

Patent Quality and Examination in Europe

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Following the publication of the Federal Trade Commission (2003) report, policy-makers in many jurisdictions started to consider administrative patent system reforms. The three largest patent offices - the European Patent Office (EPO), the Japanese Patent Office (JPO) and the US Patent and Trademark Office (USPTO) - introduced measures to cope with the growing number of claims and volume of patent applications which were deemed too complex and thus prone to uncertain interpretation by courts and competitors. Besides revamping its fee structure, the EPO also modified its rule base in 2010 under the heading “Raising the Bar”, requiring applicants to restrict the scope of subject matter considered in prior art search and examination. This paper reports on some effects of these measures over the time period from 2005 to 2013. The number of claims declined in patent filings reaching the EPO, but still showed a “home bias” introduced by national rules in the respective origin

countries. In granted patents, the number of claims declined starting in 2008 when new claims fees became effective, claims sections in patents became shorter and independent claims longer (narrower). The grant rate had declined at the EPO by 2013, but the EPO was unable to stem the use of divisional filings by setting time limits. The developments at the EPO point to the private value of delay options which allow applicants to define their patent rights over time. Delay may be achieved either by statutory means or by filing divisionals or continuations. The latter might be socially wasteful. The tradeoffs implied by these observations should be given more attention in the economic analysis and design of patent prosecution.

I. Patent Quality and Prosecution

Patents are typically granted following a substantive assessment of their novelty and inventive step (in the US: novelty and non-obviousness). The process of turning a patent application into a granted patent resembles a highly structured negotiation process in which the applicant seeks to obtain a legally robust, yet broad patent right protecting his invention and possible variants thereof. Patent offices

seek to issue patents that are of high quality, i.e., that will not be revoked when challenged in court or in post-grant administrative reviews. Criteria for granting patent protection may differ across jurisdictions inspite of some harmonization in substantive patent law, prior art search practice and examination procedures. A major part of the discussion between examiner and applicant (respectively, his legal representative) concerns the structure and wording of a patents' claims. Claims delineate the "metes and bounds" of the patentee's intellectual property (Merges and Duffy 2002). Thus they constitute – in any patent system – one of the most important parts of the patent document. The specification of claims is decisive for the robustness in annulment proceedings and for enforceability in infringement lawsuits. Moreover, the delineation of patent claims may have strong impact on post-grant licensing negotiations. Ultimately, the legal and economic impact of a patent will depend on the interpretation of its claims in such negotiations or in court.

Early delineation of claims forecloses the option of reacting to new information. Hence, it is not surprising that many applicants seek to delay examination. Patent applicants may delay examination either by filing divisional application or continuations, or by making use

of administrative options to delay. Most national systems allow for deferment periods between two and seven years during which examination can be requested. Patent offices that initiate examination automatically at the time of filing (e.g., the USPTO) constitute exceptions.¹ A short-term version of deferment is present at the EPO where applicants may request examination within six months of receiving a search report (typically 18 months following the priority date).

Moreover, as in many other patent systems applicants at the EPO may file divisional applications. I consider below how applicants reacted to changes in claims fees and to restrictions on the timing of divisionals at the EPO.

II. Claims Fees and "Raising the Bar"

Starting around 2004, discussions in Europe were concerned with an increasing number of patent filings, long pendencies at the EPO and an ever increasing volume of patent filings,

¹ Deferred examination was an administrative innovation introduced in the 1960s in the Netherlands, and subsequently in many other national patent offices, in order to deal with mounting backlogs of patent filings. In order to inform competitors about the presence of pending patents, the introduction of deferred examination was accompanied by automatic publication of the patent application. A few patent offices have allowed deferment of examination for up to seven years, e.g. in Canada (1989-1996) and in Germany (since 1969). In these two cases, applicants have historically requested examination for only about two thirds of filings - for a full third, no examination is ever undertaken as the applicant learns that even a granted patent on the given invention would not be sufficiently valuable (Harhoff et al. 2015). Deferment options thus may lead to a considerable reduction of patent office workloads, possibly at the expense of having a relatively large number of pending patents.

both in terms of descriptions and claims sections. The rising share of EPO divisionals added to these concerns, since divisionals were mostly perceived as strategic means to keep patents pending.² The three large patent offices sought to reduce the number of claims in patent filings and granted patents by introducing excess claims fees. Their stated objective was to obtain patent documents that were less complex, less voluminous and having a clearer definition of the actual scope of protection.

Effective for patents with filing dates of April 2004 and later, the JPO doubled its claims fees to 4,000 Yen per claim, but reduced the claims-contingent part of the renewal fees. Patents that were held longer thus became cheaper to applicants in order to incentivize patent quality. At the USPTO, effective December 2004, claims fees were increased sharply in order to create incentives for lowering the number of claims. Claims in excess of twenty were priced at 50 US\$ instead of 18 US\$ prior to the fee change. The EPO invoked a new claims fee schedule with effect of April 1, 2008. While each claim exceeding the tenth claim had already been priced at 50 Euro prior to the rule change, up to 15 claims were now free, but excess claims

² See Guellec and van Pottelsberge de la Potterie (2007) for an in-depth discussion and an analysis of patent statistics at the EPO.

were charged 200 Euros each. Moreover, each claim exceeding 50 claims would be priced at 500 Euro.³ At the beginning of 2008, the EPO also introduced a modification in incentives for examiners who were then allowed twice the work points for a refusal than for a patent grant. This measure was based on survey results that had suggested that the work effort for refusals of grants was roughly twice as high as the effort for finalizing a grant decision (Friebel et al. 2006).

Under the heading of “Raising the Bar” a set of new rules became effective on April 1, 2010, but intentions to introduce these changes were discussed as early as 2008. An overview is given by Beatty (2011). “Raising the Bar” was not concerned with an increase in the inventive step required for patentability, but involved new regulations for searches and examination. Noting that “while the volume of applications the EPO has to examine has been on an upward trend, the same cannot be said of their quality”⁴, the EPO compelled applicants to respond within time to the search report produced by the EPO and created incentives to reduce the scope of the protected subject matter. Applicants had to indicate to

³ In each of the three patent systems, there are additional fees related to the number of independent claims and to the overall length of the patent filing. These were also adjusted upwards, but will not be discussed in detail here.

⁴ The EPO argued that incoming filings were not consistent with EPC standards. Cf. <https://www.epo.org/about-us/annual-reports-statistics/annual-report/2008/focus.html>.

the examiner which claims and which prior art were to be searched, and examination would only be performed on the basis of these claims.⁵ Finally, the EPO amended Rule 36(1) EPC and introduced time limits for the filing of divisional applications. While prior to the rule change divisionals could be submitted at any time prior to a final grant or refusal decision, the new rules would limit the filing of divisional applications to a time window of two years of a first examination report or communication with the examining division.

III. Patent Prosecution Outcomes

A. Examination Outcomes at the EPO

Panel A of Table 1 presents data on EPO caseload and the composition of decision outcomes for the time period from 2005 to 2014.

[Insert Table 1]

The EPO has seen a moderate increase in case decisions, with a CAGR of 4 percent between 2005 and 2013. EPO patent examination has three possible outcomes: grant, withdrawal or refusal. Withdrawals may occur relatively early when applicants do not request examination after inspection of their

search report, or once examination has started and the applicant does not obtain agreement from the examiner to a patent specification he deems satisfactory. Around 7.5 percent of applications were regularly withdrawn prior to examination and payment of the examination fee.

In a small number of cases - between 2.5% and 5.2% in the time period from 2005 to 2013 - the examiner actually refused to consider the case further. These outcomes are subject to appeal to the Technical Boards of Appeal. The share of refusals increased significantly in 2008 when examiners were given more recognition for this examination outcome.

The share of grant decisions had historically been at between 60% and 70% in the 1990s, but reached a particularly low level during the financial crisis (2009 and 2010) when many patent holders economized on their IP prosecution budgets and allowed patents to lapse in examination. The EPO was able to keep granting activities at low levels in the years after the fiscally induced downturn in grants in 2009.⁶

⁵ The changes were implemented as new EPC Rules 62a and 70a, and as amendments to EPC Rules 63, 69, 137 and 161.

⁶ The EPO has interpreted this development as indicating that it has become more discriminatory in granting patents in the recent past. Cf. <http://blog.epo.org/the-epo/2011-filings-in-detail/>.

B. Evolution of Claims

The data assembled in Panel B demonstrate that claims fees apparently had the desired effect of inducing applicants to reduce the number of claims in applications submitted to the EPO. For filings with US and JP priorities, the downturn in claims starts already in 2004, for European patent holders from Germany, Great Britain and France in 2008. These developments coincide with the introduction of more steeply priced claims fees. But claims numbers of applications and of granted patents still differ substantially across priority countries. Patent applicants rarely rewrite patent filings completely for submission at a foreign office (even if that office has particular standards). Traces of a “home bias” are thus common in international patent filings.

The number of claims in granted patents is on average lower than in initial filings, since the examiner will ask for the deletion of some of the claims. Patent attorneys draft claims with “fallback options” in mind for the case that the examiner will not admit particular claims. At the EPO, the average number of claims in grants had risen from 9.1 in 1990 to a peak value of 13.4 claims in 2008. It started to decline thereafter and dropped to 12.1 claims in 2013, a reduction of 9.7%.

The reduction in the number of claims at the three major offices and in granted EPO patents may be considered spurious if patent attorneys manage to redistribute subject matter they seek to protect to fewer, yet longer or more complex claims. The total length of claims sections had increased from about 700 words in 1995 to a peak value of 826.6 words in 2007, followed by a decline to 780 words in 2013. This reduction by 5.6% was somewhat smaller than the reduction in the number of claims, suggesting that some reshuffling of subject matter may have occurred in response to higher excess claims fees.

The overall number of claims itself may be a poor measure if there are changes in the wording of the independent claims which constitute the main component of a claims structure. Analysts at patent offices use the inverse of the length of the first independent claims as a proxy measure of patent breadth – shorter claims provide *c.p.* for broader patents. The data⁷ suggest that after some period of almost continuous reductions in length, independent claims at the EPO became 10.8% longer between 2008 and 2013, and hence narrower. Taken together, these data suggest that the EPO appears to have achieved some of the objectives it set out to reach: the

⁷ For a subset of 290,000 English-language patent grants, claims were parsed in order to obtain the number and length of dependent and independent claims.

number of claims was reduced, claims sections became shorter, and independent claims became more specific.

C. Divisional Applications

In its reform measures, the EPO had included steps to stem the growing tide of divisional filings. Filing additional divisional patents would have been one counter-measure applicants would take in order to avoid narrowing their patents early, as required by the rule changes under “Raising the Bar”. Using divisional filings, subject matter could have been distributed across multiple patents and then developed further. While divisional applications were virtually unknown in the EPO system in the early 1990s, their use rose from 1,270 cases (2.1% of filings) in 1994 to 7,125 (5.6% of filings) in 2009. As the data in Panel C show, the number of divisional applications filed at the EPO in years 2005 to 2009 ranged between roughly 6,400 and 7,600 patents.

The rule change introduced in 2010 backfired badly. The number of divisional filings shot up to about 24,600 in 2010 when many applicants began to file precautionary divisional filings. In the first quarter of 2010 alone, immediately prior to the new rule becoming effective, applicants submitted more than 15,000 divisional applications.

Afterwards, practitioners began to develop strategies to circumvent the 24-month rules altogether. Given that the new rules apparently induced more divisional filings than they deterred, the 24-month time limit was repealed with effect on April 1, 2014. The EPO has now introduced a fee-based mechanism which requires applicants filing chains of divisional applications to pay additional fees. The impact of the new pricing rule is yet to be seen.

While the above analysis is qualitative in nature, an analysis of the value of deferred examination can be put in the context of a structural model.⁸ Harhoff et al. (2015) construct a stochastic patent renewal model in which the applicant has the usual choice between letting the patent lapse or maintaining it once the patent has been granted. Prior to the grant decision, the applicant may in each year (up to the maximum deferment period) choose between immediate examination, deferment and letting the patent application lapse. The applicant is allowed to learn about the value of the application while it is pending. Estimates from an empirical implementation, using data from the Canadian and the German patent system, indicate that a considerable part of the patent’s value is realized before it is granted. Reducing the

⁸ The role of pending patents has also been studied by Koenen and Peitz (2015).

deferment period reduces total patent value substantially. The authors argue that applicants will try to make up for this loss by seeking to delay examination with other means, such as divisionals or continuations, and that these strategies could be socially wasteful.⁹

IV. Conclusions

The recent administrative changes at the EPO hold a number of lessons for scholars interested in the design of patent systems. This paper has shown that applicants at the EPO reacted flexibly to increases in claims fees, and that the office was able to reduce complexity of filings and grants to some degree. Conversely, the attempt to reign in divisional filings by administrative fiat failed – the reform is now being replaced by a fee-based mechanism which will create financial disincentives for submitting many divisional applications. The reaction of EPO applicants to the restrictions which had been imposed on divisional applications has demonstrated that many users of the patent system value options for delay. Offering menu choices for different levels of delay could be a prudent response. For example, the time period during which the examination can be requested at the

EPO (currently six months) could be extended, in exchange for payment of a fee. Patent systems that allow for delay may have important shortcomings that also need attention. First, there is a political economy dimension in that letting applicants delay examination (rather than filing divisional applications or continuations) is likely to reduce the demand for intermediary services. More importantly, the argument that pending patents enhance uncertainty in the system has to be taken seriously. It may be somewhat balanced by the fact that a search report with the examiner's assessment of the patent is publicly available in any case. Moreover, many patent systems foresee rights for rivals to request examination (against payment of a fee) whenever they wish to resolve the uncertainty about examination outcomes.

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⁹ See Hegde, Stuart and Mowery (2009) for a study of patent continuations at the USPTO.

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TABLE 1—EUROPEAN PATENT OFFICE STATISTICS (2005-2013)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Panel A. Decisions at the EPO									
Total decisions (1,000)	92.7	104.2	99.1	110.3	118.7	123.6	118.7	119.7	126.5
Share grants	57.3	60.0	54.9	54.0	43.8	46.8	52.6	54.6	52.5
Share refusals (prior to appeal)	2.5	2.8	3.3	4.3	5.2	4.6	4.9	4.3	4.3
Share no examination requested (withdrawn)	7.3	6.3	8.4	7.0	8.1	7.5	7.6	7.2	7.5
Share withdrawals in examination	33.0	30.9	33.4	34.8	43.0	41.1	34.9	34.0	35.8
Panel B. Claims									
US priority filings (no. of claims)	23.8	21.7	18.3	17.2	16.0	15.5	15.0	15.1	14.6
JP priority filings (no. of claims)	13.2	12.7	12.0	11.1	10.9	10.8	10.4	10.4	9.9
DE, GB, FR priority filings (no. of claims)	15.9	15.7	14.8	13.8	13.3	12.9	12.4	12.5	13.1
Granted patents (no. of claims)	12.9	13.1	13.3	13.4	13.4	13.1	12.7	12.3	12.1
Granted patents (no. of words in claims)	800.6	807.8	826.6	823.0	816.9	803.2	791.1	778.0	780.1
Granted patents (no. of words, 1st indep. claim)	148.7	133.4	135.1	134.5	135.0	140.3	145.5	145.9	149.0
Panel C. Divisionals									
Divisional filings (1,000)	6.4	7.0	7.3	7.6	7.1	24.6	10.5	10.3	7.7

Notes: Decision counts do not include patent filings which were withdrawn prior to publication at 18 months. All outcomes in Panel A prior to possible appeals, e.g., in case of refusals that were contested. Claims data for priority filings timed to filing year at EPO, data for granted patents timed to grant years.

Source: Author calculations based on EPAREG data (April 2015) provided by the EPO in combination with PATSTAT data (version April 2015).