
Impact assessment after the first year of the new Spanish Patent Law

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Abstract: The new Patent Law 24/2015 has produced a revision and an update of the invention protection system in Spain. This new legal framework aims to modernise and adapt the system of granting patents to the most developed countries and to promote a quality patent system that helps the internationalisation of companies. The article analyses the impact of a set of indicators, at quantitative and qualitative levels, in the short period of time that has elapsed since the entry into force of the new law, and has allowed identifying some trends that should be studied in the next years. From a quantitative point of view, there has been a decrease in the number of patent applications. Nevertheless, from the qualitative perspective, it can be affirmed that the objectives related to the increase in the quality of patent applications established in the new Patent Law are being met.

Keywords: patents; Spanish patent law; utility models.

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1 Introduction

Evaluation of public policies is a central aspect of the activity of public administrations in most advanced countries. Over the past, it was oriented towards an improvement of public management in terms of economic control and legal compliance. Nevertheless, within the current political context, evaluation appears to be linked to social aspects and democratic transparency, together with a strong relationship with publicity policies and plural participation of the different stakeholders (Vedung, 1997; Newcormer et al., 2004). Public administrations need to understand and quantify the complex problems targeted by their policies. This issue requires analysis elements that go beyond atomised or out of context studies based on mere administrative controls (Khandker et al., 2004).

In Spain the new Patent Law 24/2015, came into force on April 1st 2017, has produced a revision and an update of the invention protection system. The Law preamble establishes the need to strengthen the Spanish patent system, shifting from a framework where the focus was on the fact of patenting to a new situation where emphasis is given to promoting economic activity that demonstrates true novelty, innovation and inventiveness. The main objectives of the new legal framework are:

- 1 to modernise the Spanish patent system whose prior Patent Law 11/1986 dated back to the entry of Spain in the European Economic Community (now the European Union)
- 2 to adapt the legal framework by aligning it to the regulations of the most advanced countries
- 3 to consolidate a repeatedly modified and disperse regulation developed during the last 30 years
- 4 to promote a quality patent system that helps to the internationalisation of Spanish companies.

In accordance with these objectives, procedures are simplified and regulations are adapted to the intellectual property international standards, favouring the internationalisation of Spanish companies.

The adaptation of the Spanish regulations and their alignment with international regulations and the treaties that bind Spain, and the homologation of the Spanish protection system to the European standard imply, in principle, an update and an improvement of the protection system (Hidalgo et al., 2010). However, this theoretical

modernisation has incorporated a set of potential risks that are inherent to the objectives pursued. These risks are related to the effective achievement of improving the patent system, its feasibility to achieve the protection alternatives that provide greater coverage and guarantee an improvement in the quality of patents granted. These issues are linked to the effective fulfilment of the specific objectives and motivations of the new Law. There are also other external risks that may overlap and influence the analysis of the new Spanish legal framework, among which is the transition from a deep economic crisis during the last decade to a new economic cycle of growth (at least from a macroeconomic perspective), the strength or fragility of the innovative sectors, or the possible implementation of a unitary patent system at European level (the unitary patent) that in practice can extinguish the national patent systems that, like the Spanish one, remain in force.

The impact assessment of the legal change would imply technical, legal, administrative, economic and social aspects. These effects will vary over time, so to obtain better founded conclusions and with a greater scope it will be necessary to analyse a longer period of time that allows us to consider that the new legislative framework has stabilised. Long term uncertainties around the invention protection system are large and can be influenced by many external and unrelated factors, making it difficult to extrapolate potential conclusions to larger horizons (Hidalgo and Gabaly, 2013). However, it may be useful to analyse the information available since the initial validity period of Patent Law 24/2015, in order to establish short-term trends.

A large number of changes are derived from the updating of the Law, but currently only a limited number of available results can be evaluated after Law 24/2015 has entered into force. Therefore, it is an evaluation of results, since an evaluation of the design of policies or the implementation of practical aspects is out of scope. In addition, this legal change is expected to produce long-term effects, but only the data and indicators available at the date of this study have been taken into account, both from qualitative and quantitative points of view.

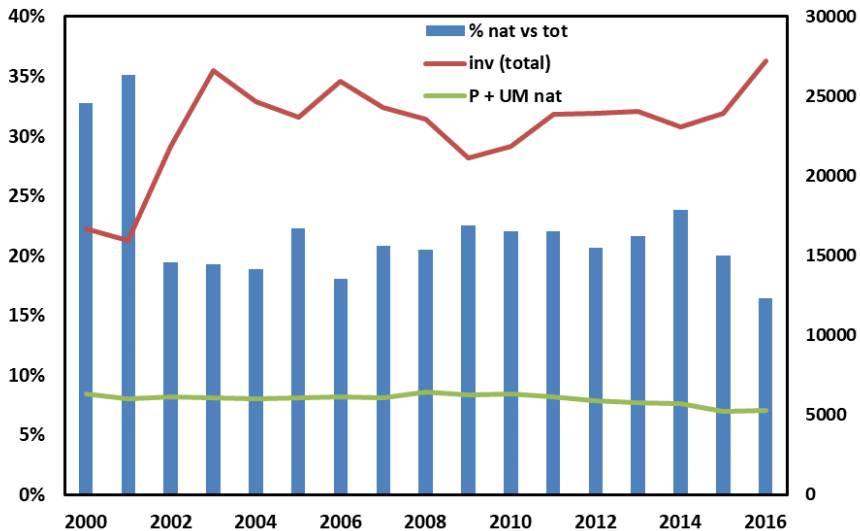
Starting from this background, this study performs an evaluation of the legal framework modification by analysing the main impacts on the Spanish invention protection system. The goal of the paper is to analyse, through an integrated approach, the evaluation of the impact due to the recent change in the Spanish Patent Law. This paper is organised as follows. In Section 2 a review of the recent evolution prior to the Law change is performed, and Section 3 analyses the methodological aspects. In Section 4, the results concerning selected indicators are presented and discussed and including other indicators especially related to patent quality is revised and finally the conclusions of the study are outlined in Section 5.

2 The recent evolution

The recent evolution of granted industrial property titles with validity at the national level is depicted in Figure 1, showing both in absolute and relative terms the relationship between inventions protected through the national system (as a sum of patents and utility models) versus the total number of protected inventions (including additionally European patents validated in Spain and PCT applications that have followed the national phase procedure). It covers last years (2000–2016) of the previous 11/1986 Patent Law.

Inventions protected through the national system were 32.8% of the total number of valid titles in 2000, but represented only 16.4% in 2016. These data show that both national patents and utility models have reduced their importance in the last 15 years of the Patent Law 11/1986 and clearly reveal a decline of the national system protection as compared to the protection given essentially through the European patent application system.

Figure 1 Evolution of granted patents using the national system versus the total number of valid IP titles in Spain (2000–2016) (see online version for colours)



The data in Figure 1 also allows us to identify the different scales of magnitude to which protection is granted through the different intellectual property titles in Spain. The validation of European patent applications granted is, to a large extent, the most important category of valid intellectual property titles. In addition, applicants for national patents and utility models are of Spanish origin (companies, private persons or research centres located in Spain), although through the European route, the origin of the applicants is mainly foreign. Applicants for national patents during the period analysed included a large part of the foreign applicants at the beginning, but they are almost exclusively national at the end of the same period. The analysis of this situation highlights that the protection of innovation has grown in Spain in absolute numbers in the last two decades, but has been based mainly on protection through the European system and not through national patents or utility models. Spain is an attractive country when seeking protection through the European system and the beneficiaries are mainly foreigners (not Spanish citizens or companies).

From a legal and administrative point of view, the gap between the national patent Law and the evolution of international and European protection systems produced comparative disadvantages for those who follow the path of national protection, something which could damage legal security. This fact was motivated by the different granting and examination procedures in both cases. In the case of the Patent Law 11/1986, the applicant could choose a ‘general procedure’ in which, even in the case of receiving a negative search report (SR – IET in the Spanish procedure) with respect to the requirements of patentability, this was not an obstacle to, without further examination,

obtaining a valid title. This type of procedure generates what can be called a ‘weak’ patent, since it is granted even with an initial negative evaluation. On the other hand, and parallel to this ‘general procedure’, a procedure with preliminary examination was also established from the year 2002. The applicant could be awarded a national patent title only upon passing a complete examination of the patentability requirements before granting. With this procedure it was intended to provide a ‘strong’ patent. The result obtained was that the establishment and maintenance of two different procedures for granting equally valid patent titles was generating a legal uncertainty when at the same time ‘strong’ and ‘weak’ patents were valid.

In terms of procedures and administrative management, the national patent system was not adapted to a competitive environment with international procedures that have evolved over the last few years to more integrated and flexible systems. The granting procedure established by Law 11/1986 was sequential and was based on successive stages (formality examination, technical examination and search report 15 months after the filing date), unnecessarily postponing the essential issue of obtaining a search report as soon as possible and, in any case, before the end of the one-year priority period. By not incorporating these requirements into the procedure, it is not possible for the applicant to plan its commercial strategy, especially in the case of needing an international extension of the initial national protection. In addition, the oppositions prior to the concession unnecessarily delayed the procedure, since the terms were too short (two months) to be effective for potential opponents. This situation caused constant delays in the concession procedure and was clearly different from the post-concession opposition systems existing in other national systems and in the European patent procedure.

In the case of minor inventions through utility models, the protection procedure was obsolete for several reasons. In the first place, the determination of the current state of the art with Law 11/1986 was related to the previous version in Spain. But the concept of relative or ‘national’ novelty has ceased to make sense, since before 1986 there were no access possibilities that currently exist to all types of information and documentation through digital technologies or the Internet. Nowadays, most of the technical information is accessible through databases and publications on the Internet. Second, the ease of protection through the utility model title can generate distortions in competitive environments because it is a title granted without examination or search report, and only depends on oppositions from third parties during a short period of time after publication. Even if there has not been a significant modification in the procedure for granting a utility model with respect to this problem, it is now required that a search report is requested before initiating any legal dispute, which must remain compatible with a fast grant delay. In addition, the type of inventions that conform to this title was excessively restricted, allowing in practice only mechanical devices.

3 Methodology

As explained in section 1, the analysis is carried out in the context of the legal change and during the period since the entry into force of the new Patent Law (April 2017). The number of variables that can potentially influence the activities related to the protection of inventions is large and difficult to cover in this study. However, it is necessary to clarify and quantify the most relevant to analyse the impact of the legal change. Due to

the short time elapsed, the methodology will be based on the quantitative analysis of a set of indicators grouped according to the criteria aligned with the targeted objectives inspiring the legal change. These indicators are the following:

- Related to the promotion of innovation: total number of applications and granted patent and utility model titles, applicants types (private persons/entrepreneurs, SMEs, universities, research centres, large and multinational companies), and quantification of administrative fees reduction.
- Related to the improvement of the administrative procedures: duration of the procedure for processing patents and utility models, and ratio of electronic/paper applications.
- Related to patent quality: percentages of patents and utility models expired and withdrawn over time.
- Related to competitive risks: Spanish applications to the European and PCT systems.

The analysis of the short-term effects of these indicators is interesting since they can provide a perspective of what may happen in the long term, although the impact of each one will be different depending on its design. As an example, regarding the indicator of the number of patent applications, the impact of the legal change is immediate, since it is an indicator affected from the beginning of the administrative procedure after the entry into force of the new Law. For its part, the durations of administrative procedures, since they are intrinsically long, will evolve in a slower way even in the case of a legal change.

It is important to point out at the methodological level that patent applications submitted before April 1st, 2017, continue their procedure in accordance with the previous Law 11/1986. This fact has given rise to a transitory effect consisting in the fact that a significant number of patent applications have been artificially activated due to the legal change, just before the entry into force of the new Law. As a consequence, the duration of the procedure is expected to increase due to this transitory effect. To mitigate, or even exclude, this undesired effect in the analysis, some outliers have been identified within the available data and a monthly analysis has been made before the entry into force of the new Patent Law.

4 Results and discussion

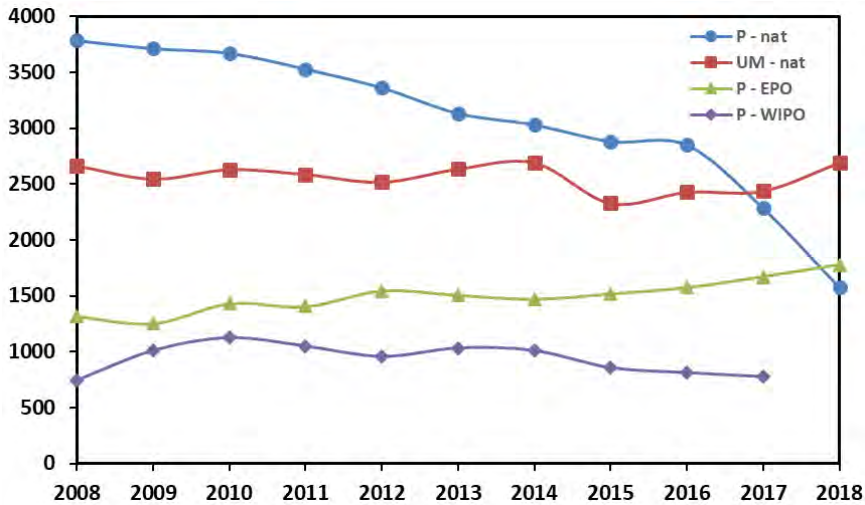
4.1 *Indicators related to the promotion of innovation*

Within this context, the indicators related to the total number of applications and granted patent and utility model titles and quantification of administrative fees reduction are analysed.

Figure 2 shows the evolution of the number of patent and utility model applications, European applications with a Spanish origin and international PCT applications with Spanish origin from 2008 to 2018 (EPO, 2018). A clear evolution can be identified with respect to the different application indicators. It has to be noted that Spanish Laws (both, prior and current) allow protection through two types of titles (patents and utility models, both represented separately), whereas European and international procedures only allow protection through patent titles. This period of time begins in 2008, when the economic situation could be considered positive, includes the years 2009 to 2012 that were

characterised by a strong economic crisis at national and global scales, and ends with the recent recovery period of the last years (2013 to 2018). Given that it is a long period of time, it allows analysing this indicator with a certain perspective and, at the same time, the evolutions of the patent protection system during the last years of Law 11/1986. It also includes, even if it is shorter, data from the entry into force of Law 24/2015 (2017, partially, and 2018).

Figure 2 Evolution of the number of applications of national patents and utility models, European patent applications of Spanish origin, and international PCT applications of Spanish origin (2008–2018) (see online version for colours)

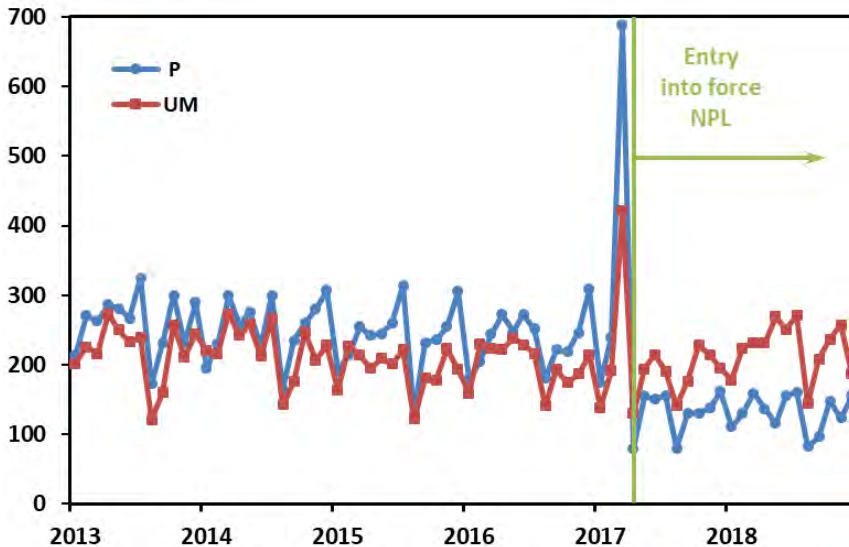


During the period 2008–2018, national patent applications (P-nat) have decreased continuously (in total –58.3%). This decrease has been emphasised importantly from the year of the entry into force of the new 24/2015 Law (in practice –19.8% between 2016 and 2017 and –30.1% between 2017 and 2018). On the other hand, utility model applications (MU-nat) have been, although some oscillations, more steady, but with final values slightly higher than the initial ones (in total +1% from 2008 to 2018 and with +10.3% from 2017 to 2018). This evolution has caused that, for the first time in the last 10 years, the number of utility model applications has surpassed the patent applications, exactly from the year of entry into force of the new Law (2017). Moreover, it can be observed that the number of European patent applications with Spanish origin (P-EPO) has increased consistently over the same period (in total +34.7% from 2008 to 2018). A higher increase can be observed during year 2017 with respect to the previous years (+7.4% between 2016 and 2017), reaching by the end of the period a record figure (1,776 in 2018). Finally, PCT applications with Spanish origin (P-WIPO), even if during the first years of the period they have increased, during the last years they have turned to decrease rates in such a way that for the whole period initial and final values present only slight differences (in total –4.9% from 2008 to 2017).

Figure 3 shows the monthly evolution of the number of national patents and utility models applications between January 2013 and December 2018. Considering a general decreasing envelope in both cases, the first result of the legal change is clearly observable during the two months previous to the entry into force. Applications were extremely high,

what can be considered outliers from a statistical point of view. Clearly a ‘call effect’ has been detected with a very high number of national applications concentrated just prior to the legal change. This affects both types of titles (more in the patents case) and all types of applicants even though the increase is mainly due to private person applications, as it can be deduced from an analysis of applicant types.

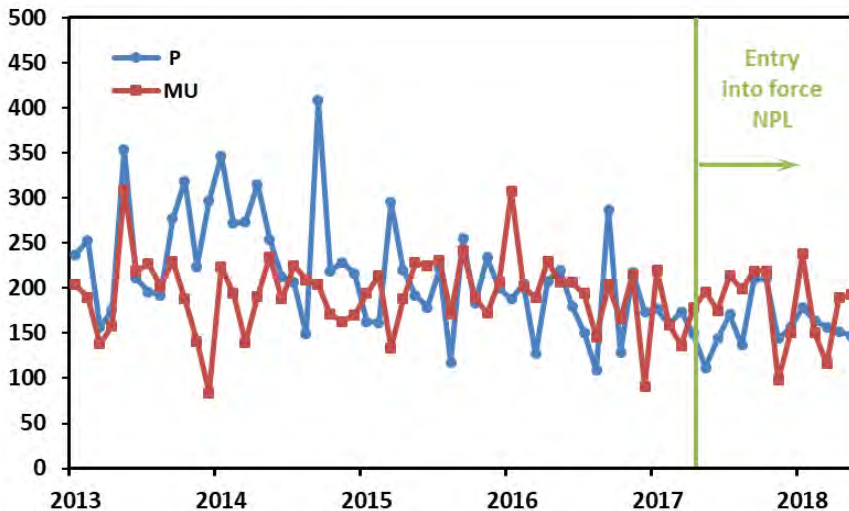
Figure 3 Monthly evolution of national patent and utility model applications (Jan/2013–Dec/2018) (see online version for colours)



A second fact is observable since there is a crossing point between both curves representing respectively national patents and utility models. The ‘call effect’ has affected also utility models even if, with the legal change, there has been no substantial difference in the granting procedure for this title type (novelty is analysed at a global level instead of at a national level). This can be surprising and would justify qualifying this situation as a ‘call effect’, since there is no clear reason that supports the spectacular increase in the case of utility models. In general, utility models have been less affected by the legal change because the granting procedure has not changed, and equally important, the required fees have not changed either (much lower compared to those of national patents). In the case of patents, the fees have increased significantly due to the mandatory requirement to conduct a preliminary examination and, in addition, the possibility of deferring the payment of fees for private persons has been eliminated, as has also occurred with the exemptions for public universities.

Figure 4 displays the monthly evolution of granted national patents and utility models between January 2013 and December 2018. It is noteworthy that, unlike the information provided in the applications for national patents and utility models (Figure 3), during the months prior to the entry into force of the new Law, there are no atypical data. It can be emphasised that the national patents and the utility models that were presented and, therefore, initiated the processing procedure when the previous Law 11/1986 was still valid, continue the administrative procedures as established in that Law. Applications submitted after April 1, 2017 follows the new procedures established in Law 24/2015.

Figure 4 Monthly evolution of national patent and utility model grants (Jan/2013–May/2018)
(see online version for colours)



It is important to bear in mind that the awarded titles depend on the administrative procedure itself, but also on the people involved, which includes both the workload of the examiners and the applicants themselves. By linking this to the fact that the time of the procedure is long (several months for utility models, and even more for patents) and that there is a variability between each application because each one is independent of the rest, the effects on the legal change in the terms of the grants of titles are much more diluted and postponed than in the case of applications. During the first 12 months of the new Law, only 18 patents have been granted with the new procedure, while the number of utility models in the same period has been 1624, which is a consequence of the procedure for utility models which is much simpler and grant times are much lower. Finally, during the last years, a decrease in the number of grants is consistent with the decrease in the number of applications, with a greater number of utility models granted than that of patents since 2016.

A t-test was performed comparing the means of the first year of validity (between May 2017 and April 2018), with the average values of the previous years and with the average of the entire period 2013–2016. This test shows that when comparing the average values obtained from the period 2013 to 2016 (even if there was already a decrease in the number of applications within this period) with the data obtained for the first year of validity of the new Law, with a level 95% confidence, it can be said that there is a significant decrease in the mean of applications (p -value < 0.01). The same test does not allow affirming that there could be significant differences, for example, between the data for the years 2013 and 2014, with the same level of confidence. For the following years, the inter-annual differences begin to be significant.

In relation to the fees corresponding to the procedures of patents and utility models, there have been no changes in their amounts with the new Law. However, there are three specific aspects that incorporate some changes with respect to the previous legal framework. The first is the elimination of postponements of rates for private individuals with low incomes. The second is the elimination of the fee exemption for public

universities, which has been transformed into a 50% reduction in the rate with respect to general rates. The third is the new reduction of 50% of the fees for entrepreneurs and SMEs.

In the first case, the elimination of the ‘benefit of poverty’ has had positive effects, since the number of patent applications from private individuals abusing of this benefit has decreased. A large part of these applications did not present an interest from the perspective of innovation, since they were either denied or, if granted, the corresponding fees were not paid by the applicants and, on the contrary, they consumed operative resources of the SPTO. This ‘poverty benefit’ can only be applied to private persons and not to other types of applicants, and is considered critical to understand the ‘call effect’ when the new Law 24/2015 came into force. On the other hand, the modification of the fee regime applied to public universities is coherent with the previous legal framework, since there continues to be an economic incentive but linked to the effective exploitation of the protected invention. In this way, public universities can obtain a 100% refund of fees (exemption in practice), if they prove that the invention is commercially exploited. Although the first effect of this modification has been a reduction in patent applications by public universities, it is expected that the real effect of this modification will be positive in the medium and long term.

Finally, the objective of promoting the use of intellectual property titles by SMEs and entrepreneurs is implicit in the 50% reduction in the fees they have to pay. Although we are at an early stage to evaluate the impact of this measure, preliminary results show that approximately 10% of patent applications benefit from this reduction. Data available for the first validity year of the new 24/2015 Law (from April 1st 2017 to April 1st 2018), show that for 375 applications (national patents and utility models) that requested a fee reduction, 333 (89%) obtained it, whereas in 42 (11%) cases it was rejected. It should be noted that 3903 applications for national titles were filed during the same period, of which 9.62% of the applications applied for a fee reduction, and 8.54% of the total applications went through the procedures with reduced fees. One objective of the new Patent Law is to increase these figures in the coming years.

4.2 *Other indicators*

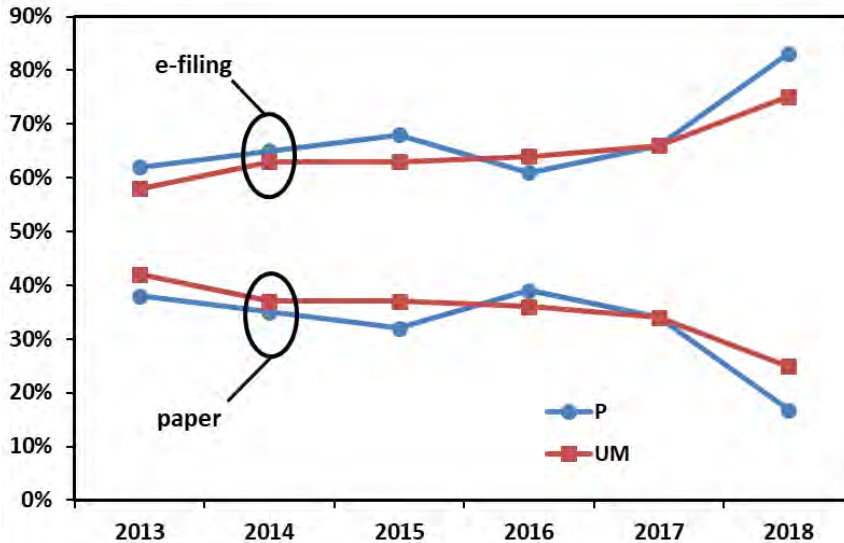
In this section we analyse the indicators related to the improvement of the administrative procedures, patent quality and competitive risks. Currently, the use of procedures based on electronic administration is widespread in public administrations. For this reason, it is interesting to analyse the impact of some indicators related to this type of procedures such as:

- 1 the proportion of paper/electronic applications
- 2 the duration of the procedures for the granting of patents and utility models.

Figure 5 shows the evolution of the percentages of paper and electronic applications for national patents and utility models filed between 2013 and 2018. This figure clearly indicates that electronic filing has notably increased over the last 5 years, moving for the patent case from 62% in 2013 to 83% in 2018. At a lower rate, utility model applications with electronic filing have increased from 58% in 2013 to 75% in 2018. As a summary we can highlight two relevant aspects: on the one hand, the electronic applications of national patents and utility models have increased continuously during this period and, on

the other hand, the increase has been even more important after the entry into force of the new Law, which applies to both types of applications. This behaviour could be anticipated from the fact that all public administrations have implemented e-government systems to manage and process citizenship requests and also to the fact that, more specifically, IP sector professionals (industrial property agents) are obliged to perform their documentation exchange with public administration by electronic means exclusively.

Figure 5 Evolution of national patent and utility model applications through electronic filing or using a paper application (2013–2018) (see online version for colours)



The mean time to generate a search report (IET) for a patent application, a prerequisite for granting the patent, is analysed in the following. With the previous 11/1986 Law, patents could be granted by two procedures: through the general procedure (without preliminary examination) and through the preliminary examination procedure. As a consequence, grant times varied strongly depending on the procedure followed by each application. The new Patent Law eliminates the general procedure for granting patents and only applies a preliminary examination procedure.

Figure 6 shows the mean time to generate the first search report for national patents between 2008 and 2018. There is a clear reduction in the average time in three situations that indicate whether the application has been discontinued or not due to formal defaults and a mean time considering these two cases. It is evident that if a formal error in the application is detected and it is discontinued, the mean time will increase explaining why these two situations are separated using this criterion. The reduction of time in this period of ten years has been two to three times the time of 2018. It is noted that during the last three years the average time to generate the search report has stabilised around ten months, a figure that the Spanish Patent and Trademark Office (SPTO) considers relevant for this indicator in order to allow the applicant having the search report before the end of the 12 month priority period after the filing date.

Figure 6 Evolution of the mean time to generate an initial search report for a patent application (2008–2018) (see online version for colours)

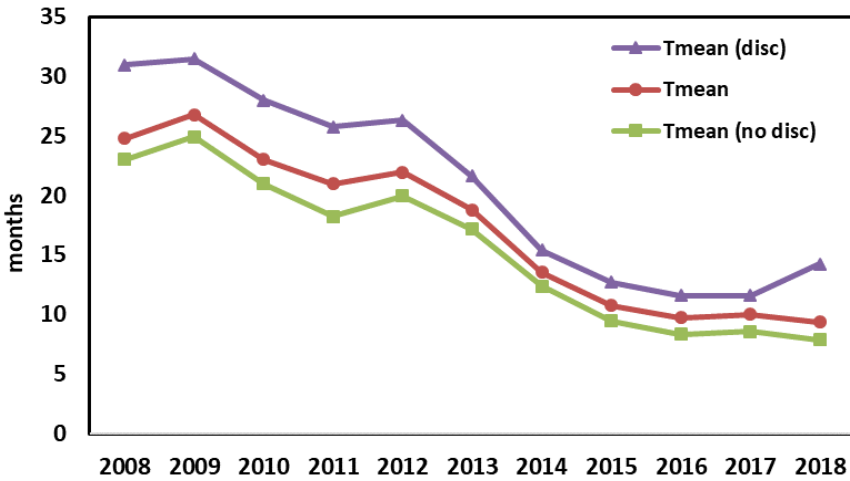
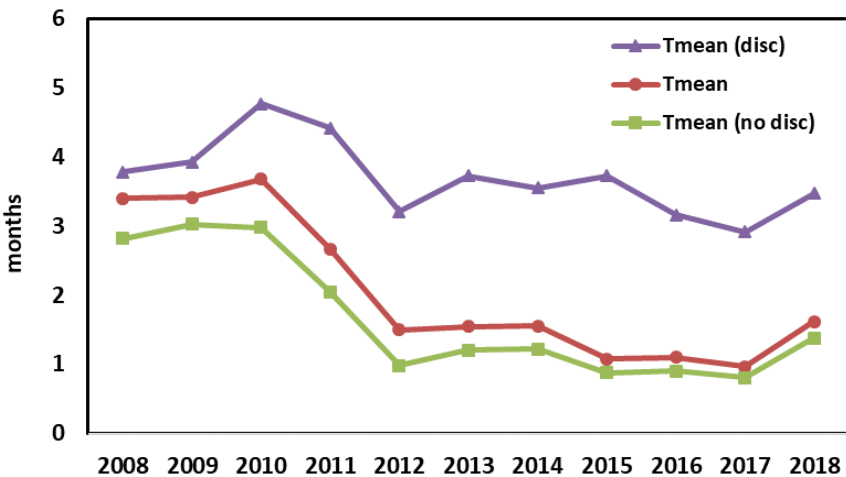


Figure 7 Evolution of the mean time to publish a utility model application (2008–2018) (see online version for colours)



Utility models do not require a search report before publication, so the granting procedure is simple and short. Therefore, it is not possible to use the same indicator for both types of titles. Figure 7 shows the evolution of the average time to publish a utility model application in the period 2008–2018. Even if the time scale is much smaller than that used in the case of patents, the evolution follows a trend similar to that of patent search reports. In recent years there has been a large decrease in the time of the procedure towards a stability threshold around 1 to 2 months.

Next, the indicators related to the quality of patents are analysed: the evolution of

- 1 expired titles
- 2 abandoned applications of patents and utility models.

These indicators, as they try to measure the quality of a patent, have a strong subjective component, since they have a direct relationship with the economic value given to their intellectual property titles by the applicants (when they have not yet been granted) or the holders of the titles (when granted). The data related to expired and abandoned patents are considered as quality indicators of the applications, since they provide information on the value that the applicant gives them.

The expired titles are those titles granted that are no longer valid, which can happen due to different reasons but, mainly, because the annual fees have not been paid or, less frequently, due to the voluntary resignation by the applicant. In the national context, it should be noted that the initial application fee covers the first two years of validity of each title, and that annual fees are only paid from the third year after the filing date of the application. Table 1 shows, for each year in the period 2012–2017, patents and utility models expired in absolute and relative terms based on the total number of applications granted in each year. There is a clear difference between patents and utility models. The percentage of expired utility models increases rapidly from the effective date of payment of maintenance fees (from the third year of validity), and is higher than 40% in the fourth year of maintenance fee payment (sixth year of validity). A strong increase is observed in the fourth year of validity and the expiration date increases from 8% to 26%. In the case of patents, the expired titles are very low (less than 1%) for the same timeframe, which highlights that once the title is granted the applicant pays maintenance fees to maintain its validity. These data clearly indicate that applicants keep their securities active whenever they are useful and provide them with a mainly economic or legal benefit.

Table 1 Patents and utility models expired as of June 1st 2018

<i>Patents</i>				<i>UM</i>			
<i>Year</i>	<i>Applications</i>	<i>Expired</i>	<i>% expired</i>	<i>Year</i>	<i>Applications</i>	<i>Expired</i>	<i>% expired</i>
2012	3,361	8	0.24%	2012	2,517	1,011	40.17%
2013	3,133	8	0.26%	2013	2,633	932	35.40%
2014	3,031	6	0.20%	2014	2,689	697	25.92%
2015	2,882	2	0.07%	2015	2,328	181	7.77%
2016	2,849	0	0.00%	2016	2,427	1	0.04%
2017	2,286	0	0.00%	2017	2,438	0	0.00%

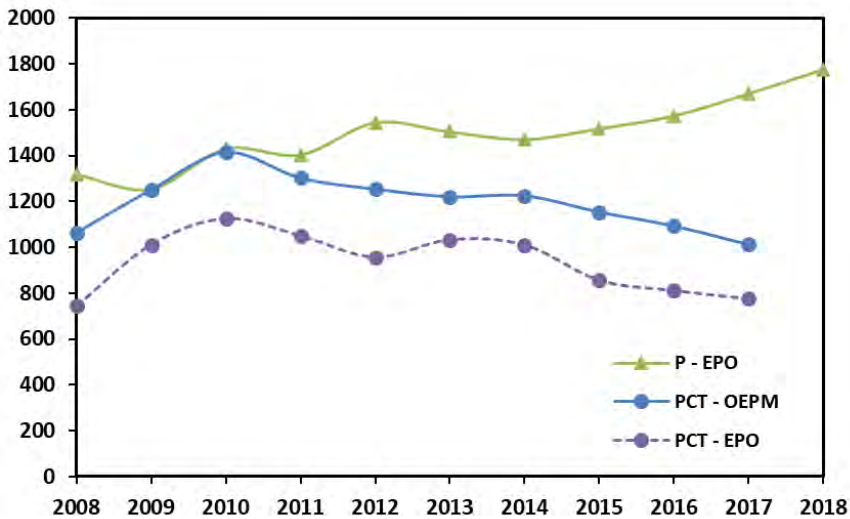
Table 2 Patents and utility models withdrawn on June 1st 2018, as a function of the filing year

<i>Patents</i>				<i>UM</i>			
<i>Year</i>	<i>Applications</i>	<i>Withdrawn</i>	<i>% withdrawn</i>	<i>Year</i>	<i>Applications</i>	<i>Withdrawn</i>	<i>% withdrawn</i>
2012	3,361	67	1.99%	2012	2,517	33	1.31%
2013	3,133	42	1.34%	2013	2,633	12	0.46%
2014	3,031	24	0.79%	2014	2,689	6	0.22%
2015	2,882	34	1.18%	2015	2,328	5	0.21%
2016	2,849	50	1.76%	2016	2,427	2	0.08%
2017	2,286	115	5.03%	2017	2,438	23	0.94%

The same methodology is applied to analyse the applications withdrawn for patents and utility models, that is, those that do not end with a title granted. As a relevant characteristic, it can be observed in Table 2 that the retired patent applications increase significantly (from 2% to 5%) as of 2017, coinciding with the entry into force of the new Law. This could be interpreted as an increase of the filtering applied by the new patent granting procedure and, therefore, as an indication of the increase in the quality of the patents that are finally granted. Patent applications that have problems from the beginning during the procedure are abandoned by their applicants. On the other hand, utility models have lower withdrawal rates than patents (less than 1%), despite having increased in 2017.

Finally, an analysis of the competitive risks for Spanish patent systems through the evolution of applications to international systems of Spanish origin is carried out: the European patent system (EPO) and the PCT international patent system (WIPO). In this case, it is not possible to perform the analysis for utility models since these systems do not have protection for this type of title.

Figure 8 Evolution of the number of applications with Spanish origin to the European system (P-EPO) and to the PCT system (PCT-OEPM) (see online version for colours)



Note: The latest PCT-EPO follows the regional phase in the EPO: 2008–2017.

Figure 8 shows the evolution of patent applications with a Spanish origin presented in each of the international receiving offices. The SPTO can act as an International Searching Authority (ISA) in the PCT system. There are two clear trends in European (P-EPO) and international (PCT) patent applications. European patent applications have increased continuously in recent years, highlighting an increase of 7.44% between 2016 and 2017. The figures for EPO applications are currently comparable to national system patent applications or even higher, since in 2018 there were 1,576 national patent applications and 1,776 EPO applications. This situation should be confirmed in the coming years, but it should be noted that the interest in European patents has increased in recent years, replacing national applications. However, the legal change is too recent to draw conclusions of a significant nature. In this context it is important to highlight that

the profile of the applicant for European patents is more oriented to large private companies or large public research centres, such as the Higher Center for Scientific Research (CSIC) and some public universities. For its part, the PCT system presents figures for patent applications decreasing as of 2010, which has the effect of reducing PCT applications that follow a regional EPO phase (PCT-EPO curve). As in the case of European patent applications, this long-term effect will have to be confirmed in the future.

5 Conclusions

At a global level, it has been observed that the economic crisis initiated in 2008 is the reason for the destruction of a large number of companies that operated only within national economic markets and were not able to internationalise their activity. From the strategic viewpoint of those companies, protection of inventions can have at least two purposes:

- 1 obtain an intellectual property title that allows dissuade other competitors who intend to use a certain technology
- 2 allow the commercial exploitation of a research development in exclusive and advantageous conditions with respect to its competitors.

In this second case, the invention has to be clearly disruptive and target a specific market in which, operating under exclusiveness conditions, higher business margins can be obtained due to the protection obtained from the intellectual property title. There are also important differences between companies based on production and those based on knowledge generation and innovation. In general, companies that are highly oriented towards productive aspects are more reluctant to protect manufacturing procedures, since it is a knowledge that they prefer to protect through industrial secrecy (even if it also has some disadvantages).

The Spanish patent system has begun a new stage with the legal change and the entry into force of the new Patent Law 24/2015. Undoubtedly, the entry into force of this new regulatory framework has involved a change that is demanding from the main economic agents an adaptation effort. The analysis carried out in the short period of time that has elapsed since its entry into force on a set of indicators has made it possible to identify some trends that need to be studied in the coming years.

From a quantitative point of view, there has been a decrease in the number of patent applications since the entry into force of Law 24/2015. A total of 1576 patent applications and 2689 utility model applications were generated, representing respectively 40% and 60% of the national invention applications received by the SPTO. Another factor related to patents is the increase in applications with Spanish origin to the European patent system, which in principle is not due to a deviation of the national patent applications to the European patent system, since the applicants and their typology are not the same in both cases. European patent applications are a useful medium for large companies that develop their activity in international markets, while they can be dissuasive for private persons due to their higher fees. Private persons still represent a high percentage of applicants in the national system.

From the qualitative perspective, it can be affirmed that the objectives related to the increase in the quality of patent applications established in the new Patent Law are being met. In this context, it is worth highlighting the implementation of the obligation that all patents requested have to pass a preliminary examination of patentability, the improvement of administrative procedures by increasing the proportion of applications by telematic means compared to requests in paper and the reduction of the times for the granting of patents and utility models, as well as the indicators related to expired and withdrawn applications that are beginning to provide sensitive improvements.

Finally, we must bear in mind that the mere fact of protecting a technological development or a technical creation has no value in itself, but must be based on a true innovative activity, essential to generate value, wealth and prosperity. Increasingly, patent protection systems tend to favour companies and research centres that are truly innovative and that generate social and economic value. Therefore, in an increasingly competitive and knowledge-based economy, this type of instrument is a necessary tool to promote social and economic progress. In the case of Spain, all these aspects are clearly reflected in the spirit and text of the new Patent Law that aims to provide a solid legal framework for the country's innovative activity. It will only be in the long term until its effects can be fully assessed.

References

- European Patent Office (EPO) (2018) *Annual Report 2017* [online] <http://www.epo.org/about-us/annual-reports-statistics/annual-report/2017.html>
- Hidalgo, A. and Gabaly, S. (2013) 'Optimization of prediction methods for patents and trademarks in Spain through the use of exogenous variables', *World Patent Information*, Vol. 35, No. 2, pp.130–140.
- Hidalgo, A., Molero, J. and Penas, G. (2010) 'Technology and industrialization at the take-off of the Spanish economy: new evidence based on patents', *World Patent Information*, Vol. 32, No. 1, pp.53–61.
- Khandker, S.R., Koolwal, G.B. and Samad, H.A. (2004) *Handbook on Impact Evaluation. Quantitative Methods and Practices*, World Bank, Washington DC.
- Newcomer, K.E., Hatry, H.P. and Wholey, J.S. (2004) 'Meeting the need for practical evaluation approaches: an introduction', in Wholey, J.S., Hatry, H.P. and Newcomer, K.E. (Eds.): *Handbook of Practical Program Evaluation*, Jossey-Bass, San Francisco.
- Vedung, E. (1997) *Public Policy and Program Evaluation*, Routledge, New York.