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FACULTY INTELLECTUAL PROPERTY RIGHTS IN CANADIAN UNIVERSITIES

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ABSTRACT

This article reports on a qualitative study of Intellectual Property regulation in Canadian universities, visited by the author. The study was based on policy and regulation comparative analysis, as well as semi-structured expert interviews carried out at Southern Ontario, Alberta and British Columbia universities. The principal assumption and purpose of the study is the useful understanding of the Canadian university intellectual property policies for potential applications to Lithuania and other emerging economies in the Baltic region and elsewhere. The study aimed to review and identify features of Canadian university intellectual property regimes, which can be held responsible for stimulating and sustaining technological innovation.

KEYWORDS

Canada universities, intellectual property, faculty intellectual property rights, technology transfer

INTRODUCTION

Through Understanding Canada—the Canadian Studies Faculty Research Program of the Government of Canada—the author studied intellectual property rights matters in several major Canadian universities during August-September 2011. Specifically, Southern Ontario, Alberta and British Columbia universities were investigated and material on these universities was gathered.

Canada is recognized as an advanced industrial nation with a high per-capita income and highly developed science and technology sector.¹ Canadian university intellectual property rights policies are little known in the Baltics. The only citation to some Canadian scholars (e.g., Daniel Gervais) on general issues of intellectual property law is found in the Lithuanian intellectual property law literature.²

Canadian university intellectual property rights is of interest for Lithuania and other emerging economies among the Eastern EU Members that are looking for the optimal regime allowing efficient commercialization of faculty research. Continuing 'brain drain' in the Baltics (and attractiveness of such countries as Canada), which may be assisted by the lack of acceptable intellectual property rights regime in countries like Lithuania, emphasizes the urgency of the matter.

The study was based on the policy and regulation comparative analysis, as well as semi-structured expert interviews carried out at Southern Ontario, Alberta and British Columbia universities. Materials expressly referred to by the interviewees were included in the analysis. A clear limitation of the study, which shall be acknowledged, is no account of the French Canada universities. Primary methods employed for the study is comparative legal text analysis, phenomenological and teleological legal text analysis, as well as semi-structured expert interviews.

The principal assumption and purpose of the study is the useful understanding of the Canadian university intellectual property policies for potential applications to Lithuania and other emerging economies in the Baltic region and elsewhere. The study aims to review and identify Canadian university intellectual property regimes, which can be held responsible for stimulating and sustaining technological innovation. The feasibility of replication of the Canadian public policies elsewhere was not evaluated and falls outside of the scope of the study, since it would require much broader assessment of the socio-economic context, as well as careful consideration of the quantitative aspects.

¹ STIC-CSTI, "State of The Nation 2010 - Canada's Science, Technology and Innovation System" // http://www.stic-csti.ca/eic/site/stic-csti.nsf/eng/h_00038.html (accessed October 1, 2012).

² Vytautas Mizaras, *Autorių teisė*, 2 tomas (Justitia, 2009), p. 752.

1. METHODOLOGY AND FRAMEWORK OF THE STUDY

Literature on the university intellectual property rights³ generally emphasizes several rationales for regulation thereof:

- Legal, pertaining to recognition of authorship and first ownership;
- Ethical, pertaining to co-creation and conflict of interest;
- Disciplinary, recognizing the differences in social sciences and humanities, as well as technical sciences;
- Economic, focusing on the external sponsorship of research (either public or private), which fund these activities and impose conditions and constraints in terms of ownership, dissemination and exploitation.

The above rationales define the framework of analysis that was used by the author for both the policy/regulation analysis, as well as interviews.

The analysis builds on the number of studies of the subject done in Canada⁴, as well as the author's own prior work in the USA and Lithuania⁵. The analysis is unique in the selection of the universities, comprehensiveness and detail, comparative study, as well as synthesis of legal text analysis and qualitative interview. Actual practices of the studied Canadian universities are taken into account as much as they were reflected in the interview data; however, this excludes the analysis of empirical data.

The study undertook comparative legal text analysis, phenomenological and teleological legal text analysis, complemented with semi-structured expert interviews focused on intellectual property rights regimes of the studied Canadian universities, with particular focus on intellectual property ownership and commercial gain distribution between the faculty and the institution. The study relied on the legal materials gathered during university visits and online, as well as additional qualitative data gathered from expert interviews (faculty, as well as university technology transfer officers).

The expert interview method was used as the most popular qualitative research method⁶, and the only method available in order to obtain qualitative legal data.⁷ The limited presence of the author in Canada, limited scope of the study, as

³ Ann L. Monotti and Sam Ricketson, *Universities and Intellectual Property: Ownership and Exploitation* (Oxford University Press, 2003).

⁴ David Doloreux, "Regional innovation systems in Canada: a comparative study," *Regional Studies* 38 (2004); Katherine A. Hoye, *University Intellectual Property Policies and University-Industry Technology Transfer in Canada*, Ph.D. dissertation (Systems Design Engineering, University of Waterloo, 2006).

⁵ Dennis S. Karjala and Mindaugas Kiškis, "Intellectual property rights within the university," *Intellectual economics* No. 1(9) (2011); Mindaugas Kiškis, "Understanding Canadian Innovation System," *Social Sciences* Vol. 75, No. 1 (2012).

⁶ Uwe Flick, *An Introduction to Qualitative Research*, 4th ed. (Berlin: Sage Publications Ltd, 2009).

⁷ Lawrence W. Neuman, *Social Research Methods: Quantitative and Qualitative Methods*, 10th ed. (Pearson/Allyn & Bacon, 2009).

well as high costs associated with other research methods were also important factors.

The author personally visited University of Toronto, Queen's University, Western Ontario University, Waterloo University, University of York, University of Alberta and University of British Columbia and established direct (formal and informal) contact with some faculty members and technology transfer officers. The choice of Canadian universities was based on the funded research proposal. As was noted, the study shall not be regarded as comprehensive of all of Canada, since it excludes French Canada universities, as well as universities in on the Canadian prairie.

Overall 23 pertinent experts were interviewed. Experts were involved based on positions held and availability. They acknowledged apprehension of their university intellectual property rights regulation and practical experience therewith, and therefore meet the requirements for the qualitative research.

There were four principal issues discussed with the experts for the purpose of the study. No specific questions or interview protocol were adopted, resulting in semi-structured interviews. The five targeted issues are:

1. Key features of the intellectual property rights regime in the university.
2. Perceived advantages/disadvantages of the regime, including content/discontent therewith.
3. Comparison and opinions of intellectual property regimes in other Canadian universities.
4. Effects that the policy had on the innovation and translation of science into the real economy.

Institutional visits and interviews were based on geographical clustering. Total duration of the research field work in Canada was 31 days. Materials and data gathered were processed during the visit and in the first half of 2012.

Table 1. Framework of research activities and analyzed material in the targeted Canadian universities

| PROVINCE | INSTITUTION | EXPERTS | FRAMEWORK DOCUMENTS | REMARKS |
|--|--|-----------------------|---|--|
| Ontario (Toronto) | MaRS Centre University of Toronto York University | 1 2 2 | <ul style="list-style-type: none"> University of Toronto Copyright Policy (2007) http://www.governingcouncil.utoronto.ca/policies/copyright.htm University of Toronto Intellectual Property Guidelines for Graduate Students and Supervisors (2007) http://www.engineering.utoronto.ca/Assets/AppSci+Digital+Assets/pdf/GradStudents+Ethics/Intellectual+Property+Guide.pdf University of Toronto Inventions Policy (2007) http://www.governingcouncil.utoronto.ca/policies/invent.htm York University Intellectual Property Policy (1996) http://www.yorku.ca/grads/policies_procedures/intellectual_property.html | MaRS centre is the independently incorporated technology transfer arm of the University of Toronto |
| Ontario (Kingston, London, Kitchener-Waterloo) | Queens University PARTEQ University of Western Ontario Communitech Waterloo University | 2 2 1 2 2 | <ul style="list-style-type: none"> Collective Agreement (Faculty, Librarians and Archivists) between Queen's University Faculty Association (QUFA) and Queen's University at Kingston (2011) https://qshare.queensu.ca/xythoswfs/webui/_xy-3990440_1-t_2W7RB1hL Collective Agreement between the University of Western Ontario and the University of Western Ontario Faculty Association (2010-2014) http://www.uwofa.ca/collectiveagreements/ University of Western Ontario Patents Policy (1983) http://www.uwo.ca/univsec/mapp/section7/mapp74.pdf Waterloo University Policy 73 Intellectual Property Rights (2000) http://iris.uwaterloo.ca/ethics/integrity/policy73.pdf | PARTEQ and Communitech are independently incorporated entities, among other functions engaged in technology transfer for the Queen's University and Waterloo University University of Western Ontario does not have a clearly identifiable technology transfer body |
| Alberta (Edmonton) | TEC Edmonton University of Alberta | 2 1 | <ul style="list-style-type: none"> Intellectual Property Guidelines for Graduate Students And Supervisors (2004) http://www.gradstudies.ualberta.ca/degreesuperv/~media/Faculty%20of%20Graduate%20Studies/common/IPGuide.pdf University of Alberta Faculty Collective Agreement (2006) http://www.aasua.ualberta.ca/en/~media/aasua/CollAgree/Docs/Faculty_Agreement_FINAL.pdf | TEC Edmonton is an unincorporated joint-venture between University of Alberta and Alberta Chamber of Commerce, which is engaged in technology transfer for the University of Alberta |
| British Columbia (Vancouver) | University of British Columbia (including University-Industry Liaison Office) | 5 | <ul style="list-style-type: none"> University of British Columbia Intellectual Property Guide (2011) http://www.grad.ubc.ca/printpdf/book/export/html/2891 University of British Columbia Patents and Licensing Policy No. 88 (2010) http://www.universitycounsel.ubc.ca/files/2010/08/policy88.pdf | University-Industry Liaison Office is an internal unit of the University of British Columbia, responsible for technology transfer |

All online documents were accessed on June-September, 2012

2. KEY FEATURES OF THE INTELLECTUAL PROPERTY RIGHTS REGIMES IN THE CANADIAN UNIVERSITIES FEATURED IN THE STUDY

The material analyzed allows a number of general observations on handling of intellectual property in Canadian universities. The foremost feature is that the intellectual property regulatory framework in the studied Canadian universities is not subject to governmental regulation. Despite intellectual property law being a federal law issue in Canada, the intellectual property regulatory framework for the universities is a matter of university autonomy and self-regulation, thus it is regulated in a variety of ways. The two principal legal instruments are:

- collective agreements between the university and the faculty, or
- a university wide mandatory intellectual property rights policy.

In addition to collective agreements, and regulations and policies dealing with intellectual property, some rules are contained in the founding documents or rules adopted by the university technology transfer arms, which are also organized in a variety of different ways in the Canadian universities. All such documents that deal explicitly with intellectual property or closely related topics such as technology transfer were analyzed.

This university autonomy results in substantial variation of the regimes in different universities. Nevertheless, most of the documents regulate the same subject matter, while varying in their content. The structure of the analysis is based on the principal issues regulated, which are:

- Types of intellectual property covered;
- Parties entitled to intellectual property rights;
- First ownership and assignment of intellectual property rights in the university;
- Disclosure of intellectual property;
- Commercialization;
- Distribution of the revenue from commercialization.

Overall the regulation of intellectual property rights in the Canadian universities is surprisingly stable.⁸ Many rules originating in the 1980s survived the turn of the millenium, as well as reform attempts by the Canadian Government in early 2000,⁹ mainly based on the recognition of the broader university mission and clear understanding that universities are not commercial players.¹⁰ Some

⁸ Canadian Association of University Teachers, "Responding to the Intellectual Property Commercialization Challenges Report," (Ottawa, 2006) // http://www.caut.ca/uploads/ipcon_comm_workshop.pdf (accessed October 1, 2012).

⁹ Claire Polster, "The University Has No Business in the Intellectual Property Business," *CAUT Bulletin* Vol. 46, No. 7 (September 1999) // http://www.cautbulletin.ca/en_article.asp?ArticleID=2740 (accessed October 1, 2012).

¹⁰ James L. Turk, ed., *The Corporate Campus: Commercialization and the Dangers to Canada's Colleges and Universities* (Toronto: ACPPU & James Lorimer, 2000).

universities – most notably the University of Toronto – have ventured into the wider appropriation of the faculty intellectual production, with arguable success. Almost all other reviewed universities maintained a broad faculty centric autonomy.

The analyzed materials demonstrate the contradictory nature of intellectual property rights within the academia.¹¹ This was also mentioned by some interviewees (almost exclusively by faculty members). The University of Waterloo, which is very influential in Canada in terms of IP policy, acknowledges this very openly, and since it is probably the most influential university in terms of faculty intellectual property handling, it deserves separate mention. University of Waterloo Intellectual Property Rights Policy (2000) states:

A strictly legal framework for and approach to IP rights, based closely on copyright, patent and the like, is not sufficient within an academic community where the emphasis is on the word “intellectual.” Academic community values openness, sharing of ideas, and scholarly activity, and its primary goals are to increase and disseminate knowledge. Depending on the particular situation, however, there may be a tendency to keep one’s ideas to one’s self. Commercial considerations, as well as potential academic recognition, can influence decisions to share ideas and results with one’s colleagues. While recognizing that such tensions can exist, the University encourages an atmosphere of openness to the greatest practical degree.

Further analysis is based on the aforementioned structure.

3. TYPES OF INTELLECTUAL PROPERTY

Most analyzed frameworks differentiate types of intellectual work(s). The distinctions are based on rules specific to different types of intellectual property produced by different disciplines, i.e., copyright works, inventions, computer software.

All analyzed universities have distinctly separate rules applicable to scientific articles and books, and scientific inventions. This distinction is most evident in the University of Toronto, which maintains two separate regulations for copyright and patent matters. Other analyzed universities generally separate the types of intellectual property; however, they deal with them within the same set of regulations. Notably, Waterloo University generally follows the same basic principles for either copyrightable or patentable subject matter.

Only a few universities had special rules for computer software or data bases. The University of Toronto treats computer software or data bases very differently

¹¹ Canadian Association of University Teachers, “Intellectual Property & Academic Staff Legal Review (Parts 1-3),” (Ottawa, 2003-2004) // <http://www.caut.ca/pages.asp?page=217> (accessed October 1, 2012).

from the copyright works, and more in line with the rules for inventions, although similarly to the European Union computer programs and data bases are not directly patentable in Canada. The University of Alberta's Collective Agreements also ascribe computer software to patentable subject matter; however, it makes the reservation that it shall be "capable of being legally protected by patent, whether in Canada or elsewhere".

For copyright works other than software and databases, the university rules at Queen's University are differentiated based on format (print, audiovisual, multimedia/electronic). Other universities generally reference copyright works and do not separate them into smaller categories.

Most universities also regulate rights with respect to the scientific data, as the precursor to copyrightable work or invention. The University of British Columbia (UBC) Intellectual Property Guide suggests that scientific data is not protected by the laws governing intellectual property: "In legal terms, it is important to remember that data themselves are not intellectual property. They are neither an invention (patentable i.e.) nor an expression of an idea (i.e. a work protected by copyright)." An almost identical approach is also assumed by the University of Alberta. Both universities suggest joint ownership of the data by both the researcher and the university. York University Intellectual Property Policy refers to property (or owners) of data without reference to the concept of intellectual property or the applicable legal regime: "Normally, all co-authors or co-owners of the data need to concur in publishing or presenting the work." University of Toronto Intellectual property guidelines for graduate students also refers to possible ownership of the data: "Raw data are not normally considered to be intellectual property in law. [...] However, research data are considered to be an invention under the University's Inventions Policy. Thus, in most cases, research data are jointly owned by the researcher and the University, which means that both have the right to use the data."

4. PARTIES ENTITLED TO INTELLECTUAL PROPERTY RIGHTS

In most studied universities, the status of the subjects determines their entitlement to intellectual property rights. Some differences in regulation of the intellectual property matters are seen between the collective agreements and the university unilateral regulations, although generally both instruments are aimed at teaching and research faculty.

In the collective agreements, the IP regulatory framework only concerns the faculty of the university, which is defined as teaching and research staff. Tenured

faculty are covered by a collective agreement in all studied institutions; however, in some of the universities (e.g. University of Toronto and UBC), the regulations supersede the collective agreements on the matters of intellectual property. As it was noted during the interviews, collective agreements are very widespread in Canada, especially in the public sector, and therefore also apply to the non-tenured faculty of the universities (including PhD students). They do not contain provisions on intellectual property, or refer to the faculty collective agreement (Queen's University).

The IP policies generally apply to all members of the institution. At the Queen's University, the IP policy is applicable for "the whole university". In Western Ontario University the patent policy applies to organizational units, faculty, staff and even students. The University of Waterloo Intellectual property rights policy is applicable to "all members of the University of Waterloo (the University); and to [...] external contractors unless there are written, contract clauses that stipulate otherwise". UBC Patents and licensing policy is applicable to "any member of faculty or staff, any student, or anyone connected with the University".

A distinct feature of the University of Toronto policy is that in addition to university members it specifically mentions "visitors" and those who use "in any way, facilities owned, operated or administered by the University and/or funds of administered by the University, are subject to University policies on intellectual property".

The University of Alberta Faculty Collective Agreement, while not signed by the staff and students, contains a special Appendix (Appendix C) covering intellectual property matters, which is formulated in a very broad way: "This policy shall apply to all [patentable intellectual property] created by all members of the University within their areas of research at the University, including faculty, researchers, staff and students whether registered for credit or not."

The overall tendency which was also mentioned during the qualitative interviews is to include and to regulate all creative subjects within the university.

5. FIRST OWNERSHIP AND ASSIGNMENT OF INTELLECTUAL PROPERTY RIGHTS IN THE UNIVERSITY

Assignment or non-assignment of ownership of intellectual property rights is effectively the most important issue in the whole matter of faculty and university intellectual property rights. In many countries, including Lithuania, university autonomy is subject to governmental intervention, since it is deemed of profound importance to the whole national innovation system. The government interest is

also dictated by economic considerations, since it applies to the public universities, which are largely financed and maintained from the public means and rely on the public research infrastructure.

In Canada this issue is the most divisive feature among the universities. Some universities maintain that all intellectual property rights shall remain with the faculty (non-assignment approach). In the group studied here, this generally applies to the smaller institutions - Waterloo University, University of Western Ontario, Queen's University.

Others - in the group studied here, the two largest institutions - University of Toronto and UBC - claim ownership of all intellectual property generated by the faculty (assignment approach). Mixed regimes for different types of intellectual property also exist, and in a study group is represented by the University of Alberta and York University. This variety is a big advantage of the Canadian innovation system, since it allows different personalities, styles, ideologies and cultures of the faculty to find a proper and accommodative academic institution, where their potential can be realized to the fullest.¹²

Based on economic considerations the regulation is also different for different types of intellectual property, e.g., for copyrightable works that are not likely to generate significant revenues, such as articles and monographs, and technological inventions, which are considered as a promising source of revenues for both the inventors and institutions.

6. ASSIGNMENT OF COPYRIGHT

According to the section 13.(3) of the Canadian Copyright Act, "the employer is, unless otherwise stated, the first owner of copyright", akin to the traditional "work for hire" doctrine accepted in all Common Law countries.¹³

In the university setting, this approach clashes with traditions of autonomy and academic freedom. Unlike the authors working in the private sector, faculty in most Canadian universities frequently retains rights in their works. This Canadian "academic tradition" is mostly entrenched in the provisions of the collective agreements, which oppose the Canadian Copyright Act on this issue. "Faculty exception" from the "work for hire" doctrine applies above all to the so called traditional university works - articles, monographs, as well as other scientific and educational works. In most university collective agreements it is acknowledged through express simple statement confirming the faculty this ownership of

¹² Mindaugas Kiškis, *supra* note 5: 98.

¹³ David Vaver, *Intellectual Property Law: Copyright, Patents, Trade-Marks*, 2nd ed. (Toronto: Irwin Law, 2011), p. 50-57.

copyright, by not restricting the traditional works, and is not even strictly limited to the members of the university.

The UBC Patents and Licensing Policy states that ownership of and intellectual property rights to “literary works” produced by those connected with the University are vested in the individuals involved. University of Waterloo Intellectual Property Rights Policy states that “ownership of rights in IP created in the course of teaching and research activities belong to the creator (s).” The University of Waterloo does not differentiate between patentable and copyrightable works. The University of Waterloo was identified in the interviews as the bastion of the widest faculty exception, which exerts a lot of influence on all other (especially smaller) Canadian higher education institutions, because its research excellence, prestige of the university among the students and employers, as well as success as the facilitator or innovative businesses in the Southern Ontario.¹⁴ Following the University of Waterloo’s lead, similar positions are taken by the University of Western Ontario, as well as Queen’s University.

Some institutions refuse the “faculty exception”, even for copyright. The University of Toronto Copyright Policy states:

The University will own Copyright in all Works which are [...] created by an Author in the course of the Author's employment by the University. [...] For the purposes of this Policy, research and training, or the creation of instructional Works, including Instructional Software, undertaken by members of the University's Teaching Staff or librarians shall not be deemed to be made or undertaken in the course of their employment by the University.

The University of Alberta Collective Agreement seeks middle ground and provides that “The University shall be the owner of the copyright and of all copyright works produced by a staff member who has been engaged by the University to prepare such works for the University or part of whose normal responsibilities to the University is the preparation of such works.” Under the University of Alberta policy, intellectual property created by university employees in the course of their employment is the university's property only if the work or the invention was created at the direction of the employee's supervisor (e.g., the individual was hired specifically to develop software for stated purpose or to write or create text or illustrations for a specific publication); otherwise, e.g., creations of the tenured faculty whose primary employment function is not specific are not claimed to be owned by the University of Alberta. Interviewees at the TEC Edmonton and University of Alberta mentioned that it is also common to have a separate agreement describing the transfer or sharing of ownership of intellectual

¹⁴ David Doloreux, *supra* note 4.

property rights between the university and the author, and generally the University of Alberta is not selfish in claiming all ownership.

7. ASSIGNMENT OF INVENTION RIGHTS

All reviewed institutions, except for the University of Toronto, generally recognize the faculty ownership of copyright in their works; however, with respect to inventions the situation is much more biased towards university ownership.

Ownership of technological innovation has been a hotly contested issue in Canada during the early 2000, when attempts to expropriate the intellectual property away from the faculty were considered an official public policy.¹⁵ "Faculty exception" survived; however, some institutions (University of Toronto and UBC) have abandoned it.

Both proponents and opponents of the "faculty exception" have important arguments, which are useful for understanding outside study. Most of these are even more applicable to outside universities – e.g., Lithuanian universities.

Opponents suggest that:

- faculty very rarely have the resources necessary to secure the patent rights, especially at the international level;
- faculty very rarely have the resources necessary to defend their rights before the courts in case the patents are infringed;
- universities are in better standing in terms of resources, however they are unlikely to support the protection of the faculty intellectual property without having their own interest;
- universities can commit only after complete transfer of the invention rights from the faculty member;
- universities are much better positioned in terms of bargaining power.

Proponents counter that:

- it is not the job of the university to commercialize intellectual property;
- private initiative is proven to be much more efficient at converting research into economic value;
- due to the major expenses involved in patenting, as well as postponed returns, academic institutions are generally reluctant to engage in a patenting;
- focus on commercial return from intellectual property would imperil basic research at the university, which is less likely to produce commercially viable intellectual property;

¹⁵ James L. Turk, "What Commercialization Means for Education": 10-12; in: James L. Turk, ed., *The corporate campus: Commercialization and the dangers to Canada's colleges and universities* (Toronto: ACPPU & James Lorimer, 2000).

- evaluation and patenting procedures significantly slow down the scientific progress and swamp the advancement of the research, thereby preventing significant follow-up breakthroughs building on current innovation;
- university attempts to protect its intellectual property tend to overload the faculty with paperwork and processes, which are not directly relevant to their primary goals;
- university attempts to protect its intellectual property tend to overlook major opportunities, due to lack of expertise of the technology transfer officers (e.g., a lawyer or even a computer scientist may fail to recognize important microbiology innovation);
- universities tend to prefer licensing over startups, which adversely affect new employment, and also capture much lesser economic value out of successful innovations;
- for Canada (and even more for Lithuania) it is very important to prefer domestic translation of innovation, rather than quick export;
- licensing tends to restrict further academic development of the technology (especially within smaller institutions), due to the exclusivity and similar demands of the licensee;
- focus on intellectual property restricts flow and dissemination of academic information, and restricts subsequent innovation and general academic freedom.

Public authorities are also generally more supportive of the institutional intellectual property ownership model, based on the assumption that it was conceived from the public resources. The “faculty exception” is, however, very enthusiastically supported by all interviewed faculty members. The resources argument is very universal, since patenting and international enforcement costs are almost universal everywhere; however, inexperience and bureaucracy are more resonant in smaller Lithuanian universities, which do not have a history of commercializing research.

The two biggest universities in the focus group – University of Toronto and UBC – take over the ownership of the faculty developed inventions. University of Toronto under their Patents policy assumes full ownership of faculty inventions. UBC Patents and Licensing Policy also provides that “[i]f any member of faculty or staff, any student, or anyone connected with the University proposes to protect or license an invention or discovery in which University facilities or funds administered by the University were used, [...] the rights [must be] assigned to the University.” The University of Alberta is flexible in its approach; it offers a choice for the inventor. The inventor can offer to assign ownership of the invention to the

university, if the university accepts the offer, it is responsible for patenting, marketing, and licensing the invention, and the university is entitled to receive 2/3 of the net revenues arising from the commercialization of the invention. Alternatively, the inventor can claim personal ownership of the invention, he/she shall accept responsibility for patenting, marketing, and licensing the invention, and the university is entitled to receive 1/3 of the net revenues arising from commercialization of the invention. Sharing of revenues will be discussed separately below.

The University of Western Ontario Patents policy maintains that:

The University regulations that, with the possible exception of externally sponsored research, it has no direct equity in any invention developed by a member of its faculty, staff or student body (notwithstanding that the invention might be intellectually conceived and developed in the course of University supported research and utilizing University facilities and equipment).

This approach, which entirely follows the "faculty exception" was also adopted by Waterloo University and Queen's University. Nevertheless, the universities and the inventors are free to make any subsequent contractual arrangements (similarly to the proposals of the University of Alberta).

Alternative arrangements may be made for outside contractors. The Queen's University Collective Agreement mentions that "[...] when the Intellectual Property is created under a contract between the University and an outside sponsor only if the sponsor insists on such an arrangement as a condition of funding and this is acceptable under prevailing University guidelines for contract research." Queen's University also differentiates on the work ordered by the institution itself – "the University holds the property of the invention, industrial design or knowledge do developed by Professor, Professor if the University expressly hired this person to perform this [...] development".

Only one analyzed regulation deals with identification of the inventors. It is generally accepted that inventors shall identify themselves; however, the decision on the recognition of the inventors or the invention may also be vested in the special university authority. The University of Waterloo Intellectual property rights policy states that "The Vice-President (Research) in consultation with the Department Chair and College Dean of the Inventor will determine the identity of all Inventors [...]. The Vice-President (Research) shall be responsible for determining the relative shares in joint ownership situations." This is important because increasing amount of innovation is being achieved by teams, rather than individual

researchers, and contributing to the innovation are important for the sharing of marketing revenues.¹⁶

University of Waterloo Intellectual property rights policy states that “all intellectual contributors to that work should be entitled to share in the proceeds in proportion to their contributions”. The UBC Patents and Licensing Policy leaves this to the team – “When several individuals collaborate on a patentable invention, the inventor's income share is divided among themselves (including co-developers who may not legally be inventors and who must be named to be eligible as containers of portions of income).” Due to said prevalence of teams in scientific research such rules are increasingly important not only for inventions, but for copyrightable works as well.¹⁷ None of the surveyed universities provides any rules for distribution of copyright co-authorship, though.

The analysis upholds the conclusion that the regulation of the first ownership and assignment of rights on inventions is subject to almost opposite rules. The interview(s), however, suggested that these differences have limited practical impact. Faculty at the Canadian universities, whether or not they own the intellectual property rights, commonly accepts the assignment of the invention rights at a later (commercialization) stage. There are several factors, which tend to reduce the differences between the polarities of the regulatory frameworks:

- Generally competitive compensation for the faculty at the Canadian universities;
- Costs associated with securing and enforcing of the patent rights, as well as risks of incurring these costs at an individual level;
- Restrictions that apply in connection with the use of the university resources;
- Rather lucrative rules of revenue sharing;
- Efficient technology transfer infrastructure, which is able to leverage intellectual property rights to a greater extent than the individual owner;
- Simple and streamlined institutional management of intellectual property.

Nevertheless, most of the interviewees have also revealed that non-assignment policies tend to uphold faculty morale, self-esteem and entrepreneurial

¹⁶ Stefan Wuchty, Benjamin F. Jones, and Brian Uzzi, “The increasing dominance of teams in production of knowledge,” *Science* 316(5827) (2007): 1039.

¹⁷ Francesco Lissoni and Fabio Montobbio, “Inventorship and authorship in patent-publication pairs: An enquiry into the economics of scientific credit,” *Centro di Ricerca sui Processi di Innovazione e Internazionalizzazione (CESPRI) Working Paper No. 224* (2008) // http://www.francescolissoni.com/prova_g000019.pdf (accessed October 1, 2012).

spirit.¹⁸ The regions around the universities which maintain non-assignment policies tend to be the most entrepreneurial in Canada. This is especially notable about the South-Ontario region (Kitchener-Waterloo, Kingston), which are deemed among the most entrepreneurial regions in Canada. It was also mentioned that UBC is not actively enforcing their ownership of intellectual property rights against faculty who leave university without disclosing and assigning the intellectual property rights (i.e., in violation of the university policies) and attempt to commercialize on their own. Unwillingness of enforcement against own faculty is also mentioned in prior literature.¹⁹ Non-assignment policies also seem to be beneficial for employment creation (through startups), while university ownership tends to favor quick licensing, which is less friendly to startups and local employment.²⁰

8. DISCLOSURE RULES

Intellectual property disclosure refers to the internal reporting of the invention, or generally works being done by the faculty and their results, according to the specific internal rules and forms. Such disclosure may be regular (e.g., weekly or monthly report on work being done and results achieved), self-initiated (e.g., discretionary when the researcher feels that certain quantitative or qualitative result was achieved) or externally initiated (e.g., interviews with the technology scouting officer). If the innovation is decided to be patent worthy, further disclosure is provided in the patent application and in the patent itself.

Public disclosure is also possible through publication, submission to a scientific journal, oral communication, defense of thesis, etc. However, it leads to loss of patentability, for lack of novelty of the invention. This type of disclosure may be deliberately chosen by the researcher who wishes to maximize the dissemination of his invention. This choice may also be unintended; therefore, most institutions warn of it, and prescribe certain disclosure rules.

Regardless of the first ownership of intellectual property, all reviewed institutions require the creator to communicate the creation to the authorities of the establishment. Mandatory disclosure rules are set forth in all analyzed frameworks. This serves several goals: first, to allow the institution to claim some of the rights or benefits granted for the invention (establish the institutional claims over

¹⁸ Martin Kenney and Donald Patton, "Does Inventor Ownership Encourage University Research-Derived Entrepreneurship? A Six University Comparison," (May 2011) // <http://ssrn.com/abstract=1847184> (accessed October 1, 2012).

¹⁹ Kevin LaRoche, Christine Collard, and Jacqueline Chernys, "Appropriating innovation: The enforceability of university intellectual property policies," *International Property Journal* 20(2) (2007): 154 // http://www.danielnelson.ca/pdfs/20_IPJ-CAN_135_4-9-09_2122.pdf (accessed October 1, 2012).

²⁰ Aaron Bouchie, "Survey reveals US university licensing up, startup formation down," *Bioentrepreneur* (2005) // <http://www.nature.com/bioent/bioenews/012005/full/bioent843.html> (accessed October 1, 2012).

intellectual property, free internal license, sharing of revenues from commercialization); second, to ensure internal and external accounting of the scientific results; third, in the case of an invention, to ensure that patenting possibilities are not compromised.

Generally disclosure is required once an invention is made. The University of Toronto Inventions Policy prescribes "When an Inventor makes an Invention, the Inventor shall make full and complete disclosure of the Invention to the University by submitting an invention disclosure form to the Vice President, Research and Associate Provost or his/her designate without unreasonable delay."

The University of Western Ontario Collective Agreement requires that "Full details of any Intellectual Property created by [(a) creator (s)] shall be disclosed to the Employer in writing [...]." The University of Western Ontario Patents policy further elaborates that "in all instances where a member of the University may have a potentially patentable invention or discovery [...] the University member will complete a "Report of an Invention by a University Inventor." The UBC Patents and Licensing policy prescribes that "a disclosure must be made [...] to protect or license an invention or discovery in which University facilities or funds administered by the University were used."

Disclosure forms and procedures vary significantly from one institution to another. A notable commonality of the disclosure rules is that the faculty cannot file a patent, seek publication or commercialization, without notice to the institution, i.e. without disclosing their work or invention. Disclosure generally means the assertion by the inventors of their intentions towards the work or invention (publishing, commercialization). Sometimes it is also the expression of a judgment concerning its commercial potential. In either case, for technological innovation the disclosure initiates the processes of patenting, commercialization and technology transfer.

Quality of disclosure is crucial for the commercialization potential. Thus, the outcomes of institutional intellectual property ownership are effectively dependent on proper disclosure, which in turn is more dependent on the endogenous environment within the university, than the formal rules of disclosure. Should the faculty be unhappy with the possibilities to earn from the creativity and innovation (including basic compensation and/or share of revenue from the intellectual property), they may choose to withhold the disclosure, or poorly (partially or vaguely) disclose the innovation, or simply prefer publication to patenting and

commercialization.²¹ Friendliness in the disclosure process, as well as technology transfer officers who handle disclosure, are all very important endogenous factors.²²

9. COMMERCIALIZATION

Once the invention is disclosed, a decision must be made whether to proceed with the patent application, as a first step to commercializing the technology.

In institutions which do not claim first ownership of intellectual property rights the disclosure generally depends on the judgment of the inventor on the commercial potential of his invention and his/her intentions in this respect. In all institutions that do not claim first ownership of intellectual property rights there always is the possibility to publicize the invention ignoring the patenting. The same exists even in institutions that assume the ownership of intellectual property, since the inventor may have inadvertently disclosed the invention due to lack of (or poor) commercial judgment. Thus, the action or inaction of the inventor is central for the possibility of commercialization.

In institutions claiming ownership or joint ownership of intellectual property, the commercialization decisions are formally assumed by the institution, after evaluating the interest and the commercial potential of the invention. Taking into account the specifics of the process, significant costs of the protection and enforcement of intellectual property, the assessment is entrusted to a specialist body – a technology transfer arm of the institution. Interviews with the technology transfer officers suggested that in reality the decision is still highly dependent on the original inventor (as noted above) and even if the inventor properly follows the disclosure procedures, the final decision often falls on a single individual technology transfer expert, who hopefully understands the invention and the field. His experience and enthusiasm (or lack of it) may result in subjective judgment, focusing narrowly on the resources available for patenting and existing outside commercial interest (demand).²³ In case of limited resources and no (or low) external interest, some significant innovations may be omitted, or vice versa – premature technologies may be patented for the sake of volume.²⁴

A further step is the marketing decisions on how the invention may be commercialized. Three basic options are available – further development, licensing

²¹ Saul Lach, Mark Schankerman, "Incentives and invention in universities," *NBER Working Papers* 9727 // <http://ideas.repec.org/p/nbr/nberwo/9727.html> (accessed October 1, 2012).

²² Kirsten S. Apple, "Evaluating university technology transfer offices"; in: Zoltan J. Acs and Roger Stough, eds., *Public policy in an entrepreneurial economy* (New York: Springer, 2008).

²³ Ed Silverman, "The Trouble With Tech Transfer," *The Scientist* (January 1, 2007) // <http://www.the-scientist.com/?articles.view/articleNo/24640> (accessed October 1, 2012).

²⁴ Richard A. Jensen, Jerry G. Thursby, and Marie C. Thursby, "The Disclosure and Licensing of University Inventions: 'The best we can do with the s**t we get to work with'," (2003) // <http://www.nd.edu/~rjensen1/research/Disclosure.pdf> (accessed October 1, 2012).

or spin-off in a form of a startup. Again vesting of this responsibility depends on the general approach that university takes to the ownership and assignment of intellectual property rights. Although all studied institutions emphasize that they want to maximize the commercial potential of inventions, yet there is little specifics on how this shall be achieved. There is little evidence which would allow concluding that universities are really adept at this process. Interviews, instead, suggest the opposite.

This complexity is reflected in the regulations, which often list a number of principles attempting to reconcile protection and commercialization of inventions with the core values of the university. The Queen's University Collective Agreement states that "No Inventor is obliged to engage in commercialization of an Invention. The Inventor is free to publish or use other means to place the intellectual property in the public domain as an alternative to the provisions contained herein." The University of Western Ontario Patents policy advises that:

The University recognizes as a fundamental principle that it should maintain complete freedom of research and unrestricted dissemination of information. Research done solely in anticipating of profit is incompatible with the aims of the University. Nevertheless, the University recognizes that in the course of its research activities, ideas or processes may be developed on which, in the public interest, patents should be sought. The University and the inventor have a responsibility to promote the effective development and utilization of such discoveries, and to ensure that they will not be restricted in their use in a way that is detrimental to the public interest. The University recognizes that the payment to the inventor of revenue from an invention is a desirable incentive towards invention. It also recognizes that the effective development of inventions based on its research activities has occasionally provided revenues that have made possible the encouragement of further research, both in the field in which the invention was developed and in the University as a whole.

The commercialization of intellectual property is essentially a business decision; hence, it cannot be imposed on the inventor, and is somewhat uncomfortable to the university itself. In both Queen's University and Western Ontario University the inventor is free to opt-out of patenting and to proceed with traditional means of public disclosure (articles and scientific books, conference presentations). In case the faculty member favors commercialization, unless he/she is willing to invest own means, as a general rule he would seek assistance from the institution or a third party. Professional assistance and financial resources are needed for the process of protection and marketing of the invention. It is also very common for the parties concerned to enter into an agreement which often provides

for the assignment of intellectual property to the party that supports the marketing and costs incurred by the process.

Some of the institutions reserve an "option right", which means that the institution shall try to market the invention until marketing is taken over by the other entity. The institutional obligation to market is fixed to a certain period of time – usually 24 months. If the institution's efforts to market the invention fail or do not achieve the desired success, then the inventor gets full flexibility in marketing the invention (and full ownership thereof) for his own benefit, as well as the freedom to forgo the commercialization in favor of the traditional public disclosure. Some institutions require a refund of the university expenses (e.g., the costs of the patent application) for the inventor to take over all rights and benefits of the invention.

Thus, regardless of the first ownership of intellectual property, the commercialization stage and decisions taken during this stage may result in change of the owner of the intellectual property, most often to the party that is most interested in benefiting from the invention and also carrying pertinent costs.

Whatever the outcome of the marketing stage, most institutions require the non-exclusive royalty-free license for internal purposes of the institution. The University of Waterloo Intellectual property rights policy (2000) prescribes that "Owners of IP rights in scholarly works created in the course of teaching and research activities grant the University a non-exclusive, free, irrevocable license to copy and/or use such works in other teaching and research activities."

The University of Toronto stands out from the researched institutions in that it assumes that all intellectual property rights from its faculty provide the opposite. Its Copyright Policy prescribes that "Where the University owns Copyright in a Work created other than in the course of employment, the Author will [...] have a perpetual, irrevocable, royalty-free, non-exclusive, non-transferable license to use, revise and modify the Work for non-commercial purposes." Although it also requires faculty to license all outside work – "Where the University does not own Copyright in Work created with Substantial Use of University Resources, the University will [...] have a perpetual, irrevocable, royalty-free, non-exclusive, nontransferable license to use, revise and modify the Work for research and teaching purposes within the University".

10. DISTRIBUTION OF THE REVENUE FROM COMMERCIALIZATION

Sharing of revenues resulting from the exploitation of the intellectual property along with the first ownership are the two most important aspects of any university

intellectual property rights regime and are perceived as such by the interviewed parties. They are critical for attractiveness of the institution to the researchers/scientists, friendliness to business (especially startups), and as key economic incentive for creation and innovation in the university. Distribution of revenue shall be perceived and accepted as fair, otherwise it jeopardizes both the generation of intellectual property, as well as efforts to commercialize it.

From an economic perspective, revenue from innovation shall be distributed based on contribution towards the creation thereof. In the case of university intellectual property, the contributors are an individual creator (inventor) or a group of individuals, the institution (department, faculty, etc.), as well as the patrons of the institution (taxpayers or society at large).

In the reviewed Canadian institution which claim ownership of the intellectual property, the creator is allowed 50% of net income earned by the sale of the granting of license or other rights of exploitation of a patent from an invention unless agreed otherwise. For example, UBC Patents and licensing policy provides that:

Income derived from the sale or other disposal by the University of inventions or discoveries, including that derived under the terms of agreements with patenting corporations, are distributed such that the inventor receives 50% of the net income while the University retains 50% of the net income (25% as general University funds and 25% to the relevant Faculty). Net income is calculated as gross income less direct costs.

It is noteworthy that the UBC framework prescribes rules for allocation to the institutional unit of the creator, i.e., the faculty where he/she is engaged, thus indirectly increasing the creator's share to 75%.

In other institutions percentages vary depending on the efforts of each party in the process of protection and enhancement of intellectual property. The University of Alberta Collective Agreement regulates that the party which assumes responsibility and costs incurred in the process of protection/commercialization of intellectual property shall be the primary beneficiary claiming 2/3 of the income:

8. Application through the University

8.1 If the Inventor offers to assign the Invention to the University [...]

8.2 [and] If the University decides to accept the assignment, it shall then assume the responsibility for obtaining patents, the negotiation of assignments or licenses, and the taking of whatever other steps are deemed necessary by the University for the commercialization of the Invention without cost to the Inventor.[...]

8.5 [...] The University shall [...] remit to the Inventor a sum equal to 33-1/3% of the Net Income for the previous fiscal year. [...]

9. Application Independently of University

9.1 [...] the Inventor may proceed independently of the University, or arrange with any outside sponsor of the Inventor's choice, to obtain patents for the Invention, to negotiate licenses, and otherwise to take whatever steps the Inventor deems necessary for the commercialization of the Invention. All such steps shall be taken at the Inventor's, or the Inventor's sponsor's expense.

9.2 [...] The University acknowledges that the Invention shall be owned by the Inventor and, except for the obligations set forth in paragraph 9.3 below, the University shall have no other rights in respect of such Invention.

9.3 The continuing obligations of the Inventor under this option shall be: [...] (c) to remit to the University [...] the sum equal to 33-1/3% of the Net Income for the previous fiscal year."

The percentages may also vary based on the amounts of the net income. University of Western Ontario Patents policy provides for inverse dependence of the creators part (decreasing with the increase of income) – "The apportionment of net revenues to the University from invention, received in a given University fiscal year, will be as follows:

(a) For net revenue from a given invention up to \$1,000.00 all revenue shall go to the University inventor.

(b) For net revenue from a given invention exceeding \$1,000.00, but not exceeding \$30,000.00, the amount in excess of \$1,000.00 will be shared equally between the University inventor and the University.

(c) For net revenue from a given invention exceeding \$30,000.00, the amount in excess of \$30,000.000 will be shared 30% to the University inventor and 70% to the University."

It must be stressed that notable Canadian universities (Waterloo and Queen's Universities) allow the creator to take all (100%) of the revenue from the intellectual property, by allowing him solely to own and commercialize it. Thus, the revenue distribution issue (if it arises at all) is left to a contractual agreement (e.g., if the faculty member decides to employ the university in commercializing his intellectual property).

Some interview respondents mentioned that they had difficulties when the intellectual property was generated out of collaboration between researchers from different institutions. Lack of clarity in these situations may indeed be an important issue. However, it was also noted that Canadian technology transfer system is very well networked and aware of the rules and practices inside Canada, as well as across the North American continent.²⁵

²⁵ Monica Salazar and Adam Holbrook, "Canadian science, technology and innovation policy: the product of regional networking?" *Regional Studies* 41 (2007): 1131.

11. OVERVIEW OF THE ANALYSIS

Author's analysis of the intellectual property rules in the Canadian universities shows that the rules are not as different as they look at a first glance. Many key aspects converge.

The first notable commonality is that with the exception of the University of Toronto, copyrightable works in most universities remain the property of the creator, ignoring the use of institutional resources.

Second, substantial costs attached to the development and protection of inventions are used as either the rationale or the vehicle for the institutions to assume rights with respect to the inventions. Some institutions directly assume the invention rights on the basis of the substantial reliance of the inventor on the institutional infrastructure, while most offer to the inventor an economically and organizationally attractive path towards sharing the intellectual property ownership and/or revenues from intellectual property. Non-selfishness of the institution plays a key role in achieving a mutually beneficial synergy and maximizing the creative/inventive potential of the faculty.

Third, the rules are reflective of an institutional culture and socio-economic context. The largest Canadian universities – University of Toronto and UBC – have many other attractions for the researchers/scientists, not least being at the heart of the burgeoning metropolises, while peripheral institutions tend to have more faculty-friendly intellectual property rules, which may compensate for the lack of big city draw.

Fourth, most institutions allow significant (in case of smaller institutions – full) intellectual freedom for the creator of intellectual property. It was expressly mentioned by the UBC that the university is willing to tolerate rogue faculty appropriation of intellectual property, since it is assumed that the institution and the society will benefit indirectly anyway (e.g., through consumption, taxes, employment). During the interviews the UBC technology transfer arm emphasized that it shall work in a way in which the faculty would be willing to voluntarily surrender their intellectual property rights, since they would benefit more from dedicated services and a lower share of greater revenue.

Fifth, ultimately it is very clear that voluntary synergy is the preferred way for handling faculty intellectual property rights in the university, since the value of intellectual property generated within the university is directly dependent on the competence and willingness of the faculty members (creators/inventors) and technology transfer officers, within a broader context of balanced (and perceived as such) substantive ownership and revenue share. In most situations the faculty

ultimately decides whether to commercialize intellectual property or to release it to the public; also, the faculty is sometimes better positioned to understand the applications of innovation. It is therefore important to understand the role of technology transfer process within the university as a secondary to the generation of innovation – it shall be assistive, rather than directive. The relationship between the faculty and the technology transfer officer shall be built on this paradigm.

Sixth, it is also clear that even with the generally generous faculty pay, the economic incentive of benefiting from one's own creation/invention is very important. Even big institutions like UBC are allowing 50% share to the faculty, while smaller institutions are even less selfish. This is to be considered very closely by the countries where academic career, especially at its early stages (doctorate and post-doctoral years) is not competitively compensated. A larger share or even full attribution of revenues from intellectual property to the faculty in these situations may be one of the ways to counterbalance 'brain drain'.

Seventh, the emphasis on generation of intellectual property within the university tends to create tensions between the faculty and the institution, especially if the institution is expressly appropriating intellectual property rights without providing the faculty with immediate benefits in return. Quality of innovation also seems to suffer significantly in these situations. Thus, the push for generation and commercialization of intellectual property may face diminishing returns, and focus on quantity, what happened in Canada under governmental pressure.²⁶ Allowing certain autonomy for the faculty themselves to regulate on these matters, as well as express emphasis on tolerance of different approaches to university intellectual property, in the Canadian experience seem to soften the tensions and benefit the whole Canadian innovation system in the longer term.

Finally, Canadian universities are very much aware of the rules applied in different institutions across Canada. Coordination and close cooperation between technology transfer, especially in small institutions, plays a significant role in streamlining the technology transfer process. Concentrated and coordinated technology transfer effort seems especially beneficial for smaller institutions (e.g., Queen's University). Concentrated technology transfer model fits well for the limited resources available, and hence need to be considered for the public policy in other countries.

²⁶ Canada Statistics, "Patent or perish? Universities are more inventive than ever," *Innovation Analysis Bulletin* 1(1) (1999): 8 // <http://www.statcan.gc.ca/pub/88-003-x/88-003-x1999001-eng.pdf> (accessed October 1, 2012).

CONCLUSIONS

Canadian universities largely stand out in the western world for allowing much greater control of intellectual property rights to the creators – namely, the faculty (scholars and researchers). In most surveyed Canadian institutions the faculty has the right of ultimate decision whether to publish their invention(s), thus invalidating the possibility of a patent, or to pursue commercialization – either independently or through the dedicated technology transfer infrastructure. This flexibility has helped Canada significantly over the last decade both in attracting foreign talent, as well as maximizing the creative potential of existing faculty.

Small emerging economies not unlike Lithuania, who have very limited resources for research, face the double challenge of creating an attractive and competitive innovation/creativity environment within the universities, as well as compensating for the ‘brain drain’ of emigration to already competitive countries like Canada. Since the socio-economic context rarely allows for competitive compensation to academia in such countries, the potential to earn from intellectual property becomes more important.

It is easy to miss the broad picture of all sorts of university innovation contributing to the economy indirectly (as emphasized by the UBC – through consumption, taxes and employment – especially startups) in favor of short term statistics (generating immediately accountable patents and licenses). Such shortsightedness, which unfortunately seems to dominate university intellectual property regulation in countries like Lithuania, comes at the detriment of new startups and longer term returns. It is also a likely contributing factor to faculty emigration. In Canada, intellectual property rights regulation and practice at the Canadian universities accounts for the said ‘broader context’, hence making it attractive to bright foreign faculty. The qualitative study done by the author suggests a relationship between the university intellectual property regime, faculty morale and ‘brain drain’; however, further more specific and targeted studies are needed to assess the correlations thereof.

The Canadian example of faculty autonomy, as well as a variety of different approaches, generally preferring faculty interests over the institutional interests, shall be considered very closely when regulating on the same issues in emerging economies. Preference to institutional interests, especially in the context of lacking commercialization experience and low faculty compensation, is perilous and instead of facilitating innovation, it may contribute to the faculty search of career alternatives and decreased productivity. State and maturity of the whole innovation

system needs to be taken into account when attempting to replicate the institution-centric approaches to university intellectual property in emerging economies.

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