CHINESE TECHNOLOGY PARKS: INNOVATIONAL TOOL FOR RUSSIA

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ABSTRACT

Technoparks play a key role in a country’s innovation potential and economic growth, as they are the most effective organizations that can transform the results of university knowledge and researches into new products, technologies and services. However, there are many problems and disproportions in Russia’s National System of Innovation, which result in an underdevelopment of its technology parks. Russia ranks much lower in terms of technology and innovations development than its strategic partner-China. There are a number of reasons for that, most of which are connected with deficient support of government. It was concluded that some of China’s methods of technoparks development such as favorable tax rate, incentive packages, insurance of foreign investors against risks can be applicable to Russian technoparks and can bring tremendous benefits.

KEY WORDS: Russia, China, technology parks, innovation policy, innovation potential, economic growth.

INTRODUCTION

Innovation and technology gap existing between Russia and the rest of the world makes the research theme of current importance. China presents a special interest in this field as its technology parks are very successful and boast huge profits that major technoparks in developed countries couldn’t receive. In fact, technoparks are the most effective innovative structures that transform the results of scientific research into new products, technologies and services. Currently, in China there are 120 high-tech development zones at various levels and the receipts from exports of their products account for more than U.S. $ 4 billion [1, p.55]. To compare, only 30 Russian technoparks passed an accreditation in 2000 and only 10 of them were found to meet the international standards [8]. So, China can serve as a great example for imitation and deserves an in-depth study.

The subject of the research is an innovation policy. The topic of the research is technology parks as drivers of a country’s innovation potential. The purpose of the work is to propose the ways of increasing Russian innovation potential by implementing the experience of Chinese technoparks' development. The purpose can be achieved through immediate tasks:

1) to compare the efficiency of Russian and Chinese innovation systems;
2) to consider the role of technoparks in a development of a country’s innovation potential;
3) to define the competitive strengths of Chinese technology parks;
4) to reveal the weaknesses and problems of Russian technology parks.

The thesis of the research

The experience of Chinese technoparks’ development might be beneficial for Russian innovation policy.

Literature review

The efficiency of Russian and Chinese innovation systems was determined by the statistics of such information databases as World Bank and Global Innovation Index. The research was also based on different articles, scientific works and empirical investigations. Particularly, the most prominent scholars who assess the roles of high-tech parks worldwide are Gang Zeng,
Alberto Albahari, Andres Barge-Gil, Salvador Perez-Canto, Aurelia Modrego-Rico etc. The works of the following authors are devoted to the Chinese technoparks’ development: Yunfeng Deng, Gang Zeng, Ingo Liefner, Albert Guangzhou, Charles Wessner etc. The problem of Russian technology parks is primarily analyzed by Russian authors, such as Igor Ustimenko, Tatiana Khvatova, Eduard Pavlov, Andrey Evplanov etc.

Although different innovation clusters including technoparks are widely discussed by modern authors, there are not any significant researches aimed at comparing Russian and Chinese technoparks. The Russian government has realized the importance of innovation clusters just recently, and very few researches concerning prospects of national technoparks’ development have been carried out. This explains the novelty and significance of the given research, the results of which can have a practical applicability in a Russia’s innovation policy.

1. TECHNOLOGY PARKS AS THE MAIN ELEMENT OF INNOVATION POLICY

1.1. The efficiency of Russian and Chinese innovation systems

Russia’s economy is characterized as constantly growing, but its National Systems of Innovation (NSI) do not function effectively, which is proved by the following data: The Global Innovation Index 2013 is 0.7 (62th out of 142) [9], Knowledge Economy Index 2012 is 5.78 (55th out of 145) [10]. The weaknesses of Russia’s NSI have come from the Soviet period and still have an effect on its innovation potential.

On the contrary, with the rapid economic growth China is improving its position on the Global Innovation Index (GII). Year by year China is increasing its expenditure on Research and Development (R&D), and now it takes 35th place on GII out of 142 countries [9], Knowledge Economy Index 2012 is 8.22 (13th out of 145) [10]. An important role in innovation potential is played by science and technology industrial parks. The government puts technological parks on significant place in its innovation policy.

1.2. The conception of technology parks

There are usually confusions with the terminology used to define the differences between innovative organizations. The difficulty is increased as different countries construe different innovative organizations in their own way.

Originally, in Russia the term “technopark” was only applied to the type of organizations which are included in the federal program of technopark development. It was supposed that technoparks work in different technological directions and are organized in one building or a closed territory of offices. But recently, the term “technopark” has started to be used for any office centre, even if it doesn’t deal with technology [5].

It is possible to claim that the modern term “technology park” has at least 16 synonyms, with the most common being “research park”, “science park”, “technopolis”, “innovation centre” and “innovation park”. The term “research park” is more frequently used in the United States and Canada, “science park” is prevalent in Europe and Britain, “technology park” is popular in Asia and Russia. So, there appears to be no singular characterization of a technology park, as the meanings of those terms are commonly the same [4]. Such parks can be determined as clusters of businesses usually linked with universities in order to benefit from the university research and commercialize innovations.

Stanford technology park, founded in 1951, claims to be the world’s first university-owned technology park, which played a key role in creating Silicon Valley. Now technology parks are also popular in the rest of the world. Today such countries as China, Singapore, India and France undertake substantial national efforts to develop technology parks and innovative potential, which are strongly interconnected.

1.3. The role of technoparks in fostering innovations

Why is the world so enthusiastic about technology parks? Technology parks are catalysts for job creation and besides, they drive economic growth by increasing innovative potential.

Indeed, the main function of technology parks is to encourage high technology and raise innovative potential. The collaborative and catalytic environment in technology parks helps entrepreneurs to transform ideas born from
research into products for the market. There is a simple linear model of innovations, which explains how innovations are being introduced in technology and science parks.

![Diagram](image)

Figure 1. A linear model of innovation [1, p.14].

“Basic research” refers to fundamental research and theoretical understanding among the variables. “Applied research” refers to the use of knowledge, theories and methods for a specific purpose. This stage precedes the development of an idea into practice. The new original products go to the markets, where they are sold and profit is being obtained (commercialization).

The innovations made by technoparks are largely aimed at increasing exports and decreasing imports in the high-tech area, which positively influence the economic growth.

2. FORMATION AND DEVELOPMENT OF TECHNOPARKS IN CHINA

2.1. Efficiency of Science and Technology parks in China

The Chinese government has started to promote the formation and development of national science and technology industrial parks (STIPs) since 1980s, as Five Years Plans started to emphasize technological innovation as a driver of economic development. The major Chinese industrial parks are located in three metropolitan areas: Shanghai, Beijing and Suzhou. To these days there are more than 54 national science (technology) parks and 53 provincial science (technology) parks in China [1, p.55].

The first Chinese technopark was founded in 1988 at Zhongguancun (Beijing), which was largely guided by Silicon Valley in the US. Zhongguancun park was described as “a large-scale attempt to recreate Silicon Valley”. Zhongguancun Science Park hosts over 20000 enterprises and 950000 employees, receiving total income of 850 billion Yuan (about US$ 110 billion). More than 800 enterprises within this park have income exceeding 100 million Yuan [1, p.55].

Zhangjiang High-Tech Park (in Shanghai) hosts more than 3,600 companies, of which more than 140 are foreign. It employs more than 100,000 researchers and other workers. The revenue is 102.1 billion Yuan [1, p.56].

Suzhou Technology Park, the largest cooperative project between Chinese and Singaporean governments, accounts for 2.3% of China’s GDP, 1.5% of financial revenue, 10% of imports and exports, and 8.3% of foreign investment [1,p. 56].

2.2. Competitive strengths of Chinese technology parks

As illustrated above, Chinese technology parks are relatively successful and boast huge profits that major technoparks in many countries couldn’t receive. Chinese technoparks present a valuable experience which can prove useful for other countries. A question arises: what are the reasons for such an amazing success?

The Chinese government realized that its support is crucial for innovative potential and economic growth, that’s why it supports and subsidizes science and technology parks. It is surprising, but the Chinese government has already invested more than US $1.4 billion in Suzhou science park alone. The fact that the government treats more favorably on-park high-tech firms than off-park high-tech firms explains the situation that about 2/3 high-tech firms in China have already gained entry into the STIPs. The former enjoy other benefits from the government. For instance, on-park firms are exempted from corporate income tax for the first two years and enjoy favorable tax rate of 15% onwards. Their revenues generated from the use of newly transferred technology are only taxable beyond the first 300 000 Yuan, whereas off-park firms haven’t got any of these privileges and should pay corporate income tax of 25%. Moreover, on-park firms do not have to acquire import licenses on import materials and parts if the final products made of them are aimed at exports [2].

China has never denied the importance of global experience. There is a widespread practice to visit science and technology parks worldwide, as they can give valuable lessons. Moreover, China started to bring back Chinese professionals who have been educated and employed overseas by creating incentive packages (which include reduced rent, relocation assistance, performance bonuses, high wages etc.). Thereby, they combat the “drain brain” and
implement the foreign experience at the same time.

Chinese technology parks deserve great interest of foreign investors. And this is also the merit of the Chinese government, as the right policies, infrastructure and resources are needed to attract them. The most famous and striking examples are the manager of Newlands Science Park at the University of Hull in the UK, Treasurer of the United Kingdom, the British Council and Nigel Halford, who have been investing in Chinese technology parks since 1997 [6].

By using incentive packages the Chinese government attracts not only Chinese emigrants, but also international talents and investors. Such incentives as government-funded technology development assistance; venture capital financing; legal, regulatory and financial advisors; talent relocation subsidizes attract foreign entrepreneurs the most. Suzhou Industrial park provides international workers and their families with special accommodation and recreational facilities. Over 10,000 Chinese “sea turtles” (students who study overseas) have returned and established over 4,200 Chinese firms in Zhongguancun Science Park [7].

### 3. THE WAYS OF INCREASING RUSSIAN INNOVATIVE CAPACITY BY SOLVING THE PROBLEMS OF TECHNOPARKS’ COMPETITIVENESS

#### 3.1. Weaknesses of Russian technoparks

Although the first Russian technology park emerged approximately at the same time as in China, such innovation organizations are obviously underdeveloped. Currently, 78 Russian technoparks are active, but only 30 of them passed the accreditation in 2000 [8].

Russian technoparks have become famous since the Skolkovo project was introduced in 2010. The Skolkovo project is based upon the high-tech technopark development program “Creation of Technoparks in the sphere of high technologies in the Russian Federation” which was launched in March 2006 and prolonged to 2014. This program is the first significant state program to create high-tech technoparks. However, it has had a lower economic effect than expected, as it has failed to perform the basic target, that is, to reach the technopark gross product of $3.3 billion and create the expected number of high-tech clusters [5].

One of the problems of Russian technoparks is that they specialize in technologies that are in demand only in a limited number of economic sectors, which are energy, transportation and processing industry. So, despite the attempts of the Russian government to diversify its economy away from oil and gas, Russia’s IT sector is still largely interconnected with an energy industry.

In addition, only few technoparks are able to realize and commercialize innovative ideas, as there is no desire to invest in them in an unpredictable future. Many parks are just developing by finding already-existing innovative products and making them commercial.

Russian technoparks also suffer from lack of customers in the internal market and weak commercial relationship with foreign customers, so that there are no prospects for them to expand.

Among other significant weaknesses of Russian technoparks there are long decision-making chains, bribery and extortion at different administrative levels and legal barriers.

#### 3.2. The experience of Chinese technoparks’ development as an innovational tool for Russia

The Chinese experience can be applicable to Russian technoparks and can bring tremendous benefits.

Obviously, without huge financial investments it is impossible to make technoparks innovative and profitable. And the main source of such investments should be the government, particularly, on the initial stage of parks’ development. Industrial firms and foreigners are not eager to invest in technoparks which are unknown in the world, as reputation has always had a key role in their choice.

Actually, the Russian government has already come to regard technoparks as a perfect means of fostering innovations and economic development, and it started to take the initiative and introduce numerous government programs. However, these programs appeared to be unsuccessful as many of the objectives have not been accomplished.

The following situation appears. Scientific and research universities/organizations have suffered a lack of financing for a long time. To improve their situation they create technology parks and get budgetary funds allegedly for
innovation business. But in reality they spend the larger part of those funds on their basic activity. This is one of the reasons why government programs don’t work.

Incentive packages can also solve the problem of “drain brain” in Russia; they can attract international investors and talents. Furthermore, the Russian government as the Chinese government should attract firms in parks by offering them some benefits. It may prove useful, particularly, to exempt on-park firms from corporate income tax for the first several years and then settle the low tax on further years of their activities. In addition, we shouldn’t underestimate the practice of visiting the leading world’s technoparks, as they can help to implement the global experience in formation and development of national technoparks.

The experience of Chinese technoparks’ development might be beneficial for Russian innovative policy and economic independence, as technoparks foster innovations, which cannot be borrowed, thereby raising the Russian share of the global high-tech market.

CONCLUSION

Technoparks play a key role in a country’s innovation potential and economic growth, as they are the most effective organizations that can transform the results of university knowledge and researches into products and then commercialize them. However, technoparks in Russia are not so developed, as in the USA, UK and China. There are a number of reasons for that, most of which are connected with deficient support of government.

The China’s methods of technoparks’ development can be used in Russia as well. For example, strong initial government financing, favorable tax rate, incentive packages, insurance of foreign investors against risks, a practice of visiting STP worldwide can improve the position of Russian technology parks. More than that, Russia has to find a way for defeating the corruption at different administrative levels and decreasing legal barriers, as all these make our country unattractive to foreign investors.

REFERENCES


