

The Missing Stakeholders in Supreme Court Patent Advocacy

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## I. Introduction

The patent laws are increasingly important domains of economic regulation. This is evidenced by increased calls for patent reform, greater patent litigation since the creation of the Court of Appeals for the Federal Circuit (CAFC) and increased scrutiny paid by the U.S. Supreme Court to cases involving patent law. Recently, the Supreme Court has granted certiorari to the case of *In re Bilski* to resolve tensions concerning the scope of patentable subject matter.<sup>1</sup> The legislature has also recently considered legislation that, if passed, would considerably change the patent laws.<sup>2</sup> Given the increased importance of patent law to innovation and the economy it is important to examine patent policy as it is crafted by the legislature and the courts.<sup>3</sup>

While ample attention has been devoted to the courts' evolving patent jurisprudence and the virtues and defects of patent reform legislation<sup>4</sup>, there has been insufficient examination of the parties advocating such changes. It is important to examine the nature of party advocacy and the parties themselves since the laws crafted in response to advocacy affects a diverse mix of participants. It is important to better understand the diverse structures and incentives of organizations whose agents act on

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<sup>1</sup> 545 F.3d 943, 88 U.S.P.Q.2d 1385 (Fed. Cir. 2008)

<sup>2</sup> See Patent Reform Act of 2008, S. 1145, 110<sup>th</sup> Cong. (2008); Patent Reform Act of 2007, H.R. 1908, 110 Cong. (2007).

<sup>3</sup> Patent policy is defined as the rules that govern patent rights as defined, interpreted and enforced by the Sovereign. This is in contrast to the rules of play, i.e. private governance mechanisms. See Birgitte Andersen and Sue Konzelman, "In Search of a useful theory of the productive potential of intellectual property rights", 37 Res. Policy, 12, 15 (2008) (Discussing the distinction in New Institutional Economics between rules of the game and institutions of governance).

<sup>4</sup> Robert E. Thomas, "Vanquishing Copyright Pirates and Patent Trolls: The Divergent Evolution of Copyright and Patent Laws," *American Business Law Journal* 43 (Winter 2006), 689-739; Cahoy, Daniel R., "An Incrementalist Approach to Patent Reform Policy," *NYU Journal of Legislation and Public Policy*, Vol. 9, No. 2, pp. 587-661 (2006); Robert P. Merges and Jeffrey M. Kuhn, An Estoppel Doctrine for Patented Standards . Cal. L. Rev. (forthcoming); F. Scott Kieff, Removing Property from Intellectual Property and (Intended?) Pernicious Impacts on Innovation and Competition, Northwestern University School of Law Searle Center Working Paper; David W. Opderbeck, Patent Damages Reform and the Shape of Patent Law, 89 B.U. L. Rev. 127 (2009)

words to better understand and predict the effects of legal enactments.<sup>5</sup> This pragmatic, legal realist perspective is relevantly applied to the U.S. patent system, which is a "one-size-fits-all" system that does not neatly accommodate the needs of a heterogenous group of stakeholders.<sup>6</sup> In fact, a reason why the legislature has been unable to pass major patent reform legislation is due to the competing interests of important and diverse constituents. The danger, as it exists, is that patent policy may veer too far towards the verified interests of one group at the expense of others. To date, this important research and policy question has been inadequately conceived and investigated.

A prior study conducted by the author examined firm behavior and advocacy captured in *amicus* briefs filed before the U.S. Supreme Court in cases involving patent litigation.<sup>7</sup> That study developed a model to predict advocacy outcomes among stakeholders and showed that there is diversity among patent right advocates. A key finding in that study was that firms operating in what are called *complex* technology environments tend to support patent rights to a greater degree than what some findings would have predicted.

This study will examine the parties who advocate through U.S. Supreme Court *amicus* briefs and will use this data to generate patent policy insights. As will be demonstrated, puzzling questions remain regarding the advocacy positions endorsed by key stakeholders in U.S. Supreme Court patent adjudication. The article intends to

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<sup>5</sup> Robert W. Gordon, *Professors and Policymakers*, in HISTORY OF THE YALE LAW SCHOOL 95 (Anthony T. Kronman ed., Yale Univ. Press 2004).

<sup>6</sup> See John R. Allison & Mark A. Lemley, Who's Patenting What? An Empirical Exploration of Patent Prosecution, 53 Vand. L. Rev. 2099, 2117, 2128-30 (2000).

<sup>7</sup> David Orozco and James G. Conley, "Innovation Policy and Friends of the Court: Patent Right Advocacy before the U.S. Supreme Court", Northwestern University School of Law Searle Center on Law, Regulation and Economic Growth, Working Paper No. 2008-103 (2008), in submission.

resolve some of these mysteries and leaves those that remain unanswered for future research.

The article is organized as follows. Section II describes the two major dimensions by which companies are identified as patent advocates. Four categories of company stakeholders are then described. Section III discusses the actual patent advocacy expressed by each of the four stakeholders who voted either in favor of strengthening patent rights or weakening patent rights in Supreme Court litigation. Section IV discusses these results. Policy implications are also discussed in this section. Section V concludes.

## II. Companies as Patent Advocates

Companies represent one of several categories of patent law stakeholders. The diverse group of patent stakeholders are classified below according to their most common unifying thread, the unit of membership.<sup>8</sup>

**Table 1.** Patent Law Stakeholders

Stakeholder Category	Membership Unit	Examples from Amicus Briefs
Individual	Individual Person	Nathan Myhrvold
For-Profit Company	Institutional	Johnson & Johnson
Non-Profit Company	Institutional	University of Virginia Patent Foundation
Government	Institutional	The United States
Policy Group	Institutional	Electronic Frontier Foundation
Citizen Advocate Group	Membership	United Inventors Association
Business or Trade Group	Institutional Membership	Business Software Alliance

Source: Adapted from Gregory A. Caldeira and John R. Wright, *Amici Curiae Before the U.S. Supreme Court: Who Participates, When, and How Much?*, 52 J. Pol. 782 (1990).

<sup>8</sup> Gregory A. Caldeira and John R. Wright, *Amici Curiae Before the U.S. Supreme Court: Who Participates, When, and How Much?*, 52 J. Pol. 782 (1990).

This study, however, examines for-profit companies as patent law stakeholders. The reason why this study focuses on for-profit companies is because they have a large and clear nexus to patent commercialization and value. A study of patent policy is likely to consider incentives to promote innovation. Commercially successful inventions are an important subset of innovation.<sup>9</sup> One study used the proxy of litigation to identify valuable patents.<sup>10</sup> In that study, companies represent nearly three quarters of the sample of valuable patents.<sup>11</sup> Changes to patent policy will, therefore, have great impact if they alter company behavior. As evidenced by the *amicus* briefs discussed below, companies are cognizant of this and are actively involved as advocates attempting to shape the outcomes of Supreme Court decision-making.

That is not to say, however, that universities and inventors do not contribute significant value to patent commercialization, and hence patent policy. Universities, although they can license patents and generate commercially successful patents, are non-profit institutions. Their goals for promoting knowledge and job creation make it difficult to include them in the sample of commercially motivated firms.<sup>12</sup> The problem of excluding inventors is to some extent ameliorated by the fact that small companies, even the very small ones, are included in the definition of a company.

There are various ways firms attempt to shape patent policy. They may, for example, advocate policy changes as parties to litigation<sup>13</sup> or advocate for administrative

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<sup>9</sup> Dan L. Burke and Mark A. Lemley, Policy Levers in Patent Law, 89 Va. Law. Rev. 1575 (2003).

<sup>10</sup> John R. Allison, Mark A. Lemley, Kimberly A. Moore, and Derek Trunkey, Valuable Patents, Georgetown L. J. (2003)

<sup>11</sup> *Id.* at 41. Individual inventors represent the owners of the remaining quarter of valuable patents.

<sup>12</sup> University technology transfer sometime has the goal to stimulate greater job creation. Also, there have been cases where universities are reluctant to litigate aggressively against infringers.

<sup>13</sup> For example, the expansion of patentable subject matter has been largely initiated by firms advocating greater applicability of patent laws to innovations. *See* Diamond v. Chakrabarty, 447 U.S. 303 (1980).

changes.<sup>14</sup> They may alternatively sponsor legislation.<sup>15</sup> Or, they can submit *amicus* briefs when patent-related litigation is heard at the highest levels of interpretation, that is, when patent cases are heard by the U.S. Supreme Court.<sup>16</sup> Company behavior as expressed in *amicus* briefs provides a rich and relevant data source since the briefs expose the explicit strategic intent of a diverse set of firms attempting to proactively influence the rules of the market game.<sup>17</sup> The intent of firms can then be categorized into groups to aid interpretation and analysis. It has been demonstrated that companies often coalesce into industry sub-groups to promote regulations that suit their narrower private interests.<sup>18</sup>

Prior research examined which patent policy levers the courts might employ that best suit the particular characteristics of specific industries.<sup>19</sup> That study examined various attributes that make the utility of patent law heterogeneous among various industries. A key factor was the cumulative nature of the technology, present in industries like biotechnology and semiconductors. That important study, however, did not take into account intra-industry variation due to company-specific attributes, which create important differences within industries and create heterogeneity among individual firms within any given industry. Without firm-level differentiation, the emphasis on industry-wide policy levers fails to take into account the heterogeneity among companies present

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<sup>14</sup> For example, IBM has been advocating peer-reviewed patent applications at the USPTO through its Peer-to-Patent initiative.

<sup>15</sup> Testimony from hearings.

<sup>16</sup> *Amicus curiae* is Latin for 'friend of the court'. Friends of the court file *amicus* briefs, an advocacy activity that has been researched in the fields of law and political science as a means to measure the social significance of court cases (Epstein and Knight, 1998; Caldeira and Wright, 1988).

<sup>17</sup> Orozco and Conley, *supra* note 4.

<sup>18</sup> Sharon Oster, The Strategic Use of Regulatory Investment by Industry Sub-Groups, *Economic Inquiry* 20 (1982).

<sup>19</sup> Burke and Lemley, *supra* note 9.

within all industries. This research introduces a dimension to take into account intra-industry variation through what are called downstream complimentary assets.<sup>20</sup>

Until recently, it was generally believed that companies in what are called complex technology<sup>21</sup> industries favored and advocated a reduction in the strength of patent rights. Stakeholders in discrete technology<sup>22</sup> industries were generally believed to advocate the opposite position, i.e. stronger patent rights. Recent work has demonstrated that complex technology firms advocate in favor of stronger patents to a much greater extent if they are smaller sized firms.<sup>23</sup>

The two dimensions used here to classify companies as patent stakeholders are:

1) The Size of the Firm, and 2) The Nature of Technology.

#### Size of the Firm

The binary classification of firm size employed here depends on whether the firm has less than 500 employees, the definition of a small or medium sized enterprise (SME).<sup>24</sup> Firm size is relevant since patent rights are often viewed differently by firms of different sizes, even if they are positioned in similar technological areas.<sup>25</sup> The reason why is related to the presence or absence of bargaining and market power that arise due to the ownership of what are called downstream complementary assets. Downstream

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<sup>20</sup> Teece, D.J., Profiting from technological innovation. *Research Policy* 15(6), 285- 305. (1986).

<sup>21</sup> Complex technologies typically comprise a large number of separately patentable elements. Examples of complex technologies are: machinery, computers, electrical equipment, electrical components, instruments and transportation equipment. See Cohen, W.M., Nelson, R.R., Walsh, J.P., *Protecting their Intellectual; Assets Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or not)*. Mass., National bureau of Economic Research, Cambridge (2004). Cohen et. al. in their empirical study classify complex industries as those in SIC codes above 2900 and discrete industries as those below this number.

<sup>22</sup> Discrete technologies embody relatively few separate patentable elements (Cohen et al., 2000). Discrete technologies include: food, textiles, chemicals, drugs and metals (Ibid.)

<sup>23</sup> Orozco and Conley, *supra* note 7.

<sup>24</sup> 35 U.S.C. § 41(h)(1) which incorporates by reference section 3 of the Small Business Act and defines a small entity as a corporation with fewer than 500 employees. Also, see John R. Allison, Mark A. Lemley, Kimberly A. Moore, and Derek Trunkey, *Valuable Patents*, Georgetown L. J. (2003).

<sup>25</sup> Orozco and Conley *supra* note 7.

complementary assets include things like distribution channels, manufacturing and brands and take time to develop and control. These critical assets provide large incumbent companies with the leverage to extract value from smaller upstream innovators.<sup>26</sup> A central assumption here is that if a firm is a SME it has less control or ownership of downstream complimentary assets viz. a viz. a firm that is not a SME.

This assumes that smaller firms tend to lack the complementary assets necessary to fully exploit an innovation.<sup>27</sup> SMEs would, therefore, require a stronger appropriability regime involving secure patent rights to prevent a larger incumbent from using their downstream complimentary assets to appropriate the SME's innovation. Conversely, a larger firm may prefer to weaken the patent rights of upstream innovators to gain access to valuable innovations that integrate well with its downstream complementary assets.<sup>28</sup>

#### Nature of Technology

The nature of technology is another important factor that influences a firm's patent advocacy.<sup>29</sup> The conceptual distinction of complex vs. discrete technologies<sup>30</sup> is important since it explains the firm's subjective valuation of an average patent and, therefore, their perception of the patent regime's overall utility. This valuation will direct a firm's arguments for changes in policy that would then impact other stakeholders. For example, if a technology architecture involves broadly distributed rights across multiple firms, and the firm is an aggregator of these rights, the value of patents and the patent

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<sup>26</sup> Teece, supra note 20..

<sup>27</sup> Technology cycles reflect paradigmatic cycles. Large companies by definition have already developed paradigmatic technologies and the related complimentary assets necessary to take those innovations to market. After a shake-out period only a few large dominant firms remain, and they have the lion's share of complimentary assets. Teece, supra note 20

<sup>28</sup> See Pisano, G., 2006. Profiting from innovation and the intellectual property revolution. *Research Policy* 35 (2006); Pisano, G.P., Teece, D.J., 2007. How to Capture Value from Innovation: Shaping Intellectual Property and Industry Architecture. *California Management Review* 50, 278-296 (2007).

<sup>29</sup> Orozco and Conley, supra note 7.

<sup>30</sup> See notes 21 and 22 and accompanying text.

regime will be low.<sup>31</sup> The converse is true for technology architectures where the locus of commercially viable patent rights is limited to a few patents and firms.<sup>32</sup>

Empirical research has shown that larger firms in complex product industries typically use patents as a defensive mechanism, mainly to achieve freedom to operate<sup>33</sup>. Many firms in systems-oriented industries accumulate patent portfolios to cross-license in case the focal firm is sued by another large rival. Larger firms that innovate in these industries tend to view patents in a defensive light, and a measure to ensure value capture *ex post* infringement. Large firms in complex product industries tend to favor collaboration and implement knowledge-sharing institutional governance mechanisms, e.g. cross-licensing, patent pools and standard setting.<sup>34</sup> Larger firms in complex industries favor these mechanisms because otherwise they would be subject to costly patent hold-ups due to patent thickets.<sup>35</sup> The thicket problem is compounded if the patent owner is a non practicing entity since a cross-licensing opportunity is not available to the accused infringer.

Given the two important dimensions: 1) Size of Firm, and 2) Nature of the Technology, the following four stakeholders are evaluated with respect to the filing of *amicus* briefs in Supreme Court patent litigation

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<sup>31</sup> Cohen et. al., supra note 21.

<sup>32</sup> Id.

<sup>33</sup> Hall, B.,H., Ziedonis, R.H., An Empirical Analysis of Patent Litigation in the Semiconductors Industry. Working Paper. (2007); Teece, D.J., Managing Intellectual Capital. Oxford University Press, New York, NY. (2000); Henkel, J., Pangerl, S., Defensive Publishing: An Empirical Study. Working Paper.(2008); Recent research, however, demonstrates that a surprisingly large amount of complex industry firms support patent rights, and that these firms tend to be smaller firms.

<sup>34</sup> Merges, R., P., Contracting Into Liability Rules: Intellectual Property Rights and Collective Organizations. California Law Review 84(5) (1996); Andersen and Konzelman, supra note 3. potential of intellectual property rights. Research Policy (2007).

<sup>35</sup> Burke and Lemley, supra note 9 at 1667.

**Figure 1.** Companies as Patent Stakeholders

SME Complex    II	SME Discrete    I
Large Complex    III	Large Discrete    IV

Quadrant 1 depicts SME Discrete firms. These firms typically possess their own stand-alone innovations yet they lack the downstream specialized assets. Quadrant 2 contains SME Complex firms. These small firms operate as a modular technology innovators in a complex technology space. Their status as modular innovators often requires them to partner with large firms who can assemble the modular components into working solutions, and deliver these solutions through the larger company's value chain, comprised of downstream complimentary assets. Quadrant 3 depicts the stakeholder group identified as Large Complex. These are incumbent firms that operate in highly networked, systems-oriented industries. Quadrant four identifies Large Discrete firms that engage in technology innovations that require few separate patentable rights. These last two types of firms possess strong bargaining power due to their ownership of specialized downstream complimentary assets such as manufacturing, distribution or brands. The following section discusses the levels of patent advocacy exhibited by each stakeholder.

### **III. U.S. Supreme Court Stakeholder Patent Advocacy**

The data used to categorize and measure the four stakeholders was obtained from an earlier study involving *amicus* brief advocacy.<sup>36</sup> That study examined *amicus* briefs filed by firms in Supreme Court patent cases since 1982, totaling fifteen cases which are listed in Table 2. In each of these fifteen substantive cases, the patent owner (plaintiff) is

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<sup>36</sup> Orozco and Conley.

advocating for a rule interpretation which grants them stronger exclusivity rights, and hence appropriability relative to the accused infringer (defendant). These cases, therefore, provide a proxy for determining which *amici* firms support the patent owner and therefore a property rule.<sup>37</sup> The cases also provide an opportunity for *amici* industry advocates to support the accused infringer. They, therefore, provide a proxy for observing firms that wish to weaken patent rights and endorse something closer to a patent liability rule. In this paper, patent liability rules are made in reference to rules impacting remedies once the patent has been granted.<sup>38</sup> These remedy-related rules are made in reference to monetary damages or the injunction remedy.

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<sup>37</sup> See Calabresi, G., Melamed, D.A., Property Rules, Liability Rules and Inalienability: One View of the Cathedral. Harvard L. Rev. 85 (1972). Kieff. Supra note 3.

<sup>38</sup> *C.f.* scholarly discussion that treats non-remedy rule changes as patent liability rules, e.g. the higher standard of non-obviousness and the decreased scope of patentable subject matter. See F. Scott Kieff, "Removing Property from Intellectual Property and (Intended?) Pernicious Impacts on Innovation and Competition", Northwestern University School of Law Searle Center Working Paper.

**Table 2.** Supreme Court Patent Cases after 1982

Case Name	Year	Citation	Did Firms File Amicus Briefs?
1. Dennison Manufacturing Co. v. Panduit Corp.	1986	475 U.S. 809	No
2. Christianson et al. v. Colt Ind. Operating Corp.	1988	486 U.S. 800	No
3. Eli Lilly and Company v. Medtronic, Inc.	1990	496 U.S. 661	Yes
4. Cardinal Chem. Co. v. Morton Int., Inc.	1993	508 U.S. 83	Yes
5. Markman & Positek, Inc. v. Westview Instruments, Inc.	1996	517 U.S. 370	Yes
6. Warner-Jenkinson Co. v. Hilton Davis Co.	1997	520 U.S. 17	Yes
7. Wayne K. Pfaf v. Wells Electronics, Inc.,	1998	525 U.S. 55	Yes
8. Q. Todd Dickinson v. Mary E. Zurko et al.	1999	527 U.S. 150	No
9. Florida Prepaid v. College Savings Bank	1999	527 U.S. 627	No
10. Donald E. Nelson v. Adams, USA, Inc.	2000	529 U.S. 460	No
11. J.E.M. Supply, Inc. v. Pioneer Hi-Breed, Inc.	2001	534 U.S. 124	Yes
12. Festo Corp. v. Shoketsu Co., Ltd.	2002	535 U.S. 722	Yes
13. The Holmes Group, Inc v. Vornado, Inc.	2002	535 U.S. 826	No
14. Merck KGaA v. Integra LifeSciences I, Ltd.	2005	545 U.S. 193	Yes
15. Unitherm, Inc. v. Swift-Eckrich, Inc.	2006	546 U.S. 394	No
16. Illinois Works, Inc. v. Ind. Ink, Inc.	2006	547 U.S. 28	Yes
17. Ebay Inc. v. MercExchange, L.L.C.	2006	547 U.S. 388	Yes
18. Labcorp v. Metabolite Laboratories, Inc.	2006	548 U.S. 124	Yes
19. Medimmune, Inc. v. Genentech, Inc.	2007	127 S. Ct. 764	Yes
20. Microsoft Corporation v. AT&T Corp.	2007	127 S. Ct. 1746	Yes
21. KSR International Co. v. Teleflex Inc.	2007	127 S. Ct. 1727	Yes
22. Quanta Computer v. LG Electronics, Ltd.	2008	128 S. Ct. 2109	Yes

The prior study provided a breakdown of the various firms' SIC codes to determine if they belonged to discrete or complex technology industries.<sup>39</sup> Finally these firms were also categorized by their size, and whether they fell into the SME or Large firm category based on the number of employees. Firms having less than 500 employees are classified as SMEs. A total of 156 firms were identified from the briefs among the sample of 15 Supreme Court cases. Of these, 33 included discrete technology firms and 123 included complex technology firms. 58 are comprised of SMEs and 98 are Large firms.

Seventy four companies filed *amicus* briefs in favor of strengthening patent rights. The percentages among the four different stakeholders in this group are represented as follows:

**Table 3.** Firms advocating stronger patent rights

SME Complex	51%
SME Discrete	9%
Large Complex	22%
Large Discrete	18%

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<sup>39</sup> This follows the procedure of Cohen et al., *supra* note 21.

Eighty two firms advocated in favor of weakening patent rights. The percentages among the four different stakeholders in this group are represented as follows:

**Table 4.** Firms advocating weaker patent rights

SME Complex	13%
SME Discrete	2%
Large Complex	71%
Large Discrete	14%

The following section discusses these results.

#### **IV. Discussion**

##### a. Firms favoring stronger patent rights

SME Complex firms represent the largest stakeholder in patent advocacy among companies supporting stronger patent rights. As stated earlier, it was expected that smaller firms would generally support patent rights given their lack of downstream complementary assets. The data supports this since a total of 45 SMEs support patent rights vs. 13 that favor weakening the patent regime.<sup>40</sup> This does not explain, however, why the majority of firms supporting patent rights are in the SME Complex category. The puzzle remains to answer why Small Discrete firms do not advocate at higher levels. Small discrete firms, therefore, represent a missing stakeholder in U.S. Supreme Court patent advocacy.

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<sup>40</sup> P-value on difference here.

A possible explanation is that SME complex firms benefit disproportionately from their patents relative to Discrete SME firms. Recall that SME Complex firms operate in highly networked industries which exacerbate the hold-up problem faced by a larger downstream incumbent with "deep pockets".<sup>41</sup> Complex SMEs may be benefiting from a higher overall patent valuation due to the embedded nature of their technology field.<sup>42</sup> Studies show that patents in highly networked technologies may receive higher infringement verdicts and royalties due to the difficulty disentangling a patent from other valuable technology components.<sup>43</sup> Discrete SME firms, on the other hand, operate in technologies that are stand-alone, and the opportunities to extract fees from incumbent third parties are much less frequent.

The cost of filing an *amicus* brief is significant, estimated conservatively by some inside parties as near twenty thousand dollars per brief. The probabilities of any single brief swaying the direction the Court are certainly fairly low, given that no company briefs are ever cited in the sample of Supreme Court patent decisions. The expected value of a patent has to be large to justify the cost of filing the brief. If one assumes that there is only a one percent probability of a particular brief swaying the Court, which is likely an overly generous assumption<sup>44</sup>, the expected value of a patent then has to reach at least \$2,000,000 to justify filing the *amicus* brief.

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<sup>41</sup> Mark A. Lemley and Carl Shapiro, Patent Holdup and Royalty Stacking, 85 Texas L. Rev. 1991 (2007).

<sup>42</sup> Id.

<sup>43</sup> Robert P. Merges and R.R. Nelson, On the Complex Economics of Patent Scope, 90 Columbia L. Rev. 839-916 (1990)..

<sup>44</sup> For example, Justice Scalia writes in his book, "Making Your Case: The Art of Persuading Judges" that Justices "don't read" *amicus* briefs. He later qualifies his statement by saying that the Justices read briefs filed by certain parties, e.g. The United States, ACLU, AFL-CIO and any other party whose opinion the Court highly values. He then counsels trial advocates to carefully read *amicus* briefs and be prepared to counter them during oral argument, suggesting the Justices are aware of at least some of the briefs' arguments.

[insert findings here on patent verdicts among SME Complex vs. the average verdict amount. Initial results indicate the average SME Complex verdict is significantly higher than average & \$2 MM.]

Another interesting finding is that Large Complex firms advocate in favor of stronger patent rights to an extent nearly equal to Large Discrete firms. One potential explanation for this unusual finding is that there are some Large Complex firms with rare offensive patent capabilities that allow them to extract an unusually large amount for their patents. This may explain some of these findings since included in these firms are Qualcomm and General Electric, both of which derive significant sums every year from out-licensing their patent portfolios.<sup>45</sup> Another explanation may be that some of the Large Complex firms advocating stronger patent rights are leaders in standard setting. Some of the firms included in this group are Qualcomm, Sun Microsystems, Phillips and Verizon.

b. Firms favoring weaker patent rights

Large Complex firms comprise the largest stakeholder favoring weaker patent rights. This can be explained by the same phenomena driving SME complex firms to advocate at such high levels in favor of *stronger* patent rights. Large Complex firms are subject to a hold-up due to the highly networked industries they operate in.

This leads them to have to pay higher patent royalties and damages and value patents less as an appropriability mechanism. Most large high technology firms, as research indicates, use patents defensively rather than offensively.

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<sup>45</sup> [company data]. This also highlights the intra-industry variance of patent capabilities and valuation.

[Discuss higher average patent verdicts for SME Complex firms and the fact that they are mainly paid out by "deep pocket" downstream incumbents, i.e. Large Complex firms. This payout translates into an economic incentive to file the briefs since the average verdict is significantly larger than \$2 MM.]

The presence of Large Discrete firms advocating weaker patent rights presents an interesting puzzle. There are more Large Discrete firms than SME Discrete firms advocating weaker patent rights.<sup>46</sup> This suggests firm size plays a role, and perhaps these firms are dominant in their industries and are strategically attempting to gain access to upstream innovations that can then be exploited by their downstream complimentary assets. The presence of SME Complex firms advocating weaker patent rights also presents a puzzle, and may indicate firms engaging in upstream R&D that is susceptible to the anti-commons problem.<sup>47</sup>

### c. Patent Policy Implications

There is clearly a lack of symmetry in the advocacy levels among the four company stakeholders. Nearly two thirds of all advocacy is conducted by the two largest interest groups, i.e. those with diametrically opposed interests: SME Complex advocating stronger patents and Large Complex advocating weaker patents. The fact that the patent advocacy debate before the Supreme Court is dominated by these two interest groups provides a foundation for the following policy discussion.

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<sup>46</sup> P-value here.

<sup>47</sup> See M.A. Heller and R. Eisenberg, Can Patents Deter Innovation? The Anticommons in Biomedical Research, 280 Science 5364 (1998).

First, it clarifies the nature of the debate since various accounts often characterize the patent reform debate as one mainly fought between large high technology firms (Large Complex) vs. large pharmaceutical and chemical firms (Large Discrete).<sup>48</sup> This is clearly not supported by the *amicus* brief data. At the highest judicial level, the policy debate is dominated by the competing interests of the upstream SME Complex firms and downstream Large Complex firms.

Second, this data, although not conclusive<sup>49</sup>, suggests that patent policy adjustments should primarily focus on the clashing interests of these two stakeholders. From a pragmatic perspective, this is the best compromise.<sup>50</sup> That is not to say that other patent policy considerations should be neglected. Instead, the advocacy data here suggests that imbalances arise in narrow contexts, which currently call into question the need for wholesale patent reforms. Congress should, therefore, avoid wholesale patent reform because the previously proposed patent reform changes extend beyond the clashing interests of SME Complex firms and Large Complex firms. Examples of wholesale measures include easier methods to initiate post-grant oppositions, limitations to damages and changes to the novelty requirements.<sup>51</sup> These broad adjustments would impact all stakeholders, even though there is limited evidence it is necessary to do so.

Third, the *amicus* data suggests that the Courts, rather than the Legislature, should spearhead policy adjustments. Any adjustments, however, should narrowly target the imbalance between SME complex firms and Large Complex firms. The courts are best

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<sup>48</sup> Opderbeck, *supra* note 4 at 128-129.

<sup>49</sup> Due to a relatively small sample size.

<sup>50</sup> From a utilitarian perspective and in a world without transaction costs patent rights would apply differently in different contexts. However, in reality, it will be very difficult to move away from the current one-size-fits all system.

<sup>51</sup> See Patent Reform Act of 2008, S. 1145, 110<sup>th</sup> Cong. (2008); Patent Reform Act of 2007, H.R. 1908, 110 Cong. (2007).

positioned to achieve this balance since the Legislature has been subject to gridlock, most likely because its proposed reforms are too broad to accommodate the diverse needs of various constituents.

Since the judiciary is in the best position to deal with the policy imbalance peculiar to parties in complex technologies, close scrutiny should follow judicial decisions to ensure they do not overreach this limited policy mandate. There has been a sustained and vigorous discussion about how the courts have recently transformed the patent property right regime towards something closer to a patent liability regime.<sup>52</sup> Yet, if the courts adjust the patent system towards a general liability regime, this is akin to wholesale patent reform. This judicial reform, however, is one that is not democratically instituted or implemented.<sup>53</sup> Such wholesale adjustments appear unwarranted and instead narrowly tailored policy adjustments applied in certain contexts will ensure a more appropriate balancing act. Clearly, the majority of balancing should be targeted towards the imbalance among certain complex technology participants, and only in cases that truly present a conflict, as discussed below. Otherwise, a similar error risks being committed which led to the current scenario, but in a manner that unfairly targets other stakeholders, e.g. Small Discrete companies under a general patent liability regime. Recall that these firms generally possess lower bargaining power viz. a viz. downstream Large Discrete firms.

In other words, if the courts apply broad patent reforms that disregard context, they may commit the same mistake that originated the imbalance in the first place. The imbalance between SME Complex firms and Large Complex firms was an unintended

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<sup>52</sup> See Opderbeck, *supra* note 4; Kieff *supra* note 4.

<sup>53</sup> See Alexander M. Bickel, *The Least Dangerous Branch*, (Bobbs Merrill: 1962).

consequence of the CAFC's prolonged general policy of broadening and strengthening patent rights across the board, without regard for technology or context.<sup>54</sup> The CAFC's policy resulted in patents with wholesale property rule characteristics, e.g. the *de facto* automatic injunction rule if the patent was found to have been valid and infringed. This policy created an imbalance between SME Complex firms and Large Complex firms due to the networked characteristics of complex technologies and the lack of bargaining symmetry between some non-practicing SME complex firms and Large Complex firms.<sup>55</sup> The CAFC accepted the possibility of such a hold-up as a natural consequence of the general right to exclude offered by the patent right.<sup>56</sup>

The courts should, therefore, be wary of crafting patent reforms that are overly broad and veer towards one particular direction regardless of context. A general movement towards a patent liability regime presents difficulties since it creates disincentives and opportunism in both discrete and complex technology industries. With weaker across the board patent rights, the parties that stand to lose the most from this wholesale reform are Small Discrete firms. To avoid such negative unintended consequences, a few guidelines are offered next to guide the courts in their correction of the patent policy imbalance peculiar to SME Complex firms and Large Complex firms.

#### d. Policy Prescriptions

A potential solution is to favor liability rules among firms competing in complex technology industries. However, a general policy that applies liability rules to both SME

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<sup>54</sup> Arti Kaur Rai, *Regulating Scientific Research: Intellectual Property Rights and the Norms of Science*, 94 *Nw. U. L. rev.* 77 (1999).

<sup>55</sup> See Lemley and Shapiro, *supra* note 41 (Discussing how an injunction raises hold-up costs which may not have a clear connection to the value of the infringed patent due to high design around costs and opportunity costs related to the design around).

<sup>56</sup> *Id.*

Complex firms and Large Complex firms would be overly broad. It would fail to take into account the legitimate interests that some SME Complex firms have in securing strong property rights in their patents. For example, some SME Complex firms may attempt to compete with a Large Complex firm by introducing a patented technology and partnering with other firms to take the technology to market. Or, they may contract for complementary downstream assets with third parties to compete with a Large Complex firm.

An extreme example of this would be the case of Robert Kearns, the inventor of the intermittent windshield wiper. This electrical-mechanical device embodied various technologies which at the time were novel and situated within a complex technology industry. The invention itself, in fact, was complex and situated within the larger complex technology of the automobile industry, which was and is controlled by a few large incumbent firms with complimentary assets. In the case involving Mr. Kearns, the inability to enforce the patents effectively against one large firm led to a situation where all incumbents practiced his technology without paying royalties.<sup>57</sup> Mr. Kearns was adamant throughout about manufacturing the technology himself and in a way competing with the efforts of the large downstream firms. Clearly, it is unfair to promote a general rule that allows a Large Complex firm to appropriate technology through a liability rule simply because it is large and the upstream firm is small. As the case involving Mr. Kearns clearly points out, without legal rights SME Complex firms have little bargaining power viz. a viz. a Large Complex firm.

The courts should look for two *necessary* conditions before applying a liability rule over a property rule in patent disputes between plaintiff SME Complex firms and

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<sup>57</sup> Eventually (many years later) Mr. Kearns' patents were upheld in court and damages were assessed.

defendant Large Complex firms. First, they would require evidence that there is a hold-up due to the embedded and complex nature of the technology. Second, they would require evidence that the SME Complex firm failed to reasonably expend efforts to use the patent to compete with the Large Complex firm.<sup>58</sup>

i. Hold-up

A hold-up occurs when a patent holder uses the threat of obtaining an injunction to successfully negotiate royalty rates that exceed a defined hypothetical benchmark.<sup>59</sup> Formally, the cost of a holdup is expressed as a function of the redesign cost divided by the value of the patent times the quantity produced.<sup>60</sup> Courts can use this flexible framework to detect the presence of a hold-up. However, the risk is that sometimes the court may incorrectly deny the injunction. To minimize this type of error, the courts should place the burden of proof on the defendant and require clear and convincing proof.

ii. Failure to Compete

The second evidentiary requirement is clear and convincing evidence that that the SME Complex firm (patent owner) failed to employ reasonable efforts to use the patent to compete with the Large Complex firm (defendant). Strong evidence of competition is an embodiment of the technology in products that are substitutes for the infringing product offered by the defendant. If the plaintiff SME Complex firm is not the one producing the product, it might still be involved in an exclusive licensing of the technology or derive a substantial portion of the value through the outsourcing of

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<sup>58</sup> These conditions follow the prescriptions adopted by Lemley and Shapiro, *supra* note 41. However, the measures proposed here differ in that they raise the standard of proof and shift the burden onto the defendant.

<sup>59</sup> J. Gregory Sidak, "Hold-up, Royalty Stacking and the Presumption of Injunctive Relief for Patent Infringement: A Reply to Lemley and Shapiro, 92 *Minn. L. Rev.*, 714-748 (2008) (discussing a holdup as defined by Lemley and Shapiro, *supra* note\_).

<sup>60</sup>  $C = R / V * Q$ . Lemley and Shapiro, *supra* note 41.

manufacture or distribution.<sup>61</sup> Essentially, the courts should require defendant to show in clear and convincing manner that plaintiff failed to embody the technology in a product that competes with the defendant's infringing product.

As mentioned above, the heightened standard of proof and burden of proof should rest on the defendant accused of infringing the patent.<sup>62</sup> The case made here for higher evidentiary standards and burdens against the defendant rests on policy and efficiency grounds. From a policy standpoint, patents should be presumed valid and the strong exclusivity rights that normally attach to patents should be considered the default scenario. These measures are also justified from a dynamic efficiency standpoint since weakening these rights creates the risk of a court improperly applying a liability rule when patent exclusivity was warranted.<sup>63</sup> These narrow changes are also justified on general efficiency grounds since the defendant is in a better position, as a least cost avoider, to demonstrate the occurrence of a hold-up and their presence in a distinct market from the plaintiff.

An important question is whether this two-part test would comply with the requirements of eBay, which forbid the application of broad categorical rules. If the defendant, as proposed here, provides clear and convincing evidence that the plaintiff does not meaningfully compete in the same markets as the defendant and that a hold-up exists, then the court should use this evidence against the request for an injunction. There

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<sup>61</sup> See Lemley and Shapiro, *supra* note 41.

<sup>62</sup> After eBay v. Mercexchange, some courts have eliminated the presumption of irreparable harm and shifted the burden of proof for obtaining an injunction onto the plaintiff. See *z4 Technologies, Inc. v. Microsoft Corp*, 434 F. Supp. 2d 437.

<sup>63</sup> See Sidak, *supra* note 59 (discussing that the often recognized presumptive right to a permanent injunction is defined in economics as the null hypothesis, and that "[o]nce the null hypothesis is established, the burden of proof falls on the accused infringer to establish that injunctive relief is not appropriate in some particular instance." Improperly denying a patent injunction is a Type I error and historically a goal of patent policy has been to reduce this error.

should be no problem, however, complying with eBay's disdain for broad categorical rules if the above conditions are evaluated to give content to the two factors of irreparable harm and hardship under eBay's four factor test. Lack of competition weighs against irreparable harm, and the existence of a hold-up indicates hardship for the defendant. Also, the courts should weigh additional evidence related to the other factors of public interest and adequate remedies at law and not treat the two factors discussed above as generally dispositive.

## **V. Conclusion**

The patent laws are increasingly important to the health of the U.S. economy. This research clarifies the nature of patent law advocates who file *amicus* briefs before the U.S. Supreme Court. Four stakeholders are identified and their advocacy levels and positions are examined. The data indicates skewed advocacy levels among two stakeholders with diametrically opposite positions: SME Complex firms and Large Complex firms. The *amicus* data suggests that patent policy reforms and adjustments by the courts should narrowly consider the clashing interests of these two stakeholders. Policy prescriptions for achieving this narrow objective are advanced that avoid upsetting the delicate balance among the remaining stakeholders.