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**Transaction Costs and Trolls:
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Inventors, Small Firms and
Entrepreneurs in Patent Litigation**

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Transaction Costs and Trolls: Strategic Behavior by Individual Inventors, Small Firms and Entrepreneurs in Patent Litigation*

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Abstract

The role of individual inventors, small firms and entrepreneurs in the patent courts has become controversial for two, somewhat contradictory reasons. First, there is the view that small parties may be at a serious disadvantage in defending their intellectual property rights in the courts since they do not have the financial resources to overcome the transactions costs of litigation. However, there is also a fear that some small inventors and licensing firms may be operating as “trolls,” using the courts as a mechanism to extract economic rents from large companies.

Using original court documents to accurately identify the parties, outcomes and disputed patents in cases filed in 2000 and 2002, we explore how the resolution of patent cases relates to the nature of the parties. In particular, we examine whether individual inventors and entrepreneurs are able to defend their patent rights and whether patent “trolls” are a significant problem. We find that small parties are quite active in our cohort of cases, constituting nearly half of all plaintiffs. However, most small plaintiffs are suing other small parties. Nonetheless, we also find that about 20% of small plaintiffs are suing defendants with annual sales greater than \$500 million. These results indicate that small parties are active in the patent courts and are suing large alleged infringers, but that large infringers are not the primary focus of their activity.

However, when small plaintiffs sue large defendants, the vast majority are able to overcome transaction costs and seek judgments against large firms or litigate to a trial. In fact, small firms are the most likely among all plaintiff categories to seek a judgment and are as likely as large firms suing other large firms to litigate to a trial. Thus, the possibility of high damages combined with institutional arrangements, such as contingency fee lawyers, may allow inventors and entrepreneurs to overcome the barriers to enforcement of patent rights. But, this conclusion must be accompanied by an important caveat. In cases with small plaintiffs, various indicators of patent quality, such as the number of claims and the number of backwards citations, increase with the size of the defendant. The same trend is not evident for large or medium sized plaintiffs. Thus, there is some evidence that when suing a large alleged infringer, small parties are only enforcing their most “valuable” patents, and that the “average” case may be filtered out.

Finally, we explore the role of licensing firms, the most common candidate for the “troll” moniker. We find that the licensing firms in our cohort of cases—all of which would have classified as small firms as of 2002—are a very small percentage of all plaintiffs. However, when licensing firms sue large firms, they do not have the same propensity to seek a judgment or go to trial as witnessed for other small firms suing large firms. Thus, our results suggest that patent litigation is not dominated by “trolls,” but the best candidates for the “troll” moniker do seem to behave differently in comparison with firms of similar size. However, these results should be evaluated with caution; it may also be that the small numbers of such firms makes it difficult to analyze their behavior.

Keywords: Intellectual Property; Strategy; Technology and Innovation; Patents; Litigation

1 Introduction: Firms, IP Strategy, and the Transaction Costs of Litigation

There is a growing realization among students of firm behavior of the importance of patents as a strategic resource. The choice of what to patent and how to manage a patent portfolio are important considerations for any company whose business centers on the development of new technology.¹ Firms have to be vigilant in defending their intellectual property rights and, when developing new technologies, firms must be aware of the intellectual property rights held by other firms to avoid a charge of infringement. All these aspects of the relationship between innovation and the patent system are important for firms engaged in developing new technologies and products.

However, in the United States, the patent system has two-stages of institutions.² In the first stage, the U.S. Patent and Trademark Office grants property rights to inventors. In the second stage, inventors can protect those rights through patent infringement suits in the courts and alleged infringers defend themselves by challenging improvidently granted patents and have them declared invalid.³ Thus, a firm's intellectual property strategy must include the possibility of using the court system to protect its rights or challenge the rights of others through an invalidity defense; analysis of the behavior and performance of the innovative firm requires a better understanding of how such firms behave when disputes over intellectual property rights graduate to a formal patent infringement suit.⁴

Understanding the behavior of firms in patent disputes is particularly important given the high costs of patent litigation. Firms with few resources—financial or otherwise—may be at a disadvantage in formulating the best strategy for defense of their property rights. Thus, the transaction costs associated with litigation⁵ may have a major impact on the ability of start-ups, entrepreneurs and individual inventors to defend their property rights. Even large firms may decide that it is worth negotiating some form of settlement with a “patent troll”

¹See, for example, Anton and Yao[3], Hall and Ziedonis[15], Ziedonis[39].

²See Kesan [17], Kesan and Banik [19].

³The PTO currently has two mechanisms for “re-examination” of previously granted patents. However, they are only used on a very limited basis compared to reexamination procedures in Europe. See Graham, et. al.[12].

⁴See Kaminski[16], Somaya[35].

⁵Throughout this paper, we define “transaction cost” as does Douglas North, among others: “[the costs of] defining, protecting, and enforcing the property rights to goods.” See North[25], p. 28. Thus, the costs associated with a patent infringement dispute—especially one that goes to court—would fit within North's concept of “enforcement costs.”[25], pp. 54-69. While there is disagreement among transaction cost scholars about the treatment of enforcement costs(North[25], p. 54), we still believe that the legal costs of a court case directly or indirectly centered on a patent license is consistent with William's view of transaction costs as “the economic equivalent of friction in physical systems” (Williamson[37], p. 19) and his definition of “ex post” contracting costs: “...[the costs of] the setup and running costs associated with the governance structures (often not the courts) to which disputes are referred...” (Williamson[37] p. 21).

to avoid litigation costs.⁶ However, if small parties do suffer from a disadvantage in defending their property rights, the high transaction costs associated with litigation could create doubts about the legitimacy of the patent system and influence the formation of future policy.

This paper seeks to explore these issues by studying the behavior of parties most influenced by litigation costs—small firms, entrepreneurs and individual inventors. We also study whether such firms are behaving as trolls, exploiting litigation costs to “hold up” innovative companies. To examine these issues, we construct an original data base of case outcomes and profile all parties involved. We then explore how the behavior of these parties relates to their size, as defined by annual sales. We hope these results will shed some light on how the ability of small inventors to cover litigation costs and to defend their rights, and whether so-called “trolls” are a significant problem in the patent courts.

1.1 The Importance of the Parties in Litigation: Theoretical Framework and Empirical Evidence

There is an enormous theoretical literature on how the parties in civil litigation choose whether to settle their case or to litigate it through a trial.⁷ Within this literature, there is a general sense that the outcome of the case will depend in the nature of the parties, i.e., their ability to overcome transaction costs, their degree of risk aversion, in sum, their relative ability to bargain for a settlement agreement or to continue the case to judgment. This view is consistent with the contention that individual inventors, small firms and entrepreneurs may be at a disadvantage when defending their intellectual property rights in the courts. Nonetheless, theoretical models of litigation are frequently constructed with no reference to the actual bargaining strength of parties.

Empirical studies tend to deal with this issue more explicitly. In an exhaustive review, Kessler and Rubinfeld,⁸ summarize the empirical literature on civil litigation, including of the general propensity to settle versus go to trial and how that propensity relates to the parties in the case. They note that difficulty in discussing this literature is that the institutional and legal environments vary substantially across types of civil litigation. For example, there may be evidence that the relative size of parties is important in the litigation of medical

⁶Particularly given the observed relationship between involvement and behavior in civil litigation and the value of a company’s stock; previous scholars have found that both the decision to file a suit and the decision to settle it once filed can have a dramatic impact on a firm’s stock value. See Bhagat, et. al. [7], Raghuram et al. [28].

⁷See, among many others, Bebchuk [4], Nalebuff [24], Png [26], Priest and Klein [27], Reinganum and Wilder [30], Shavell [34], and Spier [36]. An excellent summary of the early literature can be found in Cooter and Rubinfeld [8]. More recent work, particularly that involving multiple parties, is summarized in Daugherty and Reinganum. [9].

⁸See Kessler and Rubinfeld [20] pp. 32-37.

malpractice disputes.⁹ However, it is difficult to translate this result to other areas of civil litigation. The authors conclude:

“The particulars of settlement behavior depend on the nature of the parties (firms or individuals, risk neutral or risk-averse, etc.) on the nature of the cases (large stakes, small stakes, reputation effects, etc.) and more generally on the institutional characteristics associated with the subject matter at issue”¹⁰

To some extent, the legal institutional environment is less of a barrier to studying patent litigation than it is for analyzing other civil disputes. While malpractice and tort suits are largely a matter of state law—and therefore are litigated in systems that vary state by state—all patent disputes are litigated in the Federal District Court system. Moreover, all the appeals of patent cases are handled by a single appellate court, the Court of Appeals for the Federal Circuit, rather than the geographically defined circuits that correspond to all other federal courts. Thus, there is more institutional uniformity across all cases than is true for many other forms of civil litigation, and isolating the effects of the parties in the case therefore should be easier. Nonetheless, the parties in a patent case may still vary across multiple dimensions of size, legal status, nationality, industrial focus, etc. In this paper, we will concentrate on the simplest of distinctions: the relative financial size of the plaintiff and defendants. The different motivations that small and large parties may have as plaintiffs and defendants is summarized in Figure 1.

INSERT FIGURE 1 HERE

The most obvious impact of party size in Figure 1 relates to the relative resources they will have to pursue the litigation. Small parties—whether plaintiffs or defendants—will have fewer resources for pursuing their case in the courts. Patent suits are generally considered to be a form of “complex” litigation and there is general agreement that the transaction costs associated with pursuing a patent lawsuit are high.¹¹ Previous authors have cited legal costs of patent litigation running from half a million dollars to three million dollars per suit or \$500,000 per claim at issue per side.¹² These costs can be a particular barrier to small firms and individual inventors seeking to defend their patent rights. As the owner of one small

⁹Kessler and Rubinfeld.[20], p. 9.

¹⁰See Kessler and Rubinfeld.[20] p. 34.

¹¹See Barton[1], p. 1933. There is considerable policy interest in this question, since the existence of high transaction costs introduce a “free rider” problem that can lead to a level of litigation—and the revocation of improperly granted patents—that is below the socially optimal level. See Farrell and Merges[10].

¹²See Hall [13].

firm puts it¹³:

Only an infinitesimal percentage of small inventors can muster the resources to defend their property—to spend millions of dollars and many years trying to collect through the courts...So in 99 percent of cases the large companies get the IP for free...

Fear that small parties may not be able to defend their rights in the courts has led to a charge that the current patent system may be “dysfunctional” and a call for institutions with lower transactions costs, such as “alternative dispute resolution” and enforced arbitration.

However, if a small plaintiff does file a case against a large alleged infringer, the potential direct financial damages are considerable. As a consequence, there is also an alternative school of thought which fears that the role of “small parties” may be less benign. The publicity accorded to cases like the NTP v. RIM “Blackberry” case¹⁴ has created concern about the existence of “patent trolls.” The exact definition of a “troll” is controversial,¹⁵ but it generally includes the following: 1) they do not actually manufacture a product based on the technology in question and 2) they derive their revenue principally from licensing revenues and court judgments. Frequently, the definition of a “troll” also includes the requirement that the firm or party does not add to the supply of new technology.¹⁶ Thus, in general, the various definitions would largely encompass the “patent licensing firm,” which acquires a portfolio of assigned patent rights which it then licenses and enforces.¹⁷ Various qualifications have been applied to the size, age and quality of the patents a licensing firm might manage to be considered a “troll” and the manner in which it pursues litigation.¹⁸ However, whatever definition is employed, the term’s pejorative implications makes it a convenient way of characterizing an opponent in a patent case.¹⁹

Despite the contradictory views of small inventors as victims or victimizers in the courts, there is little empirical research on how the nature of the parties influences patent cases.

¹³Quoted in Seidenburg[32], p. 51.

¹⁴a search of the Lexis/Nexis business press database found almost 400 articles discussing the case.

¹⁵The term derives from the famous quote of Peter Dekin, formerly of Intel, defining a troll as “someone who tries to make a lot of money off a patent that they are not practicing and have no intention of practicing and in most cases never practiced” (quoted in Rantanen[29], footnote, p. 163.

¹⁶See Rantanen[29], pp. 163-169, for a discussion of the ideas underlying the various definitions of the “patent troll.” Also, Seidenburg[32]and Shapiro.[33].

¹⁷For example, the website of the Acacia Technologies Group describes itself as being “...in the business of acquiring, developing, licensing and enforcing patents. We help patent holders protect their patented inventions from unauthorized use and generate revenue from licensing and, if necessary, enforcing their patents.”

¹⁸Reitzig, et. al.[31], for example, refine the definition to require that the patent be make only marginal contributions to the final product and that the suit is filed so as to blindsides the alleged infringer.

¹⁹As Seidenburg puts it, “...everyone defines the term so that it applies to to someone else, not to one’s own company and clients.”

There are theoretical and anecdotal discussions of the “troll problem,” but no systematic empirical work. And little work exists in the behavior of small firms in the face of high transactions costs. One valuable exception is the work of Lanjouw and Schankerman[21], who explore whether “small parties” are at a disadvantage in patent cases. Unfortunately, they were unable to come to any statistically significant conclusion on this issue.²⁰

However, another major difference highlighted in Figure 1 between small and large parties in patent cases is the size of their patent portfolios. A small plaintiff—*ceteris paribus*—is likely to have a smaller portfolio than a large defendant. As a consequence, there is a higher probability that the patent in question may be crucial to the small firm’s survival, and the litigation may be “betting the firm” on the outcome of the suit. On the other hand, if one of the parties is small, there will be fewer opportunities for cross-licensing to use as bargaining chips in settlement negotiations.

Thus, some of the quadrants of Figure 1 may be of more interest than others. The northwest quadrant (small versus small) is unlikely to be of great interest to policy makers. While the patent in question may be financially important to two small businesses, neither party in these cases has the resources to pursue lengthy litigation and any damages awarded are likely to be low. There is some possibility of cases in which two start-ups are litigating over an important patent and “betting the firm.”²¹ However, such cases are unlikely to be the norm across all industries.²²

The southeast quadrant of Figure 1 may yield more interesting analysis. When a large firm sues another large firm (“Clash of the Titans” litigation), both sides will have considerable resources and while damages may be large, they are unlikely to have a significant impact on firm revenue.²³ What is potentially of greater interest is that both sides have large patent portfolios which they can use to bargain to a litigation-reducing settlement.²⁴ Again, these cases will be explored more thoroughly in future research.

The two remaining quadrants are of greatest interest to this study. The southwest quadrant (“David versus Goliath”) represents cases where small firms attempt to defend their rights against a large alleged infringer. The plaintiff has few resources to pursue the case but the potential for damages is high and can make a significant difference to the plaintiff. On the other, when Goliath sues David (northeast quadrant), the plaintiff has many resources but the prospect for damages is grim. However, in both quadrants, the large party—whether

²⁰Though they were more successful in examining how the nature of the parties influences the propensity of patents to be involved in cases.

²¹See Graham and Sichelman[11] pp.15-17 for a discussion of how firms may use patents to block or “bully” other firms.

²²How this behavior varies across industries may be a fruitful area of future research.

²³although there is some evidence that patent cases may have a significant impact on stock price. See Bessen and Meuer[6] for an investigation of this issue.

²⁴See Graham and Sichelman[?], pp12-13

plaintiff or defendant—may drag out the case and impose high costs on the small party to establish a reputation for “toughness” and deter future infringement and/or litigation.

These views lead to several hypotheses about the behavior of parties in patent litigation. The first two relate to whether small firms participate in the patent courts:

Hypothesis 1. The high transaction costs associated with patent litigation are a barrier that prohibits small parties from defending their intellectual property rights. Thus, small firms will not participate in the courts.

Hypothesis 2. The potential for large damages causes small firms, especially patent licensing firms, often exploiting the high transaction costs associated with patent litigation, to extort licensing payments from innovative companies. These “trolls” have become a significant problem in the patent system,

These two hypotheses express two extreme positions in the debate over the behavior of small parties in patent litigation. We acknowledge that they are in some sense contradictory. In particular we acknowledge that “trolls” may not be the evil that they are frequently characterized to be, and may even be beneficial in some cases.²⁵ However, these two positions do condense the current debate into a framework for empirically exploring the relationship between the nature of the parties and the outcome of patent litigation.

Two other hypotheses relate to how small parties might behave if they did file a suit:

Hypothesis 3. If a small party sues a large alleged infringer, the case is unlikely to be litigated aggressively (for a long period or to a judgement) because the small plaintiff does not have the resources to pursue the case.

Hypothesis 4. Cases with a small plaintiff and a large defendant are more likely to be litigated for a long period or to a judgment, since the offer of cross-licensing in settlement negotiations has less value.

Again, these hypotheses are contradictory and demonstrate how the countervailing forces in Figure 1 may play against each other. To determine the final outcome, we empirically explore how the outcome of a cohort of patent cases is influenced by the size of the parties.

²⁵The licensing functions they provide *might* be useful to some small inventors. Acacia’s website states that “[Their] clients are primarily individual inventors and small companies with limited resources to deal with unauthorized users...” And see McDonough[22] for a discussion of how firms characterized as “trolls” could help overcome the “patent fragmentation” problem.

2 How are Patent Disputes Resolved: The 1995, 1997, 2000 and 2002 Cohorts

To some extent, the inability of past research²⁶ exploring the role of small firms in patent litigation to find any concrete results on this issue may result from their exclusive focus on trials and exclusion of pre-trial rulings. But there is also a fundamental problem in most of the empirical work on patent litigation: the major data sources are centered around the *patents* and not around *cases*. Most work in this area tries to combine the various data sources identifying patent cases²⁷ with data about the patents and patent holders available from the exhaustive NBER database.²⁸ Above and beyond any concerns about the age of the financial information in the NBER statistics²⁹ this information can only describe the *plaintiff* in the case. But the choice to accept a settlement as opposed to continuing litigation is the result of, among other factors, the relative financial resources and bargaining power of both the plaintiff *and* the defendant. Without information on nature of both parties in the litigation, it is impossible to understand how the size of the party and their relative bargaining power influence case outcomes, let alone whether the patent system and the courts favor small parties, large parties or no one.

This work attempts to fill this gap. We start from a previous study which describes the outcomes of patent cases including settlements, pre-trial rulings, and trials.³⁰ In Section 2 of this paper we summarize the results of that work, describing the outcome of patent infringement cases filed in four recent years: 1995, 1997, 2000 and 2002. Then, in Section 3 we report detailed information on the parties to the disputes filed in 2000 and 2002, and the technologies of the patents under dispute. In Sections 4 and 5 we present statistical results on how the nature of these parties, in terms of relative bargaining power, can help explain the resolution of patent cases.

Previous studies of patent litigation have suffered from a major deficiency in the data: while what constitutes a “settlement” is clear conceptually, the term “settlement” is not an official legal term. Two parties may reach a mutually acceptable agreement, or “settle,” their dispute, but the resolution of the case will be legally recorded in some other category.³¹ As a consequence, the official database produced by the Administrative Office of the District Courts³² recording the outcome of U.S. civil cases does not give a complete picture of how many cases are resolved through a judgment³³ and how many are resolved through a settle-

²⁶See Lanjouw and Schankerman[21]

²⁷Derwant LitAlert and the database created by the Administrative Office of the District Courts, to be described later.

²⁸See Hall[14], etc.

²⁹which is drawn from Compustat data from 1989.

³⁰See Kesan and Ball[18].

³¹Such as a “dismissal,” a “consent judgment,” etc.

³²And available through ICPSR.

³³Strictly speaking, a “judgment on the merits” of the case.

ment between the two parties.

To counter this problem, we relied on the official record of case progression and resolution, the “docket report.” This document, which is now available on line³⁴, provides a record of all hearing, motions, and documents filed in the case as well as a description of the judge, parties, and lawyers involved. It also describes the manner in which the case was officially resolved. Using the list of patent disputes provided by the Administrative Office of the District Courts (AO) database, we examined the dockets for patent cases filed in three recent years: 1995, 1997, and 2000. We then classified the cases according to the way they were resolved. This project adds and classifies cases filed in 2002. The results are given in Table 1.³⁵

INSERT TABLE 1.a HERE

INSERT TABLE 1.b HERE

INSERT TABLE 1.b HERE

Much of the detail in Table 1 is of interest primarily to legal scholars rather than economists or business researchers. However, in general terms, most of the items in the first column³⁶ represent cases in which either the plaintiff chose not to pursue the case³⁷ or the defendant never responded to the plaintiffs complaint.³⁸ When the plaintiff dropped the case, the case may have just disappeared for procedural reasons, or it may have been unofficially settled. The second column represents cases that are officially designated in the docket as having settled, or the docket declares them resolved through a mechanism which generally indicates a settlement. The final column indicates cases which were resolved through a final ruling. Overall, about 3.7% of cases are resolved through a trial;³⁹ this figure is largely consistent with previous estimates of the number of cases ending in trials⁴⁰. However, over twice as many cases were decided through a pretrial ruling, either on a defendant’s

³⁴through the courts’ PACER system, at pacer.psc.uscourts.gov.

³⁵Further detail on the methodology used to classify cases and additional results can be found in Kesan and Ball[18].

³⁶The exception being cases terminated on a ruling of “lack of jurisdiction,” which pertains to the legal rules regarding the filing of patent cases.

³⁷“Want of Prosecution” or “Voluntary Dismissal.”

³⁸“default judgment.”

³⁹which may be a jury trial or a bench trial in which a judge makes the final ruling. “Rulings as a matter of law” indicate cases where a jury renders a verdict which is adjusted by the judge if it is not legally accurate.

⁴⁰See Lanjouw and Schankerman[21], p. 67.

motion to dismiss or a motion for a “summary judgment” for the plaintiff⁴¹. Thus, rulings occurring before a trial must also be included in the analysis.

For the remainder of the paper, we will focus on more detailed information for cases filed in the years 2000 and 2002. For comparison, the outcome of patent cases filed in those years are included in Tables 1.b and 1.c. As can be seen, there is little difference between that single year and the other years included in Table 1.a.

Thus, the third column of Tables 1, 1.b and 1.c represent the cases resolved with a final determination by the court that the patent was valid or invalid and/or that it was infringed. However, there is an important distinction between the pre-trial (dismissals with prejudice and, more importantly, summary judgments) and the trial rulings. Filing and arguing a motion for summary judgment is an expensive procedure; a significant amount of time must be dedicated by the legal team to writing and filing briefs and motions and arguing the position in hearings. Nonetheless, the expense of going to trial is much greater. In general, getting *any* ruling is expensive, but getting a ruling *through a trial* is extremely expensive.⁴²

However, these results do not explain *why* the patent holders and alleged infringers settle some cases and pursue a ruling in others. The remainder of this paper will explore one framework for explaining case outcomes: the resolution of the case depends on the relative financial and legal resources of the two parties and their ability and willingness to overcome the transaction costs associated with litigation.

3 The Nature of the Parties in Patent Infringement Cases: Individuals, Small Firms, Universities and Licensing Firms

3.1 The Data on the Parties, 2000 and 2002

While there is a rich and extensive collection of data on patents and patent holders⁴³, detailed information on the parties in patent cases is much more rare. Obtaining such information is particularly difficult since patent cases may have multiple plaintiffs and defendants. Unfortunately, once again, we must use the dockets as our source on the parties to the case.

⁴¹Legally, a summary judgment is granted if the parties are in agreement about the facts of a case and one party persuades the judge that the law is in their favor.

⁴²see Kesan and Ball[18] for analysis of the relative costs of rulings on summary judgment and those obtained through a trial.

⁴³See Hall, et. al.[14], for an explanation of the NBER database on patents.

Cases may have multiple plaintiffs for a number of reasons and the data provided by the Administrative Office of the Courts (AO) lists only the first plaintiff⁴⁴; frequently the first party listed is simply the first in alphabetical order. Fortunately, this situation creates relatively few problems on the plaintiff side of the case. In some cases, the multiple plaintiffs are domestic or international subsidiaries of the same corporation. Obviously all these entities are essentially representing one party and its interests. In other cases, multiple plaintiffs are included to meet legal requirements. The actual patent holder has the right to sue for infringement. However, under some licensing agreements, the licensee may have the power to initiate suits. But unless she holds an exclusive license, the licensee must include the inventor or assignee of the patent as a plaintiff, since legally only they have “standing” to bring an infringement suit.⁴⁵ Thus, the behavior of both plaintiffs is bound by their licensing contract and they have the same interests regarding the patent. All the parties should be making decisions in concert about whether to settle the dispute at a given moment, etc. and they can be consolidated as a single plaintiff,⁴⁶ using the characteristics of the firm with the “deepest pockets”⁴⁷ as covariates describing the nature of the plaintiff to measure the financial resources available.

The situation with multiple defendants is more problematic. A patent holder may be unclear as to the exact name of the firm and sue multiple “variations” as an insurance mechanism. He may sue the parent company, its subsidiary, or multiple subsidiaries located domestically or internationally. He may sue the firm and the owner of the firm. He may sue the firm and certain employees of the firm. He may sue the firm manufacturing the product and the firm which sells it. In a patent infringement suits, none of these defendants is officially the “lead” defendant in the case. In purely legal terms, all have the power to independently decide whether to pursue a judgment or settle the case. Yet, it is obvious that not all defendants are independent economic decision makers. To weed out these extraneous parties, we devised a set of rules for consolidating such dependent parties into those who are the actual decision makers. Details are provided in Appendix 1. We then employed two methods for treating the remaining defendants, one in which all were viewed as independent decision makers, and a second in which they followed the lead of the largest defendant. The procedure for doing so is described in greater detail in Section 3.4.

Thus, our analysis of the impact of the relative financial resources and bargain of the parties began with compiling a list of all the parties in cases filed in 2000 and 2002. We also recorded how each defendant’s participation in the case was resolved—i.e., was there a settlement agreement between that defendant and the plaintiff, or a final ruling for or

⁴⁴And first defendant.

⁴⁵The licensing agreement between the the patent holder defines in advance the rights and responsibilities of the patent holder and licensee should such circumstances arise.

⁴⁶In fact, in the detailed analysis of over 10,000 patent cases, never once did any plaintiff strike a separate deal with any defendant—multiple plaintiffs always behave in concert.

⁴⁷Nearly always the assignee or licensee rather than the inventor.

against that defendant. We then used a variety of data sources to construct a profile of the characteristics of each plaintiff and defendant. Once these profiles were known, we could consolidate plaintiffs and eliminate defendants to compile the final list of plaintiff/defendant negotiating pairs which actually decide the outcome of the case.

3.2 Characteristics of the Parties in Patent Cases Filed in 2000 and 2002

Data was collected on every party—both plaintiff and defendant—in all suits filed during 2000 and 2002. Information about each party was sought in the the U.S. Securities and Exchange Commission’s “Edgar” database for U.S. publicly traded companies and in the “Corporate Affiliations” database available though Lexis/Nexis which provides world-wide coverage of both public and private corporations with sales of at least \$100,000. This information was supplemented by private industry analysis, such as the Forbes lists of the the 500 Largest Private U.S. Firms and 2000 Largest Global Firms. If no information could be found from any of these sources, we searched on the internet for any applicable information.⁴⁸ If we still found no information on a firm, it was assumed that a company that had left absolutely no “footprint” must be or have been small, and the firm was classified as such. A search was also conducted for individuals listed as plaintiff and defendants to see if they had any affiliation with other parties or there was any other relevant information.

Using these same data sources, we determined whether the party was an individual, firm, university hospital or licensing firm. We determined the line of business of firms, as defined by SIC codes, NAICS codes, or descriptions. In particular, patent licensing firms were identified from their SIC code, description in Lexis, website description, or discussion in industry sources.⁴⁹ We also collected data on the location or state of incorporation of the firm, whether the firm was public or private, the stock exchange on which it was listed (if relevant), and whether it was an independent corporation or a subsidiary of a larger corporation.

But most importantly for the analysis in this paper, we determined the firm’s annual sales for the year the case was filed or the latest year available. We used this information to classify firms into three categories: small firms, with sales of less than \$10 million per year;⁵⁰ medium firms with sales between \$10 million and \$500 million; and large firms with

⁴⁸For example, the firm’s website; press releases or industry news reports that verified that the private firm in question had been acquired by another private firm; etc.

⁴⁹Licensing firms are generally defined as any firm which is in the business of licensing one or more patents. However, such firms may include entities created by individuals for tax purposes which could therefore be viewed as “individuals.” We classify such licensing firms as individuals and not “licensing firms” in our tally.

⁵⁰This level of sales roughly corresponds to the 2002 annual sales of firms with 500 employees according to the U.S. Census Bureau’s Census of Industry. Thus, it roughly equivalent to both the Small Business Administration’s definition of a “small firm” which and the size firm that would qualify for “small entity” status and reduced fees at the U.S. PTO. Firms for which no financial information could be found in any

sales over \$500 million.⁵¹ We used this information both for purposes of combining plaintiffs according to the characteristic of the consolidated plaintiff, eliminating defendants who are not independent decision makers, and constructing multiple plaintiff/defendant pairs for each case representing the relative strength of the independent defendants against the consolidated plaintiff.

Table 2 gives a breakdown of the parties according to some of these criteria after consolidation of defendants which were obvious “name variations” or subsidiaries.⁵²

INSERT TABLE 2 HERE

3.3 Small Firms, Universities, and “Trolls”

The data suggest that, based solely on a cursory examination of the dockets, individuals and small firms are very active in patent litigation both as plaintiffs and defendants. Over half of both the plaintiffs and defendants are individuals or small firms.⁵³

In addition, our data revealed several interesting facts about different kinds of parties that have been sources of controversy. For example, universities were not highly active in litigation; only eighty-three plaintiffs were universities and they defendants in only a handful of cases. Thus, our results show that universities were still not active in litigation, even as late as 2002. Moreover, they were typically accompanied by other parties. In over half of the cases where a university was a plaintiff, they were accompanied by large or medium firm as a co-plaintiff. In fact, universities had another firm, of whatever size, as a co-plaintiff in all but twelve cases.

Finally, among the most controversial plaintiffs are the patent licensing firms. These firms are in the business of acquiring the rights to patents owned by others and then licensing the patent to third parties and/or enforcing the patent rights. Since they neither produce the

source were also classified as “small,” since these firms were usually producers of a limited range of products or small retailers. Again, we assumed that a firm which left no “footprint” in the paper or virtual media was unlikely to have been a major financial player, and therefore is or was likely to have been small.

⁵¹The \$500 million cutoff was chosen to largely coincide with the low end of the S and P 500.

⁵²Several cases filed by the Lemelson Foundation in 2000 are not included in these tallies, or in the analysis to follow. These 5 cases, each with between 80 and 150 defendants were ultimately dismissed with no real litigation activity. However, the large number of plaintiffs would have dominated the statistical results, biasing the analysis to reflect how defendants react to being sued by Lemelson versus non-Lemelson plaintiffs rather than how they react to being sued by a large organization or a patent licensing company.

⁵³Many of these individuals and small firms are patent owners who license their intellectual property to large firms. Therefore, they may be consolidated into the large “case plaintiff” in the later analysis. However, as will be shown, even after consolidating plaintiffs, small parties are very active in patent litigation.

patented invention nor exploit the patent to produce a product, they are among the parties most frequently cited as the most prominent form of patent “troll.” We do not necessarily adopt this position.⁵⁴ But our results give an idea about whether they are becoming an important factor in the patent courts. In 2000 and 2002, 157 plaintiffs in 156 cases were patent licensing firms. Thus, 3% of the plaintiffs, who were active in 4% of the cases, were licensing firms. While it is, of course, difficult to make too strong a claim based on only two years of data, these results do not support the second hypothesis cited above. To the extent that licensing firms are the principal candidates to be “trolls,” it does not appear that the patent courts are “overrun” by such firms.

3.4 Consolidating the Parties and Constructing the Units of Analysis.

The last section discussed how, on at least a superficial level, small parties do not seem to be shut out of the patent courts. In this section, we will show that the same conclusion can be made at the case level, as well.

Analyzing the impact of the nature of the parties on the outcome of patent cases poses several methodological challenges. As shown above, many cases have both numerous defendants and plaintiffs. In the abstract theory of litigation, all plaintiffs and defendants are able to separately resolve their differences. However, assuming that every plaintiff will negotiate with every defendant would quickly become analytically intractable. More importantly, such an assumption is institutionally inaccurate; in practice, many parties are not true independent decision makers in patent cases. As described earlier, eliminating parties that were not truly independent was relatively easy for plaintiffs. Most co-plaintiffs belonged to the same corporate family or are a combination of the original patent holder and licensees;⁵⁵ Given the fact that patentees and licensees are bound by contract, it is highly unlikely that these parties would ever operate independently in the course of the litigation. And, in over 10,000 patent cases examined for this study, they are never observed to do so.⁵⁶ It therefore was assumed that all the plaintiffs would be pursuing the same issue, and the plaintiff with the “deepest pockets” would have the greatest influence on the prosecution of the case. Therefore, if *any* plaintiff could be classified as “large,” the overall case was assumed to have a large plaintiff.⁵⁷ If the plaintiff with the greatest financial resources was medium sized, then the case had a “medium” plaintiff. If there was no large or medium plaintiff—so the party

⁵⁴It can also be argued that licensing firms perform a valuable function by streamlining the licensing process.

⁵⁵Unless a licensee is the sole licensee of the patent, it must be accompanied by the patent holder in order to file the case. Even when they are not independent, the licensing contract will specify the rights and responsibilities of both if the patent is ever infringed.

⁵⁶That is, no plaintiff ever strikes a deal that is independent from its co-plaintiffs.

⁵⁷The reader should recall that large plaintiffs had annual sales of over \$500 million and medium had sales of \$10 million to \$500 million.

was either a small firm or an individual—the plaintiff was considered “small.” Thus, in the absence of contingency fee representation, a small plaintiff truly only has its own meager financial resources to rely on in enforcing its patent rights.

Classification of the defendants was somewhat more complicated. In many cases, the multiple defendants were simply variations on the firm’s name used by the plaintiff in order to insure that they “got it right.” In other cases, some defendants are subsidiaries of their codefendants, or an individual who actually owns the firm. Since such parties are very likely to have the same interests, these defendants could be eliminated as independent decision makers relatively easily. Details on the rules employed for consolidating such defendants are given in Appendix 1.

However, in many cases we are still left with a number of defendants. We followed two possible approaches:

1. All defendants are independent, exercising their independent legal rights. Thus each (consolidated) plaintiff has an independent action with each remaining defendant. The unit of analysis is therefore the “plaintiff/defendant” pair. However, it is unlikely given the common plaintiff, patent, judge, court, etc., that observations drawn from the same case are completely independent. Thus, in later estimation we allow for within-case correlation to produce robust standard errors. (See Woodridge[38], p. 497)⁵⁸
2. The largest defendant determines behavior, and all remaining defendants can still be consolidated, since their interests are still common. As shown in Table 3, the co-defendants in the suit tend to be relatively homogeneous. The majority of small defendants have only other small defendants sharing their side of the dispute. The same is true for both large and medium defendants.⁵⁹ Under this model, we again assume that the party with the “deepest pocket” makes the ultimate decision. Thus, the unit of analysis is the case, and the defendant in the case is assumed to have the characteristics of the largest defendant. Further justification for this method can be seen in Table 4; only about 10% of the unconsolidated defendants drop out of the case early.⁶⁰ The vast majority of defendants continue in coordination to the final judgment or settle simultaneously. And In fact, the majority of the defendants who dropped out of the case early were smaller than their co-defendants and the remaining co-defendants were more homogeneous after the “defection.” All these factors suggest that

⁵⁸These estimates were compared to those assuming all observations, even those drawn from the same case, were independent. While some additional coefficients were significant when all observations were assumed independent, the results were not qualitatively different and would not have changed the interpretation of the results.

⁵⁹We believe, but cannot prove, that the in the cases with both large and small defendants there is some form of marketing, employment or other contractual relationship. Thus, these parties would also tend to have interests that were in alignment.

⁶⁰I.e., have a “separate outcome” from the final resolution of the case.

consolidating all defendants into the largest defendant is a valid treatment of those parties.⁶¹ The unit of analysis is therefore the case, which has a consolidated plaintiff (based on the largest plaintiff) facing a consolidated defendant (based on the largest defendant).

Both these methods for treating defendants will be used in the statistical analysis. As will be shown, the qualitative results are fairly robust across the two methodologies.⁶²

INSERT TABLE 3 HERE

INSERT TABLE 4 HERE

INSERT TABLE 5 HERE

Tables 4 and 5 shows the final breakdown of the observations by the relative size of the parties for both 2000 and 2002 after consolidation. The nine classifications of plaintiff/defendant pairs demonstrated in this table (i.e., “small plaintiff, small defendant;” “small plaintiff, medium defendant;” etc.) allow us to demonstrate the relative financial resources available to each party in the negotiating pair. Table 4 gives the breakdown for the “independent defendant” methodology; Table 5 for the “largest defendant” methodology. Again, we observe that small parties are quite active in patent litigation, both as plaintiffs and as defendants; over half of both plaintiffs and defendants are small. Moreover, the largest number of pairs—approximately 25-30% of all pairs—fall into the small plaintiff/small defendant category. This result suggests that, despite high transaction costs, small parties seem willing to defend their patent property rights in the courts.

Nonetheless, there are a substantial number of cases in the pair categories that represent radically different financial resources. Just under 20% of all cases fall into the “small plaintiff, large defendant;” or “large plaintiff, small defendant” categories. These pairs may be the most interesting for our analysis of the impact of the nature of the parties on patent litigation. However, Table 4 does not support the hypothesis that the patent courts are dominated by small firms “holding up” large firms. While there are a significant number

⁶¹Use of this methodology is also a methodological defense against the valid criticism that treating all defendants as independent and each plaintiff/defendant pair as an observation artificially inflates the significance of the estimation results because of multiple counting of each case.

⁶²Table 6 shows the number of defendants per case after eliminating irrelevant defendants as well as the number of plaintiff/defendant pairs for 2000. From this data it is apparent that patent cases do not typically involve large numbers of effective defendants. Half of all cases have only one defendant; two thirds of all cases have two defendants or less. Thus, after removing extraneous parties named in the dockets, patent litigation usually is a one-on-one conflict and seldom involves a large number of “real” defendants.

(slightly less than 15%) of cases in the “small plaintiff/large defendant” category, a large firm is equally likely to be sued by another large firm. Thus, while small firms do seem to be willing to sue much larger firms, patent litigation does not seem to be dominated by “trolls.”

3.5 Patent Technologies

While the focus of this study is on the parties—particularly small parties—in patent cases, information on patents is essential to the analysis. Without information on the patents and the technologies they embody, our results might be biased by correlation between party size and technology. To avoid this problem, we collected data on the patents at issue in our cohort of cases from two sources: Derwent LitAlert and information on the patents at issue in the case dockets and accompanying documents. Both these sources were equally important. The primary source for the LitAlert data is “actions involving a patent” which the courts are required to report to the U.S. Patent and Trademark Office (USPTO). However, despite the legal requirement, reporting is incomplete and there is essentially no enforcement.⁶³ Patents are frequently in the docket and are always listed in the complaint filed by the plaintiff. But, there is no obligation to list the patent at issue in the docket, and a substantial number of districts do not provide on-line access to complaints. Nonetheless, using the two sources, we were able to find the patent at issue in about two thirds of the cases. Of these, we obtained the numbers of the patents for 1086 cases, about 55% of the total, from LitAlert, so the data was obtained nearly equally from the two sources.

Table 5 lists the data we were able to obtain on litigated patents. We have employed the technology categories developed in conjunction with the National Bureau of Economic Research (NBER) patent database,⁶⁴ which condenses the intricately detailed PTO classification system into six categories.⁶⁵ We have also added a “category zero” for design patents. Table 7 reports the breakdown across these technological categories, both overall and across the size of the consolidated plaintiff. There does not seem to be any overwhelming trend across the size categories, but there does seem to be enough variation across plaintiff size to make the technology an important concern. For example, larger plaintiffs are less likely to hold patents in the mechanical or “other” categories.⁶⁶ Unfortunately, more observations are lost for missing patents among small plaintiffs than for larger plaintiffs as well.

⁶³This situation is particularly problematic since underreporting is not random across districts; some districts do almost no reporting while others are highly compliant.

⁶⁴See Hall, et. al.[14].

⁶⁵It is common for there to be more than one patent in a case, but there is seldom any difference in the technology of said patents at the level of the NBER classification. When there were both design patents and utility patents at issue in the same case, we used the utility patent.

⁶⁶This probably reflects the higher level of activity of small firms in manufacturing items like sporting goods, clothing, novelties, etc., which are grouped in this category.

INSERT TABLE 7.a HERE

INSERT TABLE 7.b HERE

4 How does the Nature of the Parties Influence Case Outcomes: Logit Analysis of the Propensity to Litigate to a Judgment

The data described in the preceding section form the basis for analyzing how the resolution of patent infringement cases is related to the relative size of the parties. Section 1.1 outlined several “hypothesis” about how the nature of the parties might impact the probability of litigating to a judgment. When a small entity sues a large firm, they may be at a considerable disadvantage due to the high transaction costs of litigation. As described above, it is a generally accepted principle, that judgments in patent cases are expensive. Trials involve a considerable expenditure of resources; even pre-trial judgments have apparently become quite expensive.⁶⁷ However, small firms and inventors may not be interested in cross licensing arrangements with the large alleged infringer, so possibilities of negotiating a settlement are reduced.

We conducted this analysis using two measures of how much was invested in pursuing the case. First, we analyzed whether or not there was a final ruling on the merits of the case.⁶⁸ In the next section we will describe the second technique: the probability of reaching various procedural stages of a patent case. Table 8.a summarizes the statistically significant predictions of the probability of a judgment. Two logit models were estimated. The first assumed that all plaintiff/defendant pairs are independent, though we corrected for within-case correlation between observations. The second estimated a logit model using case-level analysis observations assuming that all defendants follow the largest defendant. We also controlled for the technology of the patent according to the NBER categories. Table 8.a also reports the estimated probability of termination through a judgment for a “base” category containing all cases that are not significant in the estimation.⁶⁹ The full estimation results are given in Appendix Table 2.1.⁷⁰

⁶⁷See Kesan and Ball[18], for a discussion of how various proxies suggest a high cost for both trials and pre-trial judgments. Lanjouw and Schankerman[21] discuss how small parties might be at a disadvantage in overcoming these costs taking cases to trial.

⁶⁸That is, whether or not the final resolution for the pair would have fallen in the third column in Table 1.

⁶⁹That is, those which have a value of “zero” for all the significant pairs.

⁷⁰The appendix tables include different ways of treating the outcomes in column 1 of Table 1. Since we

Table 8.b repeats this analysis but separates out patent licensing firms. Section 1.1 described how licensing firms are the most immediate candidates for the role of “patent trolls.” Thus, if their behavior deviates from that of other small firms,⁷¹ this might provide evidence that such firms posed a problems for the patent system.

These models generated several important general results about the role of small parties in patent litigation. Interestingly, the small plaintiff/large defendant pair is the *most* likely to litigate its dispute to a judgment, and this result is robust across all model specifications. Thus, the smaller set of bargaining tools and the potential for high damages in the small/large conflicts may “prolong” such cases. However, given the high transaction costs, high participation and a high probability of judgements could only be possible if there exists some mechanism—like contingency fee lawyers—which helps small parties overcome the high costs of litigation.⁷²

Several other interesting results derive from the estimation. Large firms suing other large firms seem to be equally likely as small firms suing large firms to take the case to a judgment, but only in the “largest defendant” specification. Given the general belief⁷³ that two large parties should be able to trade licenses across their large patent portfolios to resolve disputes, this result is somewhat surprising.⁷⁴

Finally, when licensing firms are separated from other firms, their behavior is not statistically distinguishable from the base case. The vast majority of licensing firms in our cohort were classified as “small” as of 2002,⁷⁵ while their alleged infringers were distributed across the small, medium and large categories. Thus, while small firms suing large firms are more likely to litigate to a judgment, the same is not true of licensing firms. When licensing firms sue large firms, they are more likely to settle the case than are other small firms. This result is relatively difficult to interpret; are licensing firms more sophisticated and hence better at negotiating settlements than are other small firms? Are large firms more willing to settle

could be sure that all the observations terminated through so-called “non-merit” resolutions—the first column in Table 1—were procedural or settlements, we estimated three models. Model 1 employs all the cases except those which terminated through a dismissal for “lack of jurisdiction” (I.e., the judge ruled that the case was filed in the wrong geographical jurisdiction or that the plaintiff did not actually have “standing” with respect to the patent in dispute.) Model 2 drops cases that were terminated for “lack of jurisdiction” or “default judgments (The defendant did not appear in court to contest the case.). Model 3 drops all the “non-merit” resolutions in column 1 of Table 1.

⁷¹the category that most of the belonged to as of 2002.

⁷²The final section of this paper will discuss an important caveat regarding this result.

⁷³discussed in section 1.1

⁷⁴and suggests opportunities for future research.

⁷⁵As of 2002, nearly all the licensing firms involved in litigation would be classified in our system as “small.” The Lemelson Foundation—which would be classified as “medium” sized based on its licensing revenues, had several cases which were terminated with non-merit resolutions. A few others, such as Acacia, were small in 2002, although they have subsequently grown to be considered “medium” sized.

with them to remove the threat of prolonged litigation? Without further evidence it is difficult to tell, and it is possible that the small number of licensing firms active in our cohort makes it impossible to statistically discern their behavior.

INSERT TABLE 8.A HERE

INSERT TABLE 8.B HERE

5 How Does Access to Resources Influence the Investment of the Parties in the Case: Ordered Logit Analysis of the Stage of Case Resolution

The previous section analyzed the propensity of the parties to litigate to a judgment on the assumption that judgments were expensive and parties negotiated settlements to avoid transactions costs. However, it is possible for a case to settle and still involve considerable expenditure of resources. The parties may litigate a case, filing motions, pursuing discovery, and even taking the case to trial, only to finally reach a settlement. Thus, the procedural steps taken in a case, no matter how it is resolved, may be a better indicator of costs than termination in a judgment.

To explore this approach to measuring transactions costs, we tracked the occurrence of several benchmarks in the history of each case in our cohort. These procedural indicators are described in Figure 2. Cases begin with a complaint being filed by the plaintiff and served on the defendant. In the first phase they begin several involved legal activities, such discovery and claim construction⁷⁶ Once the case has reached the stage where the parties are filing motions for “summary judgment.”⁷⁷ the parties have already invested a substantial amount in the case. The rate at which costs accrue escalates if the case goes to trial. Thus, a case passes through three procedural stages: the low cost “pre summary judgment” phase; the high cost “summary judgment motions filed” stage; and the very high cost “trial” stage. It should be noted that this ranking does not directly reflect the actual outcome of the case. Cases which terminate before filing of summary judgment motions are nearly always settlements. Cases which go to trial are nearly always decided through rulings.⁷⁸ However, after

⁷⁶“Claim construction” is a legal process involving expert reports and formal court hearings to define the technological boundaries of the patent at issue. Economists might consider the process analogous to the definition of market boundaries in anti trust litigation.

⁷⁷I.e., motions for a pre-trial ruling on some or all of the issues in dispute.

⁷⁸In the 2000 cohort, for example, once a trial had started it always proceeded to a final ruling; there were

the filing of summary judgment motions the case may terminate through a ruling on that motion or it may settle without a ruling. Either outcome in the second stage will involve a greater expenditure of resources than if the case had settled in the first stage.

INSERT FIGURE 2 HERE

We used this ranking of the stages of the case to estimate an ordered logit model of how the nature of the parties influenced whether the case was resolved in the low expenditure stage (before the filing of a motion for summary judgment), high expenditure stage (a summary judgment motion filed, but resolved before a trial), or very high expenditure stage (case resolved through a trial). We estimated the same model specifications described in the previous section (independent versus largest defendant; separating licensing firms). Table 9.a gives the estimated probability of terminating in each stage for all statistically significant pair categories for independent defendants⁷⁹ across technological categories and calculates the “base category” for those without statistically significant results. Table 9.b uses the “largest defendant” specification. Tables 9.c and 9.d summarize the same results when licensing firms are separated. The full estimation results are again given in Appendix Table 2.2.

In general, these results are consistent with the earlier logit analysis. Across all specifications, small firms suing large firms were as likely as large firms suing medium or large firms to litigate to the trial phase and no more likely to terminate the case in the first phase. Small firms suing large firms were more likely to litigate to the later phases than small firms suing small or medium firms or medium firms suing any category. Only large firms suing other firms with some prospect for damages were as likely to go to trial. Thus, once again, small firms seem to be willing to aggressively pursue cases against large opponents.

When licensing firms are treated separately, the results once again resemble those of the logit analysis. The behavior of licensing firms cannot be statistically distinguished from that of the base categories.⁸⁰ When they are suing a large firm, they are less likely to pursue the case to a later stage than are generic small parties suing large firms. Again, it is unclear how to interpret this result.

However, it appears that, in general, small plaintiffs have ways of overcoming transactions costs (e.g., contingency fee lawyers) and/or are not able to arrive at settlements (fewer cross-licensing opportunities.) and therefore are not inhibited from taking cases to trial. The

no cases which settled during the course of a trial.

⁷⁹again, corrected for within case correlation

⁸⁰Although, when the correction for within-case correlation is not performed, their propensity to litigate to the later phases is significantly less when facing a small defendant.

possibility of being awarded high damages still appears to be a motivation. Moreover, there is evidence that large firms suing other large firms are also likely to reach the trial stage. This result suggests that—despite their large patent portfolios—these firms are not able to negotiate a monetary or non-monetary settlement. Once again, the behavior of large firms is worth investigating in further research.

INSERT TABLE 9.A HERE

INSERT TABLE 9.B HERE

INSERT TABLE 9.B HERE

INSERT TABLE 9.D HERE

6 The Nature of the Parties and the Value of the Patents: Are Small Parties being Weeded Out?

The previous sections’ analysis seems to present a more encouraging picture of the ability of small parties to defend their patent rights than theory would suggest. Small firms actively sue large firms in patent suits, and seem to behave at least as aggressively as large firms suing other large firms once a case has been filed. However, there is one last reason for concern; it is possible that the institutional mechanisms which allow small parties to overcome transaction costs—most notably the use of contingency fee lawyers—may filter out all but the strongest cases. It seems likely that contingency fee law firms will scrutinize cases carefully, taking on only those where the expected return—both in terms of probability of winning and probable size of damages—is quite high.

Many aspects of this calculus are unobservable. We cannot determine how strong a case can be made for infringement or exactly how great the damages may be. However, it is possible to some extent to examine the patents in the case and using various “patent metrics” estimate the strength or “value” of the patent and the probability that it will be found invalid.⁸¹

⁸¹see Allison, et al [2]; Bessen[5] and Moore[23], for demonstrations on how patent characteristics can be used to evaluate the “value” of a patent.

6.1 Patent Metrics

Filing a patent application carries some expense, but the applicant has a great deal of choice on how much to invest in the writing of the application. The writing and filing of a patent application requires a certain level of professional skill and therefore usually requires the input of a patent attorney. The applicant has the choice of paying for a high amount of the attorney's time, and generating a well-crafted patent and subsequent patent. Or the applicant can invest less, and receive a patent that is perhaps more vulnerable to charges of invalidity. Thus, the patentee must calculate if the patent has sufficient expected value to justify such expense. As a consequence, aspects of the patent such as the number of claims or the its length in comparison to other patents of the same age or technical field can indicate its value. Likewise, prior art search can be expensive, but by putting effort in such a search, the applicant can ensure that the patent, if granted, will hold up against challenges to its validity in court. This fact suggests that backward citations are not only an indicator of the novelty of the innovation, but also of the willingness of the patentee to invest in the patent application. Thus, the patent document expresses the *ex ante* expectations of the patent applicant about the future value of the patent. To some extent, this argument is circular-if the patent has potentially high value, the patentee will invest more in crafting it, making it "stronger," and therefore even more valuable. But this is not our concern; valuable patents should have higher levels of certain indicators than comparable, less valuable patents.

To determine whether only the cases with the "most valuable" patents were filed by small firms against large firms, we collected data on various patent characteristics, especially number of claims, number of back citations, forward citations as of 2008, and own back citations. This number was then normalized for the age and technology class of the patent being litigated.⁸² Table 10 shows the results across the various types of plaintiff/defendant pairs. One trend is immediately apparent from these results: for small plaintiffs, the number of claims and back citations increase systematically with the size of the defendant. However, for large plaintiffs, the opposite trend is true: the number of back citations and claims decreases with the size of the defendant. While these results are certainly not conclusive, they do suggest that perhaps small plaintiffs are required to have stronger patents when facing large opponents. That is, that the "average" infringed patent may be "filtered out" by contingency fee lawyers, with only the cases based on the most "valuable" or strongest patents actually being filed. Future work, employing techniques such as sample selection modeling, will explore this are further.

⁸²that is, it was divided by the average amongst all patent in the same NBER technology class issued in the same year.

7 Conclusion

In recent years, an important issue in U.S. patent policy has been the role of small parties in patent litigation. Are small patent holders able to enforce their rights in the courts? Or are they exploiting the courts, functioning as “trolls” which extort fees from innovative firms. Using detailed data on the parties, case outcomes, and disputed patents of cases filed in a two years (2000 and 2002), we explore these issues. We find that small firms are quite active in the patent courts and sue large firms. Moreover, when faced with a large alleged infringer and the potential for a significant damage award, small parties are able to overcome transactions costs and are the most likely plaintiff to litigate to a judgment and are as likely as large firms suing large or medium forms to pursue the case to a trial. Thus it appears that high damages, combined with institutional mechanisms like contingency fee lawyers may allow small patentees to enforce their rights. However, there is some evidence that when small parties are suing large alleged infringers they are enforcing the most valuable patents and that the patents and cases of “average” quality may be filtered out. It also appears that large firms who actually file cases could be motivated by damages and are not using cross licensing and/or other settlement arrangements to negotiate settlements in litigated disputes. These last two issues will be explored in further research.

On the other hand, we find little evidence that “trolls” are posing a serious problem. The number of patent licensing firms—the most obvious candidate for the role of troll—active in cases filed in the study years was quite modest. Most of these licensing firms were small and they, for the most part, were equally likely to sue small, medium and large firms. However, there is some evidence that when a licensing firms sues a large firm they were less likely to pursue a judgment or a trial than were other small firms. Thus, our results suggest that patent litigation is not dominated by “trolls,” but that the best candidates for the “troll” moniker do seem to behave differently when suing the largest firms than do other firms of similar size. Care needs to be used in interpreting this result, however, since the very fact that they were not present in large numbers may make it statistically difficult to analyze their behavior.

8 Figures

FIGURE 1

Configuration and Theoretical Behavior of Parties in Patent Case

Figure 1: Theoretical Behavior of Plaintiff/Defendant Pairs		
	Small Plaintiff	Large Plaintiff
Small Defendant	<ul style="list-style-type: none"> –Both Parties have few financial resources to pursue case. –Low potential damages. –Both parties’ patent portfolios are small, so few cross licenses to exchange in settlement negotiations. –Patent may be highly important to plaintiff. 	<ul style="list-style-type: none"> –Plaintiff has greater financial resources than defendant to pursue case. –Low potential damages. –Defendant’s patent portfolio is small, so fewer cross licensing possibilities to offer in settlement negotiations. –Plaintiff may prolong litigation for reputation effects.
Large Defendant	<ul style="list-style-type: none"> –Plaintiff has fewer financial resources than defendant. –High potential damages. –Plaintiff may be less interested in cross-licensing, providing fewer opportunities for bargaining. 	<ul style="list-style-type: none"> –Parties likely to be financially equally matched; –High potential damages. –Both parties have large portfolio, providing significant non-monetary bargaining opportunities.

FIGURE 2
Procedural Stages of a Patent Case

Filing of Complaint;	Commence Discovery Claim Construction	Begin filing Motions for Summary Judgment;	Trial
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9 Tables

TABLE 1.a
Resolution of Patent Cases Filed in 1995, 1997, 2000 and 2002

Table 1.a: Resolution of Patent Cases Filed in 1995, 1997, 2000 and 2002								
Non-Merit Dispositions			Settlements and Probable Settlements			Rulings and Verdicts		
Outcome	Number of Cases		Outcome	Number of Cases		Outcome	Number of Cases	
Dismissed Without Prejudice	208	2.28%	Identified Settlements	3774	41.30%	Summary Judgments	533	5.83%
Lack of Jurisdiction	107	1.17%	Consent Judgments	591	17.41%	Judgment on Jury Verdict	237	2.59%
Want of Prosecution	119	1.30%	Stipulated Dismissal	836	9.15%	Judgment on Bench Trial	81	0.89%
Default Judgment	128	1.40%	Agreed Dismissal	3	0.00%	Judgment as a Matter of Law	22	0.24%
Voluntary Dismissal (Complaint not Answered)	1152	12.61%	Voluntary Dismissal (Complaint Answered)	230	2.52%	Dismissals with Prejudice	117	1.28%
						Arbitration	3	0.00%
Subtotals	1714	18.76%		6434	70.41%		990	10.38%
Total of Outcomes							9138	
Other Dismissals							46	
On-going							131	
Unidentified							190	
Total							9505	

TABLE 1.b
Resolution of Patent Cases Filed in 2000

Table 1.b: Resolution of Patent Cases Filed in 2000								
Non-Merit Dispositions			Settlements and Probable Settlements			Rulings and Verdicts		
Outcome	Number of Cases		Outcome	Number of Cases		Outcome	Number of Cases	
Dismissed Without Prejudice	58	3%	Identified Settlements	928	47%	Summary Judgments	129	7%
Lack of Jurisdiction	28	1%	Consent Judgments	146	7%	Judgment on Jury Verdict	44	2%
Want of Prosecution	41	2%	Stipulated Dismissal	227	12%	Judgment on Bench Trial	22	1%
Default Judgment	31	2%	Agreed Dismissal	0	0%	Judgment as a Matter of Law	5	0%
Voluntary Dismissal (Complaint not Answered)	241	12%	Voluntary Dismissal (Complaint Answered)	39	2%	Dismissals with Prejudice	23	2%
						Arbitration	0	0
Subtotals	401	20%		1340	68%		223	12%
Total of Outcomes							1972	
Other Dismissals							7	
On-going							62	
Unidentified							47	
Total							2081	

TABLE 1.c
Resolution of Patent Cases Filed in 2002

Table 1.c: Resolution of Patent Cases Filed in 2000								
Non-Merit Dispositions			Settlements and Probable Settlements			Rulings and Verdicts		
Outcome	Number of Cases		Outcome	Number of Cases		Outcome	Number of Cases	
Dismissed Without Prejudice	39	1.25%	Identified Settlements	1402	44.95%	Summary Judgments	156	5.13%
Lack of Jurisdiction	47	1.51%	Consent Judgments	211	6.76%	Judgment on Jury Verdict	86	2.76%
Want of Prosecution	50	1.60%	Stipulated Dismissal	451	14.46%	Judgment on Bench Trial	25	0.80%
Default Judgment	63	2.02%	Agreed Dismissal	0	0.00%	Judgment as a Matter of Law	9	0.29%
Voluntary Dismissal (Complaint not Answered)	519	16.64%	Voluntary Dismissal (Complaint Answered)	0	0.00%	Dismissals with Prejudice	55	1.76%
						Arbitration	0	0.00
Subtotals	718	23.02%		2064	66.18%		335	10.74%
Total of Outcomes							3119	
Other Dismissals							2	
On-going							56	
Unidentified							130	
Total							3305	

TABLE 2
 Characteristics of Unconsolidated Plaintiffs and Consolidated Defendants⁸³

Table 2: Characteristics of Unconsolidated Plaintiffs and Defendants								
2000								
	Individual	Small Firm	Medium Firm	Large Firm	Univer- sity	Hospital	Govern- ment	Licensing Firm
Plaintiff	340	895	526	536	22	1	0	33
Defendant	467	1,711	612	761	8	4	22	21
2002								
	Individual	Small Firm	Medium Firm	Large Firm	Univer- sity	Hospital	Govern- ment	Licensing Firm
Plaintiff	287	820	611	491	43	3	3	124
Defendant	272	1,812	763	659	6	5	4	5

⁸³Subsidiaries, variations on the same firm name, etc., have been removed from the totals for the defendants.

TABLE 4
Breakdown of Plaintiff/Defendant Pairs

Table 4: Breakdown of Plaintiff/Defendant Pairs, 2000 and 2002				
	Small Plaintiff	Medium Plaintiff	Large Plaintiff	Total
Small Defendant	2110	878	459	3447
Medium Defendant	641	426	313	1380
Large Defendant	724	275	422	1421
Total	3475	1579	1194	6248
Pairs with early "separate outcomes"				
	Small Plaintiff	Medium Plaintiff	Large Plaintiff	Total
Small Defendant	239	58	44	345
Medium Defendant	54	22	25	101
Large Defendant	119	24	33	176
Total	416	104	102	618
Pairs terminating simultaneously at end of case				
	Small Plaintiff	Medium Plaintiff	Large Plaintiff	Total
Small Defendant	1867	819	415	3101
Medium Defendant	588	403	288	1279
Large Defendant	606	255	389	1250
Total	3061	1477	1092	5630

TABLE 5
Breakdown of Plaintiff/Defendant Pairs by Largest Defendant

Table 5: Breakdown of Plaintiff/Defendant Pairs, 2000 and 2002, by Largest Defendant				
	Small Plaintiff	Medium Plaintiff	Large Plaintiff	Total
Small Defendant	1028	506	257	1791
Medium Defendant	465	359	239	1063
Large Defendant	518	229	339	1086
Total	2111	1094	835	3940

TABLE 6
Number of Defendants and Plaintiff/Defendant Pairs per Case

Table 6 : Number of Defendants and Plaintiff/Defendant Pairs per Case								
Defendants per Case	Small Plaintiff		Medium Plaintiff		Large Plaintiff		Total	
	No. of Cases	Plaintiff/Defendant Pairs	No. of Cases	Plaintiff/Defendant Pairs	No. of Cases	Plaintiff/Defendant Pairs	No. of Cases	Plaintiff/Defendant Pairs
1	1412	1412	841	841	690	690	2943	2943
2	304	608	174	348	110	220	588	1176
3	122	366	47	141	35	105	204	612
4	52	208	24	96	17	68	93	372
5	33	165	3	15	6	30	42	210
6	10	60	4	24	5	30	19	114
7	12	84	4	28	2	14	18	126
8	8	64	1	8	2	16	11	88
9	9	81	2	18			11	99
10	10	50			1	10	6	60
11	6	66			2	22	8	88
12	2	24	1	12			3	36
13	2	26	1	13			3	39
14	2	28					2	28
15	1	15					1	15
16	1	16	1	16			2	32
17	2	34					2	34
18								
19	1	19					1	19
20	1	20					1	20
21								
22								
23								
24	1	24					1	24
25								
>25	3	109	1	29			4	138
Total	1989	3479	1104	1589	870	1202	3963	6273

Does not include five cases filed by the Lemelson Foundation in 2000—with 89, 108, 114, 125, and 141 defendants respectively—which were dismissed by the plaintiff. The vast majority of the defendants in these cases were large firms.

TABLE 7

Technology of Patents by Plaintiff/Defendant Pairs: All Defendants Independent

Table 7.a: Technology of Patents by Plaintiff/Defendant Pairs								
Technology of Patents for Pairs with Small Plaintiffs								
	Small Defendant		Medium Defendant		Large Defendant		Total	
	Number	%	Number	%	Number	%	Number	%
0: Design	143	9.68	34	7.08	43	8.25	220	8.88
1: Chemical	104	6.99	25	5.21	36	6.91	165	6.63
2: Computers	232	15.60	110	22.71	200	38.39	542	21.74
3: Drugs, Medical	214	14.39	44	9.17	35	6.72	293	11.78
4: Electrical	57	3.83	44	9.17	60	11.52	161	6.47
5: Mechanical	266	17.89	72	15.00	51	9.79	389	15.64
6: Others	470	31.61	150	31.67	96	18.43	716	28.86
Total	1486	100.00	479	100.00	521	100.00	2486	100.00
Patent Unavailable	624		162		203		989	
Technology of Patents for Pairs with Medium Plaintiffs								
	Small Defendant		Medium Defendant		Large Defendant		Total	
	Number	%	Number	%	Number	%	Number	%
0: Design	57	8.60	23	7.57	20	9.43	100	8.48
1: Chemical	40	6.14	24	7.89	16	7.55	80	6.86
2: Computers	138	21.20	72	23.68	35	16.51	245	20.99
3: Drugs, Medical	109	16.74	39	12.83	49	23.11	197	16.88
4: Electrical	58	8.91	26	8.55	23	10.85	107	9.17
5: Mechanical	104	15.98	49	16.12	25	11.79	178	15.25
6: Others	146	22.43	72	23.36	44	20.75	261	22.37
Total	652	100.00	305	100.00	212	100.00	1169	100.00
Patent Unavailable	226		121		63		410	
Technology of Patents by for Pairs with Large Plaintiffs								
	Small Defendant		Medium Defendant		Large Defendant		Total	
	Number	%		%		%		%
0: Design	44	12.64	15	6.17	15	4.75	74	8.16
1: Chemical	30	8.62	29	11.93	49	15.51	108	11.91
2: Computers	38	10.92	38	15.64	56	17.72	132	14.55
3: Drugs, Medical	71	20.40	59	24.28	87	27.53	217	23.93
4: Electrical	35	10.06	27	11.11	35	11.08	97	10.69
5: Mechanical	41	11.78	20	8.23	27	8.54	88	9.70
6: Others	89	25.57	55	22.63	47	14.87	191	21.06
Total	348	100.00	243	100.00	316	100.00	907	100.00
Patent Unavailable	111		70		106		287	

TABLE 7.b

Table 7.b: Technology of Patents by Plaintiff/Defendant Pairs: By Largest Defendant								
Technology of Patents for Pairs with Small Plaintiffs								
	Size of Defendant							
	Small		Medium		Large		Total	
		%		%		%		%
0: Design	79	11.29	30	8.62	33	9.07	142	10.06
1: Chemical	38	5.43	23	6.61	22	6.04	83	5.88
2: Computers	88	12.57	67	19.25	114	31.04	269	18.98
3: Drugs, Medical	98	14.00	34	9.77	29	7.97	161	11.40
4: Electrical	36	5.14	33	9.48	47	12.91	116	8.22
5: Mechanical	113	16.14	49	14.08	38	10.44	200	14.16
6: Others	248	35.43	111	32.18	81	22.53	440	31.30
Total	700	100.00	347	100.00	364	100.00	1411	100.00
Patent Unavailable	328		118		153		599	
Technology of Patents for Pairs with Medium Plaintiffs								
	Small		Medium		Large		Total	
	Size of Defendant							
	Number	%	Number	%	Number	%	Number	%
0: Design	3940	10.18	19	7.45	18	10.29	76	9.35
1: Chemical	24	6.27	21	8.24	16	9.14	61	7.50
2: Computers	72	18.80	59	23.14	27	15.43	158	19.43
3: Drugs, Medical	52	13.58	30	11.76	35	20.00	117	14.39
4: Electrical	35	9.14	22	8.63	20	11.43	77	9.47
5: Mechanical	72	18.80	43	16.86	22	12.57	137	16.85
6: Others	89	23.24	62	23.92	37	21.14	187	23.00
Total	384	100.00	256	100.00	175	100.00	813	100.00
Patent Unavailable	123		104		54		281	
Technology of Patents by for Pairs with Large Plaintiffs								
	Size of Defendant							
	Small		Medium		Large		Total	
	Number	%		%		%		%
0: Design	28	14.58	11	5.95	11	4.37	50	7.95
1: Chemical	16	8.33	15	8.11	39	15.48	70	11.13
2: Computers	12	6.25	27	14.59	38	15.08	77	12.24
3: Drugs, Medical	41	21.35	50	27.03	75	29.76	166	26.39
4: Electrical	21	10.94	20	10.81	22	8.73	63	10.02
5: Mechanical	28	14.58	16	8.65	24	9.52	68	10.81
6: Others	46	23.96	46	24.86	43	17.06	135	21.46
Total	192	100.00	185	100.00	252	100.00	629	100.00
Patent Unavailable	65		54		87		206	

Table 8.a: Probability of a Case Ending in a Judgment, Model 3								
All Defendants Independent								
Plaintiff	Defendant	Coefficient	nber1	nber2	nber3	nber4	nber5	nber6
Small	Medium	0.52***	31.65	16.38	29.53	16.38	29.73	24.97
	Large							
Medium	Small	-0.85***	10.53	4.74	9.62	4.74	9.71	7.80
	Medium							
Large	Large							
	Small							
	Medium							
	Large							
Other Categories			21.59	10.43	19.94	10.43	20.10	16.52
By Largest Defendant								
Plaintiff	Defendant	Coefficient	nber1	nber2	nber3	nber4	nber5	nber6
Small	Medium	0.41**	18.85	11.01	21.93	11.01	20.10	17.65
	Large	0.77***	24.97	15.06	28.70	15.06	26.50	23.51
Medium	Small							
	Medium							
Large	Large							
	Small							
	Medium	0.48**	19.94	11.71	23.15	11.71	21.25	18.69
	Large	0.53***	20.75	12.24	24.05	12.24	22.10	19.47
Other Categories			13.35	7.59	15.71	7.59	14.31	12.46

Model 1: drop if dismissed for lack of personal jurisdiction; model 2: drop lack of jurisdiction and default judgments; model 3: drop all non merit resolutions

Table 8.b: Probability of a Case Ending in a Judgment, Model 3 Separating Licensing Firms All Defendants Independent								
Plaintiff	Defendant	Coefficient	nber1	nber2	nber3	nber4	nber5	nber6
Small	Medium	0.51	31.22	22.27	29.11	16.25	29.73	24.79
	Large							
Medium	Small	-0.84	10.53	6.91	9.62	4.79	9.89	7.87
	Medium							
Large	Large							
	Small							
Licensing	Medium							
	Large							
Other Categories			21.42	14.68	19.78	10.43	20.26	16.52
By Largest Defendant								
Plaintiff	Defendant	Coefficient	nber1	nber2	nber3	nber4	nber5	nber6
Small	Medium	0.55	25.54	22.10	30.58	21.25	25.35	22.62
	Large							
Medium	Small	-0.58	9.98	8.39	12.46	8.02	9.89	8.63
	Medium							
Large	Large							
	Small							
Licensing	Medium							
	Large							
Other Categories			16.52	14.06	20.26	13.47	16.38	14.43

Model 3: drop all non merit resolutions

Table 9.a: Probability of Terminating in a Procedural Phase of a Case, All Defendants Independent																							
Plain-tiff	Defen-dant	Coeff.	NBER 0			NBER 1			NBER 2			NBER 3			NBER 4			NBER 5			NBER 6		
			Trial Stage			Trial Stage			Trial Stage			Trial Stage			Trial Stage			Trial Stage					
			I	II	III	I	II	III															
Small	Med.																						
	Large	0.37	62	26	12	51	32	18	62	26	12	50	32	18	62	26	12	62	26	12	62	26	12
Med.	Small	-0.64	82	14	5	74	19	7	82	14	5	73	19	8	82	14	5	82	14	5	82	14	5
	Med.	-0.36	77	17	6	68	23	10	77	17	6	67	23	10	77	17	6	77	17	6	77	17	6
	Large																						
Large	Small																						
	Med.	0.35	62	26	12	51	31	18	62	26	12	50	32	18	62	26	12	62	26	12	62	26	12
	Large	0.37	62	26	12	51	32	18	62	26	12	50	32	18	62	26	12	62	26	12	62	26	12
All Other Pairs			71	21	9	60	27	13	62	26	12	59	28	13	71	21	9	71	21	9	71	21	9
Cut 1		0.86 (0.21)																					
Cut 2		2.95 (0.23)																					

note: Uses Model 3: all non merit resolutions are dropped.

Table 9.b: Probability of Terminating in a Procedural Phase of a Case, By Largest Defendant																							
Plain-tiff	Defen-dant	Coeff.	NBER 0			NBER 1			NBER 2			NBER 3			NBER 4			NBER 5			NBER 6		
			Trial Stage			Trial Stage			Trial Stage			Trial Stage			Trial Stage			Trial Stage					
			I	II	III	I	II	III															
Small	Med.																						
	Large	0.57	70	27	3	54	41	5	58	38	4	54	41	5	56	40	5	58	38	4	61	35	4
Med.	Small	-0.62	89	11	1	80	19	2	82	17	1	79	19	2	81	18	1	82	17	1	84	15	1
	Med.																						
	Large																						
Large	Small																						
	Med.	0.53	71	26	2	55	40	5	59	37	4	55	40	5	57	39	5	59	37	4	62	34	4
	Large	0.52	72	26	2	56	40	5	59	37	4	55	40	5	57	39	4	59	37	4	62	34	4
All Other Pairs			81	18	2	68	29	3	71	27	3	67	30	3	69	28	3	71	26	2	74	24	2
Cut 1		1.44 (0.19)																					
Cut 2		3.51 (0.21)																					

Table 9.c: Probability of Terminating in a Procedural Phase of a Case, All Defendants Independent, Licensing Firms separate																							Ball and Kesan	
Plain-tiff	Defendant	Coeff.	NBER 0			NBER 1			NBER 2			NBER 3			NBER 4			NBER 5			NBER 6			
			Trial Stage			Trial Stage			Trial Stage			Trial Stage			Trial Stage			Trial Stage						
			I	II	III	I	II	III																
Small	Med.																							
	Large	0.38	61	26	13	50	31	19	50	31	19	49	31	20	61	26	13	61	26	13	61	26	13	
Med.	Small	-0.70	82	13	5	74	18	8	74	18	8	74	19	8	82	13	5	82	13	5	82	13	5	
	Med.	-0.42	78	16	6	68	22	10	69	22	10	68	22	10	78	16	6	78	16	6	78	16	6	
Large	Large																							
	Small																							
	Med.																							
Licensing	Large																							
	Small																							
	Med.																							
	Large																							
All Other Pairs			69	21	9	59	27	14	59	27	14	58	28	15	69	21	9	69	21	9	69	21	9	
Cut 1		0.82 (0.21)																						
Cut 2		2.91 (0.23)																						

Table 9.d: Probability of Terminating in a Procedural Phase of a Case, By Largest Defendant, Licensing Firms Separate																								Ball and Hesari
Plain-tiff	Defendant	Coeff.	NBER 0 Trial Stage			NBER 1 Trial Stage			NBER 2 Trial Stage			NBER 3 Trial Stage			NBER 4 Trial Stage			NBER 5 Trial Stage			NBER 6 Trial Stage			
			I	II	III																			
Small	Med.																							
	Large	0.55	71	27	2	54	41	5	57	38	4	71	27	2	54	41	5	58	38	4	61	35	4	
Med.	Small	-0.67	89	10	1	80	18	2	82	17	1	89	10	1	80	18	2	82	16	1	84	15	1	
	Med.																							
Large	Large																							
	Small																							
Licensing	Med.	0.46	73	25	2	57	39	5	60	36	4	73	25	2	57	39	5	60	36	4	63	33	3	
	Large	0.45	73	25	2	57	39	5	60	36	4	73	25	2	57	39	5	60	36	4	63	33	3	
	Small																							
	Med.																							
	Large																							
All Other Pairs			81	18	1	67	30	3	70	27	3	81	18	1	67	30	3	70	27	3	73	25	2	
Cut 1		1.44 (0.19)																						
Cut 2		3.47 (0.21)																						

note: Uses Model 3: all non merit resolutions are dropped.

TABLE 10: Patent Characteristics by Plaintiff/Defendant Pairs, 2000 and 2002

Table 10: Patent Characteristics by Plaintiff/Defendant Pairs, 2000 and 2002			
Average Normalized Claims			
	Small Plaintiff	Medium Plaintiff	Large Plaintiff
Small Defendant	1.2823	1.48313	1.72735
Medium Defendant	1.34684	1.56818	1.36326
Large Defendant	1.5518	1.40415	1.52481
Total	1.36784	1.49321	1.5376
Average Normalized Back Citations			
	Small Plaintiff	Medium Plaintiff	Large Plaintiff
Small Defendant	1.32447	1.40415	1.89477
Medium Defendant	1.37849	1.76238	1.59638
Large Defendant	1.55446	1.56326	1.51168
Total	1.39721	1.5507	1.65144
Average Normalized Forward Citations			
	Small Plaintiff	Medium Plaintiff	Large Plaintiff
Small Defendant	2.53101	3.71485	2.97329
Medium Defendant	3.06292	4.05688	3.04493
Large Defendant	3.04594	3.52185	3.89558
Total	2.79505	3.78175	3.3676
Average Percentage own Citations			
	Small Plaintiff	Medium Plaintiff	Large Plaintiff
Small Defendant	.036705	.072203	.12669
Medium Defendant	.055115	.050335	.11311
Large Defendant	.034127	.073983	.143459
Total	.040537	.065657	.129427

10 Appendix 1: Consolidation of Defendants

We then devised the follow set of rules for eliminating irrelevant defendants.

1. Multiple defendants who were obviously included to make sure the correct “name” was cited (e.g., Acme Inc. and Acme Corp.) were consolidated into the most accurate name.
2. Defendants who were subsidiaries of another defendant were consolidated into that defendant
3. Individuals who are known to be sole or majority owners of small proprietorships were consolidated into the firm. However, if multiple owners were sued, they were treated as separate decision makers along with the firm itself.⁸⁴
4. If a small firm was sued along with a single individual, that person was assumed to be the owner/majority shareholder and consolidated into the firm.⁸⁵

⁸⁴In a small number of cases, it was known that the individual involved had some other relationship to the patent—such as previous employment with the plaintiff. In these cases, the employee would still be an independent decision maker.

⁸⁵However, employees of large firms are considered independent decision makers, and if multiple individuals were sued along with the small firm, we could not be sure if they were joint owners, employees, etc., without further information.

11 Appendix 2: Estimation Results

APPENDIX TABLE 2.1
Results of Logit Estimation

Appendix Table 2.1a: All Defendants Independent										
Plaintiff	Def.	Model 1 (drop nojuris)			Model 2 (nojuris/default)			Model 3 (drop nomerits)		
		Coeff.	z	Pr> z	Coeff.	z	Pr> z	Coeff.	z	Pr> z
Small	Medium	0.36** (0.18)	2.00	0.05	0.35** (0.15)	1.93	0.05	0.20 (0.19)	1.06	0.27
	Large	0.70*** (0.19)	4.91	0.00	0.68*** (0.20)	3.45	0.00	0.52*** (0.20)	2063	0.01
Medium	Small	-0.65*** (0.26)	-2.54	0.00	-0.64** (0.25)	-2.49	0.04	-0.85*** (0.26)	-3.24	0.00
	Medium	0.00 (0.24)	0.00	0.99	-0.01 (0.25)	-0.04	0.97	-0.21 (0.26)	-0.84	0.40
	Large	-0.05 (0.29)	-0.19	0.85	-0.07 (0.29)	-0.26	0.79	-0.12 (0.29)	-0.42	0.68
Large	Small	-0.13 (0.26)	-0.51	0.61	-0.12 (0.26)	-0.45	0.65	-0.35 (0.27)	-1.30	0.20
	Medium	0.35 (0.25)	1.41	0.16	0.33 (0.24)	1.34	0.18	0.11 (0.25)	0.45	0.65
	Large	0.45*** (0.24)	1.81	0.07	0.42* (0.40)	1.73	0.08	0.22 (0.25)	0.88	0.38
NBER 1		0.80** (0.40)	1.99	0.05	0.79** (0.24)	1.99	0.05	0.86** (0.40)	2.12	0.03
NBER 2		0.21 (0.22)	0.98	0.32	0.21 (0.33)	0.65	0.52	0.42 (0.33)	1.26	0.20
NBER 3		0.55* (0.31)	1.79	0.07	0.55* (0.31)	1.74	0.07	0.76** (0.31)	2.24	0.02
NBER 4		0.35 (0.33)	1.04	0.30	0.35 (0.34)	1.0	0.30	0.39 (0.34)	1.13	0.26
NBER 5		0.56*** (0.22)	2.57	0.01	0.56*** (0.31)	1.83	0.07	0.77** (0.32)	2.38	0.02
NBER 6		0.52* (0.28)	1.88	0.06	0.53* (0.28)	1.86	0.06	0.53*** (0.29)	1.84	0.07
Constant		-2.50*** (0.27)	-9.31	0.00	-2.48*** (0.27)	-9.22	0.00	-2.15*** (0.27)	-7.7	0.00
Log Likelihood		-1663.24			-1656.33			-1488.20		
Chi Sq(14)		82.08			78.61			81.63		
Prob > chi square		x			0.00			0.00		
N		4516			4451			3390		
Pseudo R2		0.0243			0.0233			0.0268		

Appendix Table 2.1.b: Each Case, by Size of Largest Defendant										
Plaintiff	Def.	Model 1 (drop nojuris)			Model 2 (nojuris/default)			Model 3 (drop nomerits)		
		Coeff.	z	Pr> z	Coeff.	z	Pr> z	Coeff.	z	Pr> z
Small	Medium	0.53*** (0.21)	2.58	0.01	0.52*** (0.21)	2.53	0.01	0.41** (0.21)	1.97	0.05
	Large	0.90*** (0.20)	4.6	0.00	0.87*** (0.20)	4.47	0.00	0.77*** (0.20)	3.83	0.00
Medium	Small	-0.26 (0.24)	-1.08	0.28	-0.26 (0.24)	-1.05	0.30	-0.37 (0.25)	-1.48	0.14
	Medium	0.26 (0.24)	1.08	0.28	0.25 (0.24)	1.02	0.31	0.12 (0.25)	0.5	0.62
	Large	0.23 (0.28)	0.81	0.41	0.20 (0.28)	0.71	0.48	0.10 (0.28)	0.36	0.72
Large	Small	0.19 (0.27)	0.71	0.48	0.19 (0.27)	0.7	0.48	0.04 (0.28)	0.13	0.90
	Medium	0.63*** (0.25)	2.56	0.01	0.61*** (0.25)	2.47	0.01	0.48** (0.25)	1.92	0.05
	Large	0.69*** (0.22)	3.11	0.00	0.66*** (0.22)	2.99	0.00	0.53*** (0.22)	2.34	0.02
NBER 1		0.59* (0.32)	1.85	0.06	0.59 (0.32)	1.85	0.07	0.63** (0.32)	1.95	0.05
NBER 2		0.31 (0.28)	1.09	0.27	0.31 (0.28)	1.1	0.27	0.39 (0.29)	1.37	0.17
NBER 3		0.73*** (0.28)	2.64	0.01	0.74*** (0.28)	2.65	0.01	0.82*** (0.28)	2.91	0.00
NBER 4		0.51* (0.31)	1.67	0.10	0.51* (0.31)	1.67	0.10	0.49 (0.31)	1.56	0.12
NBER 5		0.71*** (0.28)	2.51	0.01	0.71*** (0.28)	2.5	0.01	0.71*** (0.29)	2.49	0.01
NBER 6		0.55** (0.27)	2.08	0.04	0.56** (0.27)	2.09	0.04	0.55** (0.27)	2.04	0.04
Constant		-2.86*** (0.27)	-10.74	0.00	-2.84*** (0.27)	-10.63	0.00	-2.50*** (0.27)	-9.28	0.00
Log Likelihood		-1011.01			-1006.85			-923.84		
Chi Sq(14)		50.33			x			43.51		
Prob > chi square		0.000			0.000			0.0001		
N		2822			2781			2201		
Pseudo R2		0.0243			0.0233			0.023		

Appendix Table 2.1c: All Defendants Independent, Licensing Firms Separate										
Plaintiff	Def.	Model 1 (drop nojuris)			Model 2 (nojuris/default)			Model 3 (drop nomerits)		
		Coeff.	z	Pr> z	Coeff.	z	Pr> z	Coeff.	z	Pr> z
Small	Medium	0.34** (0.19)	1.77	0.0	0.33* (0.19)	1.71	0.09	0.19 (0.19)	0.99	.32
	Large	0.71*** (0.21)	3.43	0.00	0.68*** (0.21)	3.33	0.00	0.51*** (0.21)	2.46	0.01
Medium	Small	-0.65*** (0.26)	-2.49	0.01	-0.64** (0.26)	-2.44	0.02	-0.84*** (0.27)	-3.72	0.00
	Medium	-0.00 (0.26)	-0.02	0.99	-0.01 (0.26)	-0.06	0.95	-0.19 (0.26)	-0.75	0.45
	Large	-0.04 (0.29)	-0.12	0.96	-0.06 (0.29)	-0.24	0.84	-0.09 (0.28)	-0.33	0.74
Large	Small	-0.13 (0.26)	-0.50	0.62	-0.12 (0.26)	-0.44	0.66	-0.33 (0.26)	-1.21	0.23
	Medium	0.35 (0.25)	1.43	0.15	0.34* (0.25)	1.70	0.09	0.15 (0.25)	0.6	0.57
	Large	0.44* (0.25)	1.78	0.08	0.42* (0.25)	1.70	0.09	0.23 (0.59)	0.39	0.70
Licensing	Small	-0.11 (0.70)	-0.16	0.88	-0.12 (0.70)	-0.16	0.87	0.15 (0.65)	0.24	0.81
	Medium	0.20 (0.59)	0.33	0.74	0.19 (0.59)	0.31	0.75	0.23 (0.59)	0.39	0.70
	Large	0.51 (0.62)	0.84	0.40	0.49 (0.62)	0.80	0.42	0.79 (0.60)	1.33	0.18
NBER 1		0.79** (0.40)	1.99	0.05	0.79** (0.40)	1.99	0.05	0.85** (0.40)	2.12	0.03
NBER 2		0.22 (0.34)	0.65	0.52	0.23 (0.34)	0.66	0.51	0.39* (0.22)	1.78	0.08
NBER 3		0.55* (0.31)	1.78	0.07	0.55* (0.31)	1.79	0.07	0.75** (0.31)	2.41	0.02
NBER 4		0.36 (0.34)	1.06	0.30	0.35 (0.34)	1.05	0.30	0.38 (0.34)	1.10	0.28
NBER 5		0.57* (0.31)	1.85	0.06	0.56*** (0.31)	1.84	0.07	0.78** (0.32)	2.34	0.02
NBER 6		0.52* (0.28)	1.85	0.06	0.53* (0.28)	1.86	0.06	0.53*** (0.29)	1.81	0.07
Constant		-2.50*** (0.27)	-9.18	0.00	-2.48*** (0.27)	-9.80	0.00	-2.15*** (0.78)	-7.80	0.00
Log Likelihood		-1663.54			-1656.64			-1488.01		
Chi Sq(17)		81.48			77.99			82		
Prob > chi square		x			0.00			0.00		
N		4515			4451			3390		
Pseudo R2		0.0241			0.0231			0.0270		

Appendix Table 2.1d: Each Case, by Size of Largest Defendant,										
Separating Licensing Firms										
	Def.	Model 1 (drop nojuris)			Model 2 (nojuris/default)			Model 3 (drop nomerits)		
		Coeff.	z	Pr> z	Coeff.	z	Pr> z	Coeff.	z	Pr> z
Small	Medium	0.38*	1.89	0.06	0.38**	1.88	0.06	0.21	1.03	0.30
		(0.20)			(0.20)			(0.21)		
	Large	0.75***	3.99	0.00	0.73***	3.88	0.00	0.55***	2.82	0.01
		(0.19)			(0.19)			(0.19)		
Medium	Small	-0.43*	-1.8	0.07	-0.41*	-1.74	0.08	-0.58**	-2.43	0.02
		(0.24)			(0.24)			(0.24)		
	Medium	0.09	0.4	0.69	0.09	0.37	0.71	-0.11	-0.45	0.65
		(0.23)			(0.23)			(0.24)		
	Large	0.06	0.22	0.82	0.04	0.14	0.89	-0.12	-0.45	0.65
		(0.27)			(0.27)			(0.28)		
Large	Small	0.02	0.08	0.94	0.024	0.09	0.93	-0.19	-0.69	0.49
		(0.27)			(0.27)			(0.27)		
	Medium	0.45*	1.89	0.06	0.43*	1.82	0.07	0.25	1.04	0.30
		(0.24)			(0.24)			(0.24)		
	Large	0.49**	2.32	0.02	0.47**	2.22	0.03	0.28	1.31	0.19
		(0.21)			(0.21)			(0.22)		
Licensing	Small	-0.80	-1.08	0.28	-0.77	-1.05	0.30	-0.74	-0.98	0.33
		(0.74)			(0.74)			(0.75)		
	Medium	0.22	0.35	0.73	0.20	0.32	0.75	0.02	0.04	0.97
		(0.63)			(0.63)			(0.64)		
	Large	0.54	1.16	0.24	0.52	1.13	0.26	0.50	1.03	0.30
		(0.47)			(0.47)			(0.49)		
NBER 1		0.70**	2.25	0.02	0.70**	2.25	0.03	0.75**	2.37	0.02
		(0.31)			(0.31)			(0.32)		
NBER 2		0.39	1.41	0.16	0.39	1.39	0.16	0.56**	1.97	0.05
		(0.28)			(0.28)			(0.28)		
NBER 3		0.90***	3.27	0.00	0.90***	3.28	0.00	1.00***	3.59	0.00
		(0.27)			(0.27)			(0.28)		
NBER 4		0.53*	1.73	0.08	0.53*	1.73	0.09	0.51*	1.64	0.10
		(0.31)			(0.31)			(0.31)		
NBER 5		0.71***	2.53	0.01	0.71***	2.53	0.01	0.74***	2.6	0.01
		(0.28)			(0.28)			(0.29)		
NBER 6		0.59**	2.22	0.03	0.59**	2.24	0.03	0.59**	2.2	0.03
		(0.26)			(0.26)			(0.27)		
Constant		-2.76***	-10.63	0.00	2.74***	-10.54	0.00	-2.37***	-9.04	0.00
		(0.26)			(0.26)			(0.26)		
Log Likelihood		x			-1062.49			-967.80		
Chi Sq(17)		x			51.11			45.82		
Prob > chi square		x			x			0.0002		
N		x			2917			2268		
Pseudo R2		x			0.0235					

APPENDIX TABLE 2.2
Results of Ordered Logit Estimation

Appendix Table 2.2a: Ordered Logit: Termination of the Case by Procedural Stage, All Defendants Independent											
	Plaintiff	Defendant	Model 1			Model 2			Model 3		
			Coeff.	z	Pr> z	Coeff.	z	Pr> z	Coeff.	z	Pr> z
	Small	Medium	0.07 (0.14)	0.654	0.59	0.07 (0.14)	0.47	0.64	0.09 (0.13)	0.68	0.50
		Large	0.450*** (0.15)	3.35	0.00	0.47*** (0.15)	3.10	0.00	0.37** (0.17)	2.2	0.03
	Medium	Small	-0.39** (0.20)	-1.97	0.05	-0.40** (0.20)	-2.01	0.04	-0.64*** (0.19)	-3.55	0.00
		Medium	-0.21 (0.18)	-1.18	0.24	-0.25 (0.18)	-1.36	0.017	-0.36* (0.16)	-1.91	0.06
		Large	0.09 (0.21)	0.45	0.66	0.07 (0.20)	0.35	0.78	-0.01 (0.21)	-0.08	0.94
	Large	Small	-0.20 (0.19)	-1.04	0.30	-0.17 (0.20)	-0.86	0.39	-0.23 (0.21)	-1.09	0.28
		Medium	0.30* (0.16)	1.66	0.10	0.29 (0.18)	1.59	0.11	0.35** (0.19)	1.77	0.08
		Large	0.36*** (0.19)	1.93	0.05	0.34* (0.19)	1.83	0.08	0.37* (0.20)	1.87	0.06
	NBER 1		0.54** (0.25)	2.22	0.03	0.52** (0.25)	2.11	0.04	0.47* (0.28)	1.70	0.09
	NBER 2		0.44*** (0.20)	2.026	0.00	0.45** (0.22)	2.09	0.03	0.38 (0.25)	1.56	0.12
	NBER 3		0.68*** (0.125)	2.91	0.00	0.69*** (0.24)	2.92	0.00	0.50** (0.25)	2.00	0.05
	NBER 4		0.34** (0.23)	1.50	0.13	0.34 (0.23)	1.47	0.14	0.32*** (0.25)	1.27	0.20
	NBER 5		0.49** (0.24)	1.97	0.05	0.47* (0.25)	1.88	0.06	0.38** (0.25)	1.52	0.13
	NBER 6		0.06 (0.20)	0.28	0.77	0.05 (0.25)	0.24	0.81	0.11 (0.22)	0.47	0.64
	Cut 1		1.03 (0.19)			1.01 (0.19)			0.86 (0.21)		
	Cut 2		3.19 (0.21)			3.16 (0.21)			2.95 (0.23)		
	Log Likelihood		-3563.58			"-3530.38			-2739.9439		
	Wald Chi Sq(14)		132.93			129.95			50.70		
	Prob > chi square		0.0000			0.0000			0.0000		
	N		4515			4451			3390		
	Pseudo R2		0.0183			0.0181			0.0185		

Appendix Table 2.2b: Ordered Logit: Termination of the Case by Procedural Stage, by Largest Defendant										
Appendix Table										
Plaintiff	Defendant	Model 1			Model 2			Model 3		
		Coeff.	z	Pr> z	Coeff.	z	Pr> z	Coeff.	z	Pr> z
Small	Medium	0.34** (0.15)	2.23	0.03	0.32** (0.15)	2.07	0.04	0.17 (0.16)	1.03	0.30
	Large	0.84*** (0.14)	5.86	0.00	0.81*** (0.14)	5.63	0.00	0.57*** (0.16)	3.65	0.00
Medium	Small	-0.29* (0.17)	-1.77	0.08	-0.32* (0.17)	-1.91	0.06	-0.62*** (0.18)	-3.34	0.00
	Medium	0.14 (0.17)	0.79	0.43	0.08 (0.18)	0.45	0.66	-0.17 (0.19)	0.19	0.38
	Large	0.43*** (0.19)	2.31	0.02	0.40** (0.19)	2.14	0.03	0.19 (0.21)	0.94	0.35
Large	Small	0.14 (0.20)	0.74	0.46	0.14 (0.20)	0.73	0.46	-0.05 (0.21)	-0.24	0.81
	Medium	0.69*** (0.18)	3.87	0.00	0.67*** (0.18)	3.74	0.00	0.53*** (0.19)	2.74	0.01
	Large	0.77*** (0.16)	4.75	0.00	0.74*** (0.16)	4.57	0.00	0.52*** (0.18)	2.97	0.00
NBER 1		0.68*** (0.22)	3.08	0.00	0.66*** (0.22)	2.98	0.00	0.69*** (0.24)	2.91	0.00
NBER 2		0.51*** (0.19)	2.67	0.01	0.52*** (0.19)	2.69	0.01	0.56*** (0.21)	2.7	0.01
NBER 3		0.75*** (0.19)	3.9	0.00	0.75*** (0.193)	3.86	0.00	0.72*** (0.21)	3.44	0.00
NBER 4		0.61*** (0.21)	2.86	0.00	0.61*** (0.21)	2.86	0.00	0.64*** (0.23)	2.8	0.01
NBER 5		0.56*** (0.20)	2.82	0.01	0.54*** (0.20)	2.69	0.01	0.54*** (0.21)	2.51	0.01
NBER 6		0.35 (0.18)	1.89	0.06	0.35* (0.18)	1.87	0.06	0.41** (0.20)	2.07	0.04
Cut 1		1.78 (0.18)			1.74 (0.18)			1.44 (0.19)		
Cut 2		3.88 (0.20)			3.84 (0.20)			3.51 (0.21)		
Log Likelihood		-1949.09			-1932.03			-1638.96		
Chi Sq(14)		107.98			104.25			81.52		
Prob > chi square		0.0000			0.0000			0.0000		
N		2822			2781			2201		
Pseudo R2		0.027			0.0263			0.0243		

Appendix Table 2.2c: Ordered Logit: Termination of Case by Procedural Stage, all Defendants Independent, Licensing Separate										
		Model 1			Model 2			Model 3		
		Coeff.	z	Pr> z	Coeff.	z	Pr> z	Coeff.	z	Pr> z
Plaintiff	Defendant									
Small	Medium	0.05 (0.50)	0.36	0.72	0.04 (0.15)	0.30	0.71	0.03 (0.13)	0.21	0.83
	Large	0.50*** (0.16)	3.08	0.00	0.48*** (0.16)	2.95	0.00	0.37** (0.17)	2.17	0.03
Medium	Small	-0.41*** (0.21)	-2.20	0.00	-0.42** (0.21)	-2.06	0.04	-0.70*** (0.18)	-3.83	0.00
	Medium	-0.23 (0.19)	-1.21	0.23	-0.26 (0.19)	-1.39	0.16	-0.42** (0.19)	-2.19	0.03
	Large	0.05 (0.21)	0.21	0.85	0.02 (0.21)	0.11	0.93	-0.06 (0.21)	-0.28	0.78
Large	Small	-0.20 (0.22)	-1.06	0.25	-0.17 (0.20)	-0.88	0.38	-0.27 (0.21)	-1.29	0.20
	Medium	0.31* (0.18)	1.65	0.09	0.29 (0.19)	1.58	0.11	0.32 (0.19)	1.61	0.11
	Large	0.36* (0.15)	1.84	0.07	0.33* (0.19)	1.73	0.08	0.33 (0.18)	1.61	0.11
Licensing	Small	-0.13 (0.37)	-0.36	0.72	-0.13 (0.36)	-0.37	0.71	-0.991 (0.76)	-1.29	0.20
	Medium	0.12 (0.42)	0.27	0.79	0.10 (0.43)	0.23	0.82	0.05 (0.49)	0.11	0.99
	Large	0.42 (0.40)	1.07	0.29	0.40* (0.40)	1.23	0.82	-0.35 (0.54)	-0.66	0.51
NBER 1		0.54*** (0.25)	2.21	0.03	0.52** (0.25)	2.11	0.04	0.47* (0.27)	1.69	0.09
NBER 2		0.45*** (0.23)	2.00	0.05	0.45** (0.23)	2.02	0.04	0.46* (0.25)	1.80	0.07
NBER 3		0.68*** (0.24)	2.90	0.00	0.69*** (0.23)	4.95	0.00	0.50** (0.25)	2.00	0.05
NBER 4		0.35 (0.21)	1.51	0.13	0.35 (0.16)	1.49	0.13	0.3 (0.24)	1.36	0.18
NBER 5		0.49** (0.25)	1.98	0.05	0.47* (0.125)	1.89	0.06	0.37** (0.24)	1.51	0.13
NBER 6		0.06 (0.20)	0.28	0.78	0.04 (0.20)	0.23	0.82	0.10 (0.22)	0.44	0.66
Cut 1		1.02 (0.20)			0.99 (0.120)			0.82 (0.21)		
Cut 2		3.18 (0.21)			3.15 (0.21)			2.91 (0.23)		
Log Likelihood		-3562.1			-3528.9			-2733.4		
Chi Sq(17)		135.9			132.91			116.48		
Prob > chi square		0.0000			0.0000			0.0000		
N		4515			4451			3390		
Pseudo R2		0.0187			0.0185			0.0209		

Appendix Table 2.2d: Ordered Logit: Termination of the Case by Procedural Stage, by Largest Defendant,										
Licensing Separate										
Appendix Table										
Plaintiff	Defendant	Model 1			Model 2			Model 3		
		Coeff.	z	Pr> z	Coeff.	z	Pr> z	Coeff.	z	Pr> z
Small	Medium	0.044 (0.15)	0.29	0.77	0.03 (0.15)	0.18	0.85	0.12 (0.16)	0.74	0.46
	Large	0.53*** (0.14)	3.86	0.00	0.51*** (0.14)	3.68	0.00	0.55*** (0.16)	3.57	0.00
Medium	Small	-0.61*** (0.16)	-3.81	0.00	-0.62*** (0.16)	-3.88	0.00	-0.67*** (0.18)	-3.68	0.00
	Medium	-0.19 (0.17)	-1.14	0.25	-0.24 (0.17)	-1.43	0.15	-0.23 (0.19)	-1.2	0.23
	Large	0.084 (0.18)	0.45	0.65	0.06 (0.18)	0.33	0.74	0.13 (0.20)	0.63	0.53
Large	Small	-0.14 (0.19)	-0.74	0.46	-0.13 (0.19)	-0.69	0.49	-0.12 (0.21)	-0.59	0.56
	Medium	0.38** (0.17)	2.21	0.03	0.37** (0.17)	2.12	0.03	0.46** (0.19)	2.42	0.02
	Large	0.45*** (0.16)	2.88	0.00	0.43 (0.16)	2.74	0.01	0.45*** (0.17)	2.59	0.01
Licensing	Small	-1.58*** (0.53)	-2.97	0.00	-1.56*** (0.53)	-2.92	0.00	-0.88 (0.55)	-1.59	0.11
	Medium	-0.21 (0.45)	-0.46	0.64	-0.23 (0.45)	-0.52	0.60	-0.06 (0.49)	-0.12	0.91
	Large	0.20 (0.33)	0.59	0.55	0.17 (0.33)	0.51	0.61	0.087 (0.42)	0.21	0.84
NBER 1		0.73*** (0.22)	3.32	0.00	0.70*** (0.22)	3.21	0.00	0.72*** (0.24)	3.03	0.00
NBER 2		0.85*** (0.19)	4.56	0.00	0.85*** (0.19)	4.54	0.00	0.59*** (0.21)	2.83	0.01
NBER 3		0.88*** (0.19)	4.59	0.00	0.87*** (0.19)	4.55	0.00	0.87 (0.21)	4.15	0.00
NBER 4		0.72*** (0.21)	3.46	0.00	0.72*** (0.21)	3.44	0.00	0.72*** (0.22)	3.22	0.00
NBER 5		0.58*** (0.20)	2.93	0.00	0.55*** (0.20)	2.8	0.01	0.57*** (0.21)	2.66	0.01
NBER 6		0.38** (0.18)	2.07	0.04	0.38** (0.18)	2.06	0.04	0.45** (0.20)	2.32	0.02
Cut 1		1.58 (0.17)			1.55 (0.17)			1.44 (0.19)		
Cut 2		3.64 (0.19)			3.60 (0.19)			3.47 (0.21)		
Log Likelihood		-2092.59			-2074.60			-1692.88		
Chi Sq(17)		120.14			117.52			90.38		
Prob > chi square		0.0000			0.00			0.00		
N		2958			2917			2268		
Pseudo R2		0.0279			0.0275			0.026		

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