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STATISTICAL AND ECONOMIC APPROACHES TO LEGAL HISTORY

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Professor Klerman advocates increased use of economic and statistical approaches by legal historians. He documents the dearth of economic and statistical analysis in legal history and shows how use of these methods could contribute to the field. Professor Klerman shows these potential benefits by examining recent articles which use economics and statistics to explore the determinants and effects of legal change.

This article advances a simple hypothesis: legal history could benefit from more attention to economics and statistics. Legal historians currently make remarkably little use of economic theory and statistical tests. Scholars outside the legal history community, most notably economists, however, have begun to use rational choice theory and regression analysis to investigate issues which are at the core of legal history—the causes of legal change and the effect of legal change on behavior. Legal history would be enriched if historians took note of these new methods. Economics and statistics cannot, of course, replace the methods currently in use, but, when used appropriately, they can complement current methods—each method contributing its own insights and partially compensating for the weaknesses of the others.

The relative neglect of economics and statistics may reflect misperceptions of these fields, both of which have changed dramatically in the last two decades. For example, legal historians may reject economic analysis because they view it as theoretical and abstract, as politically conservative, or as naively functionalist. While each of these claims might have been true twenty years ago, they are largely false today. Part of the goal of this article is to bring to light more recent trends in economics which have made it more empirical, less functionalist, less politically charged, and thus more relevant to legal history.

This article shares much with a forthcoming article by Ron Harris, *The Encounters of Economic History and Legal History*.[1] Harris also argues that legal historians should pay more attention to economics and notes recent trends in that discipline that have made it more relevant to legal history.[2] Harris's article, however, focuses on the New Historical Institutional Economics.[3] While I agree that this school has much to offer, this article will focus more on statistical testing than on any single body of theory.

Part I of this article substantiates the claim that legal historians make little use of economics and statistics. It does so primarily through citation analysis of articles and books. Part II attempts to show how economics and statistics can contribute to legal history. It provides examples of recent works that use economics and statistics to illuminate the determinants and effects of legal change. Most of this research was neither published in legal history journals nor performed by people who would characterize themselves as legal historians. As a result, it is largely unknown to the legal history community.

I. ECONOMICS AND STATISTICS IN LEGAL HISTORY

This article starts from the premise that legal historians currently make little use of economics and statistics. That, of course, is an empirical assertion that requires substantiation. To that end, consider Table 1.

The first row of the table addresses the use of statistics. Regression is the most common and most powerful statistical method, so counting the number of articles and books that use regression is a good way of measuring the prevalence of statistical analysis.[4] The first two columns show that only a single article in the most recent legal history journals used regression analysis.[5] Because the *Index to Legal Periodicals* covers law reviews and the gamut of interdisciplinary journals, it sheds light on legal history articles published outside of specialist journals.[6] Regression

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1. Ron Harris, *The Encounters of Economic History and Legal History*, 21 LAW & HIST. (forthcoming Summer 2003).

2. *Id.* at 2, 11–17, 50–54, 59–60 (citations to manuscript version).

3. *Id.* at 3, 11–33, 52–54 (citations to manuscript version).

4. The simplest statistical tool is a table. Use of tables is, of course, common in legal history. Nevertheless, because it is difficult to disentangle the effect of several factors or to assess statistical significance with just a table, I do not consider use of tables to be evidence of serious statistical analysis. Of course, by that criterion, this very article—which has a table but no regressions—would not qualify as statistical.

5. That article is discussed in Part II.A.2. Of course, there are legal history journals other than the two in the table, but these are the only two available on-line. In addition, they are the only two American journals, so they are indicative of the American branch of the discipline. My impression is that legal historians in other countries are even less likely to use statistical and economic methods.

6. Of course, by looking at articles published in legal history journals, law reviews, and law-related interdisciplinary journals, I ignore articles of legal history that appeared in history journals. The neglect of such journals partly reflects the fact that they are not generally accessible in searchable form. If the exclusion of such journals results in a bias against legal history produced by historians in

analysis is only slightly more common in these articles.[7] Because books are a major vehicle for legal-historical writing, it is important to consider the use of statistics in books as well. The second to last column, however, indicates that very few legal history books contain regressions. The last column reports the number of regressions in the *Yale Law Journal*. This column provides a useful comparison to mainstream legal scholarship. It indicates that regression analysis is more common there, although still relatively rare.

TABLE 1
REGRESSIONS AND CITATIONS TO ECONOMISTS IN
LEGAL-HISTORICAL WRITING, 1975–2000

	American Journal of Legal History (1994-1998)[d]	Law and History Review (1996-2001)[e]	Articles classified as "Legal History" in Index to Legal Periodicals (1985-2000)[f]	Legal History Books (1975-2000)[g]	Yale Law Journal (1996-2001)[h]
Regressions[a] (performed)	0	1	2	2	4
Gary Becker[b] (citations to)	0	1	2	2	17
Ronald Coase[b] (citations to)	4	7	2	6	34
Robert Fogel[b] (citations to)	2	0	2	9	2
Douglass North[b] (citations to)	0	2	2	8	5
Richard Posner[b] (citations to)	14	14	29	16	92
N[c]	464	435	240	332	366

Notes:

[a] This row counts the number of articles or books which report the results of at least one regression performed by the author of the article or book.

[b] These rows count the number of articles or books which cite Becker, Coase, Fogel, North, or Posner.

[c] This row records the total number of books or articles (including book reviews) searched.

[d] This column was calculated using Westlaw searches. Westlaw coverage of the *American Journal of Legal History* began in 1994. The 1999-2001 volumes have not been published yet. This journal is not on Lexis.

[e] This column was calculated using Lexis searches. Lexis has much more complete coverage than Westlaw for *Law and History Review,* even though both claim coverage of the same years.

[f] The numbers in this column were computed by using Westlaw to compile a list of articles published in 1985, 1990, 1995, and 2000 classified as "legal history" by the *Index to Legal Periodicals*, downloading those which were available in full text on Westlaw (about two-thirds), and then using Microsoft's FindFile Tool to search the downloaded articles.

history departments, I hope that the last column—which examines books reviewed in legal history journals—at least partially corrects that bias.

7. The figures could be interpreted to mean that statistics are much more common in nonspecialist journals, as regressions appear in almost one percent (2/240) of such articles, whereas they appear in barely one-tenth of one percent (1/861) of articles appearing in legal history journals. This difference, however, is mostly due to the fact that the legal history journals include a very large number of book reviews, which are unlikely to contain regressions, whereas the *Index to Legal Periodicals* database includes relatively few.

^g The numbers in this column were compiled by examining every book reviewed in 1975, 1980, 1990 and 2000 by *American Journal of Legal History*, *Law and History Review*, and the *Journal of Legal History*. The citations counts are based on citations in bibliographies or, if the book had no bibliography, citations in footnotes. Since *Law and History* did not begin publication until 1983, the table includes books reviewed in that journal only since 1990. Similarly, since the *Journal of Legal History* did not begin publication until 1980, the table includes books reviewed in that journal only since that year. Since 1998 was the last complete year published by the *American Journal of Legal History*, that year was searched instead of the 2000.

^hThe numbers in this column were compiled using Westlaw.

The middle rows of the table count the number of articles that cite leading figures in law and economics and economic history. All but Richard Posner are Nobel Prize winners. Yet, with the exception of Posner, they are hardly ever cited in works of legal history. In contrast, leading law and economics scholars (Becker and Coase) are much more frequently cited in the *Yale Law Journal*, although that journal cites the economic historians (Fogel and North) with roughly the same frequency as the legal history literature. Posner receives a fair number of citations, in the legal history literature, although significantly fewer than in the *Yale Law Journal*. In addition, many of the citations are to the less economic parts of his corpus—for example his work on Holmes and Cardozo. While the citations to Posner indicate some interest in economics, the predominance of citations to Posner suggests rather shallow research. Posner's works are often the most accessible, but a serious attempt to incorporate economic insights would take historians deeper into the literature.

Although the overall numbers are small, the trend is positive. There are more regressions and more citations to economists in the most recent articles and books, even taking into account the increasing number of legal history publications.

II. ECONOMIC AND STATISTICAL ANALYSIS OF LEGAL HISTORY

Articles applying economics and statistics to legal-historical issues fall into two broad groups: those that explore the effects of legal change and those that try to explain legal change. Those in the former category are usually structured as "event studies," i.e., attempts to predict and measure the effects of particular legal changes. Attempts to explain legal change, the second group, can be subdivided into two primary categories: functionalist accounts, which see law as generally responding efficiently to changes in the nonlegal environment, and accounts rooted in public choice or positive political theory, which explain legal change as the product of interest groups and institutions.

A. Predicting and Measuring the Effects of Legal Change

Some of the most interesting and successful recent work has used economic theory and regression analysis to understand the effects of legal rules. In this subsection, I will discuss two examples of this genre.

1. Weinstein's Work on Limited Liability

Limited corporate liability is generally credited as a hallmark of modern capitalism and a key institution fostering the sustained economic growth of the last century and a half. Recent work in economic theory, however, has undermined this consensus.[8] Because creditors can adjust interest rates to take into account the greater risks of lending to corporations with limited liability, the advantages such corporations receive from greater ease of raising equity capital may be offset by more expensive debt.[9] In addition, if the benefits of cheaper equity outweighed the cost of more expensive debt, a corporation could achieve limited liability by contract. That is, even if the law did not grant corporations limited liability, a corporation could negotiate contractual clauses shielding shareholders from liability. These two considerations suggest that the benefits of limited liability, if any, would be modest, consisting mostly of reduced transaction costs, i.e., removing the need to negotiate limited liability in each debt transaction. Another benefit of limited liability today is shielding shareholders from tort liability. This benefit, however, would have been small before the mid-twentieth-century expansion of tort liability. In addition, shielding shareholders from delictual liability is probably inefficient, as it encourages managers to take excessive risks.

Although this revisionist theory of corporate liability has attracted many adherents, many scholars continue to believe that limited liability remains important and beneficial.[10] Weinstein realized that data from California provides a way of testing these theories. While nearly all economically advanced countries and American states adopted limited liability in the mid-nineteenth-century, before the emergence of modern equity markets, California changed its corporate law only in the period 1928–31.[11] As a result, it is possible to measure the effect of limited liability by examining the reaction of the stock market to the introduction

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8.   Paul Halpern et al., *An Economic Analysis of Limited Liability in Corporation Law,* 30 U. TORONTO L.J. 117, 147–50 (1980); Henry Hansmann & Reinier Kraakman, *Toward Unlimited Shareholder Liability for Corporate Torts*, 100 YALE L.J. 1879, 1932–34 (1991).

9.   *See* Halpern, *supra* note 8, at 127–29.

10.   FRANK H. EASTERBROOK & DANIEL R. FISCHEL, THE ECONOMIC STRUCTURE OF CORPORATE LAW 41–54 (1991); David W. Leebron, *Limited Liability, Tort Victims, and Creditors,* 91 COLUM. L. REV. 1565 (1991).

11.   Mark I. Weinstein, Share Price Changes and the Arrival of Limited Liability in California, 1–3, 5–7 (Sept. 24, 2001) (unpublished manuscript, on file with the University of Illinois Law Review) [hereinafter Weinstein, *Share Price Changes*]; Mark I. Weinstein, *Limited Liability in California: 1928–1931*, 2, 16–26 (Aug. 31, 2000) (unpublished manuscript on file with the University of Illinois Law Review) [hereinafter Weinstein, *Limited Liability*].

of the new liability regime. If stock prices for California corporations rose, that would indicate that the benefits of reduced transaction costs and cheaper equity capital outweighed the cost of more expensive debt. If the increase was large, it would confirm the importance of limited liability. On the other hand, if stock prices did not rise, that would suggest that limited liability was not a significant aspect of modern capitalism. Similar "event studies," measuring the impact of a wide range of phenomena on stock prices, are common in the finance literature, and their methodology has been refined over the last few decades.[12]

Weinstein applied those methods to California's adoption of limited liability.[13] That is, he ran a series of regressions in which the dependent variable was the stock price of California corporations before and after the adoption of limited liability, and the explanatory variables were dummy variables indicating various stages of California's adoption of limited liability and a number of control variables.[14] Dummy variables are variables which take the value of 0 or 1; for example, a key variable in these regressions was one which was 0 for times before California had adopted limited liability and 1 afterwards. In such regressions, the coefficients on the dummy variables indicate the effect of the adoption of limited liability on share prices. The coefficients were small and lacked statistical significance. So with appropriate caveats taking into account the small size of his data set, Weinstein concluded that the adoption of limited liability had no measurable impact on share prices.[15] This finding lends support to the revisionist view that limited liability is not that important.[16]

2. Klerman's Work on Private Prosecution

My own work on the private prosecution of crime in thirteenth-century England provides a very different example of the use of economics and statistics.[17] For most of the middle ages, criminal prosecutions could be initiated in two ways: by appeal, which was private prosecution by the victim or the victim's family, or by presentment, which was accusation by a jury. Generations of legal historians had known that appeals declined during the middle ages, but there was no agreement on when or why. I first used statistics to ascertain when the number of private prosecutions declined.[18] This could not be calculated simply by counting the

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12.   Eugene F. Fama et al., *The Adjustment of Stock Prices to New Information*, 10 INT'L ECON. REV. 1 (1969); G. William Schwert, *Using Financial Data to Measure Effects of Financial Regulation*, 24 J.L. & ECON. 121 (1981).

13.   Weinstein, *Share Price Changes*, *supra* note 11; Weinstein, *Limited Liability*, *supra* note 11.

14.   Weinstein, *Share Price Changes*, *supra* note 11, at 6–15.

15.   *Id.* at 9–12, 13–15.

16.   *Id.* at 15–17.

17.   Daniel Klerman, *Settlement and the Decline of Private Prosecution in Thirteenth-Century England*, 19 L. & HIST. REV. 1 (2001).

18.   *Id.* at 20–35.

number of appeals in the surviving records, because most of the original documents were lost or damaged. Using regression analysis, however, I was able to reconstruct the changing rate of appeals. In these regressions, the dependent variable was the number of appeals brought in a particular year in a particular county and the principle independent variables were dummy variables for years and counties. In this kind of regression, the coefficients on the year dummy variables measure whether appeals were common or uncommon in that year. These regressions revealed a much more complex trend in the number of appeals than had previously been realized, with both a sharp increase in the 1230s and sharp decreases around 1220 and after 1250.[19]

I then used simple economic analysis to try to understand why the number of appeals changed so dramatically. Private prosecutors were motivated both by the desire to punish those who harmed them and by a desire to extract favorable settlements from them. I noticed that judicial policy towards settlement changed several times during the thirteenth century. Sometimes settlements were tolerated, while other times they were disregarded and settling defendants were punished in spite of settlement. I predicted that when settlements were disregarded, potential prosecutors would have less incentive to bring appeals and that the number of private prosecutions would be lower. To test this hypothesis, I constructed a measure of judicial respect for settlement and conducted a second set of regressions, in which the year dummy variables were replaced as independent variables by the measures of respect for settlement. In this set of regressions, positive and significant coefficients on the variables measuring respect for settlement indicated that the data were consistent with the hypothesis that changing settlement policy caused changes in the number of private prosecutions and led to the ultimate decline of the appeal.[20]

B. *Explaining Legal Change*

One of the main goals of legal history is to understand and explain legal change. Economics and statistics can be useful in this task as well. Work with this goal can be classified into two broad groups: functionalist and nonfunctionalist. Functionalists tend to assume that the law responds efficiently to changes in society and thus predict legal change when economic or social conditions make a different legal rule more appropriate. Nonfunctionalist economic explanations see legal change as the outcome of negotiation and struggle between interest groups and governmental officials. Such explanations look to changes in the interests and strength of various groups as the primary impetus of legal change.

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19. *Id.* at 26–29.
20. *Id.* at 40 n.94 and more generally *id*. at 35–42.

1.   Geddes and Lueck: A Functionalist Explanation of Women's Rights

Geddes and Lueck use property rights analysis to explain the movement away from coverture.[21] They classify coverture as a regime where husbands had property rights in their wives' labor, and they see statutes that gave women rights to property and earnings as giving them "self-ownership."[22] If there were no transaction costs, the Coase Theorem predicts that there would be no difference between these two legal regimes.[23] Spouses would simply bargain with each other to allocate work, leisure, and income in optimal ways. Of course, transaction costs were not zero, because spouses could not make binding contracts with each other, and, even if they could, it would have been difficult for each spouse to monitor whether the other was performing his or her part of the deal. As a result, Geddes and Lueck argue that coverture imposed real social costs, at least when wages and returns to human capital were high and when women's work was hard to monitor.[24] Under these conditions, wives could potentially earn significant amounts by working outside the home, especially if they invested in skills and schooling. Nevertheless, coverture gave them little incentive to do so, and husbands' limited ability to monitor their wives' work outside the home and their human capital investments meant that husbands could not force their wives to exert maximal effort at work or skills acquisition. On the other hand, if women were given more control over the earnings and property, they would have economic incentives to work and acquire skills.[25]

Using these insights, Geddes and Lueck predicted that states where wages and schooling were highest would pass laws giving women control over earnings and property first and that other states would do so as wages and schooling increased.[26] They then used regression analysis to test this hypothesis.[27] The data was consistent with their predictions.

Although their analysis was not explicitly functionalist, they implicitly assumed that coverture would be abolished when it became particularly costly. That is, they assumed that legislatures responded to economic change with legislation that was more appropriate to the new circumstances.

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21.   Rick Geddes & Dean Lueck, *The Gains from Self-Ownership and the Expansion of Women's Rights*, __ AM. ECON. REV. __ (2002) (forthcoming).

22.   *Id.* at 2.

23.   *Id.* at 3, 5.

24.   *Id.* at 5–7.

25.   *Id.*

26.   *Id.* at 6, 11–12.

27.   *Id.* at 12–17.

2. *de Figueiredo and Tiller: A Nonfunctionalist Explanation of the Judicial Expansion*

In recent years, functionalist explanations have been heavily criticized as naively assuming that law responds efficiently to social change and neglecting the complexities of the political process.[28] Recent work in economics reflects a move away from functionalism towards public choice and positive political theory. These theories model political decisions, including legislation, as the product of the interplay of interests and institutions. Depending on the constellation of interests and institutions, social changes may not be reflected in legislation, and inefficient legislation may be passed.

de Figueiredo and Tiller's work on the expansion of the judiciary is emblematic of this new approach.[29] In their view, legislation increasing the number of federal judgeships could be motivated either by "institutional efficiency" (the public interest) or "political efficiency" (partisan advantage). The institutional efficiency rationale suggests that legislators would create new judgeships when increased judicial caseloads indicate that there was a need for more judges.[30] If motivated by political efficiency, legislators would expand the judiciary when they were confident that the judges who would fill the new judgeships would share Congress's political ideology. On the latter view, legislation authorizing judicial expansion should be more likely when one party controls the House, Senate, and Presidency, and when that party will continue to control the Senate and Presidency long enough to nominate and confirm the judges. Only when there is political alignment of this kind can those who pass the legislation reasonably believe that the new judges will share the politicians' policy preferences.[31]

de Figueiredo and Tiller tested the relative strength of the institutional and political efficiency rationales by examining all legislation to expand the federal courts of appeals passed between 1869 and 1991. During that period, twenty-five Congresses enacted legislation to expand the appellate judiciary. In twenty-one of those Congresses, the House and Senate were controlled by the same party as the Presidency.[32] While this simple statistic provides persuasive confirmation for the political efficiency theory, the authors also use regression analysis, which allows them to test the relative strength of the partisan and public interest theories. In their first regression, the dependent variable was a dummy vari-

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28. *See* DOUGLASS NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE, 131–40 (1990); Robert W. Gordon, *Critical Legal Histories*, 36 STAN. L. REV. 57, 100–01 (1984).

29. John M. de Figueiredo & Emerson Tiller, *Congressional Control of the Courts: A Theoretical and Empirical Analysis of Expansion of the Federal Judiciary*, 39 J.L. & ECON. 435 (1996).

30. *Id.* at 438–39.

31. *Id.* at 444–45.

32. *Id.* at 447.

able which was 1 if a particular Congress enacted legislation to expand the judiciary, and 0 if it did not. The most important dependent variables were the caseload per appellate judge and a dummy variable that was 1 if the House, Senate, and Presidency were controlled by the same party as the nominating President and confirming Senate, and 0 if not. There was no statistically significant relationship between caseloads and the expansion of the judiciary, but expansion was more than fifty-percent more likely when the House, Senate, and Presidency were in political alignment. The data are thus more consistent with the political efficiency rationale than with the institutional efficiency, public interest theory.[33]

In addition to analyzing the timing of the expansion of the judiciary, Tiller and de Figueiredo examined the number of new judgeships created. To do so, they used a regression similar to that described above, except that the dependent variable was the number of judgeships created. In this regression, both caseload and partisan alignment independent variables were statistically significant. This suggests that, when Congress has decided to expand the judiciary, the size of the expansion is determined both by the public interest and by partisan advantage.[34]

III. CONCLUSION

It is hoped that the analysis in this article has convinced at least a few legal historians that there is room in the field for more economics and statistics. The four studies discussed here indicate, I believe, that economics and statistics can be employed usefully to investigate a wide range of legal-historical issues, from the decline of private criminal prosecutions in the middle ages to the emergence of women's rights in the nineteenth century. While it is possible to argue with many of the premises and conclusions employed in these articles, I think they demonstrate the utility and power of techniques that are currently neglected by most legal historians.

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33. *Id.* at 447–53.
34. *Id.* at 453–59.