Testing Policy Alignment: A Quantitative Methodology

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Abstract

While the study of policy has grown more quantitative in recent years, the comparison on policy matters between jurisdictions remains largely qualitative (with a few exceptions, such as the fields of statistical demography and labour economics). In this Article, two statistics professors from Northwestern University's faculty consider how a quantitative measure of policy alignment might be designed and demonstrate the use of such a measure in the context of American states with differing policy approaches.

1. Introduction

The study of comparative law generally breaks into two categories: historical study of law across time and empirical study of the differences (or similarities) of laws between jurisdictions. One well-explored phylum of comparative law in the latter kingdom is the examination of policy alignment (or divergence) between the several legislatures.

The thrust of the literature in this area is anthropological or ethnographic in its language, approach, and methods, whether originating from the pens of scholars[1] or judges. Often, our empirical analyses - when we estimate the "similarity" arguments[2] and doctrines,[3] for instance - carry more than a whiff of qualitative evaluation.

Here, we describe and apply a methodology by which the policy and legislative positions of various states could be compared in a more robust, quantitative sense borrowing tools from economics and statistics.

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[1] *See generally*, HAROLD BERMAN, LAW AND REVOLUTION (Harvard University Press 1985); HAROLD BERMAN, LAW AND REVOLUTION II (Harvard University Press 2006).

[2] Kansas v. Hendricks, 521 U.S. 346 at 364 (1997) (noting "[I]n *Allen*, we confronted a similar argument." (citing Allen v. Illinois, 478 U.S. 364, 369 (1986)).

[3] Kolender v. Lawson, 461 U.S. 352, 358 n.8 (1983) (rebutting Justice White's interpretation of the majority opinion's implications: "[W]e have traditionally viewed vagueness and overbreadth as logically related and similar doctrines.").

The application of concepts from economics to law and policy is not new.[4] For years, scholars and judges[5] have applied ideas from economics,[6] field experiments,[7] game theory,[8] and other quantitative disciplines to the historically-primarily-qualitative study of law and policy. However, this Article seeks to take this mixing of disciplines a step further, comparing the policy orientation of various legislatures through a quantitative framework.

2. The Challenge: Finding the Right Interstate Variable to Analyze

There are very few situations – thanks primarily to the Full Faith and Credit Clause[9] and the Twentieth Century interpretation of the Clause[10] along with contemporary jurisprudential posture regarding interstate commerce[11] – where anything resembling wholly optional elective acceptances of privileges among the several states still exist (we purposely and knowingly leave arrangements between states and resident tribes separate and apart from this conversation). Making things yet more complex, the Privileges and Immunities Clause often operates to bar states from imposing particular burdens on the citizens of other states.[12] However, if there were a scenario where both unilateral and bilateral arrangements were made to honor privileges of one state's residents in the jurisdiction of the other state, this might provide an interesting indicator of degree of legislative policy alignment between the states involved.

Looking for an opportunity to empirically examine alignment of legislatures is difficult from a methodological perspective. Ideally, the researcher would locate a situation in which states are allowed to either recognize or not recognize a right or privilege granted by another state with no consideration of the Full Faith and Credit Clause and where the right or privilege falls outside the current jurisprudential consideration of the Interstate Commerce

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[4] United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947) (proposing a simple formula of gravity of loss multiplied by likelihood of injury set equal to cost or burden to prevent same injury); *see also*, The T.J. Hooper, 60 F.2d 737 (2d Cir. 1932), *cert. denied*, 287 U.S. 662 (1932).

[5] Continental T.V. Inc. v. GTE Sylvania Inc., 433 U.S. 36, 65 (1977) (analyzing, for first time, modern antitrust issues through law and economics lens, citing then-Professor Posner's 1974 antitrust treatise.) *Compare* Continental T.V. Inc., *with* United States v. Arnold, Schwinn & Co., 388 U.S. 365 (1967).

[6] *See generally*, Ronald Coase, *The Problem of Social Cost*, 3 J. L. & ECON. 1 (1960).

[7] *See* Marianne Bertrand & Sendhil Mullainathan, *Are Emily and Greg More Employable than Lakisha and Jamal?*, 94 AM. ECON. REV. 991 (2004) (using experimental social science methods to estimate prevalence of employment discrimination, which has historically been researched in law and policy circles from the enforcement rather than the incidence perspective).

[8] *See generally* DOUGLAS BAIRD ET AL., GAME THEORY AND THE LAW (Harvard University Press 1998).

[9] U.S. CONST. art. IV, § 1.

[10] *See* David Engdahl, *The Classic Rule of Faith and Credit*, 118 YALE L.J. 1584 (2009); Robert Jackson, *Full Faith and Credit: The Lawyer's Clause of the Constitution*, 45 COLUM. L. REV. 1 (1945).

[11] U.S. CONST. art. I, § 8, cl. 3; *see* Gillian Metzger, *Congress, Article IV, and Interstate Relations*, 120 HARV. L. REV. 1468, 1480-82 (2007).

[12] *See* Dep't of Revenue v. Davis, 553 U.S. 328, 335-36 (2008).

Clause and where the Privileges and Immunities Clause does not bar more burdensome regulation of a non-resident, non-citizen's exercise of a given right or privilege[13] when compared to the resident, citizen's exercise of the identical right or privilege; few such rights and privileges exist.

To illustrate: States do not need to adopt agreements or enact legislation to give power to divorces granted in other states,[14] to enforce child support and related equitable remedies created in foreign states' courts,[15] to recognize as valid each other's license plates,[16] or to treat each other's elderly and indigent ill in state-funded healthcare settings.[17] These schemes of recognition are consistent with the general rule that a state may refuse to recognize a foreign state's law where a real conflict with local law and policy exists,[18] but that a state may not arbitrarily refuse to recognize another state's law out of spite or out of hostility toward another state's lawmaking authority.[19] Several interstate scenarios surrounding family law matters are currently contested and hence did not make good subjects for this study.[20]

An interesting and rare situation arises, however, in the context of concealed carry weapons (hereafter "CCW") permits. The "default setting" of these policies[21] is that CCW permits are not honored across state lines and there is neither a federal requirement nor a federal prohibition governing their interstate recognition. As of this Article's publication,

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[13] *See* Saenz v. Roe, 526 U.S. 489, 500-504 (1999).

[14] Variously recognized historically either as a Full Faith and Credit Clause matter or, in the Eighteenth Century, as a matter of comity. *See* Cheever v. Wilson, 76 U.S. 108 (1869) (establishing when divorces must be entitled to extraterritorial effect); Atherton v. Atherton, 181 U.S. 155 (1901) (explicitly recognizing interstate recognition of divorce as matter of Foreign Commerce Clause effect rather than merely of equitable comity or judicial discretion); *compare* Haddock v. Haddock, 201 U.S. 562 (1906) *with* Maynard v. Hill, 125 U.S. 190 (1888).

[15] 28 U.S.C. § 1738(b) (2014).

[16] *See*, *e.g.*, Queets Band of Indians v. State, 682 P.2d 909 (1984) (*en banc*) (discussing RCW 46.85.020(2), noting states must honor each others' vehicle license plates but not those issued by the several Indian tribes). *Compare Queets, with* Wilson v. Marchington, 127 F.3d 805 (1997) (finding, in accord with *Queets*, that tribes are not covered by the Full Faith and Credit Clause or its statutory embodiment at 28 U.S.C. § 1738).

[17] 42 U.S.C. §§ 1396 *et seq.* (2014); 42 C.F.R. § 430-55 inclusive. *See also* Fla. Stat. § 409.903(4) (2014); Fla. Stat § 409.1451 (2006). This is an example, here in Florida, of adoption of the model state-level statutory Medicaid provisions.

[18] *See* Marchlik v. Coronet Ins. Co., 40 Ill.2d 327 (1968); Owen v. Owen, 444 N.W.2d 710 (S.D. 1989).

[19] *See generally* Hughes v. Fetter, 341 U.S. 609 (1951).

[20] Adoption, for instance, suffers from a contemporary circuit split between the Fifth Circuit, which held in *Adar* that recognition of foreign states' divorces was a matter of comity subject to discretion as a matter of policy compatibility, and the Tenth Circuit, which held in *Finstuen* that the Full Faith and Credit Clause requires states to adopt other states' adoption decrees. *Compare* Adar v. Smith, 639 F.3d 146 (5th Cir. 2011), *with* Finstuen v. Crutcher, 496 F.3d 1139 (10th Cir. 2007). Hence, adoption was not a good subject for this study, as states cannot simply elect to honor or not honor adoption decrees from other states.

[21] The nature and posture of default rules are a separate, important discussion. Here, the default "setting" is that states may, rather than must, choose to honor the CCW permits issued by foreign states. A detailed discussion on the effect of default rules can be found in Cass Sunstein's excellent summary of the topic. *See generally* Cass Sunstein, *Deciding by Default*, 162 U. PA. L. REV. 1 (2013).

there has been no determination that non-recognition of another state's CCW permit creates an overburdening[22] of an interstate traveler under either the Commerce Clause or the Privileges and Immunities Clause.

Interestingly, there is no state that currently honors every other state's CCW permits. There is also no state whose permit is recognized in every other state (though Michigan is closest, with a CCW permit currently honored in 40 states as of this Article's publication). Hence, the concealed carry weapons permit system offers a rare research opportunity. This system of permits issued by various states (referred to hereafter as the "CCW System") allows each state to offer concealed carry permits for an individual to lawfully carry a hidden firearm (typically a pistol) on or about his or her person. The CCW System is inherently heterogeneous from a procedural perspective: the requirements, paperwork, and education involved are unique from state to state. However, complete and incomplete states of reciprocity exist between the several states, offering an observable, empirical indicator of interstate policy alignment.

In the case of complete reciprocity, as with Colorado and Wyoming, a CCW permit holder from either state may lawfully carry a concealed weapon in the other state without obtaining the other state's permit or filing additional paperwork. Meanwhile, in a case of incomplete reciprocity (completeness of reciprocity is contemplated herein within the context of legislation in place as of the fourth quarter of 2014), as with Wisconsin and Illinois, an Illinois resident with a CCW permit may carry a concealed weapon in Wisconsin, but a Wisconsin resident with a CCW permit commits a crime by carrying a concealed weapon in Illinois. There are also situations of zero reciprocity, where a person with a CCW permit in either state may not enjoy CCW privileges in the other state.

This paper examines current legislative provisions among various states in areas separate from Second Amendment matters, but uses the zero reciprocity, incomplete reciprocity, or complete reciprocity of the two states' posture within the CCW System as a proxy for broader policy alignment or state-level cooperation. To ensure policy alignment, rather than cooperation on policing or public safety issues (or attitudes toward firearms), is being measured, the other policies examined are tax rates; these policies are easily-quantifiable and generally decoupled from the CCW System.

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[22] A famous and fascinating lineage around the concept of overburdening follows from *Nat'l Bellas Hess, Inc. v. Dept. of Revenue of State of Illinois*. Nat'l Bellas Hess, Inc. v. Dept. of Revenue of State of Ill., 386 U.S. 753 (1967). The author anticipates this lineage of case law will continue with the Court's contemplation of the business practices of Amazon.com and other online retailers.

3. Research Methods & Qualitative-to-Quantitative Shift

Our analysis began with a qualitative survey of the several states, noting that states compared should have similar applications of their laws in the CCW System and of their tax laws. As to the former, states compared should have similar issuance methodologies for the permit itself (shall-issue versus may-issue and so forth) and similar privileges granted to the permit-holder.

Originally, we sought to analyze four clusters of four states. These four clusters were later combined to provide more in-cluster pairs for analysis on either side of the Mississippi. However, in combining states, we added more political heterogeneity within clusters; for instance, the attitudes of coastal Western states are very different from the attitudes of states like Arizona, Colorado, and Wyoming.

Once clusters of eight states from either side of the Mississippi River had been chosen for the in-cluster analysis, our quantitative work, *infra*, began.

4. Methodology & Analysis

We look to similarities between states that recognize each other's CCW permits. However, it is famously difficult to disentangle cooperation and competition in these terms. For instance, if there is a mineral boom (as with fracking) near a border (as in North Dakota and South Dakota in recent years), both states might reduce their income tax rates in competition for the spending power of oil and gas executives who can choose to live on either side of the border, not in cooperation with one another in a concerted policy scheme. Thus, we look here for similarity but do not examine, or claim to find, causality.

To examine the theorized relationship between CCW System reciprocity and tax code similarity, we first compiled a dataset of pair-wise in-cluster CCW System reciprocity for use as our dependent variable. These one-way indicators of reciprocity were given a one-directional binary value: If State A gives reciprocity to State B, the AA between CCW System reciprocity and tax code similarity, we first compiled a dataset of State A, the B→A reciprocity is assigned a 0. We would term this relationship "partial reciprocity". If State B were return the reciprocity, we would term this relationship "full reciprocity" and each side of the pair is assigned a 1. If neither state accepts the other state's CCW permits, we term this relationship "zero reciprocity" and each side of the pair is assigned a 0.

We then isolated key indicators of state tax policy to use as our independent variables: Sales tax rate, income tax rate, estate tax rate, and minimum wage. Our hypothesis is that the relative values of some or all of these variables would prove significant in predicting the

degree of reciprocity between in-cluster states. For in-cluster states, we compiled a dataset of pair-wise differences in existing rates/wages.

Next, the relationship between CCW System reciprocity and state policy alignment is examined through binary logistic regression. Binary dependent variables (in our case, the binary indicator of CCW System reciprocity) violate the assumptions entailed by the least squares approach to multiple regression, thus maximum likelihood techniques are necessary in facilitating a statistical analysis of the patterns implied by these variables. Our goals with this analysis were to 1) determine whether the use of the defined independent variables (relative differences tax rates and minimum wage) had significance in predicting the degree of CCW System reciprocity and 2) isolate instances in which the defined independent variables were not successful in predicting CCW System reciprocity for further review.

5. Hypothesis, Sample Specifics, Pair Provenance, Qualitative Notes

The overarching hypothesis is that the (wholly elective, unrestricted) decision to honor the permits of some foreign states and not of others evidences (or, more conservatively, reflects) adversarial or friendly relationships between policies (and policymakers) of various states not easily captured or observed in other data. The test for this hypothesis, in the grossest terms, is the comparison of these observed relationships to similarities of tax rates (which are set independently by each legislature).

The sample is designed in pairs to represent unique policy considerations that may affect certain geographies and certain political realities. These pairs then form two clusters, nodes that have relationships sorted according to their acceptance of each other's permits within the CCW System. Only states with shall-issue clauses[23] are included in the analysis.[24]

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[23] By shall-issue clauses, we mean a specific thing: States that do not have a statutory limitation that specifically creates a may-issue condition. For this analysis, we disregard *de jure* may-issue scenarios, as may occur in Connecticut and Delaware and allow them in this analysis. However, we exclude Hawaii, Maryland, New Jersey, and Rhode Island (despite contemporary controversy regarding the interpretation of R.I.G.L. § 11-47-18), where may-issue regulation is interpreted to endorse the denial of nearly all applications. We include California despite contemporary controversy, owing to our assumption that California will soon become shall-issue in practice in the wake of *Peruta v. San Diego.* Peruta v. San Diego, 742 F. 3d 1144 (9th Cir. 2014). We exclude New York and Massachusetts, which are, at least in many counties and municipalities, functionally may-issue.

[24] There are two prevailing species of legislative construction in the drafting of CCW permit language. The first is shall-issue, where any person (except felons and others excluded in broad, non-discriminatory, explicitly-specified classes) who applies for a CCW permit shall be issued that permit. *See generally* Nicholas J. Johnston, *A Second Amendment Moment,* 71 BROOKLYN L. REV. 715 (2005); Clayton E. Cramer & David B. Kopel, *"Shall Issue": The New Wave of Concealed Handgun Permit Laws*, 62 TENN. L REV. 679 (1995). The other is may-issue, where a person (often a senior law enforcement officer) may exercise discretion in granting CCW permits or may require the applicant for a CCW permit to state a reason for the application or to prove the permit's necessity. *See generally* Nicholas J. Johnston, *A Second Amendment Moment,* 71 BROOKLYN L. REV. 715 (2005); Clayton E. Cramer & David B. Kopel, *"Shall Issue": The New Wave of Concealed Handgun Permit*

As an example, three paired nodes within the eastern cluster appear below.

Eastern Pair 1A: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	↕	0%	0%	0%	$7.25
W. Virginia		6%	6.5%	0%	$7.25

Eastern Pair 2A: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	↓	0%	5%	0%	$7.25
Vermont		6%	9.4%	16%	$8.73

Eastern Pair 3A: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	ø	0%	5%	0%	$7.25
Maine		5.5%	7.95%	12%	$7.50

We then apply an analysis[25] across nodes of a given cluster, leading to a set of uniform regression outputs (correlations) that can be analyzed and compared. Each component node within a cluster is chosen to be as complementary as possible to the other nodes in that cluster and similar to the entire cluster in terms of legal considerations.[26] For instance, West Virginia is more similar to New Hampshire, Vermont, and Maine than New York or Pennsylvania. When we say more similar, we mean a specific thing: geographically, demographically, and economically, the nodes within a given cluster are as similar as possible given the constraints of the CCW System. The two clusters are then subjected to discrete analysis within pairs, with all possible in-cluster pairs analyzed.

Laws, 62 TENN. L REV. 679 (1995). By including only shall-issue CCW permits in the study, we ensure the actual permits being compared are as similar as possible in their privileges, prerequisites, and legislative promulgation. We do, however, include states with differing training requirements, as well as different policies for waiving prerequisites (for instance, South Carolina is an atypical state in that it recognizes military training as acceptable in lieu of formal civilian training regarding safe use of firearms and the use of force in self-defense).

[25] A single footnote cannot summarize the gamut of applications of this and similar methodologies. *See generally* S. James Press & Sandra Wilson, *Choosing Between Logistic Regression and Discriminant Analysis*, 73 J. AM. STAT. ASSOC. 699 (1978); Matthew Slaughter, *Trade Liberalization and Per Capita Income Convergence* 55 J. INT'L ECON. 203 (2001); David Hosmer et. al., *Model Building Strategies and Methods for Logistic Regression*, *in* APPLIED LOGISTIC REGRESSION 89, 89 (3d Ed., John Wiley & Sons 2013) (nothing that "[t]he goal of any method is to select independent variables that result in a 'best' model within the scientific context of the problem.").

[26] *See supra* note 23 (commentary on shall-issue clause issue).

If we examine three paired nodes from the East Cluster, for instance, we see…

Eastern Pair 1B: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
N. Carolina	↕	4.75%	5.8%	0%	$7.25
S. Carolina		5%	7%	0%	$7.25

Eastern Pair 2D: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
S. Carolina	↓	5%	7%	0%	$7.25
Alabama		4%	5%	0%	$7.25

Eastern Pair 3C: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Georgia	ø	4%	6%	0%	$7.25
S. Carolina		5%	7%	0%	$7.25

… that Alabama, Georgia, North Carolina, and South Carolina are in the same region, have similar geographies (from climate to latitude to rough size), have similar demographics (and similar differences between rural and less rural areas), and have relatively similar economies (with a mixture of industries, from agriculture to aerospace in all four states).

As an example of in-cluster similarity – again using the eastern cluster as an example – the states selected are not only similar geographically, but that in-cluster median household incomes range between $40,000 and $55,000 as of the 2007-09 U.S. Census Bureau American Community Survey. Each of these four states has a major, growing[27] population center that is not the state capital – Birmingham, Alabama; Columbus, Georgia; Charlotte, North Carolina; Charleston, South Carolina.

Our hypothesis is that a pair of states with reciprocity in a wholly-elective, non-economic sense (in the CCW System) will be more similar in other policy stances – in other words, have a lower difference-in-difference net result in the final analysis – than pairs of states that experience incomplete reciprocity or zero reciprocity in the non-economic policy decision. Our decision to use the CCW System for this study is simple: reciprocity or non-

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[27] U.S. CENSUS BUREAU, 2012 NATIONAL POPULATION PROJECTIONS, *available at* http://www.census.gov/population/projections/data/national/2012.html.

reciprocity within the CCW System is generally completely decoupled from economic and tax policy and hence can be tested as a proxy for policy alignment or interstate *fidélité*. Reciprocity in the CCW System is binary (either you recognize another state's permits or you do not) and does not demand perfect reciprocity (so situations of incomplete reciprocity or unidirectional recognition are possible and, in fact, relatively common), offering three strata of policy compatibility to analyze. This can be thought of in a series of four binary pair states,[28] that are fully inclusive,[29] the middle two of which are what we refer to as incomplete reciprocity:

State 1.   ↕   (1,1)

State 2.   ↓   (0,1)

State 3.   ↑ [30]   (1,0)

State 4.   Ø   (0,0)

      Using the dataset compiled as described above, the regression analysis returned somewhat surprising results: the regression accurately predicted reciprocity less than 70% of the time and only the Estate tax had significance at the 95% confidence level. Upon further review of the data, it became evident that the partial reciprocity pairs were inherently going to decrease the accuracy of the regression analysis. For example, let's assume State A gives reciprocity to State B (the A→B reciprocity is assigned a 1), however State B does not give reciprocity to State A (the B→A reciprocity is assigned a 0). These two data points will have the same absolute value difference in tax rates/wages, but have divergent binary dependent variables. By definition, the regression analysis will predict one with 100% accuracy and the other with 0% accuracy.

      We took a closer look at these partial-reciprocity pairs and noted an interesting observation: of the eastern cluster pairs, 70% of those with partial reciprocity were instances in which Vermont did not return the reciprocity of another state. At first glance, one might misinterpret Vermont's policies as being anti-firearm, but this is untrue (and is not a proper conclusion from our data or from broader historical or legislative analysis). Vermont has permissive and welcoming laws toward gun-owners and hunters. Somewhat

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[28] *See* Methodology & Analysis section *supra* p. 4.

[29] Inclusive in the Eulerian logical sense, in that every relationship can be classified in one pair.

[30] This is a symbol not used in our notation, as all incomplete reciprocity relationships illustrated are shown as (0,1) – in other words, a person with a CCW permit in the upper state may journey with a concealed firearm to the lower state, but the inverse is not true. In the exhaustive binary analysis sense, every *pair* is shown without every *pairing* being shown (AB being omitted where BA is shown). *See* Appendix, *infra* pp. 10-17.

counterintuitively, Vermont's objection to recognizing the concealed carry permits of other states is a pro-gun, rather than anti-gun stance. Because Vermont does not require a permit to carry a gun either openly or concealed on one's person and does not issue such permits, it refuses to recognize other states' permits as an objection to the permit requirement of those states. In other words, Vermont does not require a concealed carry permit and refuses to recognize permits as an objection to other states' permit requirement for concealed carry. Importantly, the stance that permits are an overly restrictive or burdensome requirement for the carrying of weapons is a position historically embraced by both Vermont's legislature and its courts. Vermont's governor has alternated between the two dominant political parties since the election of 1960, making it the most moderate state in the country measured by frequency of party change in gubernatorial control.

Of the western cluster pairs, 100% of those with partial reciprocity were instances in which the western-most states did not return the reciprocity of the eastern-most states. Unlike in the case of Vermont, these non-recognitions are anti-gun- rather than pro-gun-motivated from a qualitative policy analysis standpoint. California, which is an anti-gun state with a history of magazine capacity limits, rifle feature limits, and other limitations on the products available to California consumers, recognizes no permits within the cluster (and recognizes no permits west of the Mississippi). California's policy stance is identical to that of Oregon in terms of accepting other states' permits (but is not identical in the inverse sense), while Washington's stance only accepts Utah's permits, of the states within the cluster (to find another permit Washington recognizes for reciprocity, one must travel substantially farther east, to North Dakota). Reducing the number of armed motorists traveling in these coastal states is likely one of the motives for the very restrictive reciprocity posture they've adopted. Interestingly, not so unlike Vermont, California's gubernatorial winners have also alternated nearly perfectly between the parties, with Pete Wilson's victory in 1990 being the only time since the post-war period when California's governor was replaced by another candidate of the same party.

Given the observed 'noise' within the partial reciprocity pairs, we removed those from the analysis and performed the binary logistic regression on exclusively the full reciprocity and zero reciprocity pairs. Using simply the full and zero reciprocity pairs and a single binary data point for each two-way reciprocation (a 1 or 0, respectively), we observed a notable change in the results. The regression analysis predicted the reciprocity of these in-cluster pairs with 90% accuracy, and again the Estate tax was the only significant independent variable at the 95% confidence level. The results tell us – consistent with our

hypothesis – that the larger the difference in estate tax rates, the lower the likelihood that in-cluster states recognize each other's CCW System permits. Surprisingly, however, the difference in sales tax rates, income tax rates, and minimum wages were not significant independent variables at the 95% confidence level.

6. Conclusion

The recognition privileges interstate that carry with them few obvious economic incentives are ripe natural experiments for analysis. However, likely for reasons cited, *supra*, these experiments are scarce – most interstate decisions are mandatory rather than elective (like the recognition of a neighboring state's license plates).

Our hope is to encourage other scholars in economics, law, statistics, and other disciplines to examine seemingly unrelated variables to better understand the policy momentum of legislatures. While specific analysis of a given proposal or law is common in public policy, analysis of how policies are related is surprisingly uncommon, and rigorous statistical analysis of interstate policy is scarce.

As policy is forged in debates that mix areas of expertise, areas of regulation, and histories of legislative intent, it is important to have a comparative – rather than discrete – lens when analyzing policy. By adopting interdisciplinary interrogations of existing data, we can sometimes understand, as here, similarities that are not apparent with qualitative analysis alone.

Appendix

East

Eastern Pair 1A: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	↕	0%	0%[31]	0%[32]	$7.25[33]
W. Virginia		6%[34]	6.5%[35]	0%[36]	$7.25[37]

Eastern Pair 1B: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
N. Carolina	↕	4.75%[38]	5.8%[39]	0%[40]	$7.25[41]
S. Carolina		5%[42]	7%[43]	0%[44]	$7.25[45]

Eastern Pair 1C: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Georgia[46]	↕	4%[47]	6%[48]	0%	$7.25[49]
Alabama		4%[50]	5%[51]	0%[52]	$7.25

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[31] Wage income is not taxed, but capital gains are taxed at 5% in a compromise reached in the late 1970's after decades of debate on the matter. *See* N.H. REV. STAT. ANN. § 77:1 (2014).

[32] N.H. REV. STAT. ANN. § 87:1.

[33] N.H. REV. STAT. ANN. § 77:1.

[34] W. VA. CODE ANN. § 11-10-11 (2014).

[35] W. VA. CODE ANN, § 11-21-4e.

[36] W. VA. CODE ANN. § 11-11-3.

[37] Current prevailing minimum wage. Revised upward to $8/hr as of the first day of 2015. *See* W. VA. CODE ANN. §21-5C-2 (2014).

[38] N.C. GEN. STAT. ANN. § 105-164.4 (2014).

[39] As this analysis takes place as of the fourth quarter of 2014, the income tax rate attributed to North Carolina is 5.8%. However, as of this Article's publication (subsequent to the first day of 2015), the rate will be reduced to 5.75%. *See* N.C. GEN. STAT. § 105-153.7 (2014).

[40] N.C. GEN. STAT. ANN. § 105-32.1 (2014) (*repealed by* S.L. 2013-316, § 7(a) (2013)).

[41] N.C. GEN. STAT. ANN. § 95-25.3 (sets hourly wage floor at $6.15 or federal rate, whichever is higher).

[42] S.C. CODE ANN. § 12-36-910 (2014).

[43] S.C. CODE ANN. § 12-6-510.

[44] S.C. CODE ANN. § 12-16-510.

[45] By statute, the minimum wage applied to South Carolina workers can never exceed the federal minimum wage. S.C. CODE ANN. § 6-1-130.

[46] Georgia recently revised several tax statutes. The most recent rates are used here.

[47] GA. CODE ANN. § 48-8-30 (2014).

[48] GA. CODE ANN. § 48-7-20.

[49] Minimum wage specified at GA. CODE ANN. § 34-4-3 was abandoned as a matter of policy as Georgia voluntarily adopted a minimum wage in line with the federal minimum wage – along with many other southern states – in the period following 29 U.S.C. § 201 (1938 and as subsequently amended in part). GA. CODE ANN. § 34-4-3.

[50] ALA. CODE § 40-23-2 (2014).

Eastern Pair 1D: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Georgia	↕	4%	6%	0%	$7.25
N. Carolina		4.75%	5.75%	0%	$7.25

Eastern Pair 1E: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Alabama	↕	4%	5%	0%	$7.25
N. Carolina		4.75%	5.75%	0%	$7.25

Eastern Pair 1F: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	↕	0%	5%	0%	$7.25
N. Carolina		4.75%	5.75%	0%	$7.25

Eastern Pair 1G: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	↕	0%	5%	0%	$7.25
W. Virginia		6%	6.5%	0%	$7.25

Eastern Pair 1H: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
N. Carolina	↕	4.75%	5.75%	0%	$7.25
W. Virginia		6%	6.5%	0%	$7.25

Eastern Pair 1I: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
W. Virginia	↕	6%	6.5%	0%	$7.25
S. Carolina		5%	7%	0%	$7.25

[51] ALA. CODE § 40-18-5.
[52] ALA. CODE § 40-15-2.

Eastern Pair 1I: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	↕	0%	5%	0%	$7.25
Georgia		4%	6%	0%	$7.25

Eastern Pair 1J: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
W. Virginia	↕	6%	6.5%	0%	$7.25
Georgia		4%	6%	0%	$7.25

Eastern Pair 1K: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Alabama	↕	4%	5%	0%	$7.25
New Hamp.		0%	5%	0%	$7.25

Eastern Pair 1K: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Alabama	↕	4%	5%	0%	$7.25
W. Virginia		6%	6.5%	0%	$7.25

Eastern Pair 2A: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	↓	0%	5%	0%	$7.25
Vermont		6%[53]	9.4%[54]	16%[55]	$8.73[56]

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[53] VT. STAT. ANN. tit. 32, § 9771 (2014).

[54] VT. STAT. ANN. tit. 32, § 5822.

[55] VT. STAT. ANN. tit. 32, § 7442a.

[56] As of writing. Increases to $9.15/hr on the first day of 2015. *See* VT. STAT. ANN. tit. 21, § 384.

Eastern Pair 2B: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Maine	↓	5.5%[57]	7.95%[58]	12%[59]	$7.50[60]
Vermont		6%	9.4%	16%	$8.73

Eastern Pair 2C: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
W. Virginia	↓	6%	6.5%	0%	$7.25
Vermont		6%	9.4%	16%	$8.73

Eastern Pair 2D: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
S. Carolina	↓	5%	7%	0%	$7.25
Alabama		4%	5%	0%	$7.25

Eastern Pair 2D: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Maine	↓	5.5%	7.95%	12%	$7.50
N. Carolina		4.75%	5.75%	0%	$7.25

Eastern Pair 2E: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Maine	↓	5.5%	7.95%	12%	$7.50
Alabama		4%	5%	0%	$7.25

Eastern Pair 2F: Incomplete Reciprocity

[57] ME. REV. STAT. ANN. tit. 36 § 1811 (2014). Maine revised its tax code sections in consecutive legislative sessions from 2005 through 2013, with an upward revision of sales tax rate being most recent. *Id.*
[58] ME. REV. STAT. ANN. tit. 36, § 5111.
[59] ME. REV. STAT. ANN. tit. 36, § 4103.
[60] ME. REV. STAT. ANN. tit. 26, § 664.

State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
N. Carolina	↓	4.75%	5.75%	0%	$7.25
Vermont		6%	9.4%	16%	$8.73

Eastern Pair 2F: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
S. Carolina	↓	5%	7%	0%	$7.25
Vermont		6%	9.4%	16%	$8.73

Eastern Pair 2G: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Georgia	↓	4%	6%	0%	$7.25
Vermont		6%	9.4%	16%	$8.73

Eastern Pair 2H: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Alabama	↓	4%	5%	0%	$7.25
Vermont		6%	9.4%	16%	$8.73

Eastern Pair 3A: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	ø	0%	5%	0%	$7.25
Maine		5.5%	7.95%	12%	$7.50

Eastern Pair 3B: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
W. Virginia	ø	6%	6.5%	0%	$7.25
Maine		5.5%	7.95%	12%	$7.50

Eastern Pair 3C: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Georgia	ø	4%	6%	0%	$7.25

S. Carolina		5%	7%	0%	$7.25

Eastern Pair 3D: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
New Hamp.	ø	0%	5%	0%	$7.25
S. Carolina		5%	7%	0%	$7.25

Eastern Pair 3E: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Georgia	ø	4%	6%	0%	$7.25
Maine		5.5%	7.95%	12%	$7.50

West

Western Pair 1A: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Utah	↕	4.7%[61]	5%[62]	0%	$7.25[63]
Arizona		5%[64]	5.17%[65]	0%	$7.90[66]

Western Pair 1B: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Idaho	↕	6%[67]	7.4%[68]	0%	$7.25[69]
Montana		0%[70]	6.9%[71]	0%	$7.90[72]

Western Pair 1C: Complete Reciprocity

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[61] UTAH CODE § 59-12-103 (2014).
[62] UTAH CODE § 59-7-104.
[63] UTAH CODE § 34-40-103 (specifies $3.80/hr as minimum wage).
[64] ARIZ. REV. STAT. ANN. § 42-5010 (2014) (effective Jan. 1, 2015).
[65] ARIZ. REV. STAT. ANN. § 43-1011.
[66] ARIZ. REV. STAT. ANN. § 23-363.
[67] IDAHO CODE ANN. § 63-3619 (2014).
[68] IDAHO CODE ANN. § 63-3024.
[69] IDAHO CODE ANN. § 44-1502.
[70] MONT. CODE ANN. § 15-68-102 (2014).
[71] MONT. CODE ANN. § 15-30-2103.
[72] MONT. CODE ANN. § 39-3-409.

State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Idaho	↕	6%	7.4%	0%	$7.25
Utah		4.7%	5%	0%	$7.25

Western Pair 1D: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Idaho	↕	6%	7.4%	0%	$7.25
Arizona		5%	5.17%	0%	$7.90

Western Pair 1E: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Montana	↕	0%	6.9%	0%	$7.90
Utah		4.7%	5%	0%	$7.25

Western Pair 1F: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Montana	↕	0%	6.9%	0%	$7.90
Arizona		5%	5.17%	0%	$7.90

Western Pair 1G: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Idaho	↕	6%	7.4%	0%	$7.25
Nevada		2%	0%	0%	$7.25

Western Pair 1G: Complete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Utah	↕	4.7%	5%	0%	$7.25
Washington		6.5%	0%	20%	$9.32

Western Pair 2A: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Nevada	↓	2%[73]	0%	0%[74]	$7.25[75]
Arizona		5%	5.17%	0%	$7.90

Western Pair 2B: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Nevada	↓	2%	0%	0%	$7.25
Utah		4.7%	5%	0%	$7.25

Western Pair 2C: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
California	↓	4.75%[76]	9.3%[77]	0%	$9.00
Utah		4.7%	5%	0%	$7.25

Western Pair 2D: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
California	↓	4.75%	9.3%	0%	$9.00
Arizona		5%	5.17%	0%	$7.90

Western Pair 2E: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Washington	↓	6.5%[78]	0%	20%[79]	$9.32[80]

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[73] Nevada, as part of the laissez faire pro-individualism platform of 1950's Republican governor Charles Russell, became a low-tax state with no income tax and a 2% sales tax. This was highly unusual during an area of increased taxes in many Western states. *See* NEV. REV. STAT. § 372.105 (2014).

[74] NEV. REV. STAT. § 375A.100.

[75] Nev. Rev. Stat. § 608.250.

[76] CAL. REV. & TAX. CODE § 6051 (2014).

[77] CAL. REV. & TAX. CODE § 17041.

[78] WASH. REV. CODE § 82.08.020 (2014) (so-called "tax reform" political momentum from 2008 to 2014 in Washington was substantial, with significant changes made and discussions of estate taxes potentially even exceeding 20%, already the highest in the nation).

[79] Highest in the United States. *See* WASH. REV. CODE § 83 100.040 (2013).

[80] This Article ignores intrastate heterogeneity in its analysis, but it is worth noting that Seattle – Washington's largest city – approved a minimum wage of $15/hr and there is a political movement to increase the minimum wage across Washington State to $15/hr and the minimum wage in Seattle to $20/hr. *See* WASH. REV. CODE § 49.46.020.

Idaho		6%	7.4%	0%	$7.25

Western Pair 2F: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Oregon	↓	0%	9.9%[81]	16%[82]	$9.10[83]
Idaho		6%	7.4%	0%	$7.25

Western Pair 2G: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Washington	↓	6.5%	0%	20%	$9.32
Montana		0%	6.9%	0%	$7.90

Western Pair 2H: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Oregon	↓	0%	9.9%	16%	$9.10
Montana		0%	6.9%	0%	$7.90

Western Pair 2I: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Nevada	↓	2%	0%	0%	$7.25
Montana		0%	6.9%	0%	$7.90

Western Pair 2J: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
California	↓	4.75%	9.3%	0%	$9.00
Idaho		6%	7.4%	0%	$7.25

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[81] OR. REV. STAT. § 316.037 (2014).
[82] OR. REV. STAT. § 118.010.
[83] OR. REV. STAT. § 653.025.

Western Pair 2K: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
California	↓	4.75%	9.3%	0%	$9.00
Montana		0%	6.9%	0%	$7.90

Western Pair 2L: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Washington	↓	6.5%	0%	20%	$9.32
Arizona		5%	5.17%	0%	$7.90

Western Pair 2M: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Oregon	↓	0%	9.9%	16%	$9.10
Utah		4.7%	5%	0%	$7.25

Western Pair 2N: Incomplete Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Oregon	↓	0%	9.9%	16%	$9.10
Arizona		5%	5.17%	0%	$7.90

Western 3A: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
California	ø	4.75%	9.3%	0%	$9.00
Nevada		2%	0%	0%	$7.25

Western 3B: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Washington	ø	6.5%	0%	20%	$9.32
Oregon		0%	9.9%	16%	$9.10

Western 3C: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Washington	ø	6.5%	0%	20%	$9.32
Nevada		2%	0%	0%	$7.25

Western 3D: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Washington	ø	6.5%	0%	20%	$9.32
California		4.75%	9.3%	0%	$9.00

Western 3E: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Oregon	ø	0%	9.9%	16%	$9.10
California		4.75%	9.3%	0%	$9.00

Western 3F: Zero Reciprocity					
State	Reciprocity	Sales Tax	Income Tax	Estate Tax	Min. Wage
Oregon	ø	0%	9.9%	16%	$9.10
Nevada		2%	0%	0%	$7.25