

# The Determinants of the Patent Applications at United States Universities How Can Vietnamese Universities Learn from the Evidence?

Nguyễn Văn Phương\*

*International University - Vietnam National, University HCMC,  
Quarter 6, Linh Trung Ward, Thủ Đức Dist., Ho Chi Minh City, Vietnam*

Received 20 July 2012

**Abstract.** This paper presents findings from an analysis of the effects of commercialization process and start-up company formation on the outcome of research activities at universities in the United States (U.S.). In particular, we implement the fixed effect model differentiating both the level effects and the rate effects of licensing income and start-ups. We find some interesting results. First, the elapsed time to compensate the initial value loss of a patent application from the commercialization process is approximately 3.6 years. Second, it takes around 3.8 years to offset the initial reduction of patent applications from generating a new start-up company formation. In addition, the paper also finds that patent applications have not developed in Vietnam. Specifically, Vietnamese universities have not generated considerable revenue from licensing university intellectual property in the forms of patents as well as establishing start-up company formation.

*Keywords:* Patent applications, commercialization, start-ups, universities.

## 1. Introduction

Universities and research institutions in the U.S. have long been noted as important actors in technological diffusion and economic development as well as a source of basic knowledge, technology spillovers, and highly skilled employees for American companies (Feldman and Desrochers, 2003). Revenue generating from licensing university intellectual property in the forms of patents becomes one of the main research funding sources and substitutes for the lack of government funding. In other words, the general decline in public

structural funds has been partially recouped by the increase in funds from for-profit and non-profit organizations and by tighter relationships between university and industry. In addition, technology spillovers from universities to industry can occur automatically when universities implement the formation of start-up companies through providing incubation, equity investment and incentives to faculties to step further into cooperation with companies.

Many previous studies have explored the commercialization activities and spin-off companies at universities. First, commercialization is often measured by the licensing income of university intellectual property in the context of patents. However, the commercialization process also generates some

---

\* Dr., Tel.: 84-8-37244270  
E-mail: nvphuong@hcmiu.edu.vn

arguments. The strongest arguments in favor of an explicit revenue-generation policy are that such a revenue: (1) rewards institutions that successfully discover commercially valuable inventions, thereby creating incentives for other institutions to emulate the innovative success; (2) utilizes revenues in research and education, both of which are largely public goods; and (3) would otherwise mainly be retained by the for-profit users of the technology (Colaiani and Cook-Deegan, 2009).

The start-ups occur when the licensee of a university-assigned invention generates a new company to exploit the inventions. As Gregorio and Shane (2003) summarize from prior studies, there are four major curriculums to generate start-up activity. First, universities located in geographic regions rich in venture capital would be more likely to create start-ups since available capital enables inventors to access venture funds more easily. Second, universities receiving industry-funded research would be more likely to create start-ups since they are more likely to utilize their experiences to make commercially-oriented discoveries. Third, universities that are more likely to pursue intellectual property are more likely to generate start-ups because the intellectual eminence of such patents enables universities to create new technologies of actual or perceived high quality. Fourth, universities that adopt certain policies could create more start-ups since these policies offer more incentives for entrepreneurial activity.

To evaluate the effects of university patenting on academic research, by exploring data on the growth of university-owned patents and university-invented patents in Europe, Geuna and Nesta (2006) show that licensing income at most universities is not profitable, even though some are successful in attracting substantial revenues. By contrast, Colaiani and Cook-Deegan (2009) find that Columbia University and the inventors profited handsomely from the Axel patents, earning USD 790 million in revenues through licensing arrangements.

Second, in terms of start-up/spin-off companies, the more time and effort the university faculties invest and develop the university inventions at a spin-off company, the higher the probability the spin-off company will commercialize the inventions successfully. By exploring case studies of academic spin-offs from the campuses of Massachusetts Institute of Technology (MIT), Agrawal (2006) shows that a higher level of faculty inventor involvement leads to an increased likelihood and degree of commercialization success. With regard to faculty effort, Lach and Schankerman (2004) find that university licensing income is associated with faculty royalty rates. Combining both time and effort by constructing life cycle models of faculty behavior, Thursby et al. (2007) show that licensing increases total research effort as well as promotes the ratio of applied to basic research. Because most of this increased effort comes at the expenses of faculty leisure time, they disbelieve licensing activities are detracting from university knowledge creation.

Besides, some authors also investigate the problems of academic brain drain when university faculties pursuing commercialization at for-profit companies do not distribute enough time and effort for academic research. For instance, Czamitzki and Toole (2010) find that academic brain drain imposes a nontrivial reduction in academic knowledge accumulation.

In this paper, we explore an empirical study to seek the effects of commercial orientation of university research and academic start-ups on the outcome of research activities at U.S. universities. Here, the outcome is measured by the number of patent applications. However, unlike previous studies, this paper distinguishes level and rate effects on a number of patent applications. By doing so, it enables us to estimate how long it takes for a patent application to offset its initial loss from the process of commercialization as well as start-up companies. In particular, we expect that the

level effects would be negative because academic inventors need sufficient time to seek potential investors either to license their intellectual property rights or to establish a new start-up company. On the contrary, the rate effects would be positive because academic inventors have more incentives for filling patent applications in the long term as the more patents could be licensed or used for developing a venture capital company.

This paper proceeds as follows: Section 2 presents university patenting in the U.S. It briefly introduces the impacts of the Bayh-Dole Act on research activities at U.S. universities receiving government funds and summarizes the outcomes of research and development at universities in recent years. Section 3 describes the methodology for the study. It develops an econometric model to investigate the level and rate effects of licensing income and start-ups on the outcome of research activities at the university level. Section 4 describes the dataset and presents the results. Section 5 presents results of patenting activities in Vietnam and suggests the policy implications for Vietnamese universities. Finally, Section 6 summarizes and concludes.

## 2. University Patenting in the U.S.

U.S. universities have experienced substantial changes in terms of research objectives and funding sources since the Bayh-Dole Act went into effect in 1981. The primary aim of this law is to use the patent system to promote the use of inventions created with federal support. The objective is to encourage collaboration between nonprofit enterprises and industry, the preference being for small business enterprises to utilize the inventions for the practical application of inventions for public purposes. Furthermore, the legal change enables inventors to have the right to spend a proportion of their time in industry and receive a portion of the royalties derived from their patented discoveries, although the patent legally belongs to the institution where the initial discovery was developed.

Figure 1 shows the ratio between the licensing income and the R&D expenditure. It peaked at around 4.2% during the dot-com boom of the late 1990s when the demand for using research results from computer sciences was very high. After the collapse of dot.com companies, the ratio went down and touched the lowest rate (less than 2%) in 2003.

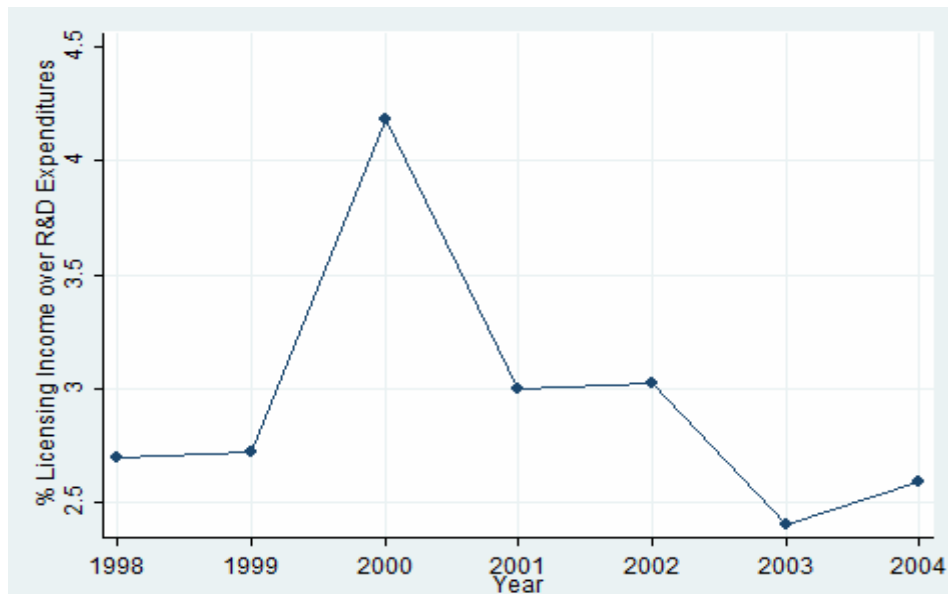


Figure 1: The efficient investment in research at the U.S. universities

Source: Association of University Technology Managers.

Recently, the number of new patents filed and issued has achieved a significant amount. During the three years 2005-2007, the total number of patent families<sup>(1)</sup> in the U.S. achieved over 145,000 per annum (World Intellectual Property Organization Statistics Database, September 2010). Besides, U.S. universities patenting activities have contributed significantly to the total number of patents granted in the U.S.

When we compare the total spending over total patent grants, in order to own one patent, we found that a university could spend, on average, over USD 9 million. This seems to be unbelievable, inconceivable, surprising but true. It is worth noting that the licensing income accounts for a small proportion of total expenditures. Therefore, the efficient

investment in R&D activities raises a huge concern for policymakers.

Table 1 shows the selected university sector top 20 Patent Cooperation Treaty (PCT) applicants in 2009. U.S. universities still dominate the list of the top 20 PCT. There are 16 U.S. universities in the list accounting for approximately 87% of 1,786 published PCT applications. The University of California accounts for the largest number of published PCT applications in 2009. The second largest is MIT with 145 PCT applications in 2009. It is worth noting that two Korean universities, including Industry-Academic Cooperation Foundation, Yonsei University, and Seoul National University Industry Foundation, rank at 18<sup>th</sup> and 19<sup>th</sup> in the list of the top 20 universities, respectively.

Table 1: Universities Sector top PCT Applications, 2009

Rank	Applicant's Name	Country of Origin	Number of PCT Applications
1	The Regents of The University of California	U.S.	321
2	Massachusetts Institute of Technology (MIT)	U.S.	145
3	Board of Regents, The University of Taxes System	U.S.	126
4	The Trustees of Columbia University in the City of New York	U.S.	110
5	President and Fellows of Harvard College	U.S.	109
6	University of Florida Research Foundation, Inc.	U.S.	103
7	The University of Tokyo	Japan	94
8	The Johns Hopkins University	U.S.	87
9	The Trustees of University of Pennsylvania	U.S.	80
10	University of Utah Research Foundation	U.S.	66
11	Wisconsin Alumni Research Foundation	U.S.	64
12	The Board of Trustees of the Leland Stanford Junior University	U.S.	62
13	The Regents of The University of Michigan	U.S.	61
14	University of Southern California	U.S.	60
15	Arizona Board of Regents	U.S.	55
16	California Institute of Technology	U.S.	52
17	The Board of Trustees of University of Illinois	U.S.	50
18	Industry-Academic Cooperation Foundation, Yonsei University	Korea	49
19	Seoul National University Industry Foundation	Korea	47
20	Ramot at Tel Aviv University Ltd.	Israel	45

Source: World Intellectual Property Indicators Statistics Database, June 2010.

<sup>(1)</sup> A patent family is defined as a set of patent applications inter-related by either priority claims or Patent Cooperation Treaty national phase entries, normally containing the same subject matter. Statistics based on patent family data eliminates double counts of patent applications that are filed with multiple offices for the same invention.

### 3. A Model of Patent Applications from Universities

We posit a model of the determinants of outcomes of academic research measured by patent applications. We consider patent applications as the outcome of university research. Our hypothesis is that there are two relevant factors to spur the growth of patent

$$p\_app_{it} = \beta_1 + \beta_2 l\_inc_{it} + \beta_3 start\_up_{it} + \beta_4 l\_exe_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

Where  $p\_app$  denotes a number of patent applications;  $l\_inc$  denotes licensing income;  $start\_up$  stands for a number of new start-up companies;  $l\_exe$  is a number of licenses executed and used to control for size of licensing income;  $i$  and  $t$  stand for university  $i$  at a year  $t$ ;  $\mu_i$  denotes the unobservable university-specific fixed-effect. The university fixed effects control for unobserved university-level heterogeneity. Finally,  $\varepsilon_{it}$  denotes the idiosyncratic error.

We seek to investigate the effect of licensing income and a start-up company on the outcome of university research activities. We follow Gregorio and Shane (2003) to define a university in our analysis as an entity that operates under a single set of policy regulations. Then, we generate a panel data from multi-campus universities during the period 1998-2004.

We implement the regression model with the Ordinary Least Squared method as well as the fixed effect method. The fixed-effect method enables us to explore the relationship between predictor and outcome variables within an entity. The first assumption of the fixed effect model considers the correlation between an entity's error term and predictor variables. We need to control for something within the university that may impact or bias the predictor and outcome variables. Fixed effects remove the effect of the time-invariant characteristics from the predictor variables so the estimated results are considered as the predictors' net effect. The second assumption of the fixed effect

applications: (i) the cooperation environment between academic research and industry through licensing activities and (ii) the start-up companies in which academic inventors are able to implement new ideas establish for-profit organizations

As a result, a specific model is suggested as follows:

model is that those time-invariant characteristics are unique to the university and should not be correlated with other universities' characteristics. Furthermore, the fixed-effects specification with university dummies also enables the avoidance of the possible reverse causality that states that having more venture capital funds or government funds for academic research attracts more academic inventors to pursue patent applications for business purposes.

The paper concentrates on testing two hypotheses about the relationship presented in Equation (1). First, we hypothesize that there is a positive relationship between a licensing income and patent applications. The higher potential licensing intellectual property rights encourage faculty inventors to generate more patent applications. Second, we hypothesize that there is a positive relationship between start-up companies and patent applications. The more opportunities for creating university spin-outs, the more faculty inventors pursue patent applications.

In the literature on innovation, the elapsed time between an initial discovery and its commercialization is defined as innovation speed (Markman et al., 2005). The faster the innovation speed, the higher the capability for a university to commercialize the innovation as well as pursues university start-ups for profit business. Therefore, this paper examines two hypotheses in the long term. In other words, we separate the level and rate effect of each independent variable in Equation (1). We expect the level effect is negatively associated

with the recurrent patent applications at year  $t$  because the licensing income and start-up companies may be generated from the previous granted patents or intellectual property rights.

On the contrary, the rate effects of these two independent variables are positively associated with the recurrent patent as our hypotheses.

Our estimated model is rewritten as follows:

$$p\_app_{it} = \beta_1 + \beta_2 L\_inc_{it} + \beta_3 L\_inc_{it} * time + \beta_4 start\_up_{it} + \beta_5 start\_up_{it} * time + \beta_6 L\_exe_{it} + \beta_7 L\_exe_{it} * time + \beta_8 time + \mu_i + \varepsilon_{it} \quad (2)$$

The estimation results from Equation (2) enable us to evaluate both the rate and level effects of explanatory variables. The rate effect of each explanatory variable is measured by the interaction term between time and each explanatory variable. For instance, to investigate the level and rate effect of academic start-up companies on a number of patent applications, the estimated coefficients of  $\beta_4$  and  $\beta_5$  present the level and rate effect of start-up companies, respectively. Similarly, to examine the level and rate effect of licensing income on the outcome, the coefficients of  $\beta_2$  and  $\beta_3$  reflect the level and rate effect of licensing income, respectively. We follow Liu (2008) to investigate the rate effects. The regression analysis with the time trend of the number of patent applications can serve as an indicator of the long-term rate of the growth of patent applications, which is determined in part by endogenous, university-specific patent application growth.

#### 4. The dataset and the estimated results

##### Data

The dataset used for this research is collected from two sources including the Chronicle of Higher Education and the Association of University Technology Managers. The dataset is an unbalanced university-level panel since the total number of universities varies across each annual survey. The number of observations is 1,017. The number of universities and institutions participating in the annual survey changes from 131 to 158 during the seven years from 1998 to 2004.

Table 2 shows the descriptive statistics of key variables. There is an annual substantial dispersion among universities in terms of the number of patent applications, licensing income and start-up companies. Of the 1,017 observations, 25 generated no patent applications, 36 generated no licensing income, and 343 generated no start-ups.

Table 2: Descriptive statistics of key variables

Variables	Description	Mean	Standard Deviation
Patent applications	The Number of Patent Applications	21.30	32.87
License income (millions USD)	Licensing Income at University	5.70	16.07
Start_up	The Number of new startup enterprises	2.37	3.50
License executed	The Number of licenses executed	23.97	37.02

Source: The Chronicle of Higher Education and The Association of University Technology Managers.

##### The estimated results

The estimates corresponding to independent variables of Equation (2) are in Table 3. The results in column (1) are estimated by using Ordinary Least Squares (OLS) method. Most of the estimated coefficients are not statistically significant, except for the coefficient of start-up. Therefore, OLS is not the best estimation method to test our model.

Column (2) of Table 3 presents the estimates by using the fixed effect method. As our expectation, the level effect of licensing income and start-up is negative and statistically significant at the 5% level and 1% level, respectively. Meanwhile, the rate effects of licensing income (Time\*Licensing Income) and start-up (Time\*Start-up) are positive and statistically significant at the 1% level. For instance, if a licensing income increases by USD 1

million, patent applications decrease by 0.5787 in the same period, but the growth rate of patent applications increases 0.1571. The estimated level effect and rate effect of licensing income imply that the elapsed time between the recovery of an initial value of a patent application and the commercialized patent is 3.6 years ( $\approx 0.5787/0.1571$ ). In other words, it will take an average of 3.6 years to offset the initial value loss of patent applications from the process of commercialization.

Similarly, the estimated level effect of start-up is - 4.3589. It means that if a new start-up company increases by 1, then the number of patent applications declines 4.3589 in the same period. Meanwhile, the estimated rate effect of start-up is 1.1247. This result implies that it takes approximately 3.8 years ( $\approx 4.3589/1.1247$ ) to offset the initial reduction of patent applications from creating a start-up company.

In general, the results provide consistent support for Hypothesis 1 and 2 and indicate that the rate effect of licensing income and start-up are very important in terms of generating patent applications.

The estimated result of the control variable (license executed) is not statistically significant. As pointed out earlier, this variable is to control the size of license income. Therefore, the insignificant result does not affect our model. Finally, the estimated result of time trend is statistically significant at the 5% level. As mentioned above, the time trend is introduced to investigate the rate effects of explanatory variables.

Finally, comparing between OLS and fixed effect method, the result of R squared improves from 71.09% to 94.95%. It means that the fixed effect model is the best estimation method to test our hypotheses.

Table 3: The level and rate effects of licensing income and start-up on university research outcomes

	(1) OLS	(2) Fixed Effects
License income	0.4200 (0.5880)	-0.5787** (0.2302)
Time*license income	0.0988 (0.1533)	0.1571*** (0.0564)
Start_up	11.4828*** (3.1293)	-4.3589*** (1.5781)
Time*start_up	-0.0674 (0.7636)	1.1247*** (0.3471)
License executed	0.4740 (0.3427)	0.1841 (0.1665)
Time*license executed	0.1594 (0.0972)	0.0506 (0.0323)
Time	-0.7217 (1.2683)	1.1662** (0.5341)
Constant	8.8560* (5.2646)	48.7999*** (3.4131)
<i>N</i>	1017	1017
<i>R</i> <sup>2</sup>	0.7109	0.9493

The dependent variable is the number of patent applications at the U.S. universities. The first column is estimated by using the OLS method while the second column is estimated by using fixed effect method. Standard errors in parentheses under coefficients are robust to heteroskedasticity. \*Significant at the 10% level.

\*\*Significant at the 5% level. \*\*\*Significant at the 1% level.



**5. Policy implications for Vietnamese Universities**

Figure 2 shows that the number of patent filings in Vietnam per USD billion GDP is too small to compare with that of other countries. Vietnam achieved a ratio of only 1.01 in 2005 while Singapore’s was over 3. It is worth noting

that the ratio in China has increased rapidly in recent years. Specifically, some Chinese corporations have become stronger as they are holding a considerable number of patents. For instance, Huawei Technologies Co., Ltd. filed 1,847 PCT applications in 2009 placing it in second position in the Business sector of top PCT applicants in the world<sup>(2)</sup>.

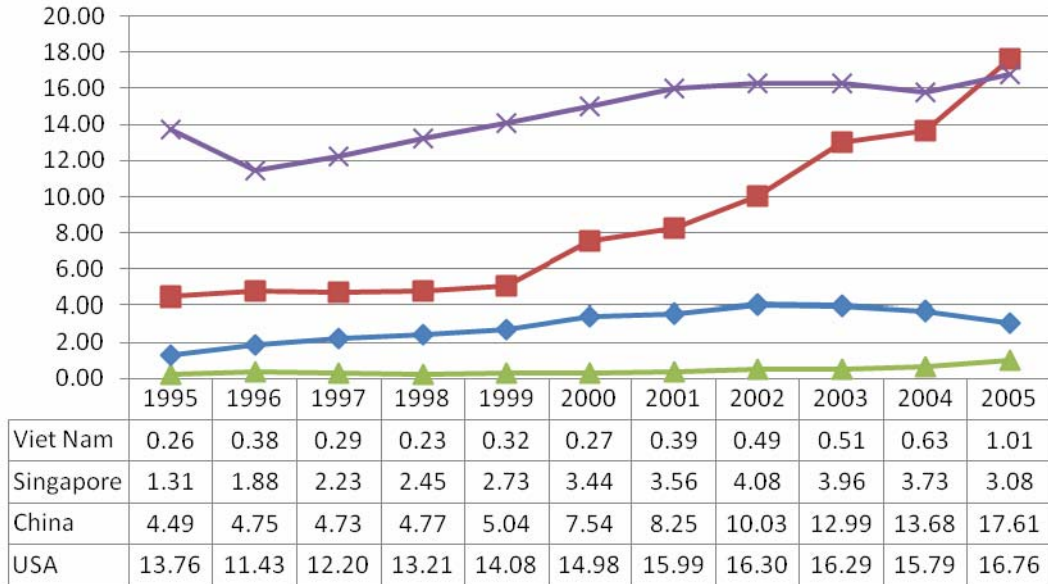


Figure 2: Patent filings per USD billion GDP

Sources: WIPO Statistics Database and World Bank (World Development Indicators), June 2009. GDP data are in billions of USD, based on 2005 purchasing power parities.

Figure 3 illustrates the number of granted patents and granted protection titles for Utility solutions for Vietnam from 1995-2008. The annual new grants for each type have been lower than 50 in recent years. This implies that research and development in Vietnam is at a lower level compared with other countries. In particular, the output of academic research at Vietnamese universities for registering patent applications has not played a leading role in stimulating the commercialization process of innovation as well as encouraging academic inventors to devote their effort and time for setting up spin-off companies.

Indeed, even though the number of granted patents for Vietnamese has gradually increased in recent years, both the patenting commercialization and the formation of university start-up companies have not been implemented efficiently. This means that almost all Vietnamese universities have been neither successful at technology transfer nor at creating significant local economic development. In other words, the technology spillovers from Vietnamese universities have very little effect on economic development in terms of benefits as measured by either start-up companies or university-industry cooperative relationships even though university knowledge spillovers are recognized as an important actor spurring on the growth of industry and

<sup>(2)</sup> World Intellectual Property Indicators, 2010, p. 54.



economic development. The outcomes of Vietnamese universities have not met the demand of our society. Moreover, the evidence from this paper has now confirmed that licensing income and start-up companies are associated with patent applications. Therefore,

it is necessary for Vietnamese universities to create explicitly a strategy for technology transfer and focus exclusively with spin-off firms in high technology cluster areas such as industrial parks or high tech parks.

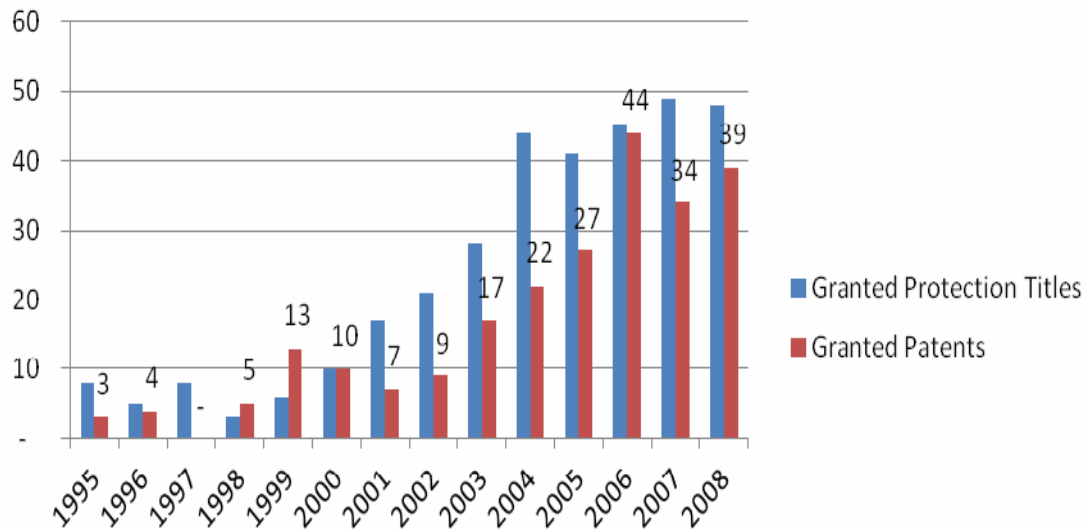


Figure 3: Granted Protection Titles and Patents for Vietnamese from 1995-2008  
 Source: National Office of Intellectual Property of Vietnam - Granted Protection Titles for Utility Solutions and Granted Patents from 1995-2008.

In addition, to attract more technology spillovers from universities to industry, the Vietnamese government should introduce a new law regarding universities' technology transfer activities. The purpose of this law would be to govern relations arising in connection with legal protection and the use of inventions with state funding and grants. The government may adopt laws emulating the Bayh-Dole rules. Revenue for universities may be a goal. Vietnamese universities whose researchers discover patentable inventions may wish to license those inventions to corporations. The revenue from commercialization provides a highly-powered incentive system to encourage academic inventors to pursue research activities at universities as well as to create a stronger linkage between university and industry. In addition, Vietnamese universities also need to diversify the resources of financial support to

offset the budget constraints associated with government funding.

Generally, the results indicate that a number of patent applications at Vietnamese universities have not developed their expectations as one of the main factors to perform technology spillovers and spur economic growth. In terms of industrial cooperation, we have not found any significant contribution from commercialization activities and start-ups of Vietnamese universities into business sectors.

## 6. Conclusion

By differentiating between the two types of effects to investigate the determinants in the long run, we yield some interesting results. First, examining simultaneously the level and rate effect of licensing income on the outcome

of academic research, the elapsed time to offset the initial value loss of patent applications from the commercialization process is 3.6 years. Second, when investigating both the level and rate effects of start-ups on the outcomes of academic research, we find that it takes approximately 3.8 years to compensate the initial reduction of patent applications after creating a new start-up company. In general, the results are consistent with two hypotheses and confirm that the rate effect of licensing income and start-ups are essential factors for motivating academic inventors to create more patents. In addition, to implement the policy implications for Vietnamese universities, the government should consider enactment of the law similar to the Bayh-Dole Act. Doing so would enable academic inventors at Vietnamese universities to generate more revenue from either licensing the inventions to corporations or seeking potential investors to establish a venture capital firm.

As with all research, this paper still has some limitations. First, our budget constraints do not allow us to access new datasets from the Association of University Technology Managers. This costs around USD 500.00 per annual dataset. Second, we could not find patent data for Vietnamese universities. These limitations suggest some directions for future research.

## 7. Acknowledgement

I would like to thank an anonymous referee for providing detailed comments and suggestions that helped to improve this final version. Specially, I also thank the editorial board for correcting typos and grammar as well as providing useful comments to complete this paper.

## References

- [1] Agrawal, A. (2006), "Engaging the inventor: Exploring licensing strategies for university inventions and the role of latent knowledge", *Strategic Management Journal*, 27, 673-702.
- [2] Colaianni, Alessandra and Robert Cook-Deegan (2009), "Columbia University's Axel Patents: Technology Transfer and Implications for the Bayh-Dole Act", *The Milbank Quarterly*, 87, 683-715.
- [3] Czamitzki, D., and Toole A. A. (2010), "Commercializing Science: Is There a University Brain Drain from Academic Entrepreneurship?", *Management Science*, 56, 1599-1614.
- [4] Feldman, Maryann and Pierre Desrochers (2003), "Research Universities and Local Economic Development: Lessons from the History of the Johns Hopkins University", *Industry and Innovation*, 10, 5-24.
- [5] Geuna, Aldo and Lionel J. J. Nesta (2006), "University Patenting and Its Effects on Academic Research: The Emerging European Evidence", *Research Policy*, 35, 790-807.
- [6] Gregorrii, Dante Di and Scott Shane (2003), "Why do some universities generate more start-ups than others?", *Research Policy*, 32, 209-227.
- [7] Heher, A. (2006), "Return on Investment in Innovation: Implications for Institutions and National Agencies", *Journal of Technology Transfer*, 31, 403-414.
- [8] Lacetera, N. (2009), "Different Missions and Commitment Power in R&D Organizations: Theory and Evidence on Industry-University Alliances", *Organization Science*, 20, 565-582.
- [9] Lach, S., and M. Schankerman (2004), "Royalty sharing and technology licensing in universities", *Journal of the European Economic Association*, 2, 252-264.
- [10] Liu, Z. (2008), "Foreign Direct Investment and Technology Spillovers: Theory and Evidence", *Journal of Development Economics*, 85, 176-193.
- [11] Markman, Gideon D., Peter T. Gianiodis, Phillip H. Phan, and David B. Balkin (2005), "Innovation speed: Transferring university technology to market", *Research Policy*, 34, 1058-1075.
- [12] Thursby, M., J. Thursby, and S. Gupta-Mukherjee (2007), "Are there real effects of licensing on academic research? A life cycle view", *Journal of Economic Behavior & Organization*, 63, 577-598.

# Các nhân tố quyết định số lượng hồ sơ nộp đăng ký bảo hộ bản quyền sáng chế tại các trường đại học Hoa Kỳ Kinh nghiệm cho các trường đại học Việt Nam

Nguyễn Văn Phương

*Trường Đại học Quốc tế - Đại học Quốc gia Thành phố Hồ Chí Minh,  
Khu phố 6, Phường Linh Trung, Quận Thủ Đức, Thành phố Hồ Chí Minh, Việt Nam*

**Tóm tắt.** Bài viết trình bày những phát hiện từ việc phân tích sự ảnh hưởng của quá trình thương mại hóa bằng sáng chế và việc thành lập các doanh nghiệp mới đối với kết quả của hoạt động nghiên cứu khoa học tại các trường đại học Hoa Kỳ. Cụ thể, chúng tôi thực hiện mô hình hiệu ứng cố định cùng với việc phân biệt các nhân tố ảnh hưởng ở hai khía cạnh khác nhau bao gồm mức độ và tỷ trọng của thu nhập từ nhượng quyền và số lượng doanh nghiệp mới khởi nghiệp, chúng tôi tìm thấy một số kết quả ấn tượng. Trước tiên, thời gian cần thiết để bù lại giá trị thiệt hại ban đầu của một hồ sơ xin cấp bản quyền do quá trình thương mại hóa là khoảng 3,6 năm. Thứ hai, cần khoảng 3,8 năm để bù lại từ việc sụt giảm giai đoạn ban đầu của hồ sơ nộp xin bảo hộ bản quyền do việc tạo lập các doanh nghiệp mới. Ngoài ra, bài viết cũng cho thấy số lượng hồ sơ nộp xin bảo hộ bản quyền chưa thực sự phát triển tại Việt Nam. Cụ thể, các trường đại học Việt Nam chưa tạo ra nguồn doanh thu đáng kể từ việc nhượng quyền sở hữu trí tuệ thông qua các bằng phát minh sáng chế và số lượng doanh nghiệp mới khởi nghiệp.