**Creating an appropriate institutional environment for intellectual property rights: Current private reward system and alternative institutional solutions**

**Abstract**

This paper investigates the question of appropriate institutional environment for intellectual property rights that would stimulate innovativeness within a country.

First, efficiency and appropriateness of the current system of intellectual property rights protection, called “current private reward system”, are being critically analyzed. Arguments that support or criticize the current system of intellectual property rights protection are based on economic and philosophical perspectives. Own empirical research based on the most recent data from the EU and other countries support the substantial importance of strong intellectual property protection for innovativeness. However, the results cannot stipulate whether the old “reward system” is the best alternative.

Second, alternative mechanisms to stimulate innovativeness and technological progress are introduced and analysed. They are grouped in two types: a) amendments within the present private reward system and b) totally new public intellectual property systems. These are possibilities that would encourage innovation without providing (excessive) monopolistic rights to inventors.

**Key words**: intellectual property rights, intellectual property protection, private reward system

**i. Introduction**

Intensive intellectual work usually leads to impressive improvements in the fields of technology, services, art etc. Following, it increases national and international, material and immaterial wealth. One of the most important questions in the field of intellectual property rights is how to motivate intellectual work and the creation of intellectual property. The international society seems to have found an answer in strengthening intellectual property protection. It can be clearly seen in the legislation processes of the majority of countries as well as in the development of bilateral and international agreements.

One of the most widely spread legal bases of international intellectual property rights protection is the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement of the WTO. It is an attempt to reduce the gaps in the way intellectual property rights are protected around the world. The TRIPS agreement sets minimal standards in the following fields of intellectual property: copyright and related rights; trademark, including service marks; geographical indications; industrial designs; patents; layout-designs (topographies) of integrated circuits; undisclosed information, including trade secrets (WTO).

Especially economic and political issues underlie the decisions of governments to provide investors with a long-term legal protection of their intellectual property.

Despite its wide implementation (normal in the majority of industrialised countries) and several advantages, the present intellectual property rights regime and its appropriateness are still actively debated in the scientific and political community. The reason lies in the importance of intellectual property not only for innovative companies and individual inventors, but also for the future development of the world in many fields like health improvement, nutrition security, technological progress, welfare distribution etc. It is reasonable to rethink and rearrange the present system of intellectual property protection. Are there other ways that would encourage knowledge production and its distribution without securing property rights to the developers of new intangible assets?

**ii. Theoretical background**

The core reason of opposing views on whether intellectual property should receive legal protection (like it is done for material property) or not, lies in the special characteristics of intellectual property. “Knowledge defies traditional understandings of property and principles of exchange” (Peters 2010, p. 18). Contrary to the majority of tangible assets, it closely conforms to the features of a *public good*:

1. *knowledge is non-rivalrous*: the knowledge is not reduced while being used. By sharing with others, use, reuse and modification it may indeed add value;
2. *Knowledge is barely excludable*: it is difficult to exclude users and to force them to become buyers; it is difficult, if not impossible, to restrict distribution of goods that can be reproduced with little or no cost. (cf. Peters 2010, p. 18). For example, it is difficult to exclude someone from using a published knowledge (in scientific journals, conferences or in patent databanks).

Taking these special characteristics of intellectual property rights into consideration, many researchers have analysed the applicability of the traditional view on property rights view to the question of intellectual property rights protection. For example, Richards (2002) came to the conclusion that the arguments of well-known philosophic defenders of exclusive rights, John Locke (labor theory of property), Friedrich Hegel (freedom theory of property), and Jeremy Bentham (utilitarian view), do not hold up well when applied to intellectual property. Furthermore, the author concludes that the applicability of the Coase theorem is also low (Richards 2002).

Menell (2007) also analyses whether intellectual property should be accorded the same protections as tangible property and criticizes the applicability of Locke’s philosophy. Menell comes to the conclusion that the philosophical (and also legal, economic, and political) bases for protecting intellectual property and tangible property differ in significant ways (Menell 2007, p. 39).

Lea (2006) analyses intellectual property rights from a moral perspective and comes to a conclusion that these rights cannot be justified. The utilitarian grounding of the intellectual property rights in a software industry was also proved to be weak.

Yung (2009) analyses the soundness of the utilitarian grounding of intellectual property rights protection and comes to a conclusion that it “may not necessarily be justified”. (Yung 2009, p. 56).

Despite of this reasonable critique (which is also shared by the author of this paper), the most fundamental economic argument in favour of a strong intellectual property protection – economic incentives[[1]](#footnote-1) – should be awarded needed attention and respect. The newly created knowledge would not exist without its creator. The latter will not be interested in creating intellectual assets without being sure about receiving an exclusive property right for the knowledge created.

**iii. The present intellectual property rights protection (IPRP) system and its strengths**

The most important reasons for the development and existence of the present system of IPRP are the following:

1. Knowledge development takes much time and money and can cause essential financial capital loss (e.g. investments in scientific projects that later fail to succeed). Therefore, the effort of developing new intellectual assets has to be awarded and the invested capital has to be amortized;
2. An inventor has to have the property right over the results of his work;
3. By issuing e.g. patents for an invention, the knowledge is not hidden but available to the public, so that every interested person could learn it[[2]](#footnote-2);
4. The chance for extraordinary benefits in case of successful development of new intellectual assets (high profit margins, long-lasting first mover advantages, temporary monopolistic position) is a strong motivator for knowledge developers. Such chances will be safeguarded if the IPRP is strong. This would cause a general increase of the level of innovativeness in a society;
5. By introducing stronger IPRP, countries would attract MNCs which will be able to use their monopolistic advantage. Accordingly international trade and investment would rise. This would lead to an increase in knowledge diffusion as well.

The explanation of the present property rights system is based mostly on utilitarian views and has been supported by many empirical studies. For example, Kanwar and Evenson (2003) were able to prove the relationship between IPRs and innovation empirically; “other evidence supports the existence of a positive relationship between IPRs and economic growth (Gould and Gruben 1996; Falvey et al. 2004, 2006a)” ( Falvey et al 2009, p. 374). The empirical results on the connection between FDI and IPR are, however, contradicting. “While Lesser (2002), Lee and Mansfield (1996), and Smarzynska (2004) found a positive effect of IPR on FDI, Kondo (1995), Nicholson (2007), and Seyoum (1996) reported otherwise“ (Adams 2010, p. 201).

Due to contradicting results of empirical and theoretical investigation of the influence of the current system of intellectual property rights protection (IPRP), own empirical research was conducted. The following two relationships were in the focus of the analysis:

* The interdependence of IPRP and innovativeness in a country and
* The interdependence of IPRP and knowledge diffusion (FDI and trade)

In the following the methodology of the empirical analysis is going to be described.

**Methodology**

First, it was analyzed whether the level of innovativeness depends on the level of intellectual property protection in a country.

The object of analysis were the following 32 countries: United Kingdom, Turkey, Switzerland, Sweden, Spain, Slovenia, Slovakia, Romania, Portugal, Poland, Norway, the Netherlands, Malta, Luxembourg, Lithuania, Latvia, Italy, Ireland, Iceland, Hungary, Greece, Germany, France, Finland, Estonia, Denmark, Cyprus, Czech Republic, Croatia, Bulgaria, Belgium and Austria. The country choice is solely based on the availability of data as available at the time of analysis.

The variables “innovativeness” and “IPRP” were measured for the year 2010.

The latent variable “innovativeness” was operationalised with the help of the Innovation Index of the Innovation Union Scorecard (IUS) developed by the Maastricht Economic and Social Research and Training Centre on Innovation and Technology. The IUS Index of Innovativeness is based on 3 main types of indicators and with respective innovation dimensions (UNU-Merit 2010, p. 7f.):

1. Enablers capture the main drivers of innovation performance external to the firm, including:
	1. *human resources* dimension measures the availability of a high-skilled and educated workforce. It includes 3 indicators: \*New doctorate graduates per 1000 population aged 25-34; \*Percentage population aged 30-34 having completed tertiary education; \*Percentage youth aged 20-24 having attained at least upper secondary level education;
	2. *excellent research systems* dimension measures the international competitiveness of the science base. It includes 3 indicators: \*International scientific co-publications per million population; \*Scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country; \*Non-EU doctorate students as a % of all doctorate students;
	3. *finance and support* dimension measures the availability of finance for innovation projects and the support of governments for research and innovation activities. It includes 2 indicators: \*Public R&D expenditures as % of GDP; \*Venture capital (early stage, expansion, and replacement) as % of GDP.
2. Firm activities capture the innovation efforts at the level of the firm, including:
	1. The *Firm investments* dimension includes \*Business R&D expenditures as % of GDP; Non-R&D innovation expenditures as % of turnover that firms make in order to generate innovations;
	2. The *Linkages & entrepreneurship* dimension measures entrepreneurial efforts and collaboration efforts among innovating firms and also with the public sector. It includes: \*SMEs innovating in-house as % of SMEs, \*Innovative SMEs collaborating with others as % of SMEs; \*Public-private co-publications per million population;
	3. The *Intellectual assets* dimension captures: \*PCT patents applications per billion GDP (in PPS€); \*PCT patent applications in societal challenges per billion GDP (in PPS€) (climate change mitigation; health); \*Community trademarks per billion GDP (in PPS€); \*Community designs per billion GDP (in PPS€).
3. Outputs capture the effects of firms’ innovation activities, including:
	1. The *Innovators* dimension measures the number of firms that have introduced innovations onto the market or within their organisations, covering: \*SMEs introducing product or process innovations as % of SMEs; \*SMEs introducing marketing or organisational innovations as % of SMEs;
	2. The Economic effects dimension captures the economic success of innovation in: \*Employment in knowledge-intensive activities (manufacturing and services) as % of total employment; \*Medium and high-tech product exports as % total product exports; \*Knowledge-intensive services exports as % total service exports; \*Sales of new to market and new to firm innovations as % of turnover; \*License and patent revenues from abroad as % of GDP.

The next latent variable, the level of intellectual property rights protection, is measured by the intellectual property rights protection index of the Global Competitiveness Report published by the World Economic Forum. The Intellectual Property Rights Protection Index is a part of the Global Competitiveness Index. Its measurement is based on expert answers to the following question:

“How would you rate intellectual property protection, including anti-counterfeiting measures, in your country?” [1 = very weak; 7 = very strong] as a weighted average. (Schwab 2010, p. 367f.).

The second question - the interdependence of IPRP and knowledge diffusion (FDI and trade) - was analysed for the majority of the countries of the world (103 developing, transition, and developed countries) for the year 2009[[3]](#footnote-3). The choice of countries is solely based on the availability of data on selected variables.

The data for the trade, here expressed in imports of merchandize and services[[4]](#footnote-4), and the FDI, here expressed in inward foreign direct investment stock[[5]](#footnote-5), was taken from UNCTAD.

The results of both research questions will be presented and discussed in the next section. The correlation of the variables of interest was analysed using SPSS.

**Research results and analysis**

The results of the correlation analysis for the IPRP and innovation index support the widely spread belief that the level of innovativeness in a society is strongly positively correlated with the level of intellectual property protection. See the statistical summary in the tables 1-2.

**Table 1: Descriptive statistics and correlation of the innovation index and the IPRP index, 2010 in 32 countries.**

|  | IN\_2010 | IPRP\_2010 |
| --- | --- | --- |
| IN\_2010 | Correlation Pearson | 1 | ,910\*\* |
| Significance (2-w) |  | ,000 |
| N | 32 | 32 |
| mean | ,463594 |  |
| st. deviation | ,1755807 |  |
| IPRP\_2010 | Correlation Pearson | ,910\*\* | 1 |
| Significance (2-w) | ,000 |  |
| N | 32 | 32 |
| mean |  | 4,659375 |
| st. deviation |  | 1,0745920 |
| \*\*. The correlation is significant on the level of 0,01 (2-w). |

IN\_2010 – innovation index in 2010

IPRP\_2010 – the level of intellectual property rights protection in 2010

**Table 2: A simple scatter plot**



The correlation between the two analysed variables is extremely high. It could be caused e.g. by experts who strongly associate intellectual property rights protection with the innovativeness in a country. Due to that, they could have given appropriate estimations for the IPRP level during the interviews of the WEF discussed before. This is the general measurement problem of abstract concepts.

Further conceptual work is needed here in order to be able to measure innovativeness and intellectual property protection completely separately.

In the second empirical analysis we have the following findings:

* The imports of merchandise and services strongly positively correlate with the national level of IPRP (see the statistical summary in the table 3).
* Inward FDI stocks also positively correlate with the IPRP level (see table 4).

**Table 3: Descriptive statistics and correlation of the imports of merchandise and services and the IPRP index for 2009 in 103 countries.**

|  | IPRP\_2009 | Imp\_2009 |
| --- | --- | --- |
| IPRP\_2009 | Correlation Pearson | 1 | ,435\*\* |
| Significance (2-w) |  | ,000 |
| N | 103 | 103 |
|  | mean | 3,744 |  |
|  | st. deviation | 1,1830 |  |
| Imp\_2009 | Correlation Pearson | ,435\*\* | 1 |
| Significance (2-w) | ,000 |  |
| N | 103 | 103 |
|  | mean |  | 137966,5522 |
|  | st. deviation |  | 276443,44272 |
| \*\*. The correlation is significant on the level of 0,01 (2-w). |

IPRP\_2009 – the level of intellectual property rights protection in 2009

Imp\_2009 – imports of merchandise and services in 2009

**Table 4: Descriptive statistics and correlation of inward FDI stocks and the IPRP index for 2009 in 103 countries**

|  | IPRP\_2009 | FDI\_2009 |
| --- | --- | --- |
| IPRP\_2009 | Correlation Pearson | 1 | ,429\*\* |
| Significance (2-w) |  | ,000 |
| N | 103 | 103 |
|  | mean | 3,744 |  |
|  | st. deviation | 1,1830 |  |
| FDI\_2009 | Correlation Pearson | ,429\*\* | 1 |
| Significance (2-w) | ,000 |  |
| N | 103 | 103 |
|  | mean |  | 155014,5265 |
|  | st. deviation |  | 367449,25420 |
| \*\*. The correlation is significant on the level of 0,01 (2-w). |

FDI\_2009 – inward FDI stock in 2009

Based on empirical results (presented in tables 3 and 4) we can summarise that the knowledge diffusion, expressed in FDI and trade, is increasing if a country has a strong intellectual property protection.

Summarising the empirical analysis, we can state that the innovativeness level of a country and the knowledge diffusion between countries is supported by a strong IPRP system. However these results need to be further analysed. Much more explaining variables (like the quality of education, public policy etc) could influence the innovativeness and knowledge diffusion.

For example, the FDI decisions of course also depend on the overall risk level of a country, market size, growth rate, country’s strategic position, and many other parameters. This can also mean that the innovativeness could increase due to the FDI inflow, even if the IPRP is low.

**iv. The present intellectual property rights protection (IPRP) system and its weaknesses**

The arguments that undermine the present IPRP regime are:

1. The most important disadvantage of the present system lies in the fact that it does not fully fulfil one of its original goals: motivating creation and spread of socially desirable knowledge.
	1. The knowledge creation, technological progress, can slow down due to the prohibitions to invent around the patented intellectual asset and apply the results on the market[[6]](#footnote-6) while the initial patent is still in power.
	2. The diffusion of socially desired knowledge / market penetration of new intellectual assets is low. \*The diffusion of knowledge between producers is prohibited due to the creation of a temporal legal monopoly on newly created intellectual assets. \*As a rule, the monopolistic power leads to high monopolistic prices. This results in a relatively low market penetration, because many customers cannot afford monopolistic prices, which is especially the case in the medicine and computer software markets.
2. Strong intellectual property rights protection gives too much control to inventors. This fact is especially problematic in the case of new plants and their seeds (e.g. “seed-wars” in hybrid maize industry, biopiracy).
3. Moral aspects of strong IPRP have to be taken into consideration, e.g. the problematic patent protection of life-saving drugs. Many suffering people will not be able to buy them, which collides with the UN universal declaration of human rights that includes the right for the adequate medical treatment, article 25, paragraph 1.
4. There are many other national market characteristics that influence the creation of new intellectual assets, like the educational system in a country, demanding innovative customers, market size etc.
5. The present intellectual property protection system focuses on the extrinsic motivation of intellectual property developers. The inventors, however, could also have intrinsic motivation to innovate. Personal satisfaction, respect, and esteem can lead to knowledge creation without building a monopoly for intellectual property. Yung brings an example of a traditional Confucian China where “creative pursuits were not for money-making, which was a low-class engagement, copying would not in anyway deter creative labouring and there would not be fewer new innovations and creations”. (Yung 2009, p. 50).
6. Other competitive advantages, not only the temporary knowledge monopoly, can motivate the creation of new intellectual property. These advantages could be the first mover advantages (Calandrillo 1998, p. 308 f.)
7. The general appropriateness of the current IPRP system for the present market characteristics and demands can be doubted. Many modern innovations exist or were created beyond the traditional IPRP system. For example, open innovation trends become louder in the business world. Companies from different industries such as: textile (skinnyCorp LLC), drinks (PepsiCo Inc. and Brauerei Beck GmbH & Co KG), automotives (Daimler AG), transportation/train construction (Bombardier Inc) and computer hard- and software (IBM Corp., open source Linux operation system) have employed different models of open innovation. Weber (2004) explains the phenomenon of open innovation with the totally different goals that companies follow as compared to the practice of “closed innovation”. The focus of open innovation does not lie in the protection of intellectual property, but in the maximisation of the ongoing development, growth and diffusion (Peters 2010, p.26). The relationship between creativity and open innovation systems is growing in significance. Johnson (2005) draws a strong set of connection between openness, creativity, and search processes.

The present system of IPRP is attempting to reduce the worst effects of providing restricting rights on new intellectual assets to the inventors. These attempts and the corresponding regulation will be discussed in the following on the example of the international regulation of IPR through WTO. TRIPS has several exceptions from its minimal standards of intellectual property rights protection:

- Eligibility for patenting: government may refuse to grant patents for certain plant and animal invention (article 27, 3b); diagnostic, therapeutic and surgical methods for treating humans and animals and for dangerous invensions for humans, animals, plants life, or health (article 27);

- Research exception: to advance science and technology, researchers are allowed to use a patented invention for research in order to understand it better. This means they can market the product immediately after the patent expires (article 30);

- Bolar provision: government may allow the generic medicine producers to use patented inventions to obtain marketing approval without the patent owner’s permission (article 30);

- Anti-competitive practice: national governments are allowed to define provisions in their legislation that prevent the patent owners from abusing intellectual property rights, “unreasonably” restraining trade or hampering the international transfer of technology (articles 8 and 40);

- Compulsory licensing/ “other use without the authorization of the right holder” (article 31): government may allow someone else to produce a patented product without the permission of the patent holder. The reasons for compulsory licensing are not specifically named in TRIPS. It is important to note that compulsory licences cannot be given exclusively to licensees (i.e. they should not exclude the patent holder) and that they usually must be granted for serving a domestic market;

- Parallel/grey imports (i.e. products marketed by the patent’s owner or his licensees in one country and imported into another country without the approval of the patent owner) are allowed; other regulations can be issued by the national governments. The principle of “patent exhaustion” is used here, which means that after selling a patented product the producer does not have any rights about what happens to that patented product later (article 6 and Doha Declaration 5 (d)).

Additionally, some other international treaties and conventions target the minimisation of the disadvantages of the present IPRP system. For example:

* International treaty on plant genetic resources (declaration that the most important plants are the ownership of the planet and humankind as a whole; in force since 2004. See: www.planttreaty.org)
* Convention on biological diversity (in force in 1993, see: www.cbd.int)

However, the special regulations in TRIPS and other treaties that handle the negative effects of the present IPRP system have a character of an exception and do not fully eliminate all disadvantages of the present IPRP regime. Thus, alternative institutional arrangements have to be discussed.

**v. Alternative institutional environment for intellectual property rights**

Two general ways to change the present regime of intellectual property rights protection are going to be discussed here[[7]](#footnote-7). The first handles amendments within the present system, the second proposes the creation of a totally new intellectual property system.

Amending the present system could includes:

* The reduction of the minimal and maximal patent protection time (e.g. Germany: 2 and 25 years respectively).
* Introduction of a “compulsory licencing” to a wide range of intellectual property rights.
* Loosen the prohibitive regulation of modification and further development of protected inventions.
* Stimulation of intrinsic motivation of inventors, e.g. introducing a Nobel Award for important scientific contributions with an obligatory “donation” of the patent to the society.

The second institutional change proposition handles the introduction of a government-run reward system. “Contrary to the monopoly price and restricted use dilemmas created by current intellectual property rights, a publicly funded reward system seeks to maximize overall social welfare by retaining incentives to create while simultaneously optimizing the dissemination of information” (Calandrillo 1998, p. 315). In a government run system of rewarded innovativeness, the inventor is paid for his intellectual property from the state budget. After receiving the payment, his/her intellectual property rights become a fully public good. The introduction of a government run system follows a public good view, which underlines that “information belongs in the public domain because free access to information is central to social cohesion and learning” (Maskus 2000, p. 27). In the government-run system, everyone will be allowed to freely use the “patents” and reproduce and commercialise them.

On the one hand, the government-run system would be able to provide a financial incentive to knowledge development and, additionally, it could increase the extrinsic motivation of inventors because of its “payment-guarantee” for innovativeness. Such kind of a guarantee does not exist in the present system of property rights protection. The overwhelming majority of property assets enjoy intellectual property rights protection but stay unprofitable. On the other hand, such an intellectual property rights system would maximise the social welfare, because (theoretically) everyone who is able to pay a price higher that the production costs will receive the appropriate good. Hense, the technological development and national prosperity will rise.

The government run system is not an easy issue to introduce. Its implementation is bound to many problems:

\*Even though the government-run system appears to be a better solution, the path-dependency will strongly impede the change. Or has the present IPRP regime already reached its lock-in? Path dependency theory provides several approaches for breaking an inefficient path, like: resource redirection, systemic view, discursive method and behavioural approach.

\*The costs of running a new intellectual property system (“inventor’s lump sum” (ILS) and the management costs) are higher than the present one. However, expected advantages (knowledge spread and penetration speed, bigger markets for innovative, better products because of lower prices etc) from introducing the new IPR-system should overweight the costs.

\*The transfer of risks of an innovation from the inventor to the country. Innovative work is risky, much capital can get lost in large new projects. Even the registration of a patent for a potentially profit-promising invention will not guarantee success. In a government-run reward system, at least a part of the marketing risk is relocated to the country. On the other hand, the advantages of using an invention are also relocated to the society.

\*Methodological difficulties to estimate the appropriate ILS.

In the following I focus on one of the most difficult methodological problems of the introduction of a government run system, the ILS assessment, and make a proposition of how to measure it.

Essential elements of the final ILS[[8]](#footnote-8) should include the following:

1. *Investments* - all investments made by an inventor should be refunded. In order to achieve this, a very transparent reporting system should be organized in each company for each R&D project.
2. *Interests* - ILS should include annual average interest rates on invested capital.
3. *Utility level* - ILS should take different utility levels of an invention into account. The government has to agree on a coefficient that would express the level of utility of an invention (from low utility i.e. small or essential developments in existing technology and products with low potential for life improvement, to high utility, i.e. inventions with high potential for life improvement) for its country markets.
4. *Innovativeness level* - a coefficient should be developed that would reflect different levels of innovativeness from low level of innovativeness to pioneering innovations.
5. *Market size* - ILS should reflect a potential market size that could be served by an innovative product.

A government run system (GRS) is not just a theoretical model. Calandrillo (1998, p. 317) shows several examples of actual use of a GRS in the USA, e.g. in the field of atomic energy. However, further scientific work is needed to perfect the methodology of calculating the ILS as well as to conduct feasibility studies in order to proof the functionality of the government run system in all kinds of industries.

**vi. Conclusion**

The present paper has shown that the current system of intellectual property rights protection and the trend of strengthening IPRP is based on economic arguments and is supported by many empirical tests. The results of a correlation analysis confirmed a strong positive correlation between the level of the IPRP and the innovativeness in a country as well as a positive correlation between the level of IPRP and the knowledge diffusion.

However, the current system of intellectual property rights protection has numerous weaknesses, which cannot be entirely solved by including exceptional provisions into existing agreements (e.g. TRIPS) or by establishing additional treaties and conventions. Due to that, the author discussed two alternative ways to change the present IPRP. One way includes several propositions of amending the presence IPR regime (like introduction of compulsory licensing to a wide range of IPR, reduction of minimal and maximal duration of intellectual property protection etc). The other way leads to the introduction of a government run system, which is able to achieve both the socially desirable knowledge diffusion and to stimulate knowledge creation. The suggestion was critically analysed. An attempt was made to solve an important problem of the government run system – the problem of assessing the inventor’s remuneration for his/her intellectual property. Essential elements of the final inventor’s lump sum were defined.

The author hopes to stimulate further discussion on alternative IPRP systems. Maybe this could lead to a shift from the now mostly utilitarian nature of IPRP.

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1. However, it should be stressed here that the present intellectual property regime is only one among several other institutions that are able to create economic incentives and to stimulate substantial knowledge creation. (Calandrillo 1998, p. 306; Yung 2009, p. 56). [↑](#footnote-ref-1)
2. For example, in Germany all patent (and other kinds of intellectual property rights) registration documents including technical descriptions of inventions, are freely available online. See: http://depatisnet.dpma.de. [↑](#footnote-ref-2)
3. This is the most recent year for which the macro-economic data is available. [↑](#footnote-ref-3)
4. Imports of merchandise and services are measured here in US dollars at current prices and current exchange rates in millions (UNCTAD). [↑](#footnote-ref-4)
5. FDI stock is the value of the share of capital and reserves (including retained profits) attributable to the parent enterprise, plus the net indebtedness of affiliates to the parent enterprises. FDI stock is measured here in US dollars at current prices and current exchange rates in millions (UNCTAD). [↑](#footnote-ref-5)
6. The exceptions will be discussed below. [↑](#footnote-ref-6)
7. Other institutional arrangements include funding of innovative programs, subsidising etc. [↑](#footnote-ref-7)
8. The propositions concern in the first place the protection of technological knowledge, in Germany in the form of patents and utility models. [↑](#footnote-ref-8)