

WIPO - UNU Joint Research Project

Impact of the Intellectual Property System on Economic Growth

Fact-Finding Surveys and Analysis in the Asian Region

Country Report - Vietnam

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1. Introduction

1.1 Outline of the present IP System

On 29 November 2005, the National Assembly enacted a new Law on Intellectual Property. Before 2005, under the Civil Code, there were only provisions on patent, utility solution, industrial design, trademark and appellation of origin. Protection of other industrial property rights was stipulated in several documents issued by the Government. In addition to the type of IP rights covered by the Civil Code, the IP Law 2005 includes provisions on circuit layout, geographical indication, unfair competition, trade name and trade secret. Enforcement of IP rights is considered as the weakest point in Vietnam's current IP protection system. Therefore, the IP Law has devoted the whole Part V trying to deal with this matter.

Under the IP Law 2005, there are several government decrees providing guideline for the implementation of the Law, e.g. the Decree 106/2006/ND-CP on administrative measures dealing with IP infringements; Decree 105/2006/ND-CP on the state management on IP, etc. Ministry of Science and Technology (MOST) is the entitled authority in managing IP in Vietnam. MOST cooperates with other ministries and authorities to draft more detail guideline circulars in order to implement IP Law and governmental decrees. The National Office of IP (NOIP) under MOST is in charge of implementing management activities related to IP. However NOIP is only in charge of industrial property and general issue. Other issues related to copyright is managed by the National Copyright Office under Ministry of Culture, Sport and Tourism. Office for Protection of New Plantation Seeds under Ministry of Agriculture and Rural Development is in charge of new plantation seeds.

Besides provisions stipulated in the IP Law, other laws and regulations also provide provisions related to IP such as the Criminal Code (1999), Science and Technology Law (2000), Customs Law (2001), Trade Law (2005), Investment Law (2005), Technology Transfer Law (2005), etc. Regarding to international treaties, Vietnam is a member of almost important conventions such as Stockholm Convention, Paris Convention, Madrid Agreement, PCT, Bern Convention, TRIPs, Rome Convention, and Lahay Convention. Vietnam also signed bilateral agreements with several countries that have a part related to IP such as the Bilateral agreement between Vietnam and United State.

1.2 Outline of the present Economic Situation

Since 1986, Vietnam started the transition from a central planned economy to a market economy. Many efforts in reforming economic policies and strategies have been implemented and as a result, Vietnam has gained many positive achievements. GDP per

capita is continuously increased from under 100USD in late 80s to nearly 700USD in 2005. Growth rate of GDP reaches a very good performance, 8% last year (see Figure 1).

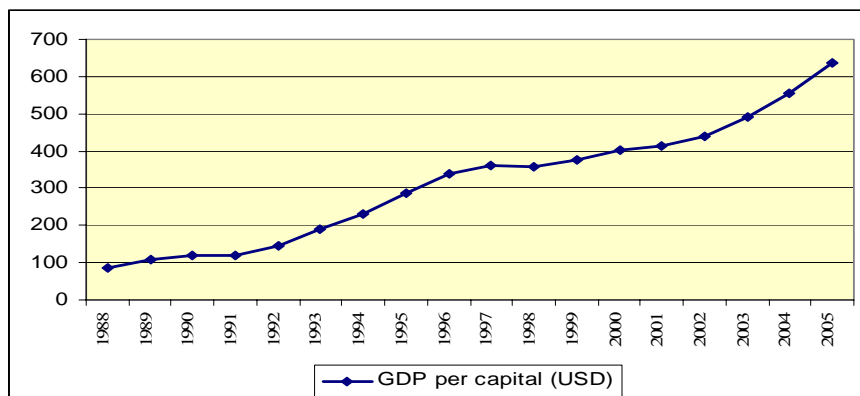


Fig. 1: GDP per capita (Source: GSO)

Since 1987, Vietnam has been very successful in attracting FDI (see Figure 2). With advantages of low distance and cultural similarity, businesses from neighboring countries such as Singapore, South Korea, Taiwan, and Japan set their affiliations in Vietnam early after its open-door policy. These countries alternate among the top rankings of FDI in Vietnam. Although FDI companies employed less than 1% of the total workforce in Vietnam, they cumulatively accounted for around 27% of the country's non-oil exports and 35% of the country's total industrial output, constituted almost 13% of Vietnam's GDP, and contributed around 25% of total tax revenues. Vietnam is ranked at third in attracting FDI in Southeast Asia. Thus, FDI is turning to Vietnam despite the global downturn in FDI and fierce competition for FDI worldwide (Vietnam Investment Review, 2001). There is not a clear indicator, however, FDI companies are believed to have a better understanding about the importance of IPRs than local companies.

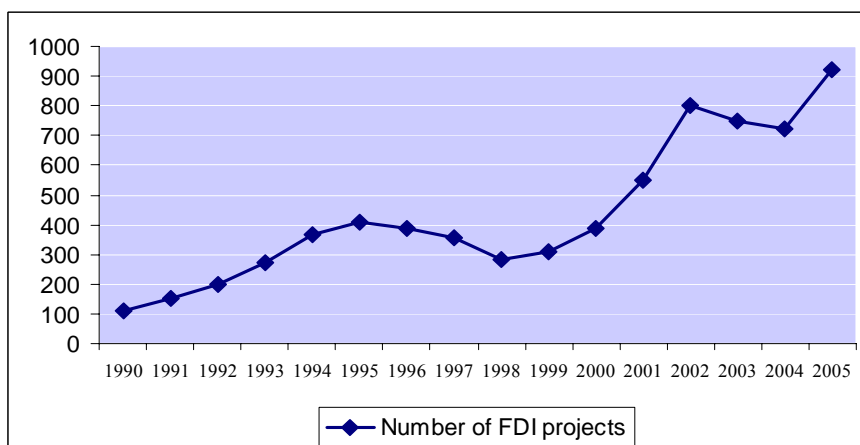


Fig. 2: Number of FDI projects (source: GSO)

Since 1995, gross output of industry is dramatically increased although before 1995, is was very low. This increase happens in almost every industry, e.g chemicals, machinery, transport equipment assembling and repairing. Computer and office equipment is a new industry in Vietnam but it has contributed to the increase of the gross output of total industry since 2000.

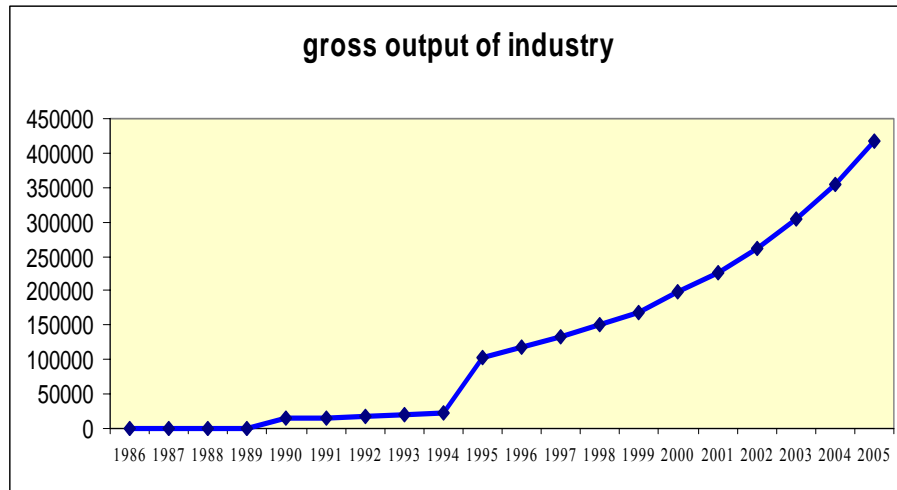


Fig. 3: Gross output of industry (Source: GSO)

In 2006, Vietnam has succeeded in negotiation with members of the World Trade Organization (WTO) and formally joined the Organization. This movement opens new phase of economic and social development for Vietnam, however, along with opportunities, there are many challenges that need to overcome and IPRs is one of issues needed to strengthen in order to catch up in new context.

2. Survey on Reforms towards IP-based Economic Development

2.1 Brief History of Intellectual Property Laws and Policies in Vietnam

In 1981, the Decree number 31-CP on *innovations for technical improvement, production rationalization and inventions* was issued. This document provided first regulations relating to intellectual property in Vietnam. After that, from 1982-1988, more regulations were issued on trademarks, industrial design and utility solution¹. According to these regulations, measures for the protection of industrial property were mainly of administrative nature. In this period of time, patents were protected under two forms - inventor certificate and exclusive patent on invention. The use of the inventor certificate (appropriate form of protection for a centrally planned economy) was encouraged, whereas the exclusive patents for inventions were mainly granted to foreigners.

In 1989, the Ordinance on the Protection of industrial property was approved by the State Council². Under this Ordinance, the regulations had higher legal level than ones under the decrees. For the first time, the concept "industrial property" was used in a legal document. Apart from the four types of industrial property (invention, utility solution, industrial design, and trademark) protected according to separate Decrees as before, the Ordinance stipulated the protection of appellations of origin in order to promote the creation of original products with the origin from specific areas, regions or localities in the country. The measures and remedies for protection of industrial property rights were also broadened rather than just limited to the administrative scale. Thus, the court system then had legal ground for taking judicial procedures relating to industrial property rights. One of the important points mentioned in the Ordinance on the protection of industrial property rights was the change of the principles for the protection of inventions, where the form of protection by granting inventor certificate was abolished and the only form of protection remained, i.e. by granting exclusive patent on invention. This was considered as an important milestone in the development of the industrial property protection system in Vietnam compared with other socialist countries at that time.

Early 1995, Vietnam filed application for the membership of WTO. At this time, the industrial property protection system functioned mainly on the basis of "under-law" documents³. In comparison with TRIPs, at the time when Vietnam filed application for accession to the WTO, its industrial property system was far not in compliance with the TRIPs agreement. Therefore, Vietnam had developed an IPRs Action Plan whose

¹ These regulations were issued under "decree" forms – the documents issued by the government.

² Later, the Ordinance regarding to copyrights was approved by the State Council in 1994.

³ The Ordinance on the Protection of Industrial Property (1989) and the Ordinance on the Protection of Copyrights (1994).

overall objective was to make the Vietnamese IP system fully comply with the TRIPs by 1 January 2000⁴. The initial important step in implementing the Action Plan was the promulgation of the Civil Code in 1995, where the part VI addressed Intellectual Property Rights and Technology Transfer. The Civil Code constituted the highest legal status to implement comprehensive industrial property activities and it marked an epoch-making turning point in the history of protection of industrial property in Vietnam. From 1996-2001, there was a number of under-law documents issued to provide guidance for the implementation of the Civil Code as well as provide additional regulations on other objects such as business secrets, geographical indications and trade name, protection against industrial property –related unfair competitions.

However, the IP system is still not fully comply with the requirements of TRIPs-WTO Agreement. Therefore, the National Assembly decided to continue improving the legislation framework for the activities in this field to promote the creative activities and enhance the competitiveness of the economy. In 2005, the National Assembly approved the new Civil Code whose part VI provide for the most basis civil aspects of the IPS (owners, subject matters, contents, ground for establishing and existing IPRs, licensing and assignment of IPRs). Thus, in comparison with the Civil Code 1995, IP provisions of the Civil Code 2005 have been trimmed and consist of the “core” provisions to regulate the civil relations concerning the IP assets.

On 29 November 2005, the National Assembly enacted the Intellectual Property Law composed of 6 parts, 18 chapters and 222 Articles. Provisions of the IP Law 2005 fully comply with the TRIPs-WTO Agreement. The enactment of the IP Law in 2005 can be considered as a milestone marking Vietnam’s efforts during 10 years preparing for the implementation of obligations of a member for WTO.

2. 2 Identification of Reforms towards IP-based Economic Development

The first regulations regarding to invention protection in 1981 (Decree 81) can be considered as one of the most important reform in the history of IP law in Vietnam. As this is the first time invention protection was regulated under a legal document, even the regulation was issued by the government.

In 1986, the “Doi Moi” economic reform was started in Vietnam. In order to attract foreign direct investment, the state decided to amend policies in order to create a good environment for business performances. The issuance of an Ordinance on Industrial Property in 1989 was considered as one of important movements to attract foreign investment. This is also considered as a reform in the history of IP laws and policy in

⁴ It is the deadline for developing countries or countries in transition to comply with the requirements of the TRIPs.

Vietnam. The Ordinance had incorporated scattered regulations from several decrees and put them in a higher legal level document. After this reform, number of patent and industrial design applications was remarkably increased (see Table 1).

In 1995, Vietnam filed application for the membership of WTO. In order to fulfill requirements of TRIPs-WTO, IP regulations were incorporated into the Civil Code in 1995. This can be considered as a very important reform of IP laws because this is the first time IP regulations were put into the highest legal level document, approved and issued by the National Assembly. It reflected the acknowledgment of the state to the important of IP to the development of the country. However, there were not many evidences to show concrete effects of this reform to the economic growth. Only the number of patent applications, especially by foreigners, was increased, other applications did not have much changes (see Table 1 and Figure 3).

In 2005, the issuance of new and separate IP Law is a remarkable reform in the history of IP laws and policies. The IP Law is enabled to be implemented from 1 July 2006. However, immediately, in 2005, the number of application increased sharply. In comparison with 2004, the number of applications increased by more than 24%. However, in order to have an exact evaluation on the impact of the IP Law 2005, we need to wait for some more years, however, it is no doubt this is the most remarkable IP law reform in Vietnam.

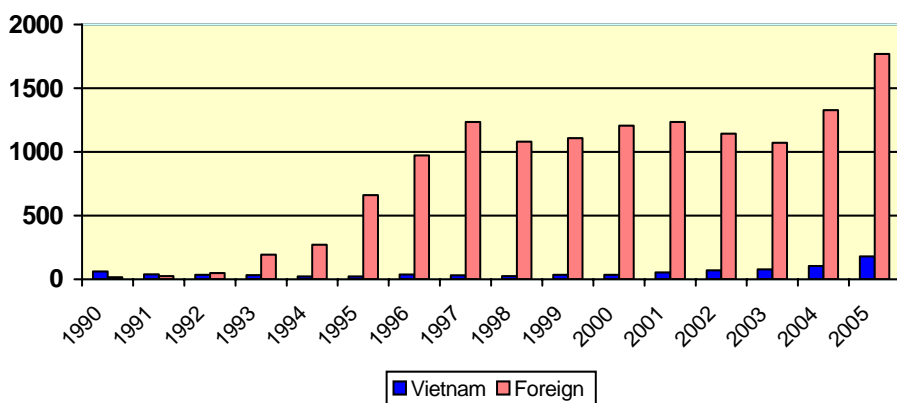


Fig. 4: Trend of the filing of patent applications (source: NOIP)

There are also several technical reforms that help in improving the IP activities in the country in 2005. For technical activities of NOIP, the electronic administration using the new and modern technology the output of the “Modernization of industrial property administration project” sponsored by the Government of Japan has been put into operation. As a result, the number of applications that have been processed in 2005 increased by 25% against 2004. This could be considered as a technical reform that

might result in increasing the number of patents granted every year. Also in 2005, there is a Program to support enterprises and creators with regard to information, the legal understanding, and the developing, exploiting and managing methodology. One of the positive progresses made last year is that the amount of IP assets of Vietnam increased, especially the number of Vietnamese inventions and utility solutions increased drastically. The number of Vietnamese invention and utility solutions applications increased in 2005 by nearly 80% against 2004.

Year	Patent	Utility solution	Industrial design	Trademark	Total
1990	79	64	200	1482	1825
1991	64	53	422	2360	2899
1992	83	33	688	4617	5421
1993	227	58	946	6136	7367
1994	292	58	716	4131	5197
1995	682	65	1131	5633	7511
1996	1008	79	1647	5441	8175
1997	1264	66	1156	4810	7296
1998	1105	28	1057	3642	5832
1999	1142	42	1036	4166	6386
2000	1239	93	1203	5882	8417
2001	1286	82	1052	6345	8765
2002	1211	131	830	8818	10990
2003	1150	127	680	12135	14092
2004	1431	165	972	14916	17484
2005	1947	248	1335	18018	21548
Total	14210	1392	15071	108532	139205

Table 1: IP applications from 1990 – 2005 (Source: NOIP, 2005)

In general, from the beginning of the development of IP laws and policies in Vietnam, there have been several reforms that might have impact on the development of the economy. However, as the development and growth of the economy is depended on many policies and strategies, it is difficult to evaluate the impact of only IP laws and policies on the economic development. In Vietnam, it could be said that the most important IP reforms are happened in 1981, 1989, 1995, and 2005. Especially, the reform in 2005 is expected to have remarkable positive impact on the economic development, however, it is still too early now to evaluate its effects.

3. Case Studies on Companies utilizing the IP System to develop Business or increase Economic Activity

3.1 Comparison of Company's Data among major Industry Fields

Pharmaceutical industry

By the end of 2005, there are more or less 170 enterprises manufacturing modern medicines in Vietnam, including some 15 FDI enterprises. There are about 300 other enterprises producing traditional medicines. According to the category of WHO, pharmaceutical industry of Vietnam is now at the level of 2,5-3⁵. However, the technology capacity of Vietnamese pharmaceutical companies is still limited. Up to now, there are only 59 companies (33%) achieved GMP (good manufacturing practices). R&D capacity of the enterprises is also still weak, the enterprises are mostly based on imported technology (Cao Minh Quang, 2005). Therefore, their IP activities are mainly concerning to trademarks, brand name and some industrial designs, there are not much inventions and patents in this field. The case study in this sector is of Traphaco, one of the leading pharmaceutical companies. Traphaco manufactures both traditional and modern medicine. The company produces about 170 products including 60 traditional medicines and 110 modern medicines. Their traditional medicines are best-known products of Vietnam and give 80% taking to the company.

Automobile

The motorcycle market in Vietnam grew briskly since 1999. Between 1999 and 2002, the market size multiplied by nearly six times. Measured by the number of vehicles produced, Vietnam now ranks eighth in the world's motorcycle market. Motorcycle producers in Vietnam can be divided into two groups: foreign-invested joint ventures such as Honda, Yamaha, Suzuki, and Taiwan's Sayang Motor (whose Vietnamese subsidiary is called SYM or VMEP) on the one hand and Vietnamese domestic makers on the other. Most of the Vietnamese domestic companies entered the market by importing and assembling components from China. In the rapidly expanding Vietnamese market, FDI and domestic companies have competed fiercely and their relative market shares have fluctuated greatly. The choice of business architecture has had direct effects on the competitiveness of these companies. Honda Vietnam and Vietnam Manufacturing and Export Processing Company Ltd (VMEP) are cases studied in this research. VMEP is the first FDI company invested in Vietnam relating to motor industry. This is a 100% Taiwanese own enterprises, it got investment license in 1992 and started production in 1994. Honda Vietnam was established in 1996 and started operation in 1997.

⁵ Level 2 means the industry has capacity to produce several kind of generic medicines, most of other medicines have to import; level 3 means the industry has capacity to produce generic medicine and export several kinds of medicine.

Manufacturing

In fact, in accordance to the category of Vietnam, both sector of pharmaceuticals and automobile above are under the manufacturing sector. The manufacturing sector contributes a leading role in the growth of GDP in Vietnam. In order to study the case of manufacturing sector in general, we chose two following cases that more or less paying attention on IP issues. The first case is Duy Loi, a private company established in 2000. Its major product is hammock with metal supporting structure. The company is very successful in the domestic market. It also exports to United States, Japan, South Korea and Australia. Sannam is also a private company established in 1994. The company operates mainly in machinery sector with products of metal working machines and equipments. Recently, the company opens its operation to other sector such as food processing, restaurant, etc.

Comparison of case studies

Ownership of the two automobiles company is 100% foreigner owned. The pharmaceuticals company (Traphaco) was a state owned company until 1999 then it was equitized to be a join stock company (according to the equitization policy of the state to state owned companies). Other companies in the manufacturing sector (Duy Loi and Sannam) are private ones. Except Duy Loi is a small firm, the others are large enterprises in accordance to the category of Vietnam⁶. Traphaco has 797 staffs including 18 master of pharmacy; 140 pharmacists and doctors; 60 staffs having bachelors of Science and Economy, and the rest are skilled workers. The company's R&D unit company has 19 staffs and there is only a vice director in charge of IP related issues. VMEP's total staffs are 1649, among them there are 68 R&D staffs (4.1%) and there are 3 employees in charge of IP activities. Honda Vietnam has more than 1000 labors. Honda does not have a R&D unit in the company in Vietnam. Regarding to IP, the company hire a law consultancy for IP related issues. Duy Loi is a small company with around 100 labors. The director of the company is the major designer of the company. Also, a law consultancy is hired by the company for IP related issues. Total employees of Sannam group are more than 400 labors. The company have a good staff of R&D, especially in designing, however, there are only two employees including the general director are in charge of IP activities. In general, almost all the cases have their own researchers or designers to carry out R&D activities (except Honda). However, not all the companies have specific IP unit, usually they use services provided from law consultant companies.

In 2005, the pharmaceuticals firm only has one application for IP protection (trademark registration). From 2006 to date, the company is in preparing for several utility solutions applications but has not finished yet. Most of IP applications of the company have so far are

⁶ Small and medium enterprises are firms that have under 300 labors and capital is less than 10 billion VND (approx. USD 625,000)

trademarks registrations (114 trademarks registered, from 1989-2005). This reflects the fact of weak R&D capacity of the company as well as the pharmaceuticals sector in Vietnam. The sector of automobile have more positive picture of IP application.

Recently, VMEP has applied for 4 patents (2006), 14 industrial designs (2007) and 3 trademarks (2007). In total, from 1993-2006, VMEP have applied for 140 patents, and 63 patents have been granted. In 2006, Honda has 46 patents, 30 industrial designs and 5 trademarks granted by and registered at Vietnam National Office of IP. However, all the applications are applied by the mother company in Japan and the mother company also own the patents granted. The number of patent applied and granted of Honda in Vietnam from 1994-2006 is very huge, about 533 patents, 214 industrial designs, 114 trademarks.

Duy Loi, a small and domestic manufacturing in Vietnam has little IP applications than other companies. From 2000-2006, Duy Loi has 19 application for patents and 8 granted, 4 applications for industrial designs and 1 granted, and 3 trademarks registered. Although this is not a hug number but their patents are very important ones and have helped them earn a lot of profit. The other domestic manufacturing company - Sannam also has some important patents granted. From 2002-2006, the company has 3 patents for industrial designs and 64 trademarks registered.

In general, the cases in automobile sector have much more applications on patent, utility solutions and industrial designs than others. Other the cases of manufacturing sector (including pharmaceuticals sectors) have only few applications on patents and designs, their IP applications mainly are for trademarks registration.

3.2 Results of Analysis

There are three companies established before the reform in 1995, however, it is noteworthy that three years after the IP Reform in 1996, the number of applications for patent did not increased clearly in these cases. Only 5 years later (since 2000) this number started to remarkably increase. Especially, Traphaco, the pharmaceutical company established long time ago, only pay attention on IP very recently but still not appropriate attention. The local companies cases showed that firms established more recent are more interested in IP issues, like Duy Loi and Sannam in comparison with Traphaco (see Table 2).

Another remark in the case of Duy Loi is that the patent of industrial design is essential to the business performance of this company since the first day of its establishment. However, Duy Loi is only one of quite unique cases of local and small firm that is aware about the important of IP protection. The two FDI motorbikes companies show that they are more active in IP activities than other cases. Their IP applications are much more than other local companies. In fact, FDI companies are considered to pay more attention to IP issues rather than local companies, in generally.

Local companies, especially the small and medium ones usually are weak in R&D activities, they even usually do not have R&D unit, therefore few IP created and applied for protection. In addition, local firms, in general, are lack of knowledge and awareness about the importance of IP (NISTPASS, 2006).

However, in this research, all companies studied are more or less aware of the importance of IP. Each case has at least one or two staffs in charge of IP activities. Moreover, the companies can use consultant services provided by law firms to carry out IP activities including patent application as well as taking out suit procedure. In Vietnam, there are more and more law firms practicing IPRs law, however, they are more familiar with trademark rather than patent and related issues.

It is also noteworthy that all the cases studied in this research have been faced with IP infringements. The two motorbikes companies' industrial designs and trademarks, especially of Honda, are infringed by many local companies. Many trademarks of Traphaco, the pharmaceuticals company are also infringed by other local companies. Sannam had a lot troubles when one of its partner in China infringed its trademark, in addition with other infringements of local companies. Duy Loi has won in two suits in United State and Japan relating to industrial design infringements. The company also has to face this trouble in domestic market made by their competitors.

Year	Traphaco	VMEP	Honda	Duy Loi	Sannam
1993	--	3	--	--	--
1994	--	8	6	--	--
1995	--	1	11	--	--
1996	--	0	36	--	--
1997	--	6	38	--	--
1998	2	0	47	--	--
1999	0	1	43	--	--
2000	33	3	73	1	--
2001	11	9	135	7	--
2002	28	18	87	2	11
2003	4	9	85	2	6
2004	35	43	81	7	36
2005	1	21	128	5	8
2006	na	18	81	2	6
Total	113	140	851	26	67

Table 2: Number of IP applications of case studies from 1993-2006 (source: NOIP)

In general, between sectors studied, companies in motor-automobile sector have showed they are more active in IP creation and protection than other sectors. Large enterprises have more IP assets than small and medium enterprises. This is also happened in the case of FDI companies in comparison with local companies. To all studied cases, IP assets have showed their very important roles that contribute to the company's performance. However, in all cases, there is not clear evidence about the economic growth resulted from IP reform in 1995 or any other reform. Companies said they look forward to more IP reforms in the future, especially the enforcement of the 2005 IP Law.

4. Analysis of reforms that exerted influence on economic development underpinned by the IP system using economic models

4.1. Impacts of economic variables on IP creation

The model

Following model is used to evaluate the impacts of key economic variables on IP creation:

$$\text{patentapp} = A \cdot \text{rdexpen}^{\gamma_1} \cdot \text{gdp}^{\gamma_2} \cdot \text{fdi}^{\gamma_3}$$

in which: *patentapp* is the number of patent application per year;

rdexpen is the national R&D expenditure per year;

gdp is the gross domestic production per year;

fdi is the foreign direct investment capital per year;

A is a coefficient which captures all other variables not explicitly represented in the model.

To estimate the parameters of the above model, following log-linear regression model is specified.

Regression Model 1:

$$\ln(\text{patentapp}) = nA + \gamma_1 \cdot \ln(\text{rdexpen}) + \gamma_2 \cdot \ln(\text{gdp}) + \gamma_3 \cdot \ln(\text{fdi}) + \text{index} + \varepsilon$$

Index is a dummy variable which represents an improvement of IPR regime in Vietnam. We have constructed this index by collapsing the patent index of Vietnam (which we get from Ginarte and Park IP Index and calculated by ourselves using G&P method) into two categories: low IP protection and medium IP protection. Inclusion of *index* in the regression model is to evaluate the impact of improvement of IPR regime on the IP activities. Using available data from 1990-2005 (16 observations) we get following regression results.

Model 1:

$\ln \text{patentapp}$	Coef.	Std. Err.	t	P> t	Beta
lnrdexpen	.0339058	.262881	0.13	0.900	.0270908
lngdp	.1078442	.5329146	0.20	0.843	.0783017
lnfdicapital	.4529604	.1962081	2.31	0.041	.4351154
index	1.201064	.3565814	3.37	0.006	.4945089
_cons	1.099507	1.637403	0.67	0.516	.

R-squared = 0.9656 Adj R-squared = 0.9531

The regression result shows that only *lnfdicapital* and *index* are significant at 5% and 1% level, other variables are not significant, but R-squared is very high. This result might reflect the fact that majority of patent applications in Vietnam is done by FDI firms or their parent firms, so the more FDI flows into Vietnam, the more IP activities are expected. *Index* variable is significant and this supports the arguments that, an

improvement in IPR regime will encourage IP activities.

lnrdexpen and *lngdp* perform very poor in our model, but this should not be considered as a violation of theory, the problem lies on data. For GDP, there is serious multicollinearity problem between *lngdp* and *lnfdicapital* since, a large proportion of GDP is contributed by FDI inflows. With regard to R&D expenditure, available data only represents government expenditure on R&D and as a common practice in Vietnam, the data is not pure expenditure on R&D but also mixes up with expenditure on other S&T activities. This plus the fact that domestic IP activities account only for a small proportion compare to that of FDI firms, it is not surprise to see poor performance of *lnrdexpen* in above model.

To see if R&D expenditure could have any impact on domestic patent activities, we have run another regression model using number of patent applications by Vietnamese as dependent variable and remove FDI capital from the list of independent variable, following result is achieved.

Model 2:

lnpatentvn~p	Coef.	Std. Err.	t	P> t	Beta
lnrdexpen	1.016579	.4860091	2.09	0.058	1.625701
lngdp	-.9603204	.7714253	-1.24	0.237	-1.39554
index	.4580017	.679908	0.67	0.513	.3774216
_cons	4.006025	2.794791	1.43	0.177	.

R-squared = 0.4380 Adj R-squared = 0.2975

Although not significant at 5% level, *lnrdexpen* is significant at 10% level, the best results in all models we have tried. Once again, it might be in implication of the potential error in R&D expenditure data.

In an effort to use other indicators of IP activities other than patent applications, we have used patent granted as dependent variable in our model, however the result is very disappointed. The problem is that we don't have a consistent estimation of the lag time between patent applications and parent granted. In fact it varies from case to case. Without this, we don't have a logical link between the number of patent granted and economic variables.

4.2 Impacts of IP regime on economic growth

Following regression model is used to estimate the impact of IP regime on economic growth.

$$\ln(gdp) = \ln A + \beta_1 * \ln(privatecap) + \beta_2 * \ln(population) + index + \epsilon$$

in which: *privatecap* is the private capital, *population* is an estimate of labour force, *gdp* and *index* are the same variables as in above models.

Results show that *lnprivatecap* and *index* are significant while *lnpopulation* is not. The good performance of *index* in the model implies that an improvement in IP regimes does have some impacts on economic growth, although it is moderate.

Model 3:

ln gdp	Coef.	Std. Err.	t	P> t	Beta
lnprivatecap	.7829862	.1332327	5.88	0.000	.8451091
lnpopulation	-.1806433	1.828371	-0.10	0.923	-.0156284
index	.351447	.0975583	3.60	0.004	.1992936
_cons	2.748122	11.08847	0.25	0.808	.

R-squared = 0.9889 Adj R-squared = 0.9861

4.3 Impacts of IP regime on foreign direct investment

To examine the impact of IP system to FDI, following log-linear regression model is used:

$$\ln(\text{fdicapital}) = \ln A + \delta_1 \cdot \ln(\text{gdp}) + \delta_2 \cdot \ln(\text{population}) + \text{index} + \varepsilon$$

Regression result is presented below:

Model 4:

lnfdicapital	Coef.	Std. Err.	t	P> t	Beta
ln gdp	2.755133	.3058519	9.01	0.000	2.082441
lnpopulation	-18.02521	3.302611	-5.46	0.000	-1.178698
index	.0472564	.2145329	0.22	0.829	.0202546
_cons	104.774	19.64115	5.33	0.000	.

R-squared = 0.9724 Adj R-squared = 0.9654

While *ln gdp* is highly significant, other variables perform poorly. *Index* is not significant and although *lnpopulation* is significant, the sign of coefficient is negative, a contradiction with traditional theory.

4.4 Some note on technical issues

Data

There are many factors that have affected the regression results above. Firstly, the number of observation is quite small. Data for key variables are only available from 1990-2005, so there are only 16 observations in total and that induce in limited results. Secondly, the IP index of the country does not vary over time, there are only three values of this variable in according to three periods: 1990-1994, 1995-2000 and 2001-2005. The index for the period of 1995-2000 provided by Ginarte and Park IP Index, index of other two periods we have to count by ourselves, based on G&P method. This has forced us to create an index as a dummy variable and use in our regression model.

Thirdly, there are many other factors considered as having effects on IP system, and vice versa, IP system may have effect on them. However, given the weak statistic practices in Vietnam, not much data are available for analysis. These all weaknesses mean that we have to interpret the regression results with care.

The impact on IP creation

In Vietnam, most of R&D activities are conducted by public R&D organizations (R&D institutes and universities) with fund from state budget. However, number of applications for patent by these organizations is very small in total number applications in Vietnam (Vietnamese application only counted for about 9% in total patent applications; and number of applications from R&D organizations is only counted for 1-2% of Vietnamese applications, NOIP, 2005). Unfortunately, R&D expenditure by the industry sector is not available for analysis. It is believed that domestic enterprises are inactive in R&D so as their expenditure for it. These reasons support the regression's results: R&D expenditure does not have a strong relationship to the applications for patent.

The impact on economic effects

In Vietnam, patent licensing is not active. Most of technologies transferred to the industrial sector are not by means of patent licensing. Home-growth technologies, if any, are mainly developed by local R&D organizations and enterprises and they usually do not meet requirements for IP protection. Moreover, importation of technologies embedded in equipment and machinery is dominating patent licensing. These limitations induced in the small number of patent licenses and its weak effect to the performance of the economy.

Impact on foreign direct investment

There have been many reforms in economic policies in order to attract FDI, including reform of IPRs laws and policies. In fact, the FDI has more positive impact on Vietnam IP system than the impact of IP system on FDI. In many patent licensing cases, patents are licensed from parent companies to their affiliates in Vietnam. Patent applications and licenses of FDI companies are much more than local companies (NOIP, 2005). However, the data analysis and the statistics show that IP system have a moderate impact on growth and performance of FDI sector. Enforcement of IP laws and policies is relatively weak. Many FDI companies even are victims of IP infringements.

5. Discussion and Proposal

During the past time, the IP system in Vietnam has been continuously improved and at present, it is appropriate with international regimes. However, it is very hard to evaluate its real impacts on the economic growth of the country. In the case of Vietnam, it is quite difficult to find out clear evidence from the statistics as well as economic regressions to show these impacts.

One of the reasons is that besides IP policies, at the same time, there are also many other economic policies that are very important in encouraging the development of economy. These economic policies even may result in improving IP activities. Therefore, it is very difficult to separate the IP policy to evaluate its impact on economic growth or development. Especially in the case of Vietnam, the impact of IP on economic growth is not so strong and effective for many other reasons. *Firstly*, the awareness and understand of public in general about IP is not appropriate. *Secondly*, IP creation capacity is weak. In industrial sector, due to weak capacity and inappropriate invested R&D capacity, the number of patents, utility solutions and industrial designs is very small. At present, enterprises pay more attention on creating and registering for trademark protection rather than creating other IP assets like patents or designs. *Thirdly*, the enforcement of IP law is weak. There are many infringements happened in local market without strong punishment to the violators. The court system is still not familiar with civil and criminal suits relating to IP.

In general, the IP system in Vietnam from the past to 2005 has not showed a vital impact on the development of economy and society in general. Although the regression models' results somehow have showed that the improvement of IP regimes in 1995 (our identified reform) has positive impact on IP activities, the country still needs more incentives and policy measurement to encourage the IP creation activities as well as application for IP protection activities. In the coming time, this picture may be more bright as currently, there are several policies and incentives have been implemented relating to this issue.

If it is rather difficult to examine the effect of IP to the economy in general, however, of course, there are other ways to prove its importance to the performance of business. Indeed, there are many specific cases that can show the significant and strong relationship between IP system and their business performance. Serial of case studies that are successful in IPRs activities absolutely could be carried out in order to share experiences and lessons, especially for developing countries. It is also possible if evaluating the impact of IP on economic growth by choosing to conduct survey at the small scale of specific sub-sector/industry or specific fields such as exportation activities, FDI attraction.

Indeed, export indicator can be used for analysis to find out the impact of IP on the performance of export enterprises. For some countries, like China, the IP system seems have clear impact on the performance of its exportation, especially high-tech products exportation. In Vietnam, most of export goods are primary goods and material, therefore IP might not have strong impact on export activities. However, it is the fact that there are many cases showed that the IP assets, especially trademarks, are very important to a company when it wants to exploit new markets overseas.

In order to examine the impact of IP system on FDI in Vietnam, there are several related researches and surveys conducted. One of NISTPASS' surveys conducted with FDI companies in the field of motorbikes manufacturing. The survey showed that FDI companies do pay attention on IPRs issues, especially large companies like Honda, Yamaha, etc. These companies' designs are frequently infringed and they have to face with many difficulties in order to deal with this problem, given the weak enforcement of IPRs in Vietnam (NISTPASS, 2006). Another the survey of FDI companies in deferent fields found that IPRs is not in the list of the most important issues that the FDI companies cared when they decided to invest in Vietnam (Nguyen, 2004). However, there has not any specific research focus on the impact of IP system on business performance yet. Therefore, a research to look closer on the linkage between FDI and IP may be another research option could be carried out in the coming time.

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