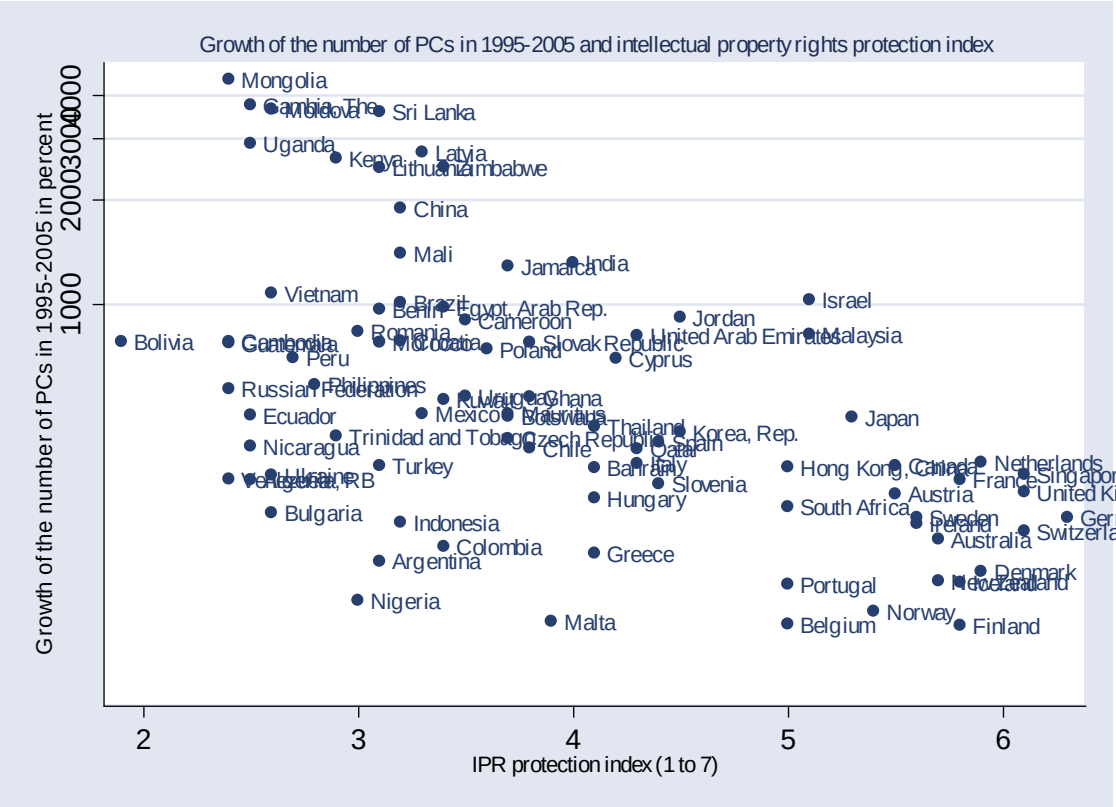
PopDens – density of population, number of people per 1 sq. km,

log***Ycap05*** **–**logarithm of PPP per capita GDP in 2005 in dollars,

HC- number of years of education per person among people over 25 years old, average for 1975-99.

And the speed of computerization in 1995-2005 depends negatively on IPR protection. What countries experienced the fastest growth of the number of PCs in 1995-2005? Fig. 4 suggests that these were countries that were not very keen in protection of IPRs.

Fig. 4



Source: World Bank; Global Competitiveness Report.

This negative relationship is not caused by the fact that IPR protection is less strict in poorer countries with low PCs base and hence faster growth in the number of PCs. Even after controlling for the level of GDP per capita, the relationship still holds:

PCgrowth95_05 = 0.02***Ycap05*** - 545log***Ycap05*** -126***IPRprot05*** + 5981

(1.8) (-2.7) (-1.7)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 84, R-squared = 0.3022

And after controlling for the government effectiveness index in 2002, the negative effect of IPR protection on the growth of the number of personal computers in the country becomes even larger and more significant:

PCgrowth95_05 = 0.02***Ycap05*** +735***GE***- 781***Ycap05log*** -539***IPRprot05*** + 9351
(2.2) (2.5) (-3.7) (-2.5)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 84, R-squared = 0.3665

Another measure of progress in culture and science is the number of book titles published in a country. The results for the total number of titles of books and science books published annually in a country are inconclusive, but at least there is no positive relationship with the IPR protection regime. The number of book titles published annually and book titles on science does not appear to depend on the regime of IPR protection[6].

So, to conclude:

- IPR protection is very much correlated with the strength of institutions, so if institutional variables (such as government effectiveness index) are added to the right hand side, this kills the effect of IPR protection on growth.
- The conventional wisdom that protection of IPR stimulates R&D is supported by evidence only if the institutional indices are not included as explanatory variables. If the corruption perception index (CPI) is included into the right hand side, the coefficient of the IPR protection index looses significance.
- The speed of computerization (the increase in the number of PCs) in 1995-2005 depends negatively on IPR protection. Countries that experienced the fastest growth of

[6] It turns out that the total number of book titles (and titles of books on science and applied science) does not depend significantly on the regime of protection of intellectual property rights, after controlling for all possible other variables (level of development, size of the country, human capital, R&D spending, post-communist dummy, GINI coefficient of income inequalities). In one regression the influence of IPR protection is negative, but the regression is statistically unreliable (9 explanatory variables and 22 points only).

the number of PCs in 1995-2005, were exactly the ones that were not very keen in protection of IPRs (fig. 4).

Piracy, IPR protection indices and growth

Data on piracy of intellectual products come from the International Intellectual Property Alliance (IIPA). These estimates are based on the gap between the demand for and the legal supply of intellectual products[7]. For instance, for business software the demand estimates are derived from the data on the total number of computers (that are not taken from the national or WB statistics, but also estimated by IIPA) and assumptions about how many software programs are installed on each computer[8]. Similarly, for movies, the demand estimates are derived by (1) multiplying the (estimated) number of video rental shops that rent pirated videos by the average number of pirated videos rented a year, (2) by multiplying the number of TVs that are used to show pirated videos by the average number of videos shown a year, (3) by estimating the number of publicly shown video, etc.

Even though the average number of software programs per computer (or movies per video rental shop and per TV) is a rather arbitrary estimate, the procedure is reasonable and probably the best possible way to estimate the magnitude of "piracy". But unfortunately, the detailed methodology is not published; the biggest unknown, which does not allow checking the IIPA piracy estimates, is the data on the legal *supply* of software, which are evaluated by the IDC (a global market intelligence and consulting firm) collecting the confidential information from the US companies[9]. Another problem is that prices of software sold to different countries are different, so even the knowledge of total revenues from export of software by US companies without the information about prices does not allow estimating the volume of exports of software.

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[7] Methodology (2008).

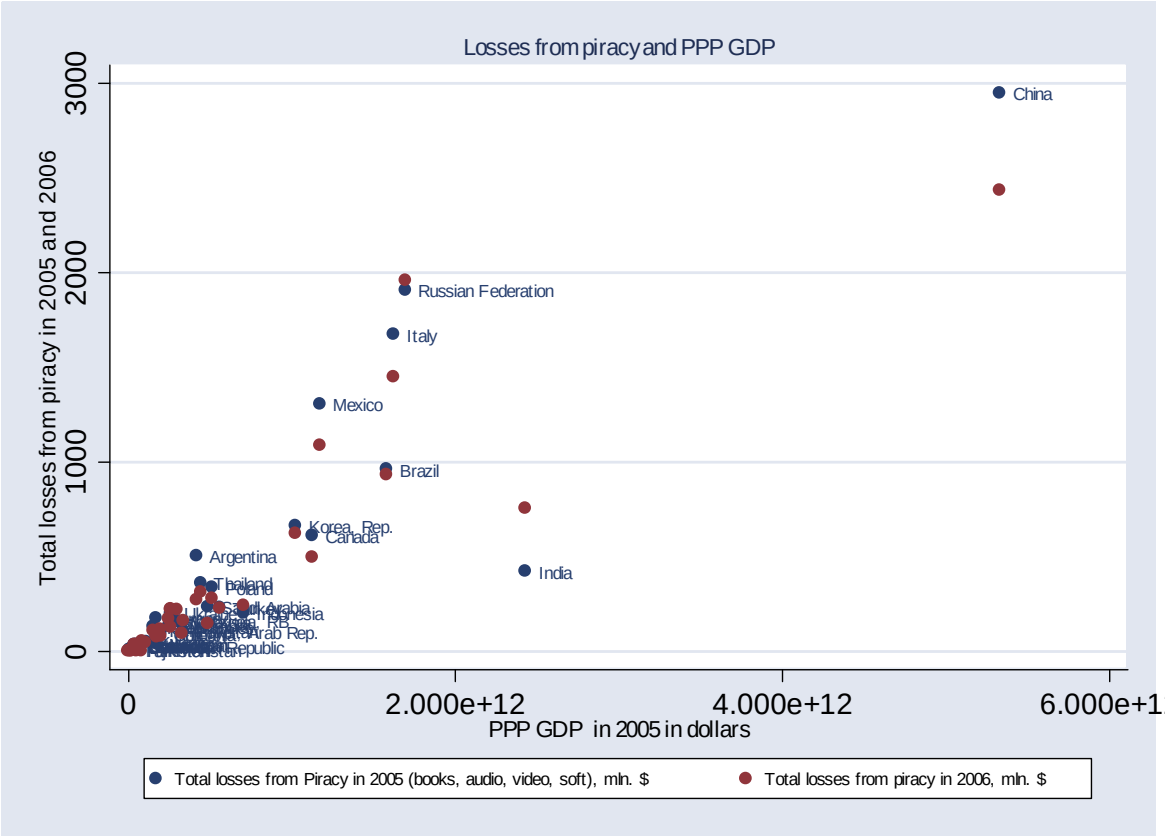
[8] "To obtain the number of software units for each type of hardware platform, including those running software on Windows and those running software on non-Windows operating systems, IDC surveyed consumers and business in 15 countries: China, Malaysia, Taiwan, Spain, Romania, Brazil, Bolivia, Chile, Colombia, Mexico, Costa Rica, Dominican Republic, Guatemala, Kuwait, and the United States. The results of these surveys were used to populate our input models for the other countries" (Methodology, 2008).

[9] "Legitimate software shipments are determined by dividing the software revenues in a country by the average system value (ASV) for that country. Software revenues are captured annually in 60+ countries by IDC software analysts around the world. Revenues are gathered from interviews with suppliers in the country and cross-checked with global numbers and financial statements. For the countries not normally covered by IDC, the data were either collected in-country or modeled regionally out of our rest-of-region estimates. Software revenues are gathered by type – such as application, infrastructure, and development tools – and by software running on Windows and non-Windows operating systems. It was also allocated to software running on new systems bought during the year and on systems that were already in place" (Methodology, 2008).

What is possible to do, however, is to check the consistency of IIPA data with the other publicly available statistics. This exercise produces results that put the IIPA estimates into question or suggests that IPR protection does not determine the levels of piracy . Controlling for the level of economic developments, the number of PCs, and the size of the country as measured by population and total GDP, losses from piracy (in billion dollars) and piracy levels (losses as a % of GDP) in most instances appear to be not correlated with the IPR protection indices. Assuming that IIPA estimates are accurate, this could happen, if piracy levels are determined not by IPR protection legislation and institutions, but by the strategy of the producers of intellectual products: in low developed small countries with few PCs they are not interested in enforcement of anti-piracy measures, but in capturing their emerging market, whereas in more developed large countries with a lot of PCs fighting piracy turns out to be more profitable.

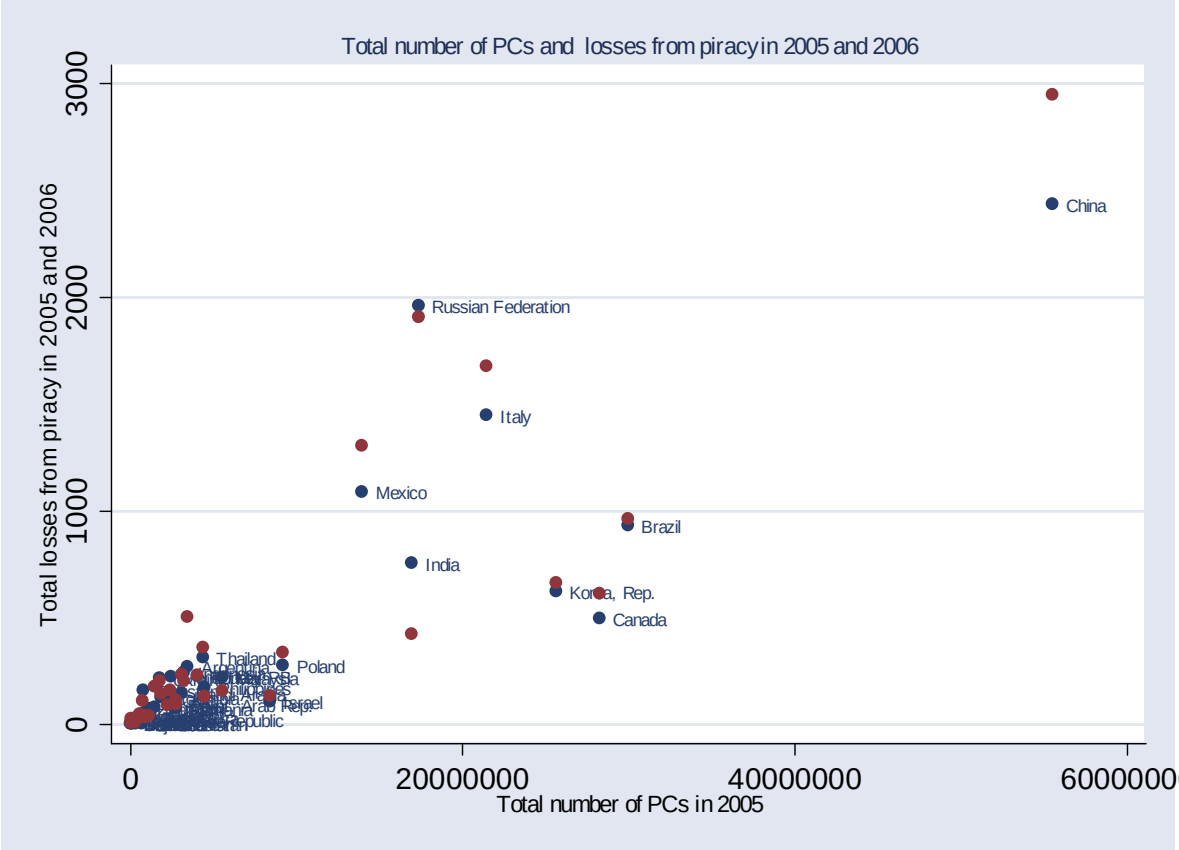
On face value, IIPA data look reasonable. There is an apparent and very intuitive correlation with the total losses from piracy (illegal imports of software – business and entertainment, music, films, books) and total PPP (purchasing power parity) GDP, as well as total number of PCs in a country (figs. 5, 6).

Fig. 5



Source: IIPA; WDI.

Fig. 6

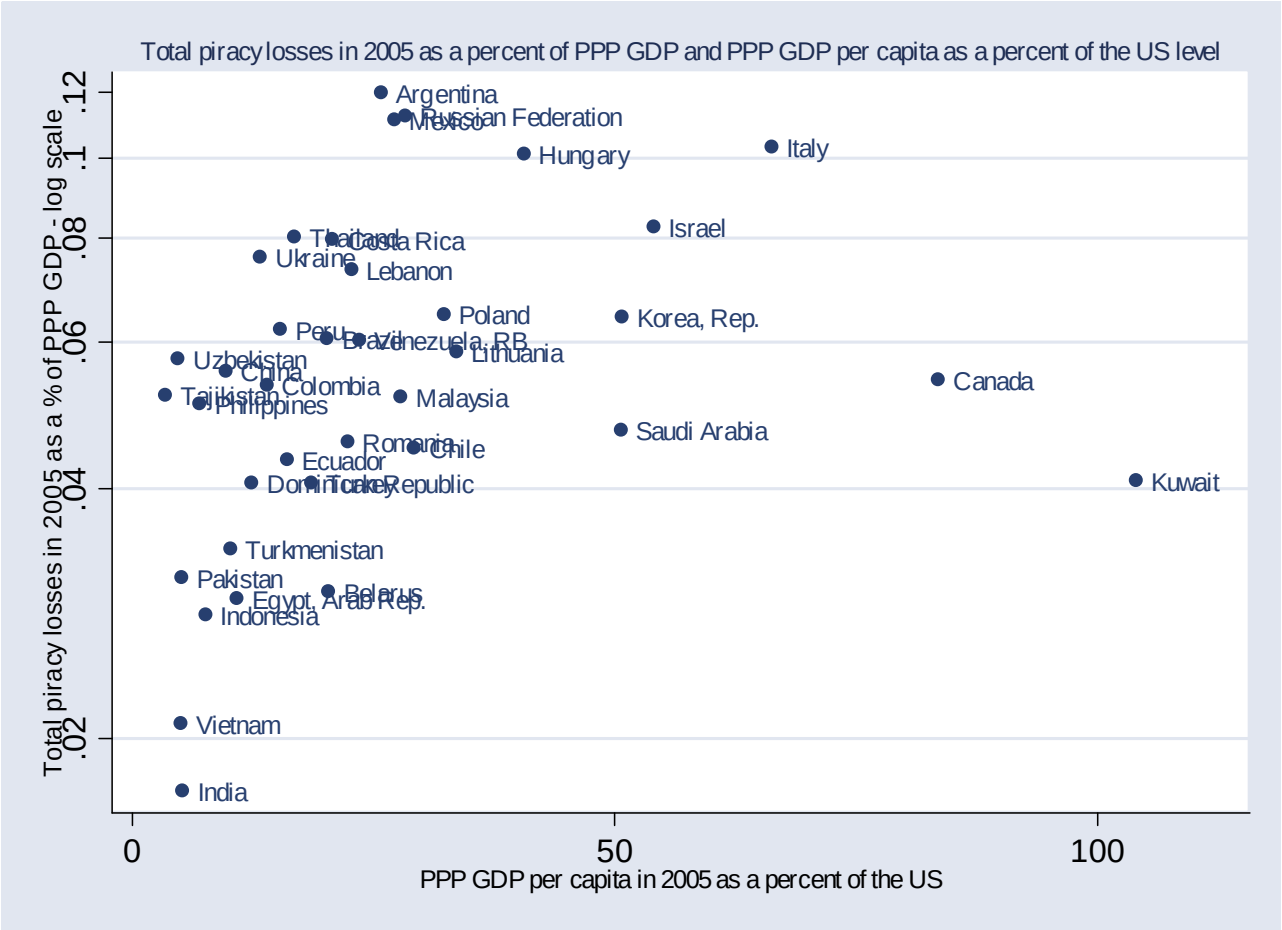


Source: IIPA; WDI.

The correlation of piracy *levels* (total losses from piracy as a % of the importing country PPP GDP) with the level of development (GDP per capita) is positive or inverted U-shape, suggesting that very poor (and perhaps very rich) countries are pirating relatively less intellectual products as compared to the middle income countries (where PPP GDP per capita is 25 to 60% of the US level) – fig. 7.

There is a theory that poorer countries (in the earliest stages of development) are interested in strong protection of IPR in order to attract FDI. As these countries develop and approach the level of middle income states they weaken the IPR regime to allow dissemination of imported technologies. As they continue to grow and approach the technological frontier, they become more interested in "home-made" innovations than in imitation and strengthen the IPR regime (Chen and Puttitanun, 2005). Hence, there should be a U-shape relationship between the level of development and the IPR protection (high for poor countries, low for middle income countries, and high for developed countries) and some studies actually find this kind of relationship (Chen and Puttitanun, 2005, find it for the panel data on 62 developing countries for the years 1985, 1990, 1995, and 2000).

Fig. 7



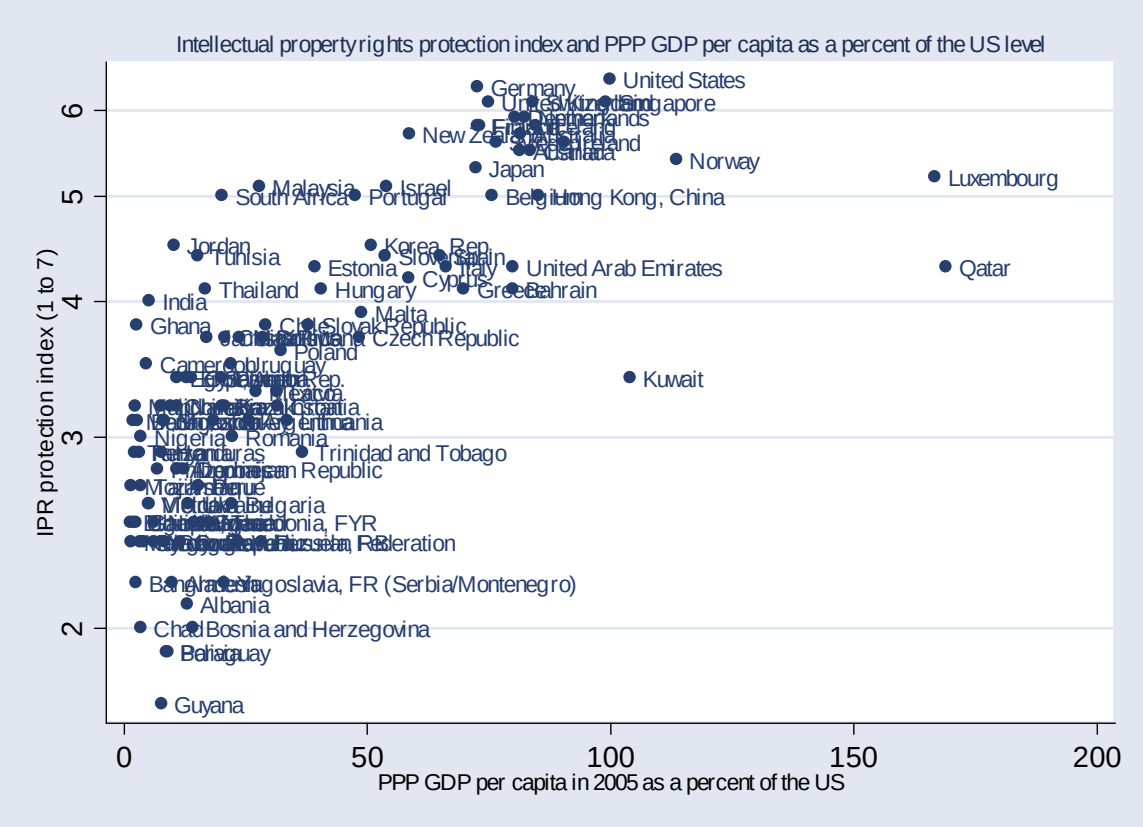
Source: IIPA; WDI.

The U-shape relationship between IPR protection and the level of GDP per capita implies that there should be an inverted U-shape relationship between the piracy levels and GDP per capita. The chart above has only 6 points for countries with per capita GDP higher than 50% of the US level (Saudi Arabia, Korea, Israel, Italy, Canada, Kuwait) and cannot be taken as sufficient evidence. And the IPR protection index from the *Global Competitiveness Report* exhibits a straightforward positive relationship with the level of GDP per capita, or even inverted U-shape relationship, not the U-shape relationship (fig. 8).

In fact studies that reveal this U-shape relationship are based on GP index – Ginarte and Park index (Ginarte and Park, 2007) that accounts for (1) coverage, (2) membership in international treaties, (3) loss of protection, (4) legal enforcement, and (5) duration of protection, but not actual enforcement of the laws on the books. This index is strongly correlated with the IPR protection index from the *Global Competitiveness Report*, (R = 0.8 for the year 2000), but does

not coincide with it on a one-to-one basis. Besides, it was argued that "well-known U-shape between IPRs and per capita GDP is instead a result of cross-country differences. Cross-sectionally, the least developed countries are less able and willing to stand up against international pressures to implement strong patent rights, while middle-income developing countries have a greater ability to oppose such pressures and, therefore, implement weaker patent rights" (Briggs, 2007). Finally, the U-shape relationship implies that poor countries, as they develop, will lower the protection of IPR, which is not observed in reality.

Fig. 8

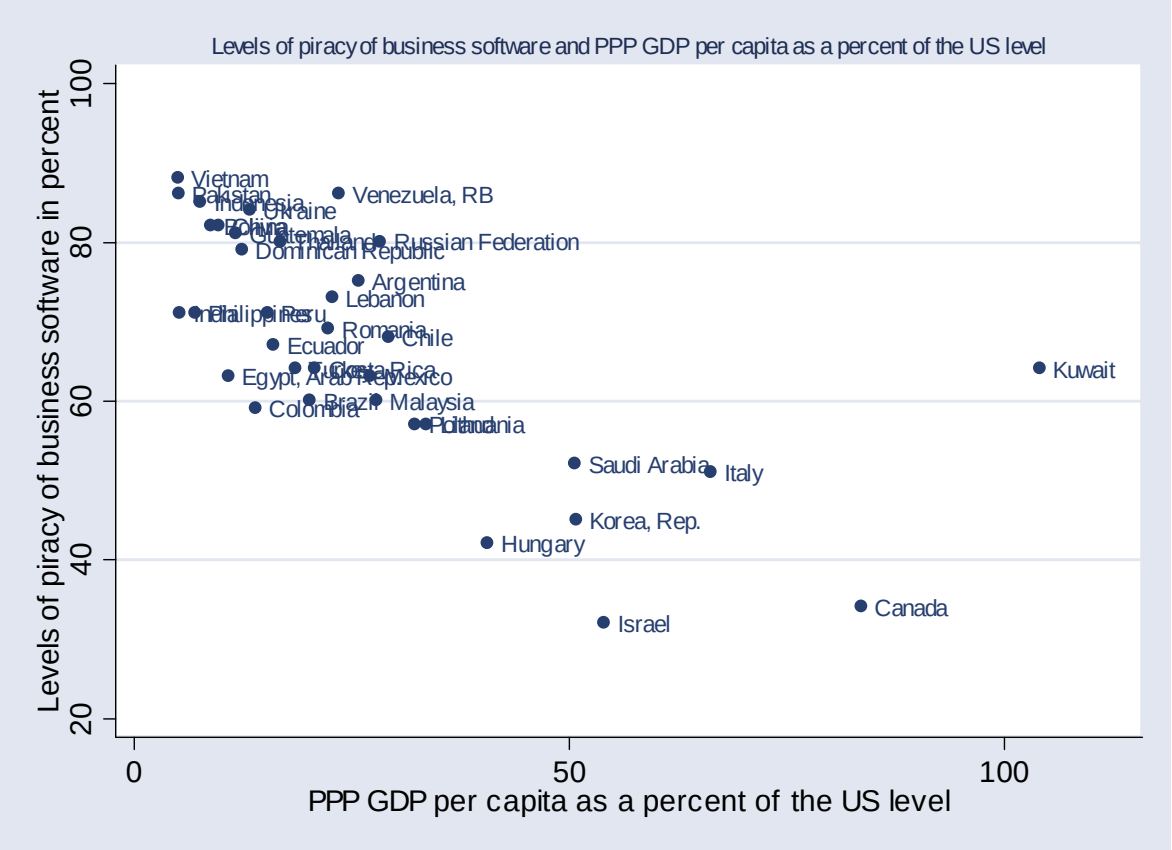


Source: Global Competitiveness Report; WDI.

For particular markets the levels of piracy are generally negatively correlated with per capita GDP, although this relationship is stronger for business software and music, and weaker for films and entertainment software (figs 9-12).

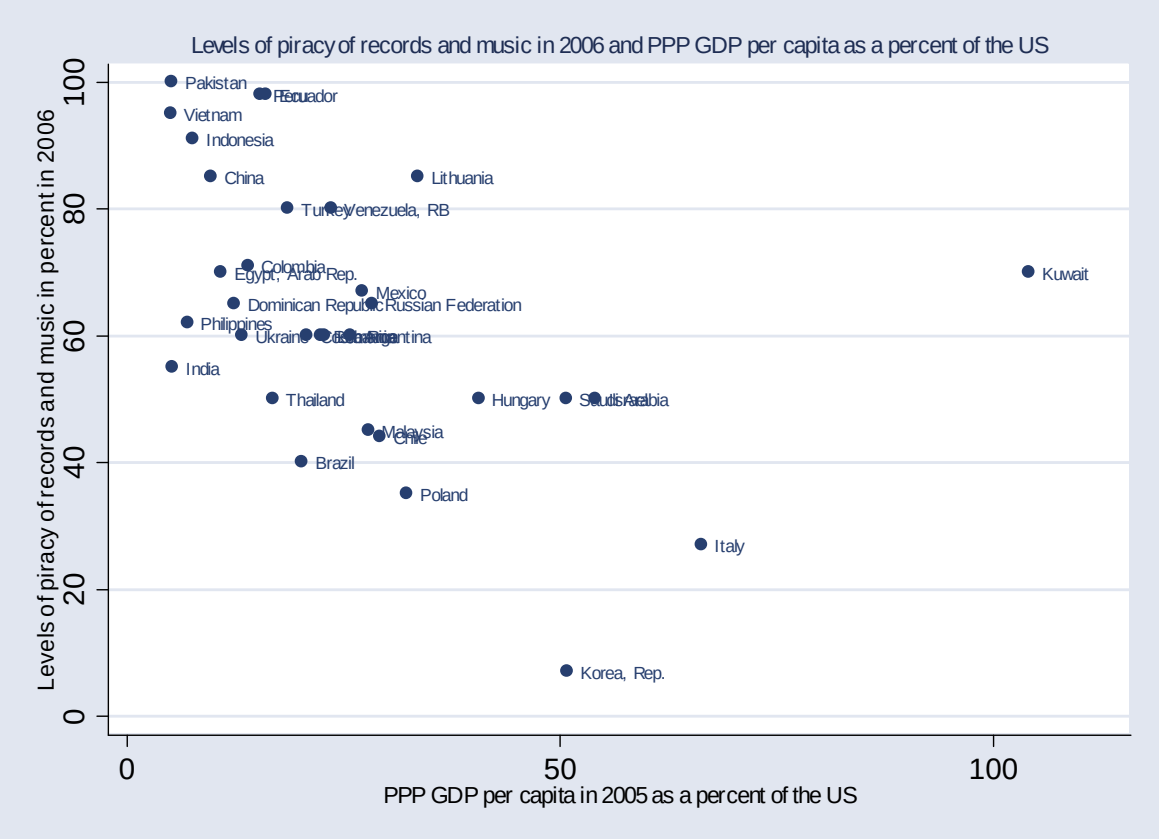
It is also seemingly logical that the levels of piracy estimated by IIPA are negatively correlated with the IPR protection index from *Global Competitive Report* computed from surveys of the executives (fig. 13).

Fig. 9



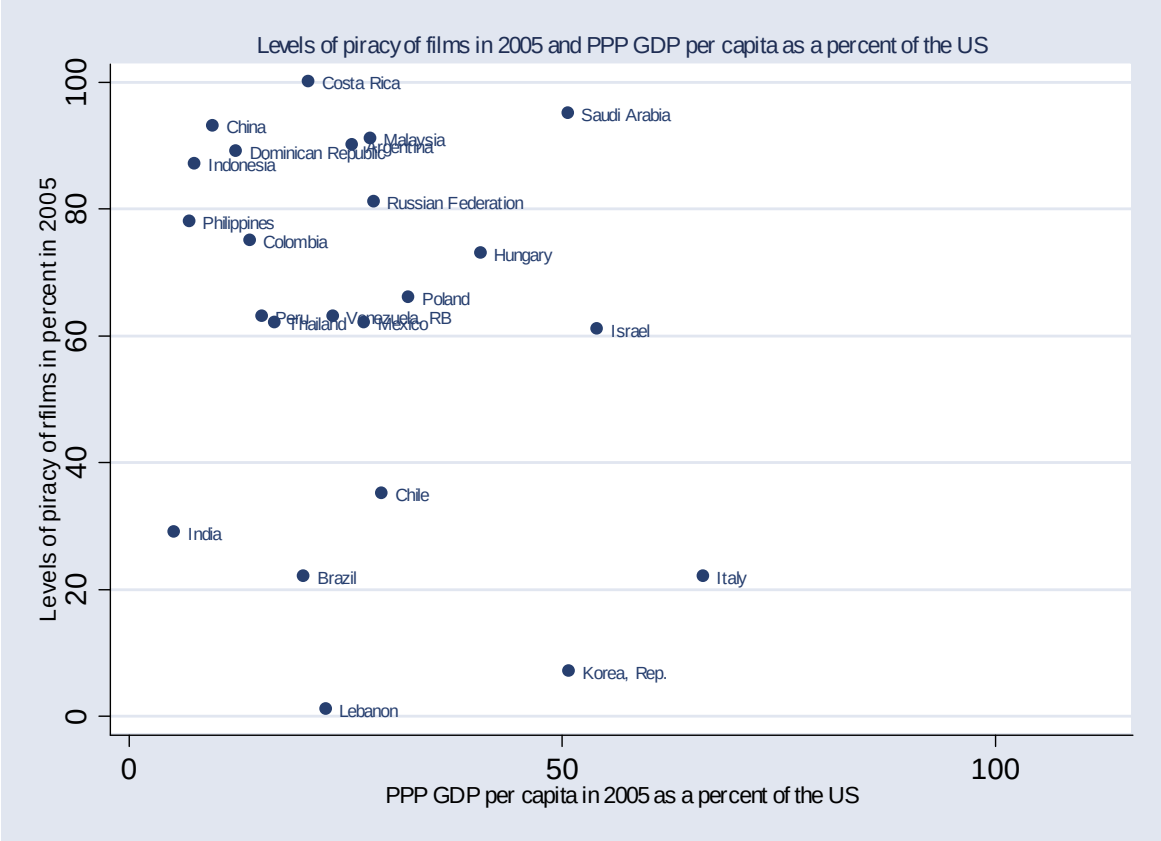
Source: IIPA; WDI.

Fig. 10



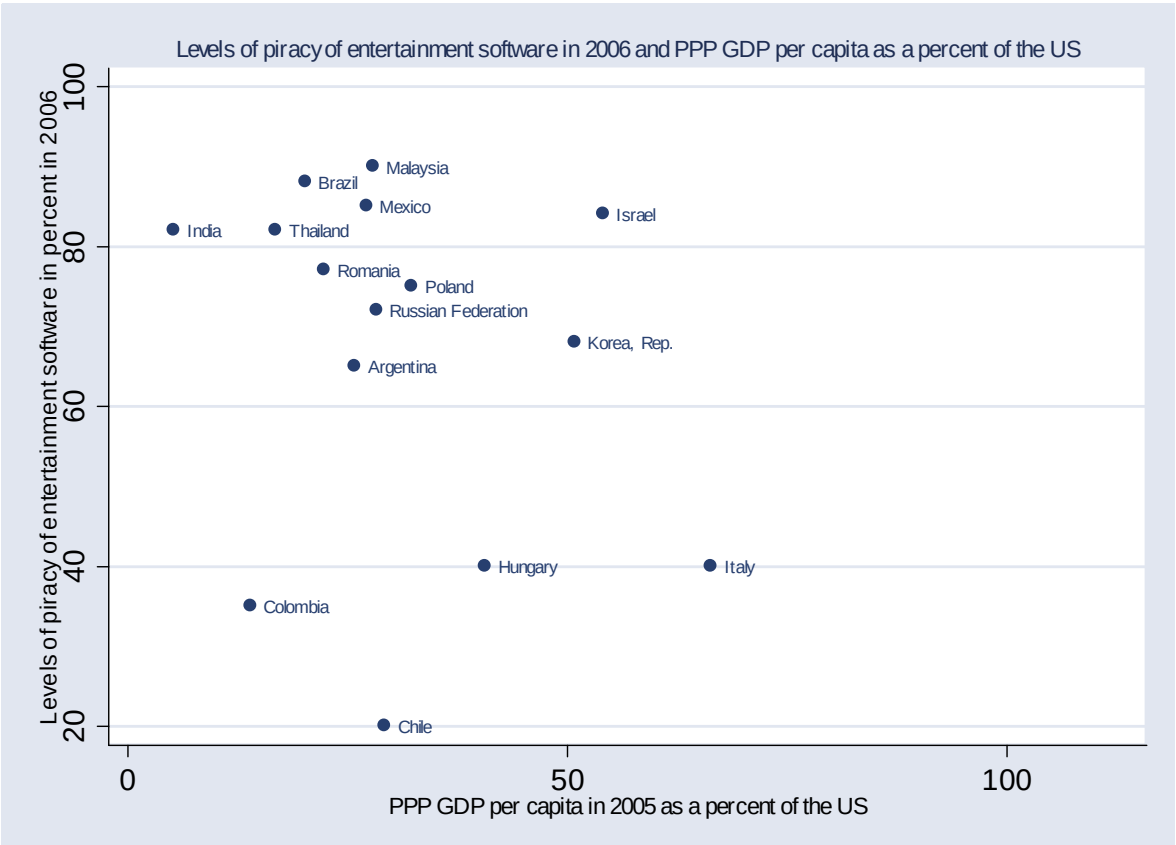
Source: IIPA; WDI.

Fig. 11



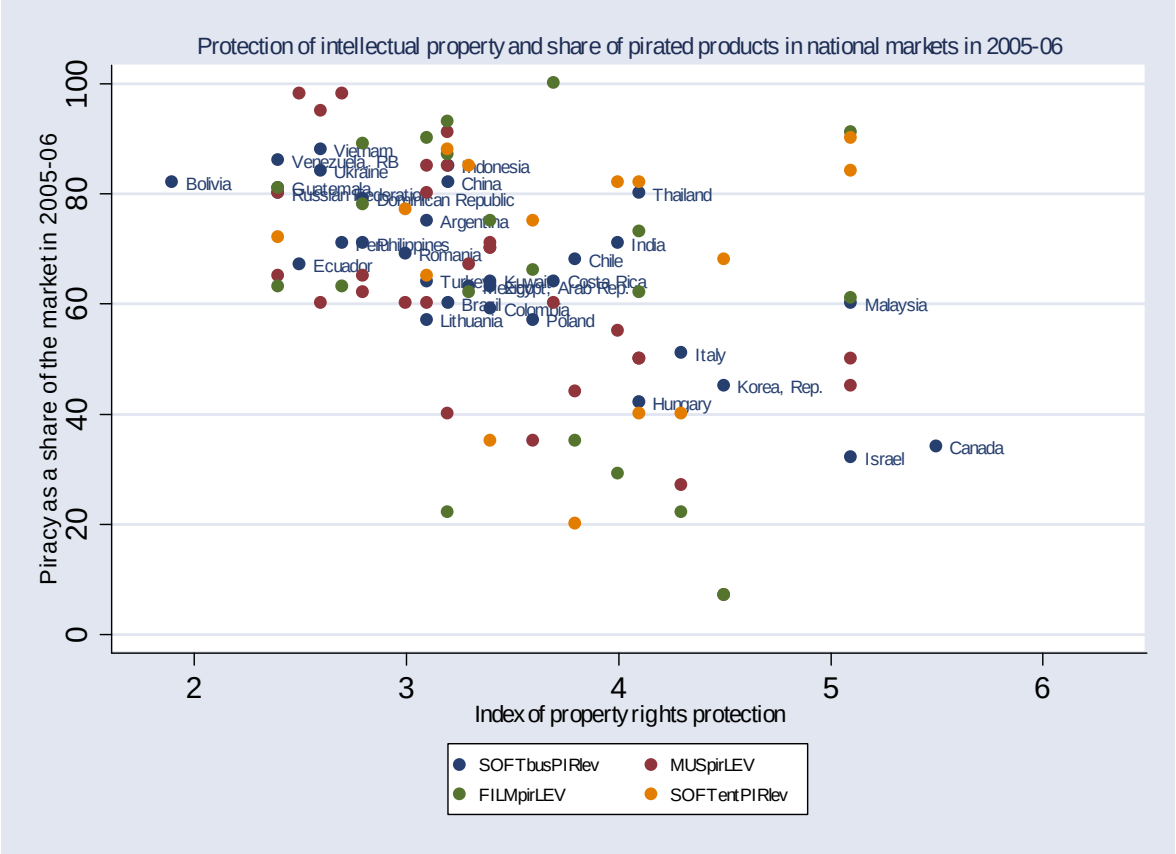
Source: IIPA; WDI.

Fig. 12



Source: IIPA; WDI.

Fig. 13



Source: IIPA; Global Competitive Report.

And it is very much in line with the expectations that total losses from piracy in 2005 are quite reasonably explained (R^2 = 78%) by the total number of PCs and the IPR protection index:

$$\textit{PIRloss2005} = 0.00005\textit{PCtotal05} - 0.19\textit{IPRprot05} + 652.7$$
$$(9.44) \qquad (-2.20)$$

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 31, R-squared = 0.7836, where:

PIRloss2005- total losses from piracy in 2005 in bill.$

PCtotal05- total number of PCs in 2005,

IPRprot05 - IPR protection index (Global Competitive Report).

However, if other variables characterizing the size of the country (population and total PPP GDP) are added to the right hand side, the IPR variable becomes insignificant. This is true for the total losses from piracy in 2005 and in 2006, as well as for the losses in the particular

markets – businesses software, films, entertainment software and books (with the exception of music):

$$\underset{}{\textbf{\textit{PIRloss2005}}} = \underset{(11.6)}{1.5*10^{-9}\textbf{\textit{GDPppp05}}} \underset{(-9.6)}{-2.6*10^{-6}\textbf{\textit{POP05}}} \underset{(-4.8)}{-0.00003\textbf{\textit{PCtotal05}}} \underset{(-0.35)}{-8.6\textbf{\textit{IPRprot05}}} -2.2$$

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 31, R-squared = 0.9721, where:

PIRloss2005- that total losses from piracy in 2005 in bill.$
PCtotal05- the total number of PCs in 2005,
IPRprot05 - IPR protection index (Global Competitive Report).
GDPppp05 - PPP GDP in 2005, $
POP05 - population in 2005, number of persons.

Regressions for the losses from piracy in the particular markets – businesses software, films, entertainment software, books and music are not reported here, but are available on request.

Similar relationships can be observed, when dependent variable is not the total losses from piracy, but piracy *levels*. There is no negative relationship between the index of protection of IPR and the total level of illegal imports as a % of GDP (fig. 14). There is some positive relationship in fact, although it is not statistically significant.

Controlling for the size of the total GDP, for the non-linear dependence on the level of economic development (GDP per capita and GDP per capita squared), and for the growth of the number of PCs in 1995-2005, allows to obtain a significant negative relationship between piracy level and IPR protection:

$$\underset{}{\textbf{\textit{PIRlevTOT2005}}} = \underset{(4.0)}{7.7*10^{-15}\textbf{\textit{GDPppp05}}} \underset{(-6.1)}{-0.00003\textbf{\textit{Ycap05\_USsq}}} \underset{(6.0)}{+0.003\textbf{\textit{Ycap05\_US}}} -$$

$$\underset{(-3.0)}{-0.00002\textbf{\textit{PCgrowth95\_05}}} \underset{(-2.4)}{-0.01\textbf{\textit{IPRprot05}}} -0.05$$

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 28, R-squared = 0.5858, where:

PIRlevTOT005- losses from piracy, as a % of total market in 2005

IPRprot05 - IPR protection index (Global Competitive Report).

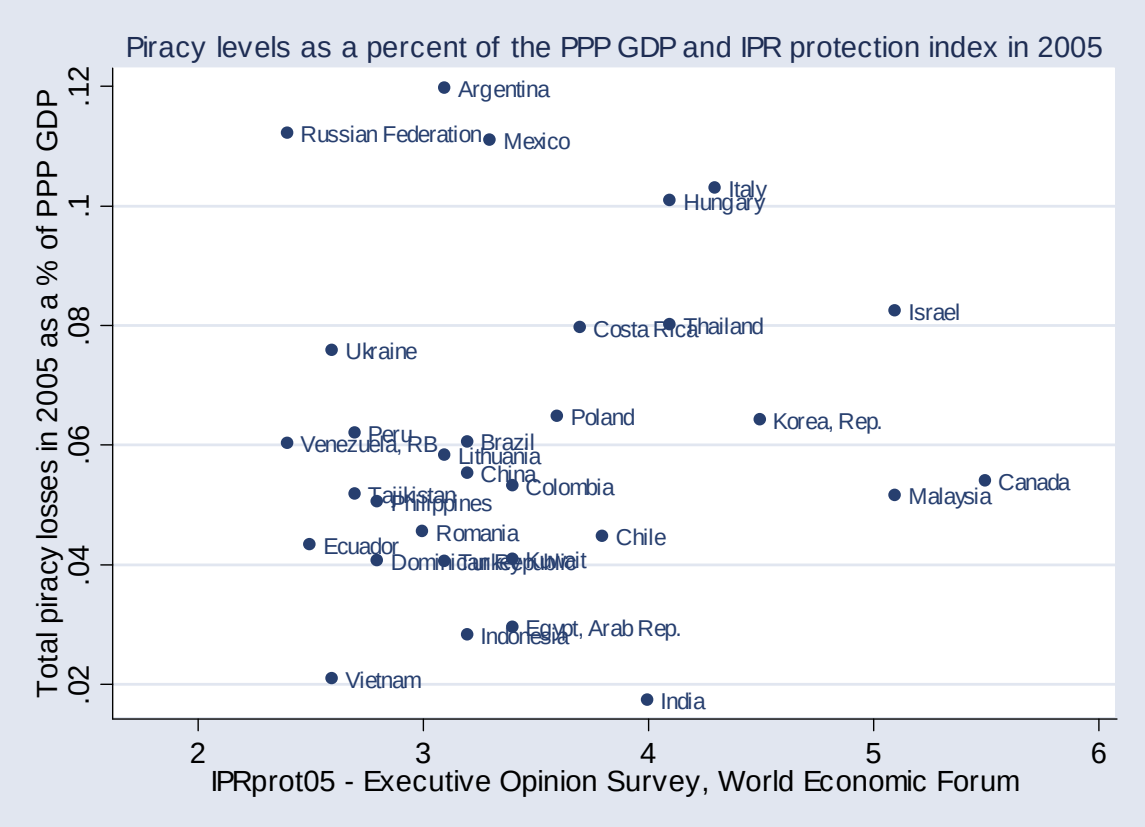
GDPppp05 - PPP GDP in 2005, $

Ycap05_US - PPP GDP per capita as a % of the US level in 2005,

Ycap05_USsq - squared PPP GDP per capita as a % of the US level in 2005,

PCgrowth95_05 – % increase in the number of PCs in 1995-2005.

Fig. 14



Source: IIPA; Global Competitiveness Report

But if other control variables – total population and the number of PCs in 2005 – are introduced, the significance of the IPR protection index disappears:

$$\underset{}{\textbf{\textit{PIRlevTOT2005}}} = \underset{(-1.8)}{-5.1*10^{-11}}\textbf{\textit{POP05}} + \underset{(2.1)}{1.5*10^{-14}}\textbf{\textit{GDPppp05}} - \underset{(-3.0)}{00002}\textbf{\textit{Ycap05\_USsq}} + \underset{(2.8)}{.002}\textbf{\textit{Ycap05\_US}}$$

- 0.01***IPRprot05*** + 0.05

(-1.3)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 31, R-squared = 0.5055

$$\textit{PIRlevTOT2005} = -6.6*10^{-11}\textit{POP05} + 4.2*10^{-14}\textit{GDPppp05} - .00002\textit{Ycap05\_USsq}$$

(-1.8) (2.6) (-3.5)

$$+ 0.003\textit{Ycap05\_US} - 1.8*10^{-9}\textit{PCtotal05} - 0.00001\ \textit{PCgrowth95\_05} - 0.01\textit{IPRprot05} + 0.04$$

(3.3) (-2.1) (-1.8) (-0.8)

Regression with robust standard errors, T-statistics in brackets, Number of obs. = 28, R-squared = 0.6369, where:

PIRlevTOT2005 - losses from piracy, as a % of total market in 2005

PCtotal05- the total number of PCs in 2005,

IPRprot05 - IPR protection index (Global Competitive Report).

GDPppp05 - PPP GDP in 2005, $

POP05 - population in 2005, number of persons

Ycap05_US - PPP GDP per capita as a % of the US level in 2005,

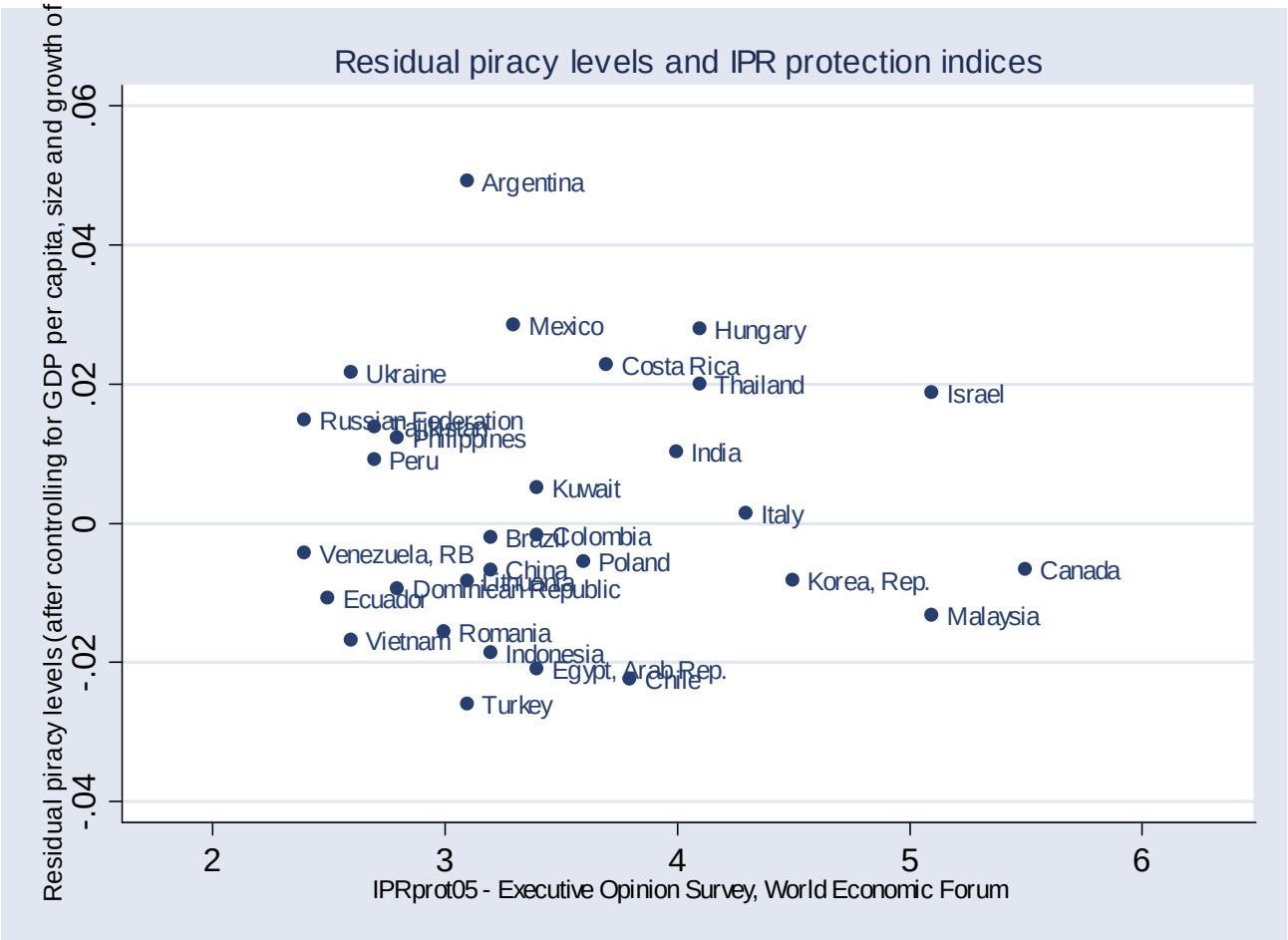
Ycap05_USsq - squared PPP GDP per capita as a % of the US level in 2005,

Running regressions for the piracy levels at particular markets (business software, music, films, entertainment software) as a dependent variable, produces mixed results. For business software and for musical products it appears that stricter IPR protection reduces the levels of piracy, whereas for films and entertainment software the IPR protection coefficients are positive and insignificant (regressions not reported here, but available on request).

To sum up, it appears that losses from piracy (in billion dollars) and piracy levels (as a % of GDP) that are estimated by the IIPA are not always correlated with IPR protection indices after controls are used for the level of economic developments, the number of PCs, and the size of the country as measured by population and total GDP. Assuming that IIPA data for piracy are accurate, it remains to be concluded that the strictness of protection of IPR does not influence the levels of piracy. These latter are determined first and foremost by the level of development and the size of the country, by the number and the rates of growth of PCs, whereas the IPR protection

indices do not provide any additional explanatory power. Fig. 15 shows that the residual piracy levels (after controls for the GDP per capita, population, GDP and number of PCs) are not correlated at all with the IPR protection.

Fig. 15



Source: IIPA; Global Competitiveness Report.

The interpretation of this finding could be consistent with the well-documented observation that the strategy of producers of intellectual products is not always aimed at fighting piracy. When the country is at the low level of development and does not have a lot of PCs and is small, producers can maximize profit by turning their back on piracy and by pricing their products at a discount in order to capture the market. On the contrary, in relatively developed countries with a lot of PCs and large domestic market, fighting piracy is a more promising strategy for producers – it yields greater benefits per unit of efforts.

It could be hypothesized that the strategy of the producers of the intellectual products is twofold:

(1) to build legal and administrative capacity for the protection of IPR in developing countries,

(2) to retain the right to decide whether to use this capacity or not (in poor small countries with small number of PCs fighting piracy undermines long-term profits of producers).

Conclusions

It was demonstrated that strict protection of IPR can have a negative effect on economic development. Regression of economic growth on these indices produces conventional results (positive effect of stricter protection of IPR on growth) only if indices of institutional capacity (government effectiveness, control over corruption) are not included into the right hand side. If they are included, they kill the effect of IPR protection (because they are very much correlated with the IPR protection indices), so it is hardly possible to separate the effects of stricter IPR protection from the impact of the general strength of institutions.

The same procedure was used to evaluate the impact of the IPR protection regime on the average share of R&D expenditure in GDP and the results were largely the same: without control for the institutional capacity, IPR protection seems to stimulate R&D, but after controlling for the institutional indices the effect disappears.

There is also a strong negative effect of stricter regime of protection of IPR on the proliferation of the most crucial technology of recent decades – computers. The increase in the total number of PCs in 1995-2005, after controlling for the level of development, the size of the country and the institutional index, is negatively correlated with the IPR protection index.

If piracy of intellectual products allows to overcome the negative impact of IPR protection on the dissemination of new technologies, it is reasonable to talk not about *costs of piracy*, but about the benefits of piracy and the *costs of stricter IPR protection*.

Losses from piracy and piracy levels that are estimated by the IIPA are not always correlated with IPR protection indices after controls are used for the level of economic developments, the number of PCs, and the size of the country as measured by population and total GDP. Assuming that IIPA data for piracy are accurate, it turns out that the strictness of protection of IPR does not influence the levels of piracy. These latter are determined first and foremost by the level of development and the size of the country, by the number and the rates of growth of PCs, whereas the IPR protection indices do not provide any additional explanatory power.

To sum up, there is no evidence that IPR protection stimulates R&D and promotes economic growth. But there is evidence that it inhibits the spread of new technologies. With stricter protection of IPR developing countries are not able to acquire the needed amount of intellectual products in the West. The global South is a net importer of intellectual products, so it looses from the need to pay for patents and copyrights (mostly to the West) and does not gain anything or gains very little from the rewards that are appropriated by inventors and artists (because the intellectual product industry is mostly in the West).

If it is accepted that growth and development of the Southern countries is a global priority, if Western countries find it worthwhile to provide assistance to development, then it is logical and reasonable to make the next step: the most efficient way to help Southern countries to develop is not to provide aid, but to facilitate the transfer of knowledge, technology and culture to the South. This goal can be best achieved by decriminalizing piracy, eliminating the IPR at least for the Southern countries, and even more so – by promoting and subsidizing the transfer of intellectual products from the West to the South.

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