

Intellectual Property Rights (patents): Essentials and innovative potential in wine industry

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Abstract: *The aim of the paper is to explore what the influence of the Intellectual Property Rights (IPRS) on the Modern economic growth is, whether there is a relationship between them, and what impact can patents have on the invention activity – positive, negative or both. It is going to explain the importance and association of technological progress with economic growth, the main goal and idea of IPRS, the way the system has been used in the period of the beginning of Modern economic growth, and research whether patents were the biggest incentive for inventors in this period as a whole and in wine industry in particular. The paper provides examples of the main European, United States and International patents available on wine production and preservation.*

KEYWORDS: INTELLECTUAL PROPERTY RIGHTS (IPRS), INVENTION, PATENT, MODERN ECONOMIC GROWTH, INNOVATION

1. Introduction

The paper presents the influence of the Intellectual Property Rights system (IPRS) on the Modern economic growth and the arguments which can be viewed in this regard. The authors claim that before making an exact final statement, it is crucial first to present the main points of views and comment them.

The **authors' thesis** is that patents indeed are a big part of the whole technological progress and, thus, economic development, but at the same time IPRS has not been the biggest incentive and influencer of the economic growth. **The main object** of the research is patents and their strong influence over the motivation of the inventor. The paper is a part of a project focused on the innovation activities made by wine industry in Bulgaria. Thus the topic suggests good practices that can be used by wine specialists.

The subject of the paper is the influence of IPRS on the innovation process. **The research aims** to derive to the final conclusion and improve our view on the ascendancy of patent law and patents themselves.

The study is structured as follows: following the introduction in the second part is described the issue of technological progress. The third part pays attention on the Intellectual Property Rights (IPR) and their importance. This analysis paves the way for the fourth part, in which is highlighted the responsibility and the right of deciding the future of the invention. The fifth paragraph provides examples of the main European, United States and International patents available on wine production and preservation. The article closes with conclusions and recommendations for future research in the field of investigation the role of intellectual property rights and their role in the wine industry.

2. Technological Progress

One of the most important prerequisites for a consistent economic growth is the technological progress. We can use as a reference argument the Malthusian theory (T. Malthus, 1959) as it states that there cannot be an infinite rise of the population as at some point the resources would not be enough for everybody, although it has nothing to do with IPRS. But there is one way we can avoid this and it is exactly what we have done in the last 200 years – progress in technology, because of which we can still live a normal life despite the formidable rise of our population since then. Similarly, but not exactly, this is the case with the direct proportional relationship between technologies and economic growth.

If there is no technological progress, economic growth will remain constant at some point. The argument to this statement is based upon the fact that technology influences production, life, business, etc. And as we know, production is on the basis of wealth. Hence, difference in productivity creates difference in wealth. One of the limited resources we have is time. The day duration stays constant and the more we produce in those hours, the more we can

consume (this is how we have managed to refute the statement of Malthus to a certain extent).

To explain the phenomenon of consistent economic growth, namely that in each year the economy produces more than it produced in the former year, Robert Solow (1956), who later received a Noble prize for his contribution, introduced technological progress into his model. The development of technology increases the supply of effective labor, because by using technology the productivity of labor increases (or at least this should be the main goal of the progress). Technology prevents the decline of marginal returns to capital.

Instead of assuming that technology automatically influences the economy for no clear reason, Solow suggested that innovation can be stimulated. But here is where another question pops up – is IPRS the main stimulant for innovation? In the next paragraphs we will try to give arguments over the basic hypotheses that IPRS have influence over the innovation process and the economic growth as a whole and in wine industry in particular.

3. Intellectual Property Rights: History and Importance

Whenever people think about IPRS itself, it is about all the positive sides and the mainstream idea of the system. It is true that to some extent it has a major impact on the work of an inventor (whether it is negative or positive) and it is of great importance to the whole activity. We can use the following example as it is an exact way to describe what an ordinary opinion of a person, who hasn't made a vast research on the topic about the process, is – if we accept the inventor and his motivation as an engine, then the patent is the fuel to the engine. Moreover, it's goal is to give meaning to the work of a genius and as Abraham Lincoln stated the US patent system “*added the fuel of interest to the fire of genius, in the discovery and production of new and useful things*”. (Lincoln 1858, cited in Andrews, 2017).

As we can see the idea and the basic opinion of people to patents is mostly positive. But is the patent itself so crucial to the period of modern economic growth (the beginning) and to the process of inventing, or is it just a small piece of the big puzzle? Is the effect large enough to account for a decent part of the increase and acceleration of technological progress?

This is a vast topic to which there are a lot of views. All the opinions have to be taken into account as they all have their strong arguments. Thus, we can make a better and correct conclusion. The main idea of the patents as discussed above is securing and motivating inventors, but just as many other positive policies, it can be used in an unfavourable way as well.

Many believe that we can support the statement that IPRS made at least some contribution to inventive activity and one of their arguments is that patenting became more common after 1760, exactly when England began to industrialize. Figure 1 shows the

period between 1660 and 1851 (the last full year before the system underwent reform):

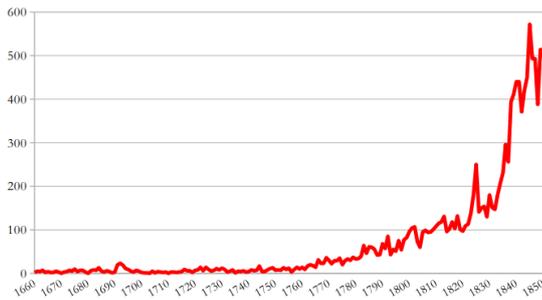


Fig. 1 English patents, 1660-1851
Source: Bottomley, S. (2013)

As we can see, the number of patents filed in Britain each year, seem to track the Industrial Revolution. But the problem here is that we cannot take this information as an evidence for the fact that patents have such a big influence – more information is needed to prove that patents had such a big role in stimulating the processes that lead to modern economic growth.

It is important to mention that Britain's patent system was not new and had many aspects in it that needed to be changed. For example, the US patent system was totally renewed when they declared independence. The British IPRS hadn't been renewed until 1852 when the big reform took place. This is why the graph is showing the number of patents until 1851 – we would like to observe the period of the First Industrial Revolution and the old patent system. Then, filing and taking out a patent was very expensive and time-consuming. For England alone the patent fee was 100£, but for the Kingdom as a whole it was 350£, without taking into account all the other costs (e.g. travelling, time, etc.). Based on the statement of Joel Mokyr (2009), he gives an example with candidate-patentee Samuel Taylor, who spent 125£ on filing a patent in 1772, and in addition had to be in London for 6 months away from his home and business. As a multiple of average earnings, the value of 125 in 1800 would equate to around 130 000£ today, and around 95 000£ in 1850. The inventor was responsible for the physical transmission of their petition through every step.

Moreover, the attitude of judges for example in this period was hostile as they considered patentees as monopolists. It is more than obvious that the whole process of filing a patent was not either easy or pleasant and because of this it has been described as "tortuous labyrinth" by Charles Dickens (1850).

However, a work suggests that the British patent system was adaptable, and that important changes really occurred to improve the whole process that a patentee had to go through (in terms of accessibility, enforceability) during the eighteenth and early nineteenth centuries (Cornish, 2010; Gubby, 2012; Bottomley, 2014). One of these improvements was the appearance of patent agents in the third quarter of the eighteenth century. This was a step of development as by employing an agent, it was no longer necessary for the inventor to transmit his petition through the different points, offices in person, and since then there was actually very little they had to do to reach the point of filing the patent. Most agents would have maintained contacts with manufacturers or investors for the benefit of their clients.

It was only around 1830, when an apparent change in the attitudes towards patentees occurred. Judicial hostility as mentioned above was replaced by a growing appreciation of the role of a patent in encouraging invention.

After the patent system was reformed in 1852, there was a sharp increase in the number of patents filed. We can derive to the fact that the whole process was problematic to the inventors.

4. Having the right of deciding the future of your invention?

Another argument that supporters of the IPRS have is that it gives the inventor the right of deciding the future of his invention. In theory, by allowing them to exclude other parties from using their invention, patents help inventors to make a return for their time and capital, invested for the inventing process, and thus incentivize the development of new technology. But did this really have such a significant impact on the development of Modern Economic Growth?

During the Industrial Revolution, inventors were able to enforce this exclusion on potential competitors. The problem here, however, is whether they could actually benefit from their inventions and use the patents to make their returns.

Even today the start of the manufacturing of an invention is a time and capital consuming process. As we saw above, agents made the links between the inventor, investor and manufacturer. But this means that the profits from their invention are not going to be fully for them. The reasons for this are:

1. Many inventors were not able to commercialize their inventions themselves this is why would either license or sell their patent. They could realize returns without going into business.

2. Some sold a portion of their patent as a part of a partnership agreement. This is how they would commercialize the invention without sufficient capital.

Of course, there were many inventors during the Industrial Revolution that failed to put their product on the market and ended their days in poverty – John Kay, James Hargreaves and Richard Trevithick. Cases like these have always questioned IPRS and its efficiency. Moreover, many of the important inventors of the Industrial Revolution viewed the patent system in a negative way and preferred not to use it. The ethics and understandings of these inventors were totally different. They stated that their motivation does not come from the materialistic side of the process. It comes from their dedication and passion to the invention activity as Claude Berthollet (Grand, 1976) wrote to James Watt – "When one loves science, one had little need for fortune which would only risk one's happiness". The same goes for the technological field as most of the engineers, Watt being an exception, were against the filing of patents.

Patents are not the only incentives for inventors, though. For example prizes in some cases could be decisive, especially in the famous case of the marine chronometer: the prize was given to all people who participated in the invention and improvement to the invention, and not only to the inventor John Harrison. The understanding of society was that if they wanted technological progress, the whole invention activity should be more financially attractive no matter whether there were patents or not. In some areas technological advancement was not so competitive, unlike the consequences of the patent system.

We could still argue further with the statement that only IPRS stimulated technological progress in the beginning of the period of Modern economic growth. It is a known fact that development in technology is a continuous process and for the faster and easier development, inventors need to build up on the technology that has been made until this very moment. But to do so they needed to have a license or to buy information of the patent holder. It was discussed above that when a patent was filed, the patentee would be given a period of 14 years (and in some cases the time could be prolonged, e.g. Watt's famous patent from 1769 to 1800) to put his invention on the market and make a return for his work. Therefore, it was highly difficult and expensive for other inventors to take the risk of investing in the knowledge without being sure that improvements could really be made. More information to the public was needed so that an improvement to products could be made and not thinking of new and similar products.

The process of building up on an invention in a free and united thinking market was termed by Robert C. Allen (1983) as "collective invention" – the main actors in technological innovation freely sharing information and claiming no ownership as the goal was development. Within the technical committees of the Society of Arts, for example, people shared ideas and "sharpened minds" with the others that were engaged in similar occupations and, thus, the process of innovation was faster. The example which Robert Allen gives in his paper is about the changes in the blast furnace practice that were developed in England's Cleveland district between 1850 and 1875. Two major improvements were made, respectively in the height and temperature of the furnace by different parties, and in the end they were combined so that all could benefit from the innovative method.

However, there are many examples of how innovation has been suppressed because of this law. One of them is the above-mentioned – the patent of James Watt, which is said to have been used for suppressing competition and keeping monopoly on the production and market of steam engines. Watt would always count on patents and this way the improvement to his steam engine would be left to no one except for him. Even when the Hornblower engine was put into production in the 1790s, Watt and his partner Mathew Boulton used the full force of the legal system to stop it.

After the expiration of Watt's patents there was an explosion in the production and efficiency of engines and this is **a key argument that patents in some cases suppressed invention activity**. It was then when steam power came as the driving force of Industrial Revolution. Crucial inventions such as the steam train, the steam boat and the steam jenny came into usage. One of the key innovations was the high-pressure steam engine. Most of them were available by 1804. But not before Watt's patent expired as none of the inventors wanted to face the same fate as Jonathan Hornblower.

One last example we would like to give is with Ireland, which possessed a patent system that derived directly from the one in England, yet it saw very little inventive activity in the eighteenth and nineteenth centuries (Bottomley, 2013) and remained an extremely poor and agrarian society – tragically evidenced by the Great Famine of 1845-1849. So society and the quality of life do matter and not only IPRS.

5. Patents in Wine Industry

Many authors investigate the patents established in wine industry based on the specifics of the product focusing on the essentials that different varieties of grapes, strains of yeasts, and technologies produce different types of wine. The well-known variations result from the very complex interactions between the biochemical development of the fruit, reactions involved in fermentation, and human intervention in the overall process. The researchers state that the final product may contain tens of thousands of chemical compounds in amounts varying from a few percent to a few parts per billion.

Baiano et al. (2013) report a detailed description of patents dealing with vine, microorganisms, additive, methods and apparatus, sensors usable to monitor the process, serving of wine, packaging, storage, and preservation. The review presents a summary of the main European, United States and International patents available on wine production and preservation. They describe the purpose of patents in wine industry and different patents varieties, i.e. patents in vine like Chardonnay I10V1-S, etc.; in microorganisms - for instance the European Patent EP 0226328 A3, WO 175774 A1, etc.; additive - the patent WO 119572 A2, EP 1964913 A1, WO 172147 A1, etc. In this context, their conclusion states that to obtain and to keep the highest censored properties by the exploitation of the potential characteristics of grapes must be achieved by combining **innovative producing and aging technologies**. In fact, it is possible to modify the grape expression by applying different wine-making procedures.

Another lesson that can be learned from the patent explosion is the rise of patent warfare. The question is basic in discussions and researches in USA stated that after the law changed on business-method patents, financial companies had to start dealing with patent-enforcement entities and numerous and continual threat letters of patent infringement, continually obtaining advice from counsel in order to deflect a finding of willful patent infringement if the companies were ultimately sued. Furthermore, and most relevant to wine, many of the larger patent-enforcement entities are universities. Universities are seeking to make money from their novel research and have not been hesitant to sue for patent infringement. In the wine industry, one of the largest U.S. patent holders is the University of California, Davis, which holds patents in many aspects of wine production, including patents on unique types of grapes themselves. The University of California and UC Board of Regents are no strangers to patent infringement cases in federal court in other technologies.

When most people think of patents, they think of new machines, new medicines, or improved manufacturing processes. Based upon the report of Brian Kaider who is a principal of an intellectual property law firm (called Kaider Law), these inventions are protected by "utility patents." Some people may also be familiar with "design patents," which protect a novel ornamental design. But, there is a third class of patents with which most people are unfamiliar, "plant patents." As the name suggests, plant patents protect new plant varieties, such as a new strain of wine grape vine. Plant patents are a useful tool to protect new varieties of grape vines.

Growers should be aware not only of the ability to protect their discoveries, but of the basic requirements to obtain patent protection and the actions that may potentially jeopardize their opportunities to seek protection. A knowledgeable patent attorney, engaged early in the process, can help to identify those new varieties that are eligible for a plant patent and to avoid waiving potential patent rights.

6. Conclusion

Technological progress was and is a key factor for the development of an economy, and inventions and innovations are a crucial part. As we saw throughout the paper, patents are not the only incentives for inventive activity. Even if they were, they can be used both in a way that stimulates technological progress or suppresses it as it is with the example of Watt.

The role of IPRS in the period of the beginning of Modern economic growth was, to some extent, to promote ownership. Based on the economic researches, we tend to see patents as one of the most important factors of the process but when it comes to an inventor and more specifically the inventors from the specified period mentioned above – they were not motivated primarily by the desire to maximize profits. Of course, that does not mean that money is not an important figure for them, but their goals and priorities were on a higher scale.

To sum up, no matter whether the influence of IPRS was positive or negative in some cases, the role of it was evident and it changed the way people thought when it came to inventions. This is a topic for discussion, and as always there were different opinions of inventors of the system. The most important part, however, was that patents did not have that big of an influence in this period but they are as important as any other incentives. And although most parts of the paper are not in favour of the statement that IPRS had a big influence on the period of Modern Economic Growth, we would like to end with the following quote of Mark Twain: *"A country without a patent office and good patent laws is just a crab, and can't travel any way but sideways and backwards."*

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