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Bigger and Better Patent Examiner Statistics

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<u>Bigger and Better Patent Examiner Statistics</u>

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The American government charges the United States Patent and Trademark Office (USPTO) with reading and reviewing patent applications to determine what new or improved inventions, machines, and processes qualify for patent protection. Each application is reviewed by a specific patent examiner who theoretically applies the standards of patentability in an even, fair, unbiased and consistent manner. This task requires the examiner to not only be internally consistent with the applications she reviews but also consistent with the behavior of other examiners within the same technology center.[2] I have conducted two studies based on data from hundreds of thousands of patents, thousands of examiners, and millions of Office Actions.[3] Both studies point to consistency issues within the USPTO that may undermine the very duty with which it is tasked. These studies also posit possible solutions that will help the USPTO create more effective guidelines and, ultimately, better patents. Part I introduces why the efficiency and quality of the patent process is so important. Part II outlines the two studies that informed

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2 See generally Shine Sean Tu, *Luck/Unluck of the Draw: An Empirical Study of Examiner Allowance Rates*, 2012 STAN. TECH. L. REV. 10, 14 (2012) [hereinafter Tu, *Luck/Unluck of the Draw*]; Simmons, N.R., *Putting Yourself in the Shoes of a Patent Examiner: overview of the United States Patent and Trademark office (USPTO) Patent Examiner Production (Count) System*, 17 J. Marshall Rev. Intell. Proper. L. 32 (2017). See also Shine S. Tu, *Patent Examiners and Litigation Outcomes*, 17 STAN. TECH. LAW REV. 507, 512-515 (2014); Wesley M. Cohen & Stephen A. Merrill, *Patents in the Knowledge-Based Economy* 24-26 (National Academy Press 2003); Vishnubhakat, Saurabh, *The Field of Invention* 45 Hofstra Law Review 899 (2017).

3 Tu, *Unluck/Luck of the Draw*; Shine Sean Tu., *Three New Metrics for Patent Examiner Activity: Office Actions per Grant Ratio (OGR), Office Actions per Disposal Ratio (ODR), and Grant to Examiner Ratio (GER)*, 100 J. Pat. & Trademark Off. Soc'y 277 (2018) [hereinafter Tu, *Three New Metrics*].

this paper and discusses the results.[4] Finally, Part III summarizes what both studies suggest for the patent prosecution process.

I. Background

A. Patent Office Statistics

The USPTO is a robust office with commensurate funding and employees. When my first study was conducted in 2012, the USPTO revenue was calculated at $1.4 billion, and it employed over 7,000 examiners. Only five years later, its revenue skyrocketed to $2.25 billion, and it employed over 8,000 examiners. The large acquisition of examiners seems to have been targeted at reducing the massive backlog of unexamined patents, and the strategy appears to have been somewhat successful. As the table below indicates, the backlog has been reduced by over 100,000 despite the increase in applications. Additionally, the First Office Action pendency duration has gone down as examiners now typically begin responding to applications within a year and a half instead of the almost two years it previously took.[5]

	FY 2012	**FY 2017**
Backlog of Unexamined Patents	641,142	526,579

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4 Shine Sean Tu, *Luck/Unluck of the Draw: An Empirical Study of Examiner Allowance Rates*, 2012 STAN. TECH. L. REV. 10, 14 (2012) [hereinafter Tu, *Luck/Unluck of the Draw*]; Shine Sean Tu., *Three New Metrics for Patent Examiner Activity: Office Actions per Grant Ratio (OGR), Office Actions per Disposal Ratio (ODR), and Grant to Examiner Ratio (GER),* 100 J. PAT. & TRADEMARK OFF. SOC'Y 277 (2018) [hereinafter Tu, *Three New Metrics*].

5 United States Patent Office Performance and Accountability Report Fiscal Year 2012 at 2,10, and 176. United States Patent Office Performance and Accountability Report Fiscal Year 2017 at 27, 11 and 24

Number of Applications Filed	565,566	647,388
First Office Action Pendency	21.9 Months	16.3 Months
Number of Examiners	7,935 Examiners	8,147 Examiners
Total USPTO Revenue	$1.72 Billion	$2.25 Billion

There appears to be a correlation between (1) the increase in examiners and (2) the modest success in reducing the backlog and in how long it takes to process the first response to a patent application. Despite the mere correlation, hiring more examiners may not be the most effective way to process more applications and ensure that patents are given to those applications that meet the USPTO's exacting standards. Indeed, the two studies detailed below suggest that revising the process by which patents are reviewed as well as retaining high production examiners may be an even more effective way to ensure that the USPTO uses its limited resources wisely.

The USPTO's role as a protector and stimulator of innovation requires the USPTO to issue patents to provide incentives for inventors as well as ensuring that these incentives are crafted both accurately and efficiently. Since the USPTO is a user-fee-funded governmental organization, it is important to make sure the USPTO does not issue patents for its own financial reasons. Although the mission of the USPTO is to encourage innovation, when examiner review is inefficient or, even worse, done incorrectly or inconsistently, it can stifle innovation.[6]

B. What is at stake?

[6] The USPTO was formed to fulfill the mandate of Article I, Section 8, Clause 8, of the Constitution that the legislative branch "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." See generally Tu, *Luck/Unluck of the Draw.*

Coverage of patent examiners who allow "bad" patents[7] have been pervasive in the news.[8] This issue has been exacerbated by the concern over non-practicing entities (NPEs).[9] Issuing patents that do not meet the patentability requirements acts as a windfall to these patentees because these patentees are able to exclude others. In previous studies, we determined some of the common characteristics of examiners who allow patents that are later litigated.[10] Furthermore, we segmented the data and analyzed some of the common characteristics of examiners who allow patents that are not only litigated but later found invalid due to a mistake that could have been prevented at the USPTO.[11] These mistakes can be quantified because these "bad" patents may be thrust into, and later invalidated, by litigation. Accordingly, the costs of patent litigation and allowances of "bad" applications are high and quantifiable.[12]

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7 "Bad" patents are defined as patents that should not have issued due to a failure to meet any statutory patentability requirements. See Wright, D., *Patently Silly from the Collapsible Walker to the Incinerating Toilet, the Craziest Inventions Ever Devised* (the Lyons Press 2009); see also Feinberg, R. *Peculiar Patents: A Collection of Unusual and Interesting Inventions from the Files of the U.S. Patent Office* (Carol Publishing Corporation, 1994); Lemley, M., Lichtman, D., and Sampat, B. *What to do with Bad Patents,* Regulation at 10, 12-13 (Winter 2005-06); Merges, R.P., *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform, 14 Berkeley Tech. L.J. 577 (1999).*

8 ADAM B. JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT 136-37 (2004); Doug Lichtman & Mark Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 STAN. L. REV. 45, 47-48 (2007); John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 314-16, 318-21; Jay P. Kesan, *Carrots and Sticks to Create a Better Patent System*, 17 BERKELEY TECH. L.J. 763, 676-68 (2002); Christopher R. Leslie, *The Anticompetitive Effects of Unenforced Invalid Patents*, 91 MINN. L. REV. 101, 133-34 (2006).

9 Colleen Chien, *Startups and Patent Trolls,* 17 STANFORD TECH. L. REV. 461 (2014); Robin Feldman et al., *The AIA 500 Expanded: The Effects of Patent Monetization Entities,* 17 UCLA J.L. & TECH. 1 (2013); *see also* Michael Risch, *Patent Troll Myths*, 42 SETON HALL L. REV. 457 (2012); David Schwartz & Jay P. Kesan, *Analyzing the Role of Non-Practicing Entities in the Patent System,* 99 CORNELL L. REV. 425 (2014); Christopher Cotropia et al., *Unpacking Patent Assertion Entities (PAEs)*, 99 MINN. L. REV. 649 (2014).

10 Shine Sean Tu, *Patent Examiners and Litigation Outcomes*, 17 STAN. TECH. L. REV. 507, 512-15 (2014) [hereinafter Tu, *Patent Examiners*].

11 Shine Sean Tu, *Invalidated Patents and Associated Patent Examiners*, 18 VAND. J. ENT. & TECH. L. 135, 135-65 (2015) [hereinafter Tu, *Invalidated Patents*].

12 In 2017, the median litigation cost for a patent infringement suit (inclusive of pre- and post-trial, and appeals when applicable) is approximately $1 million when there is $1-10 million at risk and $2 million when there

"Bad" patents can hinder innovation by increasing transaction costs for competitors and harm the public with increased product costs. The Consumer Technology Association has estimated that $1.5 billion is wasted by so-called "patent trolls" every week—a staggering $78 billion a year.[13] Thus, examiners who allow "bad" patents clearly harm innovation in real, tangible, and quantifiable ways. Making sure that the patents being issued by the USPTO meet the patentability standards, then, is a key component of fulfilling its duty as a guardian and fomenter of innovation. Patent examiners are supposed to act as gatekeepers by reviewing and preventing invalid patents while allowing "good" patents that meet all statutory requirements. Accordingly, it is paramount to understand examiners' behavior to understand how and why the system fails for certain applications.

Although "bad" patents can cost Americans an extraordinary amount in litigation, the non-issue of "good" patents also incurs a hefty price to both innovation.[14] This price can be incurred in two fashions: (1) use of trade secret and (2) a decrease in investment in research and design. First, firms who face constant improper rejection by examiners may simply choose to use trade secrets to protect their valuable intellectual property. Use of the trade secret system may also hurt innovation by making it harder for competitors to invent or build upon the patented invention since they are kept in the dark about the current advances. Accordingly, other firms may have to engage in costly duplication of development. Second, examiners who prevent "good" patents from issuing can harm innovation by increasing costs for companies that are

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is $10-$25 million at risk and $3 million when there is more than $25 million at risk. AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, 2017 REPORT OF THE ECONOMIC SURVEY 41 (2017).

13 *Patent Reform*, CONSUMER TECHNOLOGY ASSOCIATION, https://www.cta.tech/Policy/Issues/Patent-Reform.aspx (last visited June 15, 2018).

14 "Good" patents are defined as patents that meet all statutory patentability requirements.

investing in research and development. By increasing innovation costs, these companies may invest less or stop investing in bringing groundbreaking technology to the public.[15]

Examiners who delay and/or prevent "good" patents from issuing have several tools to force applicants to either (1) spend large amounts of money on gratuitous and merit-less appeals to ultimately obtain a much narrower patent than they are entitled to or (2) abandon their patent application completely. Unlike litigation, this type of harm to innovation is much more difficult to quantify because empiricists must try to measure a null set (those patents that would have issued but for the examiner's resistance to allowing the patent). That there is a real cost, however, is undeniable.[16]

II. Measurement of Patent Examiner Activity

Since there is so much at stake both financially and creatively, it is critical to find a measure that allows us to determine how the USPTO is doing in processing applications, patenting "good" applications, and denying "bad" ones.

Anecdotal evidence has shown that some patent examiners exhibit a counterproductive "Examiner versus Applicant" mentality. Some stories have described instances where patent examiners are proud of a low allowance rate. In fact, the initial study for this paper resulted, in part, from the author's visit to the Patent and Trademark Office (PTO), and observing a sign extoling the examiner's pride in a "0% allowance rate." As one examiner commented, "To these [0% allowance rate] examiners, allowances are an affront to their personal being."[17] As one can

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[15] Jaffe, A.B., and Lerner, J. *Innovation and its Discontents: How our Broken Patent System is Endangering Innovation and Progress, and what to do about it.* (Princeton University Press, 2004).

[16] There is, of course, no easy way to measure the cost. As there is currently no way of collecting data on inventors who had legitimately patentable inventions but abandoned the process because it became too timely or too costly. There have also been no studies to date that have assessed how many inventors used the trade secret system instead of patenting primarily because they, through real or perceived experience, felt that the patent system worked against them instead of with them.

[17] Personal communication with PTO primary examiners (preferred to remain anonymous).

imagine, if a large population of examiners behaved in such a manner, our patent system would be failing on several levels.

A. Unluck/Luck of the Draw[18]

In order to determine the efficacy of the patent prosecution system, my first study focused on the allowance rate of primary and secondary examiners.[19] In this study, allowance rate was defined as the total number of granted patents by the specific examiner divided by the total number of years that examiner had been at the USPTO.[20]

This study focused on both primary and secondary examiners. Primary examiners are more senior examiners with at least five years of experience and have full signatory authority.[21] Signatory authority allows the primary examiner sign off on his or her own Office Actions without review and approval by a supervisor. Secondary examiners are junior examiners with less than five years of experience and do not have signatory authority. They are supervised by primary examiners who edit their work and sign off on their Office Actions.[22]

Perhaps unsurprisingly, my first study found that secondary examiners issue patents at a much lower rate than primary examiners.[23] These data confirmed many of the results found in

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18 Tu, *Luck/Unluck of the Draw*, *supra* note 2, at 14.

19 *Id.*

20 The data was edited for those years in which an examiner issues one and only one patent. This was done to remove examiners with the lowest allowance rates. These examiner years were not counted towards the examiner's docket because these years may include examiners that fall within these categories: (1) those examiners who were only briefly at the USPTO but left before issuing more than one patent, (2) those examiners who are primary examiners who mainly review the work of secondary examiners but issued only one patent by themselves, (3) those examiners who have issued only one patent, but have not issued any since, (4) those examiners hired in December or late in the year, but who may have issued only one patent because of the ramp up time, and (5) those examiners who came back to the USPTO and needed time to re=adjust during their return year.

21 Tu, *Luck/Unluck of the Draw*, *supra* note 2.

22 Tu, S., *Patent Examination and Litigation Outcomes*. 17 Stan. Tech. L. Rev. 507 (2014).

23 Tu, *Luck/Unluck of the Draw*, *supra* note 2, at 29.

previous studies.[24] These results were unsurprising because secondary examiners are still building up their docket and learning how to correctly fashion an Office Action.

Interestingly, my first study found a small yet significant population of secondary examiners who had a very small number of issued patents, even though they have several years of experience at the PTO (See Figure 1).[25] Figure 1A shows the number of secondary examiners in Technology Center 3700 (Mechanical Engineering, Manufacturing and Products Patents). There are approximately 300 examiners (17% of the examiners) out of more than 1700 examiners in Technology Center 3700 who are secondary examiners who issue less than 5 patents per year. Figure 1B shows that these 300 examiners issue less than 0.35% of the total patents (823 out of 235,686 patents) issued by all examiners in Technology Center 3700. Although Technology Center 3700 was used as an example, this trend was seen throughout all technology types.

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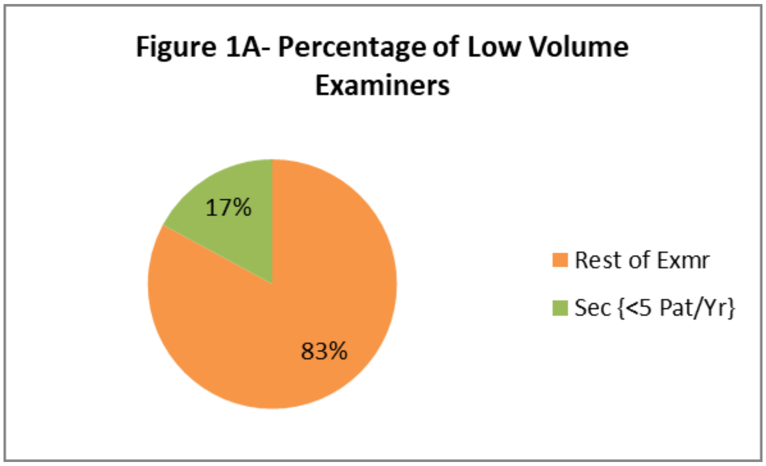
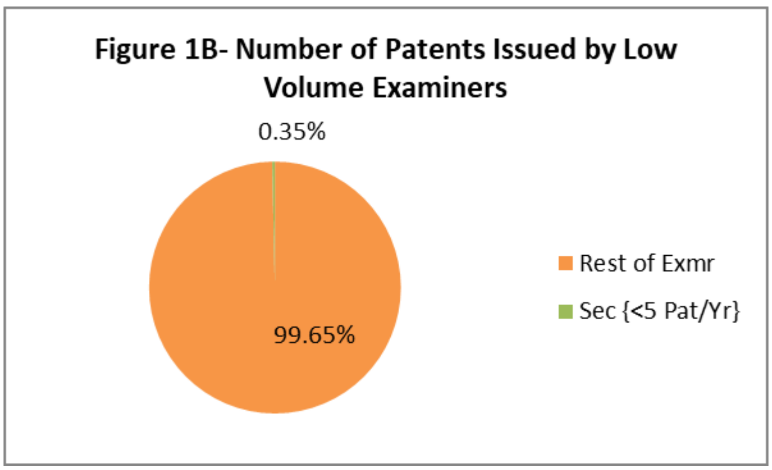
[24] *See* Mark A. Lemley & Bhaven N. Sampat, *Examiner Characteristics and Patent Office Outcomes*, Rev. Econ. & Stat 817 (2012); *see also* Mark A. Lemley & Bhaven N. Sampat, *Examining Patent Examination,* 2010 Stan. Tech. L. Rev. 2 (2010); Mark A. Lemley & Bhaven N. Sampat, *Is the Patent Office a Rubber Stamp?*, 58 Emory L.J. 181 (2008).

[25] Tu, *Luck/Unluck of the Draw*, *supra* note 2, at 14.





I argue that the default response for a secondary examiner is a rejection, which creates this low allowance rate phenomenon seen with secondary examiners. This 'rejection' default for secondary examiners is due to the negative consequences of an erroneous allowance. Erroneous allowances can be caught by either the primary examiner or quality control, which could lead to negative consequences for the secondary examiner. These negative consequences, for the most part, are not present with erroneous rejections. Although erroneous rejections could be caught by the primary examiner, it could be argued that the secondary examiner was just being more careful or cautious. Additionally, since there are no legal rights given to an applicant after a rejection, rejections do not receive the same scrutiny as allowances. Accordingly, a secondary examiner is more likely issue a rejection rather than an allowance in an ambiguous application.

I also observed that the population of secondary examiners with a low allowance rate takes much longer to issue patents. This population of secondary examiners may be doing damage to the patent system by rejecting applications that would otherwise be allowed by most examiners. The damage done by this population of examiners is twofold. First, these examiners are applying rules of patentability inconsistently from their peers. Second, these examiners disproportionally contribute to the backlog problem because they keep applications in prosecution for durations longer than necessary while expending valuable PTO resources. These examiners may be rejecting applications as a default because (1) a rejection strategy can artificially increase the measurement used to assess examiner productivity ("counts") and (2) junior examiners are in a probationary period for their first year of service, thus they may be more cautious of issuing "low quality" patents within the first year of service.[26]

In stark contrast to secondary examiners, primary examiners issue patents far more quickly than secondary examiners (See Figure 2).[27] Figure 2A shows the number of primary examiners in Technology Center 3700. There are approximately 200 examiners (12% of the examiners) out of more than 1700 examiners in Technology Center 3700 who are secondary examiners who issue more than 50 patents per year. Figure 2B shows that these 200 examiners issue more than 50% of the total patents (120,822 out of 235,686 patents) issued by all examiners

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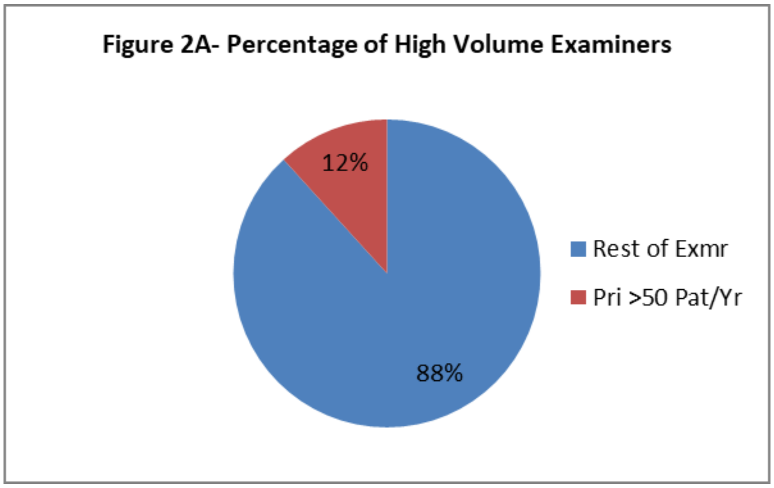
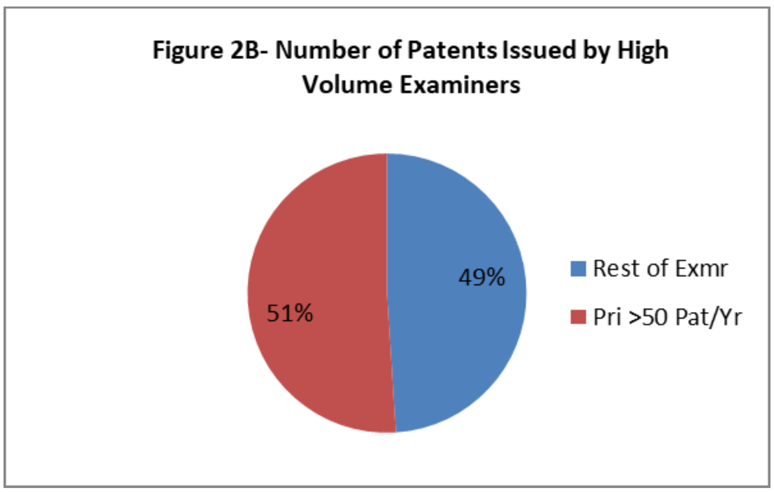
26 Personal communication with a PTO primary examiner (preferred to remain anonymous). See Naira R. Simmons, *Putting Yourself in the Shoes of a Patent Examiner: Overview of the United State Patent and Trademark Office (USPTO) Patent Examiner Production (Count) System,* 17 J. Marshall Rev. Intell. Prop. L. 32 (2017) for a general overview of count system.

27 Tu, *Luck/Unluck of the Draw*, *supra* note 2, at 17.

in Technology Center 3700. This trend for primary examiners was seen throughout all technologies types.





These results may be unsurprising because it takes less time for primary examiners to prosecute patents to allowance when compared with secondary examiners. Unlike secondary examiners, the default for a primary examiner is most likely allowance. First, primary examiners have built up a larger docket of allowed patents, thus any one erroneously allowed patent is a much smaller percentage of the total allowed patents by that examiner. Second, primary examiners are given much less time to review applications when compared to secondary examiners, which may contribute to primary examiners setting the default to an allowance of the application. The examiner review system can allow for greater 'counts' by allowing patents.[28] Finally, primary examiners have more experience and may know the relevant prior art as well as the correct types of rejections based on the application's claims. For all these reasons, primary examiners may have the ability to get to allowance in a greater volume and quicker when compared to secondary examiners.

Using the allowance rate, my first study found that the likelihood of obtaining a patent largely relies on the examiner assigned to the application. In the examiner lottery, there is a low probability that an applicant would be assigned to a high allowance rate primary examiner, where the applicant would most likely receive a patent in a short period of time and with few to no claim amendments. On the other hand, there is a higher probability that an applicant would be assigned to a low allowance rate secondary examiner, where the applicant would experience a long delay before acquiring a patent and/or would have to significantly limit the claims before issuance. Although there is no ideal allowance rate, there are many examiners who work far outside the median (both on the low and high end). This observation alone may cause concern for our patent system.

B. Three New Metrics for Patent Examiner Activity[29]

i. Office Action per Grant Ratio (OGR)

Although valuable, my first study's reliance on the generally accepted allowance rate did not capture the full picture of a patent application's life. Since the allowance rate is simply the

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28 Simmons, *supra* note 18.

29 Tu., *Three New Metrics*, *supra* note 2.

total number of patents divided by the years of service for each examiner, the allowance rate metric suffers from a denominator problem.[30] Specifically, the allowance rate does not account for the total number of applications that the examiner had in his/her docket. Additionally, the allowance rate does not account for applicant abandonments. Finally, the allowance rate cannot detect examiners who are "churning" applications. (i.e. applications that are in a constant state of prosecution but are not allowed and are not abandoned). Accordingly, some examiners may have an artificially high allowance rate because of the large number of pending cases that have neither been abandoned nor allowed.

To better capture what is currently going on at the PTO, then, my second study focused on examiners' interactions with the patent applications and, in doing so, created three new metrics.[31] Instead of focusing on all primary or secondary examiners who had ever worked in the PTO, I only looked at those who still had cases pending as of June 8, 2017 ("active" examiners). This dataset is a much more relevant dataset, because it captures only active examiners and describes what the examining core is like as of June 8, 2017. Focusing on fewer examiners meant that I could also include more data—specifically, the abandonments and office actions, which gives a much more accurate picture of how examiners are working while also correcting for the denominator problem present in my initial study.[32]

The first metric created from the dataset is called the "Office Action per Grant Ratio," or OGR (OGR = Total # of Office Actions / Total # of Allowances). This ratio is defined as the

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30 Tu, *Luck/Unluck of the Draw*, *supra* note 2, at 14.

31 Tu., *Three New Metrics*, *supra* note 2.

32 The dataset also focuses exclusively on Utility Patents (excludes plant and design patents), includes all continuation, continuation-in-part, and divisional applications as well as reexaminations. Furthermore, this dataset does not remove "non-original" patents.

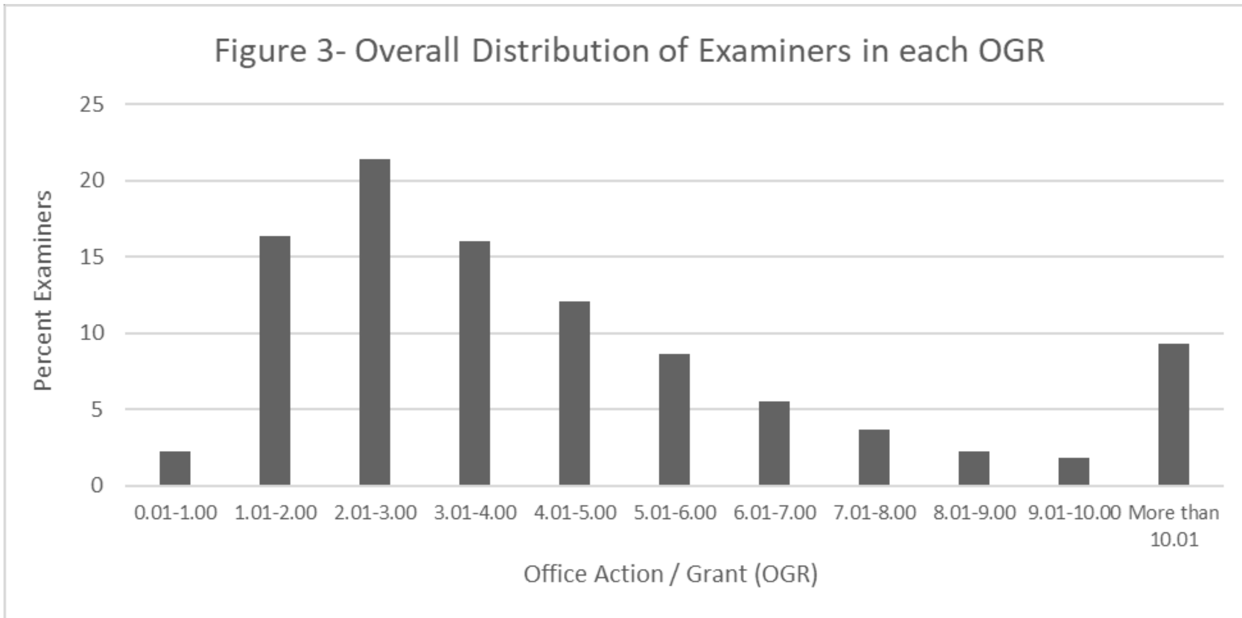
total number of office actions written by that examiner divided by the total number of grants. Accordingly, the OGR reflects the average number of office actions it takes before an examiner grants a patent. This is important because many examiners may "churn" applications by giving a high number of office actions without an allowance or abandonment. The OGR, unlike allowance rate, captures examiners who engage in this type of behavior. Additionally, the OGR measures how an examiner spends his/her time at the office—either writing office actions or allowing cases. Furthermore, the OGR metric does not suffer from the denominator problem present in the allowance rate metric, because OGR indirectly accounts for abandonments as well as grants by focusing on the number of Office Actions written. Specifically, Office Actions will be written regardless of if the application is abandoned or granted.

To calculate the OGR score, we isolate every current examiner at the office (every examiner with a pending application on their docket) and count every Office Action ever written by that examiner. Then we determine how many patents that examiner has allowed during his or her career. Finally, we simply divide the total number of Office Actions written by the number of granted patents. The OGR score is a powerful tool because it allows the practitioner to determine how frequently an examiner grants a patent.

Figure 3 shows the overall OGR for all examiners at the USPTO. [33] As seen in Figure 3, most examiners have an OGR of under 4.0. This means that most examiners allow one patent for every four Office Actions they write. Interestingly, most of the examiners who have an OGR of less than 1.0 come from Technology Center 2800 (Semiconductors, Electrical and Optical Systems and Components). In contrast most examiners who have an OGR score of more than

[33] Tu, S., *Three New Metrics,* supra note 2, at 297.

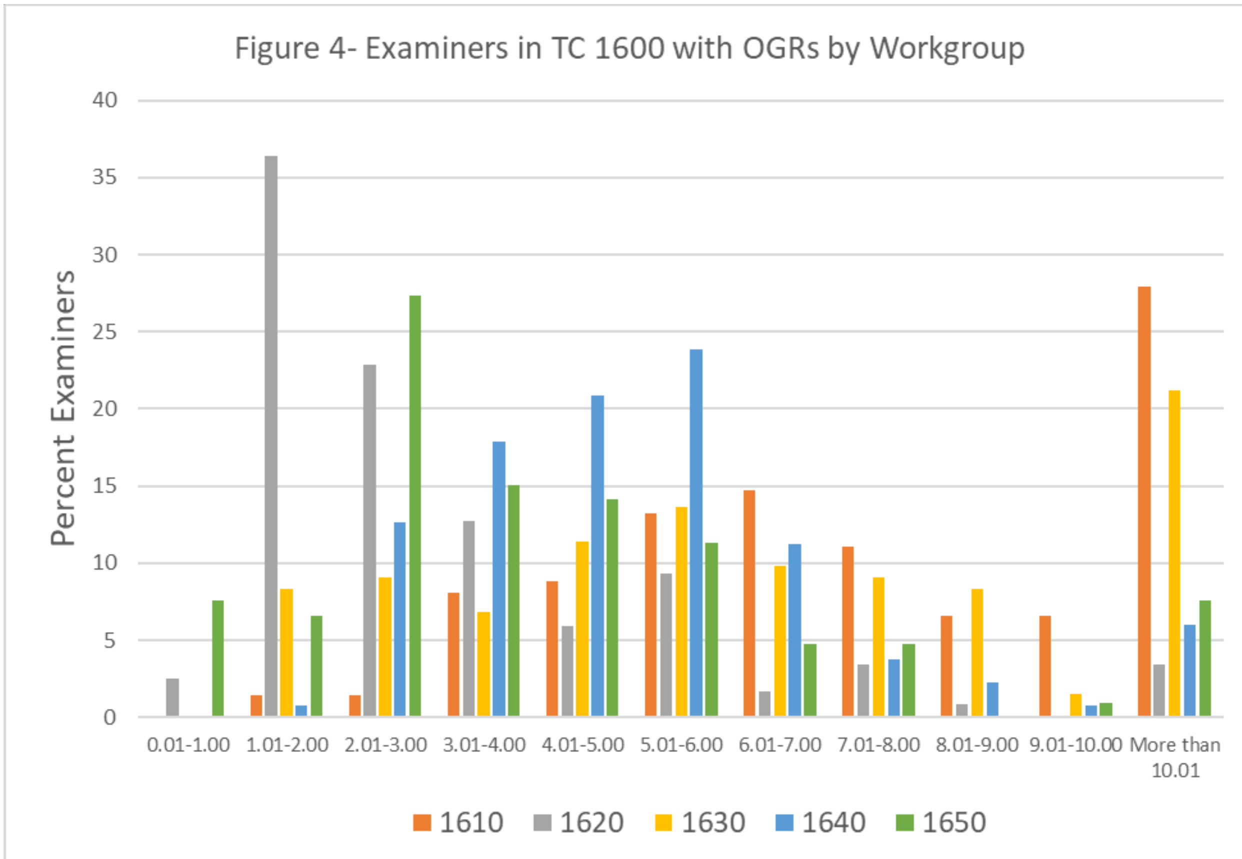
10.0 come from Technology Centers 3600 and 1700 (e-commerce and chemical engineering, respectively).



We then segmented the data by technology center in a similar fashion to the first paper. We found that OGR scores were higher in technology centers 1600, 1700 and 3600 (biotechnology, chemical engineering, and e-commerce, respectively). Furthermore, we segmented the data by workgroup, and found that workgroups within technology centers could have widely divergent OGR scores. An example of this variation can be seen in Figure 4, which shows the variation within Technology Center 1600 (Biotechnology and Organic Chemistry).[34] Figure 4 shows that there is a large percentage of examiners in 1610 (27.9%) who have an OGR score of more than 10. However, Figure 4 also shows that a large percentage of examiners in 1620 (36.4%) have an OGR score of 1.01-2.00. This is interesting because most of the art units in both 1610 (5 out of 5 art units) and 1620 (4 out of 5 art units) are classified as "Drug, Bio-

[34] Tu, S., *Three New Metrics, supra* note 2, at 305 (Figure 10).

Affecting and Body Treating Compositions." However, the differences may be because many of these art units are associated with different Classes and Subclasses.[35] These data further argue that examiners may not be applying the patentability rules in a consistent fashion even within Technology Centers.



[35] Workgroup 1610 includes Class 424 (along with many different subclasses), and Workgroup 1620 includes Class 514 (along with several other Classes and many different subclasses). Class 514 is "an integral part of Class 424" as shown by the hierarchy of class 424, and retains all pertinent definitions and Class lines of Class 424. *See* United States Patent and Trademark Office, *Class 424 Drug, Bio-Affecting and Body Treating Compositions*, UNITED STATES PATENT AND TRADEMARK OFFICE, https://www.uspto.gov/web/patents/classification/uspc424/sched424.htm; *see also*, Saurabh Vishnubhakat, *The Field of Invention* 45 HOFSTRA L. REV. 899 (2017); Heather Simmons, *Categorizing the Useful Arts: Past, Present, and Future Development of Patent Classification in the United States*, 106 Law Libr. J. 563 (2014).

ii. Office Action per Disposal Ratio (ODR)

The second metric created measures how long it takes for an examiner to get a "disposal." For purposes of this study, a "disposal" is defined as either an allowance or an abandonment.[36] Office Action per Disposal (ODR) is defined as the total number of the examiner's Office Actions divided by the sum of the grants and abandonments (ODR = Office Actions / (grants + abandonments)). The ODR gives the rate at which most examiners obtain either an abandonment or give an allowance. The ODR score is a powerful took because it hints at how long it may take for the applicant to receive a patent. Additionally, it helps the applicant determine if appeal, filing a continuation application, or abandonment is the next step forward.

Figure 5 shows the overall ODR score at the USPTO.[37] Most examiners have an ODR score of less than 3.0. This means that, on average, the examiner either issues a patent or the applicant abandons the application for every 3 Office Actions written.

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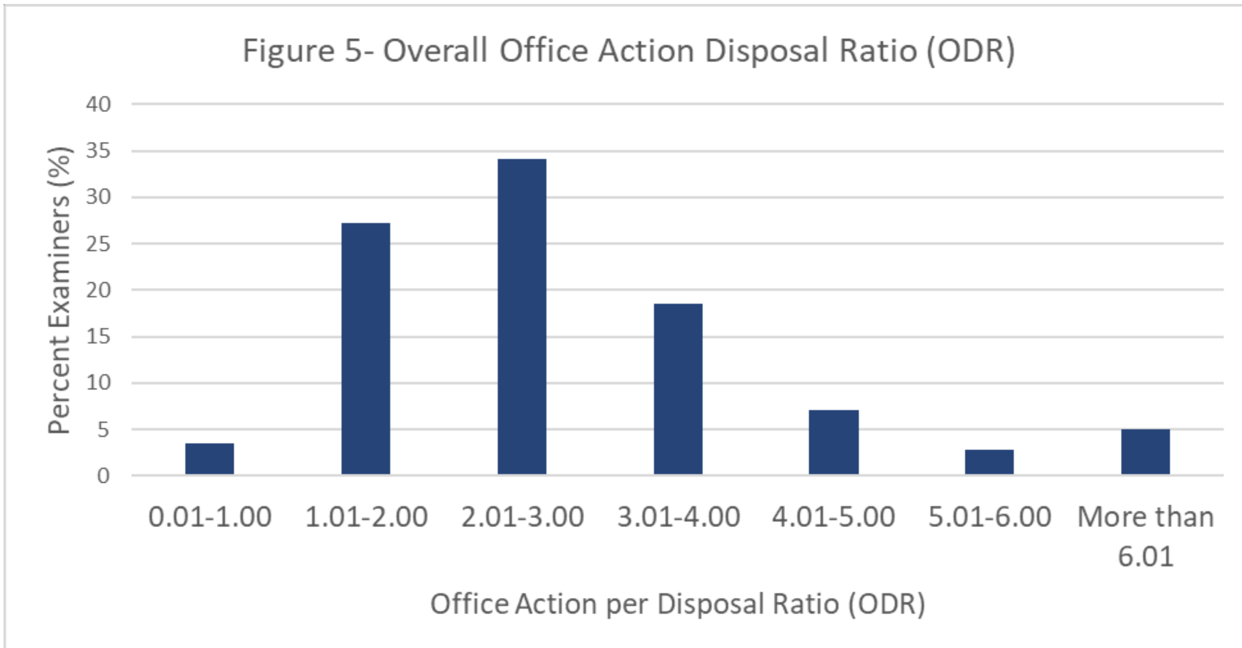
[36] This study defines "disposal" differently from the USPTO. The USPTO states that an examiner receives a "disposal" credit for the following actions: (a) allowance; (b) abandonment; (c) requests for continued examination (RCE); (d) examiner's answer; (e) international preliminary examination report; (f) statutory invention registration (SIR) disposal; and (g) institution of an interference or derivation proceeding wherein the application would be in condition for allowance but for the interference or derivation proceeding. *See also*, United States Patent and Trademark Office, *1705 Examiner Docket, Time, and Activity Recordation [R-07.2015]*, UNITED STATES PATENT AND TRADEMARK OFFICE, https://www.uspto.gov/web/offices/pac/mpep/s1705.html.

[37] Tu, S., *Three New Metrics, supra* note 2, at 311 (Figure 14).

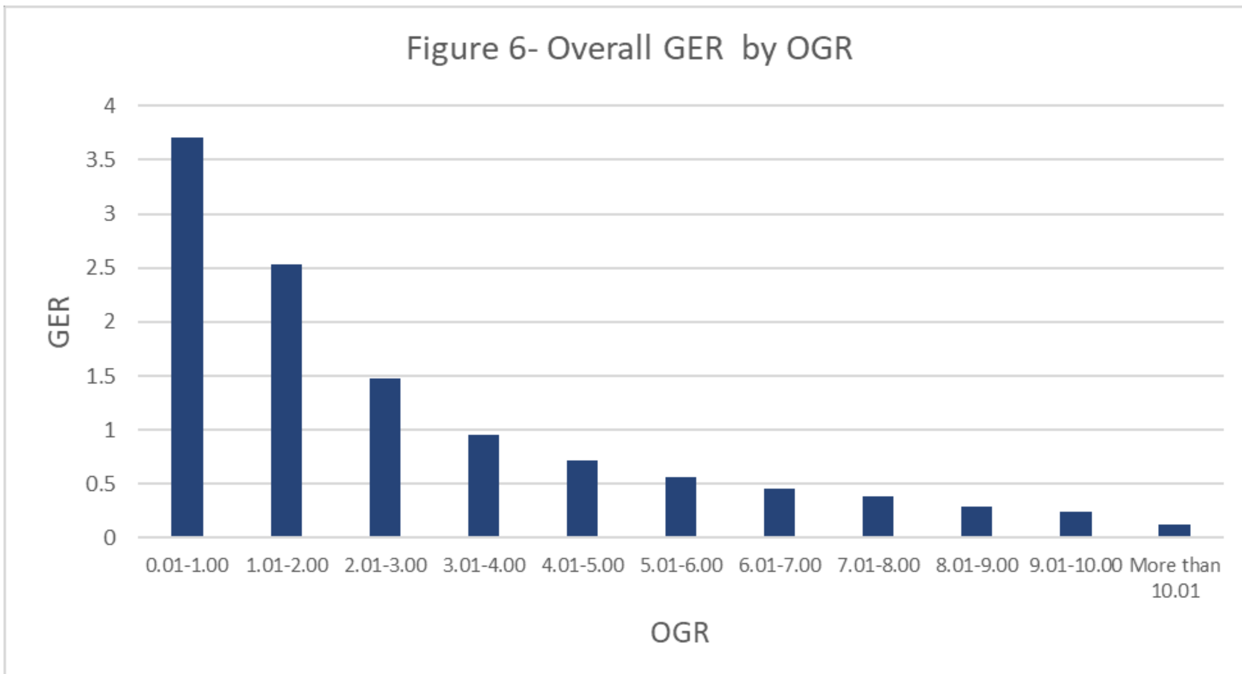


iii. Grant to Examiner Ratio (GER)

The third metric created is the "Grant to Examiner Ratio" (GER). The GER score determines what the specific examiner's contribution is to the overall number of pending applications at the USPTO. It is important to note that the GER is based solely on proportion of examiners to the total number of examiners and neither reflects any substantive analysis of the applications nor takes into account any technological differences.

The GER is calculated by determining the percentage of patents examined divided by the percentage of examiners within a certain OGR segment regardless of Workgroup or Technology Center. If the GER is equal to 1, then the cohort grants patents in a manner consistent with the percentage of examiners in that cohort. Put another way, if the segment of examiners reviewed is 25% of the total active examiners, we would expect that cohort to issue 25% of the total number of patents. If this is true, the GER would equal 1.

Figure 6 shows the GER for each OGR group.[38] As seen in Figure 6, examiners with OGR scores between 0.01 and 3.00 have GER scores over 1. This means that these examiners contribute to decreasing the backlog of unexamined patents at the USPTO. In contrast, all examiners with OGR scores over 3.01 have a GER score of less than 1. This means that examiners with OGR scores more than 3.00 do not contribute to removing the backlog of unexamined patents at the USPTO and could actually be creating a greater backlog.



III. Conclusions

My first study suffered from a lack of data problem.[39] Specifically, without data regarding the number of abandonments in each examiner's docket, it was impossible to calculate

[38] Tu, S., *Three New Metrics, supra* note 2, at 308 (Figure 13).
[39] Tu, *Luck/Unluck of the Draw*, *supra* note 2, at 14.

the true examiner allowance rates. This new study corrects this problem by adding information about office actions and abandonments from 9,535 examiners.[40] Additionally, this study creates several new metrics to detail current examiner activity at the USPTO.

Although this study does not focus on any of the substantive rejections in each Office Action, there are two main trends that are troubling. First, there is a small population of examiners who allow patents at a high rate. This may be problematic if these examiners are not reviewing or applying the patentability standards in a rigorous manner. Second, on the opposite side of the spectrum, there are a significant number of examiners who reject patents at a high rate. This may also be problematic if these examiners are applying the patentability standards too stringently or unreasonably.

These results suggest that the USPTO should more closely survey the prosecution docket for examiners who have OGR scores that are several standard deviations from the mean. Examination of individual prosecution histories may help determine which group of examiners are hurting innovation more. Furthermore, the UPSTO could examine the litigation rates for those examiners with high versus low OGR in a fashion that I have previous done.[41] This type of analysis would help determine which examiners are disproportionately contributing to unnecessary litigation. Additionally, substantive analysis of the office actions of high OGR versus low OGR examiners may help increase both productivity as well as consistency at the USPTO.

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40 Tu., *Three New Metrics*, *supra* note 2.

41 Tu, *Patent Examiners*, *supra* note 6; Tu, *Invalidated Patents*, *supra* note 7.