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Leximetrics: Why the Same Laws are Longer in Some Countries than Others

Tom Ginsburg* Robert D. Cooter†

*University of Illinois, Urbana Champian

†Boalt Hall, UC Berkeley

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Robert Cooter, Boalt Hall School of Law
Tom Ginsburg, University of Illinois Urbana-Champaign[+]

I. INTRODUCTION

When do drafters of legal instruments specify details and when do they not? This question is a central one for legal scholarship, with implications for theories of interpretation of legislation, contracts and constitutions. Comparative law can help provide answers by providing data as to whether and how specificity differs across legal systems. There have been some speculations on this point but little systematic analysis. We seek to establish some facts using quantitative methodology, so as to provide more systematic evidence for comparative lawyers' intuitions.

One well-known argument follows Weber and focuses on the common law-civil law distinction.[1] The default set of rules in common law countries, goes the argument, is a massive body of caselaw. Compared to the great codes of continental tradition, the common law provides a less predictable set of rules because it is dynamic and because its sheer volume renders it imprecise. Therefore, legislators in common law countries must articulate their views with great precision, generating longer statutes. This argument, while suggestive, is incomplete. It does not account for differences across countries within the civil law or common law tradition, nor does it explain the growing convergence in the general principles of legal drafting between civil and common law countries, which is occurring in Europe under the force of the European Union.[2]

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[1] MAX WEBER, II ECONOMY AND SOCIETY 809-15 (G. Roth, ed., 1978); see also RENE DAVID AND JOHN E. C. BRIERLEY, MAJOR LEGAL SYSTEMS IN THE WORLD TODAY: AN INTRODUCTION TO THE COMPARATIVE STUDY OF LAW (1978).

[2] Xanthaki, H., *The Problem of Quality in EU Legislation: What on Earth is Really Wrong?*, 38 COMMON MARKET LAW REVIEW 651 at 653-56, 660 (2001) (finding that "despite expected differences between countries of the common and the civil law tradition, the general principles of drafting are surprisingly similar.")

This paper has three goals, two substantive and one methodological. First, we seek to establish that the specificity of legal obligations varies systematically across countries. Second, we seek to explain that variation as a function of institutional factors. Third, we seek to introduce a new method of comparative law, which we call *leximetrics*, that relies on systematic quantitative methodology rather than intuitive or suggestive analysis.

Our paper proceeds by taking each of those goals in order. Part II focuses on establishing the facts of difference. The transposition of EU Directives provides a good set of data for examining this question, since the process requires the enactment of substantially similar legislation in all the Member States of the Union. We can thus control to a certain extent for the substance of legislation, especially for new legal obligations that have no counterpart in pre-existing national law. We also introduce data on variation in private contracts and judicial opinions in this section.

Part III offers a theory that explains the facts. Our general proposition is that decision makers will try to control future behavior in drafting legal documents. We assume that legal drafters specify details when they want to control the interpreters of a legal text, whether they are counterparties to a contract, or courts or bureaucrats that will interpret a statute. To illustrate, imagine a political party that is likely to continue ruling and controls the judiciary. It has little doubt that the courts will rule in accordance with its wishes because of the threat of discipline. Such a party will not draft long legislation. In contrast, where the party believes judges are likely to deviate from its preferences it will draft legislation in great detail. This section helps explain how the need to control future interpretation shapes drafting. It introduces other data, both historical and comparative, that is consistent with the theory.

Part IV focuses on the role of lawyer population in contributing to specificity, and offers several reasons that a more competitive market for legal services should produce longer legal instruments. Part V discusses the implications of the method and outlines an agenda for further research. We argue that the leximetric method can be applied to a wide range of questions in comparative law and legal history, and can be refined through development of more elaborate techniques of capturing specificity. This section also contains some specific propositions that can be tested with leximetrics.

II. SOME FACTS

A. Comparing Transposition of EU Directives

We focus initially on legislation. Comparative lawyers have developed intuitions about the specificity of legal instruments, and have focused on the common law-civil law divide as the key source of divergence.[3] In this section, we seek to demonstrate that the differences in legislative specificity are systematic across countries, differ within legal traditions as well as across them, and are capable of measurement.

[3] WILLIAM DALE, LEGISLATIVE DRAFTING: A NEW APPROACH (1977); DAVID AND BRIERLY, *supra* note 1.

As a proxy for specificity we use the number of words in a legal document.[4] We think that longer legal documents are likely to be more specific. Although one can think of counterexamples ("cars shall not travel on the interstate faster than 55 miles an hour" is a short and specific command), the assumption that length and specificity move in the same direction seems plausible when comparing laws that cover the same substantive area. There are alternative ways we could capture specificity, such as counting the number of obligations or articles in a legal instrument.[5] However, the question of defining an obligation raises methodological issues. While we acknowledge that use of word counts may be an imperfect measure of specificity, it is a good first step. As leximetrics develop, more refined techniques may be possible and will be considered in Part IV.

One might think that the length of statutes merely reflects the language in which the statutes are drafted. After all, languages vary in the economy with which they express similar ideas. To deal with linguistic variation, we obtained, where possible, statutes in English. In other instances, we sought to normalize the measurements. To establish that language was not the primary factor determining statute length, we obtained a copy of the Universal Declaration of Human Rights (UDHR), published by the United Nations in many languages. We then calculated the number of words in the UDHR in each EU language and normalized the legal instruments to reflect the deviance of the language from English.[6] Table 1 presents these normalization figures. A higher normalizing multiplier indicates a language that expresses ideas concisely.

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[4] A few other scholars have used word counts in this way. See Margaret F. Brinig, et al, *The Public Choice of Elder Abuse Legislation*, paper on file with authors. After this draft was complete, we learned of a new book by JOHN HUBER AND CHARLES SHIPAN, DELIBERATE DISCRETION? (2002) which employs a similar methodology and argument as this paper. As will be apparent to readers of both works, our data and the scope of our argument are different. To our knowledge, no study has used words counts to compare similar laws across countries and no study has compared legislative data with other legal instruments such as private contracts and court opinions.

[5] This is the approach of another study we have identified that uses a quantitative methodology, QUANTITATIVE ANALYSES OF LAW (Heinz Schaffer and Attila Racz, ed., 1990).

[6] We normalized by multiplying by the ratio of English to the language in question. There are alternative texts available in many languages, such as the Book of Genesis or the European Union Treaty, that we might also have used. We examined these alternative measures and observed some variation across these various texts, though their rough rankings were very similar.

Table 1: Linguistic Variation in the Universal Declaration of Human Rights

	WORDS	Rank by words	Normalizing multiplier = (# of words in English/# of words in language)
FINNISH	1272	1	1.37
SWEDISH	1545	2	1.13
NORWEGIAN (BOKMAL)	1601	3	1.09
GERMAN	1633	4	1.07
DANISH	1645	5	1.06
NORWEGIAN (NYNORSK)	1697	6	1.03
ENGLISH	1741	7	1
ITALIAN	1807	8	.96
PORTUGUESE	1836	9	.95
GREEK	1901	10	.92
SPANISH	1903	11	.91
FRENCH	1936	12	.90
DUTCH	1955	13	.89

To examine how legislation varies across countries, we examine the statutes used to transpose directives in the European Union. Directives are one of the legislative instruments provided for in Article 249 of the EU Treaty.[7] Unlike regulations, which are directly applicable in the territory of the Union, directives require transposition into the domestic legal order of Member States to become effective. In accordance with the notion of subsidiarity,[8] directives are assumed to leave Member States some flexibility in terms of how they achieve the declared results. But EU observers note that the actual substantive discretion of Member States is declining as directives themselves have become more specific.

Transposition of directives can take a variety of forms. Most obviously it can be achieved through legislation enacted by the national parliament. But it can also be achieved in certain areas through agreement by the so-called "social partners." Some

[7] See generally SACHA PRECHAL, DIRECTIVES IN EUROPEAN COMMUNITY LAW: A STUDY ON E.C. DIRECTIVES AND THEIR ENFORCEMENT IN NATIONAL COURTS (1995).

[8] The Treaty states that outside its area of exclusive competence, the Community shall take action "only if an in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States an can therefore…be better achieved by the community." Subsidiarity is a loose concept that has been found to be capable of 30 separate interpretations. Philip Norton, *Introduction* in NATIONAL PARLIAMENTS AND THE EUROPEAN UNION 7 (PHILIP NORTON, ED., 1996).

Member States transpose directives by reference or through umbrella legislation.[9] If the national legal system already has norms that provide a clear legal framework consistent with the directive, no specific transposition is required.[10] Nevertheless, it is generally true that most Member States transpose directives with formal legislation or administrative action.[11]

Federalism also complicates transposition, as federal polities will sometimes need to enact legislation at both the national level and that of the constituent unit to comply with the requirements of a directive while a unitary state will not have to do so. The various alternative means of transposition complicate the development of a data set. Therefore, we focused attention on specific directives that involved individual measures of transposition at the national level in the various Member States.

If a Member State fails to transpose a directive in a timely manner or fails to properly transpose it, the directive may be found to have "direct effect," meaning that individuals derive rights directly from the directive.[12] While one might think this reduces the incentive for the Member State to actually transpose the obligation into national law, the European Court of Justice's 1991 decision in *Francovich* made Member States liable for damages suffered by individuals as a result of the failure to properly implement directives.[13] *Francovich* and its subsequent line of cases provide a strong incentive for accurate and timely transposition.

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[9] Most notably, Italy. Because of deadlock in the Italian parliament, Italy was far behind in meeting with transposition requirements. It set up special European law procedures set up involving a single "Community Law" (called Legge La Pergola after its promoter) transposing directives for the previous year. This procedure has made a huge difference in national transposition: in the first five years of operation, Italy transposed 600 directives, as many as it had in the previous 30 years. Paul Furlong, *The Italian Parliament and European Integration—Responsibilities, Failures and Successes*, in NATIONAL PARLIAMENTS AND THE EUROPEAN UNION 35, 35 (P. NORTON, ED., 1996). at 40-43.

[10] But see KOEN LENAERTS, AND P. V. NUFFEL, CONSTITUTIONAL LAW OF THE EUROPEAN UNION 574 (1999) (states cannot rely on duty of national courts to disapply conflicting provisions of national law as means of transposition).

[11] In some countries Directives are incorporated by reference. Sue Arrowsmith, *Legal Techniques for Implementing Directives: A Case Study of Public Procurement*, in LAWMAKING IN THE EUROPEAN UNION 491, 496-97 (PAUL CRAIG AND CAROL HARLOW, EDS., 1998).

[12] See ECJ Case 8/81, *Becker v. Finanzamt Münster-Innenstadt* [1982] E.C.R. 53 at 76 (German citizen could rely on VAT directive that had not yet been implemented in Germany). On direct effect, see the famous cause of *Van Gend & Loos v. Nederlandse Administratie der Belastingen*, E.C.J. Case 26/62, [1963] E.C.R 1; see generally LENAERTS, *supra* note 10, at 526-29.

[13] *Francovich and Others*, [1991] E.C.R. I-5357 para 33 at I-5414; see generally Christian Timmermans, *Community Directives Revisited*, Y.B. EUR. L. (1998); LENAERTS, *supra* note 10, at 511-13. Liability is limited to instances when the result prescribed by the directive entails the grant of rights to individuals, that the contents of those rights can be identified on the basis of the directive, and that there is a causal link between the breach of the state's obligation that damage suffered by the party. Subsequent cases have established that there is a threshold level of damages required by the Court, namely that the breach be sufficiently serious. See Timmermans, id.; E.C. J. Cases C-46/93 and C-48/93 *Brasserie du Pecheur and*

In sum, directives leave relatively little room for substantive variation, but do allow the local legal process much flexibility in terms of specificity. Transposition measures are thus a useful way of evaluating variation across countries, largely but not entirely controlling for substance.

B. Statutes Vary Systematically Across Countries

We examined three directives in particular and evaluated the length of the implementing legislation at the national level. The three directives were the Products Liability Directive, creating uniform requirements for products sold in the European Communities; the European Works Council Directive, which mandated the creation of German-style Works Councils for all multinationals with more than 1000 workers and offices in more than one Member State; and the E-Commerce Directive, which governs formation of online contracts and regulates the liability of internet service providers. All the directives introduced significant modifications to national regulatory regimes, and in the case of the Works Council and E-Commerce directives, created completely new obligations.[14] We also include a fourth set of statutes covering national legislation on immigration, another area that has come under increasing EU pressure toward convergence.[15]

One might expect to see substantive differences depending on underlying conditions in the various countries. For example, countries that do not have an external border outside the Schengen immigration zone might have shorter immigration legislation, or countries without much industrial production might have shorter products liability laws. We believe that looking at a range of substantive legal areas helps overcome these biases to a certain extent.

For each country, we identified the statutes that were reported to the European Union as fulfilling the transposition obligation. We then normalized for language. Table 2 presents the data. Not all countries have met their obligation to inform the EU of measures transposing the E-Commerce Directive, so the data in the third column is still incomplete.

Factortame (Factortame IV) E.C. R. I-1029 paras 55-57 at I-1150. For detailed analysis of this line of cases see the Asser Institute Website at http://www.asser.nl/EEL/dossier/francovi.htm.

[14] Those countries which previously had national legislation requiring works councils had not extended it to multinationals.

[15] Primary legislation and code provisions available at http://www.geocities.com/nationalite/

Table 2: Length of implementing statutes for three directives and immigration law

	Products Liability Legislation	Works Council (EWC) Legislation	E-commerce Legislation	Immigration Legislation
Austria	509	5546	4069	8442
Belgium	1300	7600	13087	8001
Denmark	1210	3015	2125	1914
Finland	1197	1204	4522	3290
France	1374	4562	N/A	949
Germany	1490	6133	2488	4101
Ireland	1700	8260	9056	4344
Italy	1790	4682	7061	2217
Lux	790	11916	8891	4025
Neth	1250	4620	17735	5844
Norway	816	509	N/A	2849
Portugal	1090	5041	4916	1987
Spain	1490	10351	10255	1543
Sweden	514	4668	1669	2262
UK	2699	20676	7192	18916

The following matrix shows the correlations of the word counts across the national statutes. Despite the range in subject matter, the length of statutes is positively correlated across issue areas. (Note that the weakest correlations concern the E-commerce directive, for which data are still incomplete.) If specificity of obligation were random, we would not expect to see a positive correlation between statutes across these quite different areas of law. The positive correlations suggest that countries vary systematically in the specificity of legal obligations.[16]

Figure 1: Correlation matrix

	Products	EWC	E-Commerce	Immigration
Products	1			
EWC	.62	1		
E-Commerce	.22	.22	1	
Immigration	.53	.75	.16	1

[16] Note the correlations are robust when outliers are discarded, and when common law countries are discarded. Under each of these conditions, only one correlation -- that between products liability and immigration -- has a negative sign, and the magnitudes of the correlations increase in all the pairs including the E-commerce directive.

C. *Statute length is correlated with private contract length*

One interesting feature of the EWC Directive is that, under Article 13, it allowed multinationals to exempt themselves from its requirements if they concluded an EWC agreement with their workers prior to 1996. Around 450 of these private agreements ("Article 13 agreements") exist. These agreements contain a provision specifying which Member State's law will apply. One might expect that as specificity of a legislative regime rises, contractual specificity would fall as the default terms of the statute render private articulation of terms less important.[17]

The right column in Table 3 reports the average length of private agreements concluded by companies under Article 13 before the directive was transposed. We obtained roughly half of the Article 13 Agreements and calculated their average length in words for each country. To be included there had to be at least two observations of agreements specifying that a particular country's law would govern disputes between management and the multinational labor force. For countries with more than ten agreements, a random sample of ten agreements was used to construct the average.

Table 3: Works Council Legislation Compared with Works Councils Agreements

COUNTRY	Legislation Words	Private agreements	
		#	Avg. words
Austria	5546	4	1908
Belgium	7600	10	2812
Denmark	3015	3	2287
Finland	1204	6	1469
France	4562	10	1994
Germany	6133	10	1824
Ireland	8260	8	2134
Italy	4682	4	1195
Luxembourg	11916	2	3187
Netherlands	4620	10	2537
Norway	509	5	1600
Sweden	4668	10	1641
UK	20676	10	2384

To test the relationship between private agreements and public legislation, we compared the length of private agreements with the national legislation implementing works councils and found them to be correlated at the level of .52. Thus specificity in the two forms of legal instrument move in the same direction in a particular substantive area.[18]

[17] This assumes that the default terms are efficient; otherwise, private parties will have to bargain around them, increasing specificity of contracts.

[18] Note that, because the private agreements were concluded *before* national legislation was passed, we cannot draw direct conclusions about contracting in the shadow of the legislation.

D. Specificity of Other Legal Instruments Moves in the Same Direction

Table 4 presents other data on legal instruments from EU countries, including length of constitutions, civil code provisions, and an average length of ten randomly chosen civil court decisions from recent case reporters. Figure 2 reports correlations.

Table 4: Specificity of Other Legal Instruments

	constitution	civil code on contracts	Avg 10 civil cases	Lawyers/10,000 persons as of mid-1990s[19]
Austria	27939	25000	2309	7.69
Belgium	13832	11316	1691	10
Denmark	6260	2668	3277	6.99
Finland	13033	N/A	1718	2
France	7764	43000	548	5.49
Germany	24549	45200	2737	7.69
Ireland	14971	N/A	4853	15.38
Italy	15043	55300	2979	10
Lux	5744	51300	642	16.67
Neth	10124	14200	4016	4.34
Norway	8057	13133	4865	4
Portugal	32022	51600	2137	9.09
Spain	18080	39900	1301	15.87
Sweden	12562	3861	3472	4
UK	N/A	54880[20]	13957	15.38

Most of the legal instruments are positively correlated with each other and with the length of statutes and private contracts. The few negative correlations mostly involve the length of the constitution, and the effect is small. Interestingly, specificity of all instruments and lawyers are positively correlated, a point to which we will return in the theoretical section.

[19] PANORAMA OF EU INDUSTRY (1997), supplemented by ALAN TYRELL AND ZAHD YAQUB, THE LEGAL PROFESSION IN THE NEW EUROPE (1993).

[20] The United Kingdom, of course, does not have a civil code. We obtained this figure from a scholarly attempt to codify English contract law from earlier this century. See I JENKS' ENGLISH CIVIL LAW 36-264 (4th ed., 1947). The format of the digest is equivalent to that of codes in the civil law tradition.

Figure 2: Correlation matrix

	Constitution	Civil Code	Average 10 Civil Court Cases	Lawyers
Constitution	1			
Civil Code	.36	1		
Average 10 Civil Court Cases	-.06	.12	1	
Lawyers	.09	.62	.24	1
PL statute	-.01	.52	.66	.46
Immigration statute	.23	.17	.81	.33
Works Council statute	.09	.52	.61	.80
E-Commerce	-.28	-.03	,01	.25

E. Summary

To summarize the main facts developed in this section: (1) statutory specificity varies systematically across countries, controlling for substance; (2) specificity of statutes and private contracts in the same area of law tend to move in the same direction; (3) both of the above are correlated with non-statutory legal text such as court cases, civil code provisions, and constitutions; (4) specificity and lawyer population move in the same direction.

For ease of cross-national comparison, we constructed index variables representing statutory specificity and specificity of other legal obligations. For statutory specificity we averaged the length of legislation in each country and calculated the ratio of specificity to that in the median country, Italy. Table 5 shows that British legislation tends to be around three times as long as that of Italy, while Norwegian legislation is about a third as long. Table 6 provides the ratio of the individual legal obligation to the mean for that obligation in the 15-country sample. We then averaged these values for each country to produce the penultimate column, the index for all four obligations in the table.

Together, these two tables suggest that legal obligations are relatively more specific in the common law countries, the Benelux countries and the Iberian countries. Legal obligations are relatively less specific in the Scandinavian countries and in France. Spain has specific legislation, but is near the median for other obligations.

Table 5: STATUTORY SPECIFICITY INDEX

Rank	Country	Statutory Specificity Index
1	UK	3.14
2	Belgium	1.90
3	Neth	1.87
4	Lux	1.63
5	Spain	1.50
6	Ireland	1.48
7	Austria	1.18
8	Italy	1.00
9	Germany	0.90
10	Portugal	0.82
11	Finland	0.65
12	France	0.58
13	Sweden	0.58
14	Denmark	0.52
15	Norway	0.35

Table 6: OTHER OBLIGATIONS SPECIFICITY INDICES

	Const. length/ mean	Civil Code/ mean	Court case/ mean	Contract/ mean	All Obligations Index	Rank
Austria	1.86	0.91	0.69	0.92	1.09	6
Belgium	0.92	0.41	0.50	1.36	0.80	11
Denmark	0.42	0.10	0.97	1.10	0.65	14
Finland	0.87	N/A	0.51	0.71	0.70	13
France	0.52	1.57	0.16	0.96	0.80	11
Germany	1.64	1.65	0.81	0.88	1.24	3
Ireland	1.00	N/A	1.44	1.03	1.16	4
Italy	1.00	2.02	0.88	0.58	1.12	5
Lux	0.38	1.87	0.19	1.54	1.00	8
Neth	0.67	0.52	1.19	1.22	0.90	9
Norway	0.54	0.48	1.44	0.77	0.81	10
Portugal	2.14	1.88	0.63	N/A	1.55	2
Spain	1.21	1.46	0.39	N/A	1.02	7
Sweden	0.84	0.14	1.03	0.79	0.70	13
UK	N/A	2.00	4.15	1.15	1.82	1

We now have empirical confirmation of some of the intuitions of comparative lawyers, but have also developed a more nuanced picture than simple common law-civil law divergence that animates traditional comparative law. In particular, we are unaware of any comparativist who has identified the tendency of Spanish and Benelux legal systems toward specificity. Nor to our knowledge has there been observation of substantial differences *within* the common law tradition between the UK and Ireland.

III. EXPLAINING VARIATION: A CAUSAL THEORY

What explains the systematic variation across countries in specificity of legislation and other legal instruments? The fact that different types of legal obligations are correlated in length suggests that there may be other factors that determine legal specificity in particular countries. One possibility is that of legal culture: some countries produce more specific legal instruments because lawyers and the public have come to expect it over time. Earlier work has tried to tie specificity to culture. After demonstrating through survey research that cultures vary in terms of their tolerance of uncertainty, Hofstede argues that countries with low tolerance for uncertainty have more precise laws than those with greater tolerance of uncertainty.[21] The same study, however, argues that American contracts are longer than those in Japan because of greater individualism in the United States.[22] These two different cultural explanations, while not mutually exclusive, illustrate the malleability of using culture as an explanatory variable.

This paper develops an institutional theory of statutory specificity. We begin with the assumption that drafters of any legal document seek to control the behavior of interpreters of the document. We assume that more specific obligations help control behavior by limiting interpretive discretion. It follows that greater divergence of interests between drafters and interpreters should lead to longer legal texts.[23]

We begin by analyzing the relationship between drafters of legislation and judges who interpret legislation. In earlier work we predicted and provided preliminary evidence for the proposition that politics and institutions dictate specificity.[24] Using a three-country data set, we speculated that more parties in government and more institutional vetoes over legislation (*legislative resistance*) should (a) make legislation more difficult to pass and (b) produce longer statutes when actually passed. Legislation is more difficult to pass because the transaction costs of negotiating legislation increase with the number of parties and vetoes. Legislation is more specific for two related reasons: first, because the position of parties is more tenuous, they will seek to bind courts and administration with

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[21] GEERT HOFSTEDE, CULTURES AND ORGANIZATIONS 120-21 (1997).

[22] Id. at 60.

[23] A related issue is the question of rules vs. standards. See Cass Sunstein, *Incompletely Theorized Arguments*, 108 HARV. L. REV. 1733 (1995).

[24] Robert Cooter and Tom Ginsburg, *Comparing Judicial Discretion: An Empirical Test of Economic Models*, 16 INT'L REV. L. AND ECON. 295 (1996).

statutory text; and second, because legislation is more difficult to pass, the legislative coalition cannot be sure it can form again to "correct" erroneous interpretations of the original statute.[25] Both explanations reflect agency problems between legislators and judges.

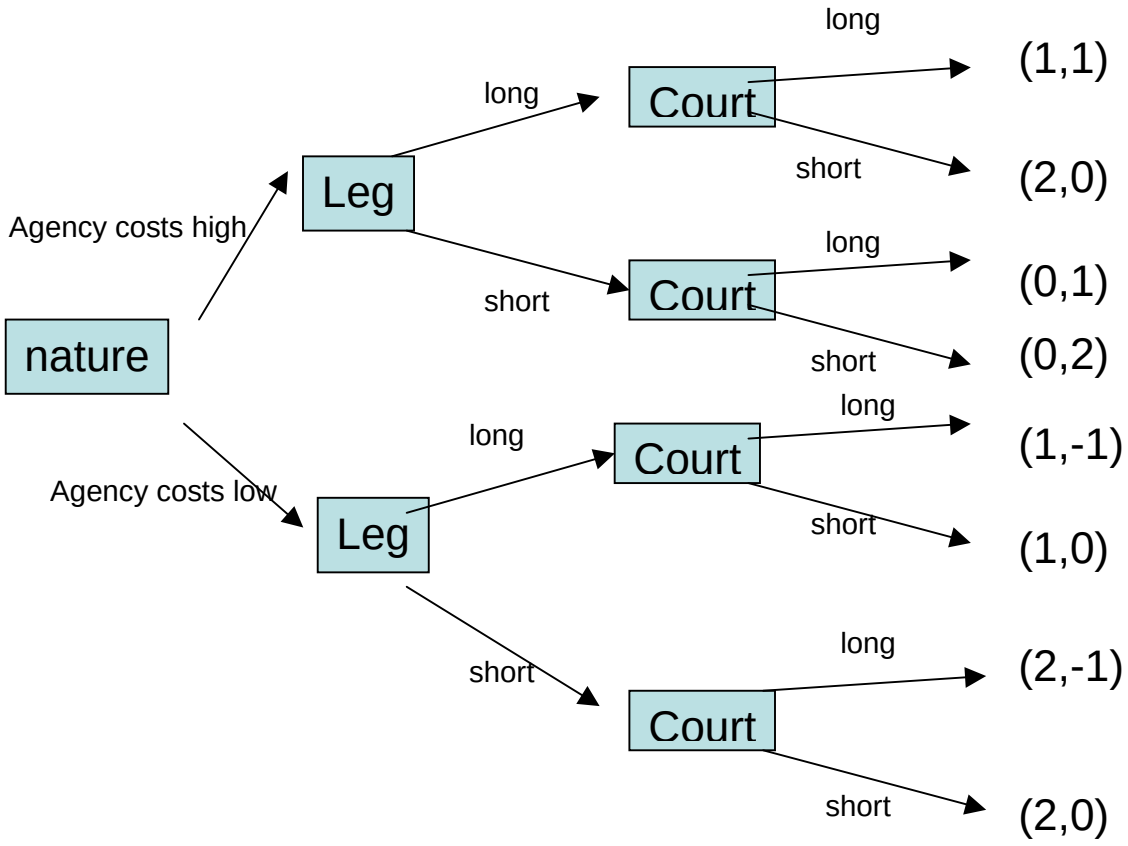
Here we focus not on the internal structure of the governing coalition *per se* but on the agency problem of judicial interpretation more generally and the impact of agency costs on both the court and legislature's level of specificity. There are a number of factors that will increase agency costs, including internal disagreement in the governing coalition, shorter time horizons of legislators, and systems of judicial appointment that facilitate judicial independence and daring. No single one of these factors is likely to serve as a perfect proxy for agency costs, but all will tend to increase them. Our concern is the effect of these costs on the specificity of legislation and judicial opinions.

Consider a simple example of a game in the context of legislation. Nature moves first and sets the degree of the agency problem as {high, low}, which is common knowledge to the parties.[26] A high agency problem means that judges are difficult for legislators to control and have different preferences. Legislators move second and choose a level of detail in legislation {long, short}. Judges move third and choose a level of detail in judicial opinion {long, short}. (One might think of these as corresponding to textual or purposive modes of interpretation, but this is not necessary for the model). We assume that legislative specificity is costly to legislators but increases control of disloyal judges and other interpreters. Specificity in judicial opinions is costly to judges. Because the judge can use language to distinguish the case at hand, either on the facts or law, specificity also increases freedom from the legislature, but only where the agency problem is large. Figure 3 presents the decision tree with sample payoffs.

[25] An alternative theory of specificity, drawing on interest group theory or the public choice tradition, would suggest that more legislative resistance would produce *shorter* statutes. This is because whatever legislation passes is safer from repeal. Furthermore, legislative resistance makes negotiation of detail costly—generally worded statutes may be easier to gain agreement on than specific text. So parties may forego the additional cost of negotiation. Our evidence, in that paper and in this, does not support this hypothesis.

[26] Legislators have some influence over agency costs in real life but we adopt the modeling assumption that nature makes the first move.

Figure 3: Legislation Game



Payoffs: Legislature, Court

The payoffs reflect the following logic. The legislature gains 2 whenever it can pass its legislation with low agency costs, since it satisfies policy preferences. When agency costs are high, the legislature loses 2 to the court unless it constrains the court with specific legislation, and specific judicial opinions increase the court's payoff by 1. This is because the court uses language to distinguish the case. Any party choosing to specify (any choice denoted long on the decision tree) loses 1 from its payoff.

Where the agency problem is small, the judge has nothing to gain from choosing {long} for the opinion. Knowing this, the legislator has no incentive to draft specific legislation, which is costly. This corresponds to the path {Nature: low; Leg: short; Court: short}. What about where the agency problem is large? The legislator's payoff is always better if he tries to constrain the court with specific legislation. Knowing this, the court will draft a specific opinion which increases its payoff. This corresponds to the path {Nature: high; Leg: long; Court: long}. We thus expect two possible equilibria from the game:

long legislation and long judicial opinions when the agency problem is high, and short legislation and short judicial opinions where the agency problem is low. Which equilibrium will be chosen in any particular legal system depends crucially on politics. Where judges are under the control of politicians, politicians are likely to write short statutes.

To test this theory we relate the length of judicial opinions and legislation to the concept of legislative resistance developed in our earlier work. Legislative resistance refers to the difficulty of passing new legislation. Where legislative resistance is high, the agency problem is high, and judges have a good deal of discretion. Where legislative resistance is low (a situation which we characterize as legislative viscosity), the agency problem is low. We use as a proxy for legislative viscosity (denoted LV in the regressions below) the number of substantive bills passed through the legislature during a ten year period.[27] We should thus expect that both judicial and legislative specificity is predicted by observed legislative resistance.

For legal instrument *i*, we predict that

$$WC_i = \alpha + \beta LV + \varepsilon$$

where WC denotes word count and LV denotes legislative viscosity. We predict that β will have a negative sign. As legislation is easier to pass, agency costs are lower and the incentive to specify details is reduced for both legislator and judge. This should mean that legislation is shorter.

Figure 4 below presents regression coefficients for a series of separate bivariate regressions with observed legislative viscosity as the independent variable and individual legal instrument length from Part I as the dependent variables. The shaded lines report the results for the index variables.

[27] As identified by Herbert Doering, PARLIAMENTS AND MAJORITY RULE IN WESTERN EUROPE (1995).

Figure 4: Regression results

Dependent Variables	Intercept coefficient	Leg. Resistance coefficient (t-stat)	R-squared	Confidence level
EWC legislation	9466	-21.23 (-1.86)	.46	91%
PL Legislation	1485	-1.50 (-1.10)	.29	71%
Immigration legislation	6270	-11.5(-1.02)	.27	67%
leg index variable	.36	-.0003 (-1.76)	.44	90%
court decision length	149	-.004 (-.47)	.13	35%
Overall specificity index	.42	-.0002 (-1.88)	.46	91%

N=14

All regression coefficients have the predicted signs. The easier legislation is to pass, the shorter the legislation, and the shorter the average judicial decision. If legislation is easier to pass, the threat of new legislation "correcting" judicial decisions reduces the agency costs of judicial interpretation. A court is less free to substitute its own version of the statute. Hence judicial decisions are shorter.

This data seems consistent with what we know about legislative processes in the various European countries. In Sweden, for example, *judges* play an important role in legislative drafting.[28] This is consistent with low agency costs under either of two interpretations. Either judges have captured the legislative process and hence need not draft long legislation because the interpreters are the same as the drafters; or legislators control judges and hence will trust them to draft legislation. We observe a lot of legislative viscosity in Sweden,[29] and given the formal superiority of lawmakers over judges, it seems that legislative control is the more likely scenario. But under either interpretation, agency costs are low, consistent with the observation of low specificity.

Contrast the case of Spain. The legislature has difficulty passing new legislation.[30] Hence, the interpreters have a great deal of discretion in interpretation. In response, the

[28] DALE, *supra* note 3, at 99-100.

[29] Doering reports an average of 375 bills per year in a ten-year period, placing Sweden at the top of the 15-country sample.

[30] Doering reports an average of 62 bills per year in the same ten-year period, placing Spain in the bottom 20% of the 15-country sample.

Spanish legislature drafts longer statutes, and Spanish judges seek to retain independence through longer opinions.

We also evaluated the statutes qualitatively to examine whether the type of specificity might reflect an agency cost story. For example, the Spanish statute transposing the Works Council Directive contains a number of provisions not found in the Portuguese statute, which is approximately half the length, or the Danish statute, which is a third as long. These extra Spanish provisions include a long section on purposes of the legislation, extensive supplementary provisions regulating renegotiation of works council agreements,[31] sections providing for judicial supervision of such renegotiations, a special provision applying the rules to naval crews, and provisions for penalties for various degrees of noncompliance with the statute.[32] The Danish statute's section on punishment is one sentence long,[33] while the Spanish statute has a page designating various degrees of breach and specifying punishments. In short, the Spanish statute is both longer and more specific in ways that likely reflect agency costs. If the legislature distrusts the judges, they will be more likely to specify punishments. The provision on navy crews appears to reflect interest group influence, another source of pressure for specificity.

Note that one might think the key factor is the structure of the legislative drafting office. For example, where drafting is conducted by professional drafters on the legislative staff, one might think drafting would be more concise. The number of lawyers in this office or in the legislature might be positively correlated with specificity. These hypotheses focus on the agency problem between legislators as policy principals and the legislative staff or ministries that actually draft legislation in various countries. Since legislators are a veto gate for whatever product the technical drafters come up with, we assume that they are able to control agency costs in this relationship.[34] Furthermore, although there may be some variation among the member states, it is likely that lawyers have a prominent role in drafting in all industrialized countries so there may be little variation.

Another alternative institutional explanation concerns the existence of a "revision" phase in some countries. In France and the Benelux countries, for example, a special body of senior administrators evaluates proposed legislation for conformity with existing law and suggests changes. This might contribute to linguistic economy. However, the contrast between relatively short legislation in France and relatively longer legislation in the Netherlands suggests this factor cannot be the whole story.

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[31] Art. 14.

[32] Title II and Title III.

[33] Art. 36, Act No. 371 of 22 May 1996 reads "Anyone who discloses information which has been given in confidence in accordance with Sec. 30 and 32 shall be punished by a fine, unless more sever punishment is warranted under other legislation."

[34] It is also worth noting that lawyers play a role in drafting in all countries for which we could obtain information on the drafting process.

A stylized legal history

The theory outlined above comports with the history of various countries in the Western legal tradition. Although we think of the distinction between common and civil law as ancient and firm, it is in fact fluid and in many regards has been overstated. In both systems, statutory law arose rather late, and until the 18th century the law was largely the province of specialized interpreters, be they judges, lawyers or professors.[35] With the gradual increase in legislation in the 18th and 19th centuries there was resistance from these interpreters who thought their own law more permanent and stable than seemingly arbitrary legislation. These actors developed interpretive techniques, such as textual interpretation and narrow construal of statutes, that limited statutory intrusion on their traditional sources, and largely preserved the realm of judicial decision-making.[36]

In an effort to control these runaway interpreters, legislators responded with more and more detailed legislation. The apex of this attempt may have been the Prussian civil code of 1794, which had 19,000 sections regulating the minutiae of daily life, and punished judges for creative interpretation.[37]

Politics differed in each country and determined whether legislators were able to effectively control the agency cost problem. In England, the monarchy was engaged in a continuous struggle with Parliament for power, intensifying in the 17th century.[38] After the English revolution of 1640, Parliament demolished the Star Chamber and other special courts of the King, but this had the effect of strengthening the ordinary courts by removing a rival institution.[39] Having constrained the monarchy, the Parliament began to challenge the courts. Indeed, as in the more well-known case of France, there were movements to control the courts through codification and deprofessionalization of the law following the English revolution.[40] These efforts were to fail, however. Judges preserved their autonomy and continued to draft long opinions, a pattern that continues today.

Statutes in 17th century France were quite verbose, reflecting the local power of judges in the *parlements*. But as struggles between the King and popular movements intensified, French judges made the wrong choice. By siding with the King in the French revolution,

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[35] R. VAN CAENEGHEM, JUDGES LEGISLATORS AND PROFESSORS (1987).

[36] Reinhard Zimmerman, *Statuta Sunt Stricta Interpretanda? Statutes and Common Law: A Continental Perspective* 56 CAMBRIDGE L. J. 315, 315 n. 1 (1997) (quoting medieval German sources for the proposition that "All statutes contrary to the common law . . . are to be interpreted strictly.")

[37] Zimmerman, *id.* at 324, notes that the code was to control judges and lawyers.

[38] The Inns of Court managed to stay neutral in these conflicts, though they were courted by both sides.

[39] Michael Burrage, *Revolution as a Starting Point for the Comparative Analysis of French, American and English Legal Professions*, in LAWYERS IN SOCIETY: COMPARATIVE THEORIES 322, 353 (1989).

[40] Id. at 355-57

both the judges of the *parlement* and the legal professions doomed themselves to counterattack. The number of lawyers in Paris went from some 600 before the revolution to around 50 thereafter.[41] In 1790, the bar's monopoly on court appearances was abolished, and the bar was de-professionalized so that anyone could defend anyone else in court.[42] Judges were distrusted and carefully monitored.

In short, conflict between the courts and legislatures in France and England led to different results. In France, the legislature defeated the judges and eliminated the legal profession. The result was short legislation, fitting in with revolutionary ideology that legal knowledge should be accessible to anyone. French legal interpreters, having been defeated and now under control of the state, took a purposive approach to interpretation, which involves reference to the *travaux prepatoires* and legislative intent. The short legislation/short opinion equilibrium resulted and persisted after the restoration. In England, the judges resisted, construed statutes narrowly, and preserved the common law outside it. Parliament responded with detailed legislation so as to limit judicial creativity and autonomy as much as possible. The result was the long legislation/long opinion equilibrium.

This brief history of two jurisdictions ties into the traditional comparative law story that common law dynamism leads to long statutes because there is no stable jurisprudence of courts or commentary that serves as the default. But rather than focus on the uncertainty, our account focuses on politics.

IV. IMPACT OF THE BAR

We have now developed a theory of specificity of legislation and judicial opinions that accounts for some of the facts we observed in Part II. In this section we seek to understand why private contracts may also increase in length with statutes, a counterintuitive result presented in Part II, as well as to account for the strong correlation between specificity and lawyers per capita. Table 7 recalls the data on the number of private lawyers per capita in various European countries presented earlier.

[41] MICHAEL FITZSIMMONS, THE PARISIAN ORDER OF BARRISTERS AND THE FRENCH REVOLUTION 69 (1987); see generally LUCIEN KARPIK, LES AVOCATS: ENTRE L'ETAT LE PUBLIC ET LE MARCHE XIII^{E}- XX^{E} SIECLE (1995).

[42] The profession was divided into *avoue* (advisors) and *avocet* (pleaders); corresponding roughly but not exactly to the English barrister and solicitor.

Table 7: Lawyer population mid 1990s

	Lawyers per 10,000
Finland	2
Norway	4
Sweden	4
Neth	4.34
France	5.49
Denmark	6.99
Germany	7.69
Austria	7.69
Portugal	9.09
Belgium	10
Italy	10
Ireland	15.38
UK	15.38
Spain	15.87
Lux	16.67

Source: PANORAMA OF EU INDUSTRY (1997), supplemented by ALAN TYRELL AND ZAHD YAQUB, THE LEGAL PROFESSION IN THE NEW EUROPE (1993).

We first want to connect lawyers to the earlier discussion of agency costs. First, we note that large agency problems between legislators and judges can give rise to pressures for more lawyers. Where agency problems are low, the courts can serve as an effective gatekeeper to filter out new claims by private lawyers that are undesirable to ruling politicians. Where agency problems are high, however, as in the long legislation-long opinion equilibrium, the private bar can exploit the gaps between legislators and interpreters to advance their own preferred interpretations of statutes. The presence of long legislation and long judicial opinions may open up possibilities for creative lawyers to develop novel arguments about statutory text. Furthermore, lawyers can also *contribute* to legislative specificity and longer statutes, as lawyers represent client interests in the legislative arena.[43] The empirical implication is that the legal profession may expand with legislative and judicial specificity, holding regulation of the profession constant.[44] Figure 5 reports correlations between the number of lawyers and the specificity of legislation.

[43] See n. 25 *infra*.

[44] The size of the private bar is primarily a function of regulation, a feature that is outside the scope of our analysis.

Figure 5: Correlations between Lawyers and Legislation

	Products Liability Legislation	Works Council (EWC) Legislation	E-commerce Legislation	Immigration Legislation
Lawyers per 10,000	.04	.90	.25	.33

The number of private lawyers is also likely to have a strong positive effect on specificity of contracts for three reasons. First, a smaller legal profession is likely to be less competitive and more monopolistic, as the profession can more easily overcome free-rider problems. This means that lawyers can produce shorter contracts for the same level of income. Second, lawyer time and contract drafting are likely to be more expensive, so demand for long contracts will be reduced. Third, a smaller legal profession will produce fewer arms-length transactions. There are likely to be more repeated games between lawyers on both sides of a transaction, reducing pressure for contractual specificity since the lawyers may develop implicit understandings.

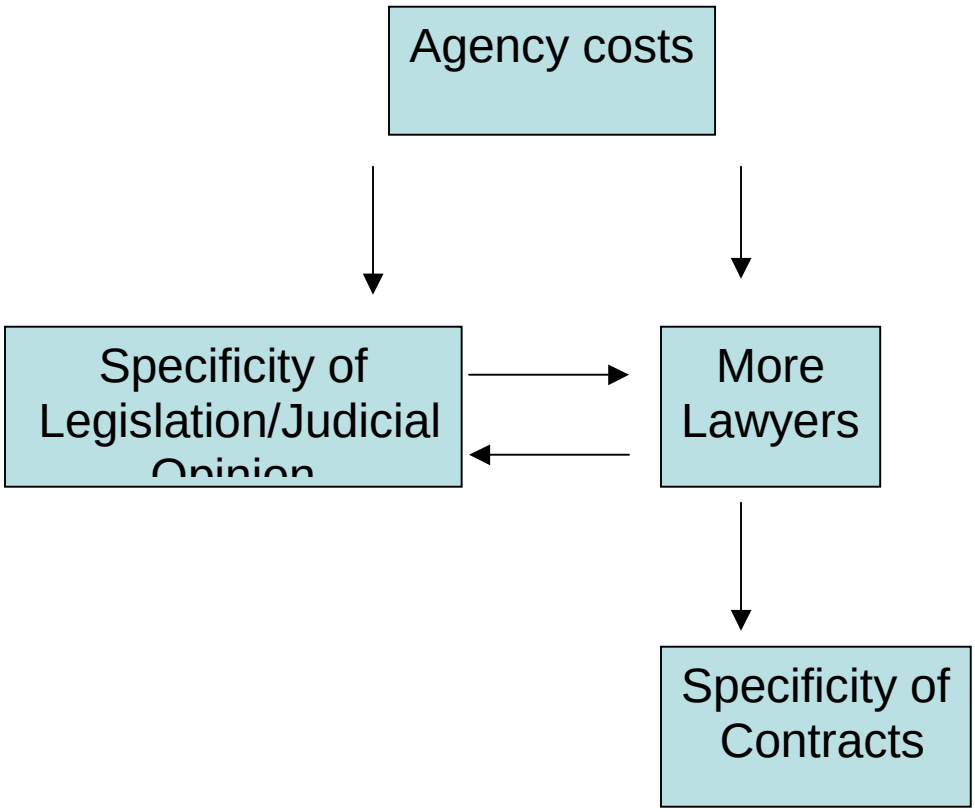
We use the number of lawyers per 10,000 persons as a proxy for the competitiveness of the legal profession, with the assumption being that a larger private bar indicates a more competitive market for legal services. Our prediction of the effects of a large bar on greater contractual specificity is confirmed by running a regression with the length of European Works Council contracts as the dependent variable and the number of lawyers per 10,000 population as the independent variable.

Figure 6: Regression results, y= EWC private contract length

Intercept	Coefficient (t-stat) lawyers/10,000	R-squared	Confidence Level
1536 (5.42)	64 (2.17)	.57	94%

To summarize, we are arguing that the agency cost problem leads to pressures for specificity and also, other things equal, pressures for legal services. Once established, specificity and lawyers are mutually reinforcing as well and can lock in a pattern in a particular legal system. Figure 7 summarizes the argument

Figure 7: Causal Relationships



V. An Agenda for Leximetric Research

This paper has presented an example of leximetric methodology, and showed that it can be a useful tool for comparative law because it allows the development of and testing of hypotheses about the structure of legal systems. In this section, we consider methodological refinements and discuss specific testable hypotheses generated by the analysis.

A. Methodology

In this paper we use the simplest indicator for specificity of legal instruments—namely, the number of words. We could have chosen to analyze specificity through more refined linguistic techniques, such as the use of grammar, the number of adjectives, or other possible methods. Techniques for this kind of analysis are not well developed in linguistics. It may be possible, however, to quantify and analyze the relative proportion of general principles versus specific rules in any given legal instrument. Another possible refinement that would complement our approach would be to focus on specific legal techniques that serve to address the agency problem at the core of the legislative

enterprise. Empirical studies of regulation have suggested that the level and detail of reporting requirements in particular regimes vary with the level of agency problem.[45] By focusing our analysis on regulatory regimes, we might be able to isolate particular modes of specificity. This would complement the present project, but would also diminish our ability to draw general conclusions about the dynamics of the legal system as a whole.

B. Specific Hypotheses

Connecting specificity with agency problems suggests a number of empirical hypotheses. Further tests of the propositions outlined here may be possible with historical and comparative data. For example, a similar comparative test might be developed for American state legislation to see if the specificity of various legal instruments is correlated. While the EU Directive process allowed us to control for substance to a greater extent than might be possible in the United States context, comparative state data would provide the advantage of a single linguistic basis. This section outlines some other potential uses of leximetrics.

1. Legalization and Regime Type

If legislative specificity increases with agency problems, democracies will have a greater volume of legislation than autocracies. While anecdotal evidence suggests this is the case, leximetrics may be able to allow comparative scholars to specify the relationship with greater precision.

The results of this paper, demonstrating that specific legislation, judicial opinions and contracts all appear together with a large number of lawyers suggests that societies vary systematically in the extent of their legalization.[46] This paper has also demonstrated that the extent of this legalization is capable of precise measurement. The idea of a "legalization" index variable, summing specificity and lawyers, can provide a parallel measure to democratization indices that are commonly used in political science.[47] Such a measure could facilitate comparative assessment of legal systems.

2. Change over time

This paper has focused on cross-national variation. Leximetric research may also help establish how specificity in a single jurisdiction changes over time in response to the causal factors identified here. If our argument about causality is correct, more fragmented party governance should lead, perhaps with a short lag, to more specific legislation. This in turn would lead to longer judicial opinions and more lawyers.

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[45] ROBERT KAGAN AND LEE AXELRAD, REGULATORY ENCOUNTERS (2000).

[46] Marc Galanter, *Law Abounding: Legalization Around the North Atlantic*, 55 MODERN L. REV. 1 (1992).

[47] E.g., the Freedom House Index. See FREEDOM IN THE World (2002).

Such a hypothesis might be tested in the United States in terms of periods of judicial activism. Were the Bird and Traynor courts in California, for example, related to periods of longer legislation? Does the volume of Congressional legislation increase during periods of judicial activism by the United States Supreme Court? These questions can be analyzed leximetrically.

One could also evaluate a single statutory regime over time. Does amendment always move in the direction of greater specificity, or are there periods when greater delegation occurs and statutes become less specific? In other words, as agency costs fluctuate in a particular policy area, does legislative specificity respond?

The rate of growth in the volume of law is likely a function of both exogenous and endogenous forces. This paper has focused on exogenous forces. An endogenous factor is the existing volume of law. It is likely that a greater volume of law requires further specificity by legal actors to differentiate the particular norm at issue in any given instance. Leximetrics may be able to specify functions that capture the influence of both exogenous factors, such as legislative resistance, and endogenous factors related to the pre-existing level of specificity.

3. Constitutional specificity

The analysis of agency problems has a long tradition in constitutional scholarship. However, there has been much more theorizing than empirical testing in this regard. In an earlier paper, Ginsburg showed that the relative strength of the largest party engaged in constitutional design was a strong predictor of the formal power of constitutional court.[48] He argued that greater uncertainty on the part of politicians drafting the constitution gave them an incentive to set up constitutional courts as an alternative forum in which to challenge the legislature.

Our analysis suggests that the greater the agency problem in constitutional design, the longer will be the constitutional text. As an initial test in this regard, we regressed the length of the constitution in 35 countries in Eastern Europe and Latin America on the difference in seat shares in the legislature between the largest and second largest party. The prediction was that as the relative strength of the largest party increased, constitutional specificity should decrease because the strong party, believing it likely to win post-constitutional elections, would not have an interest in tying its own hands after the elections with specific constitutional language. The result of the regression was a negative sign, as predicted, at the 70% confidence level.

The length of constitution might also correlate inversely with the ease of constitutional amendment because drafters would be reluctant to allow their specific instructions to be

[48] Tom Ginsburg, *Economic Analysis and the Design of Constitutional Courts*, 3 THEORETICAL INQUIRIES IN LAW 49 (2002).

overturned easily.[49] It is likely that observed constitutional amendments should correlate with the rise of parties outside the drafting coalition.

VI. CONCLUSION

In this paper, we used a new technique called leximetrics to demonstrate that, controlling for substance, the specificity of legislation varies systematically across jurisdictions. We then demonstrated that the specificity of other legal instruments, such as provisions of the civil code, constitution and court decision, move in the same direction as legislative specificity. This result was not intuitive, and we sought to explain it through analysis of agency problems between drafters and interpreters of legal instruments. Finally, we suggested a number of areas that our technique could be applied to and some possible refinements of the methodology.

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[49] But note there is an empirical problem: most available data concerns the constitution *as amended*. A constitution that was easy to amend would become more specific over time. See Donald Lutz, *Toward a Theory of Constitutional Amendment*, 88 AM. POL. SCI. REV. 355 (1994).