

## EVALUATION OF THE AMERICAN PATENT POLICY IN EUROPE

Anikó BARCZIOVÁ<sup>1</sup>

### ABSTRACT

The research paper concentrates on two academic patent policies applied in the European Union, concretely on the American theory of Bayh Dole Act and the classic European Professors' Privilege. Our paper studies the differences between the mentioned theories. According to Bayh Dole Act the legal ownership of the registered academic patent goes to the institution from where the academic patent was registered from, while the patent policy Professors' Privilege gives the ownership right to the person or group of people, who have worked on the creation of the intellectual property and on the process of its registration. Furthermore, concentrates on the American patent policy and on the results happening just after of its implication. We show if some significant changes have happened in the activity of academic patent registration as a reaction of the usage of the Bayh Dole Act patent policy.

### KEY WORDS

patent, academic patent, Bayh Dole Act, Professors' Privilege, intellectual property

### INTRODUCTION

In the work named: Evaluation of the American patent policy in Europe we analyze patents according to theories of various important economists working on this problem. Our work focusses mainly on university patents in the European Union, on their functions and importance for the countries of developing economies. On the following pages, we define what university patents are and what they are used for, we analyze the benefits of patent for universities, for the industrial sector of the country, and their negative aspects. It is very interesting to follow the alterations between different countries, their methods and patenting strategies.

The main goal of this paper is to analyze the development of patent activity in selected European countries. The aim is to show and define the difference between two patenting methods: the Bayh Dole Act and the Professor's Privilege. We are observing academic institutions, professors in the European Union, and their habits, experiences with the action of patenting. We analyze, define the advantages and disadvantages of both theories and their application in selected countries of the European Union (e.g., the application of the Bayh-Dole Act in Denmark, and its shortcomings). Also, we discuss if the American model, the Bayh-Dole Act is the most appropriate for appliance in the countries of the EU.

This research is very interesting since this topic, the application of the American theory, of the Bayh-Dole Act is mostly described and applied in European Union as whole, or in the western countries of the EU, but the quantity of research papers written about the eastern part of Europe is significantly lower.

In the research paper, we are testing the following statement: The number of patent applications was increasing after applying the theory of Bayh Dole Act (Ledebur, Buenstorf, Hummel, 2009)

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<sup>1</sup> Ing. Anikó Barcziová, anikobarczy@gmail.com

## MAIN PART

### **The Intellectual Property and its Protection**

Intellectual property [1] is knowledge, information, innovation created personally by a person or group of people. To save this property from the public people, companies, universities can use different methods as registering a patent, trademarks, copyrights or trade secrets. Patent is one of these options where the owner can get exclusive right for his intellectual property, and can decide to share it with other companies for financial compensation. Registration of a patent provides exclusive legal right for creation of special, unique intellectual property (IP). The successful IP application is registered in the Patent Office. After this operation the owner of the patent with a document can show and assure its legacy. This document creates strong protection for the newly created information, and is valid for a defined certain time period, during which only its legal owner has right to use it, and decide about its users. In the case of more than one creator of the patent, the owner of the patent in a contract with the parties decides who has right for its application and the period of its use, too. Patent as a way for intellectual property protection is very common action in the world, especially for various technological innovations of knowledge. Patents usually have a time limitation during which the protection for the intellectual property is active and is saved from the public users. This limit can be different according to countries of Europe where the intellectual property was registered from, and of course depending on legal patent owners. (Wipo Patent Office)

In case the when the intellectual property is not protected efficiently enough, the unique and special knowledge will become open for the public and society. The mechanisms of commercialization and publication of IP are complicated questions and issues for the knowledge management. It is very difficult to find the correct amount of researched knowledge that should be shared, and which information should remain in secret. In knowledge management it is possible to find and listen about “free-riders”. “Free-riders” are the people who are enjoying the benefits brought from the knowledge transfer without paying financial compensation for its usage. Without asking for the permission of the inventor, the free-riders use the new technology, they do not put their input or their creativity inside of the new knowledge. The effect of the “free-riders” can demotivate researchers from further innovation and creation and registration of new knowledge, since their hard work is used by other people without extra financial income for it. Registration of a patent is a good method and opportunity to decrease the percentage of users of the knowledge without permission, but cannot provide 100% security.

### **Patents - Pros and Cons**

The registration of a patent [2] in the patent office gives an exclusive right for its owner, with what they can decide about the patent’s user, and its conditions. The owner of patent gets protection for his knowledge, ensures the fact that no one will use it or „steal it“ without financial compensation for it.

Patents can bring their owners profit, too. After the legal acceptance of the patent, the competition and other actors on the market have to ask for permission to use it, for what obviously they need to pay.

Many times, companies cannot afford to registrate a patent, or do not have the knowledge, qualified labor to work on research and development. The already registered patents are perfect solution for the subject on the market, they can use and work on an already existing and registered knowledge, with the goal to create and establish a better invention in the future.

Exclusivity is another attribution what goes together with the patent innovation rights. The owner of the patent becomes the exclusive owner and user of it, and can decide who gets exclusive right to use it.

Thanks to the rights what patents provide, the owners can formulate the competition market. The holder can decide who gets access for using it, and can limit their number. With this limitation can create a monopol in the market, with what they can have power on price setting actions.

In the era of the Internet, the speed of knowledge transfer has fastened rapidly, in the same time the protection is more needed. Nowadays, access to information is available very easily for everyone who has connection for the Internet, that is why researchers have to protect their special knowledge more than ever, this action is possible to be done with applying for a patent.

Patents can motivate people for further innovating, if they see that after creating a unique idea, item, it can be protected, they do not need to be afraid of it getting into other hands, moreover they can even earn money for it. Patents can motivate scientists to create something new and special, and be the best and the first on the market.

Owning a patent can be impressive for investors, too. The investors more likely invest into already existing patents, than into only ideas of small companies, start-ups. With investment into an already existing idea, the company is able to do more researches for the future.

On the other hand, patenting can have many negative sides, too. To registrate a patent is a complicated action, about what companies and universities have to decide carefully. This action can be very expensive and takes a lot of time. Companies or institutions have to make a hard decision if their knowledge worth to be saved legally and be patented. Many times, small start-up companies cannot allow to spend a big amount of money for registering the intellectual property, and it has negative effect on the action of registering patents.

As mentioned before, the patent registration is a process, what takes longer time period to be legally accepted. Many times, companies can consider is as negativity before making the decision of patenting. Since companies, do not have time to wait many years for the administrative registration.

Moreover, they can be afraid of complicated administrative, byrocracy issues. It is a complex operation. Many times, the creator does not have all the needed information to start this process, and it is necessary to ask for help in the act of registration, what is obviously not a free service.

The protection is limited geographically, for some countries, is does not provide protection world widely. The idea, the knowledge can be freely used by people from some countries, where the patent legacy is not valid.

The patent rights, and their use has to be monitored by its owner actively. If the person, who has the legal property, so the owner realizes that someone is using the knowledge without permission, has to start a law court against this subject.

With publishing the patent owner is sharing some details of the innovation, knowledge. In the same time, some special, important information stay in secret. The patent publication has to increase the interest of the investor, competitors and motivate them to buy personal access for it.

### **The Role of the University**

Intellectual property rights are used to encourage creativity and innovation by granting exclusivity to the right holder for the duration of the legal protection. This means that the object of protection (an invention, a work of art or a design) can only be exploited by the rightsholder or a person with his permission. Anyone who engages in an activity that falls within the scope of intellectual property rights without such permission (i.e., license) commits an infringement. Academic patent is a knowledge created and registered by universities, with the idea to create something new, unique and special for the future and get ownership rights for it. The criteria

for establishing an academic patent is, that the patent was created in higher education institution and research center, what does not want to gain or maintain a market position and can only access the market of research results through industrial partners. “Academic patents may be owned or co-owned by the inventors, their universities, a governmental agency or public research organization (with whom the inventor may have collaborated), or a business company (again as a result of collaboration, but also, possibly, of contract research or consultancy).” [3]

Universities next to the first mission of educating they have also other mission, as creating and discovering new ideas, knowledge, theories, items for the future generation. The legal ownership of patents and knowledge is not enough, universities have to share, promote and sell their knowledge to the public on the market of patents, and work together for further exploration with knowledge transfer. This process is many times mentioned as the third mission of the universities.

According to the theories of Link, Siegel and Bozeman [4] the third mission of universities, the knowledge transfer between universities and the public sphere can happen with two mechanism, with formal and informal. The formal way of transforming information between institutions happens with the assistance of legal tools, as university spin-offs, licensing contracts or with the help of partnership projects between universities and private institutions. The informal mechanism of knowledge transfer happens in informal way, with communication between parties or publication of professors. Feldman [5] defined that formal and informal knowledge-transfer tools are not in competition but they are used in parallel, for examples a publication about an academic patent.

European universities in the area of academic patenting are often compared to the universities in the USA. Thanks to the appearance of the Theory of New Public Management in Europe, the third mission of universities got a bigger and more important role, and defines the importance of the connection between public and private sector for the successful and effective work. Moreover, it emphasizes the importance of the existence of active competition between universities, that can motivate them for further progression in development. In Europe as the reaction on New Public Management some countries started apply patent policy Bayh-Dole Act. [6]

### **American versus European Patent Model**

The Bayh-Dole act was first used in the United States of America in the 1980's, in Europe started to be used only in the 90's and at the beginning of this century. The main idea of the Bayh-Dole Act is that the university is the legal owner of the patent not the professor as individual. On the other hand, for this benefit the university has to provide the best service in patent management, in favor of the country, the society and the researcher professor, too. The application of this theory can motivate universities to increase the quality of their research within a given university. In addition, the income from applying patents by other subjects make universities able to invest more money in research in the future and support professors for higher quality work.

Applying this rule world widely gave the right for the creator organization to be the owner of the knowledge property, what highly motivated universities for research and applying for patent registration. Moreover, patents could create a part of the financial income for academic sphere. “In the late nineteenth century Joseph Lewis Ricardo, founder of the Electric Telegraph Co. argued that since, “nearly all useful invention depends less on any individual than on the progress of society”, there is no need for “reward him who might be lucky enough to be the first on the thing (invention) required”.” [7]

Between the United States of America and the European countries a difference can be observed. While this act worked perfectly in the case of the USA, the number of academic patents has increased highly, in Europe it did not work so rapidly, we call this “European Paradox” [8]. In theory the Bayh- Dole Act could be applied and transformed for Europe as well, since Europe has quality universities and high-qualified professors. In reality, it did not work smoothly. European researchers and universities were not ready to promote and sell their knowledge to third parties. The second problem was in the managerial and marketing function of European universities. The researchers and universities are concentrated more on the scientific part than on the managerial.

At the end of the previous millennium the Bayh- Dole Act has become more popular and well-known all-around Europe. In Europe, before the appearance of Bayh- Dole Act the theory Professors Privilege patent policy was used. Professor’s privilege is a legal act, when the official owner of the patent is the person who was working on the research and has applied for patent registration. Professors Privilege is in contrast with Bayh-Dole Act. The person working on the patent research is the only one, who could promote and sell the patent in the best way, with the highest quality, and he should be the only one, who benefits of the patent sales. The goal of this act is to motivate professors, researchers for further quality innovative ideas and to create, establish new knowledge, ideas and objects.

Policy and legal changes	Country	Change	Trend
Abolishment of the Professor’s privilege, to increase scientists’ incentives to disclose inventions to university managers	Denmark	2000	Universities assign a share of the patent licensing revenue to the inventor and pay all the costs associated with the patent application
	Germany	2002	
	Austria	2002	
	Norway	2003	
	Finland	2007	
Stronger enforcement of institutional owner system already in place	United Kingdom	1977	Harmonization, measures to encourage intellectual property awareness, commercialization and creation of technology transfer offices
	Spain	1986	
	France	1999	
	Switzerland	1991	
Mixed changes: Introduction of Professor’s privilege (from institutional ownership to inventor’s ownership) + Introduction of managerial and financial autonomy for universities	Italy	2001	Only applies to inventions fully funded by the university employing the inventor since 2005

Continuation of the Professor's privilege	Sweden	1949	Recurrent national debate about IP regimes. The conclusion is always that there is no need for legislative change.
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*Table 1. Changes in IP regimes for university patenting in Europe*

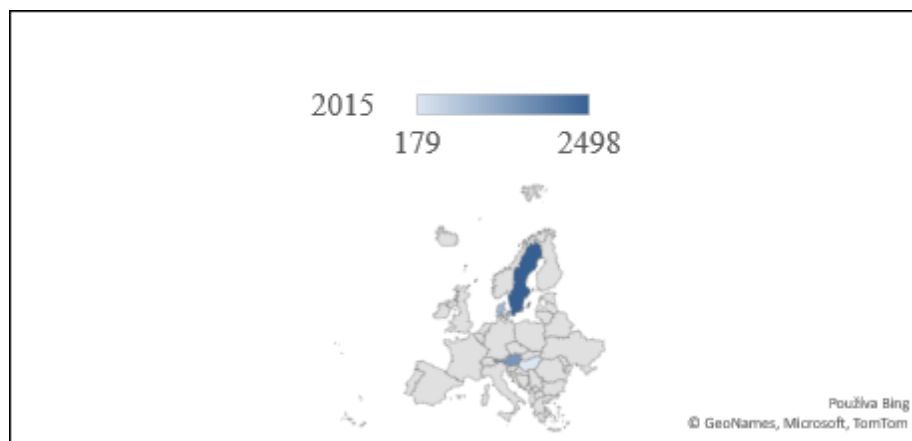
*Source: Based on information from Geuna and Rossi (2011) for most countries, Chardonnens (2010) for Switzerland, Della Malva, Lissoni, and Llerena (2013) for France, Lissoni et al. (2013) for Italy, Martinez et al. (2013) for Spain, See also Martine and Sterzi (2019) [12].*

On table 1. we can see the changes in IP regimes for university patenting in Europe, what means the change of legal administrative theories in some European countries. Countries as Denmark, Germany, Austria, Norway and Finland at the beginning of the 21<sup>st</sup> century changed their patenting system. Instead of Professor's Privilege they started to apply the theory of Bayh-Dole Act. This abolishment has relocated the legal ownership of the patent to universities, moreover the managerial rights, too with the goal of better promotion, knowledge transfer and the growth of patent sales. Universities offers revenue from the share of the created patent for the inventors, and they accept the obligation of administrative and registration cost for the patent.

In contrast, countries such Italy and Sweden has applied the opposite theory of Professors' Privilege. In 2001 Italy has changed institutional rights to inventors, moreover universities got managerial and financial authority. In Sweden the Professors' Privilege has been used since 1949. We can see well the different effect of these two theories between countries of Sweden and Denmark. Both of the countries are located on the northern part of Europe, have a similar culture, history and mentality influence. "Valentin and Jensen found significant reductions in contributions from Danish researchers, combined with a simultaneous substitutive increase of non-Danish ones and a moderate increase in academic inventions channeled into university-owned patents following the policy change. Valentin and Jensen argue that the reduction in Danish academic patenting can be attributed, at least in part, to the reform. In their own words, 'the larger part of the inventive potential of academia, previously mobilized into company-owned patents, seems to have been rendered inactive as a result of the reform' (Valentin and Jensen 2007). Valentin and Jensen claim that the ex-ante allocation of intellectual property rights to universities required by the reform harmed exploratory collaborative research, for which the results are still uncertain at the time when contracts must be signed and the allocation of potential future outputs must be discussed." [10]

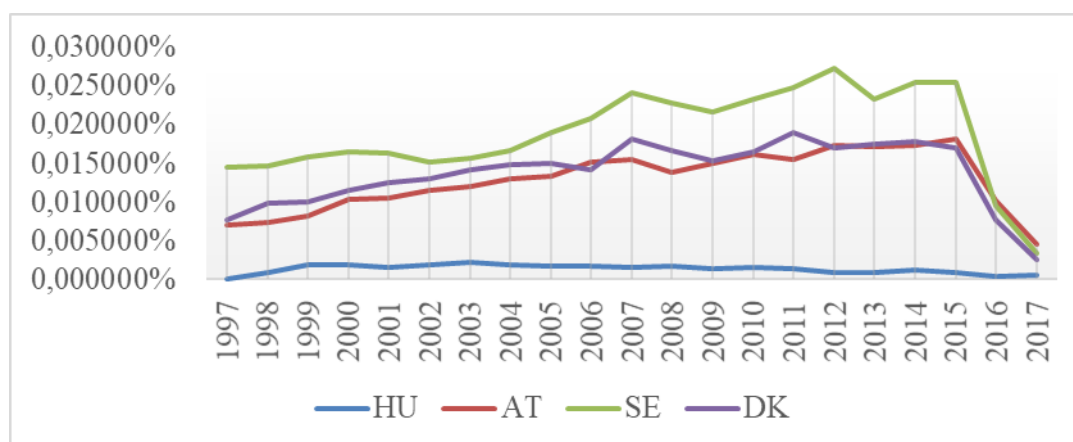
### **Comparison of the Act of Patent Registration in the Selected Countries of the European Union**

In the following part of the research paper, we analyze academic patent registrations in selected countries of the European Union- Sweden, Denmark, Austria and Hungary - between 1997 and 2017, so in a 20 years' time period. All around Europe the popularity of the action of patent registration and the applied patent policy has been different.



Graph 1: Academic Patents- Sweden, Denmark, Austria and Hungary- 2015  
Source: Patent database, OECD, own elaboration [13]

Graph 1. presents us the academic patent registration in the selected countries of the EU. With blue color are tagged those countries which we analyze in this work (Sweden, Denmark, Austria and Hungary). With light blue color we can see those countries, where patent registration was on low level, this means that country which has the darkest color, had the highest patent registration number, too. In 2015, the amount of academic patent registration in Sweden had the highest level of patent registration between these four countries (on the map n. 1. we can see it with the darkest blue color), it was followed by Austria, Denmark and finally by Hungary.



Graph 2.: Per Capita Academic Patent Registration Rate on Population 1997-2017  
Source: Patent Database, OECD, 1997-2017, own elaboration

The graph 1.- Per capita academic patent registration rate on population- is perfect for the comparison of academic patents in the selected countries, since on this graph we can see the rate of the academic patent registration on the population in the mentioned countries. This rate provides and offers us a possibility for a fair and efficient evaluation. In Hungary the population is about 10 million people, while in Denmark its level is lower, only its half, 5 million people. If we would not use this rate, and we would compare only the number of registrations between these countries (Sweden, Denmark, Austria and Hungary), and the comparison would not be done on the highest level, and the results would look differently. It is not correct to compare countries who have 10 million inhabitants with countries who have only 5 million.

For the first sight we see, in Hungary the academic patent applications are much below the registration rate in the other countries of the EU. Unfortunately, we cannot see a dominant and impressive rise in this rate during these 20 years.

In the case of Sweden, we can see much more positive results. Sweden has the highest academic patent registration rate on the population from these four selected and studies countries. In Sweden, since 2002- 2003 the patent registration number is increasing, and in 2014 this rate was on its top during this 20 years' time period.

Academic patent application rate in Denmark and Austria between 1997 and 2017 shows a similar trend, both of these countries are on the same level. Until 2006 the patent registration rate in Denmark was a little bit higher than in Austria. However, since 2007 Austria is preceding Denmark.

It can be interesting for us, that on Map 1. Austria had the second highest number of academic patent registration after Sweden of the selected four countries. This fact can be explained by the contrast between the quantity of registered academic patents and the academic patent registration rate on the population number of the countries. Maybe, Austrian academic institutions have registered more patents than the ones in Denmark, but if we count the patent number on the population in the mentioned countries the results will be different, this rate will be lower in Austria than in Denmark.

Also, we can speculate, why is the per capita patent registration rate rapidly increasing after 2015. This significant decreasing on the graph can be explained by the long-lasting patent registration process. In our correlation analysis we will not work with these two years (2016,2017), with this act we would like to avoid unreal introduction of the action of the academic patent registration.

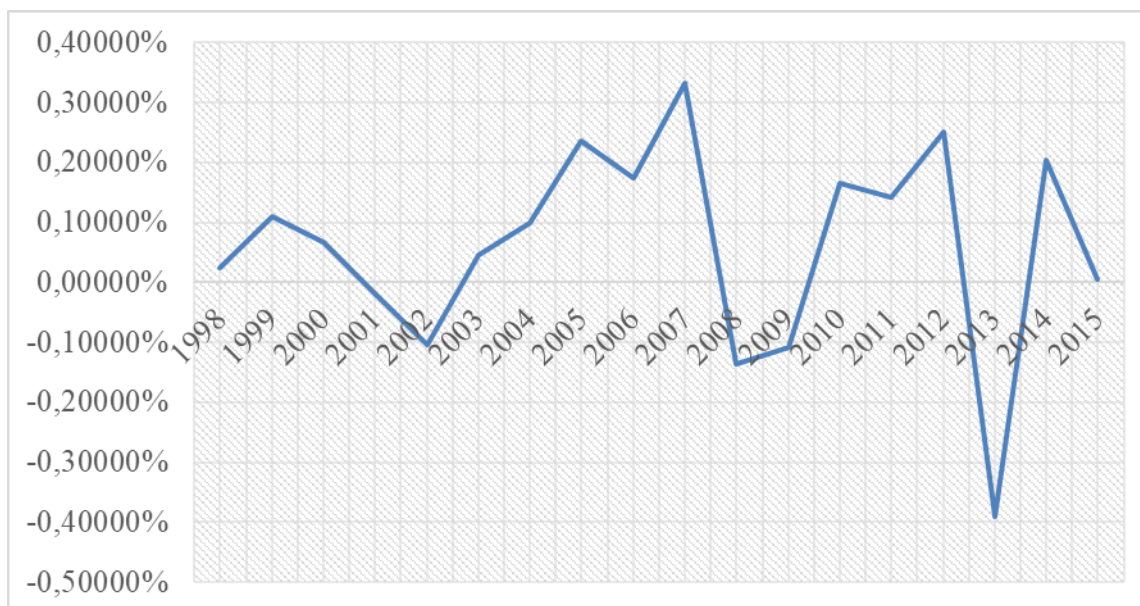
To sum up, in the four selected and analyzed countries (Sweden, Denmark, Austria and Hungary) the academic patent registration has been done differently. Eastern-Central European country, Hungary is situated on the comparison graph deeply below the other analyzed countries. The most academic patent counted on national population was registered from Sweden, the activity of Austrian and Danish universities was on the same level.

Three of the selected countries, Denmark (since 2000), Austria (since 2002) and Hungary (since 2006) are using the American patent policy, the Bayh Dole Act theory. In the Nordic Sweden the Professor's Privilege is applied. Our statement number 1 claims: "The number of patent applications was increasing after applying the theory of Bayh Dole Act (Ledebur, Buenstorf, Hummel, 2009)". After our analysis we can define that this statement n.1. is true in situation *ceteris paribus*, we do not consider other influential effects. In all of the three selected and studied countries where Bayh Dole Act started to be used, after the year of the policy application the patent registration was increasing, too.

### **Patent Growth Rate and the Bayh Dole Act Policy**

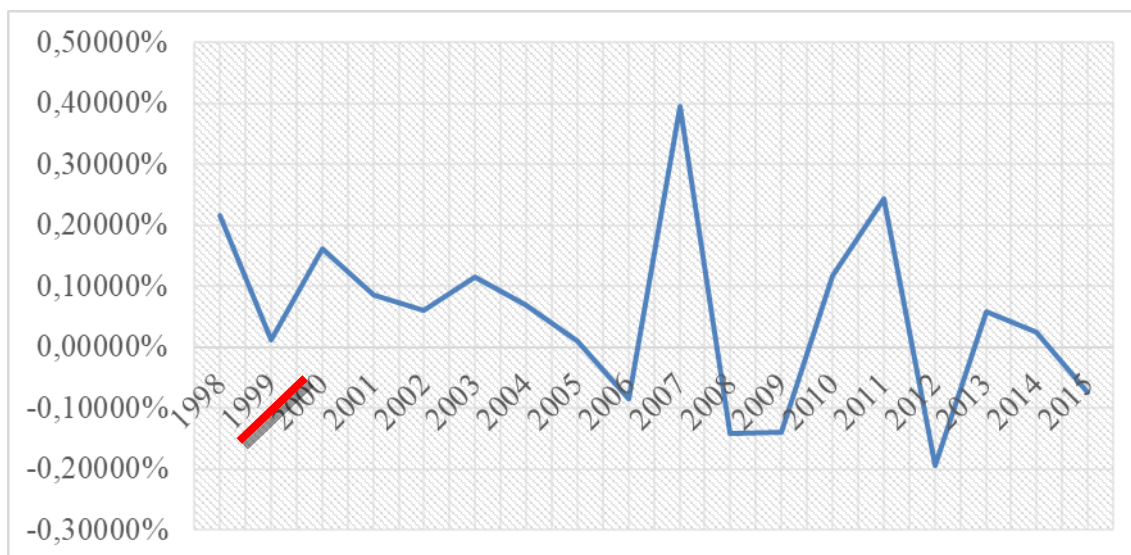
We also studied patent growth rate in the selected countries between 1998 and 2015. This rate perfectly shows us the percentual rise or decrease in the patent rise. We need to mention that for the following analysis and calculation per capita academic patent registration rate was used, and was compared. We decided to use this rate for more convenient and real comparison, with this choice we try to avoid unrealistic data created by the differentiation rise in the population in the selected countries. Furthermore, we compared the trend of this rate before and after the application of the Bayh Dole Act patent policy. We will be able to observe on the graph the patent growth rate's trend before and after the implication.





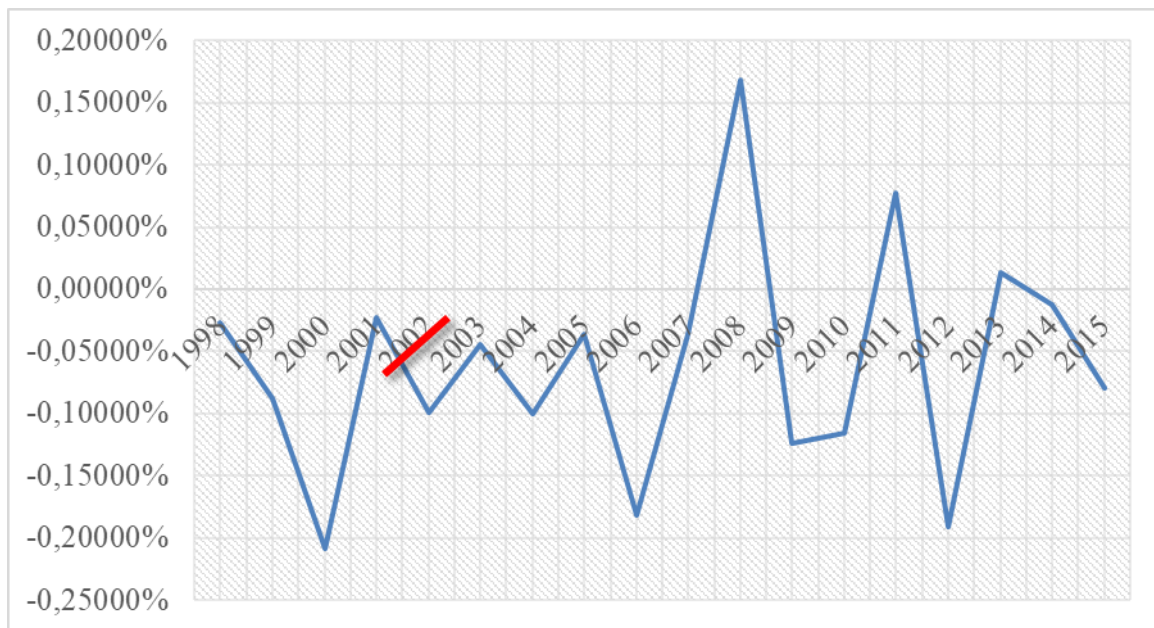
*Graph 3: Patent growth rate in Sweden*  
*Source: OECD Patent Database, own elaboration*

Patent growth rate studies were done about the situation of the patent market in Sweden. Patent growth rate is a comparison of two years, for examples, 1997-1998. In 1998 the per capita patent registration growth rate was showing a rising trend, compared to 1997, concretely, it has risen by 0,02%. We all know in Sweden Bayh Dole Act patent policy was not applied, however on the graph a stabile rise can be seen after 2002.



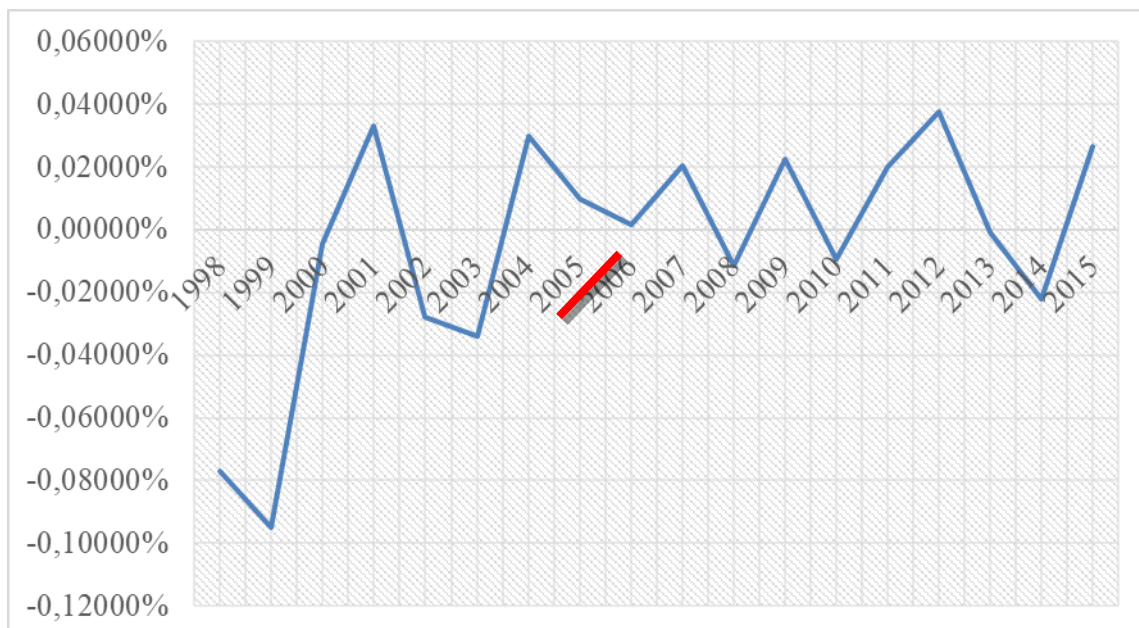
*Graph 4: Patent growth rate in Denmark*  
*Source: OECD Patent Database, own elaboration*

Graph 17 analyses that patent growth rate in Denmark. In Denmark Bayh Dole Act patent policy is implicated since 2000. Graph 17 shows us that the growth rate for patent registration per capita was showing a stabile decrease. According to our analyses, we can say that the implication of a new theory does not have positive effect on academic patent registration, it did not motivate institutions for rapid rise.



*Graph 5: Patent growth rate in Austria*  
*Source: OECD Patent Database, own elaboration*

In Austria we can observe similar results as on the graph of Denmark. With red color we tagged the year when Bayh Dole Act patent policy started to be used in the country. After 2000, a negative growth trend can be observed in Austria. In the case of Austria, according to our studies we can say that Bayh Dole Act was not stimulating academic institutions positively enough for rising the rate of patent registration per capita. In 2008 we can observe an important rise. However, unfortunately the big economic crises in 2008/2009 had a negative effect on the patent growth rate.



*Graph 6: Patent growth rate in Hungary*  
*Source: OECD Patent Database, own elaboration*

Finally, we analyzed Hungarian patent growth rate between 1998 and 2015. In Hungary Bayh Dole Act was implicated in 2006. After studying the four selected countries, we can say that according to our patent growth rate analyses that the implication of Bayh Dole Act patent policy did not have a significant rising effect on the academic patent registration rate per capita. After the year of the application, we could not observe an outstanding rising trend on patent growth rate.

## CONCLUSION AND DISCUSSION

In the final part of the research paper, we would like to sum up the analyzed information and the newly received facts. We were working with academic patent theories, policies in the EU. We decided to analyze the two most popular theories, the Bayh Dole Act theory and the Bayh Dole Act. The Bayh Dole Act patent policy gives the legal ownership right for the registered intellectual property for the university where the patent was created and researched. They claim that the university is the institution, who could ensure the promotion and the action of the knowledge exchange on the highest level. On the other hand, the act of Professor's Privilege gives the ownership right to the person or group of people, who were participating the creation of a special intellectual property and registering it as a patent.

According to our data the first statement is accepted we can say, it is true, the number of patent applications was increasing after the application of the theory of Bayh Dole Act in the selected four countries (Sweden, Denmark, Austria and Hungary) between 1997 and 2017 in ceteris paribus (we do not consider other influencing factors).

Also, we wanted to compare the Northern and Central-Eastern countries of the European Union, and their patent activities. We cannot make general statements, that in the northern countries of the European Union this activity of patent registration was happening on a higher level in bigger amount, since Austria was on the same level as Denmark. Only in Hungary we could observe academic patent registration happening on a lower level compared to the other selected countries and to the EU average. To sum up, we cannot say generally that in the countries of Central Europe the academic patent registration is happening on a lower level, it is an individual action, changing individually by the countries (the case of Austria and Hungary).

This work can be useful for the creation of policies of countries, regions and universities. According to our analyses we can show, that the implication of a new patent policy was not than effective in the European Union than in the USA, also it does not work equally efficiently in every country of the EU.

## REFERENCES

- [1] World Intellectual Property Organization, 2021, available: 28.3.2021 <[https://www.wipo.int/patents/en/faq\\_patents.html](https://www.wipo.int/patents/en/faq_patents.html)>.
- [2] ADAM, Noah, Why are patents important?, Patent Rebel, 2019, available 15.5.2021, <<https://patentrebel.com/why-are-patents-important-advantages-disadvantages-pros-cons/>>.
- [3] LISSONI, Francesco, MONTOBBIO, Fabio, The Ownership of Academic Patents and Their Impact: Evidence from Five European Countries. *Revue économique*, vol. 66(1), 143-171. 2015, available: 20.5.2021, <https://doi.org/10.3917/reco.661.0143>
- [4] LINK, Albert, SIEGEL, Donald, BOZEMAN, Berry, An empirical analysis of the propensity of academics to engage in informal university technology transfer. *Rensselaer Working Papers in Economics*, 0610, 2006.

- [5] FELDMAN, Maryann, Entrepreneurship and American Research Universities. Evolution in Technology Transfer. In David. M. Hart, The Emergence of Entrepreneurship Policy. Governance, Start-ups, and Growth in the US Knowledge Economy, p: 92-112. New York: Cambridge University Press, 2003.
- [6] NOVOTNÝ, Ádám, Vállalkozó egyetemek Magyarországon: technológiatranszferaktivitás és -attitűd a magyar egyetemi kutatók körében, BME, 2010.
- [7] GUELLEC, Dominique, POTTELSBERGHE DE LA POTTERIE, Bruno, The Economics of the European Patent System: IP Policy for Innovation and Competiton, Oxford University Press, 2007.
- [8] LISSONI, Francesco, LLERENA, Patrick, MCKELVEY, Maureen, SANDITOV, Bulat, Academic patenting in Europe: new evidence from the KEINS database, 2008, <[http://www.francescolissoni.com/rp\\_g000043.pdf](http://www.francescolissoni.com/rp_g000043.pdf)>.
- [9] GEUNA, Aldo, ROSSI, Federica, Changes to university IPR regulations in Europe and the impact on academic patenting. Research Policy 40 (8), pp. 1068-1076. ISSN 0048-7333., 2011, available: 4.4.2021, <<https://eprints.bbk.ac.uk/id/eprint/3753/1/3753.pdf>>.
- [10] DELLA MALVA, Antonio., LISSONI, Francesco, LLERENA, Patrick, Institutional change and academic patenting: French universities and the Innovation Act of 1999. J Evol Econ 23, 211–239 (2013)., available: 4.4.2021, <https://doi.org/10.1007/s00191-011-0243-3>
- [11] LISSONI, Francesco, et. al., Academic engagement and commercialisation: A review of the literature on university–industry relations, available: 4.4.2021, <https://doi.org/10.1016/j.respol.2012.09.007>
- [12] MARTÍNEZ, Catalina, STERZI, Valerio, The impact of the abolishment of the professor’s privilege on European university-owned patents, Industry and Innovation, <https://doi.org/10.1080/13662716.2019.1709421>, 2020
- [13] OECD DATABASE, Academic Patent Database, 1998-2018