The Influence of National Economy Specifics on the Interaction between Universities and Corporations in the Field of Innovation

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Abstract: Questions of the influence of national economy features on innovation activity do not lose their relevance at the beginning of the XXI century. In different countries of the world, new approaches to stimulating innovation are emerging that take into account the peculiarities of national economies. However, the main problem of such activities remains the speed of movement of new technologies from universities to corporations and the further creation of new products and technologies. The number of patents obtained by various organizations is becoming one of the main indicators of the development of the national economy. It is noted that the relationship between research costs and the number of patents obtained is not as linear as it seems in theory. The practical implementation of diffuse processes in an innovative environment also does not have a linear dependence on the "investment – result".

The use of statistical analysis methods allowed us to identify the facts that signal that the model of stimulating innovation activity, formed in the 1980s of the XX century, is losing its advantages. The article examines in detail the progress of higher education reform in the EU countries and identifies the key features of combining scientific organizations to create large multidisciplinary research centers. The authors conclude that the experience of such a reform in France is very interesting to study in Russia. It is noted that since the 2000s. in the United States and the European Union, questions are raised about the revision of the University tax system, as well as changes in the legal status of educational organizations. Similar trends occur in Russia, however, due to historical and social processes, they have their specifics. According to the authors, the regulation of taxation of scientific activities leads to the formation of unique elements of the economic mechanism for stimulating innovation.

Keywords: Innovation activity, intellectual property, higher education, entrepreneurial university, intellectual capital.

INTRODUCTION

The world economy is rapidly shifting to a new technological paradigm, creating new industries and niches. The largest economies such as China, the USA, and the European Union are actively promoting innovation, stimulating the production of high-tech goods and services. At present, the Russian economy has similar objectives. The Decree of the President of the Russian Federation of May 13, 2017 No. 208 “On the Strategy for Economic Security of the Russian Federation for the Period until 2030” specifies the main challenges and threats to the economic security of Russia. Most of them require the accelerated development of Russia’s economy and its shift to innovation. This can be achieved only by intensifying scientific work and stimulating the application of research and development results in the creation of commercially successful products.

The assessment of the development potential of high-tech industries in the Russian economy (Aganbegyan, 2017; Mau, 2015; Frenkel A.A. *et al*., 2018) and abroad (Galindo-Rueda, Verger, 2016; Pietrobelli, Puppato, 2015) is similar. At the theoretical level, there is no disagreement regarding the tools or indicators of stimulating innovation. However, if we analyze practical cases, we can see that innovative development is highly dependent on the specifics of the national economy. These specifics most often manifest themselves in the so-called “middle-income trap” (Agénor, 2017, Vivarelli, 2016), which means significant difficulties for the countries that have been building an economy based on innovation and territorial concentration of innovation activities (Balland, Boschma, Frenken, 2015). Creating a “uniform standard” for promoting innovation remains a theoretical concept. Some approaches to its practical implementation were considered by B. R. Clark (1998), who formulated the theory of the “Entrepreneurial University”, as well as H. Etzkowitz and L. Leydesdorff (1998), who substantiated the Triple Helix model.

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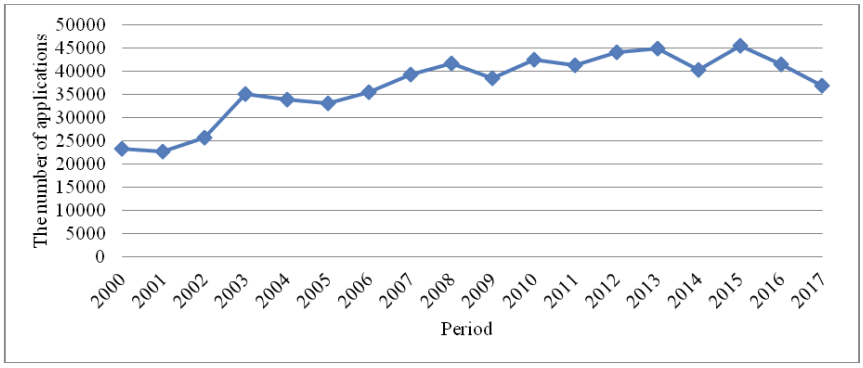

Figure 1: The number of issued patents for inventions in Russia.

Most often, the specifics of the national economy are connected with the issues of research funding sources and the implementation of innovative projects. Universities and corporations are recognized as subjects engaged in scientific and innovative work in any industry or niche. The experts' agreement on this is quite surprising (Patel, Pavitt, 1997; Bessen, 2016; Schot, Steinmueller, 2018). However, researchers have different opinions about the role of subjects when they consider the issues of intellectual property and generating income from its implementation. The organization of entrepreneurial activities related to high technologies at universities is relevant for many countries today, which is confirmed by numerous theoretical publications on this issue (Sala, Landoni, Verganti, 2016; Ha, Liu, Cho, Kim, 2015; DeMarchi, Giuliani, Rabolletti, 2015). The European experience of stimulating such activities is extremely valuable for Russia. The idea of creating Centers for Research and Higher Education in France (PRES) can be adopted during the reform of Russian higher education (Gribov, Kumelashvili, 2018), as well as by introducing an intermediate stage of university associations and creating a "collegiate" or "umbrella" university. This implies great independence of each member of the association, as it was realized during the creation of the University of Lorraine (Romanenko *et al*., 2015).

At present, the interaction of universities and corporations when creating intellectual property and the effective financing of such activities remain relevant issues.

METHODOLOGY

To conduct this study, we collected the statistics on the financing of scientific activities in Russia for the period from 2000 to 2018. The sample included official data provided by the Federal State Statistics Service "Rosstat", as well as data obtained by the researchers working in this field (see References section). We analyzed the collected information using established statistical methods based on the graphical interpretation of the collected data and correlation analysis.

For the analysis, data from 2000 to 2017 are collected, which are well amenable to study. The sample size made it necessary to use statistical methods to analyze the collected material. It should be noted that the use of statistical methods allowed us to identify the relationships between the categories under consideration and draw conclusions about the effectiveness of investments in innovative projects.

RESULTS

Intellectual property is connected to the level of science and innovation. It is patents that will become the basis for commercially successful products after some time. Let us consider the dynamics of patent applications for inventions in Russia over the period from 2000 to 2017 (Figure **1**).

As can be seen from the above data, the number of patents granted over the past ten years is at the same level and there is no growth dynamics. Moreover, since 2015, there has been a steady decline in the number of patents issued, which is below that indicator for the crisis year of 2008.

Let us analyze the data on the costs of research funding shown in Table **1**[1]:

Having studied the correlation between the indicators, we established the relationship between

[1]According to the Federal State Statistics Service, "Russia in Figures" (year-wise).

Table 1: Research Funding in Russia

Year	The number of patent applications† (units)	Research funding from the federal budget (billion rubles)	Internal expenditures on research and development (billion rubles)	The share of federal budget funds in internal research and development costs+
1	2	3	4	5
2000	23 316	17.4	76.69	0.227
2001	22 641	23.69	105.27	0.225
2002	22 645	31.05	135.0	0.23
2003	35 163	41.51	169.8	0.24
2004	33 923	47.47	196.04	0.24
2005	33 101	76.9	230.78	0.33
2006	35 546	97.36	288.8	0.337
2007	39 439	132.7	371.08	0.358
2008	41 849	162.1	431.07	0.376
2009	38 564	219.1	485.83	0.451
2010	42 460	237.66	523.37	0.454
2011	41 414	319.28	610.43	0.523
2012	44 212	355.9	699.87	0.508
2013	44 914	425.3	749.8	0.567
2014	40 308	437.3	847.5	0.516
2015	45 517	439.4	914.7	0.48
2016	41 587	402.7	943.8	0.426
2017	36 192	377.9	1019.2	0.370
2018	37 406	369.4	1028.2	0.359

†Total by type of intellectual property: invention, utility model, or industrial design.
+Compiled by the authors.

indicators 2, 3, 4, and 5[2]. The value of the correlation coefficient (r) for the corresponding indicators is:

$$r_{3/2} = 0.76 \quad (1)$$

$$r_{4/2} = 0.69 \quad (2)$$

$$r_{5/2} = 0.85 \quad (3)$$

At the same time, the dispersion diagram for the result (3) confirms the findings obtained (Figure **2**):

Let us consider the change in the share of federal budget funds in internal research and development costs in Figure **3**.

As one can see from the data in Table **1** and Figure **2**, over the ten years from 2006 to 2016 federal budget expenditures on research grew more than four times, and over fifteen years (from 2001 to 2016) – more than 17 times. Over these periods, the internal costs increased by 3.3 and 9 times, respectively.

Thus, federal budget spending was increasing at a faster pace than other costs. At the same time, the number of patents granted grew rapidly from 2000 to 2008–2010. Next, it remained at the level of 2010 with some fluctuations. The rapid growth in federal budget spending began in 2004 and reached its peak in 2013 when half of the research in Russia was carried out at the expense of budgetary funds. Studying Figures **1** and **2**, we can distinguish three main periods:

1. 2004-2005: the first sharp increase in the share of federal budget spending, accompanied by a simultaneous drop in the number of patents granted.
2. 2008-2009: the second period of growth in federal budget spending with a simultaneous drop in the number of patents granted.
3. 2012-2014: in this period one can see the same situation as in the previous periods and it was

[2]Hereinafter, the numbering of the columns of Table **1** is used to denote the corresponding indicators.

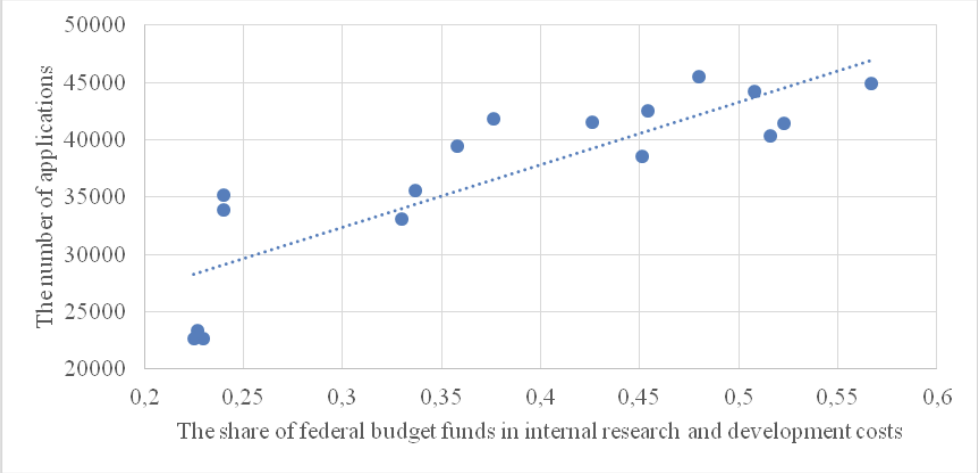

Figure 2: Dispersion diagram of a combination of factors (3).

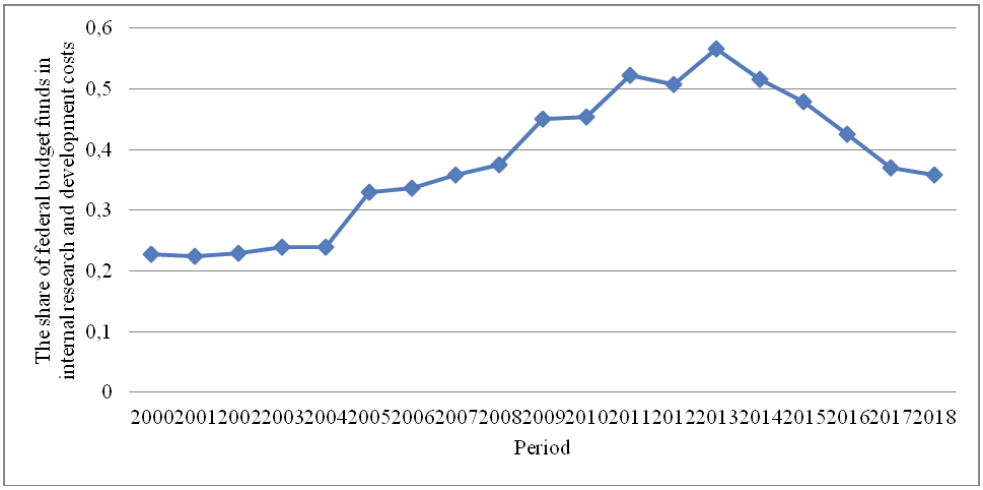

Figure 3: The share of federal budget funds in internal research and development costs.

caused by foreign policy factors. There was an increase in the share of budget spending up to 0.567 with a subsequent decline. The number of patents granted dropped as well. At the same time, due to foreign policy and economic factors, there was no recovery of positive dynamics.

It should be noted that each period of increasing research costs was accompanied by a subsequent short-term drop in the number of applications with subsequent growth in patent applications filed. The increase in budget spending on research was a key factor in the larger number of patents over the beginning of the twenty-first century. Particular attention should be paid to changes after the first period of an increase in federal budget spending.

The structure of research funding changed over the period from 2005 to 2007 as there was a change in the proportion of 1/2, when a ruble of federal budget investment accounted for two rubles of investments from other sources, mainly from business. We believe that this ratio is the minimum threshold for the effective commercialization of innovations. This ratio shows the readiness of businesses to implement the results of scientific developments and to interact with research organizations. More targeted research funding creates optimal conditions and stimulates the interest of business in the commercialization of technology, which is evidenced by the growth in investment activities.

A similar conclusion can be drawn from the experience gained during the recent crises of the Russian economy. One should also keep in mind that this situation encourages research organizations to consider the interests of businesses and build relationships with potential investors. As a result, one can witness the higher rates of applied research culminating in granting a patent.

DISCUSSION

Currently, the United States and China take the leading position regarding the number of patents granted for inventions. Since 2016, China has been the world leader in this field, while the United States ranks second.[3] South Korea and Germany also issue a lot of patents; however, their indicators are ten times lower. In general, the total number of patents granted in the EU countries is less than in the United States or China. This situation can be explained by both the activity of scientific work and the requirements for patents. It was the United States that supported the transfer of all organizational practices regarding intellectual property from WIPO to WTO, which resulted in several contradictions. Another debatable issue today is umbrella patents, which represent a very vague definition of the patented subject. This enables extensive protection of the invention in the event of a competitor product. There is a lack of agreement on the legality of such patents (Sokolov, 2016: 115). However, it is known that genuine inventors, especially in the field of engineering and high technology, suffer most from such patents. At the same time, it is most beneficial for "patent troll" companies which aim to generate income not from the sale of a patent, but the prosecution of a company operating in the same industry.

A relevant issue is the activity of certain categories of economic entities related to obtaining patents for intellectual products. Traditionally, subjects that register patents are divided into three categories:

1. Corporations (or the business sector as a whole);
2. Universities (the sector of science and education);
3. Individuals.

The emphasis is usually placed on the first and the second category. We believe that it is not correct to focus on one of these two categories of organizations in the issues related to patenting The increased interest in innovation in the 2000s and early 2010s led to an opinion that most patents should be filed by scientific and educational organizations that provide licenses (through the diffusion of innovations) for their inventions to various companies working on their practical implementation. However, world experience shows that this point of view is debatable. In 2011, IBM received a record number of patents (6,180), Samsung Electronics Co. filed 4,849 patents, and Canon Corporation took the third place in the world ranking with 2,822 patents.[4] In comparison, let us consider the ranking of the twelve most innovative universities worldwide in 2017, according to the Reuters agency, which provided a detailed description of the research methodology.[5] According to the data, the Massachusetts Institute of Technology submitted only 1,368 patent applications for the period from 2010 to 2015, of which 43.3% were granted. This figure is not comparable with the results of IBM in 2011 alone.

There is still no consensus on whether we can compare the patent activities of a university and a corporation. Apart from the category "a patent for an invention," we would like to consider the situation when in 2012 Apple received a patent from the United States Patent and Trademark Office on product design that was formulated as "a rounded rectangle with a glass display on the front panel."[6] This gave Apple the grounds for filing a lawsuit against its rival Samsung. In Germany, Apple succeeded in banning the sale of the Galaxy Tab 10.1 tablet. However, Samsung Corporation took timely measures to solve the problem: the tablet was renamed as GalaxyTab 10.1N, and its sales were resumed in Germany.

Therefore, the number of patents registered by corporations does not always indicate scientific advances. The registered patents can be of umbrella type, which implies a large number of them and attempts to prevent competitors from copying products. It should be noted that corporations more often register trademarks and receive a patent for product design, utility models rather than patents for inventions. Such patents are easier to commercialize and evaluate, while patents for inventions may be of limited use and may be of interest to a small number of companies.

Universities and corporations are at different stages of creating high technology. Universities are primarily engaged in the development, while corporations are focused on the commercialization of new technologies. However, both types of organizations face a common

[3]World Intellectual Property Indicators 2017.: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_941_2018.pdf

[4]IFI CLAIMS 2011 Top 50 US Patent Assignees: https://www.ificlaims.com/rankings-misc-top-50-2011.htm

[5]Methodology: Top 100 Innovative Universities 2017: https://www.reuters.com/innovative-universities-2017/methodology

[6]USD 670,286.

Table 2: Production Structure of PJSC UAC for the Period from 2013 to 2017[#]

Indicator (pcs)/year	2013	2014	2015	2016	2017
Military aviation	79	124	124	103	94
Civil aviation	32	35	30	37	36
Transport and special purpose aviation	-	-	2	1	3
Total	111	159	156	141	133

[#]PJSC UAC Annual Report for 2017. https://www.uacrussia.ru/upload/iblock/af2/af2d72c8b7ed1bb8d76cae232dd1f87c.pdf

problem – financing. Universities need it, first of all, to conduct new research, to pay the staff, and to improve its facilities. The primarily a concern of corporations is yielding profit. From this point of view, one cannot compare these two types of organizations – a nonprofit university that aims to maintain and scale up its activities and a commercial organization whose main goal is the financial gains of shareholders. These organizations have a different perspective on financing; however, they need each other. That is why large corporations are actively financing research at universities, and the latter, in turn, conclude agreements on the transfer of research results to corporations.

It seems that universities and corporations have created an ideal self-sustaining system that is very stable and effectively responds to the challenges of the time. However, it is not so. In the 1980s, one could observe the first signs that the system created did not enable the fast introduction of new technologies. At that time corporations tended to reduce funding for university research and set up their research centers. Corporations and universities were displeased with each other's level of professional training and the potential of using new technologies. The models of B. R. Clark, H. Etzkowitz, and L. Leydesdorff, whose achievements were discussed above, aimed to solve these problems of interaction.

The Russian system of higher education has its specific features that affect the possibility of implementing these models. Almost all universities that can be considered in this category, for example, the Entrepreneurial University, are public, while the research and scientific activities at private universities remain at an extremely low level. In the modern Russian economy, one can observe the violation of the key postulate of these models: innovations are not created by the order of state bodies. However, in Russian practice, all links in the innovation chain are elements of the state mechanism. This also applies to state universities of different statuses that can generate knowledge. The state is an active participant in the diffusion of innovations. It is state-owned enterprises (or enterprises with significant state participation) that form the basis of major industries that have the resources to introduce innovations. The private sector is also present in each link of the chain; however, its participation is small. Also, a significant part of the technologies with high innovative potential has been created in the military sector, which complicates their further implementation in the market of commercial products. The same applies to industrial enterprises engaged in the production of high value-added products. A good example is the product portfolio of PJSC United Aircraft Corporation (UAC). Its structure is shown in Table **2**, and we can see that most of the products sold account for the military sector.

Commercialization of the intellectual activity of Russian universities should be considered, first of all, in the context of the practical implementation of these developments. In other words, the links between universities and enterprises engaged in the production of goods and the provision of services based on new technologies should be strengthened.

In Russia, these difficulties manifested themselves when Law 217-FZ of August 02, 2009, was adopted. The idea of creating "Small Innovative Enterprises (SIE)", which were to become centers for the sale of intellectual property of universities and the missing link in the interaction between universities and corporations, could not be put into practice.

The proposed mechanism could not solve some problems:

1. The complex procedure for the sale of an SIE: the university that was one of the founders of an SIE became its perpetual founder without the possibility of selling the enterprise later. This implementation of an intellectual resource is not profitable for commercial organizations.

2. The possibility of transferring the patent of a state university to the authorized capital of an SIE and its further implementation: there are issues of the alienation of state property that have not been resolved yet.

3. University contribution to the authorized capital of an SIE, although the problem was partially resolved after adopting amendments to this law. This problem concerned the specification of "low-value property" that can be transferred to the authorized capital. However, after clarifying the amount of "low value", it is not clear whether an SIE needs such property.

The main challenge is not related to the procedure for creating organizations like SIEs itself, but the method of carrying out their activities – the sale of intellectual property. In 2013, the methodology for assessing the entrepreneurial potential of Russian universities was changed: for instance, the "Innovation and Commercialization" section in the National University Ranking was renamed as "Innovation and Entrepreneurship".[7] This approach is fully consistent with the idea of transforming universities in the twenty-first century. Having explored this issue, we found out that Russian universities are actively engaged in filing patents, and this area is developing quite successfully. However, very few patents have international protection, and universities hardly maintain any of the patents. The most important point is that the number of licenses issued – the indicator that reflects the demand for intellectual property – is extremely low. Russian universities are registering patents for themselves and statistics. There are some successful cases of licensing and commercialization of technologies, but there are few of them.

Promoting innovation is a relevant issue for many countries. For instance, in the 1990s Europe launched an extensive reform of higher education. One of its objectives was to intensify the research activities of universities, as well as to increase the number of innovations that have been successfully commercialized. Most studies of international experience in stimulating innovation focus on such countries as the USA, Japan, and Germany. However, due attention is not paid to the experience of France. This disregard of the French experience is because France is not usually included in the list of technologically developed countries. The innovative achievements of this country are rarely mentioned in the popular and specialized literature. However, we should not forget that France is currently one of the largest players in the global arms market, with fourth place in the SIPRI ranking for 2016.[8] France is one of the leaders in the field of aircraft, high-speed railways, and nuclear energy. Another reason why the French experience is relevant for Russia is that the state is the main player in innovation activities in this country. Also, most scientific developments are carried out not in universities, but in research centers.

This aspect is especially relevant since Russia's leading developers of technology and innovations are the research institutes of departmental affiliation or the ones belonging to the structure of the Academy of Sciences. The policy aimed at strengthening innovation and merging of universities (a similar policy is carried out in France) was launched only in the early 2010s. The merging of French universities was carried out not to create a new multi-level system for the production of scientific knowledge, but to streamline and to improve the efficiency of the existing system. France has retained its educational and scientific traditions, but radically changed the approach to the implementation of innovation activities. The reform of scientific organizations that began in 2006 led to the emergence of new research and education structures – Centers for Research and Higher Education (PRES), which united universities, research institutes, and laboratories. Thus, France aimed to create large scientific and educational centers.

The French experience can be useful for Russia when reforming the system of higher education. The reform carried out in France is unique as it focuses on economics and entrepreneurship, while educational services and teaching have taken a backseat. The reform aimed to create a network of universities that could be ranked as the largest in the world, primarily regarding the volume of research, patents, and licenses issued. France considered its university complex not as a network of educational institutions providing services, but as a locomotive of the economy, capable of promoting innovative development.

France has chosen the path of gradual reform which has taken several decades. The main idea was to use

[7]Noskova, E. (2013). It is not patents that will be counted: Technological business success of universities will be measured by a new method. Russian Gazette, 25, p.9.

[8]SIPRI YEARBOOK 2017 Armaments, Disarmament and International Security: https://www.ethz.ch/content/dam/ethz/special-interest/gess/cis/center-for-securities-studies/resources/docs/SIPRI-Yearbook%202017.pdf

the potential of existing universities and scientific organizations, gradually merging them into competitive research and educational centers. A good example is the creation of the University of Lorraine. The merger began in 2005 when a discussion was held on the possibility of uniting the educational institutions of Nancy and Metz. The integration of four different universities was not an easy process. First of all, there were issues related to administrative management and the sharing of the university property. In 2012, the process was finally completed. A similar case is the merger of the universities and scientific organizations in Bordeaux and Paris.

European and, in particular, French experience, shows that nowadays countries cannot stimulate the production of high value-added products without increasing the role of universities in the economy. However, this also enables a country to optimize the costs of higher education and to boost their effectiveness. The European reform implied a shift to funding research within particular programs and growth in the share of commercial organizations in financing university activities. All this may lead to a smaller share of the budget of European countries allocated to financing applied and fundamental research, with these funds transferred to the commercial sector and scientific and educational organizations. However, this economic effect can only be achieved in a few decades. At this stage, the reform will cost European countries tens of billions of Euros since it involves financing new research programs and subsidizing the renewal of the fixed capital assets of universities, especially regarding research equipment.

The undertaken study of the European reform of higher education revealed that possible savings in public funds of universities are a secondary issue. The main goal is the more active involvement of universities in the commercial sector of the economy. It should be said that there is no intention to turn public universities (representing a significant share in the European higher education) into private ones. Indirectly, this will strengthen the role of the state in the economy through increasing the interaction between commercial enterprises and state universities. This will have both advantages and disadvantages; however, there is no doubt that the state will gain a powerful lever of influence over the trends in the commercial sector of the economy.

One of the attempts to bridge the gap between universities and businesses was providing the first with ample opportunities to finance their activities and manage their assets. In 2012, the university environment witnessed a watershed moment – for the first time, the University of Cambridge issued bonds for GBP 350 million (approximately USD 563 million at the 2012 exchange rate) with a maturity of 40 years and a 3.75% interest rate.

At the beginning of the twenty-first century, the USA and the EU countries more often consider universities as commercial organizations with special legal and economic status. In the USA, universities are exempt from federal and municipal taxation. For example, instead of the real estate tax, universities pay compensations to municipalities. At the same time, universities often cooperate with local authorities in the issues related to joint projects and the use of the real estate. This applies not only to the United States and European countries but also, for example, to Brazil (Rücker-Schaeffer, *et al.*, 2018).

Taxation is the main component of economic incentives in Europe, the USA, the UK, and Brazil since for universities it is near zero, which is unusual for the modern economy (da Fonseca, 2018). However, innovations and new technologies can be promoted only with the active development of applied research. This makes universities vulnerable: as organizations with a special status, they cannot independently engage in the commercialization of created products and technologies. Such a situation will soon lead European and American universities to the same problem as in Russia – a change in the legal status to increase the efficiency of economic activity.

CONCLUSION

Russia is facing a similar situation. The law “On Education” was adopted in 1992, and Article 40 stated that the main activities of universities are not subject to taxation. This situation changed in 2005. However, these provisions are based on the special “non-commercial” and “non-entrepreneurial” status of such organizations. In other cases, the activities of universities are subject to current tax laws. Nowadays the conditions of Russian universities are largely due to their special status, which isolates them from the rest of the commercial sector. Is it profitable for a Russian university to try to differentiate its funding through the commercialization of intellectual activity? As soon as the university begins commercial activity, it falls under the standard taxation, which represents an insurmountable obstacle. Besides, it is not clear how to

combine the "non-profit" and "non-entrepreneurial" main activities with the commercialization of intellectual property. In this article, we have considered an unsuccessful attempt – Law 217-FZ of August 02, 2009. In such circumstances, it is more convenient for universities to obtain additional budgetary funding and to establish relations with the organizations with the same special status that stay outside the commercial sector (the enterprises of the public sector of the economy, military enterprises, and state corporations).

The development of innovation through a network of science parks also faces up to some difficulties. The main purpose of this structure is to stimulate the emergence of new high-tech companies capable of developing and growing into a large business. However, under current conditions, nobody is interested in this result. Universities, whose research activities are financed mainly from public funds, mostly cooperate with state-owned enterprises. Such companies are interested in developing new technologies, but they do not need an intermediate link in the form of startups and small innovative companies. This approach to creating and promoting an innovative product may be interesting for international companies or Russian export enterprises. This explains why the support for the export of high-tech products is so relevant nowadays: this is virtually the only area that can make Russian scientific achievements commercially successful.

The real sector of the Russian economy is aware of these trends: for example, the methodology for creating the national ranking of technology parks proposed by the Association of Clusters and Technology Parks of Russia demonstrates this trend.[9] Among the indicators used to evaluate the technology park, the economic aspect is represented by Section 2 "Economic Activities of Technology Park Residents," which contains the following indicators:

1. The level of labor productivity in the technology park;
2. The specific volume of exports of products created by the technology park residents;
3. The specific volume of tax and customs payments of the technology park residents;
4. The specific volume of investments by the residents of the technology park in fixed assets;
5. The growth rate of the revenues of the technology park residents.

Of the considered indicators, the second and the third ones are directly related to the export of high-tech products, which reflects the current conditions: the export sector is one of the few that can develop civil high-tech projects beyond state demand. Unfortunately, the current state of innovative infrastructure and a set of measures aimed at creating high-tech products and technologies do not ensure their implementation in civil industries and outside the public sector of the Russian economy.

The implementation of modern technologies largely depends on the successful interaction between commercial organizations and universities or research organizations. The traditional tax mechanism for stimulating innovation works well in research activities, but other measures should be taken. At present, there is a discussion about changes in the legal and economic status of universities, as well as the creation of new methods for the diffusion of innovations.

When implementing innovative projects, the country should take into account the specifics of its national economy. In Russia, one of the most striking manifestations of such specific features is the ratio of 1/2 in the financing of scientific and innovative projects. Even though state funding is the key element of scientific and innovative activities, promoting innovation is impossible without appropriate support from the business sector. Further reforms of the Russian economy with a focus on innovation should be carried out based on the French experience.

[9]Association of Clusters and Technology Parks of Russia (ACTR): (2018). The Fourth National Rating of Technology Parks of Russia. http://akitrf.ru/news/nazvany-samye-effektivnye-tekhnoparki-rossii/

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