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What Are the Sources of Patent Inflation? An Analysis of Federal Circuit Patentability Rulings

Professor Jonathan Masur's recent article, Patent Inflation, argues that the expansion in the boundaries of patentability that has occurred since the creation of the Court of Appeals for the Federal Circuit is caused by cases in which the court reverses patent rejections by the U.S. Patent and Trademark Office (PTO). This Essay examines every Federal Circuit patentability ruling over five different years and shows that reversals of PTO rejections are few in number and doctrinally insignificant. Instead, patentability rulings in infringement suits—which should have no net effect under Masur's model—likely play an important role in patent inflation because of the presumption of patent validity and the higher stakes in patent litigation. Masur also underestimates the role of the Supreme Court in redrawing patentability boundaries. Although Masur's simple model is elegant, this Essay argues that it cannot accurately capture the complex phenomenon of patent inflation.

INTRODUCTION

In his recent *Yale Law Journal* article, *Patent Inflation*, Professor Jonathan Masur argues that the asymmetry in appeals from the U.S. Patent and Trademark Office (PTO)—i.e., that only *rejected* patent applications are appealed to the Court of Appeals for the Federal Circuit—creates an “inflationary pressure” toward expanding the boundaries of patentability. This effect has two causes: first, the PTO errs on the side of granting patents to avoid appeals; and second, the Federal Circuit tends to leave doctrine static when affirming PTO rejections and to expand patentability when reversing the

PTO.¹ Masur's elegant public choice model goes beyond prior institutional analyses of patent law by emphasizing the systemic, structural nature of the "patent inflation" effect.

But Masur's account of the Federal Circuit does not fit the empirical data. Under the second half of Masur's model, the cases doing all the work in expanding patentability requirements are those in which the Federal Circuit reverses a PTO patent denial; other cases, such as patentability rulings in infringement suits, should have no net effect on the doctrine under Masur's theory. Most of the patentability cases cited in casebooks and treatises do not fit Masur's description.² To test the theory more rigorously, I examined all published Federal Circuit patentability rulings during five years (1990, 2000, and 2008 to 2010). Of these 324 cases, only twenty-five were reversals or vacatur of PTO denials.³ But these twenty-five cases—which Masur's model suggests are driving patent inflation—are not doctrinally significant, and they are statistically significantly less likely to be cited than other cases in my data set. While Masur is likely correct that the PTO errs on the side of granting patents,⁴ asymmetric appeals from the PTO are unable to explain patent inflation.

Part I of this Essay examines Masur's model and situates it in the prior literature about the effects of institutional structures on patent doctrine. Part II discusses two preliminary reasons to be skeptical of Masur's model: this asymmetry has been present in the patent system since before the creation of the Federal Circuit and before complaints about patent inflation, and few of the patent-inflating cases highlighted in casebooks and treatises are reversals of PTO patent denials. Part III describes my more systematic study of patentability cases and demonstrates that Masur's model is not supported by my empirical analysis. Finally, Part IV examines what went wrong in Masur's theory and begins to sketch out a new model for the development of patentability doctrine. In particular, I argue that patent infringement cases and the role of the Supreme Court are both more significant than Masur suggests.

1. Jonathan Masur, *Patent Inflation*, 121 YALE L.J. 470, 472-75 (2011).

2. See *infra* Part II.

3. As discussed in Section III.B, it is unclear whether the most faithful test of Masur's theory would include (a) only the nine reversals of PTO patent application rejections, (b) also the nine vacatur in these types of cases, or (c) also the reversals or vacatur after third-party reexamination requests. I examine each category separately, and none are doctrinally significant.

4. Prior accounts have suggested that this asymmetry in patent grants is caused by the PTO's funding structure, examiner incentives, and a general aversion to costly appeals. See *infra* notes 21-23 and accompanying text.

I. MASUR'S MODEL OF PATENT INFLATION

Masur frames his model as an explanation for the “patent crisis,” in which the PTO “allow[s] significant numbers of invalid patents to issue” and “the Federal Circuit has pushed the law in an excessively pro-patent direction.”⁵ While it is true that a higher percentage of litigated patents were found valid and infringed after the creation of the Federal Circuit,⁶ this may have been Congress’s *purpose* in creating the court, as scholars like Professor Rochelle Dreyfuss⁷ and Federal Circuit judges like Chief Judge Randall Rader⁸ and former Chief Judge Paul Michel⁹ argue. In any case, Masur’s model does not depend on his premise that “patent inflation” is bad, and this Essay tackles his descriptive model—his explanation for *how* patent inflation occurs—without making a normative judgment about the “correct” boundaries of patent protection.

Masur’s model is based on the asymmetry of appeals from the PTO to the Federal Circuit: patent applicants whose claims are rejected can challenge the PTO’s decision, but “[w]hen the PTO grants a patent . . . there is no losing

5. Masur, *supra* note 1, at 477, 477-78.

6. See, e.g., 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 105 fig.4.2 (2004); Matthew D. Henry & John L. Turner, *The Court of Appeals for the Federal Circuit’s Impact on Patent Litigation*, 35 J. LEGAL STUD. 85, 100 (2006).

7. See Rochelle Dreyfuss, *Pathological Patenting: The PTO as Cause or Cure*, 104 MICH. L. REV. 1559, 1571-72 (2006) (reviewing JAFFE & LERNER, *supra* note 6), available at <http://www.michiganlawreview.org/assets/pdfs/104/6/Dreyfuss.pdf>. Dreyfuss calls Jaffe and Lerner’s evidence of a growing number of invalid patents “spotty” and argues that increased findings of validity may mean that “courts were previously too quick to *invalidate* patents.” *Id.* at 1562-63.

8. See Randall R. Rader, *The United States Court of Appeals for the Federal Circuit: The Promise and Perils of a Court of Limited Jurisdiction*, 5 MARQ. INTELL. PROP. L. REV. 1, 2-3 (2001), available at <http://law.marquette.edu/ip/Rader.pdf> (“[T]he Federal Circuit . . . was put into place to correct the failures of the Supreme Court and to really provide a standard for what is an appropriate advance in the technological arts The Federal Circuit, I think, has accomplished a great mission in bringing uniformity, predictability, and enforceability to law.”).

9. See Paul R. Michel, *Past, Present, and Future in the Life of the U.S. Court of Appeals for the Federal Circuit*, 59 AM. U. L. REV. 1199, 1200 (2010), available at <http://www.wcl.american.edu/journal/lawrev/59/4michel.pdf> (“The genesis of the court in the late 1970s was a faltering patent enforcement system that threatened further industrial, technological, employment, and economic decline.”).

party to appeal.”¹⁰ It is not exactly true that PTO patent grants are never appealed. Third parties can challenge granted patents through *ex parte*¹¹ or *inter partes*¹² reexamination or interference proceedings,¹³ and *inter partes* reexamination or interference decisions upholding the patent grant may be appealed to the Federal Circuit.¹⁴ But while reexaminations are growing in popularity and generally favor the third-party requesters,¹⁵ the number of appealed patent grants remains miniscule compared with the number of appealed patent denials.¹⁶ The Federal Circuit can also hear appeals brought by the PTO if the patent applicant chooses to challenge the PTO’s decision in a district court under 35 U.S.C. § 145,¹⁷ though § 145 suits are uncommon. Masur

10. Masur, *supra* note 1, at 474. Appeals are first made to the Board of Patent Appeals and Interferences (BPAI), but since the BPAI is within the PTO, Masur “refer[s] to the PTO as if it were a unitary actor.” *Id.* at 482-83 n.56.
11. Any party may request *ex parte* reexamination by filing a request for reexamination, paying a fee, and submitting new prior art, after which the PTO may order a new examination of whether the patent is valid. *See* 35 U.S.C. §§ 302-307 (2006).
12. *Inter partes* reexamination is similar to *ex parte* reexamination except that the requesting party may participate in correspondence between the examiner and patentee. The requesting party is then estopped from raising invalidity arguments that could have been made during reexamination. *See* 35 U.S.C. §§ 311-318.
13. Interference proceedings resolve competing claims between a patent application and another application or granted patent. *See* 35 U.S.C. § 135. Interferences may be suggested by a patent applicant. *See* 37 C.F.R. § 41.202 (2010).
14. *See* 35 U.S.C. § 141.
15. *See* Peter Zura, *USPTO Publishes Latest Reexamination Statistics*, 271 PAT. BLOG (July 20, 2009, 12:02 PM), <http://271patent.blogspot.com/2009/07/uspto-publishes-latest-reexamination.html>. Third-party patent challenges may become more popular under the post-grant review system that will be created under the recent patent reform bill, but patent reform does not affect this Essay’s historical, descriptive analysis. *See* Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 6, 125 Stat. 284, 299-313 (2011) (to be codified at 35 U.S.C.).
16. From October 2009 to September 2010, the BPAI received 52 interference cases, 44 *inter partes* reexamination appeals, 158 *ex parte* reexamination appeals, and 12,380 other appeals of denied patent applications. *FY 2010 Process Production Report*, U.S. PATENT & TRADEMARK OFFICE, <http://www.uspto.gov/ip/boards/bpai/stats/process/fy2010sepb.jsp> (last modified Oct. 6, 2010). Even if all the interference and *inter partes* reexamination cases involved appeals of granted patents, this would still only be 0.008% of all BPAI cases.
17. 35 U.S.C. § 145 (allowing applicants to appeal from the BPAI to the U.S. District Court for the District of Columbia rather than to the Federal Circuit).

is thus clearly correct that there is currently an asymmetry in appeals from the PTO to the Federal Circuit, one which other scholars have also identified.¹⁸

Masur argues that this asymmetry has two effects: one internal to the PTO and one external. First, “one would expect the self-interested administrators of the Patent Office to minimize the number of appeals and reversals,” which means that the PTO “will err on the side of approving every application that the Federal Circuit is at all likely to grant.”¹⁹ Melissa Wasserman reaches a similar conclusion in a recent article,²⁰ and both accounts complement prior institutional analyses of the PTO by Professor Arti Rai²¹ and Professors Dan Burk and Mark Lemley,²² although neither Rai nor Burk and Lemley focus (as Masur does) on the PTO’s fear of Federal Circuit reversal. Numerous other scholars have argued that the PTO’s funding structure and patent examiner incentives cause examiners to err on the side of granting patents.²³ Whatever

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18. See, e.g., Arti Rai, *Addressing the Patent Gold Rush: The Role of Deference to PTO Patent Denials*, 2 WASH. U. J.L. & POL’Y 199, 200-01 & n.3 (2000), available at <http://law.wustl.edu/journal/2/p199rai.pdf> (noting that the Federal Circuit hears “direct appeals from PTO patent denials” and that the court’s “reversal of PTO decisions denying patent protection to certain biotechnology and computer program inventions has been a major reason for the recent proliferation of patents”); Michael Risch, *The Failure of Public Notice in Patent Prosecution*, 21 HARV. J.L. & TECH. 179, 201 (2007), available at <http://jolt.law.harvard.edu/articles/pdf/v21/21HarvJLTech179.pdf>.
 19. Masur, *supra* note 1, at 505.
 20. See Melissa F. Wasserman, *The PTO’s Asymmetric Incentives: Pressure To Expand Substantive Patent Law*, 72 OHIO ST. L.J. 379, 404-05 (2011), available at <http://moritzlaw.osu.edu/lawjournal/issues/volume72/number2/wasserman.pdf> (arguing that, “[a]ssuming that the PTO is incentivized to minimize Federal Circuit scrutiny and reversal of its decision making,” because “there is no immediate appeal of patent grants,” PTO decisions will be “biased in the patent-protective direction . . . to ensure that the majority of patents the PTO denies are likely to be upheld by the Federal Circuit”).
 21. See Rai, *supra* note 18, at 227 (“[T]he PTO’s current structural problems make it likely to err in the direction of erroneous patent grants, not erroneous patent denials.”).
 22. See DAN L. BURK & MARK A. LEMLEY, *THE PATENT CRISIS AND HOW THE COURTS CAN SOLVE IT* 22-24 (2009) (describing “[t]he structural tendencies for the PTO to grant patents”).
 23. See, e.g., JAFFE & LERNER, *supra* note 6, at 130-37 (explaining “[t]he pervasiveness of the incentives to get [granted] patents out the door,” including the PTO’s funding model and individual examiner incentives); Robert P. Merges, *As Many As Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577, 590, 606-09 (1999), available at <http://ssrn.com/abstract=180748> (discussing the “numerous incentives inside the PTO to issue rather than reject patent applications,” including a “bonus system [that] is believed to skew incentives in favor of granting patents”).

the exact cause, this Essay does not challenge the generally accepted validity of Masur's first claim.

Masur then proposes a second effect external to the PTO—his “patent inflation”—that builds on the first. He suggests that “nearly every case that the Federal Circuit hears on direct appeal from the PTO will concern a boundary-pushing patent.”²⁴ While most of these rejections will be affirmed under existing case law, “every once in a while . . . the Federal Circuit will grant one of these patents,” creating a precedent “that expands the boundaries of patentability.”²⁵ (Masur acknowledges that the Federal Circuit might “seize upon a patent that the PTO has denied as a vehicle for retrenchment,” but argues that “[t]hese cases will be rare.”²⁶) Arti Rai has similarly argued that Federal Circuit reversals of PTO denials in the case of “certain biotechnology and computer program inventions” have contributed to “the recent proliferation of patents.”²⁷ But while Rai focuses on the interaction of the Federal Circuit and the PTO in particular areas, Masur argues that inflation is a systemic effect that touches all patentability issues and that will occur regardless of the composition of the Federal Circuit.²⁸

This is an elegant and intriguing theoretical model, but it is unclear whether it reflects the reality of Federal Circuit practice. Masur notes that “a full empirical examination is beyond the scope of [his article].”²⁹ The only specific Federal Circuit cases he offers³⁰ to illustrate his theory are *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*³¹ and *In re Bilski*,³² but neither case fits his model: *State Street* was a declaratory judgment action brought by an alleged infringer; and in *Bilski*, the Federal Circuit *affirmed* the PTO denial. Masur's software and business method patent case study³³ helps illustrate his claim that the PTO played a role in the expansion of patentable subject matter, but he offers no evidence that this expansion stems from the

24. Masur, *supra* note 1, at 510.

25. *Id.* at 510, 511.

26. *Id.* at 493.

27. Rai, *supra* note 18, at 201.

28. See Masur, *supra* note 1, at 475 (arguing that natural inflationary pressure on the law results from “only three innocuous factors”).

29. *Id.* at 517.

30. See *id.* at 523-30.

31. *State St. Bank & Trust Co. v. Signature Fin. Grp., Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

32. *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *aff'd sub nom.* *Bilski v. Kappos*, 130 S. Ct. 3218 (2010).

33. Masur, *supra* note 1, at 523-30.

asymmetry of appeals to the Federal Circuit. The remainder of this Essay attempts a fuller empirical examination of this part of Masur's theory.

II. PRELIMINARY SKEPTICISM

The asymmetry at the heart of Masur's patent inflation model was not created along with the Federal Circuit in 1982. The same structural argument was made about the Federal Circuit's predecessor, the Court of Customs and Patent Appeals (CCPA), which heard appeals of PTO patent denials *only*:

[S]tructural features of both the [PTO] and the CCPA made them overly favorable to granting patents. The problem was that the PTO heard *ex parte* applications for patents, and the CCPA heard only appeals from denials. . . .

To correct the imbalance, Congress consolidated both patentability and enforcement appeals in the [Federal Circuit] by granting it jurisdiction over appeals from the district courts as well as from the PTO.³⁴

Masur is thus arguing that the Federal Circuit suffers from the same problem it was intended to correct. If, as Masur claims, patent inflation is driven by the asymmetric nature of PTO appeals, it seems odd that patent inflation *increased* dramatically when stewardship over patent appeals passed from the CCPA to the Federal Circuit, as Masur and his sources suggest.³⁵

Masur asserts, however, that the extra patent cases the Federal Circuit acquired in comparison to the cases heard by the CCPA—primarily appeals from district court infringement suits—have no net effect on the boundaries of patentability. He argues that parties will settle all cases except those very close to the current patentability boundary, so that infringement suits “will provide the circuit with approximately symmetric opportunities to expand and contract the boundaries of patentability.”³⁶ This symmetry will produce no net effect on patentability doctrine, so patent inflation will be entirely driven by asymmetric

34. Harold H. Bruff, *Specialized Courts in Administrative Law*, 43 ADMIN. L. REV. 329, 334 (1991).

35. Masur, *supra* note 1, at 473 (“[T]he Federal Circuit has noticeably expanded the boundaries of what may be patented over the past decades”); *id.* at 517 (describing the “Federal-Circuit-led expansion in the scope of patentability over the past several decades”); *see, e.g.*, JAFFE & LERNER, *supra* note 6, at 107-26 (describing four ways in which the Federal Circuit has strengthened patent holders’ rights); *see also supra* notes 6-9 and accompanying text (discussing increased findings of patent validity after the creation of the Federal Circuit).

36. Masur, *supra* note 1, at 516.

appeals from the PTO.³⁷ Therefore, based on the cases that matter under Masur's theory, the CCPA and the Federal Circuit should have had effectively identical effects on patentability doctrine, and patent inflation should have begun much earlier.

There is an additional reason for skepticism. If Masur's model is an accurate description of patent inflation, then doctrinal shifts in patentability standards should be driven by Federal Circuit reversals of PTO patent rejections. But most of the well-known patentability cases do not fit this pattern. For example, out of over seventy Federal Circuit cases cited in the patentability section of a leading intellectual property casebook, only ten were reversals of PTO patent rejections.³⁸ The Supreme Court has granted certiorari on seven patentability appeals since the creation of the Federal Circuit, but none of these involved Federal Circuit reversals of the PTO.³⁹ And one of the most watched recent patentability cases before the Federal Circuit, *Association for Molecular Pathology*, was appealed not from the PTO but from a district court holding.⁴⁰

37. *Id.* at 516-17.

38. See ROBERT P. MERGES, PETER S. MENELL & MARK A. LEMLEY, *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 128-250 (rev. 4th ed. 2007).

39. See *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 131 S. Ct. 3027 (2011) (granting certiorari to review the Federal Circuit's decision that certain diagnostic methods are patentable subject matter, 628 F.3d 1347 (Fed. Cir. 2010), which was reached after the Supreme Court vacated the Federal Circuit's original decision in the case, 130 S. Ct. 3543 (2010), *vacating* 581 F.3d 1336 (Fed. Cir. 2009)); *Bilski v. Kappos*, 130 S. Ct. 3218 (2010) (affirming the Federal Circuit's affirmation of a PTO rejection for ineligible subject matter); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007) (reversing the Federal Circuit's holding that a litigated patent was nonobvious); *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124 (2006) (dismissing certiorari as improvidently granted on whether a litigated patent was directed to patentable subject matter); *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124 (2001) (affirming the Federal Circuit's holding that a litigated plant patent was directed to patentable subject matter); *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55 (1998) (affirming the Federal Circuit's holding that a litigated patent was anticipated under the "on-sale bar"); *Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809 (1986) (vacating the Federal Circuit's holding that a litigated patent was nonobvious).

40. *Ass'n for Molecular Pathology v. U.S. Patent & Trademark Office*, 653 F.3d 1329 (Fed. Cir. 2011), available at <http://www.cafc.uscourts.gov/images/stories/opinions-orders/10-1406.pdf> (reversing the district court's holding that the composition claims to isolated DNA molecules were not directed to patentable subject matter, and affirming the holding that the method claims directed to analyzing DNA sequences are patent ineligible), *aff'g in part and rev'g in part* 702 F. Supp. 2d 181 (S.D.N.Y. 2010); see also Jonathan Stroud, *A Myriad of Reasons: The Federal Circuit Soundly Rejects the Government's "Magic Microscope" Test and Upholds Patentability for Isolated Human Gene Patents*, INTELL. PROP. BRIEF (Aug. 24, 2011, 4:30 PM), <http://www.ipbrief.net/2011/08/24/guest-post-a-myrriad-of-reasons-the-federal-circuit-soundly-rejects-the-government-s-magic-microscope-test-and-upholds>

The relative unimportance of Federal Circuit reversals of PTO rejections is also apparent in focusing on the nonobviousness requirement, which has been described as the “touchstone of patentability.”⁴¹ The leading patent treatise agrees that nonobviousness is the most important patentability doctrine and states that the Federal Circuit’s “major role in shaping and refining the nonobviousness standard” is “evident in the early decisions of the [court].”⁴² Yet *none* of the ten cited cases are Federal Circuit reversals of PTO rejections. A 1993 student comment described fourteen cases through which the Federal Circuit had relaxed the test for obviousness, only one of which involved reversing a PTO denial.⁴³ Similarly, a 2001 examination of doctrinal changes in obviousness cited twenty-seven Federal Circuit cases, only two of which were reversals of PTO denials.⁴⁴

It is possible, however, that these accounts overlook key cases—that the cases doing the doctrinal work are just not the ones that end up in treatises and casebooks. The following Part thus looks more systematically at *every* Federal Circuit patentability ruling from five different years of its history to see whether these cases support Masur’s model.

III. TESTING MASUR’S MODEL: AN EMPIRICAL ANALYSIS OF FEDERAL CIRCUIT PATENTABILITY RULINGS

A. Study Methodology and Description of Data

The data set for this study consists of all 324 Federal Circuit cases from 1990, 2000, and 2008 through 2010 in which the Federal Circuit made a ruling related to patentability.⁴⁵ (This includes one year from each decade of the

-patentability-for-isolated-human-gene-patents. The plaintiffs have recently petitioned for certiorari. Petition for Writ of Certiorari, Ass’n for Molecular Pathology v. Myriad Genetics, Inc., No. 11-725 (U.S. Dec. 6, 2011), available at http://www.aclu.org/files/assets/association_of_molecular_v_myriad_petition_for_writ_of_certiorari.pdf.

41. R. Polk Wagner & Katherine J. Strandburg, Debate, *The Obviousness Requirement in Patent Law*, 155 U. PA. L. REV. PENNUMBRA 96, 96 (2006), http://www.pennumbra.com/debates/pdfs/Wagner_Strandburg_Debate.pdf (opening statement of Professor Wagner).
42. 2 DONALD S. CHISUM, CHISUM ON PATENTS § 5.02[6] & nn.3-7 (2010).
43. See Robert Desmond, Comment, *Nothing Seems “Obvious” to the Court of Appeals for the Federal Circuit: The Federal Circuit, Unchecked by the Supreme Court, Transforms the Standard of Obviousness Under the Patent Law*, 26 LOY. L.A. L. REV. 455, 473-79 & n.190 (1993) (citing the relevant cases). The only case appealed from the PTO was *In re Sernaker*, 702 F.2d 989 (Fed. Cir. 1983).
44. See Glynn S. Lunney, Jr., *E-Obviousness*, 7 MICH. TELECOMM. & TECH. L. REV. 363, 375-79 (2001) (citing the relevant cases), available at <http://www.mttl.org/volseven/Lunney.pdf>.

court's history, plus two more recent years; no one has argued that these years represent an outlier set for patent jurisprudence.⁴⁶) Each case was coded for the basis (or bases) of the Federal Circuit's validity or patentability decision. As summarized in Table 1, 11 cases turned on patentable subject matter,⁴⁷ 1 on utility,⁴⁸ 119 on anticipation,⁴⁹ 167 on obviousness,⁵⁰ 14 on nonstatutory (or "obviousness-type") double patenting,⁵¹ 15 on enablement,⁵² 32 on written description,⁵³ 11 on best mode,⁵⁴ 28 on indefiniteness,⁵⁵ 2 on design patent issues,⁵⁶ and 10 on problems with amending claims.⁵⁷ (These numbers sum to more than 324 because many cases involved holdings on more than one issue.)

The two PTO reversals were *In re Laskowski*, 871 F.2d 115 (Fed. Cir. 1989), and *In re Oetiker*, 977 F.2d 1443 (Fed. Cir. 1992).

45. I searched LEXIS's CAFC database for "board of patent appeals or (patent w/s (valid! or invalid!))," which identified both cases appealed from the BPAI and cases in which patent validity was litigated as part of an infringement suit. This search produced 791 hits for the years studied, and I read these cases to identify the 324 cases in which the holding was actually related to patentability. I tested additional searches, such as "patent w/s (obvious! or nonobvious!)," without finding additional cases, but it is possible that this search missed a few patent validity rulings from infringement suits. Additional infringement cases, however, would only further illustrate the relative unimportance of patent application appeals from the BPAI (all of which would be found through the "board of patent appeals" search because this term appears in LEXIS's "prior history" for these cases).
46. At the suggestion of my editors, cases from 1990 and 2000 were added to the initial data set of 2008-2010 to confirm that these findings are not a recent trend, and none of the five years proved exceptional. Because Masur emphasizes that his account is systemic and does not depend on any judge-specific factors, *see* Masur, *supra* note 1, at 475, the specific years chosen to test his theory should not matter.
47. *See, e.g.,* *SIRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319 (Fed. Cir. 2010).
48. *See In re Swartz*, 232 F.3d 862 (Fed. Cir. 2000).
49. *See, e.g., In re Omeprazole Patent Litig.*, 536 F.3d 1361 (Fed. Cir. 2008).
50. *See, e.g., Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318 (Fed. Cir. 2008).
51. *See, e.g., Amgen Inc. v. F. Hoffmann-La Roche Ltd.*, 580 F.3d 1340 (Fed. Cir. 2009); *see also* U.S. PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 804 (rev. 8th ed. 2010), available at http://www.uspto.gov/web/offices/pac/mpep/documents/o800_804.htm (describing nonstatutory double patenting as a "judicially created doctrine").
52. *See, e.g., Sitrick v. Dreamworks, LLC*, 516 F.3d 993 (Fed. Cir. 2008).
53. *See, e.g., Carnegie Mellon Univ. v. Hoffmann-La Roche Inc.*, 541 F.3d 1115 (Fed. Cir. 2008).
54. *See, e.g., Green Edge Enters. v. Rubber Mulch Etc., LLC*, 620 F.3d 1287 (Fed. Cir. 2010).
55. *See, e.g., Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244 (Fed. Cir. 2009).
56. *See, e.g., In re Webb*, 916 F.2d 1553 (Fed. Cir. 1990).
57. *See, e.g., MBO Labs., Inc. v. Becton, Dickinson & Co.*, 602 F.3d 1306 (Fed. Cir. 2010) (holding some reissue patent claims invalid for violating the rule against recapture); *Cordis Corp. v. Medtronic Ave, Inc.*, 511 F.3d 1157 (Fed. Cir. 2008) (reversing the invalidation of a claim that was amended during reexamination under 35 U.S.C. § 305 (2006)).

WHAT ARE THE SOURCES OF PATENT INFLATION?

Because this study focuses on patentability requirements, the data set does not include cases in which patents were found unenforceable for inequitable conduct. The data set includes opinions designated as nonprecedential—as these can still influence other decisions⁵⁸—but does not include decisions made without written opinion under Federal Circuit Rule 36,⁵⁹ which would be unable to cause doctrinal shifts.⁶⁰ The complete data set is available online.⁶¹

Table 1.
DOCTRINAL BASIS FOR FEDERAL CIRCUIT PATENTABILITY RULINGS

Patentability Doctrine	Patent Statute	Number of Cases
Subject Matter	§ 101	11
Utility	§ 101	1
Anticipation	§ 102	119
Obviousness	§ 103	167
Obviousness-Type Double-Patenting	Nonstatutory	14
Enablement	§ 112	15
Written Description	§ 112	32
Best Mode	§ 112	11
Indefiniteness	§ 112	28
Design	§ 171	2
Amendment Issues	§ 251 or § 305	10

58. See FED. CIR. R. 32.1(d), available at <http://www.cafc.uscourts.gov/images/stories/rules-of-practice/rules.pdf> (“The court may refer to a nonprecedential disposition in an opinion or order and may look to a nonprecedential disposition for guidance or persuasive reasoning, but will not give one of its own nonprecedential dispositions the effect of binding precedent.”). As illustrated below, my results would not be different if nonprecedential cases were omitted.

59. *Id.* R. 36 (explaining when “[t]he court may enter a judgment of affirmance without opinion”).

60. For example, my data set does not include cases in which the Federal Circuit affirmed a BPAI patent rejection without a published opinion, such as *In re Babu*, 283 F. App’x 805 (Fed. Cir. 2008), available at <http://www.cafc.uscourts.gov/images/stories/opinions-orders/08-1025.pdf>, *aff’g Ex parte Babu*, No. 2007-1522 (B.P.A.I. July 31, 2007), available at <http://des.uspto.gov/Foia/RetrievePdf?system=BPAI&flNm=fd2007152207-31-2007-0>.

61. Lisa Larrimore Ouellette, *Legal Writing and Research*, LISA LARRIMORE OUELLETTE, <http://pages.physics.cornell.edu/~larrimore/web/Law.html> (last visited Dec. 27, 2011).

Each case was also coded based on how it reached the Federal Circuit. As shown in Table 2, 60 cases came from PTO patent application denials,⁶² 14 from PTO patent rejections after *ex parte* reexamination,⁶³ 2 from PTO rejections of reissue applications,⁶⁴ 11 from PTO interference proceedings,⁶⁵ 222 from infringement actions in U.S. district courts, 12 from infringement actions before the International Trade Commission (ITC),⁶⁶ and 3 from infringement actions in the Court of Federal Claims.⁶⁷ Table 2 also illustrates that the Federal Circuit found the patent claims invalid or unpatentable in 146 cases and valid or patentable in 104 cases; in the remaining 74 cases, the court reached different conclusions on different claims or simply vacated the decision below. The number of precedential cases in each category is also displayed in parentheses. Under Masur's theory, the shaded cases (or some subset of them) are doing all the work in doctrinal patentability shifts, as discussed in the next Section.

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62. Three of these cases were first appealed to district court under 35 U.S.C. § 145, and in one case it was the PTO that appealed to the Federal Circuit, as discussed *infra* note 78 and accompanying text.
 63. One of these reexamination cases were first appealed to district court under 35 U.S.C. § 145, and then the PTO appealed to the Federal Circuit, as discussed *infra* note 92 and accompanying text.
 64. See, e.g., *In re Mettke*, 570 F.3d 1356 (Fed. Cir. 2009). After Mettke applied for the reissue of his patent with broader claims under 35 U.S.C. § 251, three parties filed protests to the reissue. See 570 F.3d at 1358.
 65. Three of these interference cases was first appealed to district court under 35 U.S.C. § 146.
 66. The ITC is an increasingly popular forum for patent infringement litigation. See Sapna Kumar, *The Other Patent Agency: Congressional Regulation of the ITC*, 61 FLA. L. REV. 529, 532 (2009), available at <http://ssrn.com/abstract=1082894>.
 67. See, e.g., *Honeywell Int'l, Inc. v. United States*, 609 F.3d 1292 (Fed. Cir. 2010).

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Table 2.
FEDERAL CIRCUIT PATENTABILITY RULINGS BY SOURCE OF APPEAL

Appealed From		Federal Circuit Ruling ⁶⁸			
		Invalid	Vacate/Mixed	Valid	Total
PTO (BPAI)	<i>Initial Exam</i>	42 (17)	9 (6)	9 (4)	60 (27)
	<i>Reexam</i>	7 (3)	2 (2)	5 (3)	14 (8)
	<i>Reissue</i>	2 (2)	0 (0)	0 (0)	2 (2)
	<i>Interference</i>	6 (3)	1 (1)	4 (4)	11 (8)
Infringement Action	<i>District Court</i>	83 (58)	60 (46)	79 (65)	222 (169)
	<i>ITC</i>	4 (1)	2 (2)	6 (6)	12 (9)
	<i>Court of Claims</i>	2 (2)	0 (0)	1 (1)	3 (3)
Total		146 (86)	74 (57)	104 (83)	324 (226)

B. Analysis of Patent-Inflating Cases Under Masur's Model

Masur's theory predicts that the broadening of patentability standards is caused by cases in which the Federal Circuit reverses a PTO patent-application rejection. Only sixty cases in my data set were appeals from patent-application rejections, and the Federal Circuit reversed the PTO in only *nine* of those cases. Five of these nine reversals were designated by the deciding Federal Circuit panel as nonprecedential and have not been cited by any court. One nonprecedential case, *In re Ceccarelli*, turned on whether there was substantial evidence to support a BPAI finding,⁶⁹ and the other four nonprecedential cases involved fact-specific interpretations of prior art patents.⁷⁰ Of the four precedential cases, *In re Mills* was also based on a misinterpretation of a prior

68. "Invalid" means the Federal Circuit ruled all claims at issue invalid or held that the patent application should be rejected. "Mixed" means the Federal Circuit reached different conclusions on different claims or simply vacated the decision below. "Valid" means the Federal Circuit rejected an argument that the patent was invalid or reversed a PTO decision to deny a patent.

69. 401 F. App'x 553 (Fed. Cir. 2010).

70. See *In re Daneshvar*, 366 F. App'x 171 (Fed. Cir. 2010) (per curiam); *In re Wheeler*, 304 F. App'x 867 (Fed. Cir. 2008); *In re Wank*, No. 90-1346, 1990 U.S. App. LEXIS 20136 (Fed. Cir. Nov. 15, 1990), available at <http://bulk.resource.org/courts.gov/c/F2/923/923.F2d.870.90-1346.html>; *In re Braat*, No. 90-1197, 1990 U.S. App. LEXIS 17454 (Fed. Cir. Oct. 3, 1990), available at <http://bulk.resource.org/courts.gov/c/F2/918/918.F2d.185.90-1197.html>.

art patent,⁷¹ *In re Pleuddemann* noted that an applicant's own patent specification cannot be used as prior art,⁷² and *In re Skvorecz*⁷³ merely restated "patent law fundamentals."⁷⁴ The fourth and most significant of the precedential cases, *In re Webb*, clarified that the "normal and intended use" of an article for design patent purposes is not limited to the final use of the article.⁷⁵ This is the best example in my data set of "patent inflation," but it is a doctrinal development of minor importance.

In the spirit of Masur's theory, some additional cases also should be considered. Although Masur says "the Federal Circuit has essentially two options" in appeals from Patent Office rejections—"affirm the Patent Office's denial, or . . . reverse the PTO and grant the patent"⁷⁶—the court also has a third option: it can vacate the rejection and ask the PTO to try again. The Federal Circuit vacated patent application rejections in an additional nine cases, but these cases also do not support Masur's model.

Three of the nine vacatur cases were nonprecedential, and all three were fact-specific and of no doctrinal importance.⁷⁷ Of the six precedential vacatur cases, two arose from different patents by the same inventor, Gilbert Hyatt, who appealed

71. 916 F.2d 680, 682-83 (Fed. Cir. 1990).

72. 910 F.2d 823, 828 (Fed. Cir. 1990).

73. 580 F.3d 1262 (Fed. Cir. 2009).

74. Charles R. Macedo, *Federal Circuit Reminds US BPAI of Fundamentals*, 5 J. INTELL. PROP. L. & PRAC. 8, 8 (2010), available at <http://www.arelaw.com/publications/view/bpai>; see *id.* ("Most cases presented to the . . . Federal Circuit involve complex areas of law *In re Skvorecz* presents a rather different situation, the Federal Circuit applying fundamental principles of patent law to reverse multiple rejections" (citation omitted)).

75. 916 F.2d 1553, 1557-58 (Fed. Cir. 1990) (quoting *In re Stevens*, 173 F.2d 1015 (Fed. Cir. 1949)).

76. Masur, *supra* note 1, at 491. The Federal Circuit does not actually *grant* patents when it reverses the rejection on a particular ground; it remands for further proceedings.

77. See *In re Vaidyanathan*, 381 F. App'x 985, 993 (Fed. Cir.), available at <http://www.cafc.uscourts.gov/images/stories/opinions-orders/09-1404ir.pdf> (vacating an obviousness finding when the examiner and the BPAI provided insufficient explanation of their reasoning), *cert. denied*, 131 S. Ct. 359 (2010); *In re Baggett*, 326 F. App'x 569, 570 (Fed. Cir. 2009), available at <http://www.cafc.uscourts.gov/images/stories/opinions-orders/09-1029.pdf> (affirming the rejection of most claims but vacating the rejection of three claims for which the examiner misread the claim term "memoization"); *In re Reuning*, 276 F. App'x 983, 987 (Fed. Cir. 2008), available at <http://www.cafc.uscourts.gov/images/stories/opinions-orders/07-1535.pdf> (following the PTO's request for a remand and "declin[ing] to address the examiner's rejection on the merits"). Of these three cases, only *Reuning* has been cited in another case, and that was only a Court of International Trade decision listing numerous cases cited by the defendant. See *United States v. UPS Customhouse Brokerage, Inc.*, 686 F. Supp. 2d 1337, 1359 n.15, 1364 n.21 (Ct. Int'l Trade), *reconsideration denied*, 714 F. Supp. 2d 1296 (Ct. Int'l Trade 2010).

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his PTO rejections to a district court rather than directly to the Federal Circuit, as allowed under 35 U.S.C. § 145. One of these cases, *Hyatt v. Dudas*, actually contradicts Masur's theory because it was the PTO, not the patent applicant, who appealed to the Federal Circuit after losing in district court.⁷⁸ The second case, *Hyatt v. Kappos*, involves a question of administrative law on which the Supreme Court recently granted certiorari.⁷⁹ However, neither case considered substantive *patentability* standards⁸⁰: *Hyatt v. Dudas* considered how the PTO could group claims for a common "ground of rejection,"⁸¹ and *Hyatt v. Kappos* considered exclusion rules for evidence in § 145 actions.⁸²

The remaining four precedential cases in which the Federal Circuit vacated a PTO rejection also did not involve any noteworthy doctrinal shifts. *In re Bond*⁸³ and *In re Lister*⁸⁴ were based on the PTO's failures to make specific factual findings, and *In re Chapman* corrected the description of a prior art patent but noted that the BPAI "is in no way precluded from, and indeed may be correct in, finding the claims to be obvious."⁸⁵ Finally, *In re Comiskey* clearly cuts against Masur's thesis: the court did not consider the BPAI's ground for decision because it sua sponte requested supplemental briefing and concluded that many claims were not patentable subject matter, remanding to the PTO to determine whether the other claims were patentable subject matter.⁸⁶ None of these vacatur cases seem like examples of patent inflation.

78. 551 F.3d 1307, 1309 (Fed. Cir. 2008).

79. 625 F.3d 1320 (Fed. Cir. 2010) (en banc), cert. granted, 131 S. Ct. 3064 (2011).

80. I considered excluding these cases for this reason, just as I excluded *i4i Ltd. Partnership v. Microsoft Corp.*, 598 F.3d 831 (Fed. Cir. 2010), *aff'd*, 131 S.Ct. 2238 (2011), available at <http://www.supremecourt.gov/opinions/10pdf/10-290.pdf>, which considers the standard of review for proving patent invalidity and thus affects only infringement actions. But I decided to err on the side of including more cases within Masur's model.

81. 551 F.3d at 1309.

82. 625 F.3d at 1320.

83. 910 F.2d 831, 833 (Fed. Cir. 1990) (per curiam) (noting that the BPAI must specifically find part of the prior art to be "structurally equivalent" before rejecting a patent for anticipation).

84. 583 F.3d 1307, 1309 (Fed. Cir. 2009) (vacating a finding that a golf method patent was anticipated by a manuscript the inventor filed with the Copyright Office because the PTO had no evidence of when that manuscript became publicly accessible). The proposed invention was the method of playing golf where golfers may "tee up their balls on every shot except for those taken from designated hazard areas or the putting green." *Id.* at 1309. The Federal Circuit noted that "[o]ther bars to patentability are not before us and may be raised during the proceedings on remand." *Id.* at 1317 n.4.

85. 595 F.3d 1330, 1337, 1340 (Fed. Cir. 2010).

86. 554 F.3d 967, 972-73, 981-82 (Fed. Cir. 2009).

In addition to reversals and vacatur of PTO patent application denials, one final category of cases might be considered as part of Masur's theory. As discussed in Part I, although Masur considers only appeals during the prosecution of a patent application, appeals on granted patents may be made during reexamination. During the years studied, the Federal Circuit issued fourteen opinions in appeals from ex parte reexaminations. Although third parties may instigate these reexaminations, only the patentee may appeal the result to the Federal Circuit. Cases in which the Federal Circuit reverses or vacates an ex parte reexamination patent rejection would therefore also raise Masur's concern about asymmetric appeals.

My data set contains seven such cases, which also fail to support Masur's model. Two of these cases, *In re Bart*⁸⁷ and *In re McNeil-PPC, Inc.*,⁸⁸ are nonprecedential and have never been cited by a court. A later appeal brought by McNeil-PPC was noteworthy only for a jurisdictional question.⁸⁹ *In re Suitco Surface, Inc.*⁹⁰ and *In re Baker Hughes Inc.*⁹¹ turned on issues of claim construction, not patentability. The sixth case, *Takeda Pharmaceutical Co. v. Doll*, is evidence against Masur's theory because the appeal was made by the PTO (from an adverse district court decision in a § 145 action) and because the Federal Circuit *contracted* the patentability boundary from what the district court would have allowed.⁹²

The seventh ex parte reexamination case, *In re Kotzab*,⁹³ is the most highly cited of the twenty-five cases discussed in this section because it clearly stated the "teaching, suggestion, or motivation" (TSM) test for obviousness, which was regularly used until the Supreme Court rejected it in *KSR International Co. v. Teleflex Inc.*⁹⁴ For example, the Federal Circuit's *KSR* opinion cites *Kotzab* as

87. No. 90-1211, 1990 U.S. App. LEXIS 18258 (Fed. Cir. Oct. 17, 1990).

88. No. 99-1268, 2000 U.S. App. LEXIS 6960 (Fed. Cir. Apr. 19, 2000), available at http://sc.findacase.com/research/wfrmDocViewer.aspx/xq/fac.20000419_0042236.CFC.htm/qx.

89. *In re McNeil-PPC, Inc.*, 574 F.3d 1393, 1399 (Fed. Cir. 2009) (correcting the BPAI's interpretation of a prior art tampon patent); see also *id.* at 1401-03 (Dyk, J., dissenting) (arguing that the Federal Circuit lacks jurisdiction); *News & Events: In re McNeil-PPC, Inc.*, SUGHRUE MION, PLLC (July 31, 2009), <http://www.sughrue.com/news/decisions/DevelopmentsDetail.aspx?id=739> (describing the Federal Circuit's holding on the timeliness of the appeal without mentioning the decision on the merits).

90. 603 F.3d 1255 (Fed. Cir. 2010).

91. 215 F.3d 1297 (Fed. Cir. 2000).

92. 561 F.3d 1372 (Fed. Cir. 2009).

93. 217 F.3d 1365 (Fed. Cir. 2000).

94. 550 U.S. 398, 415 (2007) (rejecting the formulaic TSM test and finding the patent at issue to be obvious under a more "expansive and flexible" test for obviousness).

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an example of how the court “consistently held” part of the TSM test.⁹⁵ But the TSM test did not originate with *Kotzab*, and the Federal Circuit later used *Kotzab*’s language that “the teaching, motivation, or suggestion may be implicit”⁹⁶ to make the TSM test more flexible—contracting the patentability boundary.⁹⁷ The case may be more notable for its role in defining the power balance between the PTO and the Federal Circuit,⁹⁸ which is a different issue from patentability boundaries.

Depending on how broadly one interprets Masur’s model, it predicts that the nine, eighteen, or twenty-five cases described above should be responsible for any broadening of patentability standards that occurred during the years studied. But these cases are a poor fit for Masur’s model, both quantitatively and qualitatively. Quantitatively, as shown in Table 3, these twenty-five cases represent less than 8% of all patentability cases in the data set, and the fifteen of these cases that were designated as precedential represent less than 7% of all precedential cases. Masur might argue that these cases *should* be rare (because the PTO is risk averse), but that they will still drive patent inflation because they will stand out from other patentability precedents as highly doctrinally significant and will be cited frequently. But qualitatively, this Section has demonstrated that these twenty-five cases represented at most minor shifts in patentability doctrine.

95. *Teleflex, Inc. v. KSR Int’l Co.*, 119 F. App’x 282, 286 (Fed. Cir. 2005), *rev’d*, 550 U.S. 398 (2007).

96. 217 F.3d at 1370.

97. See John F. Duffy, *Inventing Invention: A Case Study of Legal Innovation*, 86 TEX. L. REV. 1, 65 & n.330 (2007) (quoting *In re Kahn*, 441 F.3d 977, 987 (Fed. Cir. 2006) (quoting *In re Kotzab*, 217 F.3d at 1370)), available at <http://ssrn.com/abstract=1087067>.

98. See Flavio Rose, *Patent Truths*, L.A. LAW., Oct. 2001, at 40, 46 n.14, available at <http://www.lacba.org/Files/LAL/Vol24No7/Oct2001Ffr.pdf> (“*Kotzab* is notable because it was decided after the Supreme Court, in *Dickinson v. Zurko*, 527 U.S. 150 (1999), held that the Federal Circuit should review PTO fact-finding more deferentially, yet *Kotzab* seemed . . . to be giving the PTO less leeway to say what is and is not obvious.”).

Table 3.
BREAKDOWN OF DATA SET BETWEEN CASES DRIVING PATENT INFLATION UNDER MASUR'S THEORY AND ALL OTHER CASES

	Patentability Cases in Data set	Cases Driving Patent Inflation Under Masur's Theory	Remaining Cases
All Cases	324 cases	25 cases (9 reversals of PTO rejections, 9 vacatur of PTO rejections, and 7 reversals or vacatur of rejections on reexamination)	299 cases (92% of total)
Precedential Cases	226 cases	15 cases (4 reversals of PTO rejections, 6 vacatur of PTO rejections, and 5 reversals or vacatur of rejections on reexamination)	211 cases (93% of total)

C. Comparison to Other Federal Circuit Patentability Rulings

Masur's model might still be somewhat descriptively accurate if the other 299 cases in my data set were even less important than the twenty-five Federal Circuit reversals or vacatur of PTO rejections described in Section III.B—i.e., if there simply were no important doctrinal shifts in patentability in 1990, in 2000, or from 2008 to 2010. But many other cases do seem more doctrinally significant. For example, a number of important cases arose from patent litigation suits in district court: *Pioneer Hi-Bred International, Inc. v. J.E.M. Ag Supply Inc.* held that plants are patentable subject matter under 35 U.S.C. § 101;⁹⁹ *Prometheus Laboratories, Inc. v. Mayo Collaborative Services* held that the diagnostic methods at issue were patentable subject matter;¹⁰⁰ and *Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.* held that the written description requirement is distinct from enablement.¹⁰¹ And in a “much anticipated” case

99. 200 F.3d 1374 (Fed. Cir. 2000), *aff'd*, 534 U.S. 124 (2001).

100. 581 F.3d 1336 (Fed. Cir. 2009), *vacated*, 130 S. Ct. 3543 (2010). On remand, the Federal Circuit reached the same result, 628 F.3d 1347 (Fed. Cir. 2010), and the Supreme Court again granted certiorari, 131 S. Ct. 3027 (2011).

101. 598 F.3d 1336 (Fed. Cir. 2010).

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affirming a PTO application rejection, *In re Kubin*, the Federal Circuit expanded the “obvious to try” test for obviousness.¹⁰²

To permit a more quantitative comparison, I conducted a multivariate regression analysis, focusing on the number and type of citations to these Federal Circuit decisions, in order to assess whether the cases that are considered “inflationary” in Masur’s model actually prove to be particularly important for future patent adjudication. I recorded the number of total citations and the number of citations marked as “positive” in LEXIS for each case in my data set.¹⁰³

Table 4 shows the coefficients from twelve linear regressions in separate rows. The dependent variable for the first six rows is the total number of citations a case received; the dependent variable for the last six rows is the number of those citations recorded as “positive” by LEXIS. The first three independent variables (listed in separate columns) are dummy variables for the three sets of cases that might be included within Masur’s model: (1) the nine reversals of PTO patent application rejections; (2) the eighteen reversals or vacatur of PTO patent application rejections; and (3) the twenty-five reversals or vacatur of any PTO rejection (including during reexamination). The final independent variable, in the last column, is a control for the time since the decision.

¹⁰². Dennis Crouch, *In re Kubin: Federal Circuit Expands Obvious-To-Try Jurisprudence*, PATENTLY-O (Apr. 7, 2009, 10:32 PM), <http://www.patentlyo.com/patent/2009/04/in-re-kubin-federal-circuit-expands-obvious-to-try-jurisprudence.html> (citing *In re Kubin*, 561 F.3d 1351 (Fed. Cir. 2009)).

¹⁰³. Citation counts were recorded on September 9, 2011.

Table 4.
IMPACT OF MASUR'S CASES ON CITATIONS¹⁰⁴

Dependent Variable	Independent Variable			
	<i>PTO Reversals</i>	<i>Including Vacaturs</i>	<i>Including Reexams</i>	<i>Years Since Decision</i>
<i>Total Citations</i>	-116.7 (18.0)			
	-185.3 (41.0)			11.2 (2.4)
		-103.2 (22.1)		
		-124.4 (27.2)		10.8 (2.4)
			-86.2 (26.2)	
			-109.2 (29.5)	10.9 (2.4)
<i>Positive Citations</i>	-5.08 (0.69)			
	-6.37 (1.17)			0.21 (0.10)
		-5.17 (0.68)		
		-5.56 (0.79)		0.20 (0.10)
			-5.13 (0.70)	
			-5.57 (0.81)	0.21 (0.10)

104. N = 222 for all rows. Robust standard errors are in parentheses. The independent variable in the final column, "Years Since Decision," is the number of years (including fractional years) between the decision and September 9, 2011.

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The regression coefficients on the patent inflating cases under Masur's model are all *negative* (and statistically significant at the 1% level¹⁰⁵) – whether we include the nine, eighteen, or twenty-five cases identified in Section III.B. That is, they receive *fewer* total citations and *fewer* “positive” citations than other cases in my data set, even when controlling for time since decision. Indeed, there were seventy-four cases with a higher number of positive citations than the most cited case of the type that drives inflation in Masur's model.¹⁰⁶ While citation analysis is far from dispositive,¹⁰⁷ these results strongly suggest that courts and commentators also view the cases highlighted in Masur's model as less important than other patentability cases.

IV. TOWARD A NEW MODEL OF THE DEVELOPMENT OF PATENT DOCTRINE

Under the public choice model in *Patent Inflation*, Federal Circuit reversals (or vacatur) of PTO rejections should be responsible for shifting outward the boundaries of patentability. This Essay has demonstrated that Masur's model fails an empirical test. I examined every Federal Circuit patentability ruling from five different years, and my results suggest that the cases that should be most significant under Masur's model are of at most minor doctrinal importance, and they are cited statistically significantly less often than other cases.

I am not claiming that cases of the kind Masur highlights are never important. As discussed in Part I, Arti Rai has described the significance of particular Federal Circuit reversals of PTO denials in the biotechnology and

¹⁰⁵. All coefficients in Table 4 are statistically significant at the 1% level except the “Years Since Decision” control in the “Positive Citations” regressions, which are all statistically significant at the 5% level.

¹⁰⁶. For all cases, the average number of citations was 149, with a maximum of 1410, and the average number of positive citations was 5.5, with a maximum of 94. For the twenty-five reversals or vacatur of PTO rejections, the average number of citations was 70, with a maximum of 498, and the average number of positive citations was 0.8, with a maximum of 6. The case under Masur's model that received the most total and positive citations is *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000). See *supra* notes 93–98 and accompanying text. There were seventy-four cases that do not fit Masur's model that had over six positive citations.

¹⁰⁷. One might argue, for example, that patent litigation cases receive more citations because they typically involve more issues, or that reversals of PTO rejections receive fewer citations because there are few other reversals of PTO rejections to cite to them. For a discussion of problems with citation analysis, and a defense of separating out “positive” citations, see Robert Anderson IV, *Distinguishing Judges: An Empirical Ranking of Judicial Quality in the United States Courts of Appeals*, 76 MO. L. REV. 315, 324–27 (2011).

software contexts.¹⁰⁸ Rather, I am claiming that Masur's cases are not doing all—or even a significant portion of—the work in shifting the boundaries of patentability. This is true both because there are few of these cases (at most 25 out of the 324 decisions in my data set) and because they are relatively less important than other Federal Circuit patentability rulings.

What went wrong with Masur's model? One important problem is his assumption that patent infringement litigation will have no net effect on patentability doctrine.¹⁰⁹ Masur cites the famous Priest-Klein analysis to support his claim that only highly uncertain cases will reach the Federal Circuit, which means that each litigated patent will have a 50% chance of being invalidated.¹¹⁰ Judge Kimberly Moore has argued that Priest-Klein fails in the patent context because generally “the patent holder has a much greater stake . . . than does the alleged infringer.”¹¹¹ While Masur acknowledges that “[p]atent law has never satisfied the strong form of the Priest-Klein hypothesis,” he argues that patents will still be evenly distributed on both sides of the Federal Circuit's current patentability boundary.¹¹² My data set suggests that patents litigated before the Federal Circuit do have a roughly 50% chance of being invalidated; Table 2 shows that the court invalidated the claims at issue in eighty-three cases and rejected the invalidity challenge in seventy-nine cases (with the other sixty cases resulting in mixed rulings or vacatur).

But the presumption of patent validity might cause these patent infringement cases to be a source of patent inflation. Even if litigated patents have a 50% chance of being invalidated, these patents are probably not initially evenly distributed across the patentability boundary. Because of the presumption of patent validity and the “clear and convincing evidence” standard for proving invalidity,¹¹³ the highly uncertain patent cases—those

108. See Rai, *supra* note 18, at 201.

109. See *supra* notes 36-37 and accompanying text.

110. See Masur, *supra* note 1, at 514 n.169 (citing George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1, 6-17 (1984), available at http://business.baylor.edu/Charles_North/4318Files/4318PriestKlein1984.pdf).

111. Kimberly A. Moore, *Judges, Juries, and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 377 (2000); see also Kimberly A. Moore, *Are District Court Judges Equipped To Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1, 10 (2001), available at <http://jolt.law.harvard.edu/articles/pdf/v15/15HarvJLTech001.pdf> (noting that the Priest-Klein theory “appears flawed when applied to appellate outcome statistics”).

112. Masur, *supra* note 1, at 515 n.176.

113. See *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S.Ct. 2238, 2243 (2011), available at <http://www.supremecourt.gov/opinions/10pdf/10-290.pdf> (noting that the Federal Circuit has required patent invalidity to be proven by clear and convincing evidence since 1984, and affirming that this is the correct standard).

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with a 50% win rate—may be more likely to be invalid under current doctrine when considered from the “preponderance of the evidence” perspective of patent examination.¹¹⁴ Priest-Klein’s 50% win prediction does not depend on the standard of review,¹¹⁵ but if the “clear and convincing evidence” standard requires 75% certainty that a patent is invalid,¹¹⁶ then close cases will probably be those in which parties are initially approximately 75% certain that the patent is invalid under current doctrine. And when this uncertainty about validity stems from mixed questions of fact and law,¹¹⁷ then these patents may fall disproportionately on the “unpatentable” side of the current doctrinal patentability boundary. When the Federal Circuit upholds the validity of some of these patents, the patentability boundary would expand to include these new precedents.

In other words, because of the presumption of patent validity, infringement suits are more likely to validate the PTO’s boundary-pushing patent grants than to check PTO-driven patent inflation. And although it would often constitute legal error for a court or the PTO to apply the patentability boundary from the “clear and convincing evidence” infringement context to the “preponderance of the evidence” examination context,¹¹⁸ the Federal Circuit distinguished a precedent based on the different evidentiary standards in only one of the 324 cases I reviewed.¹¹⁹ In contrast, the Federal Circuit regularly cites patentability decisions from the infringement context in the examination

114. I thank my editors and Adam Chandler for helping me with the following discussion.

115. See George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1, 19 (1984), available at http://business.baylor.edu/Charles_North/4318Files/4318PriestKlein1984.pdf.

116. See C.M.A. McCauliff, *Burdens of Proof: Degrees of Belief, Quanta of Evidence, or Constitutional Guarantees?*, 35 VAND. L. REV. 1293, 1328-29 (1982) (reporting that 112 of 172 federal judges surveyed assessed the certainty required by “clear and convincing evidence” to be between 70% and 80%).

117. In theory, the 75% threshold refers only to uncertainty in the evidence or facts (and litigated patents thus should still be evenly distributed across the doctrinal patentability boundary), but in practice, separating doctrinal uncertainty from factual uncertainty is more complicated. And in any case, Masur’s model assumes away any fact/law distinction, plotting each patentability doctrine along a single axis. See Masur, *supra* note 1, at 484 & figs.1 & 2.

118. In PTO examinations and reexaminations, the standard of proof is “a preponderance of evidence,” which is “substantially lower” than the standard of proof in a civil infringement case. *In re Swanson*, 540 F.3d 1368, 1377 (Fed. Cir. 2008).

119. In a case that confronted the impact of these different standards, *In re Swanson* found that an examiner’s rejection of claims on reexamination did not disturb a district court’s decision upholding the claims’ validity because “they are differing proceedings with different evidentiary standards for validity.” *Id.* at 1379.

context without discussing whether this reliance is appropriate.¹²⁰ And while there are few cases in which the Federal Circuit upholds a patent in the examination context,¹²¹ the PTO relies on infringement precedents when considering some of the hundreds of thousands of patents it grants each year.¹²²

By assuming that patent litigation cases have no net effect on doctrine and by assuming that patentability can be collapsed to a single dimension with a single boundary, Masur ignores the role that the presumption of patent validity might play in causing patent inflation. But to the extent that patent inflation can be partially captured by a mechanistic explanation, this presumption appears worthy of further investigation. Furthermore, unlike the asymmetry of appeals from the PTO, which existed before the creation of the Federal Circuit,¹²³ the presumption of patent validity was strengthened in the early years of the Federal Circuit,¹²⁴ making the presumption a more plausible

120. See, e.g., *In re Vaidyanathan*, 381 F. App'x 985, 994 (Fed. Cir. 2010), available at <http://www.ca9.uscourts.gov/images/stories/opinions-orders/09-1404ir.pdf> (citing *Perfect Web Techs. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009)); *In re Bond*, 910 F.2d 831, 835 (Fed. Cir. 1990) (per curiam) (citing *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050-51 (1988)).

121. See *supra* Table 2.

122. See, e.g., *Ex parte Kim*, No. 2009-010047, 2010 WL 3827134, at *2-4 (B.P.A.I. Sept. 28, 2010), available at <http://des.uspto.gov/Foia/ReterivePdf?system=BP&flNm=fd2009010047-09-28-2010-1> (reversing an obviousness rejection, and relying in part on the Federal Circuit's affirmation of a district court nonobviousness finding in *In re Omeprazole Patent Litigation*, 536 F.3d 1361 (Fed. Cir. 2008)); *Ex parte Albritton*, No. 2008-5023, 2009 WL 671577, at *16 (B.P.A.I. Mar. 13, 2009), available at <http://des.uspto.gov/Foia/ReterivePdf?system=BP&flNm=fd20085023-03-13-2009-1> (reversing an obviousness rejection in a "close case" based on *Arkie Lures, Inc. v. Gene Larew Tackie, Inc.*, 119 F.3d 953 (Fed. Cir. 1997)). For the number of patents granted each year, see *U.S. Patent Statistics, Calendar Years 1963-2010*, U.S. PATENT & TRADEMARK OFFICE (June 2011), http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.pdf.

123. See *supra* note 34 and accompanying text.

124. See Brief for William Mitchell College of Law Intellectual Property Institute as Amicus Curiae Supporting Petitioner at 3, *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238 (2011) (No. 10-290), available at <http://www.patentlyo.com/wmmitchell.pdf> ("The insistence on this requirement [of clear and convincing evidence] across all issues of invalidity is comparatively new, dating back only to the early years of the . . . Federal Circuit."); Henry & Turner, *supra* note 6, at 86 ("[E]arly [Federal Circuit] precedents strengthened the statutory presumption of patent validity . . .").

WHAT ARE THE SOURCES OF PATENT INFLATION?

explanation for the dramatic increase in patent inflation that occurred after that court's creation in 1982.¹²⁵

Another reason to suspect that patent infringement cases are more influential than Masur believes is that parties generally invest more resources in patent litigation, where an adverse decision might result in an injunction against a successful product, than in patent prosecution, where significant resources generally have not yet been invested in commercializing the invention. In 2011, the median cost of a large patent infringement case—with over \$25 million at risk—was \$5 million per side, compared with only \$200,000 to handle even an inter partes reexamination from the PTO through a Federal Circuit appeal.¹²⁶ It seems probable that doctrinal innovation like patent inflation will be more likely when the parties are willing to pay for the highest quality lawyers, who are likely to make more creative arguments and write stronger briefs.¹²⁷ And if patentees spend more on litigation than alleged infringers, as argued by Professors Joseph Farrell and Robert Merges,¹²⁸ this could be another important source of patent inflation, although one would also need to explain why this effect became more pronounced once patent infringement cases were consolidated from the regional courts of appeals to the Federal Circuit.

While the presumption of patent validity and the differing stakes of litigating parties might explain some of the patent inflation that has occurred over the past thirty years, I remain skeptical of any mechanistic explanation of the Federal Circuit's doctrinal developments, and I would challenge Masur's conclusion that continued patent inflation is inevitable. Many Federal Circuit judges have seen their role as strengthening patent protection,¹²⁹ but this does

125. Cf. Henry & Turner, *supra* note 6, at 112 (“[W]e conclude that the [Federal Circuit]’s stronger presumption of validity had an immediate and permanent effect on the ultimate likelihood of patent validity.”).

126. STEVEN M. AUUVIL & DAVID A. DIVINE, AM. INTELLECTUAL PROP. LAW ASS’N, REPORT OF THE ECONOMIC SURVEY 2011, at 35-36 (2011). The median cost of small patent infringement cases—with under \$1 million at risk—was \$650,000. *Id.* at 35.

127. Cf. Richard J. Lazarus, *Advocacy Matters Before and Within the Supreme Court: Transforming the Court by Transforming the Bar*, 96 GEO. L.J. 1487 (2008), available at <http://georgetownlawjournal.org/files/pdf/96-5/Lazarus.PDF> (arguing that the elite Supreme Court Bar has a significant influence on the Supreme Court’s doctrine).

128. See Joseph Farrell & Robert P. Merges, *Incentives To Challenge and Defend Patents: Why Litigation Won’t Reliably Fix Patent Office Errors and Why Administrative Patent Review Might Help*, 19 BERKELEY TECH. L.J. 943, 948-60 (2004), available at http://www.btlj.org/data/articles/19_03_06.pdf.

129. See Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 COLUM. L. REV. 1035, 1111-12 (2003), available at <http://>

not mean that they will strengthen it without limits.¹³⁰ I think Masur also underappreciates the role of the Supreme Court in resetting the boundaries of patentability. Masur argues that “[e]ven an aggressive Supreme Court cannot staunch the flow of improperly granted patents from the PTO,”¹³¹ but this argument ignores his own emphasis on the importance of the current boundary.¹³² Federal Circuit Judge Timothy Dyk has stated that “[t]he Supreme Court necessarily plays a critical role in reinterpreting, or even overruling, earlier Supreme Court decisions and in altering our jurisprudence to keep up with the demands of a changing world.”¹³³ And Professor John Duffy has argued that the Court “can continue to be important in the [patent law] field even if it is hearing only five or ten patent cases per decade” because “[i]nfluence is driven not so much by the quantity of decisions, but by the quality and authority of those decisions.”¹³⁴ *Diamond v. Chakrabarty*¹³⁵ and *Diamond v. Diehr*¹³⁶—pre-Federal Circuit Supreme Court cases that reversed PTO rejections—surely did more to create patent inflation than the Federal-Circuit specific dynamics Masur describes, and recent cases like *KSR International Co. v. Teleflex Inc.*¹³⁷ play a critical role in redrawing narrower boundaries of patentability and resetting any growth in patent inflation. The Federal Circuit and the PTO play an important role in interpreting and implementing these precedents, but that role defies a simple mechanistic explanation.

scholarship.law.duke.edu/cgi/viewcontent.cgi?article=2443&context=faculty_scholarship (reviewing evidence that “at least some members of the Federal Circuit view patent rights as a relatively unalloyed good”); *supra* notes 8-9 and accompanying text.

130. See Rai, *supra* note 129, at 1112 (“[T]he court has clearly not accepted the most assertive version of patents-as-ordinary-property claim . . .”).
131. Masur, *supra* note 1, at 520.
132. See *id.* at 511 figs.11 & 12 (illustrating how the shift in the boundary of patentability to a new “cutpoint” occurs to affect future doctrine).
133. Timothy B. Dyk, *Foreword: Does the Supreme Court Still Matter?*, 57 AM. U. L. REV. 763, 768 (2008), available at <http://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1049&context=aulr>.
134. John F. Duffy, *The Festo Decision and the Return of the Supreme Court to the Bar of Patents*, 2002 SUP. CT. REV. 273, 299, available at <http://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1880&context=facpubs>.
135. 447 U.S. 303 (1980) (finding a genetically engineered bacterium to be patentable subject matter).
136. 450 U.S. 175 (1981) (finding a physical process controlled by a computer program to be patentable subject matter).
137. 550 U.S. 398 (2007).

CONCLUSION

Although the simplicity of Masur's model is appealing, this Essay has demonstrated that his patent inflation model does not accurately capture the development of patent doctrine. As Masur noted in his article, scholars have highlighted a host of other concerns with the current system, ranging from the asymmetric incentives provided by the PTO bonus structure to the possibility of Federal Circuit capture.¹³⁸ A model of the shifting patentability bounds should include many of these complicated factors. In addition, a complete model should acknowledge doctrinal presumptions, the different stakes for parties in different postures (and the varying amounts those parties are therefore willing to invest in litigation), as well as the important role of the Supreme Court in causing large shifts in the boundaries of patentability. The phenomenon of patent inflation is far more complicated than Masur's elegant, but ultimately incomplete, model can capture.

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¹³⁸. See Masur, *supra* note 1, at 478-79.