

EMPIRICISM AND THE RISING INCIDENCE OF COAUTHORSHIP IN LAW[†]

Tom Ginsburg
Thomas J. Miles

The recent growth of empirical scholarship in law, which some have termed “empirical legal studies,” has received much attention. A less-noticed implication of this trend is its potential impact on the manner of scholarly production in legal academia. A common prediction is that academic collaboration rises with scholarly specialization. As the complexity of a field grows, more human capital and more diverse types of human capital are needed to make a contribution. This Article presents two tests of whether empiricism has spurred more coauthorship in law. First, the Article shows that the fraction of articles in the top fifteen law reviews that were empirical or coauthored (or both) trended upwards between 2000 and 2010. The increase in empirical articles accounted for a substantial share of the growth in coauthored articles, and the correlation between coauthorship and empiricism persisted after controlling for numerous other influences. Second, the Article examines the articles published since 1989 in two prominent, faculty-edited journals specializing in law and economics: the Journal of Legal Studies and the Journal of Law, Economics and Organization. Coauthored articles were far more common in these journals than in the general interest, student-edited law reviews—a pattern which itself is consistent with the specialization hypothesis. The share of articles without empirical analysis or formal models in these journals plummeted over this period, while coauthorship rose sharply. These results support the view that specialization, and specifically the growth of empirical scholarship, has contributed to the trend of coauthorship in legal academia.

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I. INTRODUCTION

Peanut butter and jelly. Abbott and Costello. Hall and Oates. Cooter and Ulen. History is replete with great partnerships where the whole seems to exceed the sum of the parts. What is it that makes a great partnership in legal scholarship? This Article sets out to understand the determinants of coauthorship in law.

Legal scholarship, of course, is a subset of scholarship in general, and there is wide variation across disciplines and over time in scholarly collaboration. Historically, most scientific writing in all fields was sole authored until the mid-twentieth century.¹ Since then, many fields have witnessed an increase in the frequency of coauthorship. As coauthorship has burgeoned, so too has a literature on the causes, consequences, and ethics of coauthorship.² Much of this literature focuses on the discipline of economics, but attention has recently turned to the incidence of coauthorship in law.³ Casual empiricism, and earlier studies, suggest an apparent trend toward coauthorship in law, notwithstanding early advice to younger scholars *not* to coauthor.⁴ The causes and implications of the trend are not fully understood. In particular, the role of interdisciplinary scholarship, such as law and economics, and empirical work in driving the trend toward coauthorship has not been analyzed.

In this Article we set out to understand the determinants of coauthorship in legal scholarship and we give particular attention to the influence of interdisciplinary legal scholarship, including empirical legal studies. In Part II, we review the existing theories of academic collaboration, and we draw out the empirical implications for legal academics. A key prediction of this literature is that intellectual collaboration rises with scholarly specialization. As knowledge grows, a subject may become increasingly complex, and greater and more specific intellectual inputs may be necessary to make a contribution. The likelihood that a single person possesses all of the human capital necessary to produce a contribution falls and collaboration rises. In effect, collaboration

1. Larry D. Claxton, *Scientific Authorship: Part 2—History, Recurring Issues, Practices, and Guidelines*, 589 MUTATION RES. 31, 33 (2005); Mott Greene, *The Demise of the Lone Author*, 450 NATURE 1165, 1165 (2007).

2. See, e.g., Jason W. Osborne & Abigail Holland, *What Is Authorship, and What Should It Be? A Survey of Prominent Guidelines for Determining Authorship in Scientific Publications*, 14 PRAC. ASSESSMENT, RES. & EVALUATION, no. 15, July 2009, at 1.

3. E.g., Paul H. Edelman & Tracey E. George, *Six Degrees of Cass Sunstein: Collaboration Networks in Legal Scholarship*, 11 GREEN BAG 2D, fall 2007, at 19 (hereinafter Edelman & George, *Six Degrees*); Tracey E. George & Chris Guthrie, *Joining Forces: The Role of Collaboration in the Development of Legal Thought*, 52 J. LEGAL EDUC. 559 (2002); see also Paul H. Edelman & Tracey E. George, *Sunstein 1s and 2s*, in THE GREEN BAG ALMANAC & READER 473 (Ross E. Davies ed., 2008) (hereinafter Edelman & George, *Sunstein 1s and 2s*).

4. Robert H. Abrams, *Sing Muse: Legal Scholarship for New Law Teachers*, 37 J. LEGAL EDUC. 1, 6 (1987) (arguing that young legal scholars should not coauthor because of concerns about shared credit and increased time required).

represents a greater division of labor as the size of the scholarly “market” grows.

In legal scholarship, interdisciplinary work tends to be more specialized than general legal scholarship because it draws on a different academic literature and it often applies unfamiliar methodologies. Among interdisciplinary approaches in law, empiricism appears particularly specialized relative to more conventional legal scholarship. Quantitative analysis has historically not been part of legal curriculum, and even now, it is rare for a legal academic to have graduate training in these methods. A plausible prediction is that by virtue of its higher degree of specialization, interdisciplinary, and particularly empirical, work will more often be collaborative than general legal scholarship.

We test this prediction by examining patterns of coauthorship in two sets of legal academic publications. First, in Part IV, we examine all articles published in the “top fifteen” law reviews between 2000 and 2010. We find wide variation across these reviews in the incidence of coauthored and interdisciplinary articles. We confirm the patterns that other investigators have detected in subsamples of these reviews: the presence of upward trends in coauthorship and empiricism in legal academia.⁵ These parallel trends provide initial support for the specialization hypothesis. As a further test, we examine whether the correlation between coauthorship and empiricism persists after controlling for other influences, and we find that it does. The increase in empirical articles accounts for a substantial share of the growth in coauthored articles.

In Part V, we examine two prominent faculty-edited journals specializing in law and economics: the *Journal of Legal Studies* (*JLS*) and the *Journal of Law, Economics and Organization* (*JLEO*). We focus on these journals because they offer a long-time series, and they are bellwethers of mainstream law and economics scholarship. Coauthored articles are far more common in these journals than in the general interest, student-edited law reviews, a fact which itself is consistent with the specialization hypothesis. Strikingly, the data shows that the share of non-technical articles in these journals has plummeted since 1989. With the expansion of empiricism and formal modeling in these journals, coauthorship has risen substantially. These results strongly support the view that specialization, and specifically the demand for empirical legal scholarship, has contributed to the coauthorship trend in law.

A second prediction of the literature on intellectual collaboration is that as the opportunity cost of a scholar’s time rises, the implicit price of

5. Edelman & George, *Six Degrees*, *supra* note 3, at 27–31 (coauthorship); Theodore Eisenberg, *The Origins, Nature, and Promise of Empirical Legal Studies and a Response to Concerns*, 2011 U. ILL. L. REV. 1713, 1713–14 (empiricism); George & Guthrie, *supra* note 3, at 561–63 (coauthorship); Michael Heise, *An Empirical Analysis of Empirical Legal Scholarship Production, 1990–2009*, 2011 U. ILL. L. REV. 1739, 1742; Shari Seidman Diamond & Pam Mueller, *Empirical Legal Scholarship in Law Reviews*, 6 ANN. REV. L. & SOC. SCI. 581, 582 (2010) (empiricism).

collaborating with the scholar increases. For example, a colleague who previously may have been satisfied with an acknowledgment in the “dagger footnote” for his or her comments on a draft may instead demand coauthorship credit. We call this the compensation theory of coauthorship. The advent of empirical legal studies increased the value of empirical skills in legal academia and thereby improved the bargaining position of empiricists. Although we do not test the prediction that acknowledgement credits will be elevated into coauthorship, we test a related hypothesis about the compensation of collaborators. When the value of a coauthor’s contribution increases, he or she might demand deviation from the norm of alphabetical ordering of authors. A more prominent placement of a scholar’s name would signal the importance of his or her scholarly input. We examine deviations from the alphabetical ordering of names in coauthored papers. Among both the law reviews and the faculty-edited journals, we find some evidence that these deviations are more common for empirical papers than for other papers. The deviations from alphabetic ordering do not appear to reflect the influence of another discipline’s norm of nonalphabetic ordering. The discipline of economics, the field which has been a wellspring of legal empiricism, follows the alphabetic norm, and there is no evidence of deviation from the norm for articles involving formal mathematical models.

The results suggest that legal scholarship in the past decade has undergone an unprecedented transformation marked by the rapid growth of interdisciplinary, especially empirical, work. This Article builds on the work of prior investigators in documenting this pattern. But what has heretofore gone relatively unnoticed is that this shift in legal output is also accompanied by a change in the means of scholarly production. A legal empiricist, in contrast to the more traditional faculty member who labors in isolation, is likely to produce scholarship through a partnership. In Part VI, this Article advances some conjectures on some broader consequences of this shift for legal academia.

II. WHY COAUTHOR?

A. *Leading Theories and Additional Considerations*

The question of what drives scholarly collaboration is not new. The literature has identified four leading factors that influence the decision to coauthor. The first is the increased complexity of scientific fields with associated demands for specialization. This is partly driven by scientific progress, but also a result of the labor conditions for researchers. As higher education enrollments and budgets have expanded, so have professors. The need for research faculty to carve out a distinctive niche for their scholarly careers has led to more specialization, requiring collabora-

tion to produce research of publishable quality.⁶ The distinctive skills of a collaborator may permit an academic to produce work that he or she would not be able to produce individually. Two authors with different specialties are likely to play a complementary role in a team production function. This perspective, which we call the *complementarity* theory of coauthorship, predicts a continuous, and possibly accelerating, trend toward collaboration.

A second theory treats coauthorship as a means of compensating colleagues for input. The opportunity cost of a scholar's time has increased, raising the market price of presubmission comments on manuscripts from colleagues. An often-cited possibility is that colleagues who would formerly be willing to provide uncompensated comments on manuscripts now must be offered coauthorship credit in return for their constructive comments.⁷ An analogous prediction is that a colleague's input may be so valuable that he or she garners a lead authorship as a public acknowledgement of the importance of his or her contribution. We call this theory, developed in the study of coauthorship in the economics discipline, the *compensation* account of scholarly collaboration. It emphasizes the collective nature of scholarly production but does not imply any increase in quality relative to the former equilibrium of sole-authorship with uncompensated input from colleagues.⁸ Rather, it is a prediction of how the rewards of intellectual teamwork will be distributed. When a certain input becomes more valuable, it will command a higher (implicit) price.

A third possibility is that quality may be enhanced through coauthored work. Collaboration may improve quality when there are increasing returns to specialization, as conjectured above under complementary theory. In addition to joint contributions to production brought by people with different scholarly profiles, coauthors might increase a reader's assessment of its reliability. If the conditions for the Condorcet jury theorem apply, more coauthors would indicate that more people thought the article was worth claiming (partial) credit for.⁹ It also means, presumably, that multiple authors have carefully evaluated the data and argument. For a journal editor, this is a signal of quality—not one but two

6. Andy H. Barnett, Richard W. Ault & David L. Kaserman, *The Rising Incidence of Co-Authorship in Economics: Further Evidence*, 70 REV. ECON. & STAT. 539 (1988); John M. McDowell & Michael Melvin, *The Determinants of Co-Authorship: An Analysis of the Economics Literature*, 65 REV. ECON. & STAT. 155 (1983); Stefan Wuchty, Benjamin F. Jones & Brian Uzzi, *The Increasing Dominance of Teams in the Production of Knowledge*, 316 SCIENCE 1036, 1038 (2007).

7. Barnett, Ault & Kaserman, *supra* note 6; *see also* David N. Laband & Robert D. Tollison, *Intellectual Collaboration*, 108 J. POL. ECON. 632 (2000) (emphasizing multiple forms of collaboration besides coauthorship).

8. Compensation theory can be seen as consistent with the complementarity theory, as it simply describes the division of credit between two producers of a collaborative product. Collaborative work of constant quality now merits coauthorship as a price for inducing the second producer to contribute, whereas it would not have in an earlier era.

9. *See generally* Paul H. Edelman, *On Legal Interpretations of the Condorcet Jury Theorem*, 31 J. LEGAL STUD. 327 (2002).

or more authors are willing to stake their reputation on the accuracy and quality of the paper. This should lead to higher quality research, *ceteris paribus*. Indeed, there is some evidence from economics that coauthorship leads to output of better quality.¹⁰

A fourth prominent explanation for collaboration relates to the uncertainty of the editorial review process. Having two authors review a manuscript and provide input might make for a better article. But even if collaboration does not improve the quality of the scholarship, it facilitates market saturation by having two people working in closely aligned fields.¹¹ Diversification reduces the risk of rejection from journals and is particularly attractive given relatively short tenure clocks and relatively long journal review periods. It also may increase the chances of a “home-run” article, if academic influence is distributed with a long right tail. If the number of articles exerting a large scholarly influence is small, the chance of writing a high-impact article may be increased by writing many articles. Coauthorship may allow a scholar to increase the number of articles he or she writes or cowrites. This *diversification* theory emphasizes strategic benefits in the decision to coauthor, even when collaboration implies no increase in quality relative to sole-authored work.

None of these theories from the literature has been definitively accepted and empirical tests are rare.¹² These theories address the benefits of collaboration or the distribution of the benefits between coauthors. The costs of collaboration have received less attention, but they warrant mentioning. Perhaps the first of these is the cost of finding a scholarly match. The increase in the size of the academic profession in recent years means that there is a larger pool from which to find suitable coauthors¹³ and the impact of this growth on the cost of collaborating is ambiguous. A larger pool may reduce the cost of collaborating because it raises the likelihood that there exists an academic with a particular specialty and hence, a better match. At the same time, the larger pool from which to choose a collaborator may raise the search cost of finding the well-suited academic partner.

Perhaps the most obvious cost of coauthorship is the time and energy expended managing the partnership, which we call *coordination* costs.

10. See Garey C. Durden & Timothy J. Perri, *Coauthorship and Publication Efficiency*, 23 AM. ECON. J. 69 (1995) (finding that coauthorship enhances productivity in total and per capita article production); see also Raymond D. Sauer, *Estimates of the Returns to Quality and Coauthorship in Economic Academia*, 96 J. POL. ECON. 855 (1988) (finding that collaboration through formal coauthorship increases the quantity or quality or both of one’s professional productivity, which has market value); Matthias Sutter & Martin Kocher, *Patterns of Co-Authorship Among Economics Departments in the USA*, 36 APPLIED ECON. 327 (2004) (finding that quality of coauthors’ institutions, measured by rankings of institutions, has a significant impact on the number of coauthored papers in top economics journals).

11. Barnett, Ault & Kaserman, *supra* note 6, at 540.

12. See Durden & Perri, *supra* note 10.

13. See John Hudson, *Trends in Multi-Authored Papers in Economics*, 10 J. ECON. PERSP., no.3, 1996, at 153.

These costs include direct expenditures such as telephone calls and traveling for meetings. They also include intellectual efforts such as reviewing and editing one another's work and integrating disparate parts of an article.¹⁴ Technological advances have surely lowered these costs. Word processing features such as "track changes" ease the process of writing. A consequence of email and the internet is that the geographic proximity of a collaborator is much less relevant than in the past.

Less directly observable are the costs of reaching an agreement on the substance of the article or the structure of its argument. Part of this cost is incurred up-front in the decision to form a scholarly partnership. The collaborators must have an initial agreement on the aims and scope of the research project and a plan for the division of labor. Negotiation over objectives and duties may be costly. As the collaboration progresses, unexpected obstacles may be encountered and unanticipated results emerge. Differences of opinion as to the direction of the research effort may develop, and it may be necessary for coauthors to engage in explicit renegotiation over which research claims will be advanced and how responsibilities will be divided. In the extreme, when collaborators cannot reach an agreement, it may imply the dissolution of the research partnership. It is not obvious whether technological changes raise or lower the likelihood of disagreements between a given set of authors. But it is possible that technology may facilitate the sorting of potential collaborators such that the members of resulting partnerships are better matched, thus reducing the likelihood of subsequent disagreements.

An additional cost of collaboration is the familiar agency problem. A collaboration is a partnership, and when a partner's contribution requires costly effort, the partner may contribute less than promised or expected. To curtail free riding off the efforts of others, members of the collaboration must monitor each other's contributions. Yet monitoring itself is costly, and in some instances, it may not be possible because of unobservability or unverifiability. Collaborators may be geographically distant, and even when physically proximate, it is unlikely they directly observe how much effort each is contributing. Even if labor hours were known, it may be hard for a collaborator to assess the effort entailed in a partner's contribution. Imagine a collaboration between a physicist and a poet. The physicist likely cannot judge whether the few lines of haiku contributed were tossed off quickly or the product of deep reflection and arduous burnishing. As interdisciplinary collaborations often join together scholars with divergent skill sets, the trend toward interdisciplinary scholarship in law may expand the incidence of agency problems in coauthorships in legal academia.

Another cost of collaboration is the diminution of credit. The inputs of author effort are not directly observed, and consequently, outsid-

14. Abrams, *supra* note 4, at 6 ("Integrating two people's work into a single cohesive product consumes additional hours.")

ers cannot easily tell which author contributed the most to an article or a book. A common rule of thumb is to divide credit equally among coauthors. Thus, each author of a paper of quality Q will be assigned Q/n of credit, where n is the number of coauthors.¹⁵ Although we do not observe directly the rewards to scholarship or the efforts of authors, this rule of thumb has immediate implications for the relationship between inputs and payoffs of collaboration. For example, in order to make it worthwhile for an author to invest the same amount of effort in an article with $n-1$ coauthors as he or she would in a single authored article, the total payoffs to the coauthored article must equal or exceed, by a factor of n , the average payoff of the sole-authored paper. Alternatively, if the payoff to an author of joining a collaboration with $n-1$ coauthors is less than $1/n$ th of a solo-authored article, the author's contribution (in terms of effort or time) must be less than $1/n$ th that of a solo-authored article. As effort and payoffs are not directly observable, we cannot tell which of these possibilities (coauthoring earns higher rewards) or (coauthoring requires less effort) occurs most often.

A caveat is that an unequal division of credit among coauthors may be unavoidable. A strong norm is to refer to collaborations of two authors by listing their names (e.g., Cooter and Ulen). But when the number of collaborators is greater than two, the tendency is to refer to the collaborators by the name of the first author with all other coauthors tucked into the catchall phrase "et al." (e.g., Black et al.).¹⁶ In this appellation, only the lead author's name is mentioned, and he or she may receive a disproportionate amount of the publicity and reputational benefit of the collaboration. A very small number of collaborations have successfully acquired designations that reflect a relatively equal crediting of authors, such as abbreviations (e.g., LLSV) or Esperanto-like acronyms (e.g., "McNollgast").¹⁷ But these instances are rare. The relative penalty of having one's name disappear into an "et al." tag offers another reason

15. James Lindgren & Daniel Seltzer, *The Most Prolific Law Professors and Faculties*, 71 CHI-KENT L. REV. 781, 793 (1996) (giving fractional credit to each coauthor).

16. For example, when citing Bernard Black, Charles Silver, David A. Hyman & William M. Sage, *Stability, Not Crisis: Medical Malpractice Claim Outcomes in Texas, 1988-2002*, 2 J. EMPIRICAL LEGAL STUD. 207 (2005) and Kathryn Zeiler, Charles Silver, Bernard Black, David A. Hyman & William M. Sage, *Physicians' Insurance Limits and Malpractice Payments: Evidence from Texas Closed Claims, 1990-2003*, 36 J. LEGAL STUD., no. S2, 2007, at S9, the authors could be listed as "Black et al." and "Zeiler et al.," respectively.

17. See, e.g., Rafael La Porta, Florencio Lopez-de-Silanes & Andrei Shleifer, *Corporate Ownership Around the World*, 54 J. FIN. 471 (1999) (hereinafter *Corporate Ownership*); Rafael La Porta, Florencio Lopez-de-Silanes, Andrei Shleifer & Robert W. Vishny, *Law and Finance*, 106 J. POL. ECON. 1113 (1998) (hereinafter *Law and Finance*); Mathew D. McCubbins, Roger G. Noll & Barry R. Weingast, *Administrative Procedures As Instruments of Political Control*, 3 J.L. ECON. & ORG. 243 (1987); McNollgast, *The Political Origins of the Administrative Procedure Act*, 15 J.L. ECON. & ORG. 180 (1999).

why coauthorships in law are almost entirely pairings rather than larger combinations.¹⁸

Coordination costs and credit diminution create a potential adverse selection problem. It is unlikely that any partnership enjoys a perfectly equitable division of labor (and the coordination costs of ensuring that it does would be very high). A consequence is that Q/n of credit overcompensates some members of a collaboration for their contributions. The pool of potential coauthors may contain a higher number of slackers than the overall academic population. This could lead to less overall effort being put into coauthored papers. One solution is to coauthor repeatedly with the same partners, which makes it likely that any inequalities on a particular project will even out over time. Repeated interactions may enhance the ability of coauthors to monitor each other's effort. This solution also means that the partners can develop a joint reputation, raising the external assessment of Q relative to their sole-authored work. This would help overcome any moral hazard problems that arise after a partnership has begun.¹⁹ A reason to doubt the severity of any adverse selection problem is that for every slacking academic who seeks a coauthorship, there must be a partner willing to furnish inputs for less than a proportionate share of the rewards. An academic anticipating that he or she would be shortchanged in this manner would decline to collaborate. A key prediction of the canonical adverse selection model is that the fear of disadvantageous trades would create a vicious cycle resulting in the unraveling of the "lemons market."²⁰ Over time the number of willing, high-quality authors would decline. As we observe the incidence of collaboration rising rather than declining, we doubt that adverse selection problems in legal academia are severe. Moreover, many coauthored works are undoubtedly of very high quality, including some of the most respected and influential contributions in law and in law and economics.²¹

This discussion has alluded to the fact that most collaborations comprise two scholars but others involve more. We do not offer a sharp prediction on the optimal number of coauthors, but many of the considerations mentioned above are directly relevant. For example, coordination costs may increase dramatically, possibly even exponentially, as the number of coauthors rises. In a group of three, each coauthor must mon-

18. This suggests that bluebook citing conventions might impact coauthorship practices. We do not test this proposition in this article. Further work might examine the covariance of disciplinary citation practices with coauthorship rates.

19. We expect that the pattern of coauthor relationships over time bears further examination from this perspective. A long-term coauthoring relationship probably implies declining marginal coordination costs over time; on the other hand, there may be also declining marginal returns to the relationship as complementarities get exploited.

20. See George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488 (1970).

21. Prominent partnerships in law and economics include William Landes and Richard Posner, Frank Easterbrook and Daniel Fischel, Robert Cooter and Thomas Ulen, and Mitch Polinsky and Steven Shavell.

itor two others; and if a potential slacker is identified, the two reliable coauthors must decide who will enforce the coauthorship norms. This may explain why the modal number of authors on a coauthored paper is two, yet disciplinary norms in this regard vary. In psychology, for example, a paper with multiple coauthors is the norm.²²

We readily acknowledge that we do not have a generally accepted theory about what academics seek to maximize.²³ The complementarity theory described above implicitly assumes that scholars maximize quality of output. If producing better work requires coauthorship, then academics will coauthor. Diversification theory, on the other hand, assumes that academics maximize reputational payoff, which might be only loosely correlated with actual quality. Reputation might be enhanced by the sheer number of publications produced. In this case, coauthoring might expand the number of lines on a scholar's resume, and at the same time, it may make it difficult for external assessors of outputs, such as academic deans and departments, to evaluate the individual contribution. Suppose, alternatively, that academics seek to maximize leisure, which would motivate them to claim credit for as much work as they can produce for as little effort as possible. As noted above, collaboration allows free riding and the increase in coauthorship may reflect greater leisure consumption. The difficult task of identifying the preferences of academics lies beyond the scope of this paper, but we recognize that our results raise these questions.

B. Implications for Interdisciplinary Scholarship in Law

What do these theories suggest about the role of interdisciplinarity and specialization as drivers of coauthorship in legal scholarship? Consider first the complementarity theory that suggests, in part, the increase in specialized technical skills required in a particular area is likely to increase the demand for coauthorship. By bringing together knowledge from different fields, interdisciplinary work requires a diverse set of skills. It is costly for a single individual to acquire all the necessary skills, and collaboration may be more convenient among two or more individuals when each of them furnishes a different skill. Some disciplines have seen significant increases in technical specialization associated with the rise of modern computing and statistics programs. Other disciplines have not. It is perhaps unsurprising that Guthrie and George show that coau-

22. E.g., Heather J. Smith, Tom R. Tyler, Yuen J. Huo, Daniel J. Ortiz & E. Allan Lind, *The Self-Relevant Implications of the Group-Value Model: Group Membership, Self-Worth, and Treatment Quality*, 34 J. EXPERIMENTAL SOC. PSYCH. 470 (1998); Tom R. Tyler, Lawrence Sherman, Heather Strang, Geoffrey C. Barnes & Daniel Woods, *Reintegrative Shaming, Procedural Justice, and Recidivism: The Engagement of Offenders' Psychological Mechanisms in the Canberra RISE Drinking-and-Driving Experiment*, 41 L. & SOC'Y REV. 553 (2007); see also George & Guthrie, *supra* note 3, at 567 (“[R]oughly a quarter of social science collaborations involved three or more authors . . .”).

23. See Richard A. Posner, *What Do Judges and Justices Maximize? (The Same Thing Everybody Else Does)*, 3 SUP. CT. ECON. REV. 1 (1993).

thorship rates in elite law reviews are higher than those in humanities journals in philosophy, English, and history, but are lower than those in psychology, economics, sociology, or political science.²⁴ The latter disciplines rely heavily on statistics, while the tools of philosophy, English, and history have not changed in any fundamental way. Thus, technological change contributes to the increased gains from cooperation in certain disciplines and not others.

Law falls somewhere in the middle of this disciplinary spectrum. Historically, law was closer to the humanities end of the technological spectrum than the social science end. For example, George and Guthrie report that from 1970–1999, coauthored work comprised fifteen percent of law review articles.²⁵ This contrasts with more than sixty percent of social science articles in leading journals.²⁶

But legal academia is changing. First, there has been a trend toward socio-legal and interdisciplinary scholarship. More and more entry-level candidates have PhDs in social sciences like economics or political science. These scholars are trained in technical methods, and may bring with them norms of coauthorship from other disciplines. Furthermore, there are natural gains from collaboration because the new PhDs have skills that older legal scholars lacked, while older scholars have more experience and knowledge of law. Although it is beyond the scope of this paper, we suspect that the increase in coauthorship in law is partly due to a wider diversity of academic training and consequently skill sets on law faculties.

As interdisciplinary fields (such as law and economics) mature, a contribution that makes an advance over existing knowledge requires an ever greater degree of technical proficiency. This intensifies the incentives for coauthorship because when a scholar lacks knowledge of a relevant field, an offer of coauthorship credit may be necessary to induce a colleague to provide input on a research project. Authors possessing especially valuable skill sets may even demand that their names appear first in the sequence of authors, deviating from the norm of alphabetic ordering. More technical sophistication raises the value of collaboration and hence the “price” of careful, time-consuming comments to a colleague that may rise to coauthorship credit. On the whole, compensation theory may explain any contribution of interdisciplinary and empirical work to the increase in coauthorship.

The quality theory, on the other hand, does not appear to offer as strong an incentive for coauthorship in empirical work as does skill complementarity. If technical complexity *alone* is the driver of coauthorship, we ought to observe an increase in coauthorship in some areas of law and

24. George & Guthrie, *supra* note 3, at 564–68.

25. *See id.* at 562.

26. *Id.* at 566. Durden and Perri report an estimate that by 1985, fifty-two percent of published articles in economics were coauthored. Durden & Perri, *supra* note 10, at 69.

not others. After all, there is considerable variation in the degree of complexity across subjects in law. Tax law, for example, is often considered highly complex. If technical complexity alone was driving coauthorship, rates of coauthorship in complex legal fields such as tax should rise. In contrast, if increasing returns from cross-disciplinary work are driving the coauthorship phenomenon, increases in coauthorship should be concentrated in empirical and interdisciplinary work.

Similarly, diversification theory does not seem to have special salience for interdisciplinary work. Collaboration may allow an academic to manage more effectively the risks of scholarship by trimming the downside risks and expanding upside gains. A collaborator may act as a *de facto* reviewer or editor and thus reduce the risks of rejection from journals. But, this rationale seemingly applies to all forms of legal scholarship and is not limited to, or uniquely applicable to, empirical or interdisciplinary work.

Collaboration provides the opportunity to free ride off the efforts of others. This opportunity may be greater in interdisciplinary work as monitoring is less effective when a scholar lacks proficiency in a collaborator's field. As the respective skills of collaborators become more specialized, each is less equipped to assess the (labor or effort) cost of the other's contribution, and the inability to monitor may provide greater opportunities for shirking. But we have no reason to think that the pool of scholars producing interdisciplinary and empirical work is more likely to be motivated by consumption of leisure than are other legal scholars. To the extent that authors of interdisciplinary and empirical work may include people who have spent years getting a PhD, sometimes in addition to a JD degree, one might presume the opposite—these coauthors have sent a costly signal of willingness to work hard and invest in novel skills.

To summarize, all of the various theories of coauthorship that we outlined above appear relevant to coauthorships in law. Yet, complementarity theory predicts a particularly strong relationship between collaboration and the growth of empirical and interdisciplinary scholarship. We might also expect compensation theory to have some explanatory power, and a prediction is that among coauthored articles, empirical pieces will be more likely to deviate from the alphabetic ordering of authors. In contrast, the quality, diversification, or leisure consumption theories may be relevant, but they do not offer an account as to why interdisciplinary scholarship, especially empirical work, would be accompanied by greater incidence of coauthorships.

III. DATA AND EMPIRICAL APPROACH

We examine two sets of data located through the ISI-Web of Science™. First, are all articles published in the top fifteen law reviews during 2000–2010.²⁷ Second, are all articles published in two faculty-edited interdisciplinary journals, *JLS* and *JLEO*, during the period 1989–2010.²⁸ Our predictions that interdisciplinarity, particularly empiricism, may influence coauthorship necessitated examination of both data sources. We chose to examine both student- and faculty-edited journals in order to have confidence that we were capturing trends in interdisciplinary scholarship rather than epiphenomena of particular journal markets.

We examined the top fifteen law reviews rather than limiting our attention to a few top law reviews in order to assess coauthorship practices in a large swath of legal academia.²⁹ We chose *JLS* and *JLEO* because they are influential interdisciplinary journals with long histories. Their age provides the opportunity to look at patterns in scholarship over a relatively long time horizon—two decades.³⁰ An additional consideration was the position these journals occupy at the intersection of law and social science, particularly economics. Another highly regarded interdisciplinary journal with a long history, the *Journal of Law & Economics*, tilts more clearly in the direction of economics than law, and for decades it has regularly published sophisticated empirical work.³¹ In contrast, we believe *JLS* and *JLEO* are bellwethers of trends in interdisciplinary legal scholarship, particularly law and economics. Our sample includes 7540 items published in law reviews, including 2785 major articles, and 1030 articles in the two peer-reviewed journals.

We define coauthorship in the same manner as Edelman and George.³² Their criteria is that a coauthor is any individual listed in the “by” line along with at least one other person. This excludes contributors identified as “with” as well as editors or those in a footnote. Articles can, of course, have multiple coauthors. This definition is intuitive and is consistent with the economics literature on coauthorship. From the ISI-Web of Science™, we generated citation reports for each article in our

27. Definitions of “top” are inherently arbitrary. We define the top fifteen law reviews as comprising *Harvard Law Review*, *Yale Law Journal*, *Stanford Law Review*, *University of Chicago Law Review*, *Columbia Law Review*, *New York University Law Review*, *Michigan Law Review*, *University of Pennsylvania Law Review*, *Virginia Law Review*, *Cornell Law Review*, *California Law Review*, *Duke Law Journal*, *Northwestern University Law Review*, *Texas Law Review*, and *Georgetown Law Journal*.

28. For another study of empirical work in the *JLS*, see William M. Landes, *The Empirical Side of Law & Economics*, 70 U. CHI. L. REV. 167 (2003).

29. *Contra* Ian Ayres & Frederick E. Vars, *Determinants of Citations to Articles in Elite Law Reviews*, 29 J. LEGAL STUD. 427 (2000) (looking at articles only from *Harvard Law Review*, *Stanford Law Review*, and *Yale Law Journal*).

30. For this reason, we chose not to examine *American Law & Economics Review (ALER)* and the *Journal of Empirical Legal Studies (JELS)*, which are influential but of more recent provenance.

31. Landes, *supra* note 28, at 171–72.

32. George & Guthrie, *supra* note 3, at 561.

data. A limitation of this source is that its coverage of citations in social science journals is more extensive than its coverage of citations in law reviews.³³ For this reason, the results may be biased in the direction of favoring articles of interest to social scientists. If so, articles of greater interest to social scientists, such as those containing formal models and empirical analyses, might have higher-than-average citation rates. But, as we shall show in Part V, this is not the case, and this pattern suggests that any bias arising from the use of this citation data base rather than a legal data base appears modest.

We coded each article for its legal subject and methodology based on a brief inspection of the physical volume. Our subject categories were: corporate/securities law, criminal law, international/comparative law, private/commercial law, and other public law. For the faculty-edited journals, we expanded this to include another category, which we called "other," to encompass articles that addressed economic behavior generally and not specific to any area of law. With regard to methodology, we were particularly interested in the presence of the two technical methods most common to law and economics: empirical methods and formal mathematical models. We counted an article as empirical if it presented a novel analysis of data. We excluded from this category articles that merely reproduced tables or figures which had previously been published elsewhere, such as in a government report. We coded an article as containing a formal mathematical model if it had at least one numbered equation. To provide a contrast with other types of interdisciplinary scholarship, we attempted to code articles that were methodologically humanities oriented, such as law and literature, philosophy, and legal history. These techniques are less evident upon inspection, and therefore, we strongly suspect that we undercounted, perhaps severely, the presence of humanities-oriented interdisciplinary work.

We examine these data in summary statistics, and then we turn to multiple regression analysis to control for numerous possible influences on coauthorship. Specifically, we estimate the probability that an article is coauthored in an equation of the form:

$$\Pr(Y_{it}) = \sum_j^{\text{method}} \alpha_{ij} + \sum_k^{\text{subject}} \delta_{ik} + \sum_l^{\text{type}} \gamma_{il} + \sum_m^{\text{position}} \rho_{im} + \alpha^T t_i + \varepsilon_{it},$$

where Y_{it} is an indicator variable that takes the value one when article i published in year t is coauthored and zero otherwise. We focus on collaboration as a binary choice because we observe relatively little variation in the size of coauthorship teams. The vector X_{it} contains continuous characteristics of the article, including its (*log*) page length and the average number of citations per year it has received since publication. For the faculty-edited journals, we collected a richer set of article characteristics, including the number of figures, whether it includes an appendix, the number of tables in an empirical article, and a count of the num-

33. Citations by courts are not recorded.

bered equations in an article with a formal model. As we show below, the faculty-edited journals featured more technical articles, and we gathered these variables to capture more of the variation in technological sophistication of those articles.³⁴ The term $\alpha^T t$ is a coefficient on a time trend, t , and because fluctuations in the propensity to coauthor may not vary linearly with time, this term is replaced in some specifications with fixed effects for the year of publication. The remaining explanatory variables are indicator variables. The α_{ij} terms are a series of binary variables for law review article i 's methodology: whether it is empirical, contains a formal model, or appears to be humanities oriented. An article employing conventional legal analysis is the omitted category of methodology. The terms δ_{ik} are binary variables for the subject matter of the article: criminal law, international/comparative law, private/commercial law, other public law, and for faculty-edited journals, the category of "other." Articles in corporate/securities law are the omitted category for subject. The terms γ_{il} measure the type of law review article: student note or comment, book review, tribute or memorial, and symposium article. The final set of indicator variables, ρ_{im} , measures the "running order" of the article in each volume and issue. They consist of binary variables for whether the article appeared first in a volume or first in an issue. Lastly, ε_{it} is an error term.

We estimate a similar equation in examining the alphabetical ordering of authors with collaborative articles. There, the sample is restricted to coauthored articles, and the dependent variable is the probability that coauthored article has an ordering of last names that deviates from the alphabetical ordering. The same set of control variables is included in those equations.

34. We believe that the count of equations for articles with formal models is a noisy measure of a model's sophistication. Articles are not consistent in their numbering conventions. Some articles number only a subset of the equations they include, and this tendency appears particularly pronounced for game theoretic articles.

IV. LAW REVIEWS

A. *Summary Data*

TABLE 1:
SUMMARY STATISTICS ON ARTICLES
IN TOP FIFTEEN LAW REVIEWS, 2000–2010

	All Articles (1)	Major Articles Only (2)
Coauthored	.121 (.326)	.201 (.401)
Empirical	.053 (.225)	.094 (.292)
Formal Theory	.021 (.144)	.035 (.185)
Humanities	.033 (.180)	.053 (.223)
(Log) Page Length	3.453 (.837)	3.938 (.624)
First in Volume	.021 (.144)	.043 (.203)
First in Issue	.084 (.278)	.173 (.378)
Tribute	.034 (.182)	--
Symposium	.286 (.452)	--
Book Review	.090 (.287)	--
Student Note or Comment	.290 (.454)	--
Corporate/Securities Law	.051 (.220)	.060 (.237)

continued on next page

TABLE 1—*Continued*

Criminal Law	.102 (.303)	.093 (.290)
International / Comparative Law	.059 (.236)	.061 (.239)
Private / Commercial Law	.195 (.391)	.230 (.421)
Public Law	.592 (.481)	.556 (.497)
Time Trend	5.692 (3.085)	5.846 (3.104)
Citations per Year	1.061 (1.1697)	1.931 (2.197)
N	7540	2785

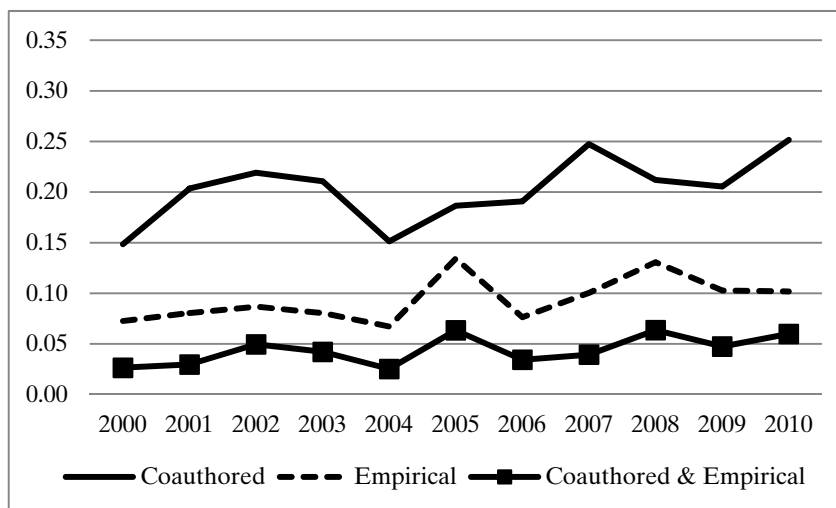
Note: The columns report means and in parentheses standard deviations. “Major articles” excludes student notes and comments, book reviews, tributes and memorials, and symposium articles.

Table 1 reports summary statistics on the law reviews. It presents two cuts of the data: column (1) includes all the articles published and column (2) includes only “major articles.” Excluded from the category of major articles are book reviews, student notes and comments, tributes and memorials, and symposium pieces. As column (1) shows, these other types of publications compose seventy-three percent of the items published in the law reviews. There are strong reasons to treat these other types of publications differently. First, authors of major articles tend to be faculty while students usually write notes and comments. The primary purpose of notes and comments is arguably pedagogical rather than scholarly. Book reviews are arguably different as well. Although they can approximate a full article in length and scope, their purpose is to review an existing work rather than to make a stand-alone contribution. Tributes and memorials also serve a different purpose. They often lack scholarly content, and even when they include such content, it is often a summation of the honoree’s prior work rather than a novel, independent contribution. They sometimes contain personal reminiscences, and they tend to be brief. Articles appearing in symposiums are a harder call, but here we treat them as separate from major articles. Symposium publications usually result from invitations rather than the submission process governing regular issues, and they tend to be shorter than major articles. It is also doubtful whether a symposium contribution carries the same heft in a junior scholar’s tenure evaluation as a major article does. We

tend to think it does not, and for that reason, we treat law review symposiums as different from major articles.

Table 1 shows that major articles differ from the other categories of publication across several dimensions. The incidence of coauthorship nearly doubles when the data are limited to major articles. This pattern is consistent with the fact that student notes and comments are nearly always single authored. Table 1 shows that among major articles, nearly twenty percent were coauthored during the decade. This aggregate figure masks considerable temporal movements in coauthorship during the decade.³⁵ Figure 1 shows the fraction of major articles in law reviews that were coauthored by year. The time series do not show a monotonic increase, but an upward trend in coauthorship can be detected. In 2000, fifteen percent of major articles were coauthored, and by 2010, this figure was twenty-three percent.

FIGURE 1:
TRENDS IN EMPIRICISM AND COAUTHORSHIP
AT MAJOR LAW REVIEWS, 2000–2010



Although not reported here, the growth in coauthorship has not been accompanied by an increase in the number of authors on each coauthored article. Of the coauthored articles, eighty-six percent had two authors, nearly eleven percent had three authors, and about three percent had three or more authors. While there is some year-to-year fluctuation in the size of coauthorships, there is no pronounced upward trend favoring larger collaborations. In other words, the growth in coauthorships in these law reviews is an expansion along the extensive rather than inten-

35. The rate represents a fifteen percent increase for law reviews from the findings of George and Guthrie. See George & Guthrie, *supra* note 3, at 562.

sive margin. The modal number of collaborators is two, a pattern that contrasts sharply with the norms in the physical sciences, where it is common to list all members of a laboratory's research team as authors.

Major articles and other categories of publication also differ in the frequency with which they employ interdisciplinary methodologies. Major law review articles boast rates of empirical, formal theory, where humanities approaches are roughly double the rates for all items published in law reviews. This is perhaps unsurprising because the different types of items published in law reviews tend to follow varying conventions. A purpose of a student note or comment is to demonstrate command of law, and law students, whose immediate academic aim is to master the law, are less likely to possess the training necessary to produce interdisciplinary work. Book reviews and tributes tend to follow the essay form and survey existing work rather than introduce novel analysis. Symposium pieces are also less likely to be interdisciplinary, perhaps because the restriction of topic or the fixed time frames of symposiums restrict opportunities to employ other methodologies.

While interdisciplinary work in law reviews appears almost exclusively in the form of major articles, it remains a relatively small share of this category of publication. Our measures of interdisciplinarity suggest that articles using such methodologies constitute only a small fraction—18.2 percent—of the major articles in law reviews. At first blush, these estimates seem in tension with the widespread belief, which we share, that interdisciplinary scholarship has enjoyed substantial growth in recent decades.³⁶ On closer inspection, the tension is not as great as it appears. Figure 1 shows a slight upward trend in the incidence of empirical articles in law reviews. There is some variability over the decade, but the rate of empirical articles rises from slightly more than five percent in 2000 to about ten percent in 2010. Still, the low incidence of empiricism even at the end of the decade may surprise critics who believe that legal empirical studies is overdone.³⁷ An important caveat is our classification scheme does not encompass nontechnical interdisciplinary work. As described above, we suspect our coding of humanities-oriented scholarship undercounts some, perhaps much, of that scholarship. In addition, our coding scheme simply does not incorporate nontechnical law and economics. For example, an article applying economic analysis without a formal mathematical model is not counted in our measures of interdisciplinary methodologies. Our measures are confined to instances of for-

36. See George L. Priest, *The Growth of Interdisciplinary Research and the Industrial Structure of the Production of Legal Ideas: A Reply to Judge Edwards*, 91 MICH. L. REV. 1929 (1993); Robert B. Thompson, *Corporate Law Criteria: Law's Relation to Private Ordering*, 2 BERKELEY BUS. L.J. 95, 97 (2005) ("The most dramatic change in law teaching over the last generation has been the growth of interdisciplinary scholarship.").

37. Brian Leiter, *On So-Called "Empirical Legal Studies" and Its Problems*, BRIAN LEITER'S L. SCH. REP. (July 06, 2010, 6:41 AM), <http://leiterlawschool.typepad.com/leiter/2010/07/on-socalled-empirical-legal-studies.html>.

mal modeling or empiricism. According to these metrics, law review articles infrequently apply more technical interdisciplinary methods.

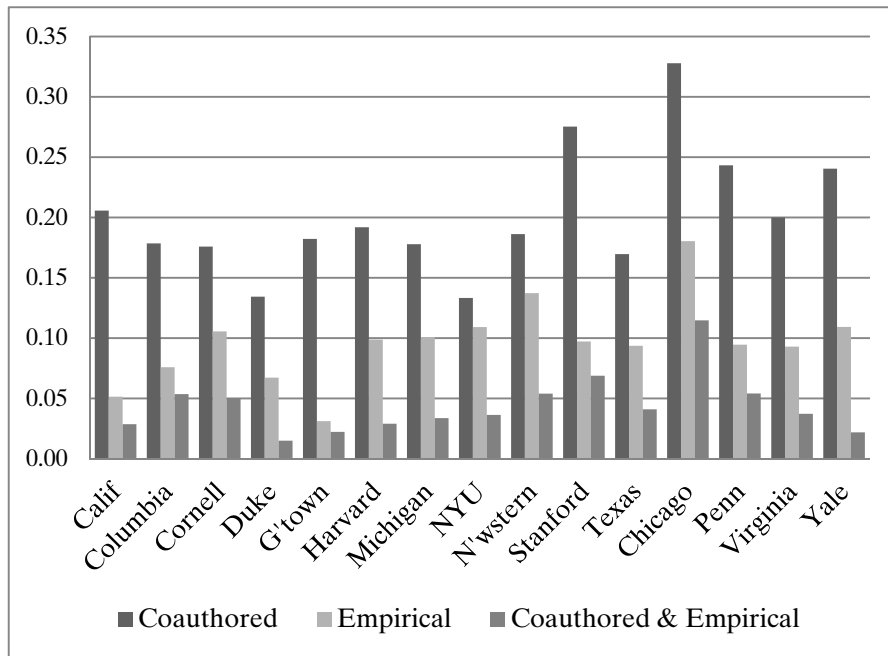
Table 1 shows other differences in the types of law review publications. Major articles tend to be longer than student notes, book reviews, and tributes. Page lengths are expressed in natural logarithms in order to place less weight on a few extremely long articles. In log terms, major articles are slightly longer. In actual pages, the average major article is sixty pages, and the average length of the other categories of publication is only forty-one pages. This difference is consistent with the common observation that tributes, book reviews, and student pieces tend to be shorter than major articles. Although not shown in Table 1, coauthorship implies no difference in the average page length of major articles, but the median length of coauthored articles is two pages shorter.

Another difference between major articles and other pieces is that major articles are much more likely to appear first in the “running order” of printed issues. When a law review dedicates an entire issue to a symposium, a symposium piece necessarily occupies the lead position. Tributes and memorials often appear at the beginning of law review issues. The data shows that, consistent with conventional understanding, student notes and book reviews virtually never lead an issue. In these data, student notes never appear first in the issues.

Major articles are also far more likely to be cited. Column (2) of Table 1 shows that the typical major article is cited on average nearly two times per year. In contrast, other forms of law review publication receive only fractional citations per year. The typical tribute is cited on average .04 times per year, the typical student note is cited .20 times per year, and the typical book review .46 times per year. Even articles appearing in symposiums are cited only once per year on average, which is nearly half of the citations of the “regular” or typical major law review article.

In addition to these differences, there are several dimensions across which major articles and the other categories of publication are similar. Given the manner in which the data was assembled, it is unsurprising that the average age of articles is the same across the two samples. Perhaps most interestingly, Table 1 shows that their distribution across legal subjects is almost identical. An important caveat is that our topical coding was relatively crude. More than half the articles ended up in the “public law” category. Nevertheless, the inclusion of student notes, book reviews, symposiums, and tributes does not alter the distribution of law review publications by topic. Other than public law, which we suspect is something of a catchall category, private and commercial law was the most popular topic, accounting for roughly twenty percent of the items published. Criminal law represented another ten percent. Despite their popularity during the past decade, corporate and international law account for a little more than ten percent of the published items.

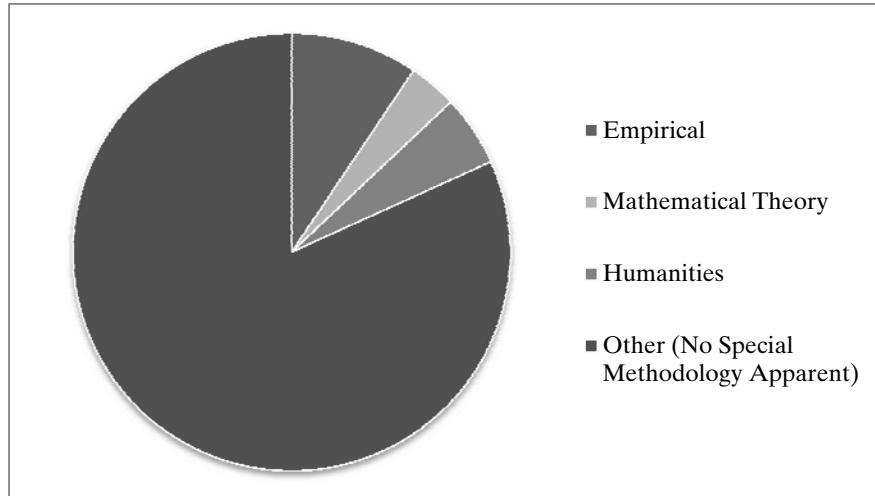
FIGURE 2:
VARIATION ACROSS MAJOR LAW REVIEWS
IN COAUTHORSHIP AND EMPIRICISM, 2000–2010



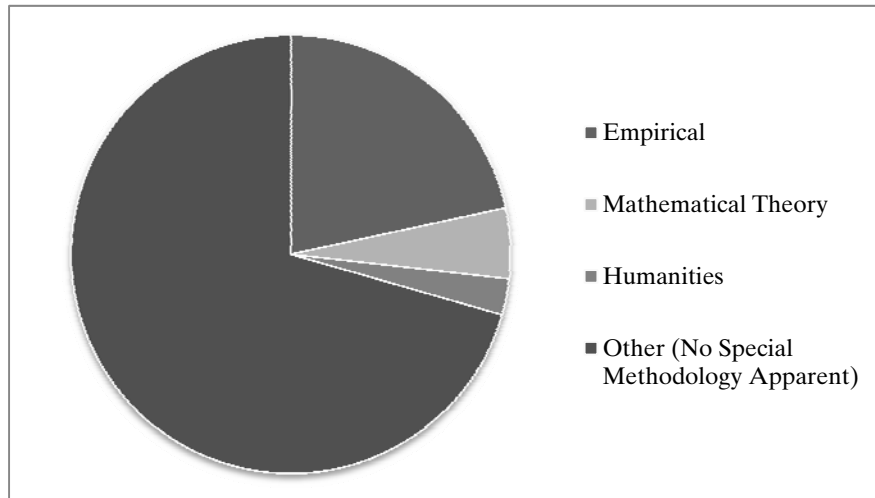
We also observed substantial variation across law reviews in the rates at which they publish coauthored and empirical work. Figure 2 shows that the fraction of major articles that were coauthored and empirical by law review. University of Chicago (Chicago) led the way on both fronts. The share of its major articles that were coauthored (thirty-three percent) was more than twice that of New York University (NYU) (thirteen percent). In fact, Chicago exceeded by nearly ten percentage points the next top venue for coauthorships (University of Pennsylvania (Penn)). With regard to empiricism, the differences were also substantial. The widest gap was between Chicago, with seventeen percent of major articles empirical, and Georgetown, with around two percent of articles empirical.

FIGURE 3:
COAUTHORSHIP AND METHODOLOGY AT MAJOR LAW REVIEWS,
2000–2010

A. FRACTION OF MAJOR ARTICLES



B. FRACTION OF MAJOR COAUTHORED ARTICLES



An initial inspection of the law review data provides some support for the prediction of a correlation between collaboration and interdisciplinarity. Figure 3 shows the relationship between coauthorship and the use of interdisciplinary methodologies. Panel A repeats in visual form the information about major articles in column (2) of Table 1, and Panel B shows the distribution of methodology in major articles that are coauthored. The pie charts reveal that the median coauthored article em-

ploys no special methodology, but it is much more likely to be empirical than a sole-authored article. The rate of empiricism among coauthored articles is 21.6% in contrast to 9.4% among all major articles. The fraction of formal models also rises slightly—5.2% from 3.5%. It suggests that articles presenting formal models are more likely to be coauthored than the traditional law review article but less likely to be coauthored than an empirical article. In contrast, the presence of humanities methodologies is lower among coauthored articles (2.6% versus 5.2% in the full sample). This pattern is consistent with the low rate of coauthorship in the humanities.³⁸

B. Determinants of Coauthorship

The summary statistics show an upward trend in coauthorship, and to a lesser degree, empiricism in major law reviews. They also reveal that empirical articles are far more likely to be coauthored. To assess whether these relationships persist after controlling for other influences, we turn to regression analysis. As described above, we estimate a series of probit models in which the dependent variable is whether the article is coauthored or not. The independent variables include the methodological approach, the log of the length of the article, average number of cites per year since publication, and several measures of the qualities of the article including the subject, article type, and placement in the journal. The results are laid out in Table 2. The table reports marginal effects, rather than coefficients, in order to ease interpretation of the estimates. The first two columns analyze the complete sample of all articles published. The last two columns only analyze major articles. To account for the observed time trend we described in Part IV.A, we estimate two models for each sample: one including a time trend and the other including fixed effects for the number of years since publication. All equations also include fixed effects for each law review.³⁹

38. See *supra* Part II.B.

39. Although not reported in the tables, the coefficients for the law reviews are jointly significant with p-values less than .05 in all equations in Tables 2 and 4.

TABLE 2:
 PROBIT REGRESSIONS ON NUMBER OF MULTIPLE-AUTHORED
 ARTICLES IN TOP FIFTEEN LAW REVIEWS

	(1)	(2)	(3)	(4)
Empirical	.163** (.022)	.164** (.022)	.255** (.033)	.256** (.033)
Formal Theory	.030* (.019)	.029* (.018)	.067 (.047)	.066 (.047)
Humanities	-.024** (.010)	-.023** (.010)	-.046 (.034)	-.044 (.034)
(Log) Page Length	.009** (.004)	.009** (.004)	-.016 (.013)	-.016 (.013)
Average Citations Per Year	.011** (.002)	.011** (.002)	.021** (.004)	.022** (.004)
First in Volume	.035** (.019)	.035** (.019)	.039 (.039)	.041 (.039)
First in Issue	.001 (.008)	.001 (.008)	-.003 (.021)	-.005 (.021)
Tribute	-.043** (.008)	-.043** (.008)	--	--
Symposium	.007 (.006)	.007 (.006)	--	--
Book Review	-.018** (.007)	-.018** (.007)	--	--
Student Note or Comment	-.132** (.006)	-.132** (.006)	--	--
Criminal Law	-.036** (.008)	-.036** (.008)	-.107** (.025)	-.104** (.026)

continued on next page

TABLE 2—*Continued*

International/ Comparative Law	-.040** (.007)	-.039** (.007)	-.099*** (.028)	-.096*** (.029)
Private/ Commercial Law	-.024** (.008)	-.022** (.009)	-.043 (.030)	-.042 (.030)
Public Law	-.045** (.011)	-.043** (.011)	-.119** (.032)	-.118** (.032)
Time Trend	.005** (.001)	--	.021** (.004)	--
Publication Year Fixed Effects?		Yes		Yes
Major Articles Only?			Yes	Yes
N	7540	7540	2785	2785

Note: The columns report marginal effects and standard errors in parentheses. Regressions also include fixed effects for law reviews. The omitted category of topic is corporate and securities law. Standard errors are clustered on articles. The symbol * denotes statistical significance at the ten percent level, and ** denotes statistical significance at the five percent level.

The results are largely consistent with our predictions and the patterns seen in the summary statistics. The estimates show a strong correlation between coauthorship and the presence of empirical analysis in an article. In the full sample, when an article is empirical, the likelihood it is coauthored is higher by sixteen percentage points, and for major law review articles, the likelihood is twenty-six percentage points higher. The estimates for other forms of interdisciplinary work are weaker. In the full sample, articles with formal models have a higher probability of coauthorship by three percentage points, and for humanities-oriented articles, the probability is lower by about two percentage points. When the sample is limited to major articles, these differences become slightly larger in magnitude, but they remain much smaller than the effect of empiricism. At most, the presence of a formal model implies a difference in the likelihood of coauthorship of seven percentage points, and humanities implies a difference of less than five percentage points. Because the estimates for formal theory and humanities are less precise in the smaller sample, they lose statistical significance. The results are consistent with the idea that empirical analysis of law provides strong opportunities for collaboration, stronger than other forms of interdisciplinary work such as formal modeling or humanities.

The probit regressions in Table 2 also include several explanatory variables that might be considered rough proxies for an article's quality—its placement in the running order of an issue and the number of citations it subsequently receives. It is difficult to obtain reliable measures of an article's quality because evaluations of scholarly merit are often subjective. Therefore, the measures we employ come largely from academic lore. It is sometimes said that prestige attaches to an article's ap-

pearing first in a volume. The estimates in Table 2 imply that articles leading off a volume are about four percentage points more likely to be coauthored, but the effect is statistically insignificant when the sample is limited to major articles. Articles that appear first in other issues of a volume are no more or less likely to be coauthored.

A second measure of quality is the number of citations an article subsequently receives. This measure is inadequate for many reasons. A citation may be given in order to criticize rather than praise an article. A superfluous citation may be given to a friend, or a deserving citation may be denied to an adversary. One may give citations to one's own prior work to boost its prominence. Despite these and other distortionary practices, a literature analyzing citations and interpreting them as an article's quality or influence has developed.⁴⁰ We follow that literature in controlling for citations, and Table 2 shows that the average number of citations an article receives per year correlates positively with coauthorship. The estimated effect, however, is small. Taking the largest estimate in Table 2, a doubling of the average number of annual citations for a major article from 1.9 to 3.8 would imply only an 8.4 percentage point increase in the likelihood of coauthorship. On the whole, these measures suggest that empiricism has a stronger bearing on coauthorship than quality.

The subject matter of coauthored work also correlates closely with the incidence of coauthorship. The omitted category is corporate/securities law, and the negative estimates on the indicator variables for other subjects imply that articles on these topics are less likely to be coauthored than corporate and securities articles. The magnitudes of these correlations are relatively modest. The largest—a decline of about twelve percentage points for the average public law article—is smaller than the effect of empiricism. When the sample is restricted to major articles, the estimate for private law loses statistical significance. We suspect that corporate/securities law is not uniquely complex or technical, compared with our other subject categories. Rather, empiricism correlates with subject areas. Only corporate and private law articles were more likely to be coauthored than singly authored. Other subject categories were less likely to be coauthored.

The positive estimate for the time trend in columns (1) and (3) suggests that the likelihood of articles in top law reviews being coauthored is rising, even after controlling for other characteristics of the article. The estimate from the subsample of major articles in column (3) implies that the probability a major article is coauthored rises by ten percentage points every five years, which is a sharper upward movement than was evident in Figure 1. Movements over time in likelihood of collaboration may be nonlinear, and for that reason, the equations in columns (2) and

40. See, e.g., Ayres & Vars, *supra* note 29; Theodore Eisenberg & Martin T. Wells, *Ranking and Explaining the Scholarly Impact of Law Schools*, 27 J. LEGAL STUD. 373 (1998).

(4) replace the time trend with the more flexible fixed effects for years of publication. The coefficients on the fixed effects for publication years were jointly significant (with p-values less than .05), and this replacement has virtually no effect on the other estimates for other variables.

TABLE 3:
PROBIT REGRESSIONS ON NONALPHABETICAL ORDERING OF
COAUTHORS IN ARTICLES IN TOP FIFTEEN LAW REVIEWS

	(1)	(2)	(3)	(4)
Empirical	.028 (.035)	.028 (.035)	.082** (.043)	.081** (.043)
Formal Theory	-.065 (.055)	-.062 (.055)	-.007 (.073)	-.008 (.073)
Humanities	-.067 (.074)	-.089 (.065)	.045 (.109)	.028 (.103)
(Log) Page Length	.002 (.020)	-.005 (.020)	.018 (.028)	.014 (.027)
Average Citations Per Year	-.007 (.007)	-.007 (.007)	-.003 (.007)	-.042 (.054)
First in Volume	.063 (.079)	.051 (.079)	-.040 (.056)	-.042 (.054)
First in Issue	-.052 (.031)	-.050 (.037)	-.020 (.039)	-.023 (.038)
Tribute	.318* (.206)	.259 (.215)	--	--
Symposium	.046 (.032)	.040 (.032)	--	--
Book Review	-.024 (.056)	-.023 (.055)	--	--
Student Note or Comment	.148 (.206)	.087 (.196)	--	--
Time Trend	-.008* (.005)	--	-.006 (.005)	--
Publication Year Fixed Effects?		Yes		Yes
Major Articles Only?			Yes	Yes
N	913	913	560	560

Note: The columns report marginal effects and standard errors in parentheses. Regressions also include fixed effects for law reviews and for subject matter of the articles. Standard errors are clustered on articles. The symbol * denotes statistical significance at the ten percent level, and ** denotes statistical significance at the five percent level.

Table 3 reports the results from a test of the compensation theory, or the idea that empirical articles are more likely to involve deviations from the norm that author names are alphabetically ordered. The table shows probit regressions on the probability that the sequence of authors' names deviates from alphabetical ordering among coauthored articles. Most of the estimates from the full data set are close to zero and statistically insignificant. Two exceptions are large point estimates for tributes and student notes. Perhaps not much credence should be given to them because they are based on a very small number of observations—only eight tributes and only seven student notes in sample were coauthored.

The restriction of the sample to major law review articles does not change most of the estimates. Although a few flip sign, they remain modest in size and statistically insignificant. The exception here is the estimate on empiricism. For major law review articles, empiricism is the *only* covariate that is statistically significant predictor of reversal of author order. Moreover, its estimated effect, eight percentage points, is enormous relative to the baseline rate of nonalphabetic orderings for major, coauthored articles: sixteen percent. The estimate implies that the rate of deviating from an alphabetic ordering is roughly fifty percent higher for empirical coauthored articles as for other types of coauthorships. Interestingly, this pattern does not appear attributable to the importation of different crediting practices from other disciplines. PhD economists are responsible for much of the recent empirical legal studies, and alphabetic ordering has long been the norm in economics. Moreover, the estimates for formal theory and humanities do not predict sizable or statistically significant differences in name sequencing. The relationship between empiricism and deviations from alphabetical name order does not appear to reflect the migration of different credit conventions from other disciplines. While further investigation is necessary, the results for nonalphabetic ordering are consistent with a high demand for empirical skill commanding a high compensation, though there may be other explanations for the pattern.

V. PEER-REVIEWED LEGAL JOURNALS

A. Summary Data

In this Section, we compare the qualities of articles published in the *JLS* and *JLEO* with major articles published in law reviews. The analysis includes all articles published in the *JLS* and *JLEO*. Unlike law reviews, these faculty-edited journals do not publish student notes, book reviews, or tributes, but they occasionally publish symposiums. To make our results as comparable as possible to the results for law reviews, we present estimates for these journals both with and without symposiums. Symposium pieces compose about twenty percent of the articles published in these journals over these years. As the results demonstrate, the inclusion of symposium articles has little effect on the observed patterns.

TABLE 4:

SUMMARY STATISTICS ON ARTICLES IN *JLS* AND *JLEO*, 1989–2010

	All Articles (1)	Major Articles Only (2)
Coauthored	.464 (.499)	.496 (.500)
Empirical	.286 (.452)	.313 (.464)
Formal Theory	.398 (.490)	.466 (.499)
Both Formal Theory and Empirics	.074 (.261)	.085 (.278)
(Log) Page Length	3.153 (.500)	3.216 (.396)
Average Citations Per Year	1.381 (2.447)	1.301 (1.737)
First in Volume	.047 (.213)	.051 (.212)
First in Issue	.052 (.223)	.051 (.212)
Symposium	.199 (.400)	--
Number of Figures	1.608 (2.618)	1.662 (2.420)
Appendices	.372 (.484)	.428 (.495)
Corporate/Securities Law	.080 (.272)	.097 (.296)

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Table 4—*Continued*

Criminal Law	.053 (.225)	.065 (.247)
International/ Comparative Law	.043 (.202)	.030 (.171)
Private/ Commercial Law	.320 (.467)	.345 (.171)
Public Law	.299 (.458)	.300 (.458)
Other Topic	.205 (.404)	.163 (.370)
Time Trend	11.064 (6.161)	11.321 (6.262)
N	1030	827

Note: The columns report means and in parentheses standard deviations. “Major Articles” excludes symposium articles.

Table 4 presents summary statistics for this sample. There are several contrasts with the law review sample that are immediately apparent: these journals feature more collaborative work, more interdisciplinary work, and more technical sophistication. Coauthored articles comprise nearly half of the articles published in these journals during these two decades. This is more than double the rate of coauthorship for major articles in the top law reviews during the past decade.

With respect to technical methodologies, empirical articles account for roughly thirty percent of the articles in these journals over this period, which is about three times the rate in law reviews during the past decade. More strikingly, articles involving formal models account for forty percent or more of the articles in the faculty-edited journals, which is an order of magnitude higher than in law reviews. Perhaps unsurprisingly for two journals focused on law and economics, humanities-oriented articles were too rare to record as a separate category. Instead, we noted when an article contained both a formal model and empirical analysis. These articles, which are in a sense doubly interdisciplinary, represent less than ten percent of the published pieces in these journals.

FIGURE 4:
TRENDS IN METHODOLOGY AT *JLEO* AND *JLS*, 1989–2010

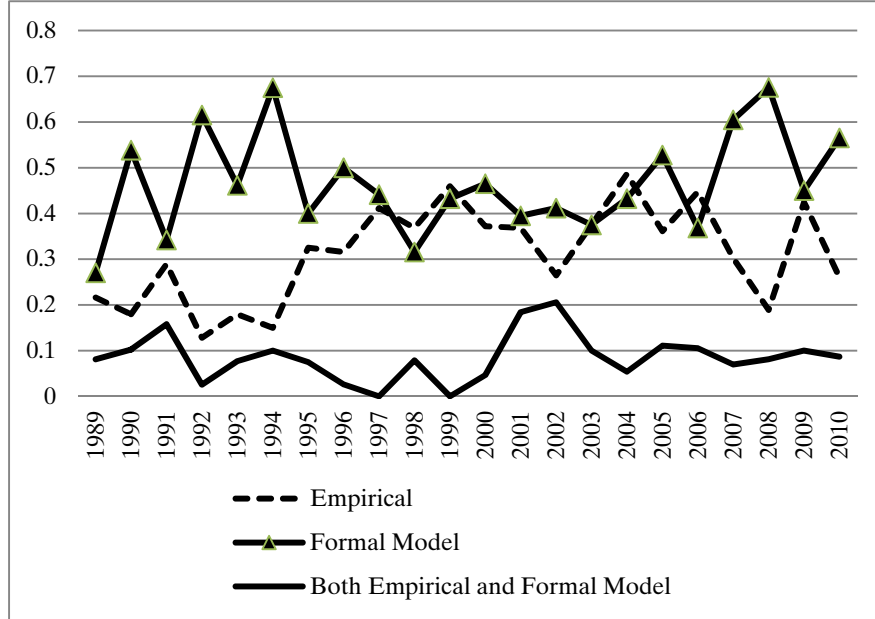


Figure 4 shows the fluctuations over time in the mix of theory and empirics in the peer-reviewed journals. In most years, theory was more common than empirics, but both are well represented. The amount of empirics in the journals has varied from year to year. For all of the attention that “empirical legal studies” has received, the figure does not show a dramatic surge in the presence of empirical work in these journals. Rather, empirical analyses have been a mainstay of these journals. Articles containing both a formal model and empirical analysis were only a small share of the publications throughout this period.

FIGURE 5:
TRENDS IN METHODOLOGY AND COAUTHORSHIP
AT *JLS* AND *JLEO*, 1989–2010

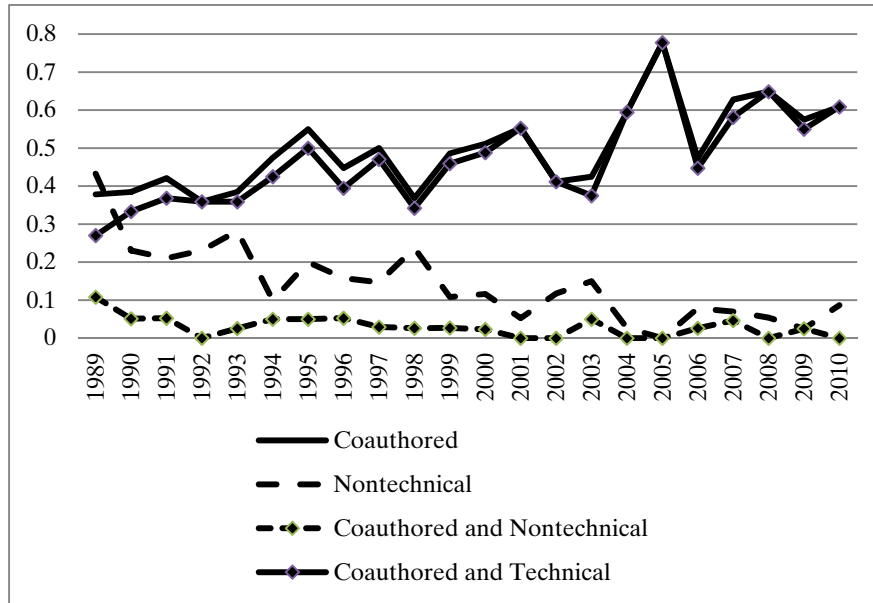


Figure 5 examines the relationship between technicality and coauthorship over time. It shows the movements in “nontechnical” articles, which we define as articles that contain neither empirical work nor a formal model. Over this period, these journals shifted sharply away from nontechnical articles: the share declined from forty percent of articles at the end of the 1980s to less than ten percent by 2005.⁴¹ In the last five years, nontechnical articles have remained below ten percent of these journals’ published output. We believe this dramatic decline reflects the “maturation” of law and economics. Early applications of economics to law could make substantial progress by employing economic ideas at a broad, conceptual level without technical nuance. As early contributions were scrutinized or challenged, it became necessary to specify the precise conditions under which particular results would be obtained, and more formal modeling was necessary. Similarly, economic analysis of law generated a welter of predictions about the consequences of laws and statistical testing of empirical predictions is necessarily technical. Another factor is that, during the past twenty years, economics itself became more technical in its models and empirics, and these methods migrated into

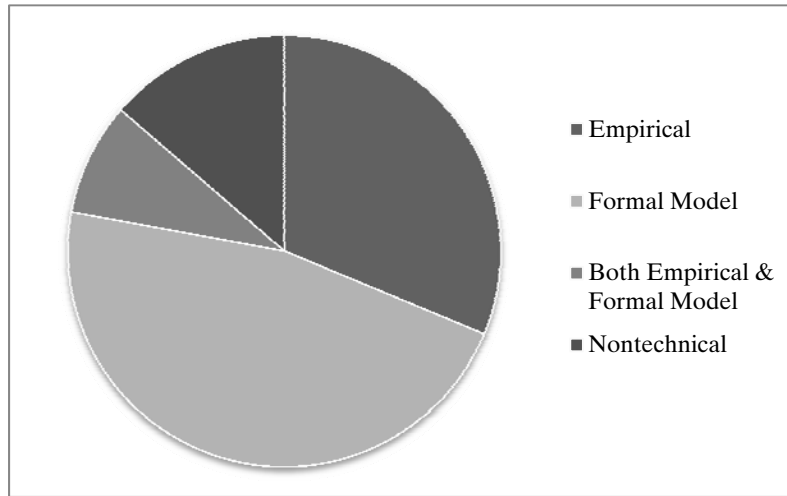
41. Figure 5 does not separately break out the trends for each journal. Yet, the data available on *JLS* extends back to the 1970s, and in that data, it is apparent that the fall in nontechnical articles in that journal is even more pronounced over the longer time period. In the 1980s, more than half of the journal’s articles were nontechnical under our definition, and that share falls with a few brief interruptions until the end of our observation period in 2010.

law and economics. Computing costs have declined sharply over his period, and large datasets have become readily available on the internet. Enormous amounts of data can now be handled at low cost. Off-the-shelf statistical software permits application of sophisticated statistical procedures with ease. All of these factors have spurred more elaborate empirical analyses.

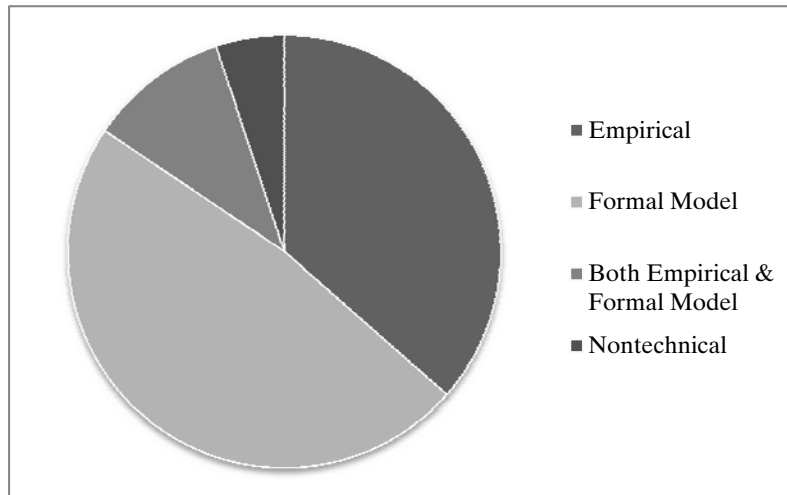
Nontechnical law and economics has not, of course, disappeared from legal academia. For example, it remains a substantial portion of the program at the annual American Law and Economics Association conference, the leading venue for emerging work in the field. Rather, we suspect that much of that work has migrated to law reviews.⁴²

42. We did not code the law reviews for nontechnical law and economics because it would be very difficult to identify such work from a brief inspection of the article.

FIGURE 6:
COAUTHORSHIP AND METHODOLOGY AT *JLS* AND *JLEO*, 2000–2010
A. FRACTION OF MAJOR ARTICLES



B. FRACTION OF MAJOR COAUTHORED ARTICLES



As nontechnical work has vanished from these journals, technical analyses and coauthorship have become more closely correlated. Figure 5 shows that for these journals, as nontechnical articles have become increasingly rare, general trends in coauthorship are determined almost exclusively by trends in coauthorship in the technical articles. Figure 6 steps back from the time series patterns and examines the relationship between coauthorship and specific methodologies. Panel A repeats in visual form the figures in column (2) of Table 4—the fraction of all major articles by methodology. Panel B of Figure 6 shows the same fractions

for coauthored articles. The contrast, not as pronounced as in Figure 3 for law reviews, has some differences. Empiricism accounts for a slightly larger share of coauthored articles than all articles (thirty-six percent versus thirty-one percent) as do articles employing both formal models and empirics (6.5 percent versus ten percent). In contrast, nontechnical articles are much less likely to be coauthored. They account for fourteen percent of all articles but only six percent of coauthored articles.

These features of the data make clear that growing technical sophistication was a central trend in these journals. To capture this trend more fully, we collected several additional proxies for the technical complexity of articles. Table 4 shows that thirty-seven percent of all articles in these two journals had at least one appendix, and they had on average 1.6 figures. Even nontechnical articles sometimes had figures, such as supply and demand diagrams.⁴³ The average length of articles was twenty-five pages which is considerably shorter than the fifty-five pages of the typical law review article. In addition, symposium pieces in these journals averaged about five pages shorter than the typical article. Average article length rose slowly but steadily over this period. For example, in the first five years of the 1990s, the average length was 23.3 pages, and in the last five years of the 2000s, it was 28.7 pages. The lengthening of articles may be another reflection of the rising degree of technicality or it may simply indicate the maturation of law and economics. That is, more recent articles have a larger body of existing work to confront and discuss as a prelude to making their own contributions. While far from certain, the slightly lower rate at which articles in these journals are cited (1.3 per year versus 1.9 per year) may indicate that more technical work is less accessible to a wide audience than is the typical law review article.

The distribution of articles across topics in the faculty-edited journals differed slightly from law reviews. The coding of subjects was not fully comparable as we observed that the faculty-edited journals included some articles that did not pertain to any specific area of law. Rather, they were essentially economics articles. We coded these articles as "other," and they represented about ten percent of the articles in these journals. Private law subjects were more prevalent in the peer-reviewed journals than law reviews, and the percentage of public law topics is roughly half that in law reviews. These differences are consistent with the close attention economic analysis of law has given to common law subjects such as contracts.

43. Although not reported here in order to conserve space, we collected other metrics of technical complexity. For example, we found that empirical papers averaged 5.7 tables, and formal papers averaged sixteen equations. Our confidence in the estimate of tables is greater than for equations. Counting numbered equations was difficult because there was some inconsistency across articles in whether every equation was numbered. This was especially true for game theoretic articles, which while clearly technical, often did not number their equations.

B. Determinants of Coauthorship

As with the analysis of law reviews, we also interrogate the determinants of coauthorship, and we run a parallel set of probit regressions on coauthorship and deviations of alphabetical name ordering among coauthored pieces. The first two columns of each table report regression results on the full sample of all articles published in these journals, and the last two columns display results from a sample excluding symposium pieces. The removal of the symposium pieces from the sample has no material effect on the estimates. The estimates in columns (1) and (2) show that after controlling for other factors, a symposium piece is about as likely to be coauthored as a typical article. The point estimate for a symposium piece is slightly negative but not statistically significant.

The estimates for methodology are not exactly comparable to those for law reviews. For law reviews, articles not employing any special interdisciplinary methodology were the omitted (or comparison) category. For faculty-edited journals, the analogous category would be nontechnical articles. But the precipitous decline in nontechnical articles during this period meant that there were very few observations in this group during the last years of the sample. For that reason, articles with either formal models or nontechnical articles constituted the omitted category in Tables 5 and 6.⁴⁴ The results show that relative to these groups, articles with empirical work or with both formal modeling and empirics are more likely to be coauthored. The difference ranges from fourteen to eighteen percentage points, which is slightly smaller than the impact of empiricism on major articles in law reviews. But it must be remembered that the comparison group here includes articles with formal models, and the overall average rate of coauthorship is much higher (forty-nine percent versus twenty percent).

Additionally, these equations include two additional controls for technical complexity. Estimates for both of those measures are positive and statistically significant. They imply that a one standard deviation increase in the number of figures in an article corresponds to a three percentage point increase in the probability the article is coauthored. More importantly, the presence of an appendix to an article suggests a ten percentage point increase in the likelihood of coauthorship.

As with law reviews, the proxies for article quality provide mixed results. Again, an article's page length does not correlate with coauthorship. Average citations per year predict coauthorship, and the magnitude of the estimate is identical to that for law reviews. Oddly, the lead

44. Although not reported here due to space constraints, we also estimated the equations using only nontechnical articles as the comparison group. The estimates for empirical articles and articles containing both formal theory and empirics were even larger than those shown in Tables 5 and 6. Also, articles with formal theory were more likely to be coauthored than nontechnical articles. These results imply that, consistent with Figure 6, any article employing a technical methodology was more likely to be coauthored than a nontechnical article.

position in the second issue in a volume correlates strongly with coauthorship,⁴⁵ but lead position in the first issue of the volume does not. Unlike the law reviews, the subject matter of the articles does not predict coauthorship. In contrast to the results for law reviews, the point estimates for subject matter are generally smaller, possessing different signs, and statistically insignificant. Lastly, Table 5 shows that as with law reviews, there is an upward trend in coauthorships, even after controlling for other factors. The size of the estimate is half as large as in the law review sample. The flatter slope is perhaps not surprising as the average rate of coauthorships for these journals was already much higher than among law reviews.

TABLE 5:
PROBIT REGRESSIONS ON NUMBER OF MULTIPLE-AUTHORED
ARTICLES IN *JLS* AND *JLEO*

	(1)	(2)	(3)	(4)
Empirical	.135** (.038)	.142** (.039)	.152** (.040)	.161** (.041)
Both Formal Theory and Empirics	.145** (.065)	.153** (.063)	.165** (.063)	.179** (.063)
(Log) Page Length	.030 (.038)	.025 (.039)	.007 (.050)	-.0002 (.051)
Average Citations per Year	.021** (.009)	.021** (.009)	.020** (.012)	.020** (.012)
Number of Figures	.023** (.007)	.024** (.007)	.013** (.006)	.014** (.008)
Appendices	.113** (.036)	.108** (.037)	.098** (.038)	.093** (.039)
First in Volume	.044 (.074)	.041 (.073)	-.009 (.079)	-.007 (.080)
First in Issue	.167** (.072)	.175** (.071)	.145** (.078)	.156** (.077)
Symposium	-.061 (.045)	-.064 (.049)	--	--
Criminal Law	.046 (.095)	.050 (.096)	.073 (.094)	.080 (.095)
International/ Comparative Law	-.029 (.098)	-.029 (.103)	-.118 (.114)	-.116 (.120)

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45. These journals only have two regular issues per year.

TABLE 5—*Continued*

Private/ Commercial Law	-.044 (.070)	-.047 (.072)	-.005 (.074)	-.019 (.076)
Public Law	.003 (.067)	.008 (.067)	.032 (.067)	.034 (.068)
Other Topic	-.018 (.067)	-.015 (.067)	.005 (.068)	.004 (.067)
Time Trend	.012** (.003)	--	.010** (.003)	--
Publication Year Fixed Effects?		Yes		Yes
Major Articles Only?			Yes	Yes
N	1030	1030	827	827

Note: The columns report marginal effects and standard errors in parentheses. Regressions also include fixed effects for law reviews. The omitted category of topic is corporate and securities law. Standard errors are clustered on articles. The symbol * denotes statistical significance at the ten percent level, and ** denotes statistical significance at the five percent level.

TABLE 6:
Probit Regressions on Nonalphabetical Ordering of
Coauthors in Articles in *JLS* and *JLEO*

	(1)	(2)	(3)	(4)
Empirical	.070** (.035)	.095** (.041)	.069** (.035)	.107** (.043)
Both Formal Theory and Empirics (Log) Page Length	.018 (.054)	.046 (.068)	.023 (.056)	.041 (.067)
Average Citations Per Year	-.004 (.004)	-.004 (.004)	.004 (.010)	.007 (.010)
Number of Figures	-.001 (.004)	-.003 (.005)	.001 (.005)	.004 (.007)
Appendices	.020 (.029)	.005 (.003)	.041 (.031)	.025 (.035)
First in Volume	-.079 (.031)	-.093 (.027)	--	--

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TABLE 6—*Continued*

First in Issue	-.020 (.049)	-.005 (.060)	-.069 (.043)	-.077 (.045)
Symposium	.150** (.064)	.127** (.066)	--	--
Time Trend	-.007** (.002)	--	.007** (.002)	--
Publication Year Fixed Effects?		Yes		Yes
Major Articles Only?			Yes	Yes
N	479	479	389	389

Note: The columns report marginal effects and standard errors in parentheses. Regressions also include fixed effects for law reviews and for the subject matter of the articles. Standard errors are clustered on articles. The symbol * denotes statistical significance at the ten percent level, and ** denotes statistical significance at the five percent level.

Table 6 tests the compensation theory for the faculty-edited journals. Again, the dependent variable is whether the coauthors deviate from an alphabetical sequencing of names. Only two variables appear to have any impact on this ordering. As in law reviews, empirical articles in the faculty-edited journals were substantially more likely to depart from the alphabetical norm. The rate at which the average coauthored article did not follow alphabetical ordering was seven to eleven percentage points higher than in the comparison group. This difference represents a very substantial increase because on average only twelve percent of coauthored (nonsymposium) articles did not have alphabetical ordering. Interestingly, the estimates for articles containing both theory and empirics are smaller (two to four percentage points) and not statistically significant. The other significant predictor in these regressions was whether the article was a symposium piece. The estimate reflects the fact that twenty-five percent of coauthored symposium pieces in the sample did not have alphabetical ordering. Why this is so, is left for future investigation.

VI. IMPLICATIONS AND EXTENSIONS

Coauthorship, we have demonstrated, is on the rise, as earlier analyses have suggested. In keeping with theories of complementarity, it appears that coauthorship is a response to increasingly technical demands in scholarship, as it is found most frequently in the peer-reviewed journals, then in major law review articles, and less frequently observed in lower-status work in law reviews including book reviews, student notes, and symposium pieces. We have also demonstrated that empirical and

interdisciplinary work, with their increasingly sophisticated methodologies, are driving much of the coauthorship trend.

We have not directly addressed the normative implications of the trend toward coauthorship in legal academia. To the extent coauthorship is driven by the empirical turn in legal scholarship, it will be subject to many of the criticisms directed at that movement. Professor Brian Leiter has recently questioned the trend, even challenging the use of the term “empirical legal studies.”⁴⁶ If, as our analysis suggests, coauthored empirical work is more technically sophisticated (as demonstrated through more figures and appendices in peer-reviewed journals), then there is a risk that it will be more difficult for traditional legal academics to understand. At the same time, our finding about citation counts indicate the possibility that coauthored work is of higher quality or has greater scholarly influence. A full analysis of the consequences of coauthorship is beyond the scope of this paper. But a finding that coauthored work is of higher quality would be consistent with our analysis and could help parry the complaint that interdisciplinary work, especially empiricism, is inaccessible to traditional legal scholars.

Another challenge associated with coauthorship is the assignment of credit among authors. This is a difficult issue for tenure committees, academic administrators, and other consumers of academic research. Yet, our evidence on name order reversal suggests that those doing empirical work, in particular, are better able to make the division clear. This may result from the importation of norms from other disciplines, or the fact that empirical authors are more likely to insist on more credit for their specialized skills. It may also be the case that the division of labor is more transparent in coauthored empirical work than in other kinds of scholarship. One author typically takes the lead in any quantitative empirical analysis, and so the precise division among coauthors is clearer. This may be particularly true when readers already know the disciplinary skill set of the collaborators.

VII. CONCLUSION

We have provided an economic theory of coauthorship that emphasizes the crucial role of complementarity, as well as compensation, credit diminution, and other factors, in driving the decision to coauthor. Complementarity is affected by the labor market for academics, but also by technological advances that allow for increasingly sophisticated technical work. The prior literature documented the trend to coauthorship is greatest in disciplines like economics and the hard sciences and much slower in humanistic scholarship in which the tools of research have not been affected by technological developments. We show that within law, coauthorship is driven by empirical and interdisciplinary work that is it-

46. See Leiter, *supra* note 37.

self influenced by outside fields and relies on the same tools that push coauthorship generally. The trend toward more interdisciplinary work, especially empirical work, appears to have driven the trend toward more collaboration in law. This pattern is evident in the top fifteen law reviews. It appears even more pronounced in two leading faculty-edited journals in which nontechnical scholarship has nearly disappeared. Empirical scholars also seem better able to resolve some of the problems of credit assignment that have been identified as one of the risks of coauthorship. While we do not directly address the quality of coauthored work, our analysis is consistent with collaboration producing more sophisticated and influential scholarship, and if this is so, we expect the trend to intensify in years to come.

