

## **Management System to Protect Intellectual Property in Brazil: Difficulties and Perspectives for the Sector of Patents and Trademarks**

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### **Abstract**

*This article aims to assess the level of performance management system to protect intellectual property in Brazil, particularly the registration of patents and trademarks. The analysis was based on the institutional framework of the country in the area object of study: Law of Industrial Property of 1996, the guidelines of Industrial Policy, Technology and Foreign Trade, 2004, the Law of Technological Innovation, 2005, Law the Well, 2005, the Productive Development Policy, 2008, the Plan of Action for Science, Technology and Innovation for National Development - 2007-2010, National Strategy for Science, Technology and Innovation 2012-2015. Examination of the improvements that were introduced in the institutional framework in Brazil in recent years and the improvements that resulted in the management of public policies to protect intellectual property revealed that there are still serious difficulties in implementation and management of these policies, particularly in the segment of the record of trademarks and patents.*

**Key words:** industrial policies and technology; intellectual property; trademarks and patents; economic development; Brazil.

### **Introduction**

Science, technology and culture are accepted as fundamental elements for the economic and social development. The importance of the technological progress has been theoretically and empirically described for several decades. Among such studies, we must refer the contribution of Joseph Schumpeter (1982) who, during the first decades of the XX century, has demonstrated the importance of the innovation process for the growing-up of the production.

In fifties, Robert Solow (1988) has created the bases for building up the theory of economic growing. In the first study, he developed a theoretical model that supports the fact that, without technological progress, there is no sustainable growing of the GDP (Solow, 1956). In order that a country can reach a stable progress it is necessary that the economy should be allowed to aggregate something to the production, without necessarily adding more inputs, such as man power and capital.

Solow named such source of wealthiness as “technological progress”. In the second paper, he tried to demonstrate, through an empirical exercise, that the technological progress was the main responsible factor for the increase of the North American economy (Solow, 1957). However, it must be stressed that he could not explain the means through which one could achieve the technological progress. Paul Romer, during the second half of the eighties, proposed a new approach to the economic theory on development (“New Theories of **Growth**”, 1986, 1987, 1990, and 1993).

In those studies about the theory of growing, the technological innovation was incorporated, i.e., the production of ideas, as the main motor for growing. Warsh (2006) on his turn supports that Romer has enlarged the field of the perception of the economic science in order to capture a world - the economy of knowledge - that was quite abstractly expressed, so far.

Before this scenario, the following question arise: The management of public policies on protection of the intellectual property in Brazil, concerning particularly the registry of trademarks and patents, is contributing for increasing the assurance and the creation of incentives to the innovation in the country? What is the perception of the Brazilian entrepreneurs about the importance and the level of priority given by their companies to the question of patenting?

We suppose that the intensive use of science and technology and innovation in every economy allow the increasing of the capacity for competing, resulting in the creation of undertakings, companies, jobs, and commercial trademarks. This strategy contributes, on its turn, for increasing the interaction between industrial and technological policy and intellectual property. Besides, we think that the management of the public policies for protection to intellectual property, as a tool for supporting the economic growing of the country, presents some deficiencies. So, we state that the fragilities and inconsistencies of the management of policies in the field of intellectual property, is damaging the capacity of competition of the Brazilian companies.

The objective of this study consists on evaluating if the management of the intellectual property system in Brazil is contributing under an appropriate way for the creation of incentives for the sectors that act and request warranties from the State as far as patents and trademarks are concerned. We used as reference, besides the Law of Industrial Property, nº 9279/1996, the guidelines for Industrial, Technological and External Trade Policies, 2004, as well as the Law of Technological Innovation, 2005, and The National Strategy for Science, Technology and Innovation (ENCTI/MCTI 2012-2015).

It should be noted, in this analysis, the National Strategy for Science, Technology and Innovation (ENCTI) highlights the importance of science, technology and innovation (ST & I) as structure the development of the country and establishes guidelines that will guide the national and regional actions in the timeframe 2012-2015. The ENCTI continues and deepens the Action Plan on Science, Technology and Innovation 2007-2010 (PACTI) and its design is based on the accumulated experience in planning actions in decades, which began in the years with the Basic Plans Development scientific and Technological (PBDCTs), followed by the creation in 1985 of the Ministry of Science and Technology (MCT today MCTI after the merger of Innovation to the name in 2011); establishment of the National Conferences on Science and Technology (CNCT) and the advent of Funds industry, established in the late 1990s, which contributed to strengthen the funding standard sector initiatives, with larger volumes and more consistent investment. There is also a link between the policy of S, T & I and the Brazilian industrial policy, represented by the Industrial, Technological and Foreign Trade (PITCE), from 2003 to 2007 by the Productive Development Policy (PDP), 2007 to 2010 and the Greater Brazil Plan (PBM), launched in August 2011, which have C, T & I guidelines as central government policy (ENCTI/MCTI 2012-2015, p. 23).

## **2. Dynamic of Growing and Process of Industrialization**

The lack of a sole theoretical referential for studies about industrial and technological questions demanded, in the beginning, some considerations of conceptual and methodological type about the process of industrialization, as well as the explanation of concepts.

Generally, the process of industrialization is a phenomenon that, up to the present, was not totally measured within a definitive theoretical framework. It is verified that a significant portion of recent studies about economic development emphasized the relationship of the dynamic of economic growth with the process of industrialization.

In order to understand the phenomena associated to economic change, we have based ourselves on the evolutionary theory (Nelson; Winter, 1982). For this kind of reasoning, the competences of the economic agents are the ones which determine their behavior, having a limited rationality as parameter. Under the evolutionary perspective, capitalism is essentially dominated by the economic change resulting from the impact of the innovation process (Rosenberg, 1994). This innovation was based on the technical progress which, according to Dosi (1988), is a mandatory factor for the international capacity of competition.

### **2.1. Technological Inventions and Innovations and Intellectual Property**

The technological inventions and innovations, along the History, have always been considered under a certain suspicion by the mankind. However, it is noted that such resistance tend to disappear as soon as people started to understand the material, economic or military profits coming from such new ideas.

It is verified that prizes and stimuli from governments, and expenditures for applied research, turned to be a constant. During the last sixty years the more developed countries, have systematically implemented the application of the scientific knowledge for promoting the technological development and innovation, as well. The R&D activities would be, so, the beginning the main indicator of innovation.

Technological innovation, for Viotti (2001, p. 9), "[...] is the key for growing, competition and development of companies, industries, regions and countries. It has also a fundamental importance for the determination of the type of development of regions or nations, as well as for the way it affects presently, and will affect in future, the quality of life of the population in general and its segments."

It can be verified, in the field of intellectual property, which significant changes have occurred since the beginning of eighties. Multinational companies, from that decade of the XX century, intensify their strategies for market globalization. This was responsible for the increasing of investments on research and development (R&D) in sectors related to new Technologies. The internationalization of markets demands the liberalization of the products, services, and capitals flow, with a higher harmonization about the norms that define the institutional environment as far as concurrence is concerned, and mainly the system of industrial property.

With the increase of expenses on investments for research and development in new products, the patents started to represent an important factor for the calculus of the private investment profitability rate. So, technology becomes a fundamental factor for the quantification of the comparative advantages in world markets. Thus, the warranty got through the knowledge protection through the patenting system starts to have a great importance for the concurrence strategy of companies (Matias-Pereira et al. 2006; Matias-Pereira, 2011a, 2011b, 2013).

The technical change is an essential factor in structuring the patterns of economy transformation. It is noted, however, that the technology is not a free good, since its appropriation comes from the cumulated level of knowledge, from the gone processes of learning, from the experiences of the companies, and from the institutional environment itself which can (or not) operate as an element reducing the uncertainty of investment decisions in new processes or products (Freeman, 1988).

It must be taken yet into account, that distinct industrial sectors are different in what concerns the terms of its capacity for promoting technological diffusion. So, the advancement of the technology is positively reflected on the process of economic growing. It is noted that the debate about the function of the patents system is not a new subject (Penrose, 1951).

What remains evident in this debate, presently, is the high priority attributed to the system of protection to the rights of intellectual property in all countries, mainly to the patenting system, whether at internal or international level.

Technology is a fundamental factor for the determination of comparative advantages of countries in the world trade. This is not a new proposition. The theory of technological hiatus (Posner, 1961) and the production cycle (Vernon, 1966) pointed already the way of diffusion of technological progress as one of the factors subjacent to the patterns and dynamics of international trade.

The difference is that, in the new technological stage, the main production factor is knowledge or information (Bifano, 1989). So, the economic value of knowledge in new processes or products is growing up. And then, the relevance of industrial property is always increasing due to two aspects: first, because it allows the private protection of new knowledge and second, because it gives the possibility of extracting profit through the property of new knowledge.

It must be stressed that not all patents correspond to an invention. In fact, a great part of patents come from small innovations carried out in already existent equipment and processes.

Kim (1997, 2005) states, in his study about "imitation to the innovation", that the way of acting of developed and developing countries is quite different in what concerns the development of technology and innovation.

In developed countries the pattern of technological development consists in "learning while researching", through articulations among companies, universities, and research institutes, while in developing countries the trajectory consists in "learning while doing" and to practice reversal engineering. Reversal engineering should be understood as the process of disassembling an equipment or product in order to learn how to build it incorporating innovations.

## **2.2. Brazilian Indicators of Science, Technology and Innovation**

The low productivity of the Brazilian economy strengthens the understanding of the need to increase investment in technological innovation. Brazil invests R\$ 50 billion a year in innovation or 1.1% of GDP, 60% of which are invested by the government and 40% by businesses (MCTI, 2012).

Brazil is a country that is an intermediate level of scientific and technological development. Despite the advance of Brazil in the world ranking of scientific output, remains a significant gap in the developed countries. This gap is even greater in the technological, which involves the ability to incorporate new knowledge into goods and services. To reduce the technological gap that still separates the developed countries, it is essential that the growth rate of the Brazilian technological effort, expressed in investments in R & D, exceeds that observed in the core countries (ENCTI/MCTI, 2012-2015, p. 28-53).

Register in Brazil, 45.7% of spending on R & D is done by companies as at several of the most dynamic technology countries (United States, Germany, China, Korea and Japan) this ratio is close to 70%, which demonstrates that the participation of the business sector in the Brazilian technological efforts still fall short of the levels seen internationally.

Worsens the situation because, historically, many of the innovations developed by Brazilian productive sector is related to process innovations - mostly based on the acquisition of technologies embodied in machinery and equipment - or adaptive innovation. In Brazil, most researchers are in institutions of higher education - 67.5% of the total in 2010 - while the companies this ratio is only 26.2%, well below the rates corresponding to the United States, Korea, Japan, China, Germany, France and Russia.

Even taking into account the progress made in recent years, Brazil is in a very unfavorable position as it relates to the volume of resources devoted to scientific and technological development. The expenditure on R & D is of the order of 1.2% of GDP, lower than in all the advanced countries, the other members of the BRICs and other smaller economies, such as Italy, Spain, Korea, Portugal and Singapore.

The dissociation between scientific advancement and incorporation of technological progress to the productive base, especially in the industrial sector, is also expressed in the relative backwardness of the country in patenting in specialized international institutions, although this is imperfect indicator.

It appears that the innovation agenda in Brazil still has a profile very academic, as opposed to the global trend, clearly business. This mismatch is evident from the fact that most publications (papers) do not result in patents. Despite this scenario, it is noticeable that the legal innovation has made advances, such as the creation of Embrapii, the Brazilian Research and Industrial Innovation.

### ***3. Intellectual Property and World Patents Registry***

One can see that the intellectual property reached its present importance due to several and systematic evolutions about its concepts. Among the factors that have contributed for a greater value of the intellectual property there are: its political visibility, due to the great economic importance for the countries; and the verification that immaterial products surpassed the traditional value given to material and landed properties goods. So, it is noted, that the intangible goods of an industry are generally more valuable than the whole of its material assets. Such reality was responsible for the fast evolution of the system of patenting registry in world, as we can verify in the following discussion.

It must be stressed that patent and registry of industrial drawing are titles of temporary property on an invention, utility model or industrial drawing, granted by the State to the inventors or authors or other physical or juridical persons who own rights over the creation.

On the other hand, the inventor is obliged to reveal in detail all the technical contents of the material protected by the patent or by the registry. During the duration period of the patent or registry, the titular has the right of excluding third parties, without his previous authorization, from acts related to the protected material, such as manufacturing, trading, import, use, sale, etc.

The World Organization of Industrial Property – WOIP, defines the patent as a document issued by a government institution, that describes the invention and creates a legal situation, where the patented invention can normally be explored (manufactured, imported, sold, and used) with the owner's authorization. So, the requisite of patentability is presented as the main characteristic of the patent document. This means that a patent may be given to an invention that obeys the requirements of novelty, i.e., something that was not disclosed before.

It is understood that it should be inedited, so it never existed before, it should have inventive activity and industrial application, and thus, that it could be commercialized. An invention can be considered a new one, when it is not inserted in the state of techniques and this one is constituted by all records of public access before the date of deposit of the patent application, through oral or written description, through use or any other means, in the country of origin or abroad.

### **3.1. The Ranking of Patents Registry of USPTO and PCT/WIPO**

It is observed that the ability of patenting countries, at present, has a strong correlation with their level of development. Although the data released by the U.S. office of patents - United States Patent and Trademark Office (USPTO, 2012), from 1980-2011 - shows that there was a drop in the growth of the number of patents granted in the G7 countries (USA, England, France, Germany, Italy, Canada and Japan), the difference in patenting compared to the rest of the world is still very large.

Brazil, in 2009, with the record of 493 patents, grew 1.6% in patent applications in the international system. In 2010 the country had a fall in the ranking, with 487 patents (World Bank, 2011a). The country maintained its upward trend, not matching the international average, which fell by 4.5% last year. Brazil, in the list of developing countries, appears as the fifth largest number of requests, behind South Korea (8,066), China (7,946), India (761) and Singapore (594). Register the drop in international applications in 2009 was stronger in developed countries. The reduction was 11.4% in the U.S., 11.2% in Germany, the United Kingdom 3.5%, 1.6% Switzerland, Sweden 11.3%, 5.8% in Italy, 11 7% in Canada, Finland 2.2%, 7.5% and 17.2% in Australia in Israel.

Brazil, in 2010, filed 584 patents, of all kinds, in the Office of Patents and Trademarks (USPTO, 2011), while the more advanced economies or those of similar size to the Brazilian sported higher values, as follows: 254 895 United States, Japan 84,842, Germany 28,157, Korea 26,648, UK 11,852, France 10,641, and Italy 4,576.

It appears that United States Patent and Trademark Office (USPTO, 2012) granted in 2011 a total of 215 patent applications in Brazil, against 3174 for China, 1234 for India and 298 for Russia. In turn, in the period from 2007 to 2011 China has the country's 9,483 patents, India, 4191, and Russia, 1123. In the same period, Brazil managed only 684 patents (USPTO, 2012).

The data from the World Intellectual Property Organization (WIPO, 2013) reveal that the Brazilian performance in innovation in 2012 was also lower than the high of 6.6% in order global patenting. Of the 194,400 applications made in the world in 2012, only 587 (0.30%) came from Brazil. China, Japan and the U.S. accounted for 75% of the growth in applications last year. Compared to other members of the BRIC countries, Brazil only surpasses South Africa, who requested record 302 patents. China had 18,627 applications (9.6% of total), India, 1208, and Russia, 958.

This uncomfortable position of Brazil in the rankings the USPTO and WIPO / PCT has been the subject of several studies in order to understand why Brazil has a level of performance as mediocre applications for registration of patents in the world. One explanation for the low performance of Brazil in the major rankings of applications for registration of patents worldwide (USPTO and WIPO / PCT) would be related to the low proportion of researchers who are working in companies. In developed countries, up to 70% of the researchers and their studies are located in companies, while the remaining 30% are in the gym. In Brazil the situation is reversed.

Is observed based on international benchmarks, that Brazil has a competitive academic research base. The entrepreneurial research base, however, is quite fragile. Thus, the major obstacle to be overcome is the proper implementation of public policies to generate incentives for companies in Brazil to hire scientists and engineers to develop technology within companies. So, the big obstacle to be surpassed consists in the creation of incentives in order that Brazilian companies could contract scientists and engineers for doing technological development within companies.

#### **4. Public Policies for Protection to the Intellectual Property**

As far as the policies and the management of science and technology are responsibility of the public sector, it is understandable that the assessment of quality in the institutions directed to management and formulation of scientific and technological policy could find some resistance. Brazil could not yet develop a system of public administration for management of intellectual property compatible with the requirements of the demand within a global world. The problem of the protection to the intellectual property is presented as a sensible and important area for supporting the process of development of the country (JPO, 1988; OCDE, 2003; Nassif, 2007).

It is in this sector that we may see presently the greatest world confrontations, since it deals about the control of two strategic factors for every country: the domain of technology and property of information. These are named the intangible assets – appropriated under the form of titles -, responsible for the royalty's generation, through the exploitation of trademarks and patents, and copyright, for the reproduction of artistic and literary works (Matias-Pereira, 2011a).

It must be stressed that the intellectual property includes all the rules relative to the protection of rights over the industrial property, author rights and the *savoir-faire*. So, the patent of invention, besides stimulating the inventive activity and facilitating the changing of knowledge, plays also an important role in the circulation of scientific and technical information and so, contributes to the enrichment of the technological property of the society (Chavanne, Burst, 1993; Carvalho et al, 2006).

The industrial property can be accepted as a legal tool that can stimulate a greater competition among individuals or companies and promotes the concurrence and the technological advancement. So, the industrial property is important for the equilibrium of the relationships among industries, as it defines collaboration mechanisms among these ones and the universities, research institutes and other similar institutions.

Considering that the development of new products and processes needs high investments, the protection through the industrial property started to have more and more importance within the international scenario, because it had become a critical factor of competitive advantage for the country. The intellectual creation may deserve several ways of protection, such as patents, rights of author, trademarks, etc. Creation of products and inventions in the field of industrial property is protected through the registry of industrial drawing and patent (patent of invention and model of utility) and certificate of addition of invention, under the responsibility of the National Institute of Intellectual Property. The industrial property deals mainly about the protection of inventions, trademarks and industrial drawing, as well as the repression of the unfair concurrence.

##### **4.1. The Function of the National Institute of Industrial Property**

It is observed that the process of globalization is affecting severely the patent system in most countries in the world. This crisis in the global patent system is also reflected in Brazil, the qualitative and quantitative aspects.

Qualitative aspects there is a growing intention to patent discoveries and not inventions; distorted interpretations of the concepts of utility and non-obviousness, etc. Regarding the quantitative aspects, it turns out in the last two decades a significant rise in the number of patent applications filed, the entry in the intellectual property system to new areas of patentability, such as biotechnology, nanotechnology, information technology, the growing complexity of applications patent, the largest number of countries in which the same claim is filed, among others. This has reflected on the quality of services provided by agencies in charge of registering patents. These problems identified can be viewed in performance report on activities INPI, in the period 2011-2012 (Brasil/INPI, 2013).

In this context, gained prominence the need to strengthen policy development and international insertion of Brazil. This scenario led the federal government to begin implementing a restructuring program the INPI in 2004, shortly after the implementation of the Industrial, Technological and Foreign Trade (PITCE). The goal of the program was divided into two phases: the search for efficiency and to facilitate the access of citizens and businesses to services, and the development of an intellectual property culture that favors growth and international integration of Brazilian companies in the global economy (Brasil, 2009:9).

Regarding the quantitative aspects it may be verified, during the last two decades, a significant increase of the amount of deposited patents requests; the input into the system of intellectual property of new areas that can be patented, such as for instance, biotechnology, nanotechnology, informatics; the increase of the complexity of the patent requests; the greater number of countries in which the same request is deposited, amongst other factors. This has been reflected on the quality of services rendered by the institutions in charge of registering the patents (INPI, 2012).

The National Institute of Industrial Property (INPI), federal institution linked to the Ministry of Development, Industry and External Commerce, is the Brazilian institution in charge for carrying out the norms that regulate the industrial property, taking into account its social, economic, juridical, and technical function. Included in such functions, there are other tasks such as the concession of trademarks and patents registries. So, the INPI is the sole institution at national level that is in charge for the registry of patents of technological innovations.

It is important to stress that, due to the greater incidence of requests for invention patents, the technologies vindicated in such requests, if the concerning patents are granted, will be protected for a greater period (20 years) and will show more opportunities of generating industrial developments. It is proved, before these data, that it is essential to continue the process of strengthening the structure of the final areas of INPI (patents, trademarks, transference of technology) in order to make possible the coordination of the activities in the required amount and the supervision of the additional workers to be contracted.

There are several ways of reducing the possible costs of the extension of the patents reaching level. Among them we emphasize two options: the first one is referred to the use of mechanisms of the economic power abuses; the second one deals with the creation of institutional environments that stimulate the activity of investments on research and development by companies that operate in those sectors through the needed articulation: government – private initiative – university.

We have the opinion that Brazil, starting from an effective effort for improving the management of policies for protection to the intellectual property, can orientate itself towards the second option. We believe that the lack of culture of Brazilian businessmen and Brazilian productive structure also contribute to affect the number of records, as it is supported in the production of commodities and traditional manufacturing sectors such as food, metal industry and fabrics.

The electronics and pharmaceutical industries are internationally the more innovative and invest in research and development (R&D). The two are joined by segments of medical and hospital instruments, optics and instrumentation, aeronautics, and "to a lesser extent," the computer, machinery and equipment and the automotive industry. Thus, innovation is closely linked to the need for increased integration of the country in international trade, which requires, as a result, the continuity of the policy of encouraging the internationalization of companies with potential (Almeida; Pacheco, 2013:6).

In connection with demand, INPI set two important records in 2011, with approximately 32 thousand applications for patents and 152 thousand for trademarks. Data collected show that these figures will tend to grow in 2012. Over the years, INPI has been endeavoring to adjust to clients' needs. In the patents sector, with gradual but constant hiring of new employees it is expected that problems stemming from understaffing will be overcome. Among these problems, one of the most serious is delay in analyses and decisions related to applications for patents. Implementation of the systems for *e-Patentes* will lead to a "paperless" INPI, speeding up application filings and making them easier. The programs INPI has been participating in have led to the technical enrichment of patent examiners, improving the quality of the exam itself. It has also enabled greater dissemination of the industrial property system in Brazil by means of courses and conferences in companies and universities. As of 2009 there has been an increase in the number of filings of applications for patents, leading to 14% growth between 2010 and 2011. Preliminary data for 2012 indicate that yet another record number of applications should be reached, close to the current average of 10%. Up to July, 19,250 patents were applied for (Brasil/INPI, 2013, p. 21).

The absence of a culture of Brazilian businessmen to protect their inventions, and especially the lack of staff at the National Institute of Industrial Property (INPI) may explain, in part, the deficiencies in this area of Brazil. The PTO may take up to ten years to grant a patent, noting that the more innovative is the product or production step, the slower the exam. Data INPI 2012 reveal how the structure Brazilian is still deficient: the PTO had only 273 examiners, while in Europe there were 3,698, 1,567 in Japan and 5,477 in the U.S.

### ***5. Deficiencies and Fragilities in the Area of Management of Intellectual Property***

Aiming to identify the main characteristics and weaknesses of the management of public policies in the field of industrial property protection, particularly on patenting, there were 82 qualitative interviews with managers of large industrial enterprises, medium and small, all located in the state São Paulo. The interviews were conducted in October and November 2012.

Despite that it was a limited sample, only in large companies noted that there is an awareness of the importance of innovation, both translated by patenting their inventions like the watch on the market in terms of privileges patented by third parties. Join the interviews were conducted via the internet. The question asked was: *What is the perception of the importance and the level of priority given by your company for the issue of patenting?*

Informants discoursed freely on the subject at hand. The data followed the following steps: ordering and classification of data and final analysis. The results obtained in qualitative research are important to strengthen our conclusions regarding the level of industry knowledge on the issues involving the management of intellectual property protection, and the difficulties and problems faced in this area.

### **5.1 - We detach the following results from those qualitative interviews:**

- i. The industrial property – area of the Law identified as “trademarks and patents” – is unanimously accepted by the inquired people as an important area for the industrial and companies activities in general. Although being valued and used as a tool of concurrency strategy and competition in more developed countries, the inquired people say that the system of industrial property is sub utilized and unknown by a great part of the entrepreneurs.
- ii. The lack of an appropriate protection of trademarks, patents, and industrial drawings, either in Brazil or abroad, is seen by all the inquired persons as quite prejudicial to the competition of the Brazilian industry. Because it makes difficult or hampers the recovering of investments for research and development and it may be the cause of huge damages, loss of customers, and commercial opportunities.
- iii. The companies and national institutions are not enough aware for the strong changes at world scenario, with deep impact on the commerce, as well as the access to technologies, where the intellectual property has been of fundamental importance for competition. It is shown through the interviews that, although the external market is very targeted by the industry, there is not a marked concern with the protection of industrial property abroad. This has created constraints for the export of Brazilian products to other markets.
- iv. All the inquired persons point out the importance of the State for the orientation of public policies in the area of industrial property, mainly concerning the restructuring and strengthening of INPI, for raising the efficiency of the public system for the protection of industrial property in Brazil.
- v. The inquired persons maintain the importance of undertaking consistent studies by the companies sector, with the partnership of INPI, aiming at making available the information about the subject of industrial property, for subsidizing the government and the productive sector.
- vi. The companies, as regards to technological innovation, need to review the behavior patterns such as, for instance, the adoption of decisions that search for immediate results, aversion to risk, and collaborative selfishness.
- vii. Companies must give priority to their political structures or guidelines and they must support the activities of Intellectual Property/Patents. For doing this, companies should adopt more aggressive policies, regarding the use of the System of Patents as legal protection, as well as a source of technological information and market.
- viii. According to most inquired people (mainly the researcher-teachers) it is important to intensify the actions for promoting the Technological Institutions, Researches, and Universities to strengthen their Sectors of Technology Management / Patents. They must also disseminate the culture of the intellectual property and use performance indicators that privilege the development of new products and processes and the partnership with industries as a way of incrementing the innovations.

### **6. Conclusions**

The weaknesses highlighted in the evaluation of the performance **in the** management system of intellectual property protection in the country are still worrying. This analysis revealed that, among other shortcomings, there are difficulties in the administration of these policies, particularly in the segment of patent registration. It appears, therefore, that public policies in the area of intellectual property are not properly fulfilling its role in institutional terms **and in the generation of stimulus to innovation.**

The pressures of organized society requires deepening the changes, resizing and strengthening of the INPI to stimulate the technological incorporation in the production and innovation - which is revealed as the main focus of industrial policy - give partial support to this statement.

It was fairly evident that, in the pursuit of promoting Science, Technology & Innovation in the country, both for Innovation Law and the Guidelines for Industrial and Technological Policies, the Plan of Action for Science, Technology & Innovation for the National Development - 2007-10 and the Policy of Productive Development belong to a cycle that started the discussion focused on resources, reached the institutional aspects, which now need to be implemented. It is observed, after the regulation of the Innovation Law, there are still aspects that need further detail, in order to preserve the identity of universities and industries and companies, so that, in fact, it is likely to become a important instrument for fostering technological and industrial policies of the country.

It is undeniable that the promotion of the use of intellectual property needs institutional support and encouragement. Public policies for intellectual property protection are necessary, especially for universities and research centers, and industries, since great part of the creation and technological and cultural innovation occurs in the field, originated from theses, concepts and theories potentially generating innovative technologies. The stimulus generation and foster partnerships for joint action among universities, research centers, and the industrial sector is essential to facilitate the exchange of specific information to process patent applications and the definition of the parameters of trade and technology transfer.

The low level of knowledge and interest of the leaders of a great number of Brazilian companies in the field of intellectual property is raising unnecessary risks in exporting their products. Due to the shortcomings and weaknesses of the management system of policies and protection for intellectual property rights, we state that it is essential for the country to continue modernizing itself in this area, particularly in the segment of trademarks and patents rights. It is essential that the country intensifies the use of intellectual property protection as a tool to support the process of socioeconomic development. These changes must be implemented, necessarily, through the management of consistent public policies.

## References

- Ávila, J. (2007). O Inpi e a propriedade intelectual no Brasil: resultados e metas. In: CONGRESSO BRASILEIRO DE INOVAÇÃO NA INDÚSTRIA, II. *Anais...* São Paulo. Available: <[www.cni.org.br](http://www.cni.org.br)>.
- . (2008). Open innovation e o Sistema Nacional de Inovação. In: OPEN INNOVATION SEMINAR. *Anais...* São Paulo: FGV.
- Brasil. Instituto Nacional de Propriedade Industrial (Inpi). (2013). *Relatório de atividades 2011-2012*. Rio de Janeiro: Inpi/MDIC. Available: <[www.inpi.gov.br](http://www.inpi.gov.br)>. (March, 11, 2013).
- Brasil. Instituto Nacional de Propriedade Industrial. (2012). Plano Diretor de Informática do INPI – 2012/2015. Rio de Janeiro: Inpi/MDIC. Available: <[www.inpi.gov.br](http://www.inpi.gov.br)>. (March, 7, 2013).
- Brasil. Ministério do Desenvolvimento, Indústria e Comércio Exterior (MDIC). *Diretrizes de política industrial e tecnológica e de comércio exterior*. Brasília: MDIC, 2004a.
- Brasil. Ministério da Ciência e Tecnologia e Inovação. (2007). *Plano de ação de ciência, tecnologia e inovação para o desenvolvimento nacional - 2007-2010*. Brasília: MCTI.
- Brasil. Ministério da Ciência e Tecnologia e Inovação (MCTI). 2012. *Estratégia Nacional de Ciência, Tecnologia e Inovação 2012 – 2015*. Brasília – DF: MCTI. Available: <http://www.mct.gov.br>. (March, 22, 2013).
- Brasil. Ministério do Desenvolvimento, Indústria e Comércio Exterior (MDIC). (2008). *Política de desenvolvimento produtivo*. Brasília: MDIC. Available: <[www.mdic.gov.br](http://www.mdic.gov.br)>. (March, 12, 2013).
- Barbieri, J. C. (1988). *Utilização de patentes no Brasil*. São Paulo: Eaes/Fundação Getulio Vargas. (Relatório de Pesquisa n. 43)

- Bifani, P. (1989). Intellectual property rights and international trade. In: URUGUAY ROUND. New York: Unctad/United Nations.
- Brito Cruz, C. H. (2007). Ciência e tecnologia no Brasil. *Revista USP*, São Paulo, n. 73, mar./maio, p. 58-90.
- Chavanne, Albert; Burst, Jean-Jacques. (1993). *Droit de la propriété industrielle*. Paris: Précis-dalloz.
- Confederação Nacional da Indústria. (2005a). *Políticas públicas de inovação no Brasil: a agenda da indústria*. São Paulo: CNI, p. 1-21.
- \_. (2005b). Gestão da propriedade intelectual. In: CONGRESSO BRASILEIRO DE INOVAÇÃO NA INDÚSTRIA, I, São Paulo. *Anais...* p. 1-47.
- Coutinho, L.; Ferraz, J. C. (Coord.). (1994). *Estudo da competitividade da indústria brasileira*. Campinas/São Paulo: Papyrus/Editora da Universidade Estadual de Campinas.
- Dahlman, Carl J. (2007). New dimensions of innovation and competitiveness policies: international experiences. In: CONGRESSO BRASILEIRO DE INOVAÇÃO NA INDÚSTRIA, II, São Paulo. *Anais...* Available: <[www.cni.org.br](http://www.cni.org.br)>. (March, 11, 2013).
- Dosi, G. (1988). Sources, procedures and microeconomic effects of innovation. *Journal of Economic Literature*, v. 27, p. 1126-1171.
- Erber, F.S. (1982). A propriedade industrial como instrumento de competição entre empresas e objeto de política estatal: uma introdução. *Pesquisa e Planejamento Econômico*, Rio de Janeiro, v. 12, n. 3.
- Ferreira, Carlos E.M. et al. (1998). *Estudo da viabilidade técnica e econômica da inventiva nacional: projeto Inventiva*. Relatório Final. Brasília: MICT/STI, Inpi, Sebrae, Fiesp/Ciesp.
- Freeman, C.; Perez, C. (1988). Structural crises of adjustment: business cycles and investment behavior. In: DOSI, G. et al. (Ed.). *Technical change and economic theory*. London: Pinter.
- Frischtak, C. (1989). *The protection of intellectual property rights and industrial technology development in Brazil*. Washington: World Bank. (Industry Series Papers no 13, Industry and Energy Department)
- Frisch, W.; Franco, G. (1991). *Foreign direct investment in Brazil*. Paris: Ocde.
- Guimarães, E. A. (2006). *Políticas de inovação: financiamento e incentivos*. Brasília: Ipea. Texto para Discussão 1.212, p. 1-69.
- Jaguaribe, R. (2006). Infraestrutura tecnológica para a inovação e a competitividade. Workshop 1. In: SEMINÁRIO INTERNACIONAL CELSO FURTADO - POLÍTICA INDUSTRIAL E OS DESAFIOS PARA A COMPETITIVIDADE, 2006, São Paulo. *Anais...*
- Kim, L. (1997). *Imitation to innovation: the dynamics of Korea's technological learning*. Boston: Harvard Business Scholl Press.
- \_. (2005). *Tecnologia, aprendizado e inovação: as experiências das economias de industrialização recente*. São Paulo: Editora Unicamp.
- Kurz, R.(1992). *O colapso da modernização*. Rio de Janeiro: Paz e Terra.
- Matias-Pereira, J.; Kruglianskas, I. (2005). A Lei de Inovação como instrumento de suporte à política industrial e tecnológica do Brasil. *Revista de Administração de Empresas (RAE-eletrônica)*, (abr./jul), p. 1-18.
- Matias-Pereira, J. et al. (2006). Brazilian new patterns of industrial, technological and foreign trade policy. *Journal of Technology Management Innovation*, v. 1, n. 3, p. 17-28.
- Matias-Pereira, J. (2011a). A gestão do sistema de proteção à propriedade intelectual no Brasil é consistente? *Revista de Administração Pública*, vol.45, n.3, p. 567-590.
- Matias-Pereira, J. (2011b). *Curso de administração estratégica*. São Paulo: Atlas.
- Matias-Pereira, J. (2013). Incentivos fiscais à pesquisa, desenvolvimento e inovação no Brasil: Uma avaliação da Lei do Bem. In: 8th IBEROAMERICAN ACADEMY CONFERENCE, 2013, São Paulo. *Anais...*
- Marcovitch, Jacques. (1983). *Administração em ciência e tecnologia*. São Paulo: Edgard Blücher.
- Mendonça, Maurício. (2005). Políticas públicas de inovação no Brasil: a agenda da indústria. *Revista Parcerias Estratégicas*, Brasília, n. 21, (dez.), p. 5-32.
- Nelson, R. R.; Winter, S. G. (1982). *An evolutionary theory of economic change*. Estados Unidos: Harvard University Press.

- \_\_\_. (2005) *Uma teoria evolucionária da mudança tecnológica*. Campinas: Editora Unicamp.
- Organisation for Economic Co-operation and Development (OECD). (1996). *Technology and industrial performance*. Paris: Ocde.
- \_\_\_ (1997). *Main science and technology indicators*, n. 2. Paris: Ocde.
- \_. (1999). *Managing national innovation systems*. Paris: Ocde.
- \_. (2001). *Brazil: economic survey*. Paris: Ocde.
- \_. (2005). *Science, technology and industry outlook 2005*. Paris: Ocde.
- \_. (2003). *Science, technology and industry scoreboard*. Paris: Ocde.
- Pacheco, Carlos A.; Almeida, Julio G. (2013). A Política de Inovação. Anais... XXV Fórum Nacional. O Brasil de Amanhã. Transformar Crise em Oportunidade. Rio de Janeiro (13-16 de maio), p. 1-15.
- Pavitt, K. (1984). Sectorial patterns of technical change. *Research Policy*, n. 13, p. 343-373.
- \_. (1988). The social shape of the national science base. *Research Policy*, v. 27, n. 8, p. 793-805.
- \_. (1991). What makes basic research economically useful? *Research Policy*, v. 20, n. 2, p. 109-119.
- Patel, P.; Pavitt, K. (1994a). National innovation systems: why they are important, and how they might be measured and compared. *Economics of Innovation and New Technology*, v. 3, n. 1, p. 77-95.
- \_\_\_. (1994b). Uneven (and divergent) technological accumulation among advanced countries: evidence and a framework of explanation. *Industrial and Corporate Change*, v. 3, n. 3, p. 759-787.
- \_\_\_. (1995). Patterns of technological activity: their measurement and interpretation. In: STONEMAN, P. (Ed.). *Handbook of the economics of innovation and technological change*. Oxford: Blackwell.
- Penrose, Edith. (1951). *The economics of international patent system*. Baltimore: The Johns Hopkins Press.
- Posner, M.V. (1961). International trade and technical change. *Oxford Economic Papers*, Oct.
- Romer, Paul M. (1990). Endogenous technological change. *Journal of Political Economy*, v. 98, n. 5, p. 71-102.
- \_. (1987). Growth based on increasing returns due to specialization. *American Economic Review*, n. 77, p. 56-62.
- \_. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, v. 94, n. 5, p. 1002-1037.
- \_. (1993). Two strategies for economic development: using ideas and producing ideas. In: THE WORLD BANK ANNUAL CONFERENCE ON DEVELOPMENT ECONOMICS, 1992. *Proceedings...* Washington: World Bank.
- Rosenberg, N. (1994). *Exploring the black box*. Cambridge: Cambridge University Press.
- Schumpeter, J. A. (1982). *A teoria do desenvolvimento econômico*. São Paulo: Abril.
- Sherwood, R. M. (1992). *Propriedade intelectual e desenvolvimento econômico*. São Paulo: Edusp.
- Solow, R. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics*, v. 70.
- \_. (1988). *Growth theory: an exposition*. New York/Oxford: Oxford University Press.
- \_. (1957). Technical change and the aggregate production function. *Review of Economics and Statistics*, v. 39.
- Tornatzky, L.G.; Fleischer, M. (1990). *The process of technological innovation*. Lexington: Lexington Books.
- Unesco. Organização das Nações Unidas para a Educação, a Ciência e a Cultura. (2010). *Relatório Unesco sobre Ciência 2010*. Brasil: Unesco.
- United States Patents and Trademarks Office (USPTO). (2012). *Annual report of the register of copyrights*. Available: <http://www.uspto.gov/dashboards/patents/main.dashxml>. (March, 5, 2013).
- \_. Performance and accountability report. 2007. Available: [www.uspto.gov/web/offices/com/annual/2007/50300\\_workloadtables.htm](http://www.uspto.gov/web/offices/com/annual/2007/50300_workloadtables.htm). (March, 13, 2013).
- Vernon, R. (1966). International investment and international trade in the product cycle. *Quarterly Journal of Economics*, May
- \_\_\_\_ (Ed.). (1970). *The technology factor in international trade*. New York: Columbia University Press.
- Warsh, David. (2006). *Knowledge and the wealth of nations*. New York: W.W. Norton.
- World Intellectual Property Organization (WIPO). (2012). *International patent system*. Monthly statistics report May 2012. Geneva: Wipo, 2012.
- \_\_\_\_\_. (2011). *Patentscope terms and conditions*. Terms and conditions for the use of Wipo Patent Information Products and Services (May 5, 2011). Geneva: Wipo.
- \_. PCT yearly review: The International Patent System in 2009. Geneva: Wipo, 2010.
- \_\_\_\_\_. *World intellectual property indicators 2010*. Geneva: Economics and Statistics Division, Wipo. Available: [www.wipo.int/ipstats/en/statistics/patents/](http://www.wipo.int/ipstats/en/statistics/patents/). (March, 8, 2013).