Studying the Impact of eBay on Injunctive Relief in Patent Cases

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Injunctions as a Remedy in Patent Cases
Is money damages a substitute?

- Is a patent a property right?
- Do you have the entitlement or do you not? Makes a difference
- Consider *Apple v. Samsung*; Samsung was most concerned about being enjoined; if not enjoined, a defendant can pay a bond and pursue additional rounds of litigation
- The absence of injunctive relief leaves the remedy of a reasonable royalty in patent cases since lost profits and punitive damages are hard to prove and get
- Without injunctions, patent owners lose a valuable remedy that facilitates negotiation and empowers resolution – no other alternative
- But what about patents that are a small part of a product or system? “Tail wagging the dog” critique; led to the *eBay* case
Important Policy Implications

Implications for potential patent legislative changes trying to curb patent litigation by so-called “patent trolls”

If it is harder for NPEs to obtain an injunction post-*eBay*:

• NPEs have lower bargaining power in litigation (and therefore in licensing negotiations)

• Penalizing NPEs may be not be optimal, depending on the quality of patents and on who they are (inventors, start-ups, university labs...)

If it is not harder for NPEs to obtain an injunction post-*eBay*

• The *eBay* ruling has had similar impact on all patent holders, and the paper measures what they are
In order to get a permanent injunction, the four factor test under eBay requires a plaintiff to demonstrate:

(1) that remedies available at law (i.e., damages) are inadequate to compensate for that injury;

(2) that the plaintiff will suffer an irreparable injury if the injunction is not granted;

(3) that considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and

(4) that the public interest would not be disserved by a permanent injunction
The *eBay* Decision

- Justice Kennedy’s concurring opinion in the *eBay* ruling linked the rejection of an automatic trigger regarding injunctions with concerns about non-practicing entities (i.e., NPEs).

- The unanimous Sup. Ct., however, sought balance and warned against the idea of denying injunctions solely because of a plaintiff’s willingness to license its patents and its lack of commercial activity.

So…. What was the effect of *eBay*?
After more than a decade after the eBay ruling, there is still confusion about the impact and the implications of this decision.

Has the rate of injunctions been impacted? By how much?

Preliminary Injunctions or Permanent Injunctions? Which types of patent plaintiffs are impacted more – practicing entities (PEs) or non-practicing entities (NPEs)?
The Literature So Far…

Case studies with a focus on the grant of permanent injunctions calculated based on motions filed

• Seaman (2015) studies the rate of permanent injunctions for 218 USDC decisions in patent cases post eBay.
  – While the overall grant average rate of permanent injunctions post-eBay was 72.5%, it was only 16% for NPEs

• Malin and Rafilson (2011) analyze 49 USDC cases from May 2006 to Dec 2008.
  – Reduced grant rate pre- and post- eBay differing across 28 factors when present or not, comprising categories for patentees, infringers, third-parties

• Peterson (2008) analyzed 33 USDC decisions on a motion for permanent injunctions post eBay as well, for patent cases between May 2006 and Feb 2008.
  – Found that in 24 (out of the 33) cases, a permanent injunction was granted, and that NPEs were less likely to be granted an injunction
1. A comprehensive sample of all USDC cases pre- and post- *eBay* (from 2000-2012) to study the impact of the *eBay* decision

2. The impact of *eBay* on permanent *and* preliminary injunctions

3. The outcomes of interest are both (a) the rate of injunctions *sought* and (b) the rate of injunctions *granted* (pre and post *eBay*)

4. The differential impact of *eBay* on NPEs vs PEs
I. Background

II. Preliminary and Permanent Injunctions Pre- and Post- eBay for PEs and NPEs

III. Logit and Difference-In-Difference Analysis of Preliminary and Permanent Injunctions Pre- and Post- eBay

IV. Implications and Conclusions
Methodology

1. Collected all patent (830) cases filed in United States District Courts (USDC) between 2000 – 2012 from PACER
   - A total of 39,229 patent cases

2. Identified patent cases with a “motion for injunction” filed using Lex Machina
   - Keyword search: “motion” and “injunction”
   - Resulted in 2,639 cases

3. Identified and removed false positives, e.g., no motion for injunction actually filed, or incorrect case type
   - Removed 456 cases

A total of 2,183 USDC patent cases filed & terminated between 2000-2012 for which a motion for an injunction was filed forms the basis of this study
Methodology

Case Data

• For each of the cases, we capture from PACER/Lex Machina
  – Filing date of the case
  – Names of the plaintiffs and defendants
  – Publication numbers of the patents involved in each case

• We further manually reviewed the docket for each case to code the following in each case:
  – Type of motion for injunction: preliminary or a permanent
  – Date the motion was filed
  – Decision of the motion
  – Date that the decision was made
  – Damages information, when available
Injunctions Pre- and Post- eBay
Rate of injunctions **granted** pre and post eBay based on injunctions sought

Granted motions / Total number of motions filed

---

**Grant Rate of Preliminary Injunction**

- 2000: 21.0%
- 2001: 20.1%
- 2002: 22.8%
- 2003: 19.0%
- 2004: 18.8%
- 2005: 23.5%
- 2006: 17.7%
- 2007: 15.4%
- 2008: 15.5%
- 2009: 20.4%
- 2010: 18.4%
- 2011: 16.7%
- 2012: 18.2%

**Grant Rate of Permanent Injunction**

- 2000: 80.7%
- 2001: 70.4%
- 2002: 78.8%
- 2003: 70.0%
- 2004: 65.1%
- 2005: 69.6%
- 2006: 76.2%
- 2007: 63.9%
- 2008: 60.0%
- 2009: 57.1%
- 2010: 59.1%
- 2011: 59.1%
- 2012: 57.1%
Rate of injunctions **sought** pre and post *eBay*

Injunctions sought / Total number of patent cases filed
Total number of patent cases filed versus number of injunctions sought

- Total USDC Patent Cases Filed
- Total Cases with Motion for Injunction
- Year Case Filed

- Total 830 Cases Filed
- Total Cases w/ Motion for Permanent
- Total Cases w/ Motion for Preliminary

Year Case Filed:
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012

Cases Filed:
- 2348
- 2474
- 2572
- 2805
- 2839
- 2583
- 2669
- 2838
- 2675
- 2667
- 3530
- 4007
- 5589

Cases w/ Motion for Injunction:
- 196
- 143
- 160
- 177
- 155
- 130
- 1669
- 126
- 95
- 36
- 33
- 37
- 27
- 19
Injunctions Pre- and Post- eBay for PEs and NPEs
Was the impact of *eBay* different for PEs and NPEs?

- Categorize all the patent plaintiffs in all the USDC cases filed from 2000-2012 (39,229 cases) as PEs or NPEs
- Study if the rate of injunctions sought or granted differs for cases brought on by PEs vs. NPEs
Methodology

Plaintiff Categorization

• Frequently used sources (in order)
  – ThomsonOne
  – Bloomberg
  – Manta
  – State-level business directories

• Data collected for each company
  – Company-website
  – Company description (from “About Us” section of webpage)
  – Product Information (all products, not just the products related to litigation)
  – Categories: PEs; Individual Inventor; Universities; Failed Start-Up; Technology Development Company; Patent Holding Company
Methodology
Plaintiff Categorization

Obtained as much information as possible about the plaintiff and hand classified according to the definitions below:

- **University**: Public or private institution of higher learning (includes foreign & domestic)
- **Individual Inventor**: One or more inventor who owns a patent (i.e., unassigned to a company). Often the party to litigation would be an individual. Includes family trusts
- **Failed Start-Up or PE**: A company that originally invented the technology and attempted to commercialize but currently sells no products
- **Patent Holding Company**: Companies, usually LLC, that formed solely to hold and enforce a patent or small portfolio, and are not owned by the original inventor
- **PEs**: Companies that manufacture products or deliver services other than licensing
- **Technology development company**: Companies that invested in the development of technology, for licensing rather than commercialization, are original owner of the patent
Methodology
Plaintiff Categorization

Manufactures Products?
- Yes
  - Still manufactures products/Still in Business?
    - Yes
      - PEs
    - No
      - Failed PE/Start-Up

- No
  - Is the Original Inventor?
    - Yes
      - Individual Inventor
    - No
      - Is an Individual?
        - Yes
          - Patent Holding Company
        - No
          - Tech Development Company
## Categorization of plaintiffs as PEs or different types of NPEs

Plaintiff categorization for all 39,229 Patent (830) Cases filed between 2000-2012

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Plaintiffs Categorized</th>
<th>Number of PEs</th>
<th>Number of NPEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>All 830 Cases Filed Between 2000-2012</td>
<td>16,387</td>
<td>12,220 (75%)</td>
<td>4,167 (25%)</td>
</tr>
</tbody>
</table>

### Table: Number of Unique Firms/Individuals Categorized

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Unique Firms/Individuals Categorized</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEs</td>
<td>12,220</td>
</tr>
<tr>
<td>Patent Holding Company</td>
<td>956</td>
</tr>
<tr>
<td>Individual Inventor*</td>
<td>2,932</td>
</tr>
<tr>
<td>Technology Development Company</td>
<td>148</td>
</tr>
<tr>
<td>University</td>
<td>86</td>
</tr>
<tr>
<td>Failed Start-Up/PE</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td>16,387</td>
</tr>
</tbody>
</table>
District Court patent cases filed by PEs and different types of NPEs (2000-2012)
Controlling for the quality of patents involved in motions for injunctions brought by PEs and NPEs

• Create a “quality index” for the patents involved in each case, we utilized the Thomson Patent database for obtaining the following information:
  – Forward (received) citations
  – Backward citations
  – Claim count
  – Length of first claim
  – Geographical coverage of the patent
Patent characteristics for PEs vs. NPEs for USDC 2000-2012 patent cases for which an injunction was sought

<table>
<thead>
<tr>
<th></th>
<th>PE</th>
<th>NPE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predicted Forward Cites</td>
<td>99.9</td>
<td>100.1</td>
<td></td>
</tr>
<tr>
<td>Observed Forward Cites</td>
<td>71.2</td>
<td>72.1</td>
<td></td>
</tr>
<tr>
<td>Backward Citations***</td>
<td>39.5</td>
<td>38.3</td>
<td></td>
</tr>
<tr>
<td>Number of Claims***</td>
<td>24.2</td>
<td>27.6</td>
<td>24.7</td>
</tr>
<tr>
<td>Log First Claim Length</td>
<td>3.033</td>
<td>3.053</td>
<td>3.04</td>
</tr>
<tr>
<td>Geo Coverage***</td>
<td>7.3</td>
<td>5.1</td>
<td>7.0</td>
</tr>
<tr>
<td>Log Length of Case</td>
<td>2.882</td>
<td>902.88</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Predicted Forward Cites: The number of forward citations predicted by the model.
- Observed Forward Cites: The actual number of forward citations.
- Backward Citations***: The number of backward citations.
- Number of Claims***: The number of claims in the patent.
- Log First Claim Length: The logarithm of the length of the first claim.
- Geo Coverage***: The geographical coverage of the patent.
- Log Length of Case: The logarithm of the length of the patent.
Rate at which injunctions are sought pre and post *eBay*, PEs vs. NPEs

<table>
<thead>
<tr>
<th>Year Filed</th>
<th># Cases w/ Motion (PEs)/# of 830 Cases (PEs)</th>
<th># Cases w/ Motion (NPEs)/# of 830 Cases (NPEs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>10.5%</td>
<td>6.9%</td>
</tr>
<tr>
<td>2001</td>
<td>7.7%</td>
<td>8.2%</td>
</tr>
<tr>
<td>2002</td>
<td>8.6%</td>
<td>6.0%</td>
</tr>
<tr>
<td>2003</td>
<td>8.3%</td>
<td>4.8%</td>
</tr>
<tr>
<td>2004</td>
<td>7.4%</td>
<td>4.3%</td>
</tr>
<tr>
<td>2005</td>
<td>6.9%</td>
<td>5.7%</td>
</tr>
<tr>
<td>2006</td>
<td>7.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>2007</td>
<td>7.2%</td>
<td>3.7%</td>
</tr>
<tr>
<td>2008</td>
<td>6.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>2009</td>
<td>6.3%</td>
<td>2.6%</td>
</tr>
<tr>
<td>2010</td>
<td>5.6%</td>
<td>1.0%</td>
</tr>
<tr>
<td>2011</td>
<td>3.9%</td>
<td>0.7%</td>
</tr>
<tr>
<td>2012</td>
<td>3.4%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Overall Rate of Change: -67% -> -93%

Rates of Change

<table>
<thead>
<tr>
<th></th>
<th>Pre eBay</th>
<th>Post eBay</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEs</td>
<td>-32%</td>
<td>-52%</td>
</tr>
<tr>
<td>NPEs</td>
<td>-52%</td>
<td>-86%</td>
</tr>
</tbody>
</table>
Rate at which preliminary injunctions granted pre and post *eBay* based on total patent cases filed

![Graph showing the rate of preliminary injunctions granted pre and post *eBay* based on total patent cases filed. The graph displays the percentage of cases where injunctions were granted, with separate lines for PE and NPE cases.](image-url)
Rate at which permanent injunctions granted pre and post *eBay* based on total patent cases filed

PE Injunctions Granted as Percentage of All Patent Cases

NPE Injunctions Granted as Percentage of All Patent Cases
Logit Analysis and Difference-In-Difference Analysis Pre- and Post- eBay
Logit Regression for Preliminary Injunctions

Outcome Variable = Preliminary Injunction Granted (1)

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Predicted Forward Cites</td>
<td>0.000 0.000 (0.001)</td>
<td>0.001 0.001 (0.001)</td>
<td>0.001 0.001 (0.001)</td>
</tr>
<tr>
<td>Average Geo Coverage</td>
<td>0.024** 0.026***</td>
<td>0.017 0.018 (0.012)</td>
<td>0.034*** 0.035***</td>
</tr>
<tr>
<td>Average 1st Claim Length</td>
<td>0.000 0.000 (0.000)</td>
<td>0.000 0.000 (0.000)</td>
<td>0.000 0.000 (0.000)</td>
</tr>
<tr>
<td>Average # of Claims</td>
<td>-0.010** -0.009**</td>
<td>-0.007 -0.007 (0.006)</td>
<td>-0.011** -0.011**</td>
</tr>
<tr>
<td>Average Backward citations</td>
<td>0.000 0.001 (0.005)</td>
<td>0.000 0.000 (0.005)</td>
<td>0.001 0.002 (0.006)</td>
</tr>
<tr>
<td>Length of Case</td>
<td>0.000** 0.000**</td>
<td>0.000*** 0.000***</td>
<td>0.000** 0.001***</td>
</tr>
<tr>
<td>PE (0)/NPE(1)</td>
<td>-0.391 -0.402*</td>
<td>-0.335 -0.347 (0.269)</td>
<td>-0.353 -0.367 (0.270)</td>
</tr>
<tr>
<td>Pre eBay (0)/Post eBay (1)</td>
<td>-0.312** (.146)</td>
<td>-0.331** (0.153)</td>
<td>-0.372*** (.159)</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.582*** -1.435***</td>
<td>-1.644*** -1.491***</td>
<td>-1.278*** -1.109***</td>
</tr>
<tr>
<td>Judicial District Dummy Included</td>
<td>No  No</td>
<td>No  No</td>
<td>Yes  Yes</td>
</tr>
<tr>
<td>Judge Dummy Included</td>
<td>No  No</td>
<td>Yes  Yes</td>
<td>No  No</td>
</tr>
<tr>
<td>Pseudo R squared</td>
<td>0.025 0.031</td>
<td>0.072 0.077</td>
<td>0.141 0.148</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.
Logit Regression for Permanent Injunctions

Outcome Variable = Permanent Injunction Granted (1)

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Predicted Forward Cites</td>
<td>-0.001</td>
<td>-0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Average Geo Coverage</td>
<td>0.024</td>
<td>0.030*</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.019)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>Average 1st Claim Length</td>
<td>0.000</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Average # of Claims</td>
<td>-0.006</td>
<td>-0.005</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>Average Backward citations</td>
<td>-0.003*</td>
<td>-0.003</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Length of Case</td>
<td>0.000</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>PE (0)/NPE(1)</td>
<td>-0.393</td>
<td>-0.429*</td>
<td>-0.419</td>
</tr>
<tr>
<td></td>
<td>(0.267)</td>
<td>(0.269)</td>
<td>(0.321)</td>
</tr>
<tr>
<td>Pre eBay (0)/Post eBay (1)</td>
<td>-0.375*</td>
<td>-0.534**</td>
<td>-0.582*</td>
</tr>
<tr>
<td></td>
<td>(.216)</td>
<td>(.239)</td>
<td>(.254)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.914***</td>
<td>0.931</td>
<td>2.314***</td>
</tr>
<tr>
<td></td>
<td>(0.264)</td>
<td>(0.274)</td>
<td>(0.670)</td>
</tr>
</tbody>
</table>

Judicial District Dummy Included | No | No | Yes | Yes
Judge Dummy Included            | No | No | Yes | Yes
Pseudo R squared                 | 0.034 | 0.138 | 0.260 |

Note: Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.01.
Basic Specification

- Diff-in-diff can address group and time specific effects
- Other controls

\[ Y_{it} = \beta_1 X_{it} + \beta_2 \alpha_i + \beta_3 \delta_t + \text{(other controls)} + \varepsilon_{it} \]

- Rate of injunctions granted in group “i” in time period t
- eBay decision (=1 at time t in group i)
- Group specific effects (e.g. incentives)
- Time trends (e.g.: change in business models, markets for patents, legal environment)
- Patent quality
**Diff-in-Diff**

\[
\Delta Y_i = (Y_{i2} - Y_{i1}) = \beta_1 X_{i2} + \delta_2 + (\varepsilon_{i2} - \varepsilon_{i1})
\]

The time difference allows us to eliminate “group” specific effects (e.g. incentives)

\[
(\Delta Y_j - \Delta Y_i) = \beta^j_1 X_{j2} - \beta^i_1 X_{i2} + (\Delta \varepsilon_j - \Delta \varepsilon_i)
\]

The diff-in-diff allows us to eliminate “time” specific effects

This allows us to measure the impact of the eBay decision.
**Diff-in-Diff analysis for preliminary injunction rates**

**Outcome Variable = Rate of Preliminary Injunctions for PEs and NPEs pre-post eBay**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>$\beta$ (S.E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE (0)/NPE(1)</td>
<td>-0.434*** (0.142)</td>
</tr>
<tr>
<td>Pre eBay (0)/Post eBay (1)</td>
<td>-0.055 (0.130)</td>
</tr>
<tr>
<td>Interaction Term</td>
<td>-0.111 (0.184)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.815*** (0.099)</td>
</tr>
</tbody>
</table>

Number of observations 312  
Pseudo R squared 0.095

Note: * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level
Diff-in-Diff analysis for permanent injunction rates

**Outcome Variable = Rate of Permanent Injunctions for PEs and NPEs pre-post eBay**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>$\beta$ (S.E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE (0)/NPE(1)</td>
<td>0.022 (0.205)</td>
</tr>
<tr>
<td>Pre eBay (0)/Post eBay (1)</td>
<td>0.739*** (0.189)</td>
</tr>
<tr>
<td><strong>Interaction Term</strong></td>
<td><strong>-0.787</strong>* (0.268)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.599*** (0.144)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>312</td>
</tr>
<tr>
<td>Pseudo R squared</td>
<td>0.079</td>
</tr>
</tbody>
</table>

Note: * indicates statistical significance at 10% level, ** indicates statistical significance at 5% level, *** indicates statistical significance at 1% level
Implications and Conclusions
We find that the U.S. Supreme Court decision in *eBay v. MercExchange* has had a significant impact on injunctive relief in patent cases.

- All entities – PE and NPEs – are less likely to file for a motion of an injunction after *eBay*.

- The rate at which injunctions are granted – calculated as a proportion of the total number of patent cases filed – is reducing.

- The reduced rate of granting of injunctions is occurring due to the self-selection by patentees who are moving less often for an injunction.
Summary of Findings

• The *eBay* ruling reduced the likelihood of all firms receiving either preliminary or permanent injunctions.

• The rate of receiving permanent injunctions reduced for NPEs at a higher rate than PEs post-*eBay*. 
Conclusions

• This study raises important policy questions about the current diminished role for injunctive relief in patent cases.

• When we are faced with multiple overlapping rights (not unique to patents at all—and indeed common to all property rights), our response seems to be to diminish the value of all these overlapping rights, without assessing the relative importance of these rights.

• Should NPEs be disfavored compared to PEs for receiving injunctive relief? Should the focus be on the importance of the patent or the patent plaintiff type?

• We need to actively embrace the development of criteria through which we can do an engaged balancing to meaningfully invigorate injunctive relief in patent law.