Ideas Have Consequences: The Impact of Law and Economics on American Justice

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Abstract

This paper provides a quantitative analysis of the effects of the law and economics movement on the U.S. judiciary using the available universe of opinions in U.S. Circuit Courts and 1 million District Court criminal sentencing decisions linked to judge identity. We estimate the effect of attendance in the controversial Manne economics training program that 40% of federal judges attended by 1990. To isolate the effect of judges from the types of cases they face, we exploit random assignment of judges to control for court- and case-level factors, an exogenous seating network from random panel composition to trace the spread of economic reasoning in law, and ordering of cases within Circuit to identify general economic ideas that move across legal topics. We use natural language processing methods to quantify the influence of economics in written judicial opinions. Descriptively, we find that judges who use law and economics language vote for and author conservative verdicts (as coded by Songer-Auburn) in economics cases and are more opposed to government regulation. After attending Henry Manne's economics training program, participating judges use more economics language and render conservative verdicts in economics cases, rule against regulatory agencies, particularly in labor and environmental cases, get cited more and increase dissents. These results are robust to a large set of judge biographical controls,

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and do not exist prior to Manne program attendance, suggesting a causal effect of economics training on judicial decisions. Further, Manne economics training is more predictive of these decisions than appointing political party. We further document a number of indirect channels of economics influence on the law beyond the direct effect on Manne program participants. Non-Manne judges exposed to Manne peers on previous cases increase their use of economics language in subsequent opinions. Further, some economics concepts are portable across legal contexts: we show that "general-purpose" economics phrases such as "capital", and "efficiency" move across legal topics within a judge. Economics reasoning diffused from regulatory domains into criminal law. Consistent with this, we show that law and economics influenced criminal decisions: Circuit Court judges that attend the Manne program and use more economics language are more likely to reject criminal appeals, and this effect spills over onto non-Manne judges serving on the same panel. Moving to district courts, and using variation in judicial discretion generated by *U.S. v. Booker,* we find Manne judges render 20% harsher (10 months longer) criminal sentences after this ruling, which allowed more judicial sentencing discretion. Finally, we document that Manne attendance is more predictive of racial and gender sentencing disparities than party of appointment, and Manne judges in both Circuit and District Courts render harsher immigration decisions, voting for enforcement of immigration regulation and longer sentences for illegal immigrants.

Keywords: Judicial Decision-Making, Ideology, Intellectual History.

JEL codes: D7, K0, Z1.

1 Introduction

U.S. federal judges interpret and apply the law and make legal precedent under significant uncertainty. This subjective decision-making creates scope for schools of thinking, defined as a system of ideas and normative commitments which form basis for policy. We can model this as a set of heuristics or principles of thinking that agents use to organize their values (Falk and Tirole 2016). A school of thought may help a judge pay attention to salient features, not unlike heuristics we use to focus on salient product attributes when making decisions (Kőszegi and Szeidl 2013). These decisions need not be rational, either, as a large literature has documented the role of salience in judicial decision making (Bordalo et al. 2015).[1] In this paper, we quantify the impact of a novel and actively promoted legal theory, law and economics, which emphasized deterrence and cost-benefit utilitarian analysis, on judicial decision-making. We use the variation

[1] Before Presidential elections, U.S. Courts of Appeals judges are twice as likely to dissent, vote, and make precedent along partisan lines (Berdejo and Chen 2016, Chen 2016). Mood, gambler's fallacy, and voice seem to affect judicial decisions (Chen 2014; Chen et al. 2016; Chen et al. 2015).

in economics training induced by the Manne program in law and economics together with the institutional structure of the U.S. federal courts to generate quasi-experimental variation.

The setting we examine is a relevant one. The U.S. federal courts (the 12 regional Circuit Courts and the 94 District Courts underneath them) and judges operate under an incremental common law space—continually finding new rules and legal distinctions that future cases must follow (Gennaioli and Shleifer 2007). Random assignment of judges to cases (to panels of 3 in Circuit Courts) controls for court- and case-level factors.[2] Judges are appointed for life (numbering roughly 180 and 680 in these courts, respectively) by the U.S. President. These courts handle hundreds of thousands of cases per year (roughly 67,000 and 330,000 respectively), but the Supreme Court hears only 200 cases per year, so the near totality of Circuit decisions are final and they comprise the vast majority of what constitutes the law.

American law makes giants of its judges. In immigration, District Court judges could single-handedly stop executive orders from the U.S. President to ban immigration from certain countries. In abortion, the 5th Circuit could invalidate a Mississippi statute requiring its abortion doctors to obtain admitting privileges at local hospitals but it allowed an identical Texas statute. The words of the statutes were the same, but the court reasoned on the potential consequences on abortion access for women. In labor, the judges shifted from a reasonable person standard to reasonable woman standard for what constitutes sexual harassment, and they waived the need to prove emotional harm in court. The Circuit Courts and the Supreme Court above it are frequently making decisions like these with potential for great scope, and they do so using consequentialist utilitarian arguments or deontological modes of reasoning.

To measure the influence of economics we compute textual distance between written opinions and a corpus of academic law and economics articles, and trace their spread of economic ideas in the courts and impacts on the population. This paper utilizes a dataset collected by one of the authors on all 380,000 cases and a million judge votes in Circuit Courts. We process the text of the written opinions to represent each opinion as a vector of phrases. We further make use of a large set of biographical features of the 268 judges in our sample, as well as 400 hand-coded features in a 5% random sample of cases, and 6000 cases hand-coded for meaning in 25 legal areas. The latter

[2] This randomness has been used in a growing set of economics papers (Kling 2006, Maestas, Mullen, and Strand 2013, Belloni, Chen, Chernozhukov, and Hansen 2012, Dahl, Kostøl, and Mogstad 2014, Mueller-Smith 2014, Ash and Chen 2017).

two data sets help serve to validate that we can begin to textually measure what is salient in the reasoning of written opinions.[3] This paper also utilizes a data set on one million criminal sentencing decisions in U.S. District Courts linked to judge identity (via FOIA-request) and a digital corpus of their opinions since 1923.

The increase in the use of economics in law over the past half-century is well-known (see Teles [2012] for a history). The influence of economics on legal thought is, in part, due to a controversial economics training program for sitting judges, organized by Henry Manne, that was funded by conservative and business interests.[4] By 1990, 40% of federal judges had attended this economics training program, despite "being swamped with criminal cases ... and not seeing the relevance of economics." Ironically, we will see that economics impacted sentencing. The reason for this is likely due to what Polyani would call, The Great Transformation of American Law, or its neo-liberalization–the consequentialist reinterpretation of duty. For instance, in the last 50 years, what used to be a duty to keep promises became efficient breach theory in contracts–a party should be allowed to breach a contract and pay damages, if doing so would be more economically efficient than performing under the contract–an idea articulated in a 1977 law review article that Richard Posner made into law in a 1985 Circuit decision (*Lake River Corp. v. Carborundum Co.*, 769 F.2d 1284 (7th Cir. 1985)). In tort law, the duty of care is defined economically, when the probability of loss times the size of the loss exceeds the burden of taking precautions. The principle underlying this is least cost avoider theory–is it less costly to take precautions to avoid the accident than the accident occurring in expectation. This idea also underlies expected deterrence in criminal law. A rational potential criminal calculates the probability of detection times the sanction to get the expected sanction. A judge who follows least cost avoider theory might perceive the cost of detection as high, but the cost of sanction as low, so might increase sanctions if approaching the decision as a social planner.

To identify the impact of economics on legal thought, we exploit judicial attendance in the Manne program, and estimate the impact on written opinions before and after attendance. We find that judges significantly increase their use of economics lan-

[3] For example, phrases like, "influenc outcom vote" and "disclosur sourc", predict liberal campaign finance decisions, while phrases like, "inform elector" and "buckley court limit", predict conservative decisions. Buckley held that limits on election spending are unconstitutional. For capital punishment, liberal decisions use "involuntari" and "mental health" while conservative decisions use "attack". For the EPA, liberal decisions refer to "hazard wast" and conservative ones refer to "statut silent ambigu".

[4] "Big Corporations Bankroll Seminars For U.S. Judges," *Washington Post*, 20 Jan 1980, available at washingtonpost.com/archive/politics/1980/01/20/big-corporations-bankroll-seminars-for-us-judges/8385bf9f-1eb7-451a-8f3d-bdabb4648452/

guage after attending the Manne program. Using the 5% sample of hand-coded cases produced by Songer (see, e.g., Haire et al. [2003]) we find that, post Manne attendance, judges render conservative verdicts in economics-relevant cases. Further, using the 100% sample of circuit cases, we find that Manne attendees subsequently are more likely to rule against regulatory agencies, for example the EPA and NLRB. However, not all regulatory agencies are treated the same–Manne attendees rule for the INS. We check our results hold conditional on biographical characteristics and benchmark our results against party of appointment. Our results hold both across judges and within judges.

The influence of law and economics went beyond the judges that attended the Manne program. We document extensive spillovers consistent with both peer and learning effects. We exploit random panel composition to examine the impact on peers. We test if the presence of even a non-authoring economically trained judge impacts the written verdict of the panel and the other votes of the panelists. We exploit the exogenous seating network to identify learning effects. We test if having an economics trained judge on the authoring judge's previous panel impacts the decision. As placebo, we look at whether there was a trained judge on the judge's next panel, whether there was a trained judge on any panel in the Circuit previous to this case (that is, a case that is not along the seating network), and whether there was a judge who eventually got training on the judge's previous panel.

Further, we exploit ordering of topics within a Circuit to identify general economic reasoning effects. More specifically, since topics are not randomly ordered but judges are randomly assigned, we can control for unobservables related to the order of topics within a judge by using the order of cases within the Circuit, to identify phrases that leap across legal topics within a judge (not just those that move from judge to judge or those that move from case to case within a judge and within a topic). With this approach we are able to test for the "portability" of economic ideas across legal contexts, within the same judge. Judges who sit on panels with Manne judges increase the use of "deterrence" in their own subsequent opinion (and not their prior opinion, only along seating network, and only after attendance in training program). We also see that phrases like "deterrence", "capital", and "law and economics" are very general ideas and are portable across legal contexts; specifically, they cross topic boundaries within a judge. For example, economic concepts travel from regulatory cases to criminal cases but not vice versa–sitting with a Manne attendee on a regulation case causes a judge to use economic concepts on subsequent criminal cases, but the reverse does not hold.

The unique structure of the U.S. federal court system generates random variation that lets us isolate these multiple channels of memetic diffusion, something that previous research that has examined diffusion of language has been unable to do (e.g. Jensen et al. [2012]).

While the Manne program focused on applications of economics in traditional domains like labor and antitrust, we show this portability of economics thinking affected even criminal decisions. At the Circuit Court level, attendees become more likely to reject criminal appeals. The effects on criminal appeals are surprising, given the lack of focus on criminal law in the Manne trainings. We explore this further by exploiting a policy change that gave judges significantly more discretion in sentencing, and find that the effect of economics training appears when judges are not bound by mandatory sentencing guidelines. With judicial discretion, sentences by Manne judges are 20% longer than non-Manne judges. This result also holds both across and within judges. While sentencing is a core judicial expertise, the principles of sentencing are not immutable. Sentencing principles have undergone several changes over time (e.g., retribution, rehabilitation, deterrence, legitimacy, and fairness). Retribution is generally considered immoral and rehabilitation a failure in U.S. legal thought (Martinson 1974, Petersilia and Turner 1993, Cullen and Gendreau 2001, van Winden and Ash 2012). Deterrence has become the major school of thought in the courts, and admits economic considerations of efficiency. In Becker's (1968) influential theory of optimal deterrence, severity substitutes for a low-detection probability, and this theory has provided one justification for the extreme punitiveness of the U.S. justice system Alexander 2012, Gilmore 2007, Davis 1998). Intellectual historians have suggested a link between economic reasoning and criminal punitiveness (Foucault 2008; Harcourt 2011), but the links are largely abstract and conceptual; we provide rigorous evidence that economics training changes judicial reasoning about criminal justice, emphasizing efficiency over equity. We find evidence that the effects are particularly strong for immigration crimes, which is consistent with the Circuit Court judges ruling in favor of enforcement of INS regulations. Manne attendance is also more predictive of sentencing disparities along race and gender than party of appointment.

Our paper is closely related to three literatures. The first is the effects of economics education on political ideology. The closest paper is probably the impact of random assignment of students to professors at Yale Law School. Some professors had Economics PhDs and others did not (mostly in Philosophy or History). It found that students with economics exposure behaved less pro-socially in lab experiments 1 and 3 years

later. However, the study had 70 students and remains unpublished (Fisman et al. 2009). The second closest paper recently analyzed a Chinese curricular reform whose introduction was staggered across provinces. It found survey evidence that students became more-free market oriented (Cantoni et al. 2014). The third closest paper is on the causes and consequences of ideology, for example, the impact of communism on redistributive preferences using German separation and reunification (Alesina and Fuchs-Schündeln 2007).[5] Our paper differs from these papers, as well as others that are more qualitative (Hirschman 1978, 1991) in that we have actual decision making in a high-stakes environment.

The second literature we relate to is a burgeoning one on text-as-data and narrative economics. Jelveh et al. (2016) classified economic text as conservative or liberal using the political donations of authors. Ash (2015) finds that the words of tax statutes impact tax revenues more than tax rates do. Recent advances develop economic interpretations of natural language processing as a discrete choice model, and apply LASSO to help identify polarized words in high-dimensional data, such as, Congressional speech (Gentzkow et al. 2015, Jensen et al. 2012, Ash et al. 2015). We advance this literature by exploiting the random assignment of judges to topics. Thus far research has only been descriptive or diagnostic. For example, it has been difficult to measure the extent to which the textual patterns mean that partisan individuals draw on or drive public discourse, or the extent to which partisan speech has causal impacts. Legal text is uniquely important in mapping language to outcomes, and the random assignment of judges generates causal variation in textual features. We thus contribute to this literature by measuring causal effects of bundles of textual features.[6]

The third literature is on constitutional constraints to policymaking (Besley and Coate 1997, Seabright 1996). Judges vary widely in their approach to law (Stephenson 2009, Ash and MacLeod 2015). A large literature documents that judges' decisions are correlated with their biographies. But an open question is whether the judges are per se biased for particular outcomes as opposed to following different legal philosophies (Posner 1973; Cameron 1993; Kornhauser 1999). For example, a judge can derive from first principles an adherence to a strict interpretation of the Constitution, while not necessarily hewing to the preferences of political parties for specific outcomes. Quantifying the role for legal philosophy is part of the goal of this paper. We seek to develop

[5] Fuchs-Schündeln and Masella [2016] examines the impact of socialist education.

[6] We also contribute to a large legal scholarship that conducts textual analysis including but not limited to the question-–"Do judge writing styles matter?"—raised by Judge Richard Posner (1995).

causal evidence on the effects of different legal philosophies, such as law and economics.

Economics has been influential in all areas of law (Posner 1987), advancing the application of economic principles to jurisprudence and prioritizing economic efficiency—as both a positive determinant of past jurisprudence (such as evolution of common law) and a normative goal of future case law (such as how to make judicial decisions). Law and economics' key criticism of regulatory policies is that they have perverse, unintended economic consequences. Reliance on economic analysis in antitrust has attained nearly complete consensus (Ginsburg 2010).[7] In Becker's analysis of crime and punishment, the notion of "rational criminals" went against prevailing wisdom of crime as a product of mental illness, which then motivated rehabilitation rather than deterrence as policy. In the domain of labor regulation, law and economics scholars (and judges) wrote extensively against New Deal labor law and union protections (Posner 1984, Epstein 1983). In EPA regulation, almost all environmental regulations can be construed as a form of government expropriation that limits how property owners can develop their property (Epstein 1993; Blumm 1995). Not surprisingly, law and economics is perceived as ideologically conservative by historians. Law and economics also has a pragmatic reputation. Judge Richard Posner, in "An Exit Interview With Richard Posner" (New York Times, 9/11/2017) said (1) "'I pay very little attention to legal rules, statutes, constitutional provisions ... The first thing you do is ask yourself — forget about the law — what is a sensible resolution of this dispute?'" (2) "See if a recent Supreme Court precedent or some other legal obstacle stood in the way of ruling in favor of that sensible resolution." (3) "'When you have a Supreme Court case or something similar, they're often extremely easy to get around.'" Whether or not law and economics is intrinsically conservative, we show its effects on policy are consistent with recent American conservative politics.

As prima facie evidence on the impact of economics thinking on legal reasoning, we find an increasing language similarity between court opinions and law-and-economics articles. Judges are also increasingly making conservative votes and increasingly voting against government regulation. What we want to do is to isolate the causal effects of

[7] By the 1960s, the Supreme Court had read into previous statutes a variety of anti-competitive social and political goals, such as protecting small traders from their larger and more efficient rivals as well as curbing inequality in the distribution of income and undue influence of large business. The law-and-economics movement advanced the initially controversial view that the antitrust laws should promote economic efficiency and consumer welfare, rather than shield individuals from competitive market forces or redistribute income across groups of consumers. In the recent time period, judges who attended law-and-economics training were less likely to have their antitrust decisions appealed (Baye and Wright 2011).

economics thinking on decisions, netting out other secular trends.

We find that judges who use economics language (in cases other than the current) vote for and author conservative verdicts, especially for economics cases. They are more opposed to government regulation and criminal appeals. Second, judges trained in economics use economics language, and render conservative verdicts especially for economics cases. They reject government regulation and reject criminal appeals, and for the latter, only after attendance in the training program. Not all regulations are treated the same; they are in favor of immigration regulations. They also render 20% harsher criminal sentences only after mandatory guidelines for sentencing were made merely advisory.[8] They are 1% more likely to render any sentence and, conditional on any sentence, assign 13% longer sentences. This is despite significant negative impacts of incarceration on families, communities, and limited or mixed evidence of deterrence effects (e.g., Mueller-Smith 2014 , Chalfin and McCrary 2014, and Morsy and Rothstein 2016). The effects are largest for immigration crimes. Notably, law and economics judges were more likely to be appointed by Republicans, nonetheless, law-and-economics thinking or training is more predictive of decision-making than political party.[9] The same is true for sentencing disparities by gender and race.

The remainder of the paper is organized as follows. Section 2 describes our text-based measurement of law and economics influence on written opinion. Section 3 examines the impact of economics-trained judges on a variety of judicial decision making margins. Section 4 examines the impact of peer economics training. Section 5 concludes.

[8] In 2005, in *United States v. Booker*, the Supreme Court declared that the existing guideline system violated the Constitution and made the previously "mandatory" guidelines as, instead, "advisory". Judicial discretion over sentencing is now considerable: "As found by members of Congress who enacted the 1984 Sentencing Reform Act: '[E]ach judge [was] left to apply his own notions of the purposes of sentencing. . . . As a result, every day federal judges mete[d] out an unjustifiably wide range of sentences to offenders with similar histories, convicted of similar crimes, committed under similar circumstances."' (USSC 2015). We exploit the variation in discretion due to *Booker*.

[9] As discussed by many scholars [e.g. Noel, 2014], ideology is not always identical to partisanship.

Figure 1: Highest and Lowest-Scoring Phrases on Law-Econ Metric

Most similar to Law-Econ Corpus Least similar to Law-Econ Corpus

2 Political Ideology and Economics Style in The Judiciary

2.1 Economics Style: Language Similarity to Law-and-Economics Articles

To measure law and economics influence within the judiciary, we begin with the set of all JSTOR articles with JEL K (Law and Economics) topic code.[10] The highest and lowest frequencies for two-grams that appear in at least 1000 court cases are presented in Figure 1. The law and economics terms include familiar ones like deterrent effect, cost-benefit (analysis)[11], public goods, bargaining power, litigation costs, and willingness to accept. Other terms include violent crime, criminal behavior, capital punishment, and illegal immigration. Non-law and economics terms include find reason, find fact, fail establish, substantive evidence, sufficient evidence, argue evidence.

To score judges by economics style, we calculate the relative frequency (E_g) for each token g in law and economics articles.[12] To be sure, one potential concern is that

[10] We employ data from 1991-2008 since the JSTOR database only goes back to 1991.

[11] The phrase could also be "costs and benefits".

[12] The full corpus of economics articles is represented as a single document. The frequency distribution over the vocabulary of P tokens is computed by summing over all documents, with the corresponding relative (proportional) frequency computed by dividing by the summed frequency over all tokens (in the included vocabulary). We then construct frequency distributions over words and over two-

our measure of **Economics Style** may simply pick up public discourse within year, so we also construct a measure that normalizes this by the relative word frequency in Google Books.[13]Then, we average the economics score of each phrase in a case. We score judges by their use of economics language. We residualize this score by circuit-year fixed effects to control for secular changes. Formally, let E represent the vector of phrase-wise economics scores, $E = \{E_1, E_2, ...E_P\}$. For each opinion i, we have the set of proportional frequencies $F_i = \{F_{i1}, F_{i2}, ..., F_{iP}\}$, where $\sum_{i=1}^{P} F_{i1} = 1$. Therefore, the case-level economics score,

$$E_i = F_i \cdot E$$

is the weighted average of the economics scores of the constituent phrases of an opinion. This is the cosine similarity between the case and JEL code K, and is closely related to a correlation coefficient. E_i will lie between 0 and 1. A case that has terms exactly in the same proportions as they appear in law and economics articles will have a score of 1. The judge-level economics style is a "leave-one-out" variable constructed as follows. For a given case i, let J_i^j be the set of *other* cases authored by judge j. Then, for a given case i at year t where judge j is on the panel, **Economics Style** Z_{ijt} is given by

$$Z_{ijt} = \sum_{k \in J_i^j}^{J} \frac{z_k}{|J_i^j|}$$

where z_k is the economics style of the other authored cases k, which has been demeaned by the circuit-year average of that year, and $|J_i^j|$ is the number of other decisions authored by the judge.

2.2 Measuring Conservative Judicial Opinion

Our primary outcomes will be proxies for conservative judicial opinion. Our first measure of conservative judicial opinion relies on the Songer database of 5% of Circuit cases. In Table 1 is a 1-digit coarse categorization from the 5% sample (also referred to as the Songer Database). A substantial portion is criminal law and economics-related. Most of our analyses involve these two topics.

word phrases. As normalization steps, we remove punctuation, capitalization, functional stopwords, numbers, and word endings. We filter out rare words and phrases to get a vocabulary of $P = 197,231$ tokens (words and bigrams).

[13] For example, A_g: relative frequency in law and economics articles, B_g: relative frequency in Google Books, so token g relatedness to law and economics: $E_g = \frac{A_g}{B_g}$.

Table 1: Distribution of High-Level Case Topics

Songer Topic	Freq.	Percent
Economics	332,553	29.69
Due Process	259,845	23.20
Criminal Appeal	250,281	22.34
Miscellaneous	149,322	13.33
Civil Rights	67,350	6.01
Labor	54,681	4.88
First Amendment	5,268	0.47
Privacy	927	0.08
Total	1,120,227	100.0

Table 2: Distribution of Liberal and Conservative Votes and Decisions

Vote Valence	Freq.	Percent
Liberal	17,529	33.74
Neutral/Other	8,355	16.08
Conservative	26,076	50.18
Total	51,960	100.00

The 5% sample was also hand-labeled for vote valence: liberal, conservative or neutral/hard to code (see Table 2). The Songer Database defines conservative vote to include rejecting the defendant in a criminal procedure case, rejecting a plaintiff asserting violation of First Amendment rights, and rejecting the Secretary of Labor who sues a corporation for violation of child labor regulations.

We also make use of the 100% universe of circuit cases. We show the detailed distribution of topics (which were coded by hand) in the Appendix. We do not have political valences for the outcomes of these cases, but we construct measures based on the voting of judges over the outcomes. We use voting against government in regulatory cases (machine-coded for the 100% sample) as well as rejecting criminal appeals (machine-coded for the 100% sample).

Within the district courts, we have an additional measure, which is the length of criminal sentence in the district court (a 100% sample, which we FOIA-requested to include the judge identity).

These measures of conservatism are highly correlated. For example, there is a 0.7 correlation between conservative vote and the machine-coded measure of ruling against regulatory agencies in economic cases. Our machine-coding is based on whether the

Table 3: Party of Appointment in the Circuit Courts of Appeal

Vote Valence	Freq.	Percent
Republican	602,836	52.12
Democrat	515,418	44.56
Other	38,486	3.33
Total	1,156,740	100.00

federal government is a party to the case (with a person or company as the other party).

We also have the judge's party of appointment (see Table 3). Not surprisingly, there is a correlation between political party and vote valence, but below we show that party of appointment is less predictive of vote valence compared to economics training. Additional descriptive information is available in the appendix.[14]

2.3 Descriptive Trends

As prima facie evidence on the impact of economics thinking on legal reasoning, Figure 2 shows that there has been an increasing language similarity between court opinions and law-and-economics articles.

There has also been an increasing share of conservative votes in Figure 3A.[15] Judges are increasingly voting against government regulation in Figure 3B, which plots the probability of voting in favor of a government agency in regulatory cases. To isolate the causal effects of economics thinking, for example, in Figure 2 on decisions in Figure 3, netting out other secular trends, we use random assignment of judges and measure (1) the judge's economic style on cases other than the current and (2) their exposure to economics training.

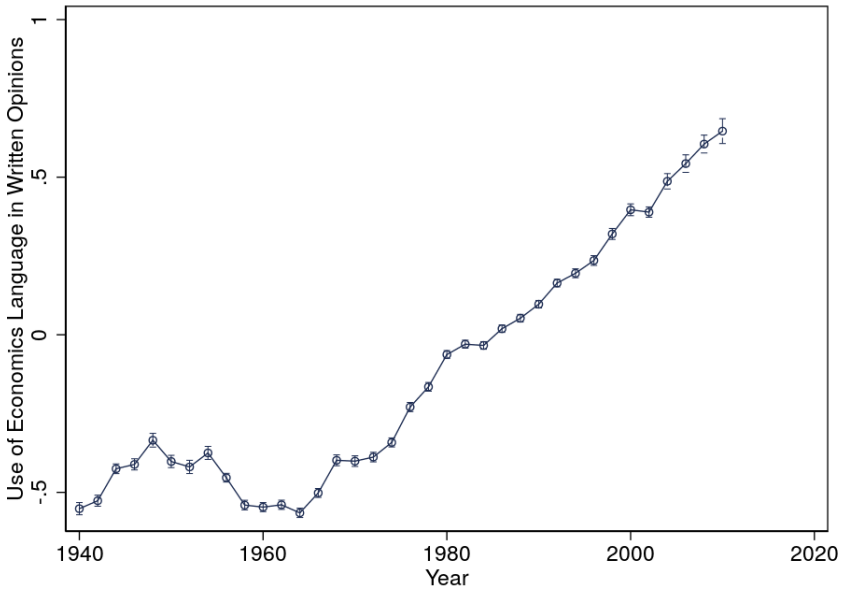
2.4 Identifying The Effect of Economics Training: The Manne Program

The public perception of the Manne Program was a beach on the south of Miami for a few weeks funded by large corporate donors. The "105 corporate contributors are almost always before a federal judge somewhere, often in antitrust, regulatory, or

[14] We do this to save space as the data and setting is largely described in other work.

[15] The numbers in Sub-Figure A do not add up to 1 because some cases are labeled as neutral/hard-to-code by the Songer Database.

Figure 2: Trends in Law-and-Economics Rhetoric



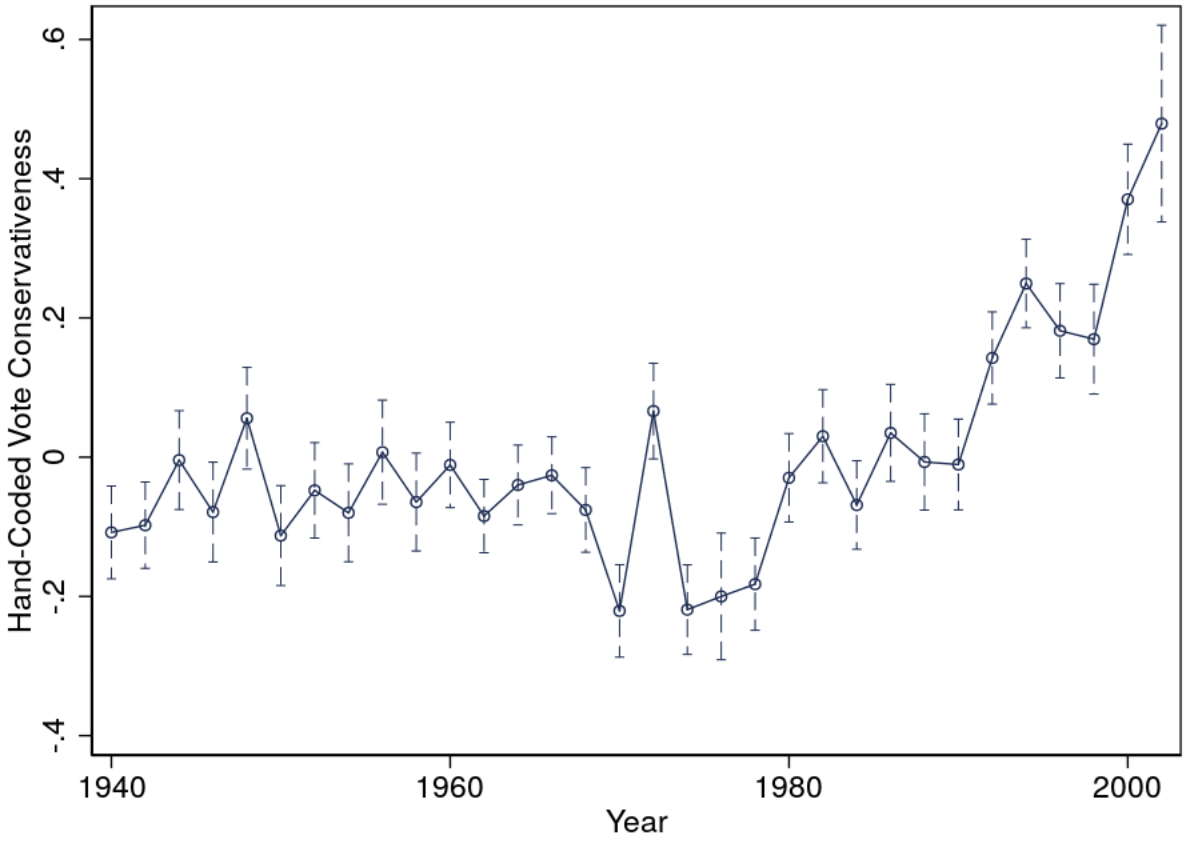
affirmative-action cases... probably all federal judges face some possibility [of having a contributor as litigant]."[16] The perception put forward by the program from its annual reports is a collection of photographs of judges diligently taking notes and receiving reading assignments. "For three weeks, 19 Federal judges from around the country took a grueling, six-day-a-week course in economics.. With classes starting at 9 A.M. and sometimes ending at 10 P.M. or later, the judges received the equivalent of a full semester at the college level. ... From the beginning, the judges, some of them 60 years or over, behaved like students, deferring to their teachers.." according to a New York Times reporter.[17]

The Manne Law and Economics Program for Judges was founded in 1976 as a 2-3 week economics course for federal judges. Lectures were by eminent economists including Milton Friedman, Paul Samuelson, Armen Alchian, Harold Demsetz, Martin Feldstein, and Orley Ashenfelter. Topics covered Coase Theorem, demand/supply the-

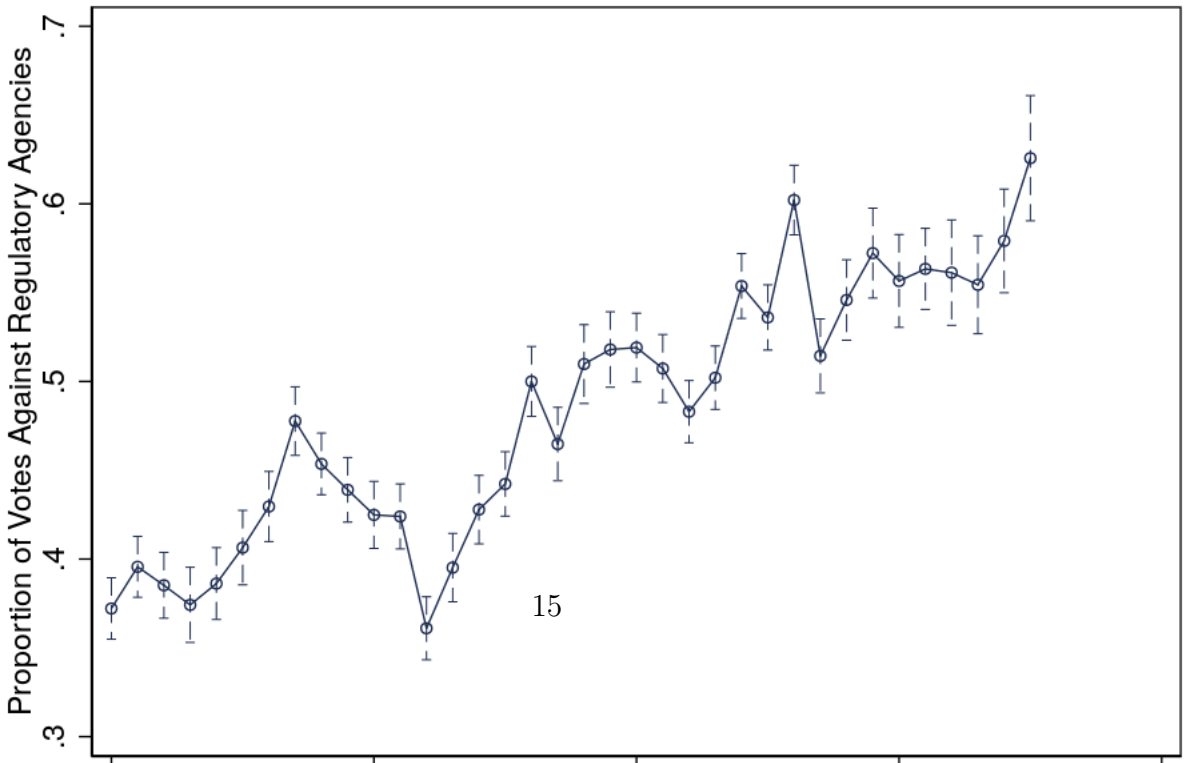
[16] "Big Corporations Bankroll Seminars For U.S. Judges," *Washington Post*, 20 Jan 1980. The list of donors included Abbott Laboratories, Alcoa, Amoco, Bristol-Myers, Campbell Soup, Chase Manhattan Bank, Chevron, du Pont, Kodak, Exxon, Ford Motor Company, General Electric, General Motors, Gerber Baby Foods, Getty Oil, Hoffmann-La Roche, Eli Lilly, Merrill Lynch, Mobil, Pennzoil, Pfizer, Procter & Gamble, Raytheon, Schering-Plough, Sears Roebuck, Shell, Southwestern Bell, Sun Company, Texaco, Unilever, Union Oil, Upjohn, US Steel, Winn-Dixie, Xerox, among many others.
[17] "19 U.S. Judges Study Economics to Help Them in Work on Bench"

Figure 3: Trends in Ideology of Circuit Court Judge Votes

(a) Increasing Conservative Vote Share (Songer-Auburn Coded)



(b) Increasing Deregulatory Decision Rates (Machine-Coded)



ory, consumer/producer/price theory, bargaining, externalities, expected value/utility, property rights, torts, contracts, monopoly theory, regulation, and statistics, and basic regression. The main reading material were the textbooks, *Law and Economics* by Robert Cooter and Thomas Ulen, and *Exchange and Production* by Armen Alchian and William Allen.

By 1990, forty percent of federal judges had attended this program. The program is still ongoing and now also funded by the Koch Brothers. Henry Manne, a prominent law and economics scholar, conceived and founded the Law and Economics Center, the first academic research center devoted to law and economics. this center began at the University of Miami in 1974, then moved to Emory University, prior to its current location at George Mason University). An excellent summary of the program is provided by Butler [1999], written by a former director. The article includes quotations from the author and judges' reaction to the program. Butler wrote, ".. [academic attention to the role of economics in law] could actually be the most lasting contribution of the judges' program to the development of law and economics" and:

> "As I always told the judges in my session-closing remarks, 'If you are doing your job right, *there really should not be many different results in your cases*. But you will have a better understanding of the law because of the insights economics offers, and that will help you be better judges."' (p. 321, emphasis added)

However, we find that the program actually did lead to different results, consistent with the testimony of participants as well as LEC promotional materials.[18] The seminar made a lasting impression. Justice Ruth Bader Ginsburg wrote: "*the instruction was far more intense than the Florida sun.* For lifting the veil on such mysteries as regression analyses, and for advancing both learning and collegial relationships among federal judges across the country, *my enduring appreciation.*" Circuit Judge Michel wrote "[it] helped to provide a *principled basis* for deciding close cases" and Circuit Judge Jolly appreciated "a sound *theoretical and rational structure* for my decisions.. the *potential effects* and foreseeable impact *of imposing a duty.*"

[18] The 1982 LEC annual report writes: "For those interested in the impact of our programs, one sentence out of a recent letter from a distinguished U.S. Court of Appeals judge says it all. "In reviewing the cases I have sat upon in the last six months, I thought you might be interested to know that in fully 50 percent of them a portion of the case or the whole case turned on an issue I felt I was better able to decide because of my opportunity to study in your program". Who could ask for stronger testimony?"

District Judge Carter said, "*I regard myself as a social progressive* and all the economists in attendance, from my perspective, had Neanderthal views on race and social policy. The basic lesson I learned .. is that social good comes at a price, a social and economic cost. I had never thought that through before being exposed to Henry's teachings. .. has *led me to measure the cost of the social good being furthered against the gain to be achieved.*" District Judge Alaimo said, "there is a wide area of decision entrusted to us where the result can go either way, depending on how we view the evidence. *That area* is *called 'judicial discretion.'* This is the area that is *most affected by these seminars* .. as a result of what I have learned at these seminars, *I have become a much better judge.*" District Judge Griesa wrote, "Henry and his LEC colleagues were of a *conservative persuasion.* .. the class wanted to express our gratitude on the final day. The person who rose to speak was Judge Hall from West Virginia, who was from the Fourth Circuit. *Without doubt he was a Democrat going back to New Deal days. He was fervent in his appreciation.*" Additional quotes from judges who enthused about the program are in the appendix. The quotes testify to how much the judges appreciated the program, how demanding were the lessons, and how the judges learned to think about their rulings through cost-benefit analysis rather than more traditional legal reasoning.

The quotations also motivate a Bartik instrument. The annual reports state that "the fact that participants in the first Institute have talked so favorably about their experience to their colleagues.. the assertion is frequent: 'I have (or shall) recommend the institute to my colleagues." After the first Institute, roughly 100 applied per seminar, some 7 months in advance. Applicants were chosen on a first-come first-served basis with a quota of around 25.[19] To capture our Bartik variation, we consider, in each year, the share of Manne attendees among judges who were born in the same decade and who went to the same type of school (public or private), excluding the cases of the judge in question. We refer to this as a jackknife cohort IV. The word of mouth mechanism has a 0.78 correlation in the Circuit courts and a 0.92 correlation in the district courts, both with $p < 0.001$.

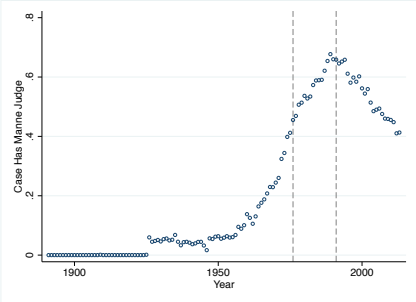
[19] An analogy may be made to the reception of Mostly Harmless Econometrics by policy evaluators. As of the date of writing, we do not have the date of application to consider a regression discontinuity design around the quota. From the former director, we are told that judges were accepted in the order of application, and when over subscribed, the first few judges might go on a wait list, because they were always a few judges who had to cancel–health, docket problems, family concerns. The judges would often be offered priority on a future program. As of the date of writing, we are also lacking data on the cancellations.

The annual reports also include the instructors' views. For Fortune magazine, Henry Manne articulated the view that insider trading was economically efficient, making the stock market a fairer game. In his article, "Myths of Regulation", he said "It is ironic that the word 'profit' has become a swear word, since profit is the only decent measure of the real public benefit provided by business." Another instructor, Professor Goetz, spoke on "'Unequal' Punishment for 'Equal' Crime," arguing that discrimination in punishment can be economically efficient, which leads to the conclusion that society will institute unequal punishments for equal crimes. In more recent years, the annual reports include instructors with known conservative stances on immigration (George Borjas), crime (James Q. Wilson), and family (Jennifer Roback Morse, who founded the Ruth Institute, designated as an anti-LGBT hate group). Empirical panels could include both Orley Ashenfelter and John Lott. In the former director's written comments to us, he wrote that "Samuelson [lectured] on whatever the heck he wanted to, usually personal investment strategies; Friedman always started on legalization of recreational drugs; Ashenfelter used climate to predict quality and prices of wine, followed by wine tasting". While both conservative and liberal economic thinkers were invited, the instruction may have been more emphatically delivered by the conservative ones. Thus it may be that disparate impacts came to be viewed as efficient, crowding out constitutional theories of minority protection, or the role of females in society came to be viewed more conservatively, or immigration policy came to be viewed through a conservative lens–to be evaluated in terms of crime (Miles and Cox 2014; Treyger, Chalfin, Loeffler 2014) or national security (Trebilcock 2005) rather than discrimination. To be sure, the 1970s law and economics applied the simplest price theory arguments, which may have rendered conservative conclusions. But law and economics in the 1990s and 2000s according to the word clouds presented above still seemed to highlight violent crime, illegal immigration, and capital punishment as opposed to evidence or other constitutional theories of interpretation.

Butler [1999] also contained a list of all the judges that had attended through 1999. We supplemented this list with exact years of attendance from Annual Reports obtained by filing FOIA requests and correspondence from the Law and Economics Center at George Mason University. We (so far) have obtained annual reports for 1976-1999, except for 1980, 1983-86, 1995, and 1999. For now, we use a historical long-difference approach to look at Manne judges before the program began in 1976, and then after 1991, when the bulk of judges had finished attending (results are not sensitive to the choice of 1991). This mitigates concerns about selection based on timing, and allows for

Figure 4: Share of Cases with Manne Judge

(a) Increasing Share of Cases with Manne Judge



the program to have lasting impacts. The figure plots the share of cases with a Manne Judge from the list in Butler [1999]; some attendees were quite old, having served on cases much prior to 1976, and the figure shows a decline in the 2000s only because Butler [1999] did not contain lists of attendees after 1999. To be sure, this also biases our long-difference estimates downwards because judges who are considered as control after 1991 may eventually attend after 1999, and judges who are considered as treated by 1991 might not have attended yet. Thus, we also exploit the annual variation and zoom in on the period of the program's heyday, from 1970-1999. We will then assess the quantitative role of this program in explaining the historical shift in conservatism in the federal judiciary.

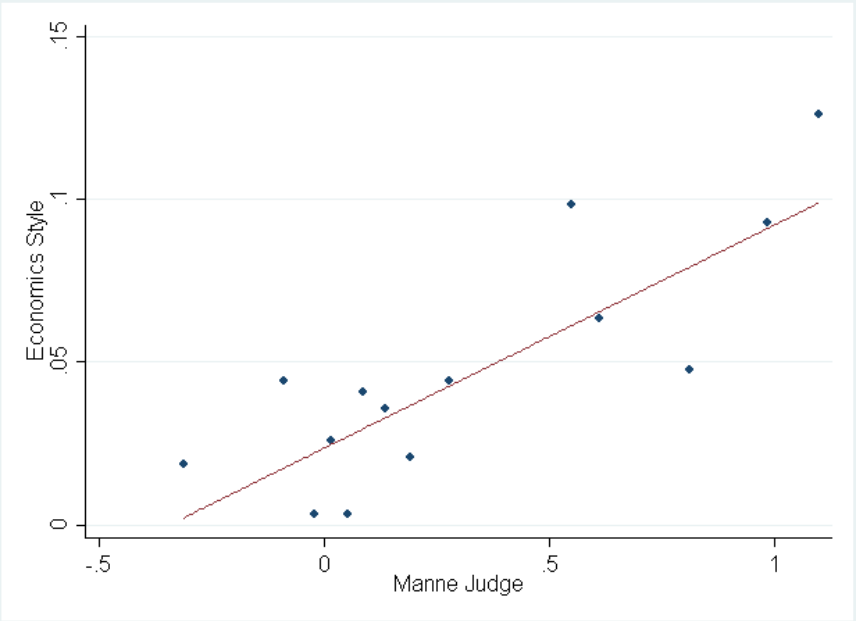
Some placebo analyses rely on the pre-1976 period, where we focus on votes and verdicts to avoid endogeneity of authorship, and we focus on lay words like "efficient" and "deterrence", which were already present in the 1960s. This avoids the issue of scarce economics terminology prior to 1976 when checking for pre-Manne differences.

Economics Trained judges score higher on our **Economics Style** measure.[20] Figure 5 plots bin-scatters conditional on circuit-year fixed effects and political party[21]). Moreover, both **Economics Training** and **Economics Style** are correlated–but not synonymous–with Republican party of appointment (see Table 4). The correlation

[20] Judges' political party is typically proxied by the political party of the appointing President.

[21] Bin-scatters grouped the residualized x-variable into 20 equal-sized bins, computed the mean of the x-variable and y-variable residuals within each bin, and created a scatterplot of these 20 data points. The underlying regression is analogous to our main specification except we regress the economics style on economics training.

Figure 5: Manne Law-and-Economics Attendance and Economics Style



between **Economics Training** and Republican is far from one, suggesting that the Manne program is not simply selecting conservative justices.

3 Impact of Economics Training on Judges

3.1 Empirical Approach

In Circuit Courts, each case is randomly assigned to a panel of three judges. The judges are drawn from a pool of 8-40 judges. We have assessed judge randomization through interviews of courts and orthogonality checks on observables.[22] The process in recent years is as follows. Two to three weeks before oral argument, a computer randomly assigned available judges to a case, including visiting judges. It ensures that judges are not sitting together repeatedly, and ensures that senior judges have fewer cases. Judges can occasionally recuse themselves. On appeal after remand, the same panel

[22] For example, Chen and Sethi [2011] use data from Boyd et al. [2010] and Sunstein et al. [2006], who code 19 case characteristics as determined by the lower court for 415 gender-discrimination Circuit Court cases, and find that case characteristics are uncorrelated with judicial panel composition. Other papers examine whether the sequence of judges assigned to cases in each Circuit Court mimics a random process. They find, for example, that the string of judges assigned to cases is statistically indistinguishable from a random string.

Table 4: Party Affiliation and Economics Ideology

	Republican		
	(1)	(2)	(3)
Economics Style	0.0367*		0.0563**
	(0.0146)		(0.0191)
Economics Training		0.140**	0.191**
		(0.0382)	(0.0602)
N	923866	410309	380085
adj. R-sq	0.137	0.082	0.099

Notes. Robust standard errors clustered at the judge level in parentheses (* p $<$ 0.10; ** p $<$ 0.05; *** p $<$ 0.01).

reviews a case. There are exceptions to randomization for rare specialized cases such as those involving the death penalty. We assume these deviations from randomness are independent of our main effects, though we will also report omnibus checks of whether economics judges are systematically more or less likely to author or sit on economics cases.

The causal effect of assignment of judge j on case i in court c and year t is γ_k on outcome Y:

$$Y_{ijct} = \alpha_{ijct} + \gamma_k Z^k_{ijct} + X'_j\beta + \epsilon_{ijct}.$$

Outcome Y_{ijct} is measured in the four ways described above: 1) conservative vs. liberal vote in the 5% hand-coded sample, 2) voting against government in regulatory cases (machine-coded for the 100% sample), 3) rejecting criminal appeals (machine-coded for the 100% sample), and 4) length of criminal sentence in the district court (a 100% sample, which we FOIA-requested to include the judge identity).

Z^k_{ijct} represents one of our two metrics for law and economics thinking. The first is **Economics Style**, $Z_{ijt} = \sum_{k \in J^j_i}^{J} \frac{z_k}{|J^j_i|}$. The second measure is exposure to **Economics Training**. The treatment is essentially the judge, so we cluster by judge. Clustering standard errors by circuit or circuit-year or judge and case increases the statistical significance of the results.

All specifications also include fixed effects represented in the term α_{ijct}. This is a full set of circuit-year interacted fixed effects in order to isolate variation in the treatment variable Z due to random assignment of judges across panels in the court

docket. We also check for robustness to the inclusion of judge characteristics, X_j, most importantly the political party of judge j, which helps benchmark the magnitudes. In some specifications, we include judge fixed effects. The error term is ϵ_{ijct}.

3.2 Effects of Economics Training On Coded Vote Ideology

We begin by analyzing the effects on conservative voting, as hand-coded in the 5% sample Songer Database. We might expect stronger effects for economics rather than non-economics cases as the latter can include social issues like abortion or drug policy, where the effect of economic thinking could be libertarian, and therefore coded as "liberal" by the Songer database.

Figure 6 shows that, in Economics Cases, **Economics Style** Judges render Conservative Votes. Table 5 reports an interactive regression. Column 1 shows that **Economics Style** is positively associated with Conservative Vote in Economics Cases. Column 2 includes Republican party fully interacted with Economics Case. The coefficient hardly changes. Column 4 repeats Column 1 but only uses Republican party. Column 5 shows that the interaction is largely driven by **Economics Style**.[23] This means that **Economics Style** captures more than the traditional partisan measure. Columns 3 and 6 show that **Economics Style** is also correlated with Conservative Vote even when the judge is not the author.

Figure 7 shows that after 1991[24], **Economics Trained** judges render Conservative votes in Economics Cases. Table 6 presents the underlying regressions. The binscatter reflects Columns 1 and 2, which is before 1976 and after 1991. Before the program (before 1976), there is no relationship between attendance and conservatism. But after 1991, there is a significant relationship. Column 3 includes a full interaction of **Economics Training**, Economics Case, and After 1991 and judge fixed effects. This column is a "long diff" looking at the difference within a judge before and after the set of years we know they attended. After 1991, **Economics Trained** judges are 20% more likely to render Conservative Votes in Economics Cases. Since the outcome is coded as a -1/0/+1, this means that judges change by 10% the direction of their vote, from liberal to conservative. Columns 4 and 5 show that the results hold with the inclusion of a full interaction with Republican party. Column 6 analyzes the difference-in-difference and only designates a case as "Post" if it definitely occurs after the judge's attendance.[25]

[23] Columns 2 and 5 are the same regression.

[24] The results do not change much when varying the cut-off year.

[25] For example, this means that cases after 1999 are marked as "Post" for judges who attended between

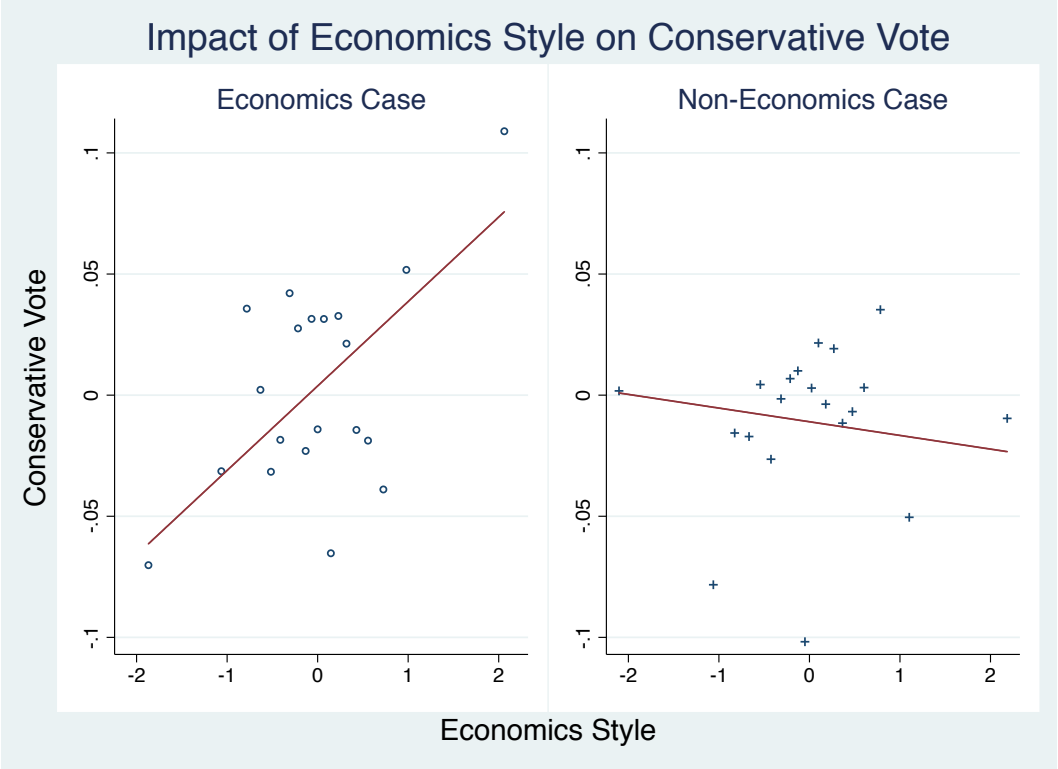
Table 5: Impact of Economics Style and Republican on Conservative Vote

	Conservative Vote		
	(1)	(2)	(3)
Econ Style	-0.0116	-0.0120	-0.0125
	(0.0102)	(0.0103)	(0.0111)
Econ Case	-0.229**	-0.241**	-0.243**
	(0.0138)	(0.0171)	(0.0167)
Econ Style *	0.0609**	0.0600**	0.0636**
Econ Case	(0.0141)	(0.0140)	(0.0148)
N	48195	48195	33901
adj. R-sq	0.089	0.089	0.100
Circuit-Year FE	Y	Y	Y
Control	N	Repub	N
Sample	All	All	Non-Author

	Conservative Vote		
	(4)	(5)	(6)
Republican	0.00622	0.0113	0.00660
	(0.0234)	(0.0147)	(0.0273)
Econ Case	-0.262**	-0.241**	-0.274**
	(0.0236)	(0.0171)	(0.0276)
Republican *	0.0678+	0.0254	0.0806+
Econ Case	(0.0370)	(0.0259)	(0.0434)
N	52215	48195	37921
adj. R-sq	0.123	0.089	0.138
Circuit-Year FE	Y	Y	Y
Control	N	Econ Style	N
Sample	All	All	Non-Author

Notes. Effect of law-and-economics on conservative vote. *Republican* is a dummy variable for whether the judge is Republican. All regressions include circuit-year fixed effects. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

Figure 6: Impact of Economics Style on Conservative Vote



We see that after attendance, judges vote much more conservatively compared to before attendance. Moreover, we find that these results hold for both Republicans and Democrats, though they are stronger for Republican judges.

Table 7 analyzes the data using the year-by-year attendance data for the entire time period and for the restricted time period during the program's heyday (1970-1999). The differences-in-differences analysis renders similar estimates and conclusions throughout. To interpret the magnitudes, from 1976 to 2002, Songer database documents an increase of 0.3 in the likelihood to vote conservative rather than liberal. Taking the Manne coefficient of 0.2 and multiplying by 0.4 (the percentage of federal judges who attended) renders a substantial fraction of the overall 0.3 shift. If the historical time period to explain begins a bit earlier, then the historical change has been 0.2 since the mid-1970s. Taken together, this indicates the Manne program accounts for 28-42% of the rise in judicial conservatism. Note that the regression estimates only account for own-attendance. If peers and precedent also impact the non-Manne judges, then the true

1976-1999.

Figure 7: Diff-in-Diff Impact of Economics Training on Conservative Votes

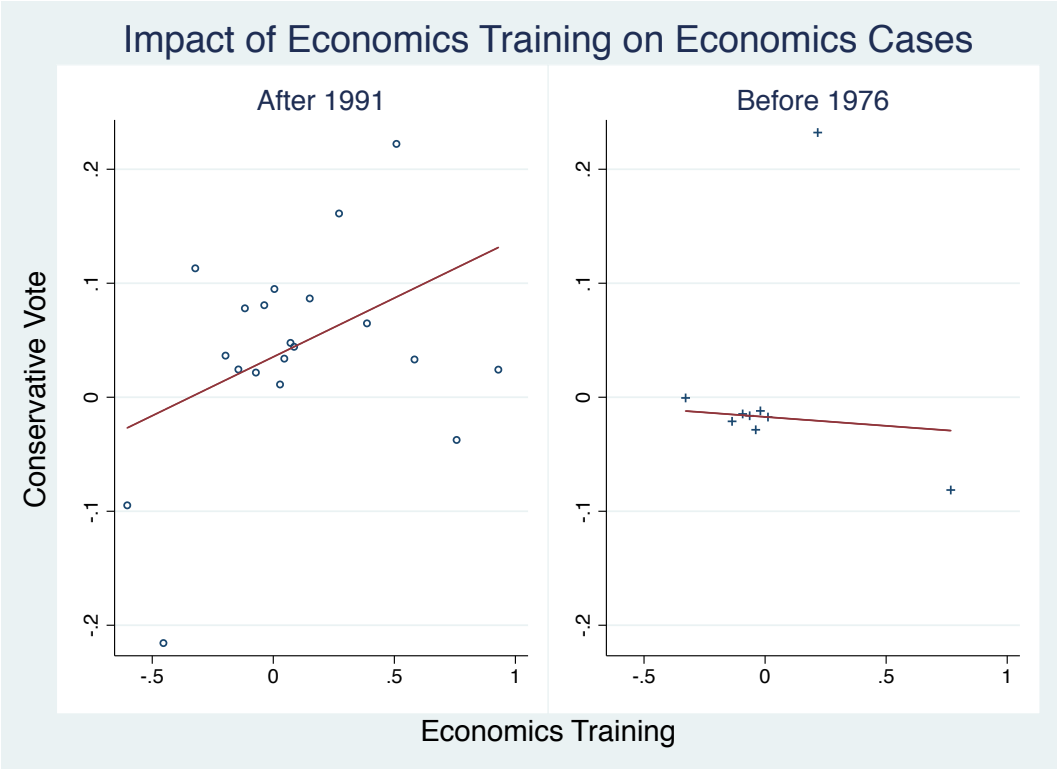


Table 6: Diff-in-Diff Impact of Economics Training on Conservative Votes

	Conservative Vote					
	(1)	(2)	(3)	(4)	(5)	(6)
Economics Training	0.0255	-0.102*		-0.107*		
	(0.0655)	(0.0500)		(0.0504)		
Economics Case	-0.307**	-0.0819	-0.266**	-0.0374	-0.303**	-0.286***
	(0.0234)	(0.0545)	(0.0196)	(0.0713)	(0.0225)	(0.0208)
Econ Training * Econ Case	-0.129	0.257**	0.000178	0.274**	-0.0128	
	(0.126)	(0.0977)	(0.0581)	(0.101)	(0.0579)	
Econ Training * Econ Case			0.207*		0.225*	
* Post 1991			(0.103)		(0.109)	
Econ Training * Post 1991			-0.150*		-0.150*	
			(0.0682)		(0.0689)	
Economics Case *			0.134*		0.174*	
Post 1991			(0.0555)		(0.0703)	
Econ Training * Post						-0.0472
						(0.124)
Econ Training * Post						0.620***
* Econ Case						(0.176)
N	29153	9639	52215	9639	52215	52215
adj. R-sq	0.146	0.106	0.271	0.106	0.271	0.302
Circuit-Year FE	Y	Y	Y	Y	Y	Y
Repub Control	N	N	N	Y	Y	Y
Judge FE	N	N	Y	N	Y	Y
Sample	Year $<$ 1976	Year $>$ 1991	All	Year $>$ 1991	All	All

Notes. Effect of economics training on conservative voting. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

Manne impact may be larger than 0.2, and thus explain an even larger portion of the historical shift.

Table 8 presents an omnibus check–no endogenous settlement or selection of cases appear either with regards to the authorship of economics cases or sitting on economics cases.

3.3 Effects on Anti-Labor Regulatory Rulings

While the Songer database has the virtue of being explicitly about ideological orientation of written opinions, it is only available for a 5 percent sample of opinions. Further, it is possible that the coding was influenced by the presence of law and economics language, and hence the correlation might be mechanical rather than truly revealing of ideology. To remedy this, we investigate judicial decisions that have a clear ideological flavor: voting against federal regulatory agencies, particularly those entrusted with enforcing labor regulation.

Rather than examine all regulatory agencies broadly, we can narrow our focus to two agencies the Law and Economics movement specifically criticized: the National Labor Relations Board and the Environmental Protection Agency.

$$Y_{ijct} = \alpha_j + \alpha_{ct} + \gamma PostManne_{jt} + X_j'\beta + \epsilon_{ijct}.$$

Further, we can take advantage of the annual nature of our data, and estimate a dynamic panel specification, in order to test for pre-trends. For example, if Manne judges are simply self-selecting into the program based on some trend in their behavior, this would show up as a change in voting patterns prior to attendance at the program. Figure 8 shows that this is not the case. Instead it appears that Manne judges exhibit a sharp and sudden increase in propensity to vote against federal labor and environmental regulatory agencies. Given our time period, the vast bulk of these cases are NLRB cases.

We can also examine all rulings where the federal government is a party. Figure9 shows the basic (residualized on circuit-year) correlation: judges that attend Manne program are more likely to rule against government regulatory agencies. This outcome measure is machine-coded based on whether the federal government is a party to the case (with a person or company as the other party). If the judge rules against a regulatory agency, that can be seen as favoring a deregulatory policy.

Table 18 reports these results more formally, controlling for a natural confound,

Table 7: Impact of Economics Judges on Economics Cases Using Exact Year of Attendance

	Conservative Vote (+1/0/-1)	
	(1)	(2)
Econ Case	-0.254***	-0.283***
	(0.0177)	(0.0199)
Post-Manne	-0.0773	-0.557**
	(0.0638)	(0.236)
Econ Case *	0.240***	0.624***
Post-Manne	(0.0667)	(0.157)
N	51868	51868
adj. R-sq	0.2467	0.247
Bartik	N	reduced form
Circuit-Year FE	Y	Y
Judge FE	Y	Y
Sample	All	All

	Conservative Vote (+1/0/-1)		
	(1)	(2)	(3)
Econ Case	-0.244***	-0.243***	-0.246***
	(0.0317)	(0.0311)	(0.0310)
Post-Manne	-0.0795	-0.0781	-0.0758
	(0.0642)	(0.0616)	(0.0869)
Econ Case *	0.180**	0.178**	0.172**
Post-Manne	(0.0715)	(0.0698)	(0.0698)
N	25768	25768	25768
adj. R-sq	0.224	0.228	0.232
Circuit-Year FE	Y	Y	Y
Judge FE	Y	Y	Y
Party-Year FE	N	Y	Y
Manne-Year FE	N	N	Y
Sample	1970-1999	1970-1999	1970-1999

Notes. Effect of economics training on conservative voting in. All regressions include circuit-year fixed effects. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $*p < .1, **p < 0.05, ***p < .01$.

Table 8: Judge Randomization Check

	Economics Case			
	(1)	(2)	(3)	(4)
Econ Training	0.00788	-0.000716	-0.00512	0.00540
	(0.00807)	(0.00454)	(0.00893)	(0.00416)
N	123519	115561	500266	389105
adj. R-sq	0.115	0.024	0.112	0.023
Circuit-Year FE	Y	Y	Y	Y
Sample	Author	Author	On Panel	On Panel
Sample	Year $<$ 1976	Year $>$ 1991	Year $<$ 1976	Year $>$ 1991

Notes. The presence of an economics case regressed on whether the judge has economics training. All regressions include circuit-year fixed effects. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

Table 9: Manne Training and Economics Style in Labor Cases

	Voting Against Environmental or Labor Agency		
	(1)	(2)	(3)
Econ Training Post	0.0555*	0.0548+	0.0889*
	(0.0278)	(0.0280)	(0.0414)
N	19957	19957	19957
adj. R-sq	0.312	0.317	0.327
Circuit-Year FE	Y	Y	Y
Judge FE	Y	Y	Y
Party-Year FE	N	Y	Y
Manne-Year FE	N	N	Y
Sample	1970-1999	1970-1999	1970-1999

Notes. Effect of law-and-economics on voting for government party. *Republican* is a dummy variable for whether the judge is Republican. The other treatment variables are the law-econ measures described in Section 3. Columns 1, 2, 5, and 6 include 1941-2002; Columns 3, 4, 7, and 8 include 1991-2002. All regressions include circuit-year fixed effects. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

Table 10: Manne Training and Rulings Against Labor Regulation (Diff-in-Diff)

	Voting Against Environmental or Labor Agency		
	(1)	(2)	(3)
Econ Training Post	0.0555*	0.0548+	0.0889*
	(0.0278)	(0.0280)	(0.0414)
N	19957	19957	19957
adj. R-sq	0.312	0.317	0.327
Circuit-Year FE	Y	Y	Y
Judge FE	Y	Y	Y
Party-Year FE	N	Y	Y
Manne-Year FE	N	N	Y
Sample	1970-1999	1970-1999	1970-1999

Notes. Effect of law-and-economics on voting for government party. *Republican* is a dummy variable for whether the judge is Republican. The other treatment variables are the law-econ measures described in Section 3. Columns 1, 2, 5, and 6 include 1941-2002; Columns 3, 4, 7, and 8 include 1991-2002. All regressions include circuit-year fixed effects. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

Figure 8: Manne Attendance and Appellate Rulings Against Federal Government

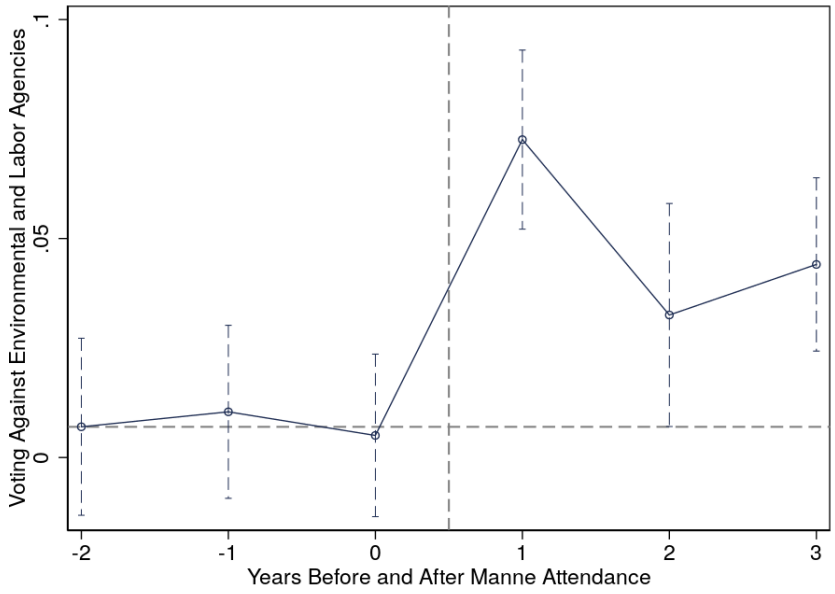


Figure 9: Manne Attendance and Appellate Rulings Against Federal Government

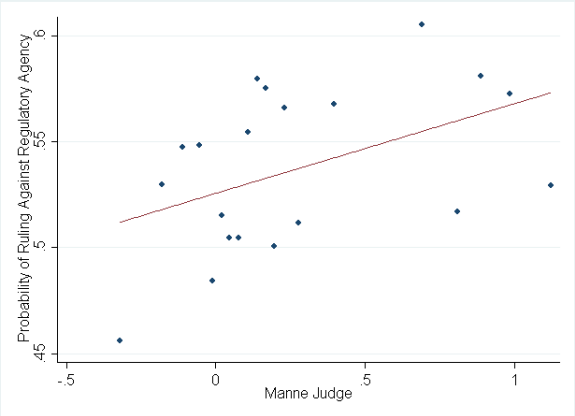
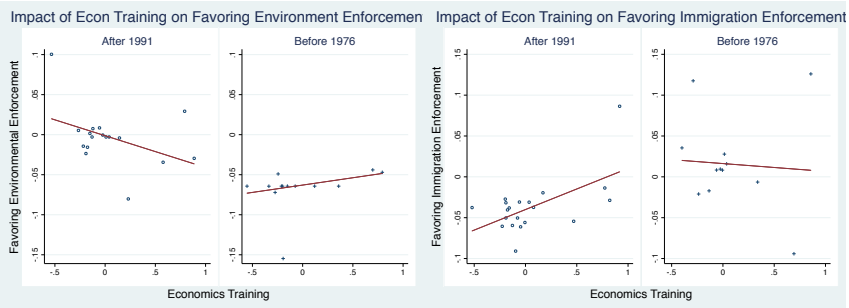


Figure 10: Manne Attendance and Appellate Rulings Against Federal Government



which is simply appointing political party. **Economics Style** and **Economics Training** are both associated with ruling against regulatory agencies. Republican party has little effect on ruling against regulation. When examining specifications with **Economics Training**, we restrict to data after 1991 when at least 40% of judges had attended (Butler 1999).

Figure10 shows the deregulatory attitude does not hold for immigration enforcement. The figure also shows that judges who attend the Manne program switch the direction of their votes to be against environmental enforcement but for immigration enforcement.

Using the 100% sample, Figure 11 shows that **Economics Trained** judges are more likely to use "efficient" in regulatory opinions after 1991, but not before 1976. Table 12 presents the regression.

Table 11: Effects of Law-and-Economics on Ruling For Federal Government

	Ruling Against Regulatory Agency			
	(1)	(2)	(3)	(4)
Economics Style	0.00554*	0.00533*		
	(0.00245)	(0.00243)		
Economics Training			0.0364+	0.0425*
			(0.0208)	(0.0212)
Republican		-0.00752		-0.0333
		(0.00750)		(0.0208)
N	53977	53977	12320	12320
adj. R-sq	0.100	0.100	0.173	0.173
Circuit-Year FE	Y	Y	Y	Y
Sample	All	All	Post 1991	

Notes. Effect of law-and-economics on voting for government party. *Republican* is a dummy variable for whether the judge is Republican. The other treatment variables are the law-econ measures described in Section 3. Columns 1, 2, 5, and 6 include 1941-2002; Columns 3, 4, 7, and 8 include 1991-2002. All regressions include circuit-year fixed effects. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

Figure 11: Impact of Economics Training on Efficiency Reasoning

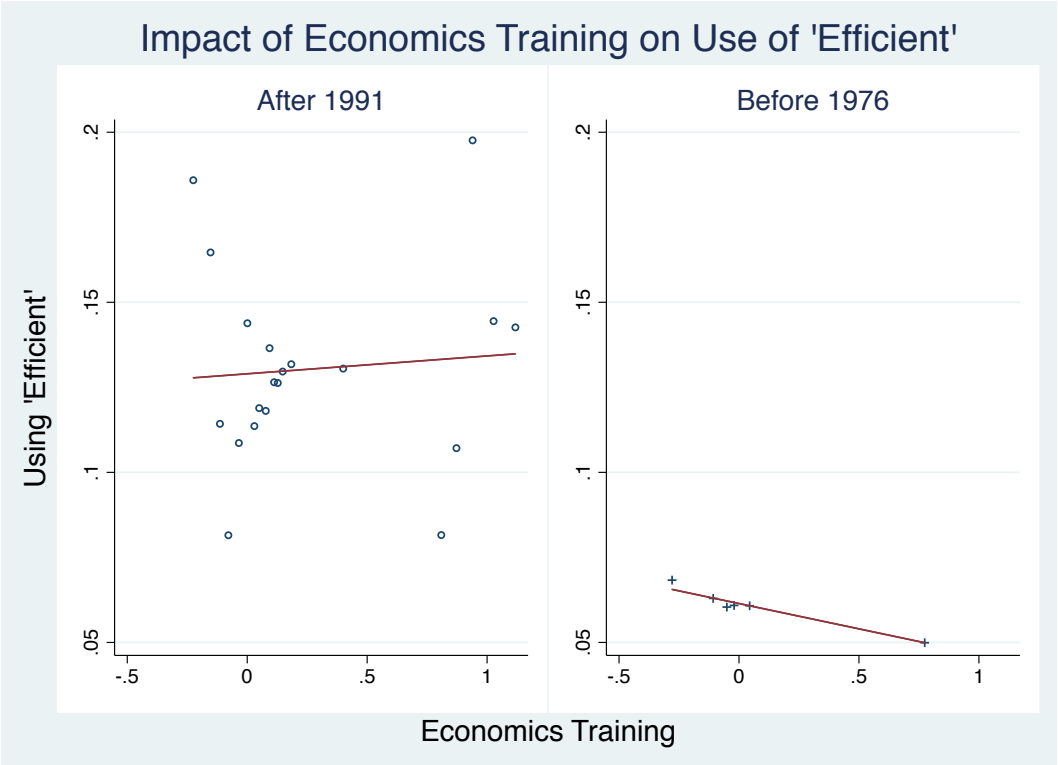


Table 12: Diff-in-Diff Impact of Economics Training on Efficiency Reasoning

	# Uses of "Efficient"		
	(1)	(2)	(3)
Econ Training	-0.00407	0.0494***	
	(0.00455)	(0.0188)	
Econ Training *			0.0495*
Post 1991			(0.0272)
N	45752	11372	72005
adj. R-sq	0.125	0.148	0.261
Circuit-Year FE	Y	Y	Y
Control	N	N	N
Judge FE	N	N	Y
Sample	Year $<$ 1976	Year $>$ 1991	All

Notes. Effect of economics training on uses of "efficient". Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

3.4 Effects on Antitrust Rulings (In Progress)

4 Diffusion of Peer Economic Training

This section exploits random panel composition in the U.S. Circuit Courts, an exogenous seating network, and ordering of topics within a Circuit to measure the impacts of exposure to **Economics Training**. Three-judge panels deliberate to reach a verdict, so we explore how exposure to peer **Economics Training** impacts subsequent thought.

4.1 Diffusion of Economics Throughout the Judiciary: Learning and Reasoning

To measure peer effects, we use the fact that the case law is essentially a book, and we can sort by reporter, volume, and page number to examine whether the judge's previous case had an **Economics Trained** judge and whether any prior case in the Circuit had an **Economics Trained** judge. The causal effect of exposure to **Economics Training** of judge j on case i in court c and year t is γ_k on outcome Y:

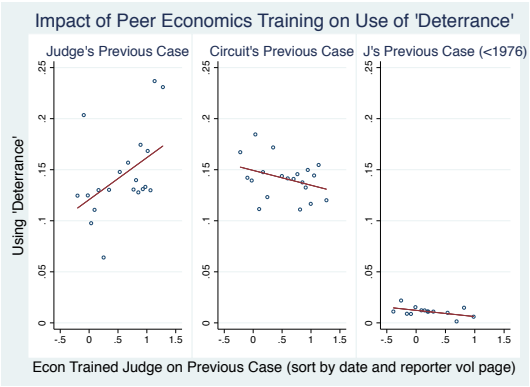
$$Y_{ijct} = \alpha_{ijct} + \gamma_k Z^k_{ijct} + X'_j\beta + \epsilon_{ijct}.$$

Outcome Y_{ijct} is now the word count of economics phrases such as "deterrence" or other words (or index of words) previously identified in legal scholarship (Ellickson 2000). Z^k_{ijct} represents one of two metrics of exposure to law and economics thinking. The first is presence of **Economics Training on the Previous Case of this Judge**. To control for secular shifts in exposure to **Economics Training** at the Circuit level, we include as control (or regress separately for placebo comparison) the presence of **Economics Training on the Previous Case in this Circuit**. Note that the treatment for Z^k_{ijct} is still the judge, so we cluster by judge, but the placebo treatment varies at the case level, so we employ two-way clustering by judge and case when we present placebo regressions (the effect of **Economics Training on the Previous Case of this Judge** strengthens when we two-way cluster).

The second treatment of interest is presence of **Economics Training on the Previous Case** of this judge on this topic.[26] When we include both, we identify economics phrases that move within judge across cases *within* topic and those that move within

[26] Here we use as topic the 2-digit hand-labeled topic in the 100% data.

Figure 12: Impact of Peer Economics Training on Deterrence Reasoning



judge across cases *across* topics. Note that since topics are not randomly ordered but judges are randomly assigned, we can control for unobservables related to the order of topics within a judge by using the order of cases within the Circuit, to identify phrases that leap across legal topics within a judge (not just those that move from judge to judge or those that move from case to case within a judge and within a topic). All specifications include fixed effects represented in the term α_{ijct}. This is a full set of circuit-year interacted fixed effects. We also check for robustness to the inclusion of judge characteristics, X_j. The error term is ϵ_{ijct}.

4.2 Peer Effects: Learning From Trained Judges

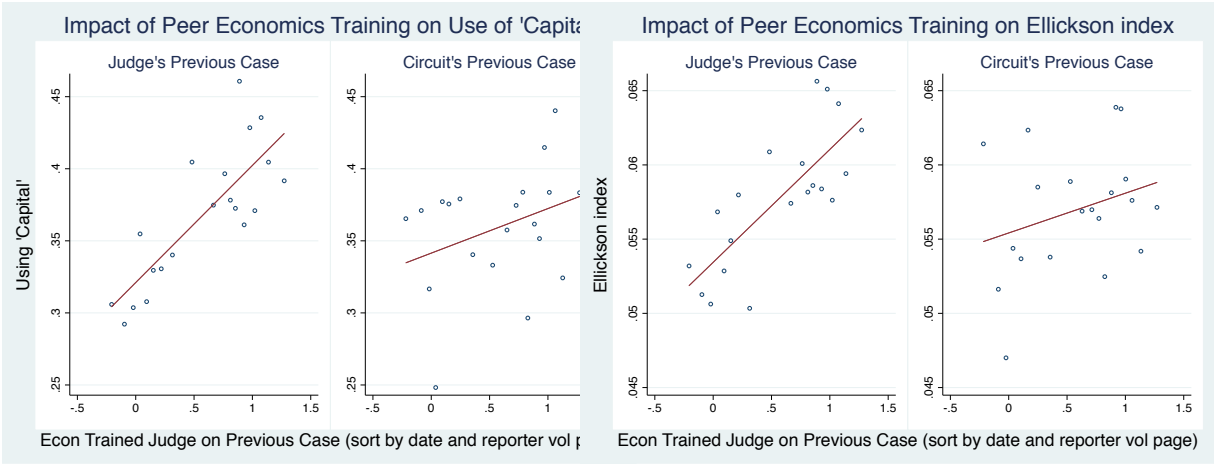
Figure 12 and Table 13 show evidence of learning deterrence theory in criminal appeals cases. When paired with an **Economics Trained** judge in a previous criminal case, a judge is more likely to use "deterrence" on the next opinion. This effect is observed only in the post-treatment period (after 1991, top panel of Table 13), and not in the pre-treatment period where the judges have not yet attended the program (pre-1976, middle panel of Table 13). As an additional placebo test, we look at the effect of having an **Economics Trained** judge on the previous case in the ordering of the circuit as a whole (right panel of Figure 12; bottom panel of Table 13). This has no effect. Similarly, there is no effect if the previous case had an **Economics Trained** judge prior to that judge receiving training.

Table 13: Impact of Peer Economics Training on Criminal Case Reasoning

	Number of appearances of "Deterrence"		
Econ Training on	(1)	(2)	(3)
Next Case	-0.0229		
	(0.0146)		
This Case		0.0320+	
		(0.0187)	
Previous Case			0.0465+
			(0.0238)
N	76596	85261	77162
Sample	Year $>$ 1991	Year $>$ 1991	Year $>$ 1991
Order within	Judge	Judge	Judge
	Number of appearances of "Deterrence"		
Econ Training on	(4)	(5)	(6)
Next Case	-0.00718		
	(0.00558)		
This Case		-0.00730	
		(0.00553)	
Previous Case			-0.00228
			(0.00418)
N	64024	74968	63641
Sample	Year $<$ 1976	Year $<$ 1976	Year $<$ 1976
Order within	Judge	Judge	Judge
	Number of appearances of "Deterrence"		
Econ Training on	(7)	(8)	(9)
Next Case	0.00883		
	(0.0246)		
This Case		0.0320	
		(0.0240)	
Previous Case			-0.00973
			(0.0275)
N	66741	85261	66797
Sample	Year $>$ 1991	Year $>$ 1991	Year $>$ 1991
Order within	Circuit	Circuit	Circuit

Effect on using deterrence language of being paired with a Manne peer in this case, the previous case, the next case, and two cases ago. Top panel: post-treatment period (after 1991); middle panel: pre-treatment period (before 1976); bottom panel: post-treatment placebo test using effect of previous case in list of all cases. Regressions include circuit-year fixed effects; standard errors clustered by judge, except Columns 7-9 two-way cluster at the judge level and case level.

Figure 13: Identifying Memetic Economics Phrases



4.3 Memetic Effects

Our final analysis examines phrases that travel within topics within judge and those that travel across topics within judge. To do so, we now use all the cases. To discipline our analysis, we also use an index of externalit*, transaction_costs, efficien*, deterr*, cost_benefit, capital, game_theo, chicago_school, marketplace, law1economic, law2economic, words largely coming from Ellickson (2000)'s analysis of trends in legal scholarship. Figure 13 shows that this index travels within a judge using all the cases.

Tables 14 and 15 present the regression (controlling for whether the previous case in the Circuit had an **Economics Trained** judge). In particular, it shows that use of economics phrases increase immediately and sometimes persist over the next two cases. Four cases later is, on average, 43 days. For every 100 cases, when there is a trained judge on the current case, there is 1.6 uses of the word deterrence. One case later, the effect decays to 1.3. Two cases later, to 1.2.

Table 16 shows that the Ellickson index transmits from one case to the next regardless of topic, but the transmission is stronger two cases later if it is the same topic as the original case where there was peer exposure to the **Economics Trained** judge. The index is an average of 9 words, so one would multiple by 9 to interpret the coefficients in the same manner as the previous table.

Finally, Table 17 restricts the sample to cases where a criminal case follows a regulation case or vice versa. It shows that transmission occurs from regulation to criminal

Table 14: Identifying Memetic Economics Phrases

	# Uses of "Capital"			
Econ Training on	(1)	(2)	(3)	(4)
Next Case	0.0120			
	(0.0230)			
This Case		0.0532**		
		(0.0267)		
Previous Case			0.0742***	
			(0.0278)	
Two Cases Ago				0.00829
				(0.0298)
N	353981	355504	354695	353928
adj. R-sq	0.010	0.009	0.010	0.011
Circuit-Year FE	Y	Y	Y	Y
Circuit Order	Y	Y	Y	Y
Sample	Year > 1991	Year > 1991	Year > 1991	Year > 1991
Order within	Judge	Judge	Judge	Judge
Cluster	Judge	Judge	Judge	Judge

	# Uses of "Deterrence"			
Econ Training on	(1)	(2)	(3)	(4)
Next Case	-0.00412			
	(0.00730)			
This Case		0.0161**		
		(0.00683)		
Previous Case			0.0127*	
			(0.00692)	
Two Cases Ago				0.0120*
				(0.00678)
N	353981	355504	354695	353928
adj. R-sq	0.009	0.010	0.010	0.010
Circuit-Year FE	Y	Y	Y	Y
Circuit Order	Y	Y	Y	Y
Sample	Year > 1991	Year > 1991	Year > 1991	Year > 1991
Order within	Judge	Judge	Judge	Judge
Cluster	Judge	Judge	Judge	Judge

	# Uses of "Deterrence" on [N] cases later					
Econ Training on	[N] = (-1)	(0)	(1)	(2)	(3)	(4)
[N] cases later	-0.00412	0.0161**	0.0127*	0.0120*	0.0142**	0.0156
	(0.00730)	(0.00683)	(0.00692)	(0.00678)	(0.00647)	(0.0062
N	353981	355504	354695	353928	353192	35247
adj. R-sq	0.009	0.010	0.010	0.010	0.010	0.010
Circuit-Year FE	Y	Y	Y	Y	Y	Y
Circuit Order	Y	Y	Y	Y	Y	Y
Sample	Year > 1991	Year > 1991	Year > 1991	Year > 1991	Year > 1991	Year >
Order within	Judge	Judge	Judge	Judge	Judge	Judg
Cluster	Judge	Judge	Judge	Judge	Judge	Judg

Notes from previous tables

Table 15: Identifying Memetic Economics Phrases

	# Uses of "Law and Economics"			
Econ Training on	(1)	(2)	(3)	(4)
Next Case	0.000206			
	(0.000259)			
This Case		0.000537**		
		(0.000243)		
Previous Case			0.000574**	
			(0.000252)	
Two Cases Ago				0.000536*
				(0.000280)
N	353981	355504	354695	353928
adj. R-sq	0.002	0.005	0.005	0.005
Circuit-Year FE	Y	Y	Y	Y
Circuit Order	Y	Y	Y	Y
Sample	Year $>$ 1991	Year $>$ 1991	Year $>$ 1991	Year $>$ 1991
Order within	Judge	Judge	Judge	Judge
Cluster	Judge	Judge	Judge	Judge

Notes from previous tables.

law, but not the other way around. To interpret the coefficients, if the current case is criminal and the previous case was regulation, the presence of economics training on the regulation case increases by 12.2 the word frequency of "deterrence" in every 100 cases. Two cases later, the effect is 3.4 words.

5 Spillover Effects on Criminal Case Outcomes

The link between economic thinking and rejecting criminal appeals is intuitive. Since Gary Becker's Crime and Punishment: An Economic Approach (1968), deterrence has become influential in the academy and in courts. The theory of optimal deterrence laid out by Becker suggests that severity of punishment can make up for certainty of sanction. Because raising certainty is socially costly, while severity of punishment is relatively cheap, this theory also provided one level of justification for the massive build-up of prisons in the 1980s and 1990s. To quote Becker (pg 17): "an increased probability of conviction obviously absorbs public and private resources in the form of more policemen, judges, juries, and so forth. Consequently, a 'compensated' reduction

Table 16: Identifying General Economics Phrases

		Ellickson average		
Econ Training on	(1)	(2)	(3)	(4)
Next Case	-0.000957			
	(0.00231)			
Next Case	-0.000231			
Same Topic	(0.00192)			
This Case		0.00585**		
		(0.00271)		
Previous Case			0.00379*	
			(0.00212)	
Previous Case			0.00385*	
Same Topic			(0.00223)	
Two Cases Ago				-0.000710
				(0.00303)
Two Cases Ago				0.00689**
Same Topic				(0.00272)
N	327844	355504	338739	327821
adj. R-sq	0.017	0.011	0.014	0.016

See notes in previous tables.

Table 17: Identifying Memetic Economics Phrases

Current Case is Criminal, Previous [N] Case is Regulation

			# Uses of "Deterrence" on [N] cases later			
Econ Training on	[N] = (-1)	(0)	(1)	(2)	(3)	(4)
[N] cases later	-0.0145	-	0.122**	0.0340*	-0.0234	0.0245
	(0.0179)	-	(0.0580)	(0.0189)	(0.0259)	(0.0178)
N	17314	-	17238	17714	17658	17723
adj. R-sq	0.066	-	0.180	0.141	0.077	0.111
Circuit-Year FE	Y	-	Y	Y	Y	Y
Circuit Order	Y	-	Y	Y	Y	Y
Sample	Year > 1991	-	Year > 1991	Year > 1991	Year > 1991	Year > 1991
Order within	Judge	-	Judge	Judge	Judge	Judge
Cluster	Judge	-	Judge	Judge	Judge	Judge

Current Case is Criminal, Previous [N] Case is Regulation

			Ellickson Average on [N] cases later			
Econ Training on	[N] = (-1)	(0)	(1)	(2)	(3)	(4)
[N] cases later	0.0119	-	0.0304***	-0.00639	0.0180*	0.0253**
	(0.0114)	-	(0.0103)	(0.0146)	(0.00951)	(0.0117)
N	17314	-	17238	17714	17658	17723
adj. R-sq	0.035	-	0.314	0.119	0.078	0.209
Circuit-Year FE	Y	-	Y	Y	Y	Y
Circuit Order	Y	-	Y	Y	Y	Y
Sample	Year > 1991	-	Year > 1991	Year > 1991	Year > 1991	Year > 1991
Order within	Judge	-	Judge	Judge	Judge	Judge
Cluster	Judge	-	Judge	Judge	Judge	Judge

Current Case is Regulation, Previous [N] Case is Criminal

			# Uses of "Deterrence" on [N] cases later			
Econ Training on	[N] = (-1)	(0)	(1)	(2)	(3)	(4)
[N] cases later	0.0172	-	0.0114	0.00765	0.00637	-0.00926
	(0.0169)	-	(0.0216)	(0.0172)	(0.0126)	(0.0124)
N	17176	-	17355	17552	17731	17636
adj. R-sq	0.097	-	0.065	0.208	0.035	0.046
Circuit-Year FE	Y	-	Y	Y	Y	Y
Circuit Order	Y	-	Y	Y	Y	Y
Sample	Year > 1991	-	Year > 1991	Year > 1991	Year > 1991	Year > 1991
Order within	Judge	-	Judge	Judge	Judge	Judge
Cluster	Judge	-	Judge	Judge	Judge	Judge

Current Case is Regulation, Previous [N] Case is Criminal

			Ellickson Average on [N] cases later			
Econ Training on	[N] = (-1)	(0)	(1)	(2)	(3)	(4)
[N] cases later	-0.00277	-	-0.00371	0.0110	-0.0383	-0.0243
	(0.00981)	-	(0.0136)	(0.00990)	(0.0242)	(0.0246)
N	17176	-	17355	17552	17731	17636
adj. R-sq	0.042	-	0.080	0.034	0.047	0.072
Circuit-Year FE	Y	-	Y	Y	Y	Y

in this probability obviously reduces expenditures on combating crime, and, since the expected punishment is unchanged, there is no 'obvious' offsetting increase in either the amount of damages or the cost of punishments. The result can easily be continuous political pressure to keep police and other expenditures relatively low and to compensate by meting out strong punishments to those convicted." While Becker's theory favored cash fines over punishments, when agents are unable to compensate victims in cash, additional punishments may be required (pg 31).

Since then, with a boomlet for community policing in the 1990s, deterrence has remained central. Generally, rehabilitation and retribution are out of favor (Martinson 1974, Petersilia and Turner 1993, Cullen and Gendreau 2001), and deterrence is viewed as the dominant purpose of criminal justice. The main change in recent years has been to move toward a more nuanced view of how deterrence operates parallel to the behavioral economics revolution, e.g. swiftness, certainty, and fairness making a much bigger impact in deterring criminal behavior than severity (Kleiman 2009; Nagin 1998; van Winden and Ash 2012). The Manne Law and Economics Program did not include material from behavioral economics, according to the syllabi listed in Butler [1999].

Harcourt [2011] suggests that this emphasis on deterrence and increased punitiveness is complementary to laissez-faire economic ideology. By deterring non-market opportunism, criminal law incentivizes participation in markets, which leads to higher efficiency. Harcourt [2011] faults Becker for taking the criminal code as given. We analyze the federal sentencing decisions, which constitute 8% of the US prison population.

Economics Style and **Economics Training** are also both predictive of rejecting criminal appeals and more predictive than Republican party. If the judge rules against the government in a criminal case, that can be understood as rejecting a criminal appeal (upholding the sentence).

One impact of **Economics Training** is learning about deterrence theory, which hypothesizes that increasing the expected costs of crime will reduce crime. Through common law (the creation of new legal rules that are binding precedent), Circuit judges can make conviction more probable, and they can also directly endorse long sentences imposed by trial courts. Deterrence theory can justify pro-government decisions in criminal cases. Figure 14 and Table 19 show that **Economics Trained** judges were significantly more likely to reject criminal appeals and use the word "deterrence" after 1991 but not before 1976. The results are similar when including Republican party as control.

As prima facie evidence that spillovers from Manne judges affect co-panelists, Figure

Table 18: Effects of Law-and-Economics on Ruling For Federal Government In Criminal Appeals

	Rejecting Criminal Appeal			
	(5)	(6)	(7)	(8)
Economics Style	0.00250+	0.00222+		
	(0.00132)	(0.00132)		
Economics Training			0.0199*	0.0220**
			(0.00774)	(0.00781)
Republican		-0.00963**		-0.0164**
		(0.00333)		(0.00630)
N	194070	194070	97824	97824
adj. R-sq	0.239	0.239	0.043	0.043
Circuit-Year FE	Y	Y	Y	Y
Sample	All	All	Post 1991	

Notes. Effect of law-and-economics on voting for government party. *Republican* is a dummy variable for whether the judge is Republican. The other treatment variables are the law-econ measures described in Section 3. Columns 1, 2, 5, and 6 include 1941-2002; Columns 3, 4, 7, and 8 include 1991-2002. All regressions include circuit-year fixed effects. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

Figure 14: Impact of Economics Training on Deterrence Reasoning

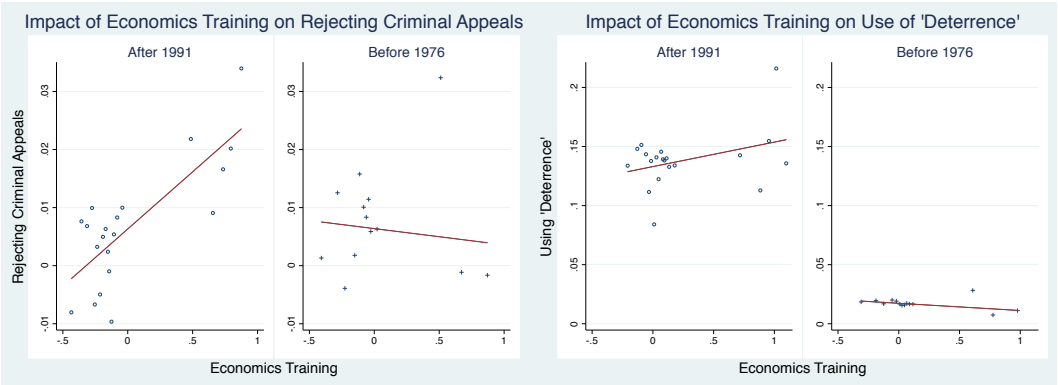
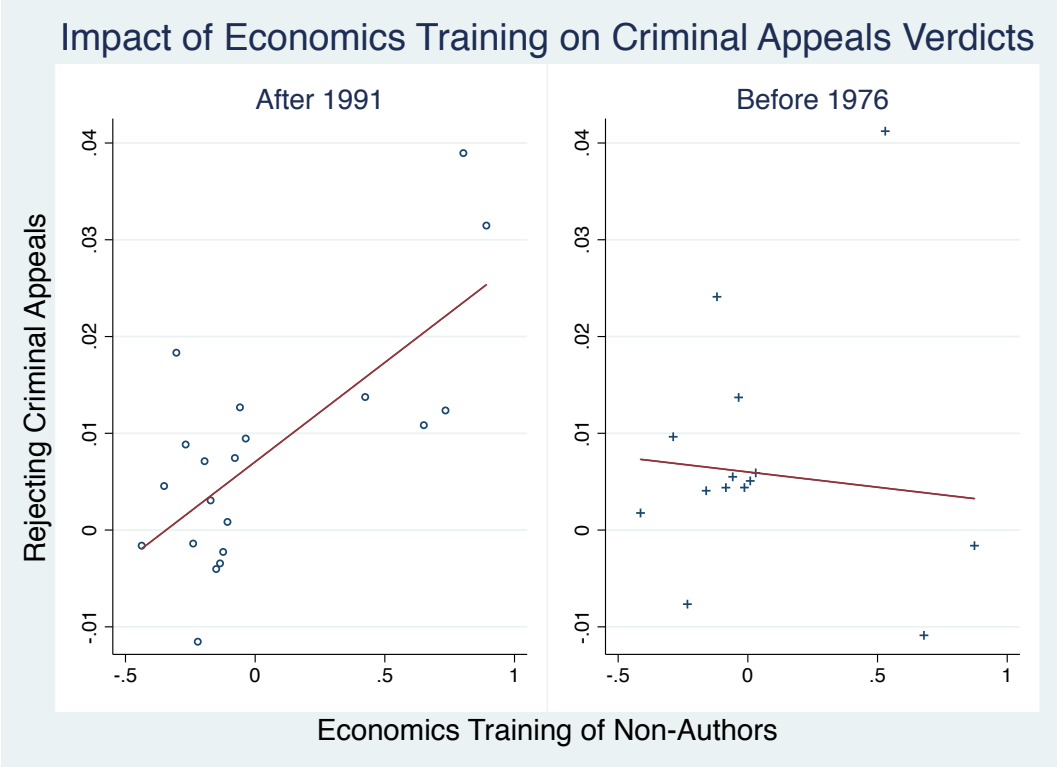


Table 19: Impact of Economics Training on Deterrence Reasoning

	Rejecting Criminal Appeal			# Uses of "Deterrence"	
	(1)	(2)		(1)	(2)
Econ Training	-0.00525	0.0197**	Econ Training	0.00497	0.0387**
	(0.0212)	(0.00792)		(0.00664)	(0.0189)
N	76183	92306	N	19199	29850
adj. R-sq	0.305	0.044	adj. R-sq	-0.019	0.023
Circuit-Year FE	Y	Y	Circuit-Year FE	Y	Y
Control	N	N	Control	N	N
Sample	Year $<$ 1976	Year $>$ 1991	Sample	Year $<$ 1976	Year $>$ 1991

Notes. Effect of economics training. Standard errors clustered by judge. Observations are weighted to treat judge-years equally. $+p < .1, *p < 0.05, **p < .01$.

Figure 15: Impact of Peer Economics Training on Criminal Appeals Verdicts



15 and Table 20 show that when paired with **Economics Trained** judges, the authoring judge is likely to vote to reject criminal appeals in their verdict. We see this effect only in the post-treatment period (left panel) and not before (right panel). Similar to our findings above on spillovers in linguistic use, we find spillovers in actual votes as well.

5.1 Effects of Judicial Discretion

United States v. Booker loosened the formerly mandatory U.S. Sentencing Guidelines and offers a policy experiment to analyze the effects of judicial discretion. We obtain data on criminal sentencing by federal district judges from Transactional Records Access Clearinghouse (TRAC). Extensive description of these data is available elsewhere (Yang 2014). The data are complete for 2004 through 2011. For earlier years, we have only a selection of sentences, and very few before 1998. In total, there are approximately

Table 20: Impact of Peer Economics Training on Criminal Appeals Verdicts

	Rejecting Criminal Appeal	
	(1)	(2)
Econ Training	-0.00697	0.0205*
	(0.0232)	(0.00928)
N	59123	65354
adj. R-sq	0.316	0.050
Circuit-Year FE	Y	Y
Control	N	N
Judge FE	N	N
Sample	Year $<$ 1976	Year $>$ 1991
Sample	Non-Author	Non-Author

See notes in previous tables. Results are similar with fully interacted Republican dummies.

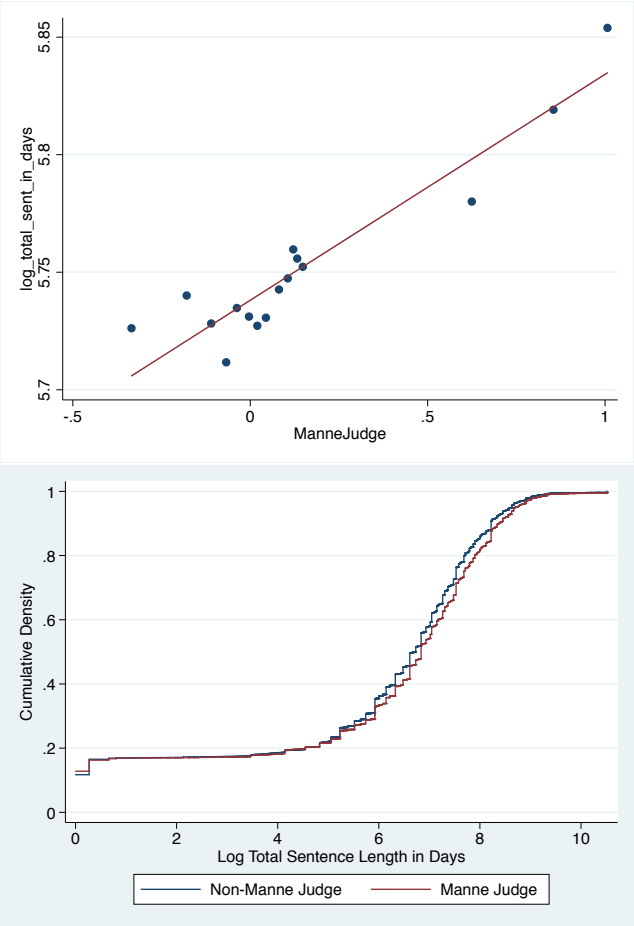
900,000 cases.[27]

Figure 16 shows that **Economics Trained** judges render more severe sentences. The left figure is a bin-scatter and the right is a cumulative distribution function of log sentence length as a function of Manne attendance. Note that total sentence length in days is roughly log-normal conditional on a non-zero sentence length.

Figure 17 shows that **Economics Trained** judges render more severe sentences only after *Booker*. Manne and non-Manne judges made similar decisions prior to Booker, and differences emerge immediately upon Booker. Our result echoes other findings that interjudge sentencing disparities have doubled since the Guidelines became advisory (Yang 2014), and we show that **Economics Trained** judges contributed to this disparity. Yang [2014] shows that the increase in disparities is associated with judge demographic characteristics, with Democratic and female judges being more likely to exercise their enhanced discretion after Booker. A follow-up study found that Republicans assigned sentence lengths that were 13% harsher across all District courts, and this lasted for five years. Accordingly, the right side of Figure 17 also controls for available biographical characteristics (and also crime characteristics) as dummy indicators. The results appear hardly affected by these controls. If anything, the pre-Booker sentences

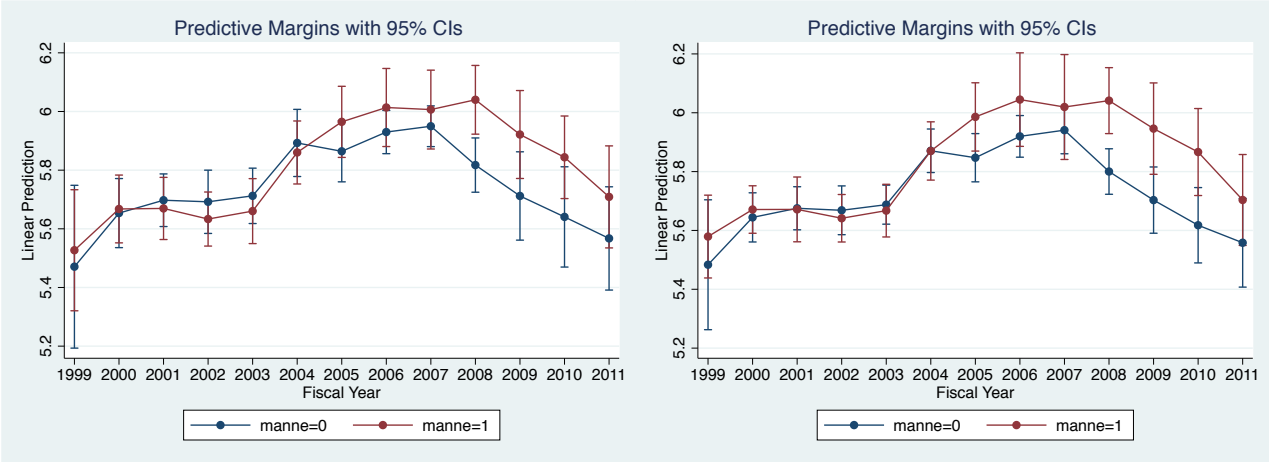
[27] The data contain information on prison sentences, probation sentences, fines, and the death penalty. We do not consider the death penalty, as it is exceedingly rare in federal cases (71 cases). Probation sentences and monetary fines are much more frequent but still apply in only about 10% of the cases each. Even then, monetary fines are mostly very small relative to prison sentences. The median non-zero monetary fine is $2,000, and the 90th percentile is $15,000. We thus ignore them as well, and focus exclusively on prison sentences.

Figure 16: Economics Judges and Sentencing Decisions



Notes. Log of 1+ sentence length in days.

Figure 17: Manne Law and Economics Attendance and Sentencing Decisions



Notes. Log of 1+ sentence length in days.

are more similar and the post-Booker sentences are more disparate between judges with and without **Economics Training**. Moreover, the effect of economics is persistent. To be sure, the Booker decision was motivated by judges' desire to depart below the guidelines, and lower sentence lengths appears to be a long-term trend. We also cannot determine whether economics judges increase their sentences, or non-economics judges decrease their sentences, since that inference depends on how one fits a trend around Booker.

Formally, we estimate the equation from our baseline specification. We include a full set of courthouse-year interacted fixed effects as well as calendar fixed effects for day-of-week and month-of-sentence.[28] We condition on courthouse rather than district court because some district courts randomly assign judges within courthouse (Chen and Yeh 2014).[29] We can include judge fixed effects. We cluster standard errors by district since the treatment doesn't vary within judge and to address unobserved influences affecting the composition of cases within a district. There are 94 district courts. Our results also hold with a reduced form specification replacing Econ Training with the Bartik equivalent.

Note that the lack of significant difference of **Economics Trained** judges prior to *Booker* is not due to sample size: 41% of the sample is before 2005. The estimated effect

[28] Month-of-sentence always refers to a specific month (e.g., December 1993), not a calendar month (e.g., December).

[29] We employ courthouse fixed effects rather than courthouse by year fixed effects so as to not absorb the post-Booker interaction with Manne judges. We obtain similar results when we only use data from 2004 and 2005.

Table 21: Effect of Economics Judges on Criminal Sentencing, Pre- and Post-*Booker*

	Any Sentence	Log of Total Sentence		
	(1)	(2)	(3)	(4)
Econ Training	-0.00433	-0.0336	-0.00527	-0.00795
	(0.00692)	(0.0594)	(0.0462)	(0.142)
Booker (≥2005)	0.0400***	0.0861	-0.202***	.
	(0.00600)	(0.0854)	(0.0636)	.
Econ Training *	0.0117*	0.198**	0.131*	0.130*
Booker (≥2005)	(0.00631)	(0.0829)	(0.0731)	(0.0774)
N	930448	930448	819881	889951
adj. R-sq	0.035	0.037	0.085	0.053
Courthouse and Calendar FE	X	X	X	X
Judge FE				X
Sample	All	All	Sentence > 0	All

See notes in previous tables. Results are similar with fully interacted Republican dummies.

of 20% longer sentences in Table 21 Column 2 translates to roughly 10 months. Column 1 presents effects on the extensive margin, where **Economics Trained** judges assign any sentence 1% more often after Book, and Column 3 presents the intensive margin, where **Economics Trained** judges assign 13% longer sentence lengths conditional on any sentence. The most restrictive specification is Column 4, which includes judge fixed effects, which also finds 13% longer sentence lengths. To benchmark our effect size, blacks receive almost 10% longer sentences than comparable white defendants arrested for the same crimes (Rehavi and Starr 2014).

Table 22 shows that the effects are largest when dropping drug crimes. Milton Friedman was known for advocating the legalization of drugs, begin against victimless crimes. The effects are smallest when dropping immigration crimes, suggesting harshness is concentrated for immigration crimes, consistent with the Circuit Court findings. In addition, harshness is elevated for weapon crimes. The vast majority of charges in the immigration category are for (1) reentry of deported alien and (2) entry of alien at improper time or place.

Table 23 presents an omnibus check for endogenous settlement or selection of cases by judges. It shows that economics judges are not systematically appearing on certain types of crimes before or after Booker.

Table 24 presents an analysis of the impact of economics judges on racial gaps. The first row shows that minority defendants were treated systematically harsher, more

Table 22: Effect of Economics Judges on Criminal Sentencing, Pre- and Post-*Booker*

	Log of Total Sentence				
	(1)	(2)	(3)	(4)	(5)
Econ Training	-0.0695	-0.00621	-0.0369	-0.0213	-0.0226
	(0.0839)	(0.0347)	(0.0559)	(0.0619)	(0.0599)
Econ Training *	0.245**	0.0467	0.200**	0.184**	0.219**
Booker (≥2005)	(0.100)	(0.0411)	(0.0856)	(0.0903)	(0.0900)
N	600010	697844	798823	838643	786472
adj. R-sq	0.043	0.044	0.051	0.037	0.043
Courthouse and Calendar FE	Y	Y	Y	Y	Y
Drop Crime	Drug	Immigration	Fraud	Weapon	Other

See notes in previous tables. Results are similar with fully interacted Republican dummies.

Table 23: Effect of Economics Judges on Criminal Sentencing, Pre- and Post-*Booker*

	Econ Training				
	(1)	(2)	(3)	(4)	(5)
Crime Type	-0.00545	0.0148	-0.00362	0.00319	-0.000646
	(0.0157)	(0.0441)	(0.0107)	(0.00898)	(0.00939)
Crime Type *	0.0127	-0.0132	-0.00621	-0.00825	-0.00691
Booker (≥2005)	(0.0127)	(0.0445)	(0.0160)	(0.0147)	(0.0142)
N	930448	930448	930448	930448	930448
adj. R-sq	0.245	0.245	0.245	0.245	0.245
Courthouse and Calendar FE	Y	Y	Y	Y	Y
Crime Type	Drug	Immigration	Fraud	Weapon	Other

See notes in previous tables. Results are similar with fully interacted Republican dummies.

frequently assigned in the upper half of the sentencing guidelines, more frequently receiving life in prison, and having more months of sentence lengths. The second row indicates that economics judges exacerbate this gap, sometimes substantially (doubling the gap for life inprisonment). The expressive effects weaken with the inclusion of the Republican interaction and whether the judge is also a racial minority. However the substantive gaps remain stable and, in terms of life inprisonment, more strongly predictive by economics training than by Republican party of appointment. The final row shows some evidence of racial in-group bias, though bias by whom is unknown without a benchmark.

Table 25 presents an analysis of the impact of economics judges on gender gaps. The first row shows that female defendants were treated systematically more leniently, more frequently assigned in the lower half of the sentencing guidelines, less frequently receiving life in prison, and having fewer months in sentence lengths. The second row indicates that economics judges exacerbate this gap, sometimes substantially (doubling the gap for life inprisonment). The expressive and substantive effects are robust to the inclusion of the Republican interaction and whether the judge is female. Note that economics training is more predictive of these gaps than Republican party of appointment.

6 Conclusion

Economics has substantially affected the federal judiciary. We see economics language in academic articles being adopted in judicial opinions. We see economics trained judges changing their decisions and impacting their peers. We see economics language travelling from judge to judge and across legal topics. Economics likely changed how judges perceived the consequences of their decisions. In economics cases, economics training changed by 10% the direction of their votes. If you teach judges markets work, they deregulate government. If you teach judges deterrence works, they become harsher to criminal defendants. In District Courts, when judges had sentencing discretion, economics trained judges immediately rendered 20% longer sentences than non-economics judges. Economics training accounts for substantial portion of the conservative shift in the federal judiciary since 1976. Economics training focusing on efficiency likely crowded out other constitutional theories of interpretation.

Economics-trained judges significantly impact U.S. judicial outcomes. They ren-

Table 24: Effect of Economics Judges on Racial Gaps, Pre-*Booker*

	Expressive		Substantive		Expressive		Substantive	
	Lower	Upper	Life	Months	Lower	Upper	Life	Months
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Minority	*-0.0317****	*0.0287****	*0.00395****	*20.84****	*-0.0337****	*0.0290****	*0.00388****	*20.34****
	(0.00519)	*(0.00462)*	*(0.000770)*	*(1.979)*	*(0.00650)*	*(0.00533)*	*(0.00102)*	*(2.170)*
* Economics	-0.0117*	0.0114*	0.00401**	5.413***	-0.00987	0.00943	0.00379**	3.180*
	(0.00656)	(0.00664)	(0.00157)	(2.044)	(0.00689)	(0.00694)	(0.00170)	(1.910)
* Republican					-0.00161	0.00317	0.000641	4.096**
					(0.00560)	(0.00497)	(0.00103)	(1.723)
* Minority J					0.0183**	-0.0120	-0.00119	-7.451**
					(0.00902)	(0.00770)	(0.00135)	(3.167)
N	155049	155049	156650	155977	153334	153334	154920	154253
adj. R-sq	0.063	0.063	0.015	0.102	0.062	0.062	0.015	0.102
Judge FE	Y	Y	Y	Y	Y	Y	Y	Y
Sample	All	All	All	All	All	All	All	All

See notes in previous tables.

Table 25: Effect of Economics Judges on Gender Gaps, Pre-*Booker*

	Expressive		Substantive		Expressive		Substantive	
	Lower	Upper	Life	Months	Lower	Upper	Life	Months
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	*0.0930****	*-0.0816****	*-0.00397****	*-31.01****	*0.0891****	*-0.0783****	*-0.00395****	*-29.84****
	(0.00585)	*(0.00536)*	*(0.000562)*	*(1.676)*	*(0.00818)*	*(0.00698)*	*(0.000718)*	*(2.127)*
* Economics	0.0187**	-0.0191***	-0.00247**	-5.083***	0.0157**	-0.0155**	-0.00227*	-4.120**
	(0.00785)	(0.00673)	(0.00113)	(1.717)	(0.00722)	(0.00623)	(0.00116)	(1.617)
* Republican					0.00766	-0.00695	-0.000372	-2.549*
					(0.00756)	(0.00680)	(0.000678)	(1.456)
* Female J					0.00127	0.000833	0.000697	0.145
					(0.00775)	(0.00735)	(0.000750)	(1.218)
N	158351	158351	160402	159713	156598	156598	158634	157951
adj. R-sq	0.068	0.068	0.014	0.109	0.068	0.067	0.015	0.109
Judge FE	Y	Y	Y	Y	Y	Y	Y	Y
Sample	All	All	All	All	All	All	All	All

See notes in previous tables.

der conservative votes and verdicts, are against regulation and criminal appeals, and mete harsher criminal sentences and deterrence reasoning. Economics-trained judges exceptionally are for immigration regulation and the sentencing effects are largest for immigration crimes. Economics judges also exacerbate racial and gender sentence gaps. We also present a framework to estimate memetic ideas that diffuse across an exogenous seating network and leap across topic boundaries. Our work is related to a broader scientific understanding of the cultural roots of social preferences. Reference points, mental accounting, and emotions underlie punishment of norm violation. Economics training make more salient certain criteria, like deterrence, when deciding to punish. Identity, egotism, and curvature of costs relate to deviating from duties. Economics (when used normatively) can generate new duties for judges as suggested by the testimonials of judges attending economics training. Memes, implicit bias from judicial corpora, and the grammar of law might be learned from the data collection presented in this paper.

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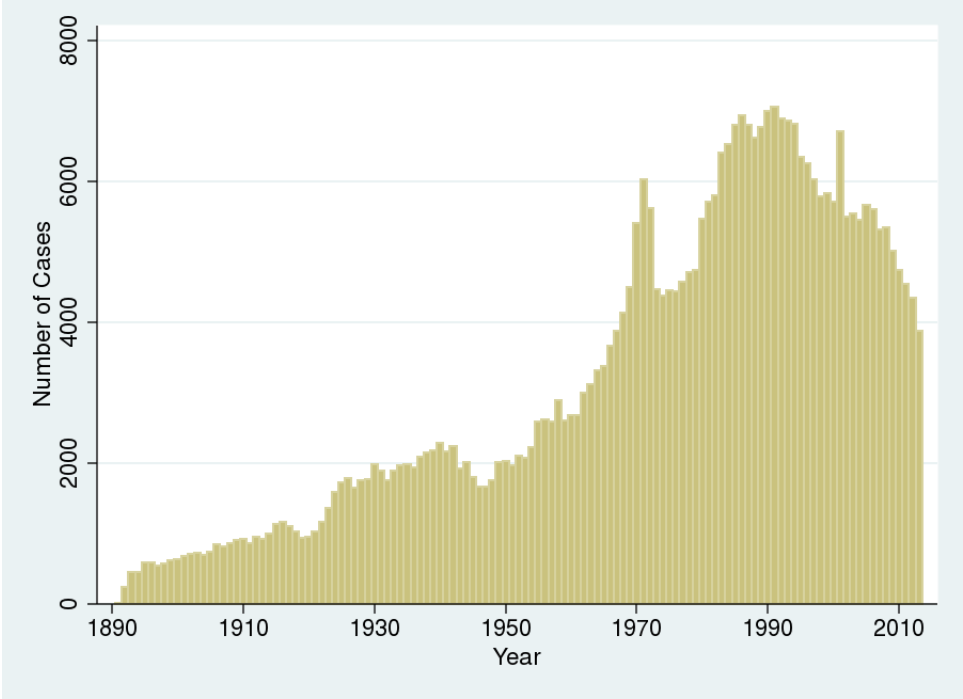
Figure 18: Distribution of Cases Over Time



A Data Setting

There are three layers in the U.S. Federal Court system: the local level (District Court), intermediate level (Circuit Court), and national level (Supreme Court). Judges are appointed by the U.S. President and confirmed by the U.S. Senate. They are responsible for the adjudication of disputes involving common law and interpretation of federal statutes. Their decisions establish precedent for adjudication in future cases in the same court and in lower courts within its geographic boundaries. The 12 U.S. Circuit Courts (Courts of Appeals) take cases appealed from the 94 District Courts. The Circuit Courts have no juries. Each Circuit Court presides over 3-9 states. The vast majority (98%) of their decisions are final.[30] Judges have life tenure.

Our key data set is the set of judicial decisions published by the United States Circuits of Appeal for the years 1891 through 2013. The cases were manually collected from Bloomberg Law and cross-checked against other existing datasets. Figure 18 shows the distribution of cases over the years in our sample. We have the set of judges working on the three-judge panel for each case. Of these judges, we have the authoring judge,

[30] In the remaining 2% that are appealed to the Supreme Court, 30% are affirmed.

as well as whether either of the other judges wrote a dissenting opinion.

The final set of data that we use is the set of judge biographical characteristics from the Appeals Court Attribute Data,[31] Federal Judicial Center, and previous data collection.[32] These data help control for other shifters of ideology. We constructed dummy indicators for whether the judge was female, non-white, black, jewish, catholic, protestant, evangelical, mainline, non-religiously affiliated, whether the judge obtained a BA from within the state, attended a public university for college, had a graduate law degree (LLM or SJD), had any prior government experience, was a former magistrate judge, former bankruptcy judge, former law professor, former deputy or assistant district/county/city attorney, former Assistant U.S. Attorney, former U.S. Attorney, former Attorney-General, former Solicitor-General, former state high court judge, former state lower court judge, formerly in the state house, formerly in state senate, formerly in the U.S. House of Representatives, formerly a U.S. Senator, formerly in private practice, former mayor, former local/municipal court judge, formerly worked in the Solicitor-General's office, former governor, former District/County/City Attorney, former Congressional counsel, formerly in city council, born in the 1910s, 1920s, 1930s, 1940s, or 1950s, whether government (Congress and president) was unified or divided at the time of appointment, and whether judge and appointing president were of the same or different political parties.

B Judge Testimonials About Manne Program

Supreme Court Justice Ruth Bader Ginsburg complimented Manne:

> "Cheers to Henry, innovator and dean nonpareil. As a student in two of his seminars, I can affirm that the instruction was far more intense than the Florida sun. For lifting the veil on such mysteries as regression analyses, and for advancing both learning and collegial relationships among federal judges across the country, my enduring appreciation." (Letter from Justice Ruth Bader Ginsburg, Supreme Court of the United States (Mar. 1, 1999))

> "the courses I attended helped to provide a principled basis for deciding close cases." (Letter from Judge Paul R. Michel, U.S. Court of Appeals for

[31] http://www.cas.sc.edu/poli/juri/attributes.html

[32] Missing data was filled in by searching transcripts of Congressional confirmation hearings and other official or news publications on Lexis (Chen and Yeh 2014).

the Federal Circuit, to Henry N. Butler, Director, Law and Organizational Economics Center, University of Kansas 1-2 (Feb. 25, 1999))

"As a new judge, a principle concern for me was that I develop reasoned criteria for deciding cases. While each judge must wrestle with what that criteria should be, I found Henry's courses helped to provide me with a sound theoretical and rational structure for my decisions..."

[I]n many cases, one need look no further than the letter of the law. However, in those cases where the law is not clear, there is, consciously or unconsciously, a proclivity to resolve the case in favor of the party with whom you most identify or sympathize. To avoid succumbing to this pattern, it is essential to understand the economic and social impact of one's decision...

[T]he courses gave to me a greater understanding of the potential effects and foreseeable impact of imposing a duty or liability on a particular party in a case. And with that understanding came an appreciation of the broader impact that my decisions could have on other similarly situated parties. In sum, the courses I attended helped to provide a principled basis for deciding close cases." (Letter from Judge E. Grady Jolly, U.S. Court of Appeals for the Fifth Circuit, to Henry N. Butler, Director, Law and Organizational Economics Center, University of Kansas 1-2 (Feb. 17, 1999))

The programs were intense.

"Henry always chose places for classes that embodied the principles of economic success. One need only to look out the window to see it all around. One's eyes never wandered far as the teachers were always the epitome of expertise. However, Henry, as truly economic, made it clear that he expected one not to participate in the abundance that surrounded them until all the classes were over and done with." (Letter from Judge Robert G. Doumar, U.S. District Court for the Eastern District of Virginia, to Henry N. Butler, Director, Law and Organizational Economics Center, University of Kansas (Feb. 26, 1999))

"Frankly, I did not expect such a concentrated agenda. I don't believe I have ever attended a seminar that involved such intensive study and discussion. My wife, who accompanied me, commented, "I don't see any more of

you here than I do at home." Another compliment came from one of my fellow judges who said, "I can't believe how much I have learned, but I'm glad I didn't have to take this course in college."" (Letter from Judge Thomas J. Curran, U.S. District Court for the Eastern District of Wisconsin, to Henry N. Butler, Director, Law and Organizational Economics Center, University of Kansas (Mar. 2, 1999))

Most importantly, from the perspective of criminal sentencing, is a self-identified social progressive who was led to measure decisions through costs and benefits, the potential scope of impact outside of traditional economic topics but to areas of "judicial discretion" more broadly, and the impact on non-conservatives:

"I attended the first of the law and economics programs Henry organized for federal judges and what was learned was so worthwhile that I attended two additional programs-this despite the fact that I regard myself as a social progressive and all the economists in attendance, from my perspective, had Neanderthal views on race and social policy. The basic lesson I learned, however, would have been forthcoming whatever the social outlook of the economist and that is that social good comes at a price, a social and economic cost. I had never thought that through before being exposed to Henry's teachings. While my views have not changed, the exposure to the thinking and teaching of the economists in these programs has led me to measure the cost of the social good being furthered against the gain to be achieved. I suppose what was learned amounts to social responsibility and required me to choose my priorities with greater care than before." (Letter from Judge Robert L. Carter, U.S. District Court for the Southern District of New York, to Henry N. Butler, Director, Law and Organizational Economics Center, University of Kansas 1-2 (Feb. 17, 1999))

"While we are circumscribed by the parameters of existing statutes, regulations and case law, there is a wide area of decision entrusted to us where the result can go either way, depending on how we view the evidence. That area is called "judicial discretion." This is the area that is most affected by these seminars on economics conducted under Dr. Manne's direction. I have attended his seminars during the past ten years and am eager to testify to their value. Indeed, I feel that, as a result of what I have learned at these seminars, I have become a much better judge, hopefully rendering

more valuable and salutary decisions to this society." (Letter from Judge Anthony A. Alaimo, U.S. District Court for the Southern District of Georgia, to William E. Simon, President, The John M. Olin Foundation, Inc., 2-3 (June 20, 1989))

"There has been a feeling in some quarters that Henry and his LEC colleagues were of a conservative persuasion. I am not inclined to deny that. However, what has been taught has been professional economics of the highest and most sophisticated caliber. In any event, people of all stripes have attended and greatly benefited. I recall my first course when the class wanted to express our gratitude on the final day. The person who rose to speak was Judge Hall from West Virginia, who was from the Fourth Circuit. Without doubt he was a Democrat going back to New Deal days. He was fervent in his appreciation of the LEC course." (Letter from Judge Thomas P. Griesa, U.S. District Court for the Southern District of New York, to Henry N. Butler, Director, Law and Organizational Economics Center, University of Kansas 2 (Mar. 30, 1999))

Consistent with potential impact on judicial discretion, the Manne Judges effect appears solely with the post-Booker period, after United States v. Booker loosened the formerly mandatory U.S. Sentencing Guidelines.