

Costs of Swiss Patent Litigation

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*The substantial legal costs of defending and enforcing a patent on both sides of the Atlantic has been subject to substantial critique (e.g. J. BESSEN/M. MEURER, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk*, Princeton University Press, Princeton NJ 2008; B. van Pottelsberghe, *Lost Property: The European Patent System and Why It Doesn't Work*, Brussels 2009). There has even been some movement on the issue in Europe exemplified by a proposal for a "Unified Patent Court" in Europe (EC16222/12), which inter alia should reduce patent-related litigation costs. Despite the obvious importance for Swiss patent policy, to our knowledge, there has been no systematic attempt to ascertain the legal costs associated with Switzerland's patent system; this paper seeks to remedy that apparent lacuna.*

*Die erheblichen Rechtskosten, die mit der Verteidigung und Durchsetzung eines Patents auf beiden Seiten des Atlantiks verbunden sind, ist Gegenstand substanzieller Kritik (z.B. J. BESSEN/M. MEURER, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk*, Princeton University Press, Princeton NJ 2008; B. van Pottelsberghe, *Lost Property: The European Patent System and Why It Doesn't Work*, Brussels 2009). In Europa kam nun Bewegung in die Angelegenheit, wie sich z.B. am Vorschlag für ein einheitliches Patentgericht (EC16222/12) sehen lässt, der unter anderem die patentbezogenen Rechtskosten reduzieren soll. Trotz der offensichtlichen Wichtigkeit für die schweizerische Patentpolitik gab es bisher unseres Wissens keinen systematischen Versuch, die mit dem schweizerischen Patentsystem verbundenen Rechtskosten zu erheben. Das vorliegende Papier will diese Lücke schliessen.*

*Les frais de justice importants liés à la défense et à la mise en œuvre d'un brevet de part et d'autre de l'Atlantique font l'objet de nombreuses critiques (cf. J. BESSEN/M. MEURER, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk*, Princeton University Press, Princeton NJ 2008; B. VAN POTTELSBERGHE, *Lost Property: The European Patent System and Why It Doesn't Work*, Brussels 2009). La situation évolue en Europe à l'exemple de la proposition d'introduire un tribunal unique des brevets (EC 16222/12), ce qui devrait entre autre réduire les coûts des procès en matière de brevets. Malgré l'importance manifeste que cela représente pour la politique suisse en matière de brevets, on n'a, à notre connaissance, jamais tenté d'analyser de manière méthodique les frais de justice liés au système suisse des brevets. La présente contribution se propose de combler cette lacune.*

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I. Introduction

1. Purpose

From an economist's perspective, the legal expenses of maintaining a patent right is a type of economic friction that serves no socially useful purpose – in a perfect world patents are unambiguously defined and enforcing their associated rights is costless and instantaneous. As our reader undoubtedly knows, patents can be ambiguous, and take considerable time and expense to enforce. The legal costs associated with defending one's own patent and navigating others' are some of the key variables in evaluating both the expected value of a patent in particular and the performance of the patent system in general. Without a good idea of the costs, businesses cannot make good decisions about patenting and litigation; without a good idea of these costs policy-makers cannot root out the inefficiencies in the patent system.

By analysing legal actions in cantonal cases between 1991 and 2011, exploiting data in the Swiss patent registry, and presenting some results of interviews conducted with litigators and patent attorneys, this paper provides: an initial estimate of the costs and number of patent disputes; develops a model of plaintiff behaviour in light of these costs; and demonstrates how these costs influence the performance of the Swiss patent system in general. These should permit better insight into the efficiency of the patent system as a whole, allowing policy-makers to make more informed decisions about whether and how to reform it.

2. Data

This article draws on three principle sources of data: the full text decisions of cantonal judgments; interviews with litigators and patent attorneys; and legal events (e.g. title deletion) recorded in the Swiss patent registry.

a) Court Cases

The first and most important component of the information comes from Swiss cantonal judgments, which are well and similarly structured and have several convenient features for analysis:

1. the court usually defines the claim value (*Streitwert*) in the court record, which is an independently valued proxy for the economic significance of the patent;
2. judgments typically specify awarded lawyer's and attorney's fees; and
3. they usually state the court's costs, disaggregated into their constituents.

Given these virtues, the basic approach was to collect a comprehensive list of Swiss patent cases for at least one patent cycle of 20 years, 1991–2011. For cases filed before 2012, this meant drawing up a list of all known decisions using Swiss-Lex, Darts-IP, and Federal Court decisions. The Swiss Federal Institute of Intellectual Property (IPI) then asked the cantonal courts, under Art. 70a of the Patent Law, to fill in any missing entries and send the full text of the judgments for analysis.

Since the cantons had neither a strong incentive nor necessarily the resources to make an exhaustive search effort, we checked for under-reporting in two different ways. The first was by drawing on previous publications (from this very journal no less). Starting in 1995, Dr. PETER HEINRICH conducted enquiries with the cantonal courts for how many patent-related cases they had seen between 1990–2000; the results for 1998–2000 were published (CH. HILTI, Ein eidgenössisches Patentgericht (EPG) 1. Instanz in greifbarer Nähe? [A Confederal Patent Court (CPC): 1st Instance within Near Reach?], sic! 2002, 288); compared with our sample, HEINRICH'S numbers reveal some likely under-reporting¹.

The second technique to identify under-reporting was to statistically estimate the expected share of cases reported from a single canton by using the number of supposedly reported years, its GDP,

¹ The courts at that time reported 73 patent-related cases to Dr. Heinrich. Today, only 27 cases for the same period have been identified; even after eliminating double entries or known non-reporting, ca. 8 cases per year or 10% might be under-reported by the other cantons for these years.

whether it has a commercial court, its share of Swiss manufacturing, and share of EPO patents originating from the canton². Here too, the evidence pointed to the missing cases from Zurich as a potential wild card, but relativises suspected under-reporting in the other cantons. Despite Zurich's under-reporting, some of its cases are accounted for through references in other cantonal cases, Swiss-lex publications, or Federal Court records (Figure 1).

Under-reporting notwithstanding, the sample is fairly representative of the types of action seen in the courts. Casting a wide net, the cantons provided a variety case types and actions, including writs of protection and confirmations of out-of-court dispute settlement. Almost half of the proceedings involve an element of infringement, but the exact legal strategy to obtain legal remedy varies. The same legal action, say a preliminary injunction, has a very wide range of "meanings": in some cases it is a simply judge's first glance at the merits of the case; in other cases, this supposedly 'procedural' action degenerates into be full-fledged and protracted court battle, complete with supreme court appeal. In still other cases, an allegation of nullity induces a quick settlement without any technical assessment. In the face of this diversity, a robust and salient taxonomy was difficult to find based on the legal attributes alone. Table 1 shows some of the attributes examined in the core sample (Table 1 in the appendix).

Beyond the core sample, about 580 patent-related legal actions going back to 1957 have been identified; some of the statistics presented draw on this bigger sample. Even though for the most part a systematic relation between costs and legal strategy could not be found, what is clear is that patent disputes with a contract (usually a licensing agreement) are much less likely to involve nullity claims, presumably because the parties have an interest in maintaining the monopoly. Contract claims are about twice as likely to succeed, and patent violation claims about twice as likely to fail³.

b) Interviews

In order to understand any bias in the cantonal sample, ascertain the number of paralegal disputes, gain some qualitative grip on the judgment data, and estimate omitted costs in the award data, interviews were conducted between December 2012 and February 2013 with seasoned patent attorneys and litigators. Claim values handled by these professionals coincide with the case data. In terms proportion between extralegal and legal disputes, about 43% of the incidents come into contact with the courts, though by and large they end outside of the court. Their responses also indicate the cantons have probably disproportionately under-reported settlement activity within the good offices of the courts (Table 2 in the appendix).

c) Swiss Patent Registry

Another important source of information is the Swiss patent registry. It records legal events about the patent. If a court strikes the patent down, or if a patent holder withdraw claims or even the patent itself, it gets recorded in the registry. These events, such as a patent modification, or voluntary withdrawal show up in the court records, allowing for some cross-checking. Due to a database migration around 1994–1995, the data before that point are not systematically captured. Events after 2006 taper off as the patents are "too young" to have been disputed (Table 3 in the appendix).

A registry event either narrows or abolishes the monopoly right, so it is reasonable to assume such an action was induced by some sort of legal "incident". Such an "incident" can occur either in- or out-of-court. In the case of (partial) nullity, events should correspond 1:1 with a lawsuit. The relation between an in- or out-of-court dispute and a partial withdrawal is likewise believed to be 1:1. The correlation between disputes and full patent withdrawal events is believed to be less tight, owners occasionally pre-empt expiry by non-payment of annual maintenance fees; the IPI does not keep records on the

² These factors are jointly significant with 98% confidence. For example, Berne with its commercial court, largish GDP, and manufacturing base should have seen about 37 actions, yet only 10 have been identified. This "missing" litigation is almost entirely compensated by cases in St. Gall, Zurich and Basle – whose "excess" litigation accounts for much of the "missing" litigation. Hence, there was likely some jurisdiction shopping with regard to patent litigation. Interestingly, these well-besought courts also seemed to have some of the smallest total legal costs proportional to the claim value, averaging 2% for Zurich vs. the national average of 18%.

³ Significant at the 10% level cf. infra Table 8.

reasons for withdrawal, and this strategy is believed to be fairly rare, so a 1:1 relation is assumed here as well.

Of course, not all run-ins over patents end in a registry event. So the assumption here is that this proportion between observed settlements and withdrawals is equal to the number of recorded withdrawals and unobserved "incidents". For the 243 registry events presented in Table 3, it would imply about 3000 total "incidents". Now, an "incident" in this understanding may have almost no cost. It might be an angry telephone call to a competitor, an engineer studying the competitor's product for a few hours, getting a patent search report from the IPI, or consulting with a (patent) attorney. Each escalation is more costly, but increasingly less likely⁴. This assumption, admittedly a bit arbitrary, comes from both the observation of the costs and tendency for many economic variables (including patent values) to follow a power law as can be seen in Figure 2 below.

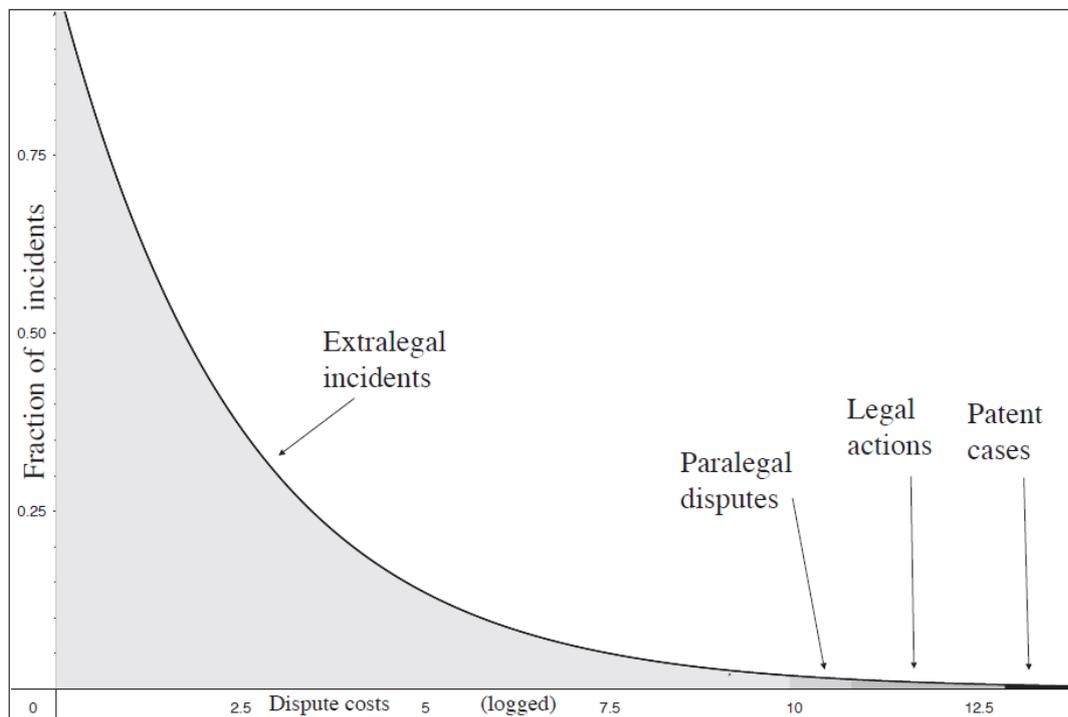


Figure 2: Costs of patent disputes are likely to follow some type of power law. Despite almost complete information about the tail in black, most information about the legal actions (dark grey), and some information about paralegal disputes, both the shape of the curve, and starting absolute number of events are essentially unknown.

d) Distribution of Costs

Before heading into the results, it is important to understand that we are trying to measure. Figure 2 shows the various cost stages, a large swathe of events are unobserved, but supposedly low cost (Table 4 in the appendix).

⁴ For simplicity, this is calculated from all legal actions for which the patent is known (221) minus any double-counts (22):

$$\frac{\text{observed Events}_{\text{Registry}}}{\text{observed Actions}} \times \frac{\text{recorded Event}_{\text{Registry}}}{\text{total Incidents}} \quad (1)$$

$$\frac{16}{199} = \frac{243}{3037} \quad (2)$$

Assuming direct proportionality might be construed as conservative because incidents with a registry event are more likely to end up in court. For example all nullity decisions have a corresponding registry entry. Several partial withdrawals are observed in cases. As we shall see below an exponential proportionality might be more appropriate. Hence, this assumption aims at capturing most of the disputes that involve a patent attorney or lawyer, not the total effort expended in defence of a patent. Drawing samples with similar characteristics pointed at a much larger number of incidents and much higher costs. Survey data on firm costs surveilling their own patents might be able to fill in the blanks.

3. Results

a) Population of Disputes

One part of that is understanding the costs within the stages of disputes. Out of court settlements are a viable and common occurrence in Switzerland. The parties in the dispute can settle entirely out of court, or terminate proceedings with or without prejudice. Disputes can escalate into a judgment phase, which can have multiple legal actions during the main procedure. On average, each patent engenders about 1.3 legal actions.

The annual number of federal appeals and number of legal actions comes from the average number of annual appeals for the years 2008–2011. Total court disputes in court include settlements within the court. The number of out-of-court disputes is based on the ratio of in-court to out-of-court disputes mentioned. The number of “incidents” is inferred as indicated above based on registry data for the years 1996–2006 when the number of events is most representative. Table 4 pieces the data, interviews, and inferences together. Like in Figure 2, Table 4 shows the more costly the incident, the fewer of such incidents there are.

Number of paralegal disputes and legal actions are probably higher than presented in Table 4 because the interviews indicated only 18%⁵ of cases in court go to judgement. This has to do with under-reporting, some of which is identified, for example, settlement proceedings in Basle-City can take place entirely orally without record. Weaknesses of this analysis notwithstanding, they do establish an initial baseline for a heretofore unquantified phenomena.

b) Patent Case Costs

From the cantonal court decisions, the court costs, awarded lawyer’s and patent attorney fees were assessed across all the cases. Court records usually only contain the prevailing party’s costs. The assumption is lawyers’ costs are, on average, symmetric across parties. Some of the court records were often vague about number of patent attorneys involved, but it usually ranged from 1–3 depending on the case; 2 are presumed. Table 5 shows the average costs involved in a Swiss patent dispute (Table 5 in the appendix).

The large error with the lawyers’ fees has to do with a myriad of factors. Whereas court costs are only partially tied to the claim value and patent attorneys’ fees behave more like fixed costs, lawyers’ costs are related to: claim value, length and difficulty, court regulations, type of case, etc. Some awards are for the actual amount the lawyer billed, costs being listed in great detail; other cantonal awards seem to be more “formulaic” relying on a defined set of rules. Many actions have no reported costs. One litigator said the court award for lawyers’ fees varies from 20% to 100% of the actual costs billed to clients, elaborating that in injunction proceedings for example, the courts usually award less than it would for a full case, despite the former being expensive to prepare, so the observed court awards tend understate the true cost to a party (and by extension the implied value of a plaintiff’s willingness to pay).

An interesting question is how these numbers stack up internationally. At first blush, Switzerland would seem to be an expensive legal jurisdiction in nominal terms (cf. Table 6). After adjusting the nominal amounts by the purchasing power implied by the costs, Switzerland does not look as quite so expensive in comparison (Table 6 in the appendix).

Having established the general costs, it begs the question of what the general litigation costs for the entire patent system are.

c) Total Systemic Legal Costs

The general incidence of patent litigation in Switzerland is very low. There were a total of 15 legal actions involving patents of some 124000 patents born during 1991–1992. Estimating system costs from 15 actions is not terribly robust, so total costs were estimated using the total costs for the years 2008–2011, i.e. the years for which the data is most complete. Aside from the ‘hard’ data, the interviewees

⁵ Relative error: ±28%.

information was incorporated in the form of unobserved billing and paralegal disputes. Because the costs appear to follow some sort of power law and the courts had a tendency to report the major cases in the long tail, the costs missing entries were imputed with the observed median⁶ court costs (CHF 6500) and lawyers' (CHF 21000) fees⁷. Paralegal disputes were conservatively billed at one half of the median lawyers' fees (CHF 10500) for each party. Half the posited "incidents" were billed at two times a quarter of the lawyer's median cost. This does not mean that a patent attorney might not be involved for the paralegal disputes and incidents; indeed, a threatening letter from patent attorney might be more credible, however the smaller the claim involved, the less likely both a patent attorney and lawyer jointly involved (Table 7 in the appendix).

5.8 million francs in annual legal costs implied by the system looks like a bargain compared to a single US lawsuit. But is this reasonable? Possibly, the interviewees indicated the legal culture is more conciliatory – indeed the court records often indicate long negotiations within the court before the trial. Lack of punitive damages or even real damages for that matter decreases the incentive to litigate, as does the risk of paying the other party's legal fees. Furthermore, the Swiss market is small, meaning the stakes are lower.

Having examined the total cost, the next section is less speculative and more familiar as we take a look at the elements of a patent court battle.

II. A Model of Swiss Patent Suits

This section develops an economic model for the behaviour of the parties involved in patent dispute, which is typically a civil suit. It does this by taking the main features of the legal process, and expresses the behaviour of the actors as a function of their incentives. In doing so it reveals some of the institutional weaknesses of the Swiss civil suit, and also underpins some of the arguments further on in the article. The math and derivations have been left aside; their core logic being explained in words for the verbally inclined reader.

A Swiss patent suit usually involves five types of actors:

1. the lawyers
2. the court
3. the defendants
4. the plaintiffs
5. the patent attorneys.

Each of these actors will be examined against their interests in light of the judgment data.

1. The Lawyers

The lawyers obviously want to win their case. Given that the cantons award lawyers' fees based on the *Streitwert*, and it is often correlated with the complexity of the case, this is modelled as some fraction of *Streitwert*. Depending on the canton, lawyers can also charge clients by taking a percentage of this *Streitwert*. Basle-Country, for example, allows lawyers to charge up to 2.5% of the *Streitwert* (BL-178.112 §4–5). The interviews with the lawyers revealed this is not necessarily a common practice. Another part of their fee is set at least in part by the court, again based on the claim value. In some cantons like Geneva, contingency fees or case for a flat-fee are not allowed (LPAv Art. 35), so clients cannot induce optimal lawyer effort within the context of a single suit. No informant reported contingency as part of his or her billing⁸. This simplifies the model immensely because the case outcome is not determined as a function of fees paid for the lawyer's effort. The model essentially reduces to a decision made by the plaintiff.

⁶ For those not familiar with this metric, it is the mid point if all the observations are lined up in order of magnitude; it is often a much better representation of the average when data comprise extreme values.

⁷ Bootstrapped and bias-adjusted; R=50000.

⁸ To reduce moral hazard, they can induce more lawyer effort by forming long-term conditional contracts for repeat business or putting lawyers on staff with the option to terminate.

2. The Court

The Swiss court obviously adjudicates the claim, perhaps less obvious is the fact that the cantonal courts placed a great deal of emphasis on arbitration. This is evidenced in the judgments by lengthy descriptions of various discussions between the parties and court in informal sessions; another indication is the fact that ca. 30% of the cases are settled during the lawsuit in court.

As far as economic incentives are concerned, the court is presumed to need revenue. To acquire it, it typically takes a fee that is some percentage of the *Streitwert*⁹. Courts also want to appear “fair” so as not get overruled on appeal, their utility is expressed in terms of fees and disutility from the divergence between claims and counterclaims presented. It is legally disinclined to deviate from the average *Streitwert* submitted by the parties¹⁰.

The fact that the court has discretion in awarding both attorneys’ fees and setting the court’s take of the *Streitwert* based on the difficulty of the case suggests there could be upward bias on the *Streitwert*. Interviewee A indicated that some presiding judges would pressure parties to raise a low *Streitwert* submitted to the court. In our sample, the cantonal judges often characterised patent cases as “difficult” or “laborious”. With exception of a few cantons (cf. Figure 1), most cantonal judges rarely saw a patent case, which implies they would need read the doctrine, jurisprudence, and law thereabout in order to adjudicate the dispute. Merely reading a patent can take an even experienced examiner hours; determining novelty and inventiveness can take the better part of a week in certain cases. So “difficult” or “laborious” when compared to a rental dispute is not necessarily inaccurate.

3. Patent Attorneys

While an entire case can hinge on a single patent attorney’s opinion, the parties and courts essentially treat the patent attorneys like a passive technical resource. According to our interviews with patent attorneys, their fees are a function of difficulty and time involved, and unlike the lawyer’s fees, not directly hinged to the *Streitwert*. The parties would occasionally agree to make the whole suit contingent on a single expert appraisal of the patent, which was a more cost-effective way of settling a dispute. Their utility is defined by the total amount billed.

4. The Defendant

If the plaintiff prevails, the defendant pays damages equal to the *Streitwert* of the case, his own patent attorney’s fees, court costs, plus his opponent’s and his own legal costs. Otherwise, the defendant walks away with nothing besides his costs covered¹¹. Damages modelled as a function of *Streitwert*, this is very stylistic. Most observed cases do not go past preliminary injunction, which indicates damages and payments are likely being made outside of the court. The interviews also support this conjecture; the lawyers indicated that settlements can be anything from a pure bargaining game to an accounting exercise based on standard licensing fees. For simplicity, and as a proxy for the patents value, this damage is assumed to be equal to the *Streitwert*.

5. The Plaintiff

While the other actors are fairly passive, the plaintiff drives the legal action. The risk-neutral plaintiff wants to maximise expected value of the claim upon prevailing, but will only take legal action if and only if she expects to benefit after subtracting all the expert costs, court costs, and all attorney’s fees.

The plaintiff will not file if the suit will cost more than the potential damages recovered – no doubt something any good lawyer would tell a client¹². The implied value of a claim changes with respect to

⁹ While each canton has the right to set its own court costs under the Art. 96 uniform civil Procedure, many if not all, set these in proportion to the claim value.

¹⁰The burden is on the parties to determine the *Streitwert* K. Spühler/L. Tenchio/D. Infanger, Schweizerische Zivilprozessordnung [Swiss Civil Suit Procedure], Basel 2010, 535.

¹¹

$$E\{U_{\text{defendant}}\} = (1 - \text{probLose}) \cdot 0 - \text{probLose}(\text{Streitwert} + 2 \cdot \text{patentAttorneyFee}) \quad (3)$$

$$+ \text{courtsTake} \cdot \text{Streitwert} + 2 \cdot \text{lawyersTake} \cdot \text{Streitwert}) \quad (4)$$

¹²The plaintiff’s decision to go to court can be written as a function of all the legal costs, and the payoff in terms of a lump sum award of the *Streitwert*:

the other cost factors and probability of prevailing in court. This idea is not new: one patent law commentary states that implied costs of a case are used by the court to revise *Streitwert* upward (CH. BERTSCHINGER/P. MÜNCH/T. GEISER, Schweizerisches und europäisches Patentrecht [Swiss and European Patent Law] IV, Basel 2002, 842).

Not all decisions however are so rational. The informants made it clear that emotions and bad blood clouds clear judgement. Furthermore, plaintiffs might not have full information about legal proceedings and costs from the beginning, or be trying to deter future infringement. Informant C mentioned that small businesses often underestimate the costs involved in court battles, and whereas corporate clients can be more ready to settle because they have a better picture of the true costs involved in a court battle. The dirtier managerial secret is that patent holders do always not have a grip on the value of their own patent let alone its legal embodiment in *Streitwert*. The legal literature on patent valuation in Switzerland makes it evident there is not a single accepted practice for valuation; the valuation experiences related by our informants indicated that managers do not really know what the value is, nor is there necessarily a real attempt at valuation, and even when valued, the court on average rarely awards anything approximating the value of right infringed.

Having set up all the actors' preferences, we now turn to the actual data to fill in the blanks. Given the centrality of the plaintiff in launching a suit, we shall largely focus on her decision and its implications in patent rights enforcement.

6. Parameters of a Swiss Civil Case

In addition to the general, case attributes presented in the first section, some of the key economic variables were coded so as to permit a parametrisation of the foregoing. These values are presented in Table 8 in the appendix.

Armed with an idea of how things work in a typical case, the chances of success, and costs, we shall now explore the implications.

III. Some Implications of Litigation Costs

1. When (not) to go thermonuclear

Recall from that the average cost of a principle patent lawsuit is about CHF 408000; this is also the amount a plaintiff would have to pay should she not prevail in her claim. Her historically determined probability of winning is 41%. Her probability of losing is 59%. Thus her expected costs of a suit becomes ca. CHF 240000 ($0.59 \cdot 408000$). She is indifferent between suing and being infringed if she will gain 587000 in benefit ($240000/0.41$). She will sue, if this will restore that more than that amount of benefit. Conversely, it becomes rational to infringe on her invention, if it is worth less than this amount.

The cost structure of the new patent court does hold out the possibility that the break even point will be lower, but it would require a radical new take on damage awards. Table 9 shows where a plaintiff might break even – at about 172000 francs (*provided* damages are awarded as a lump sum equal to the *Streitwert*) (Table 9 in the appendix).

However, this would require a major change in legal practice because plaintiffs up until now have, on average, only recovered a fraction of *Streitwert* in Swiss courts¹³.

However, suing only when breaking even is not always the best move. A patent owner can deter infringement by developing a reputation to litigate at a loss. Steve Jobs, Apple's founder, famously said, "I will spend my last dying breath if I need to, and I will spend every penny of Apple's \$40 billion in the bank, to right this wrong. I'm going to destroy [Google's] Android, because it's a stolen product. I'm willing to go to thermonuclear war on this (W. IZAACSON, Steve Jobs, New York 2011, 1330)." Cooler heads seemed to have prevailed: Apple now has \$ 137 billion in the bank as of Q1 of 2013, and An-

$$E(u_p) = \frac{1 - \text{probWin}}{\text{probWin}} \cdot (2 \cdot \text{patentAttorneyFee} + \text{courtsTake Streitwert} + 2 \cdot \text{lawyersTake Streitwert}) \quad (5)$$

$$\text{if } \text{Streitwert} \geq E(u_p) \quad (6)$$

¹³The plaintiff's benefit using the empirically estimated parameters from Table 8 above is for the Federal Patent Court would be:

$$U[\text{Streitwert}] = \frac{0.41 \cdot \text{Streitwert} - (1 - 0.41)(2 \cdot 31000 + 20.2 \cdot \text{Streitwert})}{\text{Streitwert}^{0.5715} + 2 \cdot 0.11 \cdot \text{Streitwert}} \quad (7)$$

droid is still around. In the Swiss court decisions, we did not see many suits conducted by the same litigant that would indicate such an aggressive strategy of deterrence.

Strategy aside, the private-value of the vast majority of Swiss patents probably falls well below even the new threshold value because of Switzerland's small market size. Furthermore, confrontational Jobsian megalomania is not a trait generally associated with Swiss managers. As stated above, both the court records and interviews hint at more conciliatory dispute resolution. High relative litigation costs no doubt also play a role. All this begs the question whether widespread infringement could be Switzerland's secret sauce for innovation?

With a concrete understanding of the plaintiff's decision, we now switch points of view to the competitor's perspective.

2. Why judicial examination is (microeconomically) broken

Patent Law Art. 26 allows a party with a proven interest to file a nullity suit, which would, upon success, permit a court to modify or strike the patent down. Despite the public good of having fewer bad patents in the system, Swiss legal procedure makes no special cost provisions for patent nullity actions. That is to say such cases are by and large subject to the same court costs as those presented above. The following is a sketch of why this cost constellation is problematic from a competitor's perspective.

Imagine a type of patented product whose cumulative countrywide profits are one million Swiss francs. Since only a single firm produces this product based on its monopoly right, that firm's profit would be the entire million. Enter our potential plaintiff, a firm that believes the patent is null. Upon winning, the firm will receive a portion of those monopoly profits, but since there will be two firms competing after the judgment, the firms' profits are given by the total value of the patent divided by the number of firms (i.e. profit/2). Now consider the most general case where there are n other competitors besides the patent holder and potential plaintiff. It becomes evident that the incentive to launch a nullity action evaporates when the number of firms is large because profit goes to zero. Of course the potential plaintiffs could coordinate a lawsuit, but as the number of firms grows so do the organisational costs amongst the potential plaintiffs. Moreover, some of them will have an incentive to free ride on the others' lawsuit. Around the time when the Swiss legislature was debating an unexamined patent in the early 1950's, imports were about 3.2% of GDP compared with 32% of GDP today¹⁴. A nullity action that might have been profitable in a duopolistic or oligopolistic situation of the post-war sheltered market has become a less attractive when the world's producers can compete alongside national firms.

The evidence for this hypothesis is admittedly limited, but we do know that nullity actions are quite rare which is consistent with the theory. The Swiss patent registry has seen only 6 patents between 1991–2011 that have been either modified or annulled. At the very least, the value of the case would have to be about double the value threshold before a nullity suit would be worth considering because post-suit profits are halved.

While judicial review might be "microeconomically" broken, this does not necessarily imply that it is "macroeconomically" broken. If there are no unjustified patents, there is no social cost. Even if there are unjustified patents, but they have little to no value, there is no socially deleterious monopoly rent. Furthermore, if all the unjustified patents have a value greater than about 1.2 million, judicial review should work when the number of firms is small, mitigating any economic damage. That is quite a few "ifs". Even then the amount damage still might be less than the costs of examination, which is a partial functional substitute to the nullity suit. Though there are ways to estimate these ill-gotten gains, explaining the rationale, methods, and assumptions in doing so would go far beyond the scope of this article, for this reason, we next examine an apparently missing denizen of Swiss litigation landscape – the (too) much maligned "patent troll".

3. Hunting the (elusive) *Trollum patentorum helveticum*

Patent trolls are typically non-producing entities that do not directly use or implement the patented technology in question. They can play a useful role in the patent ecosystem by buying up and market-

¹⁴ WTO 2011 country profiles. 1948 imports from WTO over 1947 GDP based on F. Andrist/R. Anderson/M. Williams, Real Output in Switzerland: New Estimates for 1914–47, US Federal Reserve Review 2000.

ing technologies, which in the hands of another proprietor, might have otherwise lain fallow. Aside from subsisting on courtage, trolls feed on settlements and damages. A patent troll thus has a different profit strategy than a producing entity in that it often allows the infringement to occur rather than prevent it as would a producing entity. Trolls will also be much less likely to strike a cooperative bargain (e.g. cross-licensing) with producing entities because they depend on licensing and damages rather than revenue from production. Trolls are a major source of legal costs in some systems: lawsuits from non-producing entities now comprise about 61% of the lawsuits in the US federal courts¹⁵. In stark contrast, of the some 160 Swiss judgments examined, there did not seem to be a single *prima facie* case of trolling. The argument advanced here is that both payoffs and costs are not conducive to trolling.

The first and most basic reason why patent trolls seem to be an endangered species in Switzerland is that the Swiss market is small compared to other jurisdictions. This implies that both the likelihood of infringement and the size of possible damages are small compared to the United States or even Germany where trolls are known to dwell (M. REITZIG/J. HENKEL/C. HEALTH, On sharks, trolls, and their patent prey – Unrealistic damage awards and firms' strategies of 'being infringed', Research Policy 2007). Assuming courts award damages proportionally to relative market size, measured by GDP, a troll would be awarded about nine times more for a patent violation in Germany or 42 times more for a violation in the United States¹⁶. There is no doubt some critical jurisdiction/market size below which a patent troll's business model becomes unprofitable. Switzerland, as a small economy, seems to fit that general economic expectation. This basic economic presumption aside, there also are good legal reasons.

ANDRI HESS discusses some of the legal reasons for why typical cases of trolling in the United States would be difficult or impossible under Swiss law¹⁷. Reasons for which he cites: 1. the lack of penal damages; 2. the lack of submarine patents (patents that are not published quickly enough); 3. no patents on contentious and vague software and business processes; 4. more extensive compulsory licensing; 5. compulsory licensing for a wide range of subfields; 6. a strong legal bar against abuse of right.

That last point is especially relevant. The tactic of waiting until an infringement has occurred or unrecoverable investments have been made in a product is common amongst trolls. In theoretical models of troll behaviour, both SHAPIRO 2010 and HENKEL 2007 highlight that waiting until an infringer has incurred large sunk costs before launching infringement proceedings can be an optimal strategy.

Hess points out that waiting is a questionable strategy under Swiss law given its strong principle of abuse of right; Swiss Civil Code Art. 2 para. 2 states that an "obvious abuse of a right receives no protection under the law". Common law has practically an opposite take: "If it was a lawful act, however ill the motive might be, he had a right to do it"¹⁸. Hence the would-be viable strategy of waiting to maximise damages in some common law jurisdictions becomes at best dubious legal tactic under Swiss law, especially since the Federal Court weakened the legal test for abuse of right in *i.S.I. Inc. vs. I.com Standard Inc.* (FCD 117 II 575). The results of this investigation largely support HESS's assertion that the Swiss legal environment is hostile troll habitat. But there are a few deficiencies in his analysis become apparent when we look at the court case data.

First, HESS underplays the role of preliminary injunctions in trolling. The economic literature on patent trolls shows how potent an injunction can be in negotiations because it has the potential to cut off the entire revenue stream of a given product line (cf. SHAPIRO 2010; HENKEL 2007). As one defendant put it, a preliminary injunction in the United States "create[s] the financial equivalent of nuclear winter (M. ARMOND, Introducing the Defense of Independent Invention to Motions for Preliminary Injunctions in Patent Infringement Lawsuits, California Law Review 2003, 120);" it can force even a large company with deep pockets quickly to the negotiating table. Swiss law also provides for temporary injunctive measures, but it is a mere shadow of the legal cudgel that makes companies cower in fear in the United States. Whereas US federal courts are wont to grant an injunction, the opposite holds true in Switzerland. When reading the tone of the cantonal judgements, one gathers that Swiss courts seem very disinclined to issue injunctions. Our sample statistics also bear this out: (pre-)preliminary actions only

¹⁵ S. McBRIDE, US patent lawsuits now dominated by 'trolls'-study, Reuters 2010-12-10.

¹⁶ 2011 PPP GDP.

¹⁷ A. HESS-BLUMER, Patent Trolls: An Analysis according to Swiss Law, sic! 2009, 851-865.

¹⁸ "The Mayor of Bradford v. Pickles", House of Lords, 1895.

succeed about 26% of the time. Under Switzerland's current uniform civil procedure of 2011, a plaintiff typically must show that:

1. she actually has a right that has been or will be very likely to be violated or vitiated;
2. a disadvantage therefrom that cannot be easily repaired; and
3. (if pre-preliminary, an element of urgency.)

These current cumulative conditions largely codify the previous practice of the cantons, which theretofore was only to allow injunctions when necessary to secure the legal interest of the plaintiff that might otherwise be irreparably prejudiced (secure evidence from destruction, freeze bankrupt assets, etc.).

VS-2007-10-04¹⁹ is a concrete example of this judicial conservatism with respect to injunctions. Therein is described an owner of a patent, which passively mixes mash during fermentation, requesting an injunction against a wine producer who had purchased fermenters from a former distributor. That distributor had lost its right to distribute in Switzerland implying the fermenters were extremely likely to be counterfeits from the grey market. The judge ruled against the injunction, not on material grounds of a plausible interest, the judge even hints at a possible criminal violation, but that examination of the fermenters just was not urgent enough, and that even if the evidence were moved or destroyed, the damage of using the patented fermenters could be repaired. In other words, even where there is a likely blatant violation and evidence could be destroyed, urgency and the fact monetary compensation are available militate strongly against the other requisite factors in the Swiss legal test for an injunction. In other cases, the courts allowed a security deposit to be put up in order to forestall a writ – an option not typically seen in patent cases before US federal courts²⁰. There is also some real legal risk involved in obtaining a Swiss injunction because if it is overturned, the plaintiff can be made liable for the lost-profits arising from the issuance of the injunction itself (LU-2011-06-27)! This again stems from a strong idea of abuse of right, but stands in stark contrast to common law jurisdictions, where “there is no general principle of restitution available to a party harmed by a ‘wrong’ court order²¹.”

This case would have likely merited an injunction because the US Federal Court “has indicated that an injunction should be issued once infringement has been established unless there is a sufficient reason for denying it²².” Assuming that the winemaker is typical, (s)he could have lost out on a whole season's worth of income of about CHF 87000²³ because the case had been (strategically?) introduced right around harvest time. Had the injunction been issued, the winemaker might have been willing to settle for any amount less than this income despite obvious and cheap substitutes for the patented fermentation tanks (e.g. pumps, mechanical or even manual stirring). (Could the judge's real reason for denying the injunction have been a balancing of hardships as required by equity in common law?)

Lastly, while HESS rightly points out the lack of treble damages works to the disadvantage of patent trolls, he misses the fact that *all* civil damages are nigh impossible to recover in Switzerland. Plaintiffs do not pursue damages in the courts, and even when they do, the judgments reveal that the courts were also reluctant to assign direct damages. In fact, we saw monetary damage awards in only eight cases, which represents 5% of the legal actions evaluated. Our informants, including a president of a commercial court, stated that this is the case because Swiss jurisprudence on the matter is inconsistent. To recover, a Swiss plaintiff has to choose between requesting damages or disgorgement of unjust profits; both remedies expire after a year. Even where harm is quantifiable, a claim can easily stumble on proving causality, plaintiffs in our sample seemed to opt for seizure of illicit profit, indicating relief is more likely to be found. Interviewee B, a litigator, stated this is his preferred avenue for recovery. Even then it is hard for plaintiffs to quantify their expected value in case of recovery. Since there is no general principle of discovery, only after wrongfulness has been determined does the judges order the books be examined. In more than one case in our sample did a plaintiff obtain a Pyrrhic victory, winning on the merits, but either not recovering damages, or at a legal cost in excess of what was

¹⁹ This refers to the canton and date of judgment; regular citations are unavailable because the cases were provided on condition of anonymity.

²⁰ e.g. BL-2001-09-26.

²¹ “SmithKline v. Apotex Europe Ltd.”, Supreme Court of Judicature of Appeal, UK, 2006-05-23.

²² “W.L. Gore & Associates, Inc. v. Garlock, Inc.”, 842 F.2d 1275, 1988. This blanket injunction practice was recently overturned in “Robert Bosch LLC v. Pylon Manufacturing Corp.”, 659 F.3d 1142, 2011.

²³ Swiss Federal Office of Agriculture survey for its farm accountancy data network.

recovered. No doubt the relatively weak damage remedies induce settlement prematurely on valid claims, revealing a source of legal inefficiency.

This is all not say that the fabled *Trollum patentorum helveticum* does not exist; 4 of the 16 informants interviewed reported sightings. But the lack of automatic injunctions, small Swiss market, lack of penal damages, and legal difficulty in recovering damages or lost profits, all imply that the Swiss species of troll is likely to be an especially hardy breed.

IV. Conclusion

Coming back to the paper's original purpose, we might conclude that individual suit costs are higher than in other countries, but this does not necessarily imply high systemic costs. Furthermore, judicial inefficiency caused by uncertain damage awards and low probability of plaintiff success, is probably displacing those visible costs in the form of increased infringement and paralegal dispute activity.

The more tempered approach Swiss judges also take to injunctions and damages has distributional implications. Since, trolls disproportionately prey on small companies and start-ups, this judicial stance aids small companies, whilst at the same time lowering the value of patents in general due to diminished enforceability.

A research priority should narrowing the error in estimating the costs of paralegal disputes through survey data. Two policy recommendations would be to standardise damages in patent suits to reduce uncertainty for plaintiffs and eliminate the current prisoner's dilemma for challenging bad patents by incentivising successful nullity challenges to bad patents in some manner.

Summary

In the first section, the basic cost structures of patent litigation were presented using a new dataset created by the author from court decisions. Using that dataset, patent lawsuits historically cost on average about CHF 408000. Many of the costs are probably hidden in paralegal disputes or low-cost "incidents", such as a threatening letter. Without access to lawyers' or patent attorneys' billing records or specific survey data, this paper tries to infer those costs. The annual total cost to the Swiss system is thought to be about CHF 5.8 million 2011. After ascertaining a general cost structure, the paper then developed a model of Swiss litigation. The interaction between those legal structures, and the specific costs where then explored in three vignettes along with the resultant ramifications, namely that: patent infringement up to a patent value of about CHF 587000 can be rational; nullity actions are in most cases a losing proposition; and there is not, nor likely to ever be, US-like troll infestation.

Zusammenfassung

Im ersten Teil werden die grundlegenden Kostenstrukturen von Patentprozessen anhand eines vom Autor aus Gerichtsentscheidungen neu geschaffenen Datensatzes dargelegt. Ausgehend von diesem Datensatz kosteten Patentprozesse in der Vergangenheit durchschnittlich rund CHF 408000. Viele dieser Kosten sind wahrscheinlich hinter Paralegal-Kosten oder wenig kostenträchtigen Ereignissen wie z.B. Verwarnungsschreiben versteckt. Ohne Zugang zu den Abrechnungsunterlagen von Anwälten oder Patentanwälten versucht der vorliegende Beitrag, diese Kosten zu ermitteln. Die jährlichen Gesamtkosten des schweizerischen Systems beliefen sich auf rund CHF 5,8 Mio. (Kaufkraft 2011). Nach der Ermittlung der generellen Kostenstrukturen entwickelt der Beitrag anschliessend ein Schweizer Modell für Gerichtsstreitigkeiten. Die Interaktion zwischen diesen Rechtsstrukturen und den spezifischen Kosten werden dann in drei kurzen Darstellungen untersucht und zusammen mit den folgenden Schlussfolgerungen vorgestellt: Bis zu einem Streitwert von rund CHF 587000 kann eine Patentverletzung rational begründet werden; Nichtigkeitsklagen sind in den meisten Fällen Verlustgeschäfte; es gibt keine Plage von Patentrollen wie in den USA und es ist auch nicht wahrscheinlich, dass es solche je geben wird.

Résumé

En premier lieu, l'auteur présente les structures principales des coûts des procès en matière de brevets à l'aide d'une nouvelle banque de données qu'il a établie sur la base de décisions judiciaires. En se référant à cette banque de données, les procès en matière de brevets ont coûté par le passé en

moyenne CHF 408000. Une part importante de ces coûts se dissimule vraisemblablement derrière des frais «para-légaux» ou des opérations peu coûteuses comme la rédaction de lettres de mise en demeure. Sans avoir eu accès aux notes d'honoraires des avocats ou des conseils en brevets, le présent article tente de déterminer ces coûts. Les coûts annuels globaux du système suisse se sont chiffrés à environ CHF 5,8 Mio. (pouvoir d'achat 2011).

Après l'évaluation des structures générales des coûts, l'auteur de l'article développe ensuite un modèle suisse pour les litiges portés devant les tribunaux. L'interaction entre ces structures juridiques et les coûts spécifiques est enfin examinée à la lumière de trois brefs exposés et dont la présentation est accompagnée des trois conclusions suivantes: la violation d'un brevet peut être motivée de manière rationnelle jusqu'à concurrence d'une valeur litigieuse de CHF 587000; les actions en nullité constituent dans la plupart des cas des causes perdues; les trolls en brevets ne sont pas légion comme aux USA et il n'est pas vraisemblable qu'il en soit ainsi à l'avenir.