THE POLICIES CONCERNING THE STRENGTH OF INTELLECTUAL PROPERTY RIGHTS PROTECTION: THE CHOICES FOR ESTONIA IN WIDER CONTEXT OF EU[1]

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Abstract

The foreign direct investment (FDI) can be substitute for the contractual transfer of intellectual property rights in a situation where these rights are weakly protected. Hence, stronger intellectual property rights protection may reduce incentives for FDI. This is, however, only one line of reasoning. Stronger intellectual property protection can also increase motivation to invest into completely new products and processes. Thus, from the slightly different perspective FDI and strength of intellectual property protection can be seen as complementary. This duality of impact makes the search for efficient protection very difficult and complex. The aim of this paper is to outline the policy choices open for Estonia in influencing the relative strength of intellectual property rights protection and its impact on FDI. The vital secondary research agenda by this concerns the influence of EU-membership on the autonomy of such policy choices. Given the fact that there exist European patents and patent registry, certain intellectual property rights protection measures and legislative practices are undoubtedly pre-determined by this embeddedness into EU-wide protection systems. The national level policies and enforcement issues may still vary.

Keywords: intellectual property rights protection, FDI, Estonian policy, EU policy

Introduction

The interaction between foreign direct investment (FDI) and intellectual property rights protection is not straightforward. In situations, where intellectual property rights are weakly protected, FDI may be a substitute for contractual transfers via licensing or franchising. Therefore, strengthening of intellectual property rights protection can reduce interest in investing because contractual entry modes become less risky and more visible. This substitution effect is only one possible outcome.

Stronger intellectual property rights protection may on the contrary increase the motivation for FDI, because investments into new products and processes as well as into new proprietary technologies are safeguarded by legal protection. The strength of intellectual property protection can be seen as one of the important proxies for socio-economic development (at least in western hemisphere). Stronger protection

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characterises usually more developed countries described by attractive consumer markets and numerous business opportunities. Thus, from these viewpoints FDI and intellectual property protection are likely to be complementary and not substitutes.

Because of this dual impact on FDI, it is difficult to find such a level of intellectual property rights protection, which would offer sufficient risk reduction without discouraging FDI. The efficient strength of protection may well depend on the country or region concerned. In less developed countries, where knowledge transfers support mainly imitation, the substitution effect is likely to be more prominent than in so called innovator countries and regions.

Stronger intellectual property protection can also increase motivation to increase into completely new products and processes. Thus, from the slightly different perspective FDI and strength of intellectual property protection can be seen as complementary. This duality of impact makes the search for efficient protection very difficult and complex.

The aim of this paper is to outline the policy choices open for Estonia in influencing the relative strength of intellectual property rights protection and its impact on FDI. These policy choices are considerably influenced and restricted by the EU-membership. European patenting itself prescribes some EU-wide protection systems and legislative practices. Despite these measures, the national policies and especially enforcement issues are still likely to differ.

The structure of this analysis is following. The discussion starts with an introduction of theoretical concepts and earlier studies that focus on multinational transfers of intellectual property and FDI. In the next sections we describe the intellectual property and FDI in Estonia. Thereafter, the intellectual property usage and protection policies in Estonia are discussed in greater detail. The concluding section outlines the main results, limitations, and suggestions for future researched.

The theoretical background

The relationship between the strength of intellectual property rights protection and FDI has found considerable research interest. The research made in the context of product cycle model (describes technology transfer from an innovative region to an imitating region) found that stronger intellectual property rights protection in the imitating region might help to restrict imitation, but difficulty of imitation also generates resource wasting and disincentives which reduce FDI and innovation. Thus, resource engagement in imitation can crowd out FDI. From this perspective, stronger protection of intellectual property rights has adverse effect on FDI. (Glass, Saggi 2002)

Similar study outlines in addition that imitating of multinationals' technologies in so called imitating region increases FDI and innovation for quality improvements, but new varieties offered by innovator companies reduce incentives for that. Therefore, stronger intellectual property rights protection is likely to shift innovation away

from product improvements towards the development of entirely new products. (Glass, Wu 2007)

Even more recent contribution of Parello (2008) found that stronger intellectual property rights protection in imitating region has only a temporary impact on the innovation rate and negative long-run impact on the imitation rate. The study concludes also that stronger intellectual property protection might be ineffective in attracting technological knowledge when the local skill-level is low. The results of these innovation-imitation studies show that the relationship between intellectual property and FDI as channel for technology transfers is very complex.

Other authors indicate that in case when FDI has purpose of deterring local competitors the stronger patent protection reduces incentives to invest and substitutes FDI, while in case of other motives the reduced competition due to protective measures can encourage FDI. The sufficiently large market potential of the host location or relatively small R&D expenditures reduces the likelihood that strong patent protection facilitates FDI into that location. Hence, on large and attractive markets licensing is viable alternative. (Pfister, Deffains 2005)

Some authors studied the relationship between patent protection and FDI on the basis of data from 63 random countries. The study included also other control variables like market size, levels of corruption, unemployment rates, and international trade orientation of host countries. These results revealed clear positive relationship between stronger patent protection and levels of FDI. (Seyoum 2006)

The different impact of intellectual property rights protection on the innovation rate in developed and developing countries is outlined by Schneider (2005). In developed countries stronger protection supports domestic innovation, but in developing economies the impact can be negative. This suggests once more the imitative or adaptive nature of innovations in these economies.

There is a contribution that takes a more specific look on FDI and intellectual property to connection. This study investigates the impact on composition FDI on the basis of company data from Eastern Europe and former Soviet Union. The findings suggest that weak protection deters investors in technology-intensive sectors, because they rely on intellectual property. Weak intellectual property rights protection in the host country encourages FDI into distribution, but discourages local production. This implies that sales are not seen as possible channel for involuntary transfers or unwanted spillovers. (Smarzynska Javorcik 2004)

In a higher level of capital flow composition, the development economies gain indeed better access to intellectual property via attracting FDI, portfolio equity, or long-term loans, as opposed to short-term bank loans. (Williamson 2001)

The study made by Organisation of Economic Cooperation and Development (OECD) in 2003 revealed a positive but diminishing association between increased FDI and strengthening of intellectual property rights protection in developing

countries. Hence, countries with very weak initial protection may benefit most from stronger rules. (OECD 2003)

The relationship between intellectual property rights protection and location of R&D conducted by multinationals has been research as well. The study on topic shows that in developing countries location of R&D activities is motivated by need to adapt products or processes to market conditions and determined by the scope of multinational company's FDI. In developed countries however, the strength of intellectual property protection is very important factor in influencing the location of R&D. This analysis indicates also that technology transfers to food and chemical industries in developing countries are more facilitated by weaker patent protection. (Sanyal 2004)

Du *et al.* (2008) found that US investors in China clearly prefer regions, where property rights are better protected and contracts reliable. Thus, intellectual property rights protection and contract enforcement are important economic institutions by determining the location choices of foreign investors. Other authors point out that even if Chinese culture has certain adverse influence on intellectual property rights, the political, business, and social environment may still facilitate the acceptance of intellectual property rights and respect for them. Therefore, new more protective regimes are likely to emerge, has they have in Taiwan. (Berrell, Wrathall 2007)

Fahy *et al.* (1999) show also on example of Hungary that protection of private and intellectual property can be considered as one of the major factors behind FDI success.

Osland *et al.* (2001) studied the determinants of foreign market entry modes. Their results reveal that Japanese investors tend to be more sensitive to external risks, including insufficient intellectual property rights protection, than US investors. In case of US investors intra-corporate considerations dominate over external risks. Thus, not only attitude towards these rights and towards their protection, but also the intellectual property transfers and their modes are shown to be culturally sensitive. Slater *et al.* (2007) offer even more elaborate conceptualisation of ethnicity and decision making.

There is a study which takes another interesting perspective on the issue. He claims that by making FDI into emerging markets, during pre-investment environmental scanning, the managers often fail to account for the probability of intellectual property theft and infringement. The causes for this lie in false assumption about similarities in intellectual property cultures. As the business grows more global the likelihood of loosing intellectual property during FDI only increases, because regions differ. (Haley 2000)

Haley (2000) proposes to use the cross-environmental technology audit procedure, which investigates not only different environments (political, economic, legal, social-cultural, etc.), but also their interaction from intellectual property rights protection viewpoint. This could help to avoid extensive risks during FDI.

MacGarvie (2005) investigated the diffusion of technological knowledge on the basis of patent citations. The findings showed that diffusion is supported by physical and technological proximity and by sharing common language. FDI was positively associated with technology diffusion, but trade facilitates diffusion when countries innovate in similar fields.

Some authors differentiate in their study between non-affiliated contractual transfers to third parties and affiliated transfers within multinational company via FDI. They conclude that the choice between these two options is considerably influenced by the host market size, the degree of fragmentation or integration on regional basis, and the cultural and institutional barriers on FDI that increase transaction costs. In small and culturally alien markets which do not participate in regional integration non-affiliate transfers via licensing or franchising contracts are preferred to affiliated transfers. However, the preferences of multinational companies are likely to change as the markets develop. For example, the development and EU integration of Eastern European countries is likely to divert US investors towards affiliated methods. (Clegg, Cross 2000)

It has been also argued that low or high intellectual property rights protection standards encourage integrated governance, and FDI, while moderate standards are to be associated with a contractual protection. This is contrary to thinking that stronger standards will reduce the role of FDI as method of equity-based protection and increase the usage of licensing agreements as market-based method. (McCalman 2004)

There are works which show that intellectual property rights protection agreements and legislation often benefit the interest of large multinational companies from industrial countries rather than developing countries. Thus, the benefits of globalisation and international regimes of intellectual property protection remain dubious for developing regions. (Hartungi 2006) Ismail and Fakir (2004) show that internationally protected trademarks may devolve into protectionism. The overall social utility of transnational corporation from the perspective of allocative efficiency is criticised also by Jones (2000), who argues that they extract rents from countries and workers mostly in the name of shareholders wealth.

Other authors offer even more detailed analysis of knowledge transfer practices within multinational corporations. They conclude that hegemony of headquarters tends to cause loss of knowledge at the local level, while coercive practices are also used to implement transfers. When dealing with poorer nations multinationals may indeed invoke imperial attitudes. (Mir *et al.* 2008)

Schultz II and Nill (2002) analyse the social dilemmas associated with intellectual property rights violations from game-theoretical perspective. This study identifies several problems that make finding the global intellectual property rights protection system, which would serve the best long-term interests of largest number of society stakeholders, very difficult.

The study by Yang and Cheng (2008) relates the intellectual property rights protection with the context of privatisation of state-owned companies. Their model incorporates a multinational company, a local corporation, and host country government. They find that in case of a relatively small market size of host country stronger intellectual property protection or higher trade tariffs attracts more FDI. The high tariffs are likely to be used to attract FDI only when intellectual property is in small market weakly protected. In case of a relatively large host market neither these measures are likely to attract more FDI.

This discussion indicates that the relationship between intellectual property rights protection and FDI as well as the general context of technological knowledge transfers within and outside multinationals is very dependent on development levels, roles in international product life cycle, cultural differences, interplay of other environmental factors, in particular countries or regions. In the following section we describe the intellectual property rights creation and protection in Estonian.

The intellectual property and its protection in Estonia

European Innovation Scoreboard 2007 indicates that Estonia belongs to a country group of moderate innovators. The summary innovation index of this group is slightly below EU average. The calculated index for Estonia is 0.37, while index for EU27 is 0.45. Nevertheless, together with Czech Republic and Lithuania, Estonia was seen in scoreboard study as one potential candidate for catching-up within a decade. During the period from 2003-2007 the summary index of Estonia has improved from 0.35 to 0.37. (European Innovation Scoreboard 2007, 2008)

In this paper the focus is on intellectual property rights protection. Unfortunately when placed according to sub-indexes of knowledge creation[2] and intellectual property[3] Estonia ranks lower than in other sub-indexes. In dimension of knowledge creation has 5th lowest rank among all 38 observed countries and in intellectual property dimension 11th lowest. (*Ibid.)*

In comparison to other Baltic countries Lithuania has somewhat higher and Latvia somewhat lower knowledge creation index than Estonia. In terms of intellectual property, however, Estonia ranks considerably stronger because Lithuania and Latvia rank as 5th and 6th lowest accordingly. (*Ibid.*)

Knowledge creation is according to scoreboard championed by Sweden and intellectual property by Switzerland. Innovation efficiency in terms of converting inputs into outputs is championed by Germany and Luxemburg, while all Baltic countries have relatively low efficiency in providing intellectual property and

[2] input dimension that includes public and private R&D expenditures as % of GDP, share of medium-high-tech and high-tech R&D in these expenditures, and share of enterprises receiving public funding for innovation

[3] output dimension that includes EPO patents, USPTO patents, triad patents, new community trademarks, and new community designs (all per million population)

applications. However, placement of Estonia is considerably stronger than that of other Baltic countries. The share of non-R&D innovators is in Estonia about 57%, which is well above EU average of 46%. (European Innovation Scoreboard 2007, 2008)

In terms of patents, trademarks, and designs per million population Estonian data indicate 15.5 EPO patents (2003), no US patents (2003), 1.4 Triad patents (2005), 42.5 trademarks (2006), and 19.4 industrial designs (*Ibid*.)

Thus, in general Estonian innovations are not very intellectual property centred. Although the position is better than that of closest post-socialist neighbours the gaps with countries leading the knowledge creation and intellectual property aspects remain very large. All in all Estonia is a country with the small open market and predominantly imitative knowledge transfers.

The intellectual property statistics about 2008 are reported by the Estonian Patent Office. In terms of patents in total 72 applications were received 7 of which where PCT applications submitted via the Estonian Patent Office (See also Table 1). Although Estonian residents submit the majority of local applications, most entries into patent registry (final stage) concerned patents belonging to non-residents. The number of local patent applications is growing year by year. The numbers of registry entries have also increased. This is an indication that local patenting activities are gaining in importance. However, although before the EU accession the number of applications to local registry was far lower than now, the Estonian Patent Office processed much higher number of PCT applications than during 2006-2008. In 2001 for example 662 PCT applications, in 2002 663, in 2003 571, the number dropped after accession to EU.

Table 1. The applications and entries into local registries in 2006-2008

	Local applications		PCT/Intern. applications	Registered (Residents)
	Residents	Non-residents		
Patents 2008	62	3	7	172 (12)
Patents 2007	44	8	11	148 (3)
Patents 2006	36	7	2	95 (4)
Models 2008	132	4	4	65 (59)
Models 2007	117	5	2	61 (57)
Models 2006	67	6	2	69 (55)
Trademarks 2008	1426	374	2917	1238 (934)
Trademarks 2007	1537	443	3199	1178 (876)
Trademarks 2006	1284	420	3430	1379 (971)
Designs 2008	84	10	45	134 (87)
Designs 2007	62	59	70	157 (110)
Designs 2006	91	40	192	81 (46)

Source: The Estonian Patent Office, 2009.

Highest number of non-resident patents was in 2008 issued to Swedish owners (43 patents 25% share from all issued patents). Other foreign patent owners are from Germany (25; 14.53%), USA (23; 13.37%), France (18; 10.47%), Finland (8; 4.65%), and Belgium (7; 4.07%). The position of Finland in this list is in comparison to other neighbour Sweden is somewhat surprising. Also in 2007 Finland was in similar place. (The Estonian Patent Office 2009)

For utility models the general tendencies look quite similar. However, the share of Estonian residents among owners of registered models is higher than in case of patents. The figures in table 1 show that change in utility model registration has been slower than that of patent registration. (*Ibid.*)

The non-resident utility models were in 2008 owned by Russian residents (3 models or 4.62% share from all registered models). Denmark, Netherlands and Sweden were the other non-resident origins by one registered utility model each. (*Ibid.*)

The number of trade and service mark applications is much larger than in two earlier categories of intellectual property. It is natural because the creation of unique trademark is often pre-scribed by the nature of branding process. Also in this category applications of residents dominate. However, the share of non-resident applications from total number is much higher than for patents and utility models. If we include international registrations applied to be registered also in Estonia, then non-resident applications become dominant. Unlike in case of patents, the share of resident owners from all owners of registered trademarks is again high. There is no clear growth tendency in applications of trade and service marks. The registration numbers fluctuate also. Perhaps indeed different economic aspects prevail in trademark registration and patenting decisions. In some sense the statistics point also to the fact that intellectual property in distribution is much more common in Estonia than the proprietary aspects related to products and processes.

In 2008 local but non-resident trade and service marks were registered to US owners (82 trademarks; 6.62% from total of registered marks) and to owners from Switzerland (35; 2.83%), Finland (24; 1.94%), and Germany (21; 1.7%). When we include internationally registered non-resident trademarks that came into force in Estonia in 2008, then Germany dominates as the country of origin with 414 trademarks, followed by France (227), Russia (193), and Switzerland (189). (The Estonian Patent Office 2009)

Last major category of intellectual property governed by patent offices is industrial design. The figures in table 1 reveal considerable decline in local applications. From 2006 to 2008 the number of forwarded international applications has also decreased from 192 to 45. These statistics imply considerable setback in terms of new industrial designs, the causes of which are yet to be identified.

From locally registered non-resident industrial designs in 2008 42 designs or 31.34% of registered designs originated from Finland, 3 (2.24%) from Ukraine, 1 (0.75%) from France and 1 (0.75%) from Spain. The total of local and international

registered non.-resident designs was in 2008 dominated by owners from Switzerland (97 designs) followed by Finland (42), Germany (6), and Spain (4). This shows that the origin of registered non-resident patents, utility models, trade or service marks, and industrial designs is by no means limited to very close countries. (The Estonian Patent Office 2009)

Foreign direct investments into Estonia

Despite its smallness Estonia has succeeded in attracting the foreign capital. The incoming FDI has helped to re-build Estonian economy. Figure 1 shows the changes in the inward and outward FDI flows of Estonia between 2002 and 2007. Thus, it captures the period before and after EU-accession. It can be seen that inward flows have been far more prominent. However, after the EU-accession in 2004 the outward investments from Estonia have also gained in importance. In 2006 and 2007 the outward flows grew more consistently than inward flows. (Bank of Estonia 2009)

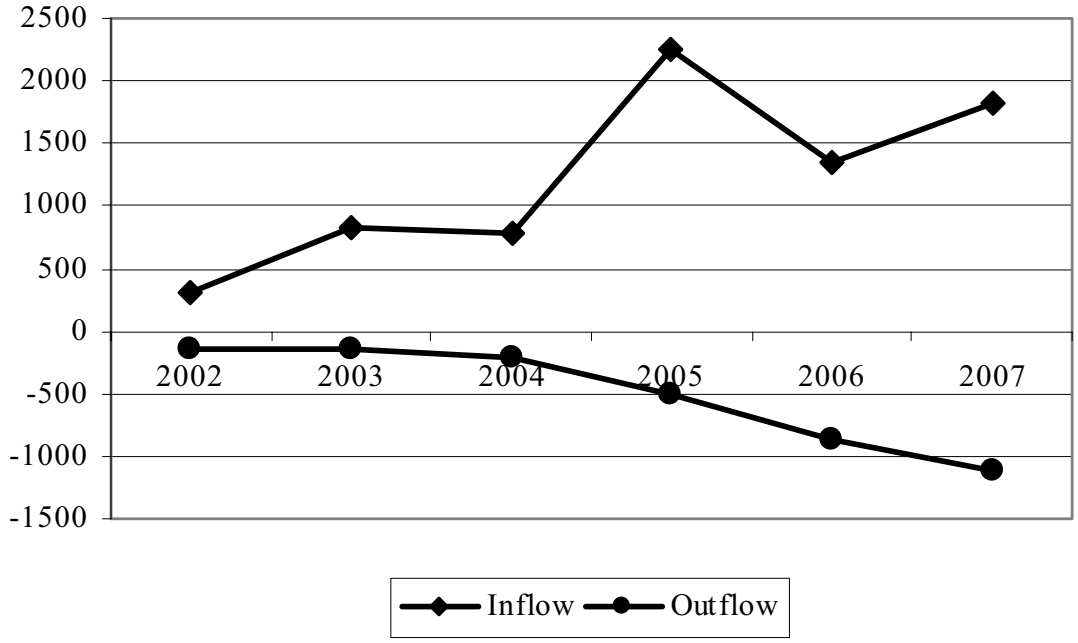

Figure 1. Inward and outward FDI flows in Estonia between 2002 and 2007 (in millions of EUR). (Bank of Estonia)

The total stock of Estonian inward FDI amounted to EUR 11929 million as of the end of September 2008, which is close to three times more than outward FDI (EUR 4728 million). The ratio between the stock of outward and inward FDI was 39.6% in September 2008 (35.4 % in the end 2007). This indicates that outward stock is indeed growing faster. (Bank of Estonia 2009)

By the fields of activity the most important sectors are financial intermediation with 32.7 % of total inward FDI (36.8% from outward FDI), followed by real estate and business services 28.1 % (35.1%), and manufacturing industries 14.3% (4.3%). In outward FDI stock third largest sector is transportation and telecommunication

sector with 12.0%. The FDI into Estonia is thus characterized by the dominating role of services. (Bank of Estonia 2009)

However, in years 1994-1995 most foreign investments were made into manufacturing industries. Based on the business statistics collected by Statistical Office of Estonia, we can say that in 1995 food, beverages and tobacco industries got 26.9% of all FDI made into manufacturing industries and production of chemicals, chemical products and oil shale accounted for 24.3%

If during years in between the chemical industries became most prominent recipients of inward FDI by getting 1/5 or even a quarter of all FDI into manufacturing, then for the year 2000 the relative importance of food and beverage industries increased again. In 2006 food and beverages accounted again for 23.5% of inward FDI. The pulp and paper industries got in the middle of 90s 8-10 percent of investments. Since 1997, the share of textile industries has fluctuated between 10 and 15 percent, being higher in a period 2001-2003. In 2004-2006 FDI into wood and wood products has increased above 12%. (The Statistical Office of Estonia 2009)

2003 and 2007 were the years of intensive investments into wholesale and retail trade. If in 2004, 2005 and 2006 the inflows of FDI to trade sector were smaller then the year 2007 became record-breaking in terms of amount invested into Estonian wholesale and retail sector. In that year about 345 million euros were invested into that sector. These industry level data reflect the ongoing expansion of predominantly foreign owned retail chains in Estonia. (*Ibid.*)

After the relatively volatile levels of investment inflows into transport, storage and communication, during the years 1999-2001 the annual flows stabilised above 64 million euros. During that period the inflow of investments into communication was supported by the privatisation process of Estonian Telecom and the abolishment of monopolistic agreements concerning communication services. From 2002 the inflows have been again more unstable. In some years sector gains foreign assets and in others looses. (*Ibid.*)

There have been certain very important changes in attractiveness of Estonian financial intermediation companies for foreign investors. When in 1994-1996 the FDI into that sector was modest in comparison with investments into manufacturing and trade, then the foreign interest peaked first in 1998 with acquisitions of strategic shares of two largest banks. In connection with these deals more than 275 million euros were invested into financial intermediation. The level of FDI inflow into that sector has been even higher in 2005-2007, fluctuating between 785 million and almost 2 billion euros annually. (*Ibid.*)

In the year 2007, more than 310 million euros were also invested into Estonian real estate, renting and business activities. In earlier years, 1994-1997, only below 13 million euros inward FDI went annually into that industry, but in recent years the level has been much higher but very fluctuating. In other industries the FDI inflows have been in general much smaller than in described industries. (*Ibid.*)

According to data from September 2008 39% of inward FDI has been received from Sweden, 24.7% from Finland, 6.3% from Netherlands, 3.9% from Norway, 2.8% from Norway, and 2.7% from Russia. Outward FDI has been made predominantly to Latvia (33.3%), Lithuania (28%), Cypros (9.1%), Finland (4.7%), Russia (4.6%), Ukraine (3.9%), and Italy (3.2%). (Bank of Estonia 2009)

In the next section we will discuss the intellectual property rights protection policies for Estonia in connection with EU-membership and FDI. This should help to determine appropriate solution for attracting knowledge related FDI, while accounting for EU-wide protection systems.

The policy choices for intellectual property rights protection in Estonia

The national intellectual property rights protection in Estonia re-emerged with the re-establishment of the Estonian Patent Office in 1991. Patent law and utility model law were passed in spring 1994. Industrial designs have separate legal regulation since 1998 (the law was passed in November 1997). Trade and service marks received separate law from date of accession to EU (1st of May 2004), although legal acts were prepared two years earlier. All these laws have been by now refined several times. (The Estonian Patent Office 2009)

The general intellectual property rights protection is in accordance with various international treaties and conventions. The Estonian Patent Office processes also international patent applications related to Washington 1970 Patent Cooperation Treaty (PCT) and by the European Patent Convention 2002. The rights protection cooperation in the international and EU-wide patent networks prescribes strict processing and submission rules that are to be followed.

Thus, in terms of legislative and procedural standards Estonia is in accordance with EU-wide protection policy. This policy can be described as strong, harmonising, and aimed at community-wide cost efficiency. Prior to the accession to EU, and especially before new millennium, the Estonian intellectual property rights protection system dealt predominantly with applications from non-residents that were seeking legal protection in Estonia. Only the applications concerning utility models were mainly domestic in origin. In many respects the foreign patenting initiatives dominate even now. (The Estonian Patent Office 2009)

Although the legal framework has developed throughout the last 18 years, the larger problem in terms of sufficient protection has been the enforcement. In 1990-s Estonian police force lacked at first the experience and tools for adequately preventing the infringements. These difficulties of enforcement are usually most explicit in the field of copyrights for software and audio visual materials. In late 80-s and early 90-s the image of entire post-socialist region was characterised by widespread piracy in public markets. As the living standards have gradually grown, the police and NGO initiatives for better enforcement practices have emerged as well. The legal offerings are now also more affordable for an average consumer.

However, via internet based P2P software solutions certain intellectual property rights (especially copyrights) are now under global rather than local attack.

The copyright enforcement strength and practices in a country may serve as an important signalling tool about the general strength of intellectual property rights protection there. When police force, courts and other public or private guardian units fail to offer sufficient protection in these explicit infringement matters, far more fuzzy and implicit patent misuses are perceived as highly likely in such an environment.

Hence, the true strength of intellectual property rights protection is indicated not by regulatory standards *per se* but by strong cases of sufficient enforced protection in cases of claimed infringements. In Estonia the actual (enforced) level of protection is now considerably stronger than in 1990-s. This is especially true about the corporate usage of intellectual property.

In terms of intellectual property rights protection policies, the relative strength and attractiveness of the system are influenced not only by legal and enforcement issues. The other policy domains include the visibility of commercial usage, academy-industry links of intellectual property creation, and market size. In addition to these the general facilitation of innovativeness, short term vs. long term investment horizons, and intellectual property protection traditions came into play.

The relatively low level of domestic patenting in Estonia can be at least partially attributed to the weak links between academic research and commercialisation of results. Unlike in Sweden and Finland there is no long lasting tradition of industrial contracts. Although first signs of industry-driven research initiatives can be seen, the general research tradition in universities lacks strong connections to leading edge technological problems in Estonian industries. The ideas about the applicability of particular proprietary innovation in industries remain often too vague.

This aspect of intellectual property governance calls for following policy measures:

- Better utilisation of EU-wide financing schemes to facilitate academic research based on international industrial contracts (customised research for an industrial partner);
- Establishment of national financing schemes and development programs for the facilitation of applied research and academy-industry cooperation (by first screening the areas with highest intrinsic potential for such cooperation);
- Establishment of public promotion unit similar to International Financial Corporation from World Bank group, which can temporarily take equity ownership in spin-offs oriented for intellectual property commercialisation;
- Establishment of commercialisation consultancy unit for high-tech spin-offs by the Enterprise Estonia;
- Supporting Inter-university cooperation on applied research projects via the Ministry of Education and Research and its sub-units.

- Extended cooperation with other EU-members (especially Nordic countries) on intellectual property generation an utilisation practises.

Due to the extreme smallness of Estonian market for leading edge products the regional integration into EU in terms of exporting and industrial contacts is paramount in the facilitation of intellectual property commercialisation. Estonian market alone is inherently too small for solely national offerings. Access to wider Baltic, Nordic and EU markets is inevitable precondition for the efficient utilisation of domestically created intellectual property.

The smallness of our market can also explain the low usage of contractual entry modes (especially licensing in) in comparison to importing and inward FDI. The more extensive transfers of proprietary technology via licensing could be made visible by regional rather than local representation rights. These rights, however, are not easily obtainable and remain vary sensitive to political as well as economic developments in target region. The Baltic-wide representation is quite visible possibility. The extension of such international target area to include Nordic region or Russia and Ukraine is unfortunately unlikely.

These facilitation policies might not bring sufficient impact without wider shift in industrial and economic policy towards valuing intellectual property creation. At present the Estonian economy is too reliant on application of imported solutions. Some innovative industry clusters in information technology (including Skype, Playtech, Webmedia, Regio) and in biotech (including Asper, Quattromed and others) have emerged, but even they do not always control core ideas. For example, Skype is still developed in Estonia, but the core solution is not domestic in origin.

The key issue for post-crisis Estonian economy will be the governance of domestic knowledge. It includes the eminent need to increase the general level of innovativeness and entrepreneurship in Estonian society. One serious barrier, to be accounted for in this process, concerns the short term profit expectations of post-socialist investors. Unlike imitative or distributive business models, the innovative projects require often considerably longer time before rendering considerable returns. The clearly defined public policies are also needed to facilitate long term risk taking by potential investors. In the initial stages of policy shift, this may require strong financial safeguards until long term investing becomes more habitual.

Estonia does not have deeply rooted intellectual property rights protection traditions, like for example USA, Japan, and Netherlands. The building of national patenting system prior to World War II was interrupted by Soviet era during which the fruits from intellectual property where obtained by government bodies and not by innovators. This reward policy did clearly alienate innovators from the fruits of their work and led to general public devaluation of intellectual property. Unlike in China, the causes for disregard were not deeply embedded in culture, but in prevailing public ideology. The almost two decades of independence have certainly helped to remedy this alienation to some extent, but it will take more time and joint effort to build strong tradition of intellectual property creation. This is a matter of not only

economic or industrial policies, but also for education policy concerning curricula in schools and maybe even in pre-schools.

These wider policy issues are also likely to impact the relationship between the strength of intellectual property rights protection in Estonia and inward FDI. On the bases of our discussion above it might seem that stronger and improved intellectual property rights protection and enforcement measures have clearly positive relationship to inward FDI. However, we have to ask, how important intellectual property is for foreign-owned companies in Estonia?

Proxy indicators of intellectual property usage by foreign-owned companies are included into 5th Community Innovation Survey, which covers the period from 2004 to 2006. From total of 1924 companies, who participated in survey[4], 2.7% or 52 companies had applied for patent during 2004-2006, 1.7% or just 32 companies had registered an industrial design, 12.9% or 248 companies had registered trade or service mark, and 2.3% or 45 companies had applied for copyright. (Community Innovation Survey 5 2008)

More detailed view on these four intellectual property rights protection measures by ownership type reveals that patenting was undertaken slightly more in minority and majority foreign-owned companies. Minority foreign-owned companies registered trade or service marks also more than other types. Largest share of fully foreign companies made use of copyright laws. The intellectual property transfers and protection in domestic companies was in general more moderate than in the companies with some foreign ownership. (Community Innovation Survey 5 2008)

35.9% of all respondents from 1068 who answered to particular question said that in period 2004-2006 they had transferred patents, non-patented inventions, know-how, or other knowledge from other organisations.

Table 2 indicates that these inward transfers were somewhat more extensive in foreign-owned companies (especially in majority foreign or fully foreign companies). It has, however, to be notified that these transfers include also non-proprietary knowledge.

Table 2. Intellectual property rights protection and transfers (% of respondents)

	Foreign-owned companies				Domestic companies
	All	< 50%	50-99%	100%	
Patent application	3.6	4.5	5.9	2.3	2.3
Industrial design	2.0	2.7	1.5	1.9	1.5
Trade/service mark	13.7	18.2	16.9	10.6	12.6
Copyright application	2.7	2.7	1.5	3.2	2.2
Inward transfers	42.6	37.1	45.6	43.2	32.3

Source: Community Innovation Survey 5: 2004-2006, 2008.

[4] all also answered particular intellectual property questions

To generalise, it seems that although the foreign ownership ties facilitate intellectual property rights creation and transfers, the relationship between foreign investments into Estonia and intellectual property in Estonia is rather weak.

This evidence is supported by various surveys of foreign investors. These indicate that investors are not primarily motivated by strategic assets (including intellectual property rights) and new technologies in investing into Estonia. The market presence and growth are far more important motivations. Patents and licenses are also not the main sources of their competitive advantage. Inward-outward transfers of patented technology ranked also low among other types of knowledge transfers and are thus not very important and common. (The Survey of Estonian Outward FDI 2006; The Survey of Estonian Inward FDI 2006)

Given this more detailed information from surveys, it seems more appropriate to conclude that due to low creation and usage of intellectual property by foreign investors in Estonia the strength of intellectual property rights protection and inward FDI flows are weakly related or even autonomous. There are no strong complementarities between the intellectual property and FDI. This can be also attributed to the small market size here in Estonia, which does not provide attractive incentives for intellectual property usage. Other cause might be that the large investments into service sector rely on specific knowledge types, which cannot be directly patented.

The discussion of policies showed that although legal framework is to the large extent pre-scribed by international and EU-wide cooperation. The strengthening of intellectual property rights protection can occur through enhanced enforcement practices and image. However, the relative strength of the protection system is influenced considerably by the visibility of commercial usage via academy-industry links, market size, the general facilitation of innovativeness, short term vs. long term investments, and intellectual property traditions. The relationship between the strength of intellectual property rights protection and FDI into Estonia was shown to be uncommonly weak.

Conclusions and implications

The relationship between the strength of intellectual property rights protection and FDI and is not straightforward. The strengthening of intellectual property rights protection in imitating region (for example in catching-up country like Estonia) can also reduce incentives for FDI to there and innovation. The policy of multinational companies may also be rather hegemonic and rent reaping. It is difficult to determine globally acceptable and economically as well as socially suitable standards of intellectual property protection.

The comparative levels of knowledge creation and intellectual property in Estonia are relatively low. This implies that unlike in Sweden, Switzerland, USA, Germany and Finland, insufficient public or private funding is provided for innovation, and that the available funds fail to render an efficient output in terms of international

patents, trademarks and industrial designs. In comparison to other Baltic countries Estonia has still the strongest position and from general innovation perspective the catching-up to EU average level might happen faster than in several other member-states.

During 2006-2008 local applications and registrations of patents by the Estonian Patent Office have increased in numbers. More massive submission of applications for international PCT patents took place in 2001-2003 and thus prior to EU accession. The utility model registration applications are in Estonia more common than patents. Most popular registration efforts concern trade and service marks. Industrial designs are submitted less intensively than some years earlier.

Estonia has been very successful in attracting inward FDI. Outward flows have grown predominantly in new millennium. The largest share of FDI has been received by financial intermediation sector followed by real estate and business services. The inward FDI into Estonia can in general be described by the dominance of service sector. Sweden and Finland have contributed the dominant share of inward FDI.

The legislative aspects of intellectual property rights protection in Estonia have been formalised and gradually improved starting from 1994. Much like in other post-socialist economies, the initial situation with enforcement was poor and reflected badly on general image of intellectual property protection. At present the enforcement measures are considerably better. The legal framework is by now indeed largely determined by international and community-wide intellectual property protection standards. The further strengthening of intellectual property rights protection can take place by enhancing the local enforcement practices and subsequently international image.

The relative strength of the intellectual property rights protection system is influenced also by the visibility of commercial usage via academy-industry links. The policy mix of international and national efforts is needed to facilitate these links. The small market size in Estonia is an important barrier for intellectual property transfers. Enhanced regional integration to govern rights in larger target region is needed.

The general facilitation of innovativeness and additional public incentives for long term investments into innovative projects as well as re-establishment of interrupted intellectual property traditions are vital policy issues as well.

The relationship between the strength of intellectual property rights protection and FDI into Estonia is rather weak. The intellectual property and FDI are in Estonian context not strongly complementary. The reason might lie once again in a small market size that is insufficient for the provision of attractive intellectual property usage incentives. It may also relate to the fact that the large and dominant investments into Estonian service sector rely on specific knowledge types, which cannot be patented or otherwise legally protected.

The results of this policy discussion are limited by the lack of comprehensive survey on the subject. The available proxy indicators used in this study do not capture the entire complexity of the intellectual property rights protection issue. Patents, utility models, trademarks, and industrial designs cover only most legal and explicit types of proprietary knowledge. The statistics and survey results provide preliminary possibilities for generalizations, but the true nature of international knowledge transfers is often very tacit and embedded in particular governance structures.

Hence, the theoretical implications from our discussion point to a need for the investigation of FDI and intellectual property protection relationships from management perspective. The studies done so far are often at macro level and to aggregating in nature.

Managers can benefit from this study by mapping out their role in contributing to the various suggested intellectual property policies and by monitoring the potential for academic research contributions into intellectual property development in their particular business area. The managers' involvement in the public discussion about the appropriate commercialisation policy measures is vital for the emergence of inherently functioning initiatives and academy-industry links.

The future research could focus on providing more detailed data about the main types of knowledge involved in international intra-corporate transfers. Other important research venue relates to the efficiency of intellectual property usage in small open economies and to the possibilities for enhancements in that field. The discussion of intellectual property rights protection and its strength could also benefit from detailed case studies, which would help to discuss the particular causes of intellectual property creation and usage.

References

1. Bank of Estonia (2009). http://www.eestipank.info/frontpage/en/.
2. **Berrell, M., Wrathall, J.** (2007). Between Chinese Culture and the Rule of Law: What Foreign Managers in China Should Know About Intellectual Property Rights. – *Management Research News*, 30 (1), pp. 57-76.
3. Community Innovation Survey 5: 2004-2006 (2008) – country data collected by the Statistical Office of Estonia (MS Excel xls dataset).
4. **Clegg, J., Cross, A. R.** (2000). Affiliate and Non-Affiliate Intellectual Property Transactions in International Business: An Empirical Overview of the UK and USA. – *International Business Review*, 9 (4), pp. 407-430.
5. **Du, J., Lu, Y., Tao, Z.** (2008). Economic Institutions and FDI Location Choice: Evidence from US Multinationals in China. – *Journal of Comparative Economics*, 36 (3), pp. 412-429.
6. European Innovation Scoreboard 2007 (2008). http://www.proinno-europe.eu/admin/uploaded_documents/European_Innovation_Scoreboard_2007.pdf, PRO INNO Europe.

7. **Fahy, J., Shipley, D., Egan, C., Neale B.** (1998). Motives and Experiences of International Joint Venture Partners in Hungary. – *Journal of Business & Industrial Marketing*, 13 (2), pp. 155-165.
8. **Glass, A. J., Wu, X.** (2007). Intellectual Property Rights and Quality Improvement. – *Journal of Development Economics*, 82 (2), pp. 393-415.
9. **Glass, A. J., Saggi, K.** (2002). Intellectual Property Rights and Foreign Direct Investment. – *Journal of International Economics,* 56 (2), pp. 387-410.
10. **Haley, G. T.** (2000). Intellectual Property Rights and Foreign Direct Investment in Emerging Markets. – *Marketing Intelligence & Planning*, 18 (5), pp. 273-280.
11. **Hartungi, R.** (2006). Could Developing Countries Take the Benefit of Globalisation? – *International Journal of Social Economics*, 33 (11), pp. 728-743.
12. **Ismail, Z., Fakir, T.** (2004). Trademarks or Trade Barriers?: Indigenous Knowledge and the Flaws in the Global IPR System. – *International Journal of Social Economics*, 31 (1/2), pp. 173-194.
13. **Jones, M. T.** (2000). The Competitive Advantage of the Transnational Corporation as an Institutional Form: A Reassessment. – *International Journal of Social Economics*, 27 (7/8/9/10), pp. 943-968.
14. **MacGarvie, M.** (2005). The Determinants of International Knowledge Diffusion as Measured by Patent Citations. – *Economics Letters*, 87(1), pp. 121-126.
15. **McCalman, P.** (2004). Foreign Direct Investment and Intellectual Property Rights: Evidence from Hollywood's Global Distribution of Movies and Videos. – *Journal of International Economics*, 62 (1), pp. 107-123.
16. **Mir, R., Banerjee, S. B., Mir, A.** (2008). Hegemony and its Discontents: A Critical Analysis of Organizational Knowledge Transfer. – *Critical Perspectives on International Business*, 4 (2/3), pp. 203-227.
17. OECD (2003). *The Impact of Trade-Related Intellectual Property Rights on Trade and Foreign Direct Investment in Developing Countries*. OECD Papers, 3 (11), pp. 4-40.
18. **Osland, G. E., Taylor, C. R., Zou, S.** (2001). Selecting International Modes of Entry and Expansion. – *Marketing Intelligence & Planning*, 19 (3), pp. 153-161.
19. **Parello, C. P.** (2008). A North–South Model of Intellectual Property Rights Protection and Skill Accumulation. – *Journal of Development Economics*, 85 (1/2), pp. 253-281.
20. **Pfister, E., Deffains, B.** (2005). Patent Protection, Strategic FDI and Location Choices: Empirical Evidence from French Subsidiaries' Location Choices in Emerging Economies. – *International Journal of the Economics of Business*, 12(3), pp. 329-346.
21. **Sanyal, P.** (2004). Intellectual Property Rights Protection and Location of R&D by Multinational Enterprises. – *Journal of Intellectual Capital*, 5 (1), pp. 59-76.
22. **Schneider, P. H.** (2005). International Trade, Economic Growth and Intellectual Property Rights: A Panel Data Study of Developed and Developing Countries. – *Journal of Development Economics*, 78(2), pp 529-547.
23. **Shultz II, C. J., Nill, A.** (2002). The Societal Conundrum of Intellectual Property Rights: A Game-Theoretical Approach to the Equitable Management and Protection of IPR. – *European Journal of Marketing*, 36 (5/6), pp. 667-688.

24. **Seyoum, B.** (2006). Patent Protection and Foreign Direct Investment. – *Thunderbird International Business Review*, 48 (3), pp. 389-404.
25. **Slater, S., Paliwoda, S., Slater, J.** (2007). Ethnicity and Decision Making for Internationalization. – *Management Decision*, 45 (10), pp. 1622-1635.
26. **Smarzynska Javorcik, B.** (2004). The Composition of Foreign Direct Investment and Protection of Intellectual Property Rights: Evidence from Transition Economies. – *European Economic Review*, 48 (1), pp. 39-62.
27. The Statistical Office of Estonia (2009). http://www.stat.ee
28. The Estonian Patent Office (2009). http://www.epa.ee
29. The Survey of Estonian Outward FDI (2006). Survey Data, University of Tartu, Enterprise Estonia
30. The Survey of Estonian Inward FDI (2006). Survey Data, University of Tartu, Enterprise Estonia
31. **Williamson, J.** (2001). Issues Regarding the Composition of Capital Flows. – *Development Policy Review*, 19 (1), pp. 11-29.
32. **Yang, Q., Cheng, L.** (2008). Import tariff, Intellectual Property Right Protection and Foreign Merger. – *Economic Modelling*, 25 (6), pp. 1225-1231.