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November 17, 2014

A Century of Patent Litigation in Perspective

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A Century of Patent Litigation in Perspective

By Ron D. Katznelson

ABSTRACT

When comparing patent litigation rates or “rarity” across decades, one must take into account the proportion to the actual scale of commercial activities that give rise to patent disputes. Such normalizing scales are preferably national metrics of commercial activity such as (a) the number of patents issued in the year, (b) the total number of patents in force over which disputes may arise, (c) the total number of Federal civil suits, or (d) the economic scale of the Gross National Product (GDP) in real dollars. This paper marshals for the first time information on all patent litigation in Federal district courts spanning almost a century. The patent lawsuit filing information is newly obtained from the Judicial Conference Annual Reports going back to 1937 and further collected from the weekly Official Gazette of the Patent Office going back to 1923. In addition, an estimate for the number of US patents in force in each of the years covered is derived. Using non-parametric statistical tests, it is shown that, with the exception of the AIA-caused litigation anomaly of 2011-2013 explained in the paper, for all four normalizing metrics, patent litigation intensities during this century had not exceeded those experienced during the 20th century. High patent litigation intensities in the 1920s-1930s and the 1960s have been comparable to, if not higher than, those in the 2000s. These litigation activities are thought to be consistent with major shifts in technological developments such as the development of radio and electronics and chemical advances in the 1920s-1930s, the development of semiconductor transistor electronics in the 1960s and the wireless communications and internet-based technologies at the turn of the 20th century.

Keywords: patent litigation, GDP, patents in force, intellectual property lawsuits, judicial statistics.

JEL Classifications: K41, N12, O34.

1 The author wishes to thank Susan Hager for her tireless support in entering the patent lawsuit records from the Official Gazette of the Patent Office into the lawsuit database. Thanks are also due to Jim Hirabayashi of the USPTO for his guidance on the Office’s legacy TAF database used in this study to estimate patent maintenance rates.
1 Introduction

Recent years brought a proliferation of articles that describe and quantify a purported “explosion” in patent litigation. The causes for this purported explosive rise are often attributed to technological change, the Federal Circuit “patent-friendly” court, the growth of patenting, poor “patent quality,” and to litigation tactics of non-practicing entities (NPE), or the ill-defined “Patent Assertion Entities” (PAEs), pejoratively called “patent trolls.” A recent White House report on PAEs states without supporting sources that “[t]he increased prevalence of PAE suits, and patent suits in general, in recent years stands in contrast to the 20th century, when suits for patent infringement were relatively rare.” However, without the context of the general scale of commercial activity, this statement is meaningless because the number of all federal civil suits “in recent years stands in contrast to the 20th century,” when civil suits “were relatively rare:” about 283,000 Federal civil suits were filed in 2010 compared to only about 54,600 filed in 1950; in Federal district courts, about 3,700 trademark suits were filed in 2010 compared to only about 200 filed in 1950; and about 2,000 copyright suits were filed in 2010 compared to only 165 filed in 1950.

Therefore, when comparing patent litigation “rates” across decades, one should cover periods of major technological change, and one must take into proportional account the actual scale of the economy and the commercial activities that give rise to patent disputes. Normalization measures for the number of patent suits are preferably the growing user base of new technologies as manifested by commercial activity indicia such as (a) the number of issued patents in the year, (b) the total number of patents in force over which disputes may arise, (c) the total number of Federal civil suits, and (d) the Gross National Product (GDP) in real dollars. All four of these normalizing measures are used in this study.

Previous studies on historical numbers of patent lawsuits relied on the limited data from the Federal Judicial Center, Federal Court Cases Integrated Database which unfortunately does not cover the years before 1970. As a result, these studies do not cover some major technological development eras of the 20th century. Moreover,

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6 Id.

7 Id.

8 Database available from the Inter-University Consortium for Political and Social Research (ICPSR) in Ann Arbor, MI. www.icpsr.umich.edu.

most of these studies report the absolute number of filed patent cases without normalization to relevant economic activity measures.

A recent study by Zorina Khan\textsuperscript{10} covered the period 1790 to 2000 with a temporal granularity of a decade, using patent lawsuit data from Lexis and from published volumes of reports of patent cases. Although published judicial opinions may be a good way to track the development of case law, they are deficient proxies for the actual number of historical patent disputes. Cases litigated to a decision were only a small subset of all lawsuits filed, and reported decisions, even a smaller subset of that, with reporting coverage that varied over time.\textsuperscript{11} Indeed, Khan acknowledged the limitations of reported decisions count as a source, but her results are nevertheless qualitatively highly instructive.

Khan’s study of the number of reported patent lawsuits over two centuries reveals that historically, as a fraction of issued patents, reported litigation rates in the first part of the 19th century exceeded that of the last two decades by about a factor of five.\textsuperscript{12} She finds that high litigation rates in given technological fields were correlated with the advent of disruptive technologies\textsuperscript{13} and observes that “vexatious and costly litigation about all areas of law—patents, property, contracts, and torts alike—were inevitably associated with the advent of important disruptive innovations.”\textsuperscript{14} Importantly, Khan also documents the robust NPE activity and patent litigation, finding that it is not new and tracing such activity to the patent “wars” of the 19th and early 20th centuries.\textsuperscript{15}

This present study aims to fill the void in studies on the national aggregate statistics of all patent lawsuit filings before 1970. The contributions of this study are twofold: first, sources for such litigation information are identified and data compiled for the fiscal years beginning in 1923 through 2013. It is recognized with virtual certainty that, short of collecting individual archival records prior to 1923 from each district court, no national compilation of patent lawsuit filings earlier than 1923 likely exists. Second, in order to derive the important normalizing measure of the total number of patents in force each year, a detailed analysis of this measure is provided which factors for each year (a) the number of issued patents, (b) the number of patents


\textsuperscript{12} Id., at 861, Figure 3.

\textsuperscript{13} Id., at 862-863 (showing the effects on litigation rates in the telegraph, telephone and automobile industries).

\textsuperscript{14} Id., at 842.

\textsuperscript{15} Id., at 833-835, 839-842.
expired at the end of their term, (c) the number of patents expired earlier than their
term for failure to pay maintenance fees, (d) the distribution of post-GATT patents
having patent term greater than 17 years (but no more than 20 years) based on
prosecution pendency time.

Finally, a statistical analysis of patent lawsuit filing rates normalized by the four
normalizing measures described above is presented. It is shown that, with the
exception of the AIA-caused litigation anomaly of 2011-2013 explained in the paper,
for all four normalizing metrics, patent litigation intensities in recent years had not
exceeded those experienced during the 20th century.

2 Data and methods
2.1 Patent litigation data
Beginning in 1873, national compilation and reporting of civil cases filed in Federal
district courts were published in the Annual Reports of the Attorney General of the
nature of suit was reported and thus the number of patent suits cannot be obtained
from these annual reports. It was not until January 1935 that the Justice Department
inaugurated a new system for compiling Federal court statistics. Under this system,
individual reports of civil and criminal cases were furnished monthly by court officials
by means of punch cards and a central IBM Hollerith tabulating machine was used to
compile the annual statistics.\footnote{Annual Report of the Attorney General of the United States for the Fiscal Year 1935, Washington, D.C. (1935) p183; Shafroth (1948) note 16 supra, at 205.} For fiscal years 1935-1936, the Annual Reports of the
Attorney General reported the total number of intellectual property suits (patent,
copyright, and trademark suits) in a single table entry. The first fiscal year for which
those counts are available separately is 1937, although they were not reported until
after 1940, when the Administrative Office of the United States Courts was organized
and had taken over the Department of Justice's system.\footnote{Id.} Separate numbers for suits
filed in patent, copyright, and trademark cases are therefore available from fiscal year
1937 onwards in Table C-2 and its predecessors in the Annual Report of the Director of
the Administrative Office of the United States Courts, which this study relies upon.
No appeal cases were included in these counts.

Fortunately, patent lawsuit filing events for earlier years since fiscal year 1923 have
been reported on a weekly basis in the weekly Official Gazette of the US Patent Office,
albeit requiring laborious week-by-week and case-by-case collection and data entry. In
the Act of February 18, 1922, Congress codified in R.S. §4921, the predecessor of 35
U.S.C. §290, a Federal court reporting requirement: “it shall be the duty of the clerks
of such courts within one month after the filing of any action, suit, or proceeding
arising under the patent laws to give notice thereof in writing to the Commissioner of
Patents...”\footnote{Revised Statutes § 4921, Ch. 58, § 8, 42 Stat. 392 (Feb. 18, 1922).} In turn, the US Patent Office published these notices shortly thereafter
in its weekly Official Gazette,\textsuperscript{20} identifying the patents involved, the inventor(s), the suit filing date, the parties’ names, and the court docket number.

Copies of the weekly “Patent Suits” sections appearing in the Official Gazette of the United States Patent Office during the years 1922-1937 were obtained, from which a total of 14,617 suit records from district courts (excluding circuit court appeals) were manually entered in a database of filed patent cases. Of these cases, 14,155 have filing dates between July 1, 1922 and June 30, 1937, corresponding to Fiscal Years 1923 through 1937.\textsuperscript{21} In addition, 14 cases were reported with no filing date and for the purpose of this study, these were recorded as having been filed in the fiscal year in which the respective notice was published in the Official Gazette.

In a check for the completeness of the Patent Office “Patent Suits” data, it was found that the number of filed cases reported for FY 1937 (870 cases) was about 87% of that reported by the Administrative Office of the United States Courts for that fiscal year (1,004 cases). This under-reporting by the courts to the Patent Office appears consistent with similar comparisons of more recent data elsewhere.\textsuperscript{22} Therefore, the data in this study for the fiscal years 1923-1936 likely underestimate by more than 10% the actual numbers of patent suits during those years.

\subsection{2.2 Derivation of the number of patents in force}

The number of utility patents in force by the end of each fiscal year is derived as follows. The number of issued patents each fiscal year was obtained from the US Patent and Trademark Office’s (PTO) annual reports starting from 1905. To begin, two important legal changes affecting patent term must be considered. The first is the establishment of the patent maintenance fee system that came into effect in 1981.\textsuperscript{23} Failure to pay maintenance fees during any of the maintenance windows at 4, 8 and 12 years after issue results in early patent expiration. Initial effects of this law occurred in 1985 for patents issued in 1981 that expired at the first maintenance window for failure to pay maintenance fees. The second key legal change is that Congress enacted in the Uruguay Round Agreements Act\textsuperscript{24} implementing the General Agreement on Tariffs and Trade (GATT). Under this legislation, the 17-year patent term was changed and 35 U.S.C. §154(a)(2) since provides that patents filed on or after June 8, 1995 have a term of 20 years from the priority application date. Moreover, under § 154(c)(1) the term of a patent that was in force on or that results from an application filed before June 8, 1995 is the greater of the 20-year term, or 17 years from grant.

Finally, relevant legal changes that have had no effect on the present analysis are as follows: Patent term adjustments under 35 U.S.C. §154(b) began taking effect only for

\textsuperscript{20} Official gazette of the United States Patent Office, (starting in 1922).
\textsuperscript{21} This fiscal year choice was made for want of consistency with the fiscal year reporting system of the later data from the Annual Report of the Director of the Administrative Office of the United States Courts.
\textsuperscript{22} Somaya (2004), note 9 supra, at 108.
\textsuperscript{23} P.L. 96-517, 94 Stat 3015 (Dec. 12, 1980); 35 U.S.C. §41(b).
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patents issued after 2000 and as such, the effects are not manifested in patent expirations for patents issued to date. Moreover, the number of patents having terms extended due to the FDA approval process under 35 U.S.C. § 156 is negligible for the purposes of this analysis, as PTO data shows that the terms of only about 70 such patents per year are extended.25

Accordingly, three separate counting treatments of issued patents were used: the first is for all “Old Patents” issued between 1905 and June 8, 1978. These have had a simple term of 17 years from issue as they were subject to neither maintenance fees nor GATT effects. A simple running 17-year “leaky” accumulation establishes the number of patents in force for this category. The second treatment is for all patents with priority application dates later than June 7, 1975, as they are subject to GATT effects under § 154(c)(1). The third is the maintenance effects affecting all patents issued since 1981 and overlapping the second treatment.

<table>
<thead>
<tr>
<th>FY</th>
<th>PATENTS SUBJECT TO GATT EFFECTS</th>
<th>MAINTENANCE</th>
<th>OLD PATENTS</th>
<th>Utility Patents in Force</th>
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<tbody>
<tr>
<td></td>
<td>Application date &gt; June-7-1975</td>
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<td>Issued</td>
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<td></td>
<td>Nominal term expired in FY (long</td>
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<td>Nominal term expired in FY (short</td>
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<td>expired any time before</td>
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<td>nominal term</td>
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<tr>
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<td>Total expired in FY due to failure to renew</td>
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<tr>
<td></td>
<td>Total issued in FY that expired any time before nominal term</td>
<td></td>
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</tr>
<tr>
<td>Source</td>
<td>Annual PTO Report</td>
<td>FPO Database (Utility Patents)</td>
<td>Annual PTO Report</td>
<td>PTO TAF database</td>
</tr>
<tr>
<td>t</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
</tbody>
</table>

* Except for 1995, where applications filed on or before June 7, 1995 are shown per search in FPO database. Note that k(t) = 0 for all t > 1995; b(t) = 0 for all t < 1995; c(t) = 0 for all t < 1996; d(t) = 0 for all t < 1997; e(t) = 0 for all t < 1985;

** Utility patents in force at year t are calculated recursively as follows:

For t < 1995:

\[ m(t) = m(t-1) + a(t) + h(t) - e(t) - k(t) + g(t-17); \]

For t ≥ 1995:

\[ m(t) = m(t-1) + a(t) + h(t) - b(t) \left[ 1 - \frac{g(t-17)}{a(t-17)} \right] - c(t) \left[ 1 - \frac{g(t-18)}{a(t-18)} \right] - d(t) \left[ 1 - \frac{g(t-19)}{a(t-19)} \right] - e(t) - k(t) \]

The last terms involving the variable g(t) are fractional corrections to avoid double counting of expirations included in variable e(t).

Table 1. The sources and the variables used to derive the number of patents in force.

Table 1 shows the sources for, and the count variables used to derive the count of the patents in force. Because it has been less than 20 years since the GATT change, no patents expired yet under § 154(a)(2) and the only two categories of patents requiring separate analysis are those having the 17-year term which expired no later than June 7, 1995, “Old Patents” in the table, and those governed by § 154(c)(1), shown in the

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table as “patents subject to GATT effects.” Expirations from both categories were combined. In addition, the numbers of early expirations under the maintenance system were derived from the PTO’s Technology Assessment and Forecast (“TAF”) database, from which count variables f and g were derived.

Patents subject to GATT effects were divided into three coarse indicator sets (count variables a, b and c) depending on their pendency in prosecution. These were determined by selective search on FreePatentsOnline.com (FPO) for the number of patents filed 20 years prior to the focal fiscal year t and issued within 3-4 years (b), 2-3 years (c), and 1-2 years (d) from their filing window. These were used to estimate a proportional correction and shorten the otherwise 20-year term of the patents as shown in the second equation in Table 1.

Noteworthy is the fact that the results obtained in this analysis for US utility patents in force are within 1% of the limited results published by the World Intellectual Property Organization for the years 2004-2012.26

2.3 Civil suits data

The numbers of civil lawsuits filed over the years manifest trends in the overall scale of all disputes taken up by the Federal district courts. As one of the normalizing measures for patent litigation, the annual total numbers of civil suits filed in federal district courts were obtained from Table C-2 and its predecessors in the Annual Report of the Director of the Administrative Office of the United States Courts for fiscal years 1937-2013. The rest of the data for the years 1923-1936 were obtained from the Annual Reports of the Attorney General, wherein all civil cases were included in the tally with the exception of cases brought by the government under the National Prohibition Act of 1919.27 As a control for civil suits related to patents, the numbers for copyright and trademark suits were separately obtained from Table C-2 for the Fiscal Years 1937-2013.

2.4 Real GDP data

The US Bureau of Economic Analysis (BEA) is the official government source for Gross Domestic Product (GDP) information. It now reports GDP in “real” dollars based on chain-weighted indexes. These indexes use updated weights in order to provide a more accurate picture of the economy, to better capture changes in spending patterns and in prices, and to eliminate the bias present in fixed-weighted indexes.28 However, BEA’s GDP data coverage begins at 1929. Fortunately, the BEA real chained dollar index was extended to cover US GDP starting at 1790 by MeasuringWorth.com.29 For

27 Civil prohibition cases artificially inflated the count until the Act’s repeal in December of 1933. According to the Annual Reports of the Attorney General, 1932 saw a record high of 15,455 prohibition cases brought by the government.
29 See www.measuringworth.com/usgdp/.
this study, this source was used to obtain the GDP data in Real 2009 chained dollars for 1923 to 2013.

2.5 Statistical Analysis

The annual numbers of patent lawsuits (shown in Figure 1) were normalized by (a) the number of issued patents in the year (result shown in Figure 2); (b) the total number of patents in force at the end of the year (result shown in Figure 3); (c) the total number of Federal civil suits in the year (result shown in Figure 4), and (d) the Gross National Product (GDP) in real dollars (result shown in Figure 5).

The White House assertion described in the introduction, that the increased prevalence of patent suits “in recent years stands in contrast to the 20th century, when suits for patent infringement were relatively rare” is tested here. As explained above this statement is meaningless without considering economic scales and thus the terms “prevalence” and “relatively rare” are taken to mean as the lawsuit filing rate relative to other relevant economic activity rates – such as the four normalizing time-series discussed above. These four normalized litigation time series as shown in Figure 2 through Figure 5 form the set, which we define as “litigation intensities.” Because litigation intensities are always positive (asymmetric, bounded from below) and because the magnitudes of their temporal fluctuations are not sufficiently small compared to their mean values, their distributions cannot be taken as normal. Therefore, statistical inferences should rely on non-parametric methods used when the distributions are unknown. Accordingly, the two hypotheses consistent with the White House assertion to be tested are formulated non-parametrically as follows:

- **Hₐ**: Patent litigation intensity after the year 2000 had a maximum excursion that exceeded any of the excursions in the period 1923-2000.
- **H₉**: Patent litigation intensity distribution after the year 2000 differed from the distribution in the period 1923-2000.

It follows that the alternative to Hypothesis **H₉** is a null hypothesis **H₀**:

- **H₀**: The patent litigation intensity distributions of both time periods are identical, so that there is a 50% probability that an intensity value randomly selected from one time period exceeds an observation randomly selected from the other time period.

Hypothesis **Hₐ** and its logical complement are readily tested by a simple peak excursion test, comparing maximum intensities in both periods. The testing of **H₀** against **H₉** is accomplished by using the non-parametric Mann-Whitney test, also called the Wilcoxon rank sum test. The results of these tests are tabulated in Table 2 below.

3 Discussion of Results

The annual numbers of patent lawsuits are shown in Figure 1. The normalization by the number of issued patents in the year are shown in Figure 2 whereas normalization by the total number of patents in force at the end of the year are shown in Figure 3.
Normalization by the total number of Federal civil suits in the year is shown in Figure 4 and the normalization by the GDP is shown in Figure 5.

Several observations can be made: substantial reduction in patent litigation intensity occurred during World War II. Figure 5 shows that this decline also occurred in copyright and trademark litigation. A preliminary examination of the types of patents asserted during the relatively high patent litigation period of the 1920s and 1930s indicates substantial rise of the chemical technologies and particularly in the new field called electronics. These recorded cases show a large share of lawsuits involving patents on radio and vacuum tube electronics, consistent with historical reports of litigation surge involving such patents. Indeed, litigation followed years of brisk patenting and development in the vacuum tube electronics and radio fields. This suggests that further studies should examine the degree to which such surges of patent litigation activities shown in the figures are related to major shifts in technological developments such as the development of radio and vacuum tube electronics in the 1920s-1930s, the development of semiconductor transistor electronics in the 1960s and the wireless communications and internet-based technologies at the turn of the 20th century.

Figure 3 shows a substantial rise in the number of patents in force after 1995. This trend is attributable to three factors: (a) the effective extension of patent term due to GATT for patents having prosecution pendency shorter than 3 years, (b) the steady increase in patent maintenance rate, prolonging the average patent life, and (c) an increase volume of new patent issued. All figures show that the number of patent lawsuits surged in 2011-2013. As discussed below, this is directly attributable to the America Invents Act (AIA) and is not reflective of an underlying increase in the number of litigated patent disputes.

3.1 The AIA lawsuit filing surge

Several factors created by the AIA caused, and will likely continue to cause, increased rate of lawsuit filings. The effects of these factors were building up even before passage of the AIA in September 2011, as patentees acted in anticipation of more adverse legal conditions at various phases of the AIA implementation. As codified by the AIA, 35 U.S.C. § 299 substantially curtails joinder of multiple defendants in a single case, requiring multiple lawsuits where one would have been filed before September 2011. Thus, the AIA forced patentees to file more lawsuits, each naming only one defendant.


Figure 1. Patent lawsuit filings in US district courts, 1923-2013.

Figure 2. Patent lawsuits in US district courts as percentage of patents issued in the year.
Figure 3. Patent lawsuits filed in US district courts as a fraction of US patents in force.

That the surge in the number of patent suits in 2011-2013 is dominated by AIA-related provisions has been widely documented. A report by the U.S. Government Accountability Office (GAO) recognized that the surge in patent lawsuit filings was due to the AIA joinder provisions, and in a detailed empirical study, Professors Cotropia, Kesan, and Schwartz have shown that there was “no major difference between both the number of unique patentees and the number of alleged infringers from 2010 to 2012. While the number of cases increased, the totals for the main players—patentees and defendants—stayed essentially constant.” This observation is consistent with the lawsuit filing surge wrought by the AIA rather than by an inexplicable surge in litigation.

Incentives to advance the filing of patent infringement suits before the AIA enactment in September 2011 also grew substantially due to AIA’s 35 U.S.C. §315(b) which provides that no inter partes review (IPR) can be instituted if the petition is filed more than one year after petitioner is served a complaint alleging infringement of the subject patent. Thus, in order to inoculate any particular existing infringed patent against the threat of IPR challenge, patentees simply had to advance filing lawsuits earlier than September 2011, which was one year before any party could institute an IPR proceeding which came into effect in September 2012.

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A third provision of the AIA that contributes to the lawsuit surge is related to incentives created by AIA-codified 35 U.S.C. §325(b) to file patent infringement suites within 3 months of patent grant, as explained by this author elsewhere.\textsuperscript{35}

### 3.2 The patent litigation spike of 1935

As the figures above show, a spike in patent litigation occurred in 1935, reaching more than 1,360 suits, a level exceeding by about 45% the average intensity in proximal years. This rise was mostly due to one patentee. After the US Supreme Court upheld on January 7, 1935 in two separate decisions\textsuperscript{36} his patent on egg incubator (US Pat. No. 1,262,860), Samuel B. Smith filed a few hundred patent infringement lawsuits in district courts across the country against farmers and hatcheries during February through May, 1935. As a result, many courts were upholding Claim 1 as valid and infringed. It would not be until 1937 that obscure prior use antedating the invention was discovered and proven, which the Supreme Court affirmed.\textsuperscript{37}

### 3.3 No significant change in patent litigation intensity in recent years compared to the 20th century

Table 2 summarizes the results of two non-parametric statistical tests for the four patent litigation intensity measures. Because patent litigation intensities during 2011-2013 were anomalous due to the AIA – artificial reasons and mechanisms that have little to do with the underlying number of patent disputes – data points for these three years were removed from the analysis to prevent bias.

As can be seen in the table, Hypothesis $H_A$ that patent litigation intensity after the year 2000 had a maximum excursion that exceeded any of the excursions in the period 1923-2000 is rejected. Rather, the fraction of samples in which litigation intensity in 1923-2000 period exceeded the maximum intensity in the later period ranged from 3% to 45% depending on the normalizer.

Similarly, Hypothesis $H_B$ that patent litigation intensity distribution after the year 2000 differed from the distribution in the period 1923-2000 is rejected for three out of the four normalizers. Table 2 shows that for these three normalized intensities, the null hypothesis $H_0$ cannot be rejected, i.e., that there is no statistically significant difference in the intensity distributions of both time periods. However, for one normalizer – the total number of patents in force – the distributions are significantly different (Mann–Whitney $U = 56$, $n_1 = 78$, $n_2 = 10$, $p < 10^{-5}$ one-tailed).


\textsuperscript{36} Smith v. Snow et al., 294 US 1 (1935); Waxham V. Smith et al 294 US 20 (1935).

\textsuperscript{37} Smith V. Hall et al. 301 U.S. 216 (1937).
Table 2. Results of two non-parametric statistical tests for four patent litigation intensity measures shown in Figure 2 through Figure 5.

While it can be said that litigation intensity normalized by the total number of patents in force observed in the two time periods are not drawn from the same probability distribution, the peak excursion test shows that in 3% of the time such normalized intensities in the first time period were actually higher than the maximum intensity observed in the second period.

4 Conclusion

Newly acquired patent litigation statistics going back to 1923 provide a much-needed perspective into patent litigation rates during the last 90 years. Four normalizing metrics reflecting trends in economic and commercial activity scale were obtained to derive normalized litigation intensities. Using non-parametric statistical tests, it is shown that, with the exception of the AIA-caused litigation anomaly of 2011-2013 explained in the paper, for all four normalizing metrics, patent litigation intensities in recent years had not exceeded those experienced during the 20th century. Rather, patent litigation surges are consistent with major shifts in technological developments, which introduce novel terms and uncertainty in patent claims and require infringement analysis of novel and less understood products.