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Policy Analysis

Potential
gains from
EU Patent large

*Hasty
compromise
could be costly*



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The value of a well-designed EU Patent

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Summary

After decades of negotiations, a single patent for the European Union (EU) is at last within reach. After the breakthrough agreement on translation requirements for the EU Patent in December 2011, negotiations have turned to focus on patent courts and litigation rules. Simulations show that the proposed radical reduction in translation costs will already be sufficient to make the EU Patent a success. This Policy Brief estimates that this cost reduction will raise the total net private value of European Patents by 1.4 billion euro per year— an increase of 60 percent. Potential gains of the EU Patent are even larger when account is taken of improvements in litigation and enforcement. Adopting best-practise in legal institutions could *double* the value of the EU Patent to 8.5 billion euro per year in comparison to an EU patent available under the institution- average across the EU. In fact, the present compromise on the location of the central court is less promising than adoption of the best-practise. If markets trust that best-practise in legal institutions will be achieved from the start, the estimated gains could materialize immediately with the introduction of the EU Patent. These gains even overshadow the potential gains from the participation of Italy and Spain in the EU Patent, which would add about 0.3 billion euro per year.

1 Introduction

The oldest and most widespread public policy that aims to encourage innovation and eventually drive economic growth is to reward inventors with a monopoly on the use of their inventions.¹ By patenting an invention, a firm can raise the private value of the invention. The value of a patent is not to be confused with the value of the invention for which the patent is granted. A patent gives its holder the exclusive rights to commercial use of an invention for a period of time. The value of the patent right is related to the extent of the market and its institutional arrangements (e.g. quality of courts, enforcement of a court's decisions). In the EU, each member state still has its own patent laws and institutional arrangements. Introduction of the EU Patent, a policy reform that entails a single set of rules for patents in the EU and is accompanied by a centralized court (see box), would end this fragmentation of patent rights. This Policy Brief presents the conclusions of a CPB study (Straathof and Van Veldhuizen (2012)) showing how the adoption of the EU Patent can raise the value of patents.

After decades of negotiations, a single patent for the EU is within reach. Agreement on the location of the central court for the EU Patent was the latest step towards the introduction of the EU Patent: last summer, the proposal was made that the location would be shared between Paris, London and Munich. This textbook example of European-style compromise locates the Central Division in Paris, while London and Munich will have thematic clusters of this Division. The section in London is to deal with patents concerned with pharmaceuticals and chemistry, and Munich handles applications relating to mechanical engineering. Regional and local courts, located in various countries, will act as courts of first instance. In December 2011 the previous hurdle, translation requirements, was taken through “enhanced cooperation” between all EU member states except Spain and Italy (Council of the European Union, 2011). The vote on the new patent law has been postponed, however, by the European Parliament. This postponement is related to another loose end that concerns the replacement of national rules by EU-wide regulation and the role of the European Court of Justice.

This issue might seem minor, compared to the disagreement on translation requirements, which had dominated the negotiations on patent reform for decades. The current translation requirements make European Patents much more expensive than patents in other countries— and for that reason were called a “tax on innovation” by Bruno van Pottelsberghe de la Potterie (2010). Our econometric analysis presented in this Policy Brief confirms that the reduction in translation costs indeed is an important reform: in the

¹ Venice already granted patents in the 15th century. The Statute of Monopolies passed by the English parliament in 1624 granted monopolies to skilled individuals for new techniques. The United States granted its first patent in 1790.

absence of translation costs, the value of European Patents (net of costs) would be 60 percent higher.

The potential gains from having a EU Patent, however, could be much larger than the gains to be had from lower translation costs alone (Van Pottelsberghe de la Potterie and Mejer, 2009). The debates over translation requirements have overshadowed the fact that the (proposed) EU Patent legislation introduces specialised patent courts in countries where such courts are lacking. Specialised patent courts are important because disputes regarding patents can be complicated, and require technological expertise from the judges. The EU-wide introduction of specialised patent courts is a significant event— as currently only Germany, the United Kingdom and the Netherlands have courts dedicated to disputes regarding patents. In other countries, patents disputes are handled by courts dealing with commercial law in general.

EU Patent versus European Patent

Although the proposed EU Patent is related to the already-existing European Patent, it has important differences.

Currently, inventors can apply for a European Patent at the European Patent Office (EPO). The EPO performs an examination of the patent that is accepted by most European countries. Once the patent is granted by the EPO, the holder of the patent may choose to validate the patent in member states of the European Patent Convention (EPC). To be enforced at the national level, translation into several languages is required, and national validation fees and annual renewal fees must be paid. Moreover, litigation for infringement of the patent, or to revoke it, can be done country-wise only. Each country has different rules and procedures. Thus, forum shopping might occur. This makes the European system expensive and time-consuming. Hence, patent-holders might decide not to validate their patent at all, under this system.

The EU Patent is a new type of patent. Once granted, it will be valid in all member states of the EU, except in Italy and Spain. However, the form of this new system is not yet completely settled. In 2011, agreements on translation costs were reached, containing a significant reduction in translation requirements compared to the European Patent. Section 3 of this policy paper discusses the details and consequences of these reductions. Furthermore, the new patent is designed in order that infringement and revocation issues connected with the patent are dealt with at the EU level. The EU, however, has not yet reached agreement on several issues. One major hurdle is the role of the European Court of Justice, the ultimate court of appeal on all disputes arising under EU law in the new litigation system.

In order to fully exploit the benefits of the specialised patent courts that accompany the EU Patent, the patent courts and the rules on litigation that escort them need to be modelled on the best institutions in the EU. Arguably, the best institutions are German: this is not only evident from the sophistication of German patent law and the number of cases dealt with by the *Bundespatentgericht*, but is also strongly confirmed by empirical analysis (Straathof and Van Veldhuizen (2012)).

Whether or not best-practise will be achieved depends on the final outcome of the negotiations on the location of the headquarters of the EU patent court and the negotiations on the ‘technicalities’ of litigation rules. Of importance will be both the substance and

symbolism of the agreements. In fact, these negotiations might turn out to be more important for the EU Patent than all of the previous debates on translation requirements: whereas the removal of translation costs brings a potential gain of 1.4 billion euro per year, achieving best-practise could raise the value of the EU Patent by 4.6 billion euro per year. The opportunity costs of Spain and Italy staying out of the EU Patent are relatively small.

The remainder of this Policy Brief explains how the CPB study estimated the gains from the EU Patent, and how large these gains are for four scenarios: reduction in translation costs, the present compromise of having three locations for the patent court, the adoption of best-practise institutions, and Italy and Spain changing their minds and joining the EU Patent. The conclusion: the adoption of best-practise institutions would have, by far, the largest impact on the value of patent rights.

2 What's a patent worth?

The value of a patent depends on a number of things: the commercial potential of the underlying invention, the rigour of the patent examiner, and the enforcement of patent rights once the patent has been granted. This implies that a patent on a very valuable invention could be worthless. Unfortunately, there is no easy or direct way to estimate or measure the value of a patent. What is known, however, is the following: if the value of a patent is smaller than the costs of acquiring it, then inventors will not even apply for a patent. In the complex European system, patent-holders also face a number of cost-benefit decisions *after* the patent has been granted. The outcomes of these decisions can be used to estimate the value of a patent *in a particular country*.

More specifically, when the European Patent Office (EPO) grants a patent, it essentially grants the patent-holder a right to acquire a basket of national patents. The consequences of this fragmentation are as follows: the rights of patent-holders differ across countries, justice is administered in different ways in each member country, and holders of a European patent must choose to validate the patent in member states of the European Patent Convention (EPC, which also includes non-EU countries). Without validation in a particular country, the patent is unprotected from infringement in that country.

Most patent-holders do not validate their patents in all countries: On average, a granted European Patent is validated in just five countries, implying that many European Patents are not protected from infringement in a large part of Europe. The reason for not validating everywhere has to do with the substantial costs of validation— including validation fees, costs due to translation requirements, and future renewal fees for each validated country.²

² Harhoff et al. (2009) show that differences in validation costs are associated with differences in validation rates across countries.

This makes European Patents up to 20 times as expensive as American or Japanese patents (Van Pottelsberghe de la Potterie, 2010).

The good news about validation costs is that they can be used to infer the value of patent rights. If a patent-holder validates his patent in a country, this means that he expects that the benefits of validation are at least as large as the validation costs for that country.³ As a number of validation decisions are observable for each patent, an estimate can be made of how valuable a patent is and what a patent right of a particular country is worth, on average. Moreover, the coefficient estimates can be used to infer how changes in the value of patent rights and validation costs would alter the validation decisions of patent-holders. This provides the micro-econometric foundation for the scenarios presented here.

The value of a patent right can be broken down into contributions by different factors. An important contribution is made by the (technological) characteristics of the underlying invention itself. Another factor is the size of the potential market for the underlying invention in a country. After controlling for these and other factors, the value of patent rights still substantially varies across countries. The largest residual value is found for German patent rights, while Greek patent rights are at the bottom of the list. We use these estimates as an approximation for the quality of institutions that affect the enforcement of patent rights in a country. The details of the empirical analysis, including data sources and estimation results, are provided in the CPB study of Straathof and Van Veldhuizen (2012).⁴

3 Translation costs

Since the EU Patent significantly reduces translation requirements, it will substantially lower the translation costs associated with validating a patent in the EU. The simulations in the CPB study show that the small costs of an EU Patent, compared to its geographical reach, are sufficient to achieve a validation rate of up to 100 percent for new European patents. The increase in validations will raise the aggregated value of patents by up to 60 percent.

In the current institutional setting, translations of the European Patent are required in two stages of the application, examination and validation process. The requirements differ between the claims and the description of a patent. The claims, which define the scope of the protection, have to be available in all three official languages of the EPO (i.e. English, German or French) right from the start. In the first stage, the description of the patent (which usually

³ A similar way of estimating the value of patents, is to consider patent renewal decisions (see Schankerman, 1998).

⁴ The simulations are based on the baseline regression estimates in column (6) of Table 4 in Straathof and Van Veldhuizen (2012). The data used for estimation are from 2004. As the number of granted patents has increased since 2004, we adjusted the aggregate values of patent rights to the number patents that were granted in 2011. We assume that the number of patent applications does not change in response to the introduction of the EU Patent. For this reason, the results presented here probably underestimated the true gains in the aggregate value of patents.

requires more text than the claims) is published in the proceeding language, which is one of the official languages of the EPO. In the second stage of validating the granted patent in one or more member states, the description and claim have to be translated into the official language of the validation country. Whether a description needs to be translated depends on the original language and the country of validation. Claims are already available in English, German and French, such that translation costs for claims only depend on the country of validation.

In the new situation, patent applications can be submitted in any language. However, continuing its existing working procedure, the EPO will examine and grant applications in one of the three official EPO languages. The cost of translation to one of the official languages of the EPO will be compensated for EU applicants who file their patent application in a language other than the three EPO languages. After the patent is granted, the claims section has to be translated to the other two official EPO languages. For a transitional period of up to 12 years, the descriptions of unitary patents that are granted in French or German must be translated into English, whereas those granted in English will need to be translated into French or German. These translations will be necessary until high-quality machine translations become available to guarantee the accessibility of patent information. Moreover, the proposed language measures aim to guarantee a level playing field for all EU applicants.

To estimate the effect of lower translation costs on the validation rate and value of patents, we construct two scenarios. The first scenario, referred to as 'English only', simulates the transitional period in the sense that the *description* of granted patents has to be translated into English, taking into account that the *claims* are already translated into English, French and German. The second scenario, referred to as 'no translation costs', simulates the situation in the longer run. At that time, we assume that every patent will be submitted and granted in English, as translation costs are no longer required. Alternatively, this scenario corresponds to a situation where advanced machine translations will be available, such that translation costs in any language are negligible.

Table 1 presents the simulation results of the lower translation costs according to our two scenarios. In both cases, the reduction in translation costs is sufficient to make the EU Patent a success. In case of 'English only', the validation rate already more than doubles to almost 90 percent. In fact, in the scenario 'no translation costs', the validation rate goes up to approximately 100 percent, implying that each granted EU Patent will be validated and protected in the member states. Hence, the costs of translation no longer hamper validation in a particular country within the EU (excluding Italy and Spain, of course).

Table 1 Effects of lower translation costs on validation rates and the value of patent rights

	Current situation	Scenarios for translation requirements	
		English only	No translation costs
Validation rate (%)			
EU Patent	N.A.	88.9	99.8
National validations	40.9	3.1	0.0
Total private value (bln euro)			
EU Patent	N.A.	3.7	3.9
National validations	3.4	0.2	0.0
Total administrative and translation costs (bln euro)			
EU Patent	N.A.	0.3	0.1
National validations	1.0	0.1	0.0
Value minus costs EU Patent (bln euro)	2.4	3.5	3.8
Notes: The scenario of an EU Patent with “English only” translation requirements implies that German and French applications have to be translated into English. In the “No translation costs” scenario, we assume that all applications will be done in English.			

Consequently, both the validation rate and the total private (net) value of the patents rise. In the current situation, using the estimates of the private value of the European Patent, the aggregate value of granted European Patents (net of administrative and translation costs, and except Italy and Spain) in 2011 is 2.4 billion euro per year.⁵ Our findings indicate that the reduction of translation costs will increase this aggregate value net of costs by 1.4 billion euro per year in the long run— an increase of 60 percent.

4 Adopting best-practise

An issue not yet completely settled is the set-up of a unified patent litigation system: a European Patent Court. The returns from EU patents with unitary effect could be higher when the current system of multi-forum would be abolished. Currently, companies that want to protect their invention with a European Patent across Europe are confronted with high litigation costs in case of infringement, because they have to enforce their patent rights in multiple (national) courts. Similarly, revocation proceedings by third parties are very costly and not attractive.

⁵ Our estimate of total validation costs, 900 million euro (Table 3.1), exceeds an earlier estimate by Danguy and Van Pottelsberghe de la Potterie (2009), who estimate that the cost reduction for businesses is 250 million euro per year. This difference is largely due to higher estimated translation costs (Straathof and Van Veldhuizen, 2012).

Harhoff (2009) clearly illustrates that the economic benefits from a unified and integrated European Patent litigation system are likely to exceed by far the costs of establishing and operating a new court. Although the cost reduction of central litigation could be downplayed (as most disputes only involve the German, Dutch and English courts), a unified litigation system is crucial. Actually, too little attention has been paid to the quality of litigation in this respect. The way in which central litigation will be organised in the future is crucial to the value of the EU Patent. Straathof and Van Veldhuizen (2012) show that, amongst others, the need for protection against infringement determines the value of patent rights. Enforcement of intellectual property rights determines large parts of the German advantage in the aggregated value of patent rights.

Here, we present the results on the value of patents of two simulations dealing with this European Patent litigation system: 'best-practise' and 'present compromise'. The first simulation estimates the effects on the value of patents by simulating what would occur if the European Patent Court adopts the best-practise now provided by the German courts. In an exploration of how the value of patent rights would be affected by the proposed compromise, our second simulation features the central division of the EU Patent court located in Paris, with thematic clusters of the central division located in London and Munich, as mentioned earlier in this paper.

Figure 1 illustrates how a change from current institutions to best-practise affects the value of patent rights, by country. In fact, the overall gains from adopting best-practise institutions are 4.6 billion euro per year (see table 2). In the figure, we show only the top-10 countries in terms of aggregated values of patents according to the present situation. Obviously, the aggregated value for Germany does not change, but considerable changes appear for other countries. Particularly, the aggregated values for EU patents validated in Portugal, Belgium and the UK will improve, reflecting an increase in the reward that a patent system provides to inventors.

Figure 1 Gains from best-practise: Aggregate value of patent rights by country of patent right

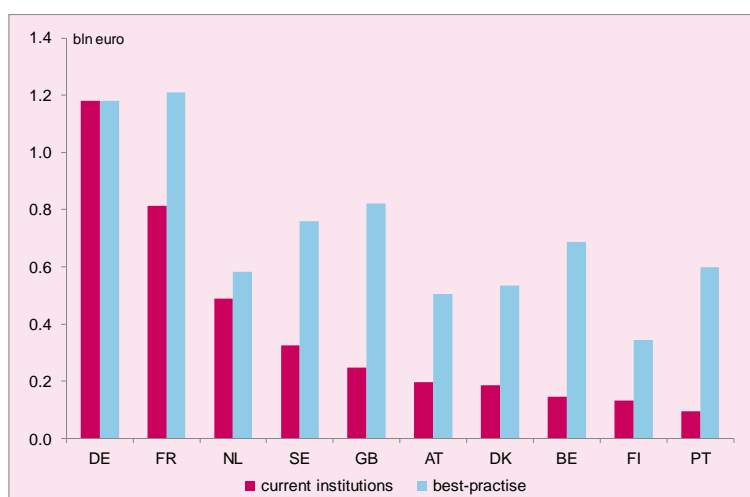


Table 2 takes another perspective for both simulations— with a focus on the effects on the value by country of the patent holder. The results show that German patent-holders also benefit from adopting best-practise, since they have validated granted patents in other countries under the current institutions as well. In general, the value of such EU Patent is more than double that of an EU Patent available under the institution- average across the EU. No matter the origins of the patent-holder, the results are essentially the same. Hence, the potential gains from achieving best-practise litigation and enforcement could be substantial and non-discriminatory across Europe. In that respect, the non-settled issues— such as the location of the central court and arbitration centre for the EU Patent, the composition of court panels and the choice of language regime— seem to be minor topics compared to the quality of the future litigation system.

Table 2 also shows the simulation results of the present compromise that was put forward by the EU Council last summer. This compromise is less promising than adoption of the best-practise. First, whilst the value of the EU Patent would increase through this proposal as well, the estimated gains are much lower than for best-practise. The compromise would raise the aggregate value net of costs of granted patents by 1.3 billion euro per year in the long run, whereas adopting best-practise would increase this value by 3.3 billion euro on top of that. Second, the gains of the compromise would not be equally distributed across Europe. Particularly France would benefit relatively more than Germany and the UK in this situation.

Table 2 Gains from best-practise and compromise by country of patent-holder

	Scenarios for legal and institutional design		
	No change	Best-practise	Compromise
(bln euro)			
All countries	3.9	8.5	5.2
EU27	2.0	4.5	2.9
Germany	0.9	2.1	1.1
France	0.3	0.7	0.7
United Kingdom	0.2	0.4	0.2
United States	1.0	2.1	1.4
Japan	0.5	1.1	0.9
Notes: The "No change" scenario assumes that the only benefit of the EU Patent is abolishment of translation requirements, and is identical to the "No translation costs" scenario. The "Best-practise" scenario assumes that the EU Patent is modeled after the German patent. The "Present compromise" is a mix of English, French and German institutions and laws.			

5 Italy and Spain

For years, negotiations on the EU Patent were fruitless because member states could not agree on reducing translation requirements. Particularly Spain blocked proposals to require only translations into German, French and English. The stalemate in negotiations ended in December 2010, when 12 EU member states decided to go ahead without Italy and Spain, and started an ‘enhanced cooperation’ procedure. Since then, more countries have joined this enhanced cooperation. Currently, all EU members except Italy and Spain participate.

Table 3 Italy and Spain: Yearly gain in aggregate value net of costs by country of patent right

	Enhanced cooperation (bln euro)	Italy joins	Italy and Spain join
EU excl. Italy and Spain	3.8	3.8	3.8
Italy	0.3	0.5	0.5
Spain	0.2	0.2	0.4
EU	4.4	4.5	4.7

The consequences of Italy and Spain not participating are relatively insignificant for the EU: even with the EU Patent in place, holders of European Patents will still have the opportunity to validate in Italy and Spain. Table 3 shows by how much the value of European Patents would increase if Italy and Spain would change their minds and join the EU Patent. For three scenarios, the table reports the gains in the aggregate value of patent rights minus the change in validation costs. The first scenario is the current proposal, which excludes Italy and Spain. This is the ‘no translation costs’ scenario without implementation of best-practise discussed above. In the second scenario, Italy joins the EU Patent. Italy’s opposition to the EU Patent appears to have become less strong with the recent change of government. The net value of Italian patent rights increases by 45 percent to an estimated 0.5 billion euro per year. Spain joins as well in the third scenario, resulting in a 72 percent jump in the net value of Spanish patent rights to 0.4 billion euro per year.

The net value for the EU as a whole rises by 0.3 billion euro per year when both Italy and Spain join. This is a very small amount when compared to the effect of ‘no translation costs’ for the enhanced cooperation group (1.4 billion euro) or the effect of ‘adopting best-practise’ (4.6 billion euro). The choice for enhanced cooperation without Italy and Spain thus will not lead to a substantial loss in the value of patent rights.

6 The final hurdles

The EU Council reached an agreement in June 2012 on one of the last outstanding issues regarding the introduction of the EU Patent package: the location of the central division of the EU Unified Patent Court. As has happened in the past, various political events and

struggles for power delayed yet again the introduction of the EU Patent. One major hurdle to be taken is the role of the European Court of Justice in the new litigation system.

This time, however, a delay in the EU Patent might not be all bad news. The delay brings with it two opportunities. First, the extra time could be spent on improving the set-up of the patent court and the rules on litigation that accompany it. A hasty compromise on these issues might prove to be costly. Our analysis suggests that adopting “German-style” legal institutions as best-practise substantially raises the value of patents compared to sticking to institutions that are “EU-average”. In fact, the gains from adopting best-practise institutions— 4.6 billion euro per year— dwarf the already substantial gains due to lower translation costs, which are 1.4 billion euro per year.

The second opportunity of a delayed agreement is to make the choice for the best institutions credible from day one. Under the current proposal for the EU Patent, holders of European Patents can still opt to validate their patents in individual countries. If they do not believe that the EU Patent court will offer effective protection of their rights, then the EU Patent might have a slow start. There is a parallel with the introduction of the euro: the smooth introduction of the euro was possible because the reputation of the *Bundesbank* was successfully leveraged to the *European Central Bank*. Applied to patents, this means that the EU patent court could benefit from the solid reputation of the German *Bundespatentgericht*.

A reduction in translation requirements for European patents is long overdue and most welcome. The gains from the EU Patent, however, are not limited to a reduction in translation costs: the EU Patent presents a window of opportunity for improving patent laws and institutions in all participating countries. The gains in the net private value of patents due to adoption of best-practise are much larger than the gains to be had from lower translation costs.

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