# AN EMPIRICAL SURVEY OF THE POPULATION OF U.S. TAX COURT WRITTEN DECISIONS

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*What can empirical data tell us about the jurisprudence of United States Tax Court? Which sections of the Internal Revenue Code are most frequently cited and has recent tax legislation sparked change in the Tax Court's decisions? This article presents an analysis of the citation practices of the United States Tax Court between 1990 and 2008. While previous citation studies focus on case-to-case citations, we modify this approach to focus on statutory citations, which better capture the nature of tax jurisprudence. By applying techniques from computer science, we collect and analyze more than 11,000 decisions and 244,000 statutory citations authored by the United States Tax Court between 1990 and 2008. Our approach includes both a static and*

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A supplemental website for this article can be found online at the following URL: http://computationallegalstudies.com/VTR-tax-court-article/. The appendix, our dataset of Tax Court opinions, the case-to-statute network, and possible errata will be published on this page.

*longitudinal analysis of the most cited Internal Revenue Code sections. In addition, we carry out a network analysis of these case-to-statute citations to uncover patterns in citation practices, concept relationships, and legislative acts. This article answers the call for greater empiricism in tax scholarship and paves the way for future research on Tax Court jurisprudence.*

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## I. INTRODUCTION

Despite what Benjamin Franklin may have claimed about the similarities between them,[1] one of the major differences between death and taxes is that taxes can be contested in a court of law.[2] In the U.S., taxpayers take advantage of this difference in droves, filing

[1] *See* JOHN BARTLETT, FAMILIAR QUOTATIONS 361 (Nathan Haskell Dole ed., 10th ed., Blue Ribbon Books 1919) (1855) (citing Benjamin Franklin, Letter to M. Leroy, 1789).

[2] Technically, while matters resulting from death are often litigated in probate courts, the event of death itself only enters through questions of fact.

thousands of petitions before the U.S. Tax Court ("Tax Court" or "Court") every year. Yet commentary about the U.S. federal income tax system is often focused away from the Tax Court and toward the Internal Revenue Code ("Code"), Congress, and taxpayers themselves. Perhaps because of this scholarly and political focus beyond the Tax Court, the Court itself remains in many ways opaque to observers interested in tax policy. What litigants argue their cases before the Court? What provisions of the Code are most invoked in the Court's opinions?

These questions are fundamental to a greater understanding of tax policy, not only because they shine light on tax jurisprudence, but also because issues within the Code are better identified by understanding the Court's jurisprudence. By uncovering what types of cases and litigants come before the Court, policy makers can improve access and representation. By understanding what portions of the Code are typically invoked or questioned, policy makers can identify and clarify sources of uncertainty or inconsistency in tax law. Taken together, the insights that even a basic empirical portrait can provide may be translated directly into improving the legal system.

This article is not the first to discuss the Tax Court. It adds to a small but growing number of articles about tax litigation. One of the reasons for the lack of academic research on tax litigation is that tax law is more statutory than other areas of the law.[3] Unlike other areas of law, tax is defined less by judicial decisions and more by constantly changing rules and regulations. Congress, the Treasury Department, and the Internal Revenue Service, among other non-judicial actors, play primary roles in the development of tax law. Despite the distinct nature of tax law, numerous courts still interpret the statutory bases of taxation. In the U.S., federal courts across the country hear thousands of tax cases every year.

The vast majority of litigated tax cases are heard by the specialized U.S. Tax Court.[4] Although U.S. District Courts and the Court of Federal Claims share jurisdiction over certain cases, the Tax Court differs significantly in that taxpayers may contest an alleged

[3] *See, e.g.*, Michael A. Livingston, *Reinventing Tax Scholarship: Lawyers, Economists and the Role of the Legal Academy*, 83 CORNELL L. REV. 365, 373 (1998) (stating that "tax scholars face particularly special challenges" partially due to "the statutory (and therefore, the legislative) origins of tax law").

[4] *See* Leandra Lederman, *Equity and the Article I Court: Is the Tax Court's Exercise of Equitable Powers Constitutional?*, 5 FLA. TAX REV. 357, 412 (2001) [hereinafter Lederman *Article I*] (stating that "the Tax Court hears about 95% of litigated federal tax cases").

underpayment or failure to pay without first paying the deficiency.[5] The Tax Court is an Article I court that is based in Washington, D.C. and hears cases around the country. This article presents an analysis of the jurisprudence of this court and its 11,254 opinions authored between 1990 and 2008.[6]

This article fills three significant gaps in existing scholarship. First, it answers a call for greater empiricism in tax law. Many authors have noted the absence of empirical research in tax law,[7] and, while the amount of empirical research has increased in recent years, the data and methodology presented in this article are novel.[8] Other empirical research has focused on methods of statutory interpretation, judicial outcomes, or taxpayer responses to tax policy.[9] We focus on the

[5] Bankruptcy Court proceedings may also allow taxpayers to challenge the imposition of tax without paying the deficiency, but such challenges are limited to those raised as part of a bankruptcy proceeding.

[6] *See supra* Part III.

[7] *See, e.g.*, Assaf Likhovski, *The Duke and the Lady:* Helvering v. Gregory *and the History of Tax Avoidance Adjudication*, 25 CARDOZO L. REV. 953, 971 (2004); Livingston, *supra* note 3, at 373; Daniel M. Schneider, *Empirical Research on Judicial Reasoning: Statutory Interpretation in Federal Tax Cases*, 31 N.M. L. REV. 325, 325 (2001).

[8] While tax scholarship has certainly taken an empirical turn, this experience has not been uniformly distributed across its respective subfields. *See, e.g.,* Nancy Staudt, *Empirical Taxation*, 13 WASH. U. J.L. & POL'Y 1, 8 (2003) (listing all empirical tax articles from 1993 through 2002). Although tax policy has long been influenced by economics and political science, the literature on tax litigation appears far less developed. *But see* Mark P. Altieri et al., *Political Affiliation of Appointing President and the Outcome of Tax Court Cases*, 84 JUDICATURE 310 (2001); Leandra Lederman, *Which Cases Go to Trial?: An Empirical Study of Predictors of Failure to Settle,* 49 CASE. W. RES. L. REV. 315 (1999) [hereinafter "Lederman *Predictors*"]. A variety of tax scholars have encouraged the use of empirical methods to study tax jurisprudence. *See, e.g.,* Staudt, *supra* note 8, at 2–5. *But see* Louis Kaplow & Steven Shavell, *Should Legal Rules Favor the Poor? Clarifying the Role of Legal Rules and the Income Tax in Redistributing Income*, 29 J. LEGAL STUD. 821, 833 (2000) (raising skepticism about legal policy analysts doing empirical research).

[9] *See, e.g.*, Lee Epstein, Nancy Staudt & Peter Wiedenbeck, *Judging Statutes: Thoughts on Statutory Interpretation and Notes for a Project on the Internal Revenue Code*, 13 WASH. U. J.L. & POL'Y 305 (2003) (considering the Supreme Court's method of statutory interpretation in economically oriented cases); Christopher C. Fennell & Lee Anne Fennell, *Fear and Greed in Tax Policy: A Qualitative Research Agenda*, 13 WASH. U. J.L. & POL'Y 75 (2003) (considering taxpayer aversion to paying taxes); Schneider, *supra* note 7 (analyzing the method of statutory interpretation used by Tax Court judges, as well as the background of judges); Daniel M. Schneider, *Statutory Construction in Federal Appellate Tax Cases: The Effect of Judges' Social Backgrounds and of Other Aspects of Litigation*, 13 WASH. U. J.L. & POL'Y 257 (2003) (analyzing the backgrounds of judges on federal appellate tax cases).

relationship between Tax Court decisions and the Internal Revenue Code (Code) sections invoked in these decisions. We also apply network analysis to these statute-case relationships to uncover patterns in the opinions written by the Court.[10] This approach allows us to analyze a much larger corpus of tax opinions than have been previously considered, and our focus on statutory citations allows us to reach different conclusions than other authors.

This article's second contribution is to indicate which specific sections of the Code have been interpreted or invoked most during the past two decades. Although both academics and practitioners often assume that some sections of the Code are frequently discussed,[11] no empirical analysis has attempted to prove or disprove such assumptions. Our research not only shows which Code sections have been most discussed in Tax Court opinions, but also shows the changes in these citation patterns over the time period analyzed. We use network analysis to better understand the implied conceptual relationships between cases and statutes. These relationships encode statutory dependency, highlighting both expected and unexpected ties between provisions of the Internal Revenue Code.

Finally, this article proposes four possible interpretations for our observations. The purpose of this article is not to assert any single interpretation. Rather, we invite scholars to use our data as well any other data to uncover and explain the patterns in written decisions. Typical empirical scholarship is based on positing hypotheses, performing statistical tests, and then accepting or rejecting their hypotheses. Without a basic understanding of the data, such hypotheses are difficult to construct. Therefore, our goal in this article is to provide a high-level overview of the population of Tax Court decisions so that future researchers have some basis for their initial hypotheses. In sum, though much analysis remains to be done, this article broadly characterizes nearly two decades of U.S. Tax Court jurisprudence.

The remainder of the article is structured as follows. Part II

[10] *Cf.* Mark A. Hall & Ronald F. Wright, *Systematic Content Analysis of Judicial Opinions*, 96 CAL. L. REV. 63, 64 (2008) (arguing that content analysis could form the basis of an empirical methodology that is uniquely suited to legal analysis). A number of allied approaches could also be employed. In particular, we believe techniques from computational linguistics could prove fruitful.

[11] *See, e.g.*, Jeffrey G. Sherman, *'Tis a Gift to Be Simple: The Need for a New Definition of "Future Interest" for Gift Tax Purposes*, 55 U. CIN. L. REV. 585, 585 (1987) (referring to "[t]he most troublesome and most frequently litigated issue in gift tax law").

provides a description of the Tax Court and its written opinions. Part III describes the construction and contents of our dataset. Part IV then presents our findings, including a static and longitudinal analysis of Code section citations and a network analysis of the case-to-statute citations. Part V presents four possible interpretations of these findings. Finally, Part VI concludes, paving the way for future research by both empiricists and policymakers.

## II. THE UNITED STATES TAX COURT AND ITS OPINIONS

The Tax Court originated in 1924 as an administrative agency called the Board of Tax Appeals.[12] In 1969, after debate over whether to make the Board into an Article III court,[13] Congress made the Tax Court an Article I court.[14] Although the Tax Court is a "legislative court," separate from the judicial branch even for administrative purposes,[15] the Tax Court is generally seen as a well-established court of law for purposes of the Appointments Clause of the U.S. Constitution and is a court of record under Article I.[16] Commentators have acknowledged that "the Tax Court is truly a court, with solely judicial functions."[17]

Despite its judicial nature, the Court is unique for a variety of reasons: first, as a legislative court, it is more closely tied to Congress than to courts in the judicial branch.[18] While this has led some to criticize the Court for pro-government bias,[19] such criticism is not

[12] Mary Ann Cohen, *How To Read Tax Court Opinions*, 1 HOUS. BUS. & TAX L.J. 1, 3 (2001).

[13] For more on the extent to whether the Tax Court has effectively taken on the role of an Article III court in certain cases, see Lederman *Article I*, *supra* note 4, at 412.

[14] Leandra Lederman, *Tax Appeal: A Proposal to Make the United States Tax Court More Judicial*, 85 WASH. U. L. REV. 1195, 1205 (2008) [hereinafter Lederman *Proposal*].

[15] *Id.* at 1206.

[16] *See* Cohen, *supra* note 12, at 3.

[17] Lederman *Proposal*, *supra* note 14, at 1248; *see also* Cohen, *supra* note 12, at 3.

[18] For example, while Article III courts request their budgets centrally, "the Tax Court makes its budget requests directly to Congress." Lederman *Proposal*, *supra* note 14, at 1210.

[19] *See* David Laro, *The Evolution of the Tax Court as an Independent Tribunal*, 1995 U. ILL. L. REV. 17, 18 (1995) (referring to a "myth . . . that the court is sometimes predisposed in favor of the government").

generally supported.[20] Second, although the Tax Court is a specialized court with presidentially-appointed sitting judges, senior judges, and special trial judges,[21] it shares its jurisdiction with two other federal fora: federal district courts and the U.S. Court of Federal Claims. Since the Tax Court is the only jurisdiction that allows taxpayers to petition for relief before paying the deficiency, the choice between the three jurisdictions "is often more theoretical than real. . ."[22] In other fora, taxpayers must first pay the tax and then file a claim for a refund. Consequently, the overwhelming majority of federal tax litigation appears before the Tax Court.[23] Third, the Tax Court only hears disputes between private parties and the U.S. government.[24] In these cases, the federal government is represented by the administrative agency of the Internal Revenue Service (Service), which is therefore a repeat player.[25]

The Tax Court hears only civil federal tax cases. These cases are generally deficiency cases — cases in which the underlying issue is an underreported tax liability that led the Service to send a notice of deficiency.[26] All types of litigants can and do appear before the Tax Court; taxpayers petitioning the Court for relief include individuals, corporations, and estates.[27] Furthermore, taxpayers may appear before the Court either pro se or with representation; over 50 percent of taxpayers do appear before the Court without counsel and nearly 90 percent of small tax cases are filed by pro se litigants.[28]

In deciding these cases, the Tax Court can issue three types of written opinions: summary opinions, memorandum opinions, and Tax Court opinions. Of these, only Tax Court opinions are precedential. Summary opinions are issued pursuant to section 7463 in S cases, which involve less than $50,000 per year in question.[29] S cases have

[20] *See* James Edward Maule, *Instant Replay, Weak Teams, and Disputed Calls: An Empirical Study of Alleged Tax Court Judge Bias*, 66 TENN. L. REV. 351, 425–26 (1999) (stating that the "Tax Court is not biased in favor of the IRS" and suggesting the need for empirical study).

[21] Lederman *Proposal*, *supra* note 14, at 1201. Special trial judges hear almost all S cases and regular cases under $10,000. Cohen, *supra* note 12, at 3.

[22] Lederman *Proposal*, *supra* note 14, at 1197.

[23] *Id.*

[24] *Id.* at 1196.

[25] *See* Lederman *Predictors*, *supra* note 8, at 342.

[26] *Id.* at 328.

[27] *See id.* at 331.

[28] Cohen, *supra* note 12, at 4.

[29] *Id.* at 3.

simplified procedures, and summary opinions cannot be appealed.[30] Until 1998, the Tax Court did not publish summary opinions,[31] and the Court still discourages such publication due to the lack of precedential value.[32] Memorandum opinions are issued in "cases involving application of familiar legal principles to routine factual situations, nonrecurring or enormously complicated factual situations, obsolete statutes or regulations, straightforward factual determinations, or arguments patently lacking in merit. . ."[33] In contrast, Tax Court opinions — or division opinions — are issued in cases in which the Tax Court sees itself setting precedent. Such cases include "those in which a legal issue of first impression is decided, a legal principle is applied or extended to a recurring factual pattern, a significant exception to a previously announced general rule is created, or there are similarly significant and precedentially valuable cases."[34]

As in any court, not all cases that are filed result in a written opinion. Some are settled before a judgment can be reached, and others result in an unwritten bench opinion. The dataset discussed in this article does not include either settled cases or bench opinions, and, as such, our findings are conditioned on the fact that we are analyzing only written opinions. In a previous empirical study, Professor Lederman determined that cases that go to trial are statistically different from those that are settled.[35] Professor Lederman finds that the Service's internal dispute resolution process, the stakes at issue, whether the judge is a Tax Court Judge or a Special Trial Judge, the decade of the judge's appointment, and the judge's professional background all play a role in deciding whether a case reaches trial.[36] This means that the written opinions we are analyzing do not reflect the entire set of cases filed before the Tax Court. Furthermore, only a small proportion of cases that do go to trial result in a bench opinion.[37] Such opinions are issued only "if the facts and the law are clear" at that time.[38]

The written opinions that we discuss in this article include summary opinions, memorandum opinions, and Tax Court opinions.

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[30] *Id.*

[31] Lederman *Proposal*, *supra* note 14, at 1241.

[32] Cohen, *supra* note 12, at 5.

[33] *Id.* at 7.

[34] *Id.*

[35] Lederman *Predictors*, *supra* note 8, at 332.

[36] *See id.* at 332–41.

[37] *See* Cohen, *supra* note 12, at 4.

[38] *Id.*

Though neither summary nor memorandum opinions carry precedence, this does not undermine the purpose of our study, as we focus primarily on the subject matter of decisions. This article aims to provide an analysis of the relationship between written opinions and the Code sections they rely on in order to better understand Tax Court jurisprudence during this period.

## III. CONSTRUCTING THE WRITTEN DECISION DATASET

This article is an initial empirical exploration of the U.S. Tax Court's written decisions between 1990 and 2008. Before carrying out this exploration, we must first obtain the desired decisions. As described in our online appendix,[39] we apply methods from computer science to collect population-level data on these decisions and the citations within them. This application of computer science is consistent with Professor Ohm's recent article, in which he challenges legal scholars to utilize computer programming in the development of positive legal theory.[40] We believe that the process we outline in our online appendix, despite its shortcomings, is capable of answering many other important questions in positive legal theory.

One possible shortcoming present in many empirical studies is selection. As noted earlier, selection impacts the class of disputes that eventually reach the Court.[41] Some possible disputes never materialize, as would-be defendants may simply comply with the demands of the Service. Disputes that do enter the legal system may be resolved by a number of other mechanisms, including settlements, special letter rulings, and alternative jurisdictions; no written decision

[39] Appendix A is available on the supplemental website, as indicated on the title page of this article.

[40] Paul Ohm, *Computer Programming and the Law: A New Research Agenda*, 54 VILL. L. REV. 117 (2009). Professor Ohm's call has been echoed by a number of leading social scientists including Gary King, James H. Fowler, David Lazer and Myron Gutmann. *See* David Lazer et al., *Computational Social Science*, 323 SCIENCE 721 (2009); *see also Big Data: Community Cleverness Required*, 455 NATURE 1 (2008).

[41] There have been very credible attempts to confront case selection in a number of contexts. *See, e.g.*, Kevin M. Clermont & Theodore Eisenberg, *Appeal from Jury or Judge Trial: Defendants' Advantage*, 3 AM. L. & ECON. REV. 125 (2001); Jonathan P. Kastellec & Jeffrey R. Lax, *Case Selection and the Study of Judicial Politics*, 5 J. EMPIRICAL LEGAL STUD. 407 (2008). George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1 (1984); Peter Siegelman & John J. Donohue III, *The Selection of Employment Discrimination Disputes for Litigation: Using Business Cycle Effects to Test the Priest/Klein Hypothesis*, 24 J. LEGAL STUD. 427, 428 (1995).

is entered under the U.S. Tax Court in any of these cases. This selection issue does limit the qualitative claims that we can make, and, statements asserted throughout the remainder of this article are conditioned on reaching a written decision. In other words, we cannot extrapolate claims from the population of written decisions to all disputes. Despite this limitation, our analysis provides a significant amount of information on Tax Court jurisprudence.

Given the number of Tax Court decisions, previous empirical research has relied on the use of sampling techniques. Sampling methods attempt to infer properties about the population of decisions by reasoning from a smaller, strategically selected sample of decisions. Typically, researchers manually code each document in a small sample for a chosen set of variables. Recently, an increasing number of researchers have begun to apply computational methods in place of traditional hand-coding, allowing them to attack larger datasets.[42] Though automated methods of content analysis often result in less detail than hand-coding, the sampling that hand-coding requires also results in a loss of certainty. There is a tradeoff and the appropriate approach depends upon the relevant questions being considered. The goal of this initial inquiry is to push these computational methods far enough to study the entire population of decisions.

In order to uncover patterns in this population of decisions, we focus our analysis on the citations contained therein. The study of judicial citations has a rich history in legal scholarship, and theoretical and empirical work on this topic have become commonplace.[43]

[42] Two recent studies offer concrete examples of automated document coding. *See* Michael Evans et al., *Recounting the Courts? Applying Automated Content Analysis to Enhance Empirical Legal Research*, 4 J. EMPIRICAL LEGAL STUD. 1007 (2007); Michael Laver, Kenneth Benoit & John Garry, *Extracting Policy Positions from Political Texts Using Words as Data*, 97 AM. POL. SCI. REV. 311 (2003). The most recent of these studies notes that "political scientists in general and public law specialists in particular have only recently begun to exploit machine learning techniques" and that "computational techniques can potentially allow researchers to have the best of both worlds: reliable and detailed analyses of legal documents at a large scale." Evans et al., *supra* note 42, at 1009.

[43] *See, e.g.*, Michael Abramowicz & Emerson H. Tiller, *Citation to Legislative History: Empirical Evidence on Positive Political and Contextual Theories of Judicial Decision Making*, 38 J. LEGAL STUD. 419–43 (2009); Mita Bhattacharya & Russell Smyth, *The Determinants of Judicial Prestige and Influence: Some Empirical Evidence from the High Court of Australia*, 30 J. LEGAL STUD. 223 (2001); Stephen J. Choi & Mitu Gulati, *Bias in Judicial Citations: A Window into the Behavior of Judges?*, 37 J. LEGAL STUD. 87 (2008); Stephen J. Choi & Mitu Gulati, *Choosing the Next Supreme Court Justice: An Empirical Ranking of Judge Performance*, 78 S. CAL. L. REV. 23 (2004); Frank B. Cross et al., *Citations in the U.S. Supreme Court: An Empirical Study*

Furthermore, recent interdisciplinary scholarship with the social and physical sciences has produced interesting results relevant to the evolution of precedent,[44] the dynamics of individual case importance,[45] and even the entire jurisprudence of the entire Supreme Court.[46]

Nearly all previous citation studies of jurisprudence focus on case-to-case citations. Though network theory has been applied to other matters relevant to legal scholars,[47] no existing research has attempted to apply these techniques to a court whose focus is primarily statutory. As discussed in Part II above, the Tax Court is primarily considered to be legislative.[48] While the Court can and does cite precedent under certain conditions,[49] most cases on its docket are statutory in nature.

*of Their Use and Significance*, 2010 U. ILL. L. REV. 489 (2010); David Klein & Darby Morrisroe, *The Prestige and Influence of Individual Judges on the U.S. Courts of Appeals*, 28 J. LEGAL STUD. 371 (1999); Montgomery N. Kosma, *Measuring the Influence of Supreme Court Justices*, 27 J. LEGAL STUD. 333 (1998); William M. Landes, Lawrence Lessig & Michael E. Solimine, *Judicial Influence: A Citation Analysis of Federal Courts of Appeals Judges*, 27 J. LEGAL STUD. 271 (1998); William Landes & Richard Posner, *Legal Precedent: A Theoretical and Empirical Analysis*, 19 J.L. & ECON. 249 (1976); Richard Posner, *An Economic Analysis of the Use of Citations in the Law*, 2 AM. L. & ECON. REV. 381 (2000); David Walsh, *On the Meaning and Pattern of Legal Citations: Evidence from State Wrongful Discharge Precedent Cases*, 31 L. & SOC'Y REV. 337 (1997).

[44] *See generally* Michael J. Bommarito II, Daniel Martin Katz, Jon Zelner & James H. Fowler, *Distance Measures for Dynamic Citation Networks*, 389 PHYSICA A 4201, 4205–06 (2010); James H. Fowler & Sangick Jeon, *The Authority of Supreme Court Precedent*, 30 SOC. NETWORKS 16 (2008); E. A. Leicht et al., *Large-Scale Structure of Time Evolving Citation Networks*, 59 EUR. PHYSICAL. J. B 75 (2007).

[45] *See* Michael J. Bommarito II, Daniel Katz & Jon Zelner, *Law as a Seamless Web? Comparison of Various Network Representations of the United States Supreme Court Corpus (1791-2005)*, 12 CONF. ARTIFICIAL INTELLIGENCE & LAW PROC. 234 (2009), *available at* http://portal.acm.org/citation.cfm?id=1568234.1568270; Frank B. Cross, Thomas A. Smith & Antonio Tomarchio, *The Reagan Revolution in the Network of Law*, 57 EMORY L. J. 1227 (2008); Cross et al., *supra* note 43.

[46] James H. Fowler et al., *Network Analysis and the Law: Measuring the Legal Importance of Precedents at the U.S. Supreme Court*, 15 POL. ANALYSIS 324 (2007); Thomas A. Smith, *The Web of the Law*, 44 SAN DIEGO L. REV. 309 (2007).

[47] In addition to judicial decisions, it is also possible to model actors or institutions using network methods. *See, e.g.*, Daniel M. Katz et al., *Reproduction of Hierarchy? A Social Network Analysis of the American Law Professoriate*, J. LEGAL EDUC. (forthcoming 2011); Daniel M. Katz & Derek K. Stafford, *Hustle and Flow: A Social Network Analysis of the American Federal Judiciary*, 71 OHIO ST. L.J. 457 (2010).

[48] *See, e.g.*, Livingston, *supra* note 3, at 373.

[49] *See, e.g.*, Myron C. Grauer, *Justice O'Connor's Approach to Tax Cases: Could She Have Led the Court Toward a More Collaborative Role for the Judiciary in the Development of Tax Law?*, 39 ARIZ. ST. L.J. 69, 69–70 (2007) (highlighting the

Given the statutory nature of the Court, a case-to-case citation analysis would likely produce a distorted image of its jurisprudence. Therefore, we instead perform our citation analysis on case-to-statute citations, which we believe better characterize the subject matter of the Court's decisions. As described in the online appendix,[50] we design and apply a semi-supervised machine learning algorithm to extract over 244,000 case-to-statute citations from the 11,254 decisions in our dataset.

There are two important points to make about the features of this algorithm. First, for tractability, we consider statutory citations as citations to an entire Code section, not as citations to specific provisions below the section level. For example, citations to Code section 162(a) and section 162(b) are both coded as citations to 26 U.S.C. 162, despite the fact that (b) lists exceptions to (a). Though this choice clearly results in the loss of some detail, it allows us to better understand the general topic of citations; 162(a) and 162(b), while purposefully different, both consider trade and business expenses. Furthermore, interpreting the results of this study would not be possible, since there are hundreds of thousands of specific provisions in the Code. Second, we record the *number* of times that a case cites a statute, not just *whether* a case cites a statute; in other words, we code weighted edges in our network data. A case that cites 26 U.S.C. 162 fifteen times clearly has more to do with business expenses than a case that cites 26 U.S.C. 162 once, and these weights allow us to determine how important a specific statute actually is for a case. Without these weights, citation analysis could not distinguish between core legal issues and tangential references within a case.

## IV. ANALYZING THE WRITTEN DECISION DATASET

In this part, we analyze our Tax Court decision data in three ways: first, we examine trends in the broad population of decisions over time. Second, we narrow our focus to the sections that are most frequently cited within our data, allowing us to identify the focus of the Court's jurisprudence. Third, we add depth to these analyses by using the case-to-statute citation network to understand the relationship between sections of the Code.

importance of Supreme Court tax decisions).

[50] Appendix A is available on the supplemental website, as indicated on the title page of this article.

### *A. Findings on the Population of Decisions*

As discussed in Part II, there are three types of decisions issued by the U.S. Tax Court: Tax Court opinions, summary opinions and memorandum opinions.[51] Given that our focus is on jurisprudence more generally, not just precedential decisions, we consider all of these opinion types.[52] Figure 1 displays the number of decisions between 1990 and 2008, broken down by type of decision. The first observation is that the opinion types occur at different rates. Memorandum opinions are more common than summary opinions and summary opinions are more common than Tax Court opinions for every year in our dataset. A second observation is that the number of decisions issued per year has declined steadily, driven primarily by a decrease in the number of memorandum opinions. In 1990, 700 memorandum opinions and 100 Tax Court opinions were published; by 2008, these numbers had fallen to 250 and 50 respectively. Though the court only began to publish summary opinions in 2001, their number has ranged between 150 and 200 consistently.

[51] As detailed in Part II, *supra*, neither summary nor memorandum opinions carry precedential value. Memorandum opinions are limited in their substantive scope, while summary opinions, first available electronically in 2001, involve deficiencies of less than $50,000 per year. For more on the distinctions between the types of written opinions issued by the Tax Court, see *supra* notes 29-34.

[52] Our study does not, however, include unpublished opinions. For more on unpublished opinions, see Schneider, *supra* note 7, at 333.

FIGURE 1. NUMBER OF DECISIONS PER YEAR, BY TYPE

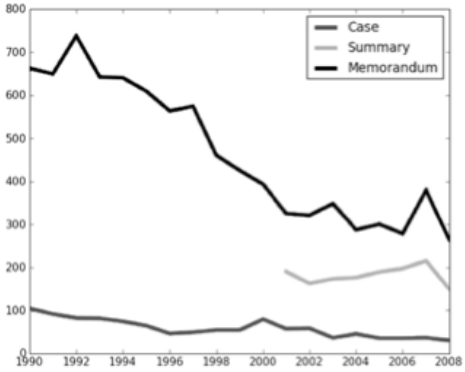



Table 1 presents a basis summary of the 11,254 Tax Court decisions in our dataset. Similar to Figure 1 above, there are a number of relevant observations. The most striking of these findings is that nearly half of all Code sections were not cited even once. This statistic is a product of the significant right-skew in the distribution of citation frequency. While the median section was cited twenty-one times between 1990 and 2008, the mean number of citations per case was 113.

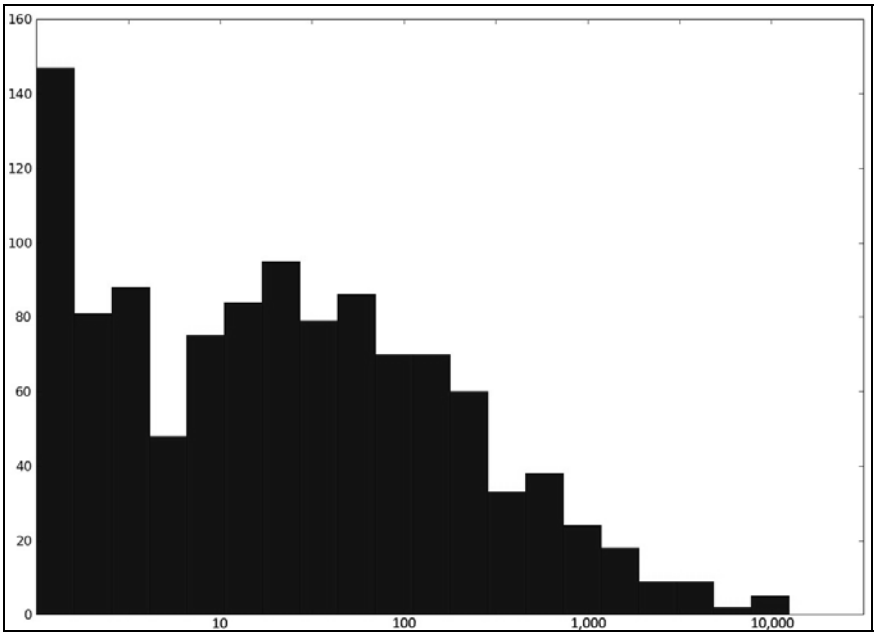
TABLE 1. SUMMARY OF TAX COURT DECISIONS

| | |
|---|---|
| Total Number of Sections in 26 U.S.C. | 2149 |
| Total Number of Citations in Dataset | 244,461 |
| Average Number of Citations per Section | 113 |
| Median Number of Citations per Section | 21 |
| Number of Sections Receiving One or More Citations | 1121 |
| Number of Sections Receiving Zero Citations | 1028 |

Figure 2 plots the distribution of citations received on log-linear[53] axes for sections that received at least one citation. This figure clearly demonstrates that the distribution is right-skewed. In fact, five sections receive nearly 10,000 citations each, while over 140 sections receive only one or two citations. These results indicate that a very large proportion of citations are to a small number of Code sections and that the burden is not uniform across portions of the Code.

[53] The tick marks on the x-axis increase at an exponential rate, beginning with $10^0$ and increasing to $10^1$, $10^2$, $10^3$, and $10^4$.

FIGURE 2. LOG-LINEAR DISTRIBUTION OF CITATIONS, CONDITIONED ON RECEIVING AT LEAST ONE CITATION




*B. Findings on the Twenty-Five Most-Cited Sections*

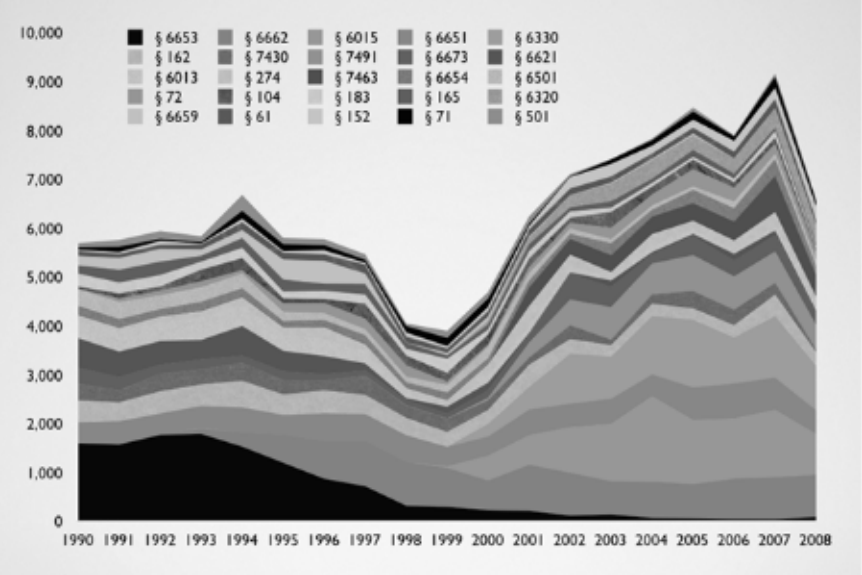
The results in Table 1 and Figure 2 suggest that the Tax Court pays a disproportionate amount of attention to a small number of sections of the Code. While some of these citations are procedural, many are not. Therefore, an analysis of Tax Court jurisprudence should likewise focus on these important sections. In order to determine which sections receive the most attention, we count the number of citations received over the period from 1990 to 2008 and rank the sections of the Code by this count. The results are shown in Table 2, which displays the twenty-five most cited sections of the Code in our dataset. These twenty-five top sections include a mixture of procedural and substantive sections, confirming the views likely held by various academics and practitioners.

TABLE 2. TWENTY-FIVE MOST-CITED SECTIONS OF THE CODE

| *Rank* | *Section Number* | *Subject Matter* |
|---|---|---|
| 1 | 6653 | Civil fraud penalty |
| 2 | 6662 | Underpayment penalty |
| 3 | 6015 | Innocent spouse relief |
| 4 | 6651 | Failure to file penalty |
| 5 | 6330 | Collection due process hearing |
| 6 | 162 | Trade or business expenses |
| 7 | 7430 | Awarding of costs and fees |
| 8 | 7491 | Burden of proof |
| 9 | 6673 | Sanctions and costs |
| 10 | 6621 | Determination of rate of interest |
| 11 | 6013 | Joint returns |
| 12 | 274 | Entertainment expenses |
| 13 | 7463 | Disputes involving $50,000 or less |
| 14 | 6654 | Failure to pay estimated tax penalty |
| 15 | 6501 | Limitations on assessment and collection |
| 16 | 72 | Annuities; endowments; life insurance |
| 17 | 104 | Compensation for injuries or sickness |
| 18 | 183 | Hobbies |
| 19 | 165 | Business losses |
| 20 | 6320 | Collection due process hearing |
| 21 | 6659 | Valuation overstatement penalty (repealed in 1989) |
| 22 | 61 | Gross income defined |
| 23 | 152 | Dependant defined |
| 24 | 71 | Alimony |
| 25 | 501 | Tax-exempt corporations |

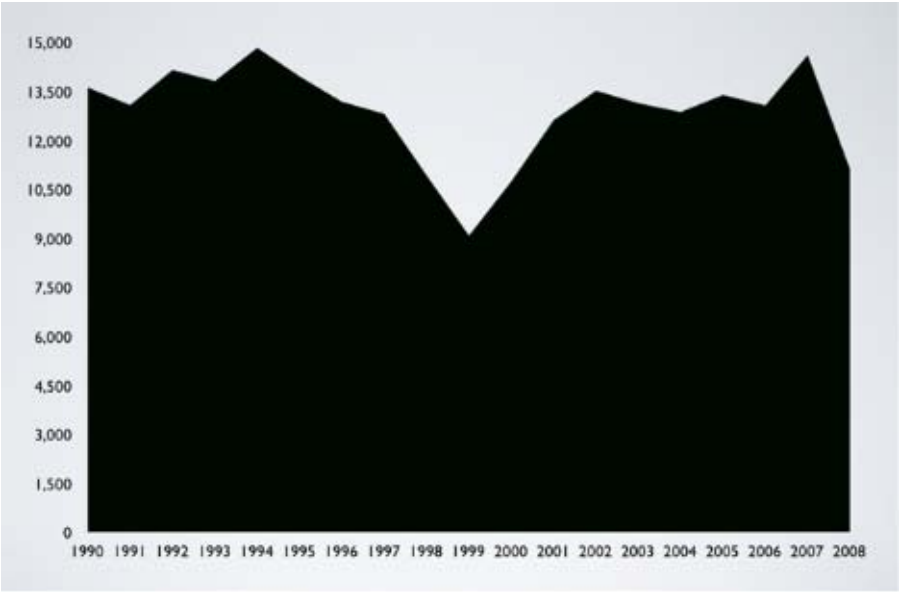
Given that the results in Table 2 represent nearly two decades of written decisions, we believe it is useful to examine the data for any trends over time. This analysis allows us to identify system level changes in either tax disputes or the way in which the court characterizes these disputes. Figure 3 provides a stack graph that shows the yearly citation rates for the twenty-five most cited sections in Table 2. This figure presents a significant amount of information and requires some instruction to interpret. The order of the regions in the figure, from bottom to top, corresponds to the order of the legend, right to left. For example, section 6653 is the most commonly cited section in our dataset. The number of citations to section 6653 is shown in the bottommost region in the chart, and the label for section 6653 is upper-leftmost in the legend. The next most commonly cited section is 6662, which is therefore plotted just above section 6653 and whose label occurs just to the right. Using this logic, each of the twenty-five most cited sections can be identified in the figure.

FIGURE 3. NUMBER OF CITATIONS PER YEAR, TWENTY-FIVE MOST CITED SECTIONS




A cursory analysis of Figure 3 reveals that the rate of citation for these sections changes dramatically in 1999. This observation is confirmed in Figure 4, which plots the total number of citations across all sections from 1990 to 2008. We expand in much greater detail on this phenomenon in Part V.A., where we suggest that this transition represents the responsiveness of the court to legislative action.

FIGURE 4. NUMBER OF CITATIONS PER YEAR, TOTAL




### *C. Findings in the Network of Case-to-Statute Citations*

The above analyses are based simply on counting the number of times that sections have been cited. However, it is unlikely that a case invokes only one section of the Code. In this analysis, we focus on the number of times that sections are cited together within a case. We apply the tools of network analysis to uncover various higher-level relationships between sections of the Code.

Table 3 shows, for each of the ten most-cited sections, which sections they are most commonly invoked with. This analysis can be described as "cases that cited this section also cited. . .," similar to the "people who bought this item also bought" recommendations popularized by Amazon.com.[54] For example, section 6653 most often occurs in concert with section 6621, followed by section 162. Section 6662 likewise occurs most frequently in opinions with section 7491,

[54] Though this technology is often called "automated recommendation," the origins of Amazon's technology are in "collaborative filtering." While prior approaches relied upon matching the characteristic of individuals (person to person), Amazon's technology relied upon matching similar items (item to item). *See* Greg Linden et al., *Amazon.com Recommendations: Item-to-Item Collaborative Filtering*, 7 INTERNET COMPUTING 76 (2003). For a technical treatment of the question see, e.g., John S. Breese et al., *Empirical Analysis of Predictive Algorithms for Collaborative Filtering*, 14 CONF. UNCERTAINTY IN ARTIFICIAL INTELLIGENCE PROC. 43 (1998); Ken Goldberg et al., *Eigentaste: A Constant Time Collaborative Filtering Algorithm*, 4 J. INFO. RETRIEVAL 133 (2001).

followed by section 6330.

TABLE 3. SECTIONS AND THEIR MOST CO-CITED SECTIONS

| | *Co-Citation Rank* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Section* | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 |
| 6653 | 6621 | 162 | 7430 | 6673 | 6651 | 7491 | 6330 | 6015 | 6662 |
| 6662 | 7491 | 6330 | 6015 | 6651 | 6673 | 7430 | 162 | 6621 | 6653 |
| 6015 | 6330 | 7491 | 6673 | 6651 | 6662 | 7430 | 162 | 6621 | 6653 |
| 6651 | 7491 | 6330 | 6015 | 6662 | 6673 | 7430 | 162 | 6621 | 6653 |
| 6330 | 7491 | 6015 | 6673 | 6651 | 6662 | 7430 | 162 | 6621 | 6653 |
| 162 | 6653 | 6621 | 7430 | 6651 | 6673 | 6662 | 6330 | 7491 | 6015 |
| 7430 | 6653 | 6621 | 162 | 6651 | 6673 | 6330 | 7491 | 6015 | 6662 |
| 7491 | 6330 | 6015 | 6673 | 6651 | 6662 | 7430 | 6621 | 162 | 6653 |
| 6673 | 7491 | 6330 | 6015 | 6651 | 6662 | 7430 | 6621 | 6653 | 162 |
| 6621 | 6653 | 162 | 7430 | 6673 | 6651 | 7491 | 6015 | 6330 | 6662 |

Once we acknowledge the importance of section co-citation, a number of questions are immediately raised. For example, which sections occur infrequently overall but play an important co-citation role? Do these co-citations imply that one section depends on another or are these sections acting cooperatively? Do "central" sections tend to be more procedural or substantive?

In order to address these questions, we need to use tools from empirical network analysis. Though network science has its roots in mathematical sociology, much of the recent research has been offered by physics and mathematics.[55] In addition, legal scholars and social scientists have applied network theory to explore a wide class of substantive questions.[56] We follow this trend, as described in detail in

[55] *See, e.g.*, Albert-László Barabási & Réka Albert, *Emergence of Scaling in Random Networks*, 286 SCI. 509 (1999); Aaron Clauset, Cristopher Moore & Mark E. J. Newman, *Hierarchical Structure and the Prediction of Missing Links in Networks*, 453 NATURE 98 (2008); Michelle Girvan & Mark E. J. Newman, *Community Structure in Social and Biological Networks*, 99 PROC. NAT'L ACAD. SCI. U.S. 7821 (2002); Gergely Palla, Albert-László Barabási & Tamás Vicsek, *Quantifying Social Group Evolution*, 446 NATURE 664 (2007); Duncan J. Watts & Steven H. Strogatz, *Collective Dynamics of 'Small World' Networks*, 393 NATURE 440 (1998).

[56] *See, e.g.*, Fowler *supra* note 44; Fowler *supra* note 46; Gregory Todd Jones et al., *Homogeneity of Degree in Complex Social Networks as a Collective Good*, 24 GA. ST. U. L. REV. 929 (2008); Daniel M. Katz, Derek K. Stafford & Eric Provins, *Social Architecture, Judicial Peer Effects and the "Evolution" of the Law: Toward a Positive Theory of Judicial Social Structure*, 23 GA. ST. U. L. REV. 975 (2008); David G. Post &

the online appendix.

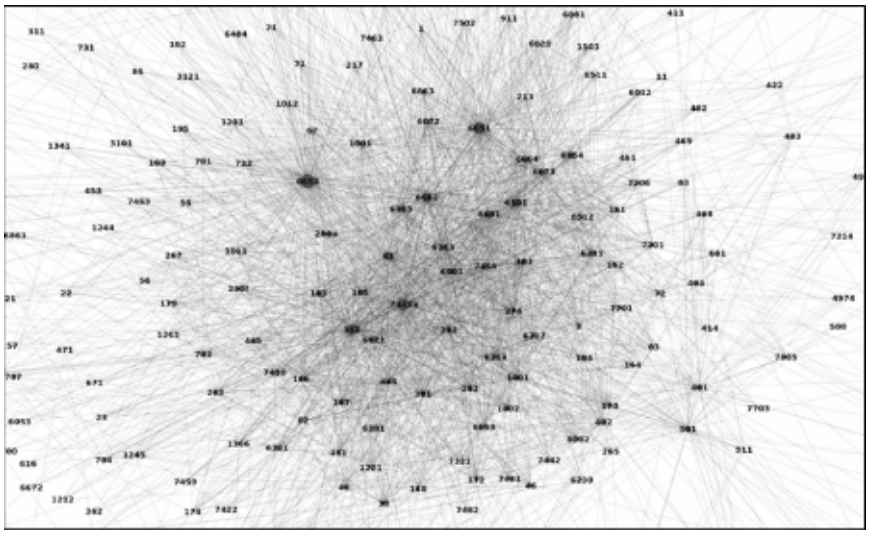
First, we construct a bipartite network of case-to-statute citations. We then create a weighted single-mode projection of this network that encodes statute co-citation. Each node in this network represents a section of the Code and is drawn as a circle. These circles are larger for sections that are co-cited more often. Each edge in this network represents co-citation between two sections of the Code. Sections that are co-cited more frequently are connected by thicker edges. Furthermore, to emphasize important relationships, we remove edges that represent co-citation that occurs below some threshold rate.

Figure 5 shows a network visualization of this co-citation network, where co-citations that occurred fewer than five times in our dataset are not shown. This figure shows a close-up frame of the center of the network. Though many of these central sections appear in the list of twenty-five most cited sections in Part IV.A., a number of these sections did not appear in the above list. For example, both sections 1 and 2 appear in this central region of the network. This indicates that some sections may play an important role even though they do not occur as frequently as other sections. However, we cannot identify these important sections by relying only on this network visualization.[57]

Michael B. Eisen, *How Long is the Coastline of the Law? Thoughts on the Fractal Nature of Legal Systems*, 29 J. LEGAL STUD. 545 (2000); Smith, *supra* note 46; Katherine J. Strandburg et al., *Law and the Science of Networks: An Overview and an Application to the "Patent Explosion*," 21 BERKELEY TECH. L.J. 1293 (2006); *see also* Frank B. Cross, Thomas A. Smith & Antonio Tomarchio, *Determinants of Cohesion in the Supreme Court's Network of Precedents* (San Diego Legal Studies, Paper No. 07-67, 2006), *available at* http://papers.ssrn.com/sol3 /papers.cfm?abstract_id=924110; Katz & Stafford, *supra* note 47.

[57] *See, e.g.*, Peter Eades, *A Heuristic for Graph Drawing*, 42 CONGRESSUS NUMERANTIUM 149 (1984); Ivan Herman et al., *Graph Visualization and Navigation in Information Visualization: A Survey*, 6 IEEE TRANSACTIONS ON VISUALIZATION & COMPUTER GRAPHICS 24 (2000).

FIGURE 5. SECTION CO-CITE NETWORK, CENTER ZOOM, THRESHOLD = 5



We are interested in sections that are "central" to understanding the Code's statutes. The simplest form of centrality is the "degree" of each vertex, which is equivalent to the number of connections to and from that vertex. Although degree can be a useful measure of centrality, a simple count of co-citations does not capture the higher-order relationships between sections. A number of methods have been developed that do appropriately consider the recursive nature of concept dependence. We apply Professor Kleinberg's Hubs and Authorities ("HITS") algorithm, a method that can identify structurally important nodes in a weighted network.[58] Similar to Google's PageRank algorithm, HITS assumes the existence of two important types of nodes — hubs and authorities. As applied to our co-citation network, a hub section is a section to which many other key sections connect, while an authority section is a section upon which major sections rely.[59] Table 4 ranks top sections using the Hubs and Authorities measure. The left half of the table displays the twenty

[58] *See* Jon M. Kleinberg, *Authoritative Sources in a Hyperlinked Environment*, 46 J. ASS'N FOR COMPUTING MACHINERY 604 (1999).

[59] Consider the description of the algorithm offered by prominent networks scholar James Fowler and his co-authors. Applying their description to this network, let each section's receiving capacity scores be $x_i = a_{1i} y_1 + a_{2i} y_2 + \ldots + a_{ni} y_n$ and let each section's sending capacity be $y_i = a_{1i} x_1 + a_{2i} x_2 + \ldots + a_{ni} x_n$. These equations produce $x = A^T y$ and $y = Ax$ in matrix format. These equations converge to the fixed points $\lambda x^* = A^T A x^*$ *and* $\lambda y^* = A A^T y^*$ where is the principle eigenvector. *See* James Fowler et al., *Social Networks in Political Science: Hiring and Placement of Ph.D.s, 1960-2002*, 40 PS: POL. SCI. & POL. 729, 730 (2007).

sections with the highest hub scores. The right half of the table displays the twenty sections with the highest authority scores. Note that the right column of each half also shows the rank of each section by number of total citations. These hub and authority scores in Table 4 demonstrate both similarities and differences between "centrality" and frequency of citation as shown in Table 2.

TABLE 4. SECTIONS WITH HIGHEST HUB AND AUTHORITY SCORES

| *Section* | *Hub Score* | *Citation Rank* | *Section* | *Authority Score* | *Citation Rank* |
|---|---|---|---|---|---|
| 6662 | 1 | 1 | 7491 | 1 | 7 |
| 6653 | 0.99 | 3 | 6651 | 0.94 | 3 |
| 6651 | 0.97 | 5 | 6662 | 0.9 | 2 |
| 162 | 0.95 | 21 | 6330 | 0.89 | 4 |
| 61 | 0.93 | 14 | 7463 | 0.79 | 12 |
| 6501 | 0.91 | 7 | 6320 | 0.76 | 19 |
| 7491 | 0.89 | 26 | 274 | 0.71 | 11 |
| 7443a | 0.88 | 41 | 6213 | 0.69 | 29 |
| 6664 | 0.82 | 84 | 6664 | 0.68 | 41 |
| 301 | 0.8 | 63 | 6001 | 0.66 | 14 |
| 6601 | 0.79 | 9 | 6015 | 0.66 | 2 |
| 6621 | 0.78 | 19 | 6212 | 0.65 | 32 |
| 165 | 0.78 | 29 | 6501 | 0.63 | 14 |
| 6213 | 0.77 | 110 | 61 | 0.63 | 21 |
| 7701 | 0.77 | 96 | 6404 | 0.63 | 27 |
| 6214 | 0.77 | 11 | 162 | 0.62 | 5 |
| 6013 | 0.77 | 30 | 6211 | 0.61 | 66 |
| 163 | 0.76 | 38 | 72 | 0.6 | 15 |
| 401 | 0.75 | 66 | 855 | 0.6 | — |

## V. INTERPRETATIONS AND DISCUSSION

While this article's primary contribution is its open dataset,[60] this part discusses several interpretations that could be drawn from the data in Part IV. We expect and encourage other scholars studying the

[60] Though uncommon in traditional legal scholarship, dataset papers are common in social and physical sciences. The purpose of a dataset paper is to introduce the data, explain its collection or construction, and present a number of initial findings. These papers serve as the basis for future research in many fields. The full dataset is available online at http://computationallegalstudies.com/VTR-tax-court-article/.

Tax Court to carry out independent studies using this dataset. This part presents possible examples of future research.

One possible interpretation, discussed in Part V.A., is that the Tax Court is immediately responsive to certain types of legislative change. A second interpretation, discussed in Part V.B., argues that the Tax Court deals with issues that are inherently different from the issues that Congress addresses through tax legislation. This interpretation suggests that the Code separated into two bodies of law — a legislated Code and a litigated Code. The legislated Code, the realm of lobbyists and Congressmen, includes sections that focus on international tax, complex transactions, corporate tax, and capital gains; in general, these portions of the Code apply to corporate or higher income taxpayers. The litigated Code, as demonstrated by our data, applies mainly to individual taxpayers. Provisions in the litigated Code tend to focus on deductions for business expenses, the definition of the family unit, and workers compensation and insurance payments. A third interpretation, discussed in Part V.C., states that the Court considers a wider range of statutes when considering legal questions related to corporations or complicated forms of compensation. This conclusion is drawn from the case-to-statute citation network, where sections of the legislated Code are more structurally central. A fourth and final interpretation of our data, presented in Part V.D., is that the Tax Court, unlike most courts, does not exhibit an "access to court hurdle." The Court's openness to pro se litigants may compensate for lack of access to legislative remedies, though this openness may also come at the cost of a higher caseload.

The interpretations we present here, though subject to additional research, suggest possible uses for both academics and policy makers. We remind the reader that these interpretations are given primarily as examples and should be subjected to future research.

### *A. Judicial Responsiveness to Legislative Changes*

Figure 3 shows the trend in statutory citation over the past two decades. As discussed above, this figure highlights how many cites per year are received by the twenty-five most cited Code sections. The most striking change in this figure occurs between 1999 and 2005, when the number of citations contained in the top twenty-five sections doubles. There are two clear observations: first, more work was done by fewer sections. Second, a number of entirely new Code sections jump into the top twenty-five. These newly legislated sections include sections 6015, 6320, 6330, and 7491. Section 6015 was cited so

frequently between 1999 and 2008 that it is the third most-cited section between 1990 and 2008.

Practitioners and academics will recognize these newly legislated sections as provisions created by Internal Revenue Service Restructuring and Reform Act of 1998 ("the 1998 Act"). The 1998 Act was a result of years of criticism of the Service and tax administration in the wake of the 1986 Reform Act, and it emerged from several months of hearings detailing allegedly rampant abuse and injustice.[61] Among the many procedural changes it instituted, the 1998 Act established innocent spouse relief (section 6015), burden shifting (section 7491), and due process hearings (sections 6320 and 6330). Although other tax legislation was passed in the years prior to 1999,[62] the increase shown in Figure 3 is likely due to the 1998 Act, rather than other legislation such as the Taxpayer Relief Act of 1997.[63]

Commentators have argued that the 1998 Act did not substantially alter the Court through its procedural changes and the value of these shifts.[64] Figure 3 indicates, however, that previous arguments have missed a significant trend in statutory citation. Even if

[61] *See* Bryan T. Camp, *Tax Administration as Inquisitorial Process and the Partial Paradigm Shift in the IRS Restructuring and Reform Act of 1998*, 56 FLA. L. REV. 1, 80–81 (2004). Note that many of the allegations made in the hearings were subsequently disputed or discredited. *See* Danshera Cords, *How Much Process is Due? I.R.C. Section 6320 and 6330 Collection Due Process Hearings*, 29 VT. L. REV. 51, 52 (2004).

[62] *See, e.g.*, STAFF OF JOINT COMM. ON TAXATION, 105TH CONG., GENERAL EXPLANATION OF TAX LEGISLATION ENACTED IN 1997 (Comm. Print 1997).

[63] This statement is based on the fact that the increase between 1999 and 2005 is driven primarily by sections that were introduced in the 1998 Act. If the increase were due to either the Taxpayer Relief Act of 1997 or some other act, then provisions within these acts would be noticeable in the figure.

[64] *See, e.g.*, Camp, *supra* note 61, at 3, 108-4 (suggesting that Congressional ignorance of the inquisitorial nature of the Internal Revenue Service (Service) led to problematic changes in the 1998 Act); Cords, *supra* note 61, at 108 (concluding that the courts' interpretation of the collection due process provisions may have left taxpayers with little more recourse or process than before); Steve R. Johnson, *The Dangers of Symbolic Legislation: Perceptions and Realities of the New Burden-of-Proof Rules*, 84 IOWA L. REV. 413 (1999) (stating that, although the passage of section 7491 created more problems for taxpayers, it did not change much in terms of outcome); Philip N. Jones, *The Burden of Proof 10 Years After the Shift*, 121 TAX NOTES 287 (Oct. 20, 2008) (arguing that the passage of section 7491 has had no impact on the outcome of tax litigation); John A. Lynch, Jr., *Burden of Proof in Tax Litigation under I.R.C. Section 7491 — Chicken Little was Wrong!!*, 5 PITT. TAX REV. 1, 58 (2007) (concluding that section 7491 did not change much for the outcome of cases applying the new burden of proof).

the outcomes of cases have not changed as a result of the 1998 Act, the citations within the Tax Court's opinions have changed significantly. As shown in Figure 1, the number of decisions issued by the Tax Court has decreased slightly over the same period that these citations have risen. By normalizing Figure 3 by the number of cases in Figure 1, we can conclude that Tax Court opinions include many more citations after the 1998 Act. Furthermore, provisions created by this 1998 Act account for a large portion of this increase. In other words, even if the 1998 Act did not change *what* the Tax Court decided, it did significantly change *how* the Court reached its conclusions.

Citations to provisions created in the 1998 Act began almost immediately, highlighting the responsiveness of litigators to legislative action. Beginning in 1999, sections 6015, 6320, 6330, and 7491 all appear in Figure 3, meaning either that taxpayers immediately brought cases under these new sections or that the Tax Court immediately incorporated these sections into its opinions. Furthermore, the Tax Court could apply these sections to cases filed before the final passage of the 1998 Act. Section 6015, for example, applied to any tax liability arising after July 22, 1998 (the date of enactment of the 1998 Act), as well as any tax liability "arising on or before this date but remaining unpaid as of this date."[65] The retroactive nature of the 1998 Act significantly decreased the lag between the 1998 Act's passage and its incorporation into the Tax Court's decisions.

As Figure 4 highlights, the Tax Court also experienced a decrease in statutory citations immediately before the passage of the 1998 Act. This decrease may have occurred due to the debates over the competence of the Service.[66] For example, the Service may have been less likely to declare deficiencies, taxpayers may have filed a claim with the Tax Court when they otherwise would not have, or the Court

[65] Melvyn B. Frumkes, *Effect of TRA 1997 and RARA 1998 on Divorce Taxation*, 16 J. AM. ACAD. MATRIMONIAL LAW. 121, 140 (1999).

[66] For more on the criticisms leveled at the Service during the 1997 and 1998 Senate Finance Committee hearings, see Heather B. Conoboy, *A Wrong Step in the Right Direction: The National Taxpayer Advocate and the 1998 IRS Restructuring and Reform Act*, 41 WM & MARY L. REV. 1401, 1401 (referring to "the horror stories" that showed "an organization plagued by delay, inefficiency, and abuse"); Cords, *supra* note 61, at 51 (stating that the tone of the hearings "reflected some constituencies' extreme dissatisfaction with the functioning of the IRS"); Johnson, *supra* note 64, at 447 ("A parade of witnesses — taxpayers, taxpayers' representatives, and IRS agents — testified (sometimes anonymously and behind screens) to a litany of IRS wrongdoing.").

may have relied more on judicial citations due to greater public faith in judicial interpretations. This decrease may also have been a response to legislative action like the Second Taxpayer Bill of Rights of 1996, or a combination of legislation, taxpayer and Tax Court action, and self-censorship by the Service.

Though the Court seems quick to respond to the 1998 Act, this it may also have a very long memory in some cases. For example, although section 6659 was repealed in 1989, it remains one of the twenty-five most cited sections during the twenty years following its repeal. While the number of citations has decreased sharply following its initial repeal, it has taken nearly two decades for citations to section 6659 to decrease to zero. There were a total of fourteen citations in the last three years of the dataset, as compared to 705 citations over the first three years after its repeal. This difference between positive and negative responsiveness is not surprising, however. Just as newly passed Code sections may apply retroactively to cases already before the Court, newly repealed Code sections may still apply to cases that are not yet decided.

Readers may argue that the spike in citations after the passage of the 1998 Act and the inclusion of sections such as 6015, 6320, 6330, and 7491 are to be expected. The 1998 Act focused more on Tax Court procedure than other tax legislation, and the provisions that appear in written opinions immediately after 1998 are specifically focused on Tax Court procedure. The fact that the Court cited these sections does not indicate anything about the substance of those citations. It may be that the Court's citation of these sections did not change any outcomes, and that the Court merely cited them in dismissing taxpayers' claims under the new sections. Alternatively, the Court may merely be signaling its awareness of the new burden-shifting provision, which had been very publicly included in legislation after hearings on the behavior of the Service.[67] Furthermore, our data does not allow us to determine whether a specific citation to Section 7491 shifts the burden onto the Service or the taxpayer. The same can be said for the other sections from the 1998 Act; though sections 6015, 6320, and 6330 were cited frequently, the exact context of their citation is not analyzed in this study. Further research into the Tax Court's responsiveness to legislation, as well as the increase in decisions after 1998, requires both more detailed content analysis and a comparison to the responsiveness of the Court in earlier periods.

[67] *See supra* note 64 and associated text.

### *B. The Face of Tax Court Written Opinions*

Figure 3 serves not only to highlight the impact of the 1998 Act, but also to provide empirical evidence of the most-cited sections in the Code. The twenty-five sections presented in Table 2 and Figure 3 are the sections that have been cited the most in Tax Court opinions from 1990 through 2008. Although we cannot observe disputes that did not result in written decisions, this data provides an outline of the most common statutory issues before the Tax Court.

The majority of the top twenty-five sections are procedural. Fifteen of the twenty-five address issues such as collections, interest calculation, penalties, information and returns, and judicial proceedings. The remaining ten sections, however, shed light on the types of cases that result in Tax Court opinions. These sections are, from most-cited to least-cited: (i) section 162, on deductions for trade or business expenses, (ii) section 274, on disallowance of certain entertainment expenses, (iii) section 72, on annuities and endowment and life insurance contracts, (iv) section 104, on compensation for injuries or sickness, (v) section 183, on activities not engaged in for profit, (vi) section 165, on deductibility of business losses, (vii) section 61, on the definition of gross income, (viii) section 152, on the definition of dependent, (ix) section 71, on alimony and separate maintenance payments, and (x) section 501, on tax exemption.

Much has been written about the large number of pro se litigants who represent themselves before the Tax Court.[68] Our findings about the subjects of Tax Court opinions may add depth to the picture of what cases fill the Tax Court's docket. Not only do the top twenty-five most-cited sections include the substantive sections discussed above, they also include sections 6320 and 6330, which provide for lien and collection due process hearings, and sections 6013 and 6015, which address joint filing and innocent spouse relief. Notably, list of the most-cited sections is striking for what it does not include — no sections addressing capital gains or losses, no sections addressing tax shelter reporting or complex transactions, and no sections addressing foreign investment. The sections that are cited most frequently deal with the distinction between personal and business expenses, with family relationships, and with forms of income that are earned by individuals. One way of interpreting this distinction is that the sections

[68] *See, e.g.*, Charles A. Borek, *Social Science Explanations for Disparate Outcomes in Tax Court Abuse of Discretion Cases: A Tax Justice Perspective*, 33 CAP. U. L. REV. 623, 686 (2005) (citing articles estimating that between 43% and 60% of Tax Court petitions are filed by pro se taxpayers).

that are cited most frequently are those that affect individual taxpayers, rather than large corporations or taxpayers involved in highly structured transactions. Paired with the evidence of the high percentage of pro se litigants before the Tax Court, this finding suggests that the Tax Court's docket is focused on issues of personal taxation, rather than corporate or international taxation.

At first glance, this finding may not seem surprising. First, the lack of a prepayment requirement and the high percentage of pro se litigants suggest that the Tax Court is likely to decide a significant number of cases that involve lower income taxpayers who are not party to more complicated transactions. Second, many of the most-cited sections require fact-intensive inquiries.[69] Third, as discussed in Part V.A., our dataset only shows the frequency of citation, not the context of those citations. It is therefore possible that many sections, such as sections granting the Court jurisdiction or establishing penalties and interest, are frequently discussed in passing but are not core issues in the case. Some sections, such as section 501, may not even be invoked as legal citations; tax-exempt organizations are often referred to as "501(c)(3) organizations," and the term may arise in that context even if the case does not interpret section 501. Fourth, even if the number of written opinions is skewed toward individual, smaller-income taxpayers, this population likely makes up the majority of all taxpayers. Thus, it is possible that their rate of litigation is actually proportional to their representation among taxpayers more generally.

Despite these critiques, our analysis of the most-cited Code sections does suggest a separation between the content in the Tax Court's written opinions and the focus of tax legislation. Major tax legislation passed between 1990 and 2008 modified hundreds of Code sections. In 1995 and 1996, for example, Congress passed the Taxpayer Bill of Rights 2, the Small Business Job Protection Act of 1996, the Health Insurance Portability and Accountability Act of 1996, and the Personal Responsibility and Work Opportunity Reconciliation Act of 1996, along with provisions on self-employed health insurance and specific tax benefits for individuals performing

[69] The seeming requirement of fact-based inquiries does not distinguish the most-cited sections from other, less-cited sections of the Code. Complex transactions that raise questions about their legality also require significant fact-finding. *See*, *e.g.*, Long Term Capital Holdings v. United States, 330 F. Supp. 2d 122 (2004). This is not sufficient to push the underlying Code sections into the group of most-cited sections in Table 2.

services in certain hazardous duty areas.[70] Nearly two hundred Code sections were introduced or amended during these two years, and these sections ranged from narrow provisions, such as reporting requirements for purchasers of fish, to broader reforms, like rules affecting S corporations and medical savings accounts.[71] While many of these modifications were merely corrections or clarifications of earlier legislation, they still required Congressional time and effort, thereby providing a sense of the focus of the legislative branch. Nearly every Congress has passed major legislative changes to the Internal Revenue Code. The Joint Committee on Taxation, which publishes a general explanation of major tax legislation (known as the "Bluebook"), released Bluebooks in 1996, 1997, 1998, 2001, 2003, 2005, 2007, and 2009.[72] In other words, recent Congresses have been quite active in the tax law, modifying and adding hundreds of Code sections every few years.

While not surprising to those who follow tax policy debates,[73] the frequency of tax legislation highlights a gap between legislative action and the written opinions of the Tax Court. If Congress regularly modifies large portions of the Internal Revenue Code, then the sections most often cited by the Tax Court should change substantially every year. However, as we show in Part IV.A., this is not true. Given the size of the Code, the percentage of Code sections that are cited

[70] STAFF OF JOINT COMM. ON TAXATION, 104TH CONG., GENERAL EXPLANATION OF TAX LEGISLATION ENACTED IN THE 104TH CONGRESS (Comm. Print 1996).

[71] *Id.*

[72] STAFF OF JOINT COMM. ON TAXATION, 111TH CONG., GENERAL EXPLANATION OF TAX LEGISLATION ENACTED IN THE 110TH CONGRESS (Comm. Print 2009); STAFF OF JOINT COMM. ON TAXATION, 110TH CONG., GENERAL EXPLANATION OF TAX LEGISLATION ENACTED IN THE 109TH CONGRESS (Comm. Print 2007); STAFF OF JOINT COMM. ON TAXATION, 109TH CONG., GENERAL EXPLANATION OF TAX LEGISLATION ENACTED IN THE 108TH CONGRESS (Comm. Print 2005); STAFF OF JOINT COMM. ON TAXATION, 108TH CONG., GENERAL EXPLANATION OF TAX LEGISLATION ENACTED IN THE 107TH CONGRESS (Comm. Print 2003); STAFF OF JOINT COMM. ON TAXATION, 107TH CONG., GENERAL EXPLANATION OF TAX LEGISLATION ENACTED IN THE 106TH CONGRESS (Comm. Print 2001); STAFF OF JOINT COMM. ON TAXATION, 105TH CONG., GENERAL EXPLANATION OF TAX LEGISLATION ENACTED IN 1998 (Comm. Print 1998); STAFF OF JOINT COMM. ON TAXATION, *supra* note 62; STAFF OF JOINT COMM. ON TAXATION, *supra* note 70.

[73] *See, e.g.,* Tom Herman, *And the Best Tax Preparation Program Is. . .*, WALL ST. J., Mar. 19, 2008, at D1 ("But even the best programs can't handle every situation or prevent do-it-yourselfers from making costly mistakes, thanks to the ever-growing complexity of our tax laws. To make matters worse, a flurry of tax-law changes, Internal Revenue Service rulings and court decisions last year have added even more layers of complexity.").

often by the Tax Court is extremely small; a small number of sections are cited very often, and the network of citations is structured around a few central sections. This could mean that the Code is effectively broken into two tax codes.[74] Although tax is allegedly less judicial, one possible understanding of tax law is that it is divided into a legislated Code and a litigated Code. The legislated Code changes significantly with every Congress. Year in and year out, modifications are made to corporate taxation, international taxation, tax abuse provisions, and provisions that affect specific groups of taxpayers, such as Christmas tree farmers or fish purchasers. These Code sections are hardly ever considered by the Tax Court. The litigated Code stays fairly constant and focuses on areas that affect more taxpayers who are generally less affected by the legislated Code. Although the litigated Code responds to legislative changes, it need only respond to major legislative changes meant to reform the experience of the individual taxpayers who are most likely to go before the Tax Court.

As with all of our possible interpretations, this reading of the data requires further research. First, more research into legislative action is required to identify what portions of the Code are most legislated. Second, a better understanding of the context of the citations would allow us to better support our results. Third, it is possible that the litigated Code is actually divided into a Code for the Tax Court and a Code considered by district courts. Finally, it is important to gather data about the other stages of litigation or dispute resolution mechanisms that taxpayers may pursue. It may be that disputes that reach settlement differ significantly from Private Letter Rulings or other administrative remedies. It is possible that the same Code sections that appear repeatedly in Tax Court written opinions also appear repeatedly in settlements, administrative remedies, and opinions from other courts.

### *C. Network Analysis and the Gray Area Between the Codes*

The above interpretations focus on counting citations to sections of the Code and drawing conclusions, either by aggregating over the entire period or comparing year-over-year. How could we expand on these interpretations using the network of case-to-statute citations developed in Part IV? Figure 5 and Table 4 add greater depth to our

[74] This division echoes the allegation of others that "there may be two Constitutions, 'one for taxes and one for all other matters.'" Stephen W. Mazza & Tracy A. Kaye, *Section IV: Constitutional and Administrative Law: Restricting the Legislative Power to Tax in the United States*, 54 AM. J. COMP. L. 641, 670 (2006).

results by demonstrating which sections of the Code are most "central" to interpretation. This analysis takes into account the fact that most cases must simultaneously interpret multiple sections of the Code to reach a decision. Unsurprisingly, many of the most central Code sections are procedural sections, dealing with penalties for failing to pay tax, underpayment of tax, and fraud or neglect. Section 7491, the section addressing burden of proof introduced by the 1998 Act, is also quite central. Some substantive sections also play an important role in this network, as is demonstrated by section 61, which defines income and is often invoked in opinions that interpret issues left unspecified in the Code.

The most striking aspect, however, is the contrast between Table 4 and Table 2, which list the most central and most frequent citations respectively. Many sections that are not very frequent are very central. This may not be notable for procedural sections — it may seem self-evident that, when a court cites a procedural section that governs its own practice or the appearance of litigants before it, that section is unlikely to be freestanding. In other words, it may be expected that most Tax Court written opinions that refer to interest on underpayment, nonpayment, or extension of time would also be resolving other issues, such as whether or not there was such an underpayment. Section 6601, which pertains to such interest, is thus understandably central, although it is only the sixty-third most-cited section.

The same immediate explanation cannot be given for a number of substantive sections in Table 4. Such sections include section 301, which addresses distributions by corporations, as well as section 401, dealing with pension, profit-sharing, and stock bonus plans, and section 1001, which defines gains and losses. One possible explanation is that they define key terms — such as gains and losses, upon which the outcome of many a tax case depends. However, other definitional sections, such as section 501 and section 152, either do not seem to be very central. Their centrality may thus have as much to do with the substance of these sections as with their role in defining terms. While none of these very central sections deals specifically with areas such as international taxation or tax shelter reporting, they seem to have a different tenor than the sections listed in Table 2. Though they still may affect individual taxpayers, they are specific to taxpayers receiving dividends or stock options or calculating gains and losses. While the Tax Court issues a large number of opinions that affect such taxpayers, our findings could mean that these written opinions depend on a wider variety of sections than do the opinions characterized in

Part IV.B.

Table 4 also indicates that sections 162, 163, and 165 are very central. These sections are unique in that they are both central and frequently cited; in addition, they all deal with deductibility, whether of business expenses, interest, or losses. While certain sections seem more suited for opinions that interpret just one section or discuss other sections only infrequently, the deductibility of everything from losses to investment expenses appears to lead the Tax Court to refer to multiple other sections. This could be due to the many different sections in the Code that refer to deductions — sections 151 through 224 set out the rules for deductions that are not specific to corporations — or it could be due to cross-references within sections allowing the deduction of certain items. The many frequent joint citations in this area could also be due to the Tax Court citing multiple deduction sections together for the purposes of distinguishing or analogizing, rather than for cross-reference purposes, or it could be due to deductibility cases also raising procedural matters.

Our application of network analysis could thus be interpreted as building on the earlier division of the litigated Code and the legislated Code. One interpretation of this analysis is that, when the Tax Court considers certain provisions that appear to occupy a gray area between the legislated Code and the litigated Code, it relies much more on cross-citations. This may be due to the infrequency of such citations — any reference to such a section requires analogy to or support from another section — or it may be due to such sections only arising in opinions that discuss a variety of other issues. It is notable, however, that while the Court frequently cites one group of sections — those that make up the litigated Code — it cites a very different group of sections frequently with other sections. In other words, the central sections and the frequently cited sections are different. This distinction may be due to the Court mainly considering sections outside the core of the litigated Code only when they arise in conjunction with other litigated Code sections, or it may be due to the Court reaching to other Code sections — as analogies or counterarguments — when confronted with sections outside of the litigated Code. Regardless of the reason, our network analysis adds greater depth to the characterization of Tax Court written opinions.

### *D. Access to the Court*

These several interpretations suggest another reason for further research — access to courts. The outcome of litigation affects not only

the litigant himself, but also any potential litigants facing similar disputes. For this reason, it is important that access to Courts is taken as seriously as a right, especially in cases where litigants lack power. This right of access to civil court has a long history in the U.S., with various scholars granting it different statutory and constitutional bases.[75] This right is especially protected for prisoners, indigent litigants, and other less advantaged groups of potential litigants.[76]

Unlike many other courts, the Tax Court has shown itself to be quite open to pro se litigants. Not only are a large number of the litigants before the Court pro se, but the Tax Court has also been praised by commentators for being helpful to pro se litigants. For example, the Court has warned litigants not to raise certain arguments that may lead to a penalty.[77] If our divided Code hypothesis is true, then cases that result in written opinions are often exactly those that concern individual, less-well-off taxpayers. Under this theory, the legislated Code involves just the opposite type of taxpayers: corporations and higher income taxpayers. These taxpayers do not receive written opinions from the Tax Court in the same way that individual taxpayers do. Instead, they likely turn to other avenues for relief — administrative remedies, lobbying legislatures, and other non-judicial mechanisms. In other words, the legislated Code is not litigated because those who are affected by it have access to more valuable administrative or legislative remedies. These findings suggests that the concern for statutory courts like the Tax Court is not access to court, but actually access to administrative or legislative remedy. All taxpayers have access to the Tax Court, but only those who do not have access to other remedies actually pursue litigation.

More research is required to confirm or deny our divided Code hypothesis. If true, there are two possible explanations for this division: in the first case, this "access to court" issue represents inherent inequity in the legal system. Small, less powerful taxpayers seek remedy through the Tax Court, while more powerful and sophisticated taxpayers pursue more favorable administrative and

[75] *See*, *e.g.*, Carol Rice Andrews, *A Right of Access to Court Under the Petition Clause of the First Amendment: Defining the Right*, 60 OHIO ST. L.J. 557, 562 (stating that the Supreme Court "initially recognized judicial access as a fundamental liberty without citing any particular clause of the Constitution as the source of the right. In this century, the Court began to assess court access under a variety of specific constitutional provisions and theories").

[76] *See id.* at 557.

[77] *See* John B. Snyder, III, *Barbarians at the Gate?: The Law of Frivolity as Illuminated by Pro se Tax Protest Cases*, 54 WAYNE L. REV. 1249, 1285 (2008).

legislative remedies. This case raises clear normative questions. In the second case, this "access to court" issue is actually a more efficient allocation of attention. Small taxpayer petitions tend to be fact-based disputes, which are arguably better resolved by judges. Furthermore, the ramifications of small taxpayer disputes may be too small to warrant the attention of the entire Congress. This division of the Code might therefore be representative of an appropriate division of attention. Though further research is required to answer these questions, we hope that the results and interpretations presented in Parts IV and V lead scholars to pursue these questions in greater detail.

## V. CONCLUSIONS

This article provides academics and practitioners with a three important empirical contributions. First, we construct a publicly accessible population-level dataset of written opinions of the Tax Court from 1990 through 2008. Second, we provide an analysis of the most-cited sections of the Code in this period, indicating the focus of Tax Court jurisprudence. Third, we carry out a network analysis of the case-to-statute citation network contained within these Tax Court decisions. These contributions not only respond to the call for greater empiricism in tax field but also allow us to posit a number of possible interpretations of this dataset.

First, we find that the written opinions of the Tax Court, which hears the vast majority of federal tax cases, focus on a very limited range of tax issues. Although the Code itself is made up of thousands of sections, only a small number of these sections are cited frequently and consistently year-over-year. Even as Congress regularly legislates broad areas of tax law, the sections invoked in written opinions typically apply to individual taxpayers. Alongside those that deal with Tax Court procedure, the Code sections that are cited most often deal with divorce, dependents, nonprofits, hobby and business expenses and losses, and general definition of income. Surprisingly, sections of the Code that deal with corporate or international taxation, tax avoidance, or complicated transactions do not appear on the list of the twenty-five most-cited Code sections. Though future research is required, this article presents a picture of two Codes: one, the litigated Code, changes infrequently but is the basis for most Tax Court opinions, while the other, the legislated Code, changes frequently but is not often the basis for Tax Court opinions.

Second, our results have implications about the Tax Court's is

responsiveness to litigation and access to court. If these findings mean that the Tax Court is an even more specialized court than previously realized — in other words, a court of the litigated Code — what does this mean for tax policy? Do cases that challenge or arise under the legislated Code never reach the Tax Court? Do litigants choose to raise these cases before other fora that have jurisdiction, such as U.S. District Courts or the Court of Federal Claims? How do citations differ among different types of written opinions? Are summary opinions or memorandum opinions more or less likely to consider the legislated Code than Tax Court opinions? What information is contained in case-to-case citations made in the Tax Court's written decisions? Though these questions remain unanswered, our findings stand alone in characterizing the population of Tax Court written decisions and the behavior of litigants, policymakers, and judges in this forum.