

ANALYTICAL METHODS FOR LAWYERS

SECOND EDITION

HOWELL E. JACKSON

LOUIS KAPLOW

STEVEN M. SHAVELL

W. KIP VISCUSI

DAVID COPE

FOUNDATION PRESS

Analytical Methods for Lawyers

Howell E. Jackson
James S. Reid, Jr., Professor of Law
Harvard Law School

Louis Kaplow
Finn M. W. Caspersen and
Household International Professor of Law and Economics
Harvard Law School

Steven M. Shavell
Samuel R. Rosenthal Professor of Law and Economics
Harvard Law School

W. Kip Viscusi
University Distinguished Professor of
Law, Economics, and Management
Vanderbilt University Law School

David Cope
Lecturer on Law
Harvard Law School



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© 2011 By THOMSON REUTERS/FOUNDATION PRESS

1 New York Plaza, 34th Floor

New York, NY 10004

Phone Toll Free 1-877-888-1330

Fax 646-424-5201

foundation-press.com

Printed in the United States of America

ISBN 978-1-59941-921-3

Mat #41090617

To Robert C. Clark

Preface

This text was created to accompany a course we have taught for the past four years at Harvard Law School. The course and the text grew out of our joint realization that the traditional law school curriculum, with its focus on the development of analogical reasoning skills and legal writing and research, left many law students inadequately prepared for upper-level law courses and, more importantly, for legal practice in the modern world. Lawyers, whether corporate counsel or public interest advocates, must work in settings where effective argumentation and the giving of sound legal advice often depend on mastery of language and techniques derived from disciplines such as economics, accounting, finance, and statistics, staples of the modern business school curriculum, but notably absent, in introductory form, from law school classrooms.

True, a number of students arrive at law school well equipped with knowledge of these areas from undergraduate experience as economics, finance, or business majors. Equally true, however, is that many, perhaps the majority, of law students are woefully under-prepared in these areas. Furthermore, many self-select away from those upper-level courses in which their inadequate preparation would severely disadvantage them. These students will graduate from law school without a set of basic skills, the absence of which will hamper their development in almost any of the careers that law graduates now pursue. It has been our experience that the students who lack background in these critical areas are themselves acutely aware of their deficiency (or are made aware of it when they encounter their first law and economics discussion in torts or contracts). Such students are eager to enroll in a course such as ours that promises to demystify analytical concepts and quantitative techniques that they see as clearly relevant to success in their other law school classes and,

ultimately, to success in their chosen careers. It is primarily for these students that this text has been written.

I

Unlike traditional introductory treatments, this book is not a dry or technical text, far removed from the world of law. Quite the opposite. Virtually every concept is introduced, explained, and applied in legal contexts. The translation from theory to practice is not left for students to develop after graduation; instead, it is at the very heart of the text.

Chapter One introduces students to decision analysis, a set of techniques traditionally taught to first-year MBA students. Increasingly, practicing lawyers make use of decision trees to review litigation strategies and settlement offers. With a few relatively simple tools, decision trees help lawyers unpack complex decisions and advise clients choosing among various possible courses of action. The chapter introduces concepts such as probability, expected value, sensitivity analysis, risk aversion, and the value of obtaining additional information. It's hard to imagine a lawyer giving effective advice without a familiarity with these basic analytical tools, yet the explicit study of decision analysis is totally absent from the traditional law school curriculum.

Chapter Two expands on decision analysis to introduce basic game theory, with an emphasis on strategic challenges raised by incomplete information. In many contexts where lawyers offer advice, the decisions of their clients will depend in part on what they expect to be the actions and reactions of others. Game theory offers an analytical structure to help students recognize and evaluate problems of this sort. In a similar spirit, the chapter introduces students to the basics of information theory, including the concepts of moral hazard and adverse selection. While students will have heard these terms mentioned in other law school classes, many don't have a clear understanding of their meaning or how they can complicate negotiations and contracts. Nor have students been exposed to standard solutions to the prisoner's dilemma or other similarly recurring problems.

Chapter Three presents an overview of the function of contracts and a tool box for designing effective agreements — contracts that will accomplish clients' objectives and avoid common pitfalls. In contrast to most first-year contract courses, which emphasize legal doctrines governing

contract formation and damage awards, this chapter offers students a practical framework for determining what kinds of provisions contracts should include, for instance, when to use a cost-plus as opposed to a fixed payment fee structure or how to formulate a contract to ensure that work is completed on time. In addition to reviewing actual terms from real contracts, the chapter considers the avoidance and resolution of contract disputes, topics also typically absent from first-year contracts courses.

In Chapter Four, we turn to analytical skills often associated with business practice: accounting and the interpretation of financial statements. All lawyers — not just corporate counsel — should have a basic understanding of these topics. Accounting is pervasive in modern legal practice. Family lawyers negotiating divorce agreements or child custody arrangements must be able to interpret and critique financial statements. Employment agreements often include compensation provisions that are expressed in terms of accounting standards. Non-profits and government agencies all measure their performance in accordance with financial accounting standards. Much information obtained in discovery is of a financial nature. Without a passing acquaintance with balance sheets and income statements, law school graduates face a serious handicap when they enter the world of practice, whatever their area of specialization.

Chapter Five offers an introduction to the field of finance. Our task here is threefold. In terms of basic skills development, the core of the chapter is an introduction to the time value of money: the most basic concept in finance and the one that new lawyers must fully internalize in order to be able to represent their clients sensibly in a variety of legal contexts, from contract negotiations to litigation settlements. We then introduce a series of more advanced concepts in finance theory such as diversification, the relationship between risk and return, and rudimentary coverage of asset pricing models and valuation techniques. The chapter also provides a selection of excerpts from classic writings in the field of finance. We include these excerpts to expose students to an intellectual tradition that will be familiar to their classmates who have studied economics and finance as undergraduates and that is often taken for granted in upper level courses on corporations and advanced commercial topics. These readings also offer an important alternative perspective on the goals of financial analysis.

Chapter Six presents a primer in microeconomics. While many students have been exposed to economics, some have not and a large number will have taken introductory courses at the undergraduate level that make no effort to relate the basic concepts of microeconomic analysis to problems that lawyers are likely to encounter in practice. Accordingly, in this chapter, we review the basic tools of microeconomics — including supply and demand, public goods, externalities, and marginal analysis — and then relate these concepts to common legal problems.

Chapter Seven is an introduction to the field that has become known as law and economics, the hallmark of which is attention to the effect of law on the behavior of individuals and firms. Here the basic ideas of law and economics are discussed for the core areas of law — property, tort, contract, and crime — as well as for litigation. For example, in torts, we discuss how rules of negligence and strict liability influence incentives to reduce risk and we also examine the relationship between tort liability and insurance. Students will sometimes have encountered law and economics thinking in small doses in other courses, but a systematic treatment is a different and highly valuable enhancement to their usual exposure.

Finally, in Chapters Eight and Nine, we turn to empirical techniques. In Chapter Eight, *Fundamentals of Statistical Analysis*, we begin by introducing the basic elements of descriptive statistics, including various measures of central tendency and variability, with a particular emphasis on the value of visual presentations of data in histograms and other graphic formats. We then turn to the basic elements of sampling and survey design, concepts that many treatments of empirical method often overlook. Finally, the chapter offers an informal presentation of the two most important tools of inferential statistics: hypothesis testing and estimation.

Chapter Nine concludes our treatment of empirical methods with an introduction to multivariate analysis. We start off with simple linear relationships between two variables and the techniques of correlational analysis and simple linear regressions. We then extend the discussion with a presentation of multiple regression in the context of discrimination litigation. The chapter ends with brief treatment of some of the most common difficulties in making inferences using multiple regression

analysis: the omission of important explanatory variables, the inclusion of irrelevant variables, the effect of multicollinearity, and the problem of two-way causation.

II

At most law schools, Analytical Methods for Lawyers will be a new offering and, as a result, a number of questions are likely to arise as to how the course would best fit into the curriculum. While many approaches are possible — and we welcome input from those who adopt the course — here are our preliminary thoughts on some key issues.

First, which law students should take courses in analytical methods? At one extreme, one could imagine making the course a requirement for all students, perhaps as part of the first-year curriculum. For some law schools, a mandatory course might make sense, but there are also certain pitfalls with this approach. Many schools will no doubt prefer — at least initially — to make the class optional, as we have at Harvard Law School.

A further practical question is when such a course should be offered to students. At Harvard, our choice originally was to schedule the course in the Spring Term so that students can take it during the second half of their first year. At that point, the students know something about legal doctrine and civil procedure, and are beginning to understand the various roles that lawyers are called upon to play in both litigation and transactional settings. As a result, it is possible to use problems that draw upon their legal training: for example, considering how to decide whether to hire an expert witness for a civil trial or what kind of compensation provision to put into a personal service contract. While students would have even greater knowledge of legal problems by the second or third year, there are important offsetting costs of delaying the timing of the course. Many of the skills that we teach in Analytical Methods are essential building blocks for upper level courses. Accounting and finance provide important background for corporations classes and other commercial courses. Knowledge of statistical methods is useful in upper level courses on employment discrimination and many other areas of public policy analysis. Particularly for students most in need of quantitative skills training — the French literature major who dropped

math after eleventh grade — we strongly recommend that the course not be postponed till late in the second or third year of law school lest these students be needlessly disadvantaged in other upper-level courses.

Next, there is the issue of feedback and examinations. In other areas of the university where analytical skills are taught, a critical component of instruction is the weekly problem set or laboratory exercise, and that is the model we have adopted in our teaching of the course. In our experience, the best way for students to internalize new analytical skills is through regular written exercises and prompt feedback. Over the course of the semester, students are expected to complete approximately ten such exercises, which together account for about a quarter of their course grade. While there is a cost associated with these weekly exercises — preparing and grading weekly exercises is time consuming — the offsetting benefit is considerable. Students feel empowered when they have actually used — successfully — their newly acquired skill. Moreover, students generally seem to enjoy the opportunity to complete much of their work in one course before the end of the semester. For the balance of the grade we use two “mid-term” examinations, each approximately an hour and a half in length and each covering roughly one half of the course. (A teachers’ manual, which is available to instructors upon request, includes a large number of sample exercises and written assignments.)

A separate practical concern relates to the issue of what kind of faculty member should teach a course on Analytical Methods. In our view, the concepts covered in this book are either already known, or easily enough understood, so that most instructors who teach commercial, corporate, or economic courses would find themselves entirely comfortable presenting most of the topics covered in the text. Formal training in the subject matter is not necessary. (And our teachers’ manual offers substantial assistance for the uninitiated.) The course lends itself to team teaching, with each faculty member responsible for covering different chapters of material. We also typically employ a teaching assistant to help grade the weekly written exercises. Many schools, whether due to instructor preferences, limited class hours, or overlaps with other offerings, may well choose to offer only a selection of modules. Our text is designed so that this is readily accomplished, for each chapter (or group of two) is entirely self-contained.

Finally, there is a question of how a course in analytical methods relates to other semester-long law school courses, such as corporate finance, analysis of financial statements, economic analysis of the law, or empirical methods in the law. At least at Harvard, we have tended to view Analytical Methods as an optional gateway to these upper level offerings. Students with no prior training in quantitative methods will take our Analytical Methods course and then choose to go on to advanced upper level courses on related subjects. This strikes us as entirely appropriate. (We do, however, impose some limits on students who have taken two or more upper level courses in related fields from enrolling in the overlapping modules in our Analytical Methods class.)

* * * *

Chapters One, Two and Three of this book were written primarily by Louis Kaplow and Steven Shavell; Chapters Four and Five by Howell Jackson; Chapters Six and Seven by Steven Shavell; and Chapters Eight and Nine by David Cope and Kip Viscusi. Many others have also contributed to the development of the book. To begin with, the John M. Olin Foundation, through its grants to the John M. Olin Center for Law, Economics, and Business at Harvard Law School, provided generous and sustained support for the development of this book and associated research efforts at the Law School. We benefited from a different, but equally important, kind of support from our students at Harvard who suffered through early versions of the manuscript, endured with good humor not-always-successful experiments in pedagogical innovation, and offered invariably helpful and creative suggestions for improvements in the manuscript. We are also extremely grateful for the excellent and extraordinarily patient editorial assistance that we received from Peggy Burlet and Diane Long, as well as help from Matt Seccombe in preparing the index and providing a final proofing of the manuscript. Finally, we want to express our appreciation and gratitude to Robert C. Clark, to whom this book is dedicated, for his unwavering support for our efforts in developing this book and the Analytical Methods for Lawyers course upon which it is based.

Cambridge, Massachusetts
September, 2003

Preface to the Second Edition

The first edition of this text has been used now for seven years in our Analytical Methods for Lawyers course at Harvard Law School, which, as an elective, has attracted between 100 and 200 students each year. The popularity of the course can, we believe, be attributed to the continuing presence at the law school of large numbers of students who arrive without background in many or all of the subjects covered in the text and who recognize that success at the law school and in law practice will require that they achieve a degree of familiarity with the concepts and techniques presented in it. We are acutely aware of the fact that our core constituency is a group of students who can be expected to be not only beginners in the various areas we cover, but also, though intelligent and highly motivated, not fully comfortable with quantitative methods. Making subjects like economics, statistics, accounting, and finance accessible to this group is a difficult pedagogical task, and we have greatly benefitted in it from our interactions over the years with the many students who have taken the course. A good deal of our effort and concern in preparing this second edition has been devoted to improving the presentation of key ideas, primarily in the accounting and statistics chapters, based on their detailed feedback, and on many helpful suggestions from faculty using the text at other law schools. In addition, where needed, we have updated the text, including new references at the end of each chapter. Those faculty already using the text will be pleased that we have retained the coverage of the first edition and that much, if not all, of the material in the teacher's manual will remain viable.

We are grateful for support provided for the development of this new edition by the John M. Olin Center for Law, Economics and Business at

Harvard Law School. We would also like to acknowledge the first-rate work of Sandra J. Badin in editing the manuscript, and of Sharon D. Ray in preparing it for publication.

Cambridge, Massachusetts
November, 2010

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