Devolution and Policy Experimentation under Federalism: Essays on Innovation and Emulation in the American States

by

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Dedication

I dedicate this dissertation to my family. My father Narasimham, more than anyone, challenged and inspired me to embark on this course. He showed me the value of hard work, is my role model, and deserves more credit than words can describe. My mother Nagamani taught me about faith and hope. My brother Gurunadh taught me to maintain a healthy sense of skepticism. And my wife Carrie made enormous and selfless sacrifices and supported me throughout this endeavor.

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Abstract

Scholars and policymakers have long argued that state-level officials operating free from the influence of the central government act as the major drivers of innovative, or novel, policy in a federal system. However, this belief runs counter to the possibility that electoral considerations and resource limitations could cause state-level officials to emulate (or copy) policy rather than innovating. In this dissertation, I evaluate the decision by state-level officials to innovate or emulate, and I conduct my analysis in three parts using data on renewable portfolio standard (RPS) policy. First, I evaluate the innovation and emulation activity of state legislatures making policy adoption decisions. Then I compare the innovation and emulation decisions of elected versus appointed state public utilities commissioners. And third, I analyze the innovation and emulation behavior of cosponsoring state legislators. I find evidence suggesting that the states are better described as drivers of emulation rather than innovation: both electoral vulnerability and legislative professionalism increase the likelihood of emulation rather than innovation. At the same time, giving policy authority to appointees will not increase innovation, as appointees are less likely to innovate compared to elected peers. Results suggest that the federal government may play an important role in advancing state policy innovation.

CHAPTER 1

A Federation of Innovators and Emulators: The Case of the American States

1.1 Introduction: Devolution as an Enabler of Policy Innovation

Many observers of federalism believe that the capacity for devolution[1] within federalism promotes *policy innovation*, or the creation of diverse, novel, or untested policy, by splitting policymaking authority across multiple jurisdictions. The division of power across "distinct governments," to use Madison's words, disperses rather than concentrates policymaking authority and lets representatives of the distinct governments craft policies demanded by their respective constituencies (Madison 1788).

The notion that devolution facilitates policy innovation has widely been upheld as a central virtue of federalism. Justice Brandeis, in an oft-mentioned opinion, remarked that "a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country" (*New State Ice Company v Liebmann* 1932). Proponents of New Federalism, an attempt in the 1980s and 1990s to take policymaking authority from the federal government and give it to the states, couched their defense of New Federalism in Brandeis's language and argued for

[1] "Devolution" represents the transfer of policymaking authority from a single (usually national-level) government to multiple (usually state-level) governments.
[2] A great example of someone espousing the agenda of New Federalism comes from then-House Speaker Newt Gingrich. Discussing his party's vision for welfare reform, Gingrich states that "We are committed to getting power back to the states, we are

the devolution of education, environmental, and welfare policy on the grounds that the states were more qualified to solve local problems than was the distant federal government (Peterson 1995).[2]

Other proponents of devolution defend the capacity of the states to innovate in the language of states' rights and argue that policy innovation reflects the democratic will of the citizens who elect representatives to adopt policies on their behalf. These states' rights proponents of devolution also argue that the centralization or federalization of policymaking authority will lead to a homogenization of policy in which the democratic choices of citizens in the states are superseded by federal fiat. [3]

[2] A great example of someone espousing the agenda of New Federalism comes from then-House Speaker Newt Gingrich. Discussing his party's vision for welfare reform, Gingrich states that "We are committed to getting power back to the states, we are committed to breaking the logjam of Federal bureaucrats controlling how we help the poor, and we believe you can trust the 50 states and the 50 state legislatures to work together on behalf of the citizens of their states" (quoted in Apple 1995).

[3] Examples of this view come from Alabama Supreme Court Chief Justice Roy Moore and U.S. Supreme Court Justice Clarence Thomas in response to recent decisions by federal judges to permit gay marriage in Alabama, thus challenging a gay marriage ban in that state. Moore, who was elected by Alabama voters, claims that "It's my duty to speak up when I see the jurisdiction of our (state) courts being intruded by unlawful federal authority." Thomas, who sees the U.S. Supreme Court's decision to neither support nor oppose the federal judges as an affront to Alabama voters, claims that the federal court had "no regard for the people (Alabama voters) who approved these laws in referendums or elected the representatives who voted for them" (quoted in Associated Press 2015). A states' rights-based interpretation of policy innovation is interesting insofar as it runs counter to the pro-civil rights views of Brandeis.

The case for devolution (and by extension, policy innovation) is not just made within federal countries. Many Scottish supporters of a unionist solution to the issue of Scotland's independence from the United Kingdom have advocated that the United Kingdom adopt a federal form of government. Supporters of a unionist solution, such as members of the Home Rule and Community Rule Commission of the Scottish Liberal Democrats, argue that federalism will "allow different domestic policies to be pursued in different parts of the United Kingdom," meaning that the Scots can innovate and design solutions to their own problems instead of importing solutions from Westminster (Home Rule and Community Rule Commission 2012).

1.2 Do State Governments Innovate under Devolution?

Defenders of the view linking devolution to policy innovation often assume that state governments naturally innovate in a devolutionary environment. However, we know very little about why state governments in devolutionary environments would even choose to innovate in the first place. Why should a state government, which may have a limited resource capacity, go through the hassle of researching and adopting a novel and untested policy (that is, an innovation) when that state government could adopt an existing and tried-and-true policy (an action that I refer to as *emulation* throughout this dissertation) at an arguably lower cost in terms of time and resources? And why would an elected state government official, who ostensibly desires and strives for reelection (Mayhew 1974), accept the risk of innovating when that state government official could emulate and place his or her reelection prospects in less jeopardy?

Innovation literally represents the adoption of novel policy while emulation represents the adoption of policy that has already been adopted elsewhere. This means that an innovating government adopts a policy *before* any other government has adopted the same policy while an emulating government adopts the policy *after* other government(s) have adopted the policy. Innovation is arguably riskier than emulation because an innovating government cannot examine how a novel policy has performed in other settings before deciding whether to adopt the policy. In contrast, an emulating government can use a candidate policy's track record of performance in other settings to inform its own adoption decision. In this project, I investigate the innovation and emulation behavior of one particular set of governments, the U.S. states.[4]

Political science is only beginning to take the issue of state governmental innovation versus emulation seriously, and extant literature does not provide a solid endorsement to the view that state governments are natural wellsprings of policy innovation. Volden, Ting, and Carpenter (2008) and Cai and Treisman (2009) show in formal theoretic models (but not empirically) that reelection-seeking officials in a given state may emulate and copy policy choices made in other states instead of taking on the

[4] A hypothetical example of innovation and emulation comes from education policy. Suppose that Michigan is the first state to adopt a policy that offers loan forgiveness for college students that remain in-state following graduation. Since Michigan adopted this policy before any other state, it counts as an innovator. Five years later, suppose that Ohio decides to also adopt a policy offering loan forgiveness for college students remaining in-state following graduation. Since Ohio's adoption follows Michigan's and Ohio can use Michigan's track record to inform its own decision-making, Ohio counts as an emulator. Importantly, in this project, I define and analyze innovation and emulation within the bounded system of the U.S. states. This is not to say that Ohio could not emulate the actions of another country's government (say, Norway). However, this kind of emulation (across countries) arguably entails a greater level of risk than emulation that occurs within a closed system of similarly structured units (the U.S. states). I provide several concrete examples of innovation and emulation in chapter 2.

risk of developing their own novel policy solutions. These authors argue that elected officials in a given state do not want to jeopardize their electoral prospects by innovating and will therefore choose to emulate (this is a safer choice for the officials since they can observe how potential candidates for emulation performed in other states). Given that reelection is ostensibly a goal for officials across all fifty state legislatures and that a given state often faces problems that are similar in nature to the problems faced by other states, the claims of Volden, Ting, and Carpenter (2008) and Cai and Treisman (2009) are serious and warrant further consideration. After all, the revelation that the states are laboratories of emulation rather than laboratories of innovation has implications for how we view the role of the states with respect to policymaking in a federal system.

1.3 The Goal and Structure of the Dissertation

Overview

The formal theoretic observations of Volden, Ting, and Carpenter (2008) and Cai and Treisman (2009) are compelling but have not been subject to empirical evaluation. Additionally, for all the discussion about the positive association between devolution and policy innovation, we still do not have a baseline idea about what drives state-level innovation and emulation absent direct federal influence (that is, given devolution). Establishing a baseline understanding of state-level innovation and emulation is important so that we can (in future research) then see how direct federal influence interacts with baseline explanators to affect state-level innovation and emulation.

In this project, I seek to establish a baseline understanding of state-level innovation and emulation under devolution and evaluate the determinants of state policy

innovation (or the lack thereof) under devolution across different institutional arrangements, such as when legislatures versus regulatory agencies control the policymaking process. Analyzing different institutional arrangements is important because (1) state policymaking occurs through multiple institutional channels and (2) different institutional structures create different incentives for policymakers, leading to a potential diversity in policy outcomes.[5] Focusing on legislative activity and ignoring the role of non-legislative actors gives us an incomplete view of the states as policy laboratories, and I compare legislative and regulatory policymaking to provide the reader with a richer view of the policymaking environments that exist across the states.

Throughout the dissertation, I analyze state innovation and emulation choices with respect to a single policy area: the development of renewables portfolio standard (RPS) policies across the U.S. states. RPS policies represent a class of policies that aim to increase renewable energy use at the state-level by mandating that electricity providers generate some amount of electricity from renewable sources. RPS is a fantastic policy area for exploring state-level innovation and emulation for three reasons. First, the states adopted RPS policies with no discernible direct federal influence, meaning that RPS offers a great case for evaluating how state governments behave under devolution.[6] Second, ample innovation and emulation has occurred with respect to RPS policy, as state governments pioneer new innovations in RPS policy (by designating an

[5] A canonical example from political science (and one that I explore here) concerns whether elected officials approach their policymaking responsibilities differently from appointees, who do not face reelection pressures.

[6] The federal government did not communicate an RPS policy preference to the states until the Environmental Protection Agency's (EPA) release of a Proposed Clean Power Plant Rule in 2014 (and 2014 lies outside the bounds of this study). Of course, it is worth acknowledging, as McCann (Forthcoming) indicates, that the federal government's decision to leave the states alone may be strategic in nature.

unconventional energy source as a form of "renewable" energy, for example) or adopt practices utilized in other states. Finally, the states adopted RPS policies using different institutional venues, including bodies (legislatures) where all members face electoral pressure and bodies (public utilities commissions) where some members are elected and other members are appointed. Variation in the institutional venue of adoption lets us explore how the incentives faced by members of an institution affect the innovation and emulation decisions of that institution, and I conduct this analysis in the chapters ahead.

Chapter 2

In chapter 2, I describe the RPS policy domain in lengthy detail and also discuss why I analyze innovation and emulation at the level of the policy feature rather than the more commonly used policy regime.[7] I then walk the reader through the coding process that I utilize throughout this dissertation to distinguish innovation and emulation, and I provide examples to the reader of how I identify innovation and emulation in official state RPS policymaking documents. I close the chapter with a discussion of how I employ my coding method to answer the big theoretical questions evaluated in the dissertation, and I suggest future research projects that could be analyzed using my coding method.

Chapter 3

In chapter 3, I examine when state legislatures innovate and emulate while adopting RPS policy and hold the claims of Volden, Ting, and Carpenter (2008) and Cai

[7] In chapter 2, I define and distinguish policy features and policy regimes from one another.

and Treisman (2009) to empirical scrutiny.[8] The bulk of the extant work on state policy innovation deals with the policy adoption behavior of legislatures, which are not only tasked with crafting policy but also have members that are subject to reelection. Evaluating state legislative RPS policy adoption behavior across fifty states and over nearly thirty years (1983-2011), I find evidence for the claim that electoral vulnerability increases emulation, as increases in the median vote share of an incumbent legislator in the last election relate negatively with the likelihood that a state legislature emulates when adopting policy. I also interrogate the prominent claim linking state legislative professionalism, or resource capacity, to innovation (Walker 1969; and Boushey 2010) and find that professionalism increases the likelihood of emulation more than it increases the likelihood of innovation. I argue that increased professionalism raises the likelihood of emulation more than innovation because it increases the ability for members of a legislature in a given state to learn about and vet a candidate for emulation (in short, to research about the fit of a policy that has already been adopted elsewhere) more than it increases their ability to learn about and vet a candidate for innovation (to research about the fit of a policy that has never been tested in any state). The pro-emulation results with respect to electoral vulnerability and legislative professionalism (and the empirical fact that legislatures emulate much more than they innovate) suggest that state legislatures strongly prefer emulation to innovation and that when they do innovate, the impetus for

[8] Volden, Ting, and Carpenter (2008) and Cai and Treisman (2009) analyze governments where officials are elected and can adopt policy. In the U.S. states, the governmental institutions that most closely fit these criteria are legislatures. In chapter 3, I look at the policy adoption behavior of state legislatures. In chapter 3, the state legislature (rather than the state legislator) is the fundamental actor of interest.

innovation does not come from the resource advantages associated with legislative professionalism.

The result linking electoral vulnerability to emulation complicates the view that the states are natural laboratories of innovation, because it suggests that reelection-seeking members of a legislature will push for emulation rather than innovation. And the result linking legislative professionalism to emulation complicates the view that the states are natural laboratories of innovation, because it suggests that even those states that are perhaps best equipped to innovate (states with high legislative professionalism) use the resource advantages of professionalism to emulate.

Chapter 4

In chapter 4, I shift my focus to the policy adoption behavior of regulatory agencies operating and examine when state public utilities commissions innovate and emulate while adopting RPS policy. Regulatory agencies play a key role in policy adoption, as they possess extensive procedural and technical knowledge about the areas that they regulate. Moreover, the commissioners of regulatory agencies are often appointed, and the nonelection of these commissioners may have implications on whether they choose to innovate or emulate when adopting policy. The result from chapter 3 linking electoral vulnerability with emulation suggests that appointed officials may favor innovation, as these actors are not bound by reelection concerns. At the same time, however, appointed officials are accountable to the principals (state legislators and governors) that appoint them and may favor emulation in order to avoid confrontation with their principals.

There is variation across the states in terms of whether public utilities commissioners are appointed by governors (and confirmed by state legislatures) or elected by statewide voters, and I exploit this variation here to examine whether elected public utilities commissioners innovate more or less than appointed public utilities commissioners when adopting policy. I find that elected public utilities commissioners are more likely to innovate compared to appointed commissioners and argue that this result stems from a difference in how the principals of elected and appointed commissioners monitor those commissioners. Median voters are the principals of elected public utilities commissioners, and these median voters primarily care about consumer prices over all other aspects of public utility regulatory policy (Besley and Coate 2003). This means that elected public utilities commissioners are largely free to take risks and innovate with respect to regulatory policy so long as they can convince median voters that innovations will not raise consumer prices. In contrast, appointed public utilities commissioners serve principals (state legislators and governors) that may have strong preferences about regulatory policy and concerns about how novel changes to regulatory policy will affect constituents. Appointed public utilities commissioners may then partly reject innovation as a way to reduce the possibility of conflict with or backlash from concerned legislative and executive bosses.

The result from chapter 4 adds to our baseline understanding of state policy innovation and emulation under devolution because it suggests that giving policy responsibility to appointees will not necessarily increase innovation. Elected officials are bound by reelection constraints and certainly appear (based on the finding from chapter 3 linking electoral vulnerability to emulation) to emulate in response to fears about

reelection. Despite the reelection constraint, however, elected officials still appear to drive policy innovation in the states, and elected officials (both in the state legislatures and in state public utilities commissions) definitely innovate with far greater frequency than appointed officials. The increased innovation output from elected rather than appointed officials implies that we continue to look to *elected* state officials to serve as the wellsprings of state policy innovation. While appointees play a role in the policymaking process, appointees (at least in the area of RPS policy) do not appear to be risk-acceptant policy adopters.

Chapter 5

In this chapter, I move away from analyzing the decision-making of collective institutions (for example, I analyzed legislative decision-making in chapter 3 and agency decision-making in chapter 4) and instead devote my attention to the choices of individual legislators operating under devolution. I also move away from analyzing policy adoption and instead look at whether legislators choose to innovate or emulate when cosponsoring policies. I focus on micro-level (individual) rather than macro-level (collective) determinants of innovation and emulation since macro-level institutions consist of individuals making their own choices about policy. Ignoring micro-level explanators and focusing only on a macro-level picture may cause us to miss important individual-specific drivers of innovation and emulation. I focus on cosponsorship because cosponsors are important advancers of policy proposals within a legislature.[9]

[9] I only have data identifying cosponsorship and lack information about primary authorship (or sponsorship). The absence of sponsorship data is unfortunate since sponsors serve the key movers of policy proposals through the legislative process (this does not mean, of course, as a rich literature on cosponsorship demonstrates, that cosponsors are unimportant in the policymaking process). Moving forward, I plan to use

Understanding when cosponsors choose to advance novel policy versus push for existing policy would help us uncover individual factors that affect the content of policy proposals that receive consideration from a legislature for adoption.[10]

Analyzing the RPS cosponsorship activity of 867 legislators from thirty states, I find that increased legislative professionalism raises the likelihood that legislators choose to emulate rather than innovate during cosponsorship. This result mirrors the macro-level legislative professionalism result obtained in chapter 3 and suggests that increased legislative professionalism (think more staff and due to increases in legislator salary and time on the job, possibly more fact-finding commissions and study groups) also increases the ability for legislators to learn about and vet a policy proposal that already exists elsewhere more than it increases the ability for legislators to learn about and vet a novel policy. Evaluating the other finding from chapter 3—the finding linking electoral vulnerability to increased emulation in adoption—I fail to find evidence that individual-level electoral vulnerability increases the likelihood that legislators emulate when they cosponsor policy.

At the same time, however, I find evidence linking term limit provisions to an increased likelihood that legislators cosponsor innovative policy. This result, I argue, stems from work by Kousser (2005), Ferraz and Finan (2011), and Alt, Bueno de Mesquita, and Rose (2011) linking the shorter time horizons associated with term limits to increased risk-taking by legislators. Compared to legislators from states without term

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formal information requests to gather data on primary authorship and will hopefully be able to identify commonalities and differences in the innovation and emulation patterns of cosponsors and sponsors.

[10] "Content" here refers to whether a policy is novel (an example of innovation) or whether it has already been adopted elsewhere (an example of emulation).

limit provisions, legislators from states with term limit provisions may be more willing (provided, of course, that they like an innovative policy) to cosponsor innovative legislation. This is because term limits shorten the time horizons of legislators and reduce the possibility that unanticipated and undesired effects of the innovative policy jeopardize the electoral prospects of the cosponsoring legislators. In contrast, the absence of term limit provisions lengthens the time horizons of legislators and increases the likelihood that a legislator may emulate rather than innovate in order to protect his or her electoral future.[11]

Results from chapter 5 provide insight about the factors that affect policy innovation and emulation in cosponsorship. Importantly, we should expect legislators from less professional legislatures and legislators from states with term limit provisions to cosponsor innovative policy and perhaps serve as key players in the narrative describing the states as laboratories of policy innovation. We should emphasize, however, that the legislative professionalism and term limit findings could be bad from a democratic accountability perspective, if the findings suggest that (1) legislators do not utilize the tools of legislative professionalism to research about prospective innovations; and that (2) term limits reduce electoral accountability and increase the chance that legislators engage in risky policymaking.

Implications

Viewed in total, the results from the three empirical chapters complicate the narrative linking state policymaking under devolution to policy innovation. The

[11] In my analysis of legislative policy adoption in chapter 3, term limits also increase the probability of innovation and decrease the probability of emulation. However, these findings are not significant statistically. I discuss why this may be the case in chapter 3 and in the conclusion of the dissertation.

legislatures—the primary institutions through which states craft policy—emulate more than they innovate, and legislative electoral vulnerability increases emulation at the adoption stage, as shown in chapter 3. The fact that electoral vulnerability increases emulation is normatively good insofar as it shows that lawmakers take voter considerations seriously and try not to subject voters to the consequences of risky innovation. And the finding from chapter 4 linking appointment to reduced innovation is also normatively good from a democratic accountability perspective, as it shows that innovation more likely comes from elected individuals who maintain a direct link to voters rather than appointed individuals who are insulated from voter demands.

Two potential normative problems raised in this project relate to the origins of innovation. The first problem deals with the finding (shown in chapter 5) linking term limit provisions with increased innovation in cosponsorship. If legislators in states with term limits are willing to subject citizens to the risk of innovation in order to advance what they consider to be "good" policy that they believe meets the demands of constituents, then there is arguably little cause from concern from a democratic accountability perspective, as legislators are serving as good representatives (Pitkin 1972). However, if legislators in states with term limits are willing to subject citizens to the risk of innovation in order to satisfy their own personal desires or those of key supporters, then good governance may be threatened insofar as innovations occur as the result of particularistic personal and interest group goals rather than a goal to improve the general public good.[12]

[12] This is not beyond the realm of possibility. Legislators may want to advance the interests of a key supporter in order to procure lobbying jobs after the conclusion of their term-limited legislative careers (Kousser 2005).

The second problem concerns the legislative professionalism result discussed in chapters 3 and 5. The lack of a statistical relationship between legislative professionalism and innovation may seem harmless, but it suggests that legislative research capacity does not drive innovation and may even indicate that innovators do not research the ramifications of potential innovations as much as they probably should.

Future research will allow us to take the baseline of state policymaking under devolution established here and evaluate how policy centralization interacts with the factors in this dissertation to affect state innovation and emulation.[13] Compared to the baseline of devolution, legislators from states with term limit provisions could emulate more given federal involvement, as the legislators face incentives to comply with federal rules. And also compared to the baseline of devolution, electorally vulnerable lawmakers could innovate more given federal involvement, as these lawmakers may want to signal to constituents that they are using federal financial assistance to solve vexing policy challenges. The probable federalization of the policy area (renewable energy regulation) analyzed in this project will help us examine the effects of centralization moving forward.

1.4 A Brief Description of the Empirics of the Dissertation

The goal of the dissertation is to examine factors affecting state innovation and emulation given devolution, or an absence of direct federal influence on state policymakers. In order to evaluate state innovation and emulation choices under the baseline condition of negligible direct federal influence on state policymaking, it is imperative to investigate a policy area where the federal government left policymaking in

[13] Centralization typically refers to when the federal government uses grants or rules to incentivize the states to move policy in a certain direction (Peterson 1995).

the hands of the states. It is also important, given the nature of the questions examined in chapters 3, 4, and 5, to investigate a policy area where legislative and regulatory agency actors participated in adopting (and in the case of legislators, sponsoring, policy.) RPS policymaking meets the criteria outlined above, and data on state RPS policy adoption and sponsorship are used to evaluate the theoretical propositions outlined in this dissertation. RPS, it is worth repeating, describes a family of policies specifying that electric utilities derive some amount of electricity from "renewable" sources and outlining how utilities should meet these standards. Renewable energy possesses issue salience, as individuals of different ideological and partisan stripes in government, academia, and the private sector have advocated for the development of America's renewable energy infrastructure in order to reduce dependence on foreign oil and address threats from climate change (Rabe 2004).

The state governments, absent direct federal influence, have taken the lead in crafting RPS policies and created diverse RPS regimes, where a regime simply refers to the set of adopted policy features that together comprise a state's RPS program: Hawaii, for example, devised an RPS regime designed to maximize the use of traditional sources of renewable energy (for example, hydroelectric, solar, and wind count as traditional sources of renewable energy) while West Virginia has crafted a regime devoted to classifying coal as a renewable resource. To date, from 1983 to 2011, 37 states adopted RPS regimes, and I evaluate the RPS policy adoption choices of legislatures and public utilities commissions across the fifty states and the RPS sponsorship behavior of legislators within and across thirty states (the states for which sponsorship data of any kind is available) to identify the conditions under which state governmental actors

innovate or emulate during policy adoption or sponsorship.[14] Table 1 lists the states (in chronological order, based on first adoption) that have adopted RPS regimes.[15]

TABLE 1: States with RPS Regimes

State	Year of RPS Initiation
Iowa	1983
Minnesota	1994
Arizona	1996
Maine	1997
Nevada	1997
Massachusetts	1997
Wisconsin	1998
Connecticut	1998
New Jersey	1999
Texas	1999
Hawaii	2001
Illinois	2001
California	2002
New Mexico	2002
Maryland	2004
Rhode Island	2004
New York	2004
Pennsylvania	2004
Colorado	2004
Montana	2005
Vermont	2005
Delaware	2005
North Dakota	2006
Washington	2006
Virginia	2007
New Hampshire	2007

[14] Public utilities commissions are the agencies typically charged with regulating the actions of electric utilities. Two states, Colorado and Washington, adopted their RPS programs through ballot initiative. There are no cases of ballot initiative innovation and a low sample size (26) of emulations that occur through ballot initiative. I therefore do not investigate the nature of the innovation/emulation choice from the vantage point of citizens using a ballot initiative process.

[15] Iowa adopted RPS well before the next state (Minnesota), and it is an open question as to why eleven years passed before Minnesota's creation of an RPS regime. My best guess centers on the extreme newness of the regime or program in 1983: Iowa was literally the first state to take on public utilities and require that they comply with renewable mandates. Other states, perhaps due in part to the threat of litigation, may have waited until Iowa's program was solidly established before creating their own RPS regimes.

State	Year of RPS Initiation
Missouri	2007
Oregon	2007
North Carolina	2007
South Dakota	2008
Utah	2008
Ohio	2008
Michigan	2008
Kansas	2009
West Virginia	2009
Oklahoma	2010
Indiana	2011

A challenge in evaluating the innovation and emulation choices of state governments involves determining what innovation and emulation look like empirically. The extant political science literature (Walker 1969; Gray 1973; Berry and Berry 1990; Boushey 2010; Pacheco 2012; Makse 2013; and others) does not distinguish innovation from emulation and instead refers to innovation as a state's adoption of policy regardless of when that state adopted the policy.

In this dissertation, I empirically disentangle innovation from emulation by tracing the adoption of a given policy feature across the states and then designating a particular state as an innovator or emulator depending on when (in relation to other states) that state adopted the policy feature. I do this by gathering all state-level enabling documentation (these are typically approved bills or public utility commission rules, and there are 306 enabling documents in total) and sorting through the documentation to assign a date to when a state adopted a particular RPS policy feature. I gather the names of specific RPS policy features from the preeminent repository of state RPS data, the *Database of State Incentives for Renewables and Efficiency* (DSIRE). DSIRE identified key policy features of state RPS programs, and I analyze whether the states innovate or

emulate with respect to these policy features. Taking the dates from each state's adoption of a particular policy feature, I generally label a state as an innovator if it adopts a particular policy feature before any other state has done so and label a state as an emulator if it adopts a particular policy feature after another state has adopted the policy component.

This empirical manifestation of innovation and emulation, which I discuss in much greater detail in chapter 2 and briefly in chapters 3, 4, and 5, represents a major contribution of the dissertation and allows us to relate changes in key explanatory variables to the likelihood of innovation and emulation.

1.5 Outline of the Dissertation

In chapter 2, I describe the RPS policy domain, discuss why I analyze innovation and emulation using the policy feature as the unit of adoption, give the reader a thorough overview of the coding process that I utilize to distinguish innovation from emulation, and sketch out future projects in which my coding process can be employed to better understand when governmental actors innovate or emulate.

In chapter 3, I use the coding process discussed in chapter 2 to examine the determinants of legislative innovation and emulation during policy adoption and specifically investigate how electoral vulnerability and legislative professionalism affect the likelihood of innovation and emulation.

In chapter 4, I switch from legislative to regulatory agency action and use the coding process discussed in chapter 2 to examine whether elected public utility

commissioners are more likely to innovate compared to appointed public utility commissioners.

In chapter 5, I use the coding process discussed in chapter 2 to examine the cosponsorship (rather than adoption) activity of legislators and identify conditions that affect when cosponsors innovate or emulate. The data processing procedure involves an additional step to that utilized in chapters 3 and 4, as I must link the names of individual cosponsors with their decisions to cosponsor policies that either represent examples of innovation or emulation.

Finally, in chapter 6, I offer a recapitulation of the project's conclusions and implications and provide the reader with an outline of future directions of this research.

I now move on to distinguishing how I separate the choices of innovation and emulation using RPS policymaking in the next chapter.

CHAPTER 2

Separating Innovation from Emulation using Policy Features from State Renewables Portfolio Standards

2.1 An Introduction and Note on Terminology

In this chapter, I provide detail about the RPS policy domain and specify a general process (which I apply in this project to the RPS policy domain) that can be used to differentiate innovation from emulation. I first discuss the terminology used in this chapter and differentiate a *policy feature* from a *policy regime* and a *policy domain*. I then describe the nature of the RPS policy domain. I thirdly discuss why it is beneficial to use the policy feature as the unit of analysis when investigating adoption. I then walk through the exact coding process that I use to identify instances of innovation and emulation from state government policymaking pertaining to the RPS policy domain; and I lastly discuss how I utilize the output from this coding process to advance the goals of my dissertation.

Before describing the nature of state RPS policymaking, it is helpful to define terminology that features prominently in this chapter and in the broader dissertation. I begin with the concept of a *policy feature*. A policy feature is the most basic unit of policy choice and describes in granular detail how a government plans to achieve a programmatic goal in some issue area. Suppose that a state government wants to ensure the cleanliness of waterways and plans to monitor activity from businesses and punish those businesses that are considered to be polluting the waterways. A policy feature

allows the state government to operationalize its programmatic goal (cleaning the waterways) and describes how, in specific and granular terms, the state government plans to achieve its programmatic goal. Actual policy features in this hypothetical example may include how the state government defines cleanliness of the waterways, what businesses will be inspected, how often businesses will be inspected, and how businesses will be punished for polluting the waterways. Policy features give specificity to the state government's programmatic goal and provide the analyst with concrete ways in which the government plans to accomplish its programmatic goal.

A *policy regime* is simply the set of all policy features that a government adopts in order to meet its programmatic goal. In the example from above, a policy regime is the set of all policy features that a state government has adopted to ensure the cleanliness of its waterways: this means that a state's policy regime for ensuring clean waterways is the sum of the four hypothetical policy features that the state adopted in the previous paragraph. A state government adopts a policy regime when it initially adopts any set of policy features that are designed to meet the state's programmatic goal. However, the state government can change its policy regime over time by adopting new policy features. Two states have identical policy regimes if they have each adopted the same exact set of policy features as one another; if not, then the states have different policy regimes from one another.

A *policy domain* is simply the entire set of policy features that have been adopted across all governments (in the case of this dissertation, "all governments" refers to the governments of the fifty states) that share the same programmatic goal. In the clean waterways example, the policy domain of ensuring clean waterways would consist of the

set of all policy features that have adopted by the fifty state governments in order to maintain cleanliness and prevent pollution in waterways. In this dissertation, I investigate state governmental policymaking in the RPS policy domain and define innovation and emulation by comparing the policy adoption behavior of the states at the level of the policy feature.

2.2 The Renewables Portfolio Standard Policy Domain

Renewables portfolio standards, or RPS, refer to a set of policy features that state governments use to encourage and in some cases mandate electric utility companies to utilize renewable sources of energy (Rabe 2006). Electric utility companies typically deliver electricity from producers to end-use consumers[16], and RPS regimes promote renewable energy use by placing the onus on electric utility companies to supply their consumers with electricity derived from renewable raw materials. RPS regimes have emerged as the preferred tool that state policymakers use in trying to spur renewable energy consumption: an RPS regime is more viable politically than are policy instruments that impose direct and observable costs on end-use energy consumers (a fossil fuel tax is an example of a policy instrument that imposes a direct and observable cost on end-use energy consumers) because the RPS regime not only shields end-use energy consumers from direct costs but imposes direct costs on actors—electric utility companies—with

[16] Some electric utility companies produce *and* deliver electricity to end-use consumers. However, all electric utility companies deliver electricity to end-use consumers. An end-use consumer is defined as any electricity consumer who sits at the very end of an electricity supply chain and uses electricity but does *not* distribute electricity to other users. The vast majority of electricity consumers are end-use consumers (Besley and Coate 2003).

whom the majority of end-use consumers have an adversarial relationship (Besley and Coate 2003; Holland, Hughes, and Knittel 2009).

RPS regimes are also viable politically because they are not purely associated (in the eyes of the public and some policymakers) with climate change (Rabe 2004, 2006). Other policy instruments that promote renewable energy use, like fossil fuel taxes or cap and trade systems, have directly been labeled as anti-climate change policies and face opposition from climate change skeptics; RPS regimes, on the other hand, have been lauded as an effective way to reduce dependence on foreign petroleum while creating jobs and have even won support from policymakers in several politically conservative states where the domestic fossil fuel industry represents an important constituency (Rabe 2004, 2006).[17]

The states have adopted RPS regimes with negligible federal influence, as the federal government has not provided financial or rule-based incentives or advice to the states on whether the states should adopt RPS regimes or how the states should craft their RPS regimes. The states have also crafted their RPS regimes in diverse ways and policymakers in many states have innovated by adopting RPS policy features that have not previously been adopted in any state while other policymakers have emulated by adopting RPS policy features that have already been adopted in other states. The combination of negligible federal influence plus the diversity across the states with respect to the design of RPS regimes makes the RPS policy domain superb for evaluating *when* state policymakers choose to innovate or emulate given the absence of direct federal influence on state governments. And although I cannot determine how changes in

[17] Oklahoma, Texas, and West Virginia all have strong fossil fuel industries *and* RPS regimes.

centralization affect the innovation and emulation choices of state policymakers, as I do not observe variation in centralization in the RPS policy domain, I can use the RPS policy domain to identify when state policymakers choose to innovate or emulate under the baseline condition of devolution. Moreover, in future work, I can potentially evaluate how direct federal influence on state governments changes the innovation and emulation behavior of state policymakers.[18]

An RPS regime consists of a set of policy features that dictate how an electric utility company should provide renewable energy-derived electricity to consumers. Each state RPS regime typically includes six groups of policy features that specify how an electric utility company should provide renewable energy-derived electricity to consumers: (1) policy features belonging to the first group specify the exact energy sources that are considered to be "renewable" (such as *hydroelectric* or *wind*) for the purposes of meeting the requirements of an RPS; (2) policy features belonging to the second group deal with the type of standard that a state may impose on electric utility companies to meet the state's RPS: most states require that electric utility companies procure some percentage of electricity sold to retail consumers from renewable sources—this is called a *percentage of retail* standard—while other states require that electric utility companies procure some percentage of electricity consumed (regardless of whether that electricity is sold or not) from renewable sources—this is called a *percentage of consumption* standard.

(3) Policy features belonging to the third group deal with the exact amount of electricity that a state may require electric utility companies to procure from renewable

[18] Given the high probability of future federal involvement in the RPS policy domain.

energy sources: California, for example, requires that *33%* of the electricity sold to consumers be procured from renewable sources while Michigan requires that *10%* of the electricity sold to consumers be procured from renewable sources.[19] (4) Policy features belonging to the fourth group deal with whether a state requires that electric utility companies must utilize a specific renewable resource to meet part of their RPS obligations: New Hampshire, for example, requires that electric utility companies operating in that state must meet part of their RPS obligations by procuring electricity from *biomass* sources.[20] (5) Policy features belonging to the fifth group deal with whether a state allows for electric utility companies to trade credits with one another in order to meet RPS obligations: some states permit electric utility companies to purchase credits in lieu of procuring electricity from renewable sources while other states do not allow for credit trading by electric utility companies. (6) Policy features belonging to the sixth group deal with whether a state *requires* electric utility companies to participate in an RPS regime: while some states require electric utility companies to meet RPS obligations, other states allow electric utility companies to *voluntarily* choose whether to participate in RPS regimes. I display the full list of policy features utilized in this project in the appendix of the dissertation.[21]

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[19] Here, the policy features identified by DSIRE would be 33% and 10% respectively. I *do not* include policy features associated with actual amounts in this project and discuss my justification for doing so later in this chapter.

[20] Policy features that require electric utility companies to meet part of their RPS requirements from specific renewable sources are called "technology minimums" in the renewable policy community.

[21] DSIRE places policy features into six groups in order to make categorization of policy features easier. However, it is the policy feature (and not one of the six groups of policy features) that is both the basic policy unit identified by DSIRE and the basic policy unit analyzed in this study. I discuss the merits of using the policy feature as the basic unit of analysis later in this chapter.

It hopefully is clear from the above discussion that it is the adoption of policy features that makes a state RPS regime operable. States choose different policy features, and it is the sum of a given state's policy feature adoption choices that give that state's RPS regime its character. Michigan's RPS regime, for example, consists of policy features from five of the six groups delineated above: (1) Michigan adopted policy features defining the sources that are considered to be "renewable" in its RPS regime (three such examples are *tidal energy*, *wind*, and *gasification*); (2) Michigan adopted a policy feature specifying the type of standard that is levied on electric utility companies operating in the state (*percentage of retail*); (3) Michigan adopted a policy feature specifying how much electricity (*10%*) electric utility companies should procure from renewable sources; (4) Michigan has *not* adopted policy features specifying that electric utility companies must meet part of their RPS obligations using specific renewable sources, meaning that Michigan's RPS regime has no technology minimums; (5) Michigan adopted a policy feature *allowing* for electric utility companies to meet their RPS obligations by trading credits; and (6) Michigan adopted a policy feature *requiring* electric utility companies operating in the state to participate in the state's RPS regime. Michigan's experience with mixing policy features together to create a comprehensive RPS regime is not atypical, and other states have also crafted their own RPS regimes through the selective adoption of policy features. In the next section, I discuss why the policy feature is a good candidate to use to distinguish innovation from emulation.

2.3 Using Policy Features to Distinguish Innovation from Emulation

The mix of individual policy features adopted by Michigan is what gives Michigan's RPS regime its character and allows us to differentiate Michigan's RPS regime from that of other states and account for the diversity of RPS policymaking within and across states. In fact, looking at state policymaking at the level of policy feature adoption gives the analyst a more accurate picture of the true uniqueness of a state's RPS regime compared to looking at state policymaking at the level of RPS regime adoption. Imagine that I compare the RPS regimes of Michigan and Ohio but ignore adoption at the level of policy features and only look at whether Michigan and Ohio established RPS regimes. The RPS regimes of the two states would appear identical even though they differ in terms of what sources are considered to be "renewable" and whether electric utility companies must satisfy technology minimums. Focusing on policy feature rather than policy regime adoption allows us to better discern the diversity of RPS policymaking within and across states.

Since focusing on policy feature adoption reveals the diversity and uniqueness of state policymaking more than focusing on policy regime adoption, it follows that tracing the innovative or emulative quality of policy features within a state's RPS regime allows us to better discern the innovative or emulative quality of a state's RPS regime compared to tracing innovation and emulation at the level of the state's RPS regime. Analyzing policy innovativeness at the level of policy features represents a divergence from existing literature (Walker 1969; Gray 1973; Berry and Berry 1990; and Boushey 2010), which has largely looked at the adoption of entire policy regimes rather than policy features. One prominent example of this existing approach comes from Berry and Berry (1990), who model innovation based on whether a state has or has not established a lottery

regime but ignore the adoption of various policy features that could distinguish one state's lottery regime from the lottery regime of another state.

While the extant literature's focus on adoption at the level of the entire policy regime rather than the policy feature is understandable, the choice to analyze entire policy regimes has affected how we in political science study policy innovation. Looking at the adoption of entire policy regimes rather than policy features may lead to misleading inferences about the innovative or emulative quality of a given state's RPS regime. If I only looked at the initial adoption of state RPS regimes (shown in table 1 in chapter 1) rather than the adoption of RPS policy features, I may conclude that later states emulated the policies of earlier states even in cases when the later states were actually big innovators and adopted several policy features that had not previously been adopted by other states.

The mistaken conclusion mentioned above can occur with respect to the RPS policy domain. If I only looked at the initial adoption of RPS regimes, I may conclude that West Virginia, the third to last state to even adopt an RPS regime, is a laggard that has emulated the policymaking choices of states that established their RPS regimes earlier. However, looking at the adoption of policy features reveals West Virginia to be a major innovator that has adopted many policy features, mainly related to the incorporation of coal and fossil fuel technologies within an RPS framework, that were not previously adopted by any state.

Focusing on the initial adoption of state RPS regimes rather than the adoption of RPS policy features also prevents us from identifying when states innovate by amending or modifying already established RPS regimes. Many states continue to add policy

features to their RPS regimes after these regimes have been established, and the added policy features can be prominent examples of both innovation and emulation: Nevada, for example, initially established its RPS regime in 1997 and adopted 8 policy features corresponding to 5 instances of innovation and 3 instances of emulation. In 2001, 2002, 2003, and 2007, however, Nevada amended its RPS regime and adopted 11 more policy features across that timespan corresponding to 3 instances of innovation and 8 instances of emulation. If I only looked at the initial adoption of Nevada's RPS regime, I would throw away important policy adoption activity that occurred in Nevada subsequent to the initial adoption of that state's RPS regime. Analyzing innovation and emulation at the level of policy features and tracing the adoption of policy features at both the time of an RPS regime's initial creation and the time of an RPS regime's modification allows us to better visualize the diversity of RPS policymaking within and across the states and also gives us a much more detailed picture of innovation and emulation within and across the states. The benefit of much greater detail about state policymaking activity justifies the use of the policy feature as the unit of analysis in this project.

2.4 Coding Policy Features as Innovation or Emulation

In this project, I define innovation and emulation at the level of policy features and now discuss how to identify innovation and emulation in the adopted policy features associated with state RPS regimes. While I utilize my coding process with respect to the policy domain of RPS, I emphasize that this process is extendable to policy domains besides RPS: the one caveat, however, is that the analyst must have knowledge about

what policy features are actually associated with a policy domain.[22] In this project, I utilize policy features that have already been identified by analysts at DSIRE. Analysts at DSIRE work in collaboration with the U.S. Department of Energy and state governments (like North Carolina legislature) and have detailed expertise about the RPS policy domain: this detailed expertise is important insofar as it adds to the overall trustworthiness of the DSIRE database and gives us confidence that analysts at DSIRE have correctly identified the policy features associated with the RPS policy domain. My use of policy features already identified by DSIRE consequently represents a robustness check against the possibility of incorrectly identifying policy features associated with the RPS policy domain. While every policy domain may not have an organization like DSIRE that provides rich information about state policymaking within that particular policy domain, I reemphasize here that using my policy features approach requires the analyst to possess detailed knowledge about the specific policy features associated with a policy domain.

My coding strategy centers on two main assumptions. First, I assume that innovation and emulation are distinct and separable types of policy adoption available to policymakers. The distinction between innovation and emulation, I argue, boils down to whether a specific policy feature that is being adopted by state *i* has already been adopted by at least one other state *j*. If state *i* adopts a specific policy feature that has never been adopted by another state, then I claim that state *i*'s policymakers are innovating; if state *i* adopts a specific policy feature that has already been adopted by another state, then I

[22] This is to avoid the situation where a naïve analyst incorrectly identifies (or fails to identify) the policy features that are associated with a policy domain and then mistakenly inflates (or deflates) the number of instances of policy feature adoption that occur in his or her dataset.

claim that state *i*'s policymakers are emulating. Innovation and emulation differ because emulation provides adopting policymakers with a visible track record while innovation does not. Emulating policymakers in state *i* in some sense know what to expect from adopting a policy feature that has already been adopted in state *j* because the policymakers in state *i* can observe what happened when state *j* adopted the same policy feature; innovating policymakers in state *i* know comparatively less about what to expect when adopting a novel policy feature because they do not have access to some other state's track record with that same policy feature. Following Volden, Ting, and Carpenter (2008) and Cai and Treisman (2009), I assume that the existence of a track record generally makes emulation less risky than innovation, and I use the idea that emulation offers adopting policymakers a visible track record while innovation does not to give emulation and innovation different empirical forms.[23]

Readers may take issue with the idea that innovation is so easily distinguishable from emulation and may believe that the distinction between innovation and emulation is more nuanced than I suggest here. I acknowledge this concern and argue that using qualitative methods to tease out innovation and emulation represents a fruitful direction for future research. However, I also argue, along with Volden, Ting, and Carpenter (2008), Cai and Treisman (2009), and Walker (1969), that innovation and emulation represent distinctly different choices from one another, and my assumption about the separability of innovation and emulation allows for social scientists to utilize quantitative analytical techniques to identify the determinants of innovation and emulation. The use of

[23] Although there may be certain instances when emulation is riskier than innovation, I follow the lead of Volden, Ting, and Carpenter (2008) and Cai and Treisman (2009) and assume that the existence of a track record *generally* makes emulation less risky than innovation.

quantitative techniques is useful insofar as it produces general findings based on the investigation of large sample sizes.

My second main assumption deals with how I empirically distinguish innovation from emulation: namely, I code the adoption of a specific policy feature as an example of innovation if state *i* adopts that same policy feature *before* any other state has adopted the same policy feature or if state *i* adopts that same policy feature *within* one year of the date when another state *j* innovated and became the first state to adopt that same policy feature; I code the adoption of a specific policy feature as an example of emulation, on the other hand, if state *i* adopts that policy feature at least one year *after* another state *j* already adopted that same policy feature.

Concrete examples of innovation and emulation help here. Including *wind* energy as a renewable source within a state's RPS regime is a common RPS policy feature that has been adopted across many states. In 1983, Iowa was the first state to adopt *wind* energy as an eligible renewable source within its RPS regime and consequently innovated because it adopted this policy feature. In 1997, Nevada established an RPS regime and included *wind* energy as an eligible renewable source within its RPS regime. Since Nevada included *wind* energy as an eligible renewable source thirteen years after Iowa did so, Nevada's adoption of this policy feature represents a case of emulation.

The passage of one year from the date of the first state's adoption of a specific policy feature distinguishes innovation from emulation and represents enough time for policymakers in an emulating state to at least observe the short-term effects of a specific policy feature's adoption in the original innovating state. I am not alone in believing that the passage of one year is sufficient to distinguish innovation from emulation: Volden,

Ting, and Carpenter (2009), Beck, Gleditsch, and Beardsley (2006), and Swank (2006) all argue that the passage of one year allows policymakers in state *i* to learn from the choices of policymakers in state *j*. However, I acknowledge the possibility that the passage of one year may not be enough time to generate the observable track record needed to distinguish innovation from emulation, and I suggest ways to remedy this issue in the dissertation.[24]

Another potential issue with my method of empirically separating innovation from emulation is that it—like earlier studies on innovation and diffusion including landmark work from Walker (1969); Gray (1973); Berry and Berry (1990); Volden (2006); and Boushey (2010)—relies too much on the passage of time to identify the act of emulation. It is possible, as pointed out in Shipan and Volden (2008) and Volden, Ting, and Carpenter (2009), that a later state may appear to be copying the action of an earlier state even though the later state is coincidentally and independently adopting the same policy feature. It is also possible (as also pointed out in Shipan and Volden 2008) that an innovating state *i* may copy the actions of another innovating (and influential) state *j* in order to look like state *j*.[25] While I acknowledge that using the passage of time

[24] The easiest remedy is to extend the definition of innovation to two years from the date of the first state's adoption of a specific policy feature. Results from my dissertation do not substantively change when I modify the definition of innovation in this manner.

[25] Shipan and Volden (2008) call this *imitation* and claim that it occurs when state *i* adopts a policy feature right after an influential leader state *j* adopted the same policy feature in hopes of looking like state *j*. In my RPS data, Massachusetts was the first state to adopt *landfill gas* energy as part of its RPS regime on November 25, 1997. Connecticut followed suit less than five months later on April 15, 1998. I code both policy feature adoptions as innovations because they lie within the passage of one year from the date of the first state's (Massachusetts) adoption of *landfill gas* energy as an eligible renewable source. Shipan and Volden (2008) may argue, however, that Connecticut is imitating a leader state (Massachusetts) in order to look like Massachusetts.

to separate innovation from emulation has its limits, I argue that my method still represents a useful way to distinguish innovation and emulation from one another. Even in the hypothetical case where a later state coincidentally adopts a policy feature that has already been adopted by earlier states, we cannot rule out that the later state's policymakers may have been indirectly influenced by the track record of the policy feature's adoption in the earlier states.[26] In the case where a second innovating state imitates the policy feature adoption of a leading innovating state, policymakers in the second state still undertake the risk of innovation insofar as they cannot use an existing track record to learn about the potential effects of adopting that specific policy feature.

Ultimately, I advance the policy adoption and diffusion literatures by devising a way to model innovation and emulation as separate outcomes. These separate outcomes can be analyzed using conventional statistical techniques to determine how various factors—political, economic, or otherwise—differentially affect the probabilities of innovation and emulation. I deliberately apply this process at the level of policy features rather than entire policy regimes since greater diversity in policymaking is found at the level of policy features.

An example of how looking at policy features more accurately captures the diversity of state policymaking compared to looking at policy regimes can be found in the RPS policy domain. In this domain, 37 states adopted RPS regimes during the timeframe analyzed in the study, meaning that there would be 37 cases of adoption (that would then be coded as innovation or emulation) if I used the RPS regime as the unit of analysis.

[26] The public in the later state may be aware of the track record of the policy feature and put pressure on policymakers to adopt the policy feature. Similarly, interest groups in the later state may be aware of the track record of the policy feature and put pressure on policymakers to adopt the policy feature.

However, there are 84 unique policy features within the RPS policy domain. Assuming that each of the 37 states with RPS regimes incorporated all 84 policy features within their own RPS regimes, there could potentially be 37*84 (or 3108) cases of adoption that are then coded as innovation or emulation.[27] The 3108 RPS policy feature adoption cases provide much greater diversity than looking at 37 cases of RPS regime adoption. Of course, not every state with an RPS regime adopted all 84 unique policy features, but there are still have 609 cases of policy feature adoption in this project's master dataset (these 609 cases correspond to 110 cases of innovation and 499 cases of emulation). These 609 cases of policy feature adoption provide much more diversity in state policymaking than could have been gleaned using 37 cases of RPS regime adoption.

I now discuss how I trace innovation and emulation in policy feature adoption using official state decision-making documentation. The first step is to gather the names of all unique policy features associated with a particular policy domain. This is a very important step, as the analyst's selection of policy features determines the number of adoption (and consequently, innovation and emulation) choices that are available to policymakers across the states. In order to make sure that I was using correctly identified and unique policy features, I gathered the names of the policy features evaluated in this study from RPS policy experts at DSIRE.

The policy experts at DSIRE identified the policy features and provide (on their website)[28] the names of the policy features that they identified: examples of actual policy

[27] This did not happen but I discuss it for demonstrative purposes.
[28] The address for this website is http://www.dsireusa.org. The website (prior to its redesign in early 2015) had a webpage devoted to each state that had adopted an RPS regime. Within each state-specific RPS webpage, policy experts at DSIRE listed the names of all policy features that had been adopted by the state in question. I compiled the

features include when a state includes *hydroelectric* energy as an eligible renewable source within its RPS regime, when a state includes *wind* energy as an eligible renewable source within its RPS regime, when a state includes *coal mine methane* as an eligible renewable source within its RPS regime, when a state specifies that electric utility companies meet RPS obligations by procuring a *percentage of retail* electricity from renewable sources, and when a state allows for electric utility companies to meet RPS obligations by *trading credits*. An analyst desiring to apply this step to a different policy domain could do so by gathering the names of the policy features associated with that policy domain.

The next step is to identify whether a state has adopted each of the policy features whose names were gathered in the previous step. My goal is to code innovation and emulation at the level of policy features and since innovation and emulation are distinct types of adoption, I must first identify whether a state adopted a particular policy feature. In this project, the policy experts at DSIRE also identified whether a state adopted a particular policy feature and provide this information in the same area—the state-specific RPS webpages within the DSIRE website—where they identify the names of policy features that have been adopted in the RPS policy domain. An analyst desiring to apply this step to a different policy domain will need to comb through state governmental documents to identify whether a state adopted a particular policy feature if he or she does not have access to data from an organization (such as DSIRE) that has already compiled this information.

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full list of policy features identified by the DSIRE experts by gathering the names of adopted policy features across each state-specific RPS webpage. The names of some policy feature adoptions are *repeated* across different states, and it is this repetition or the lack thereof that becomes the basis for distinguishing innovation from emulation.

The third step is to identify when a given state adopted a particular policy feature. Since innovation and emulation are differentiated from one another by the passage of time, it is crucial to know when a state adopted a particular policy feature so that I can code that state's policy feature adoption as an example of innovation or emulation. In this project, the policy experts at DSIRE did not identify when states adopted policy features but did (again, in the state-specific RPS webpages section of the DSIRE website) provide the names of government documents in which each state adopted RPS policy features or clarified rules pertaining to its RPS regime. I identify when a state adopts a particular policy feature by searching through the state government documents named by DSIRE and looking for the oldest government document in which a state explicitly mentions that a particular policy feature is included in that state's RPS regime. I then use the approval date of this oldest government document as the adoption date for the particular policy feature that is added to the state's RPS regime by that government document.[29]

Examples are helpful here. Maryland has an aggressive RPS regime, and experts at DSIRE have identified 15 government documents between 2004—the year in which Maryland established its RPS regime—and 2011—the most recent year for which the DSIRE experts have verified their RPS data as well as the final year included in this study—that pertain to Maryland's RPS regime. Experts at DSIRE have also identified several policy features associated with Maryland's RPS regime, and here I highlight four:

[29] The approval date of a government document depends on what type of governmental actor does the policymaking. The three actors that adopted RPS policy features were state legislatures, state public utilities commissions, and citizens using the ballot initiative process. For state legislatures, the date of approval was the date during which the final version of a bill passed both chambers of a legislature. For state public utilities commissions, the date of approval was the date during which commissioners approved the final version of a rule. For ballot initiative-driven legislation, the date of approval was the date during which voters approved the final version of a ballot proposition.

the adoptions of *wind*, *tidal*, *wave*, and *solar water heat* energy as eligible renewable sources within Maryland's RPS regime. Experts at DSIRE have not identified when Maryland adopted the four policy features, so I must search through the 15 government documents identified by DSIRE in chronological order and look for the oldest document in which Maryland explicitly mentions that each of the four policy features is included in its RPS regime. Maryland includes *wind*, *anaerobic decomposition*, and *wave* energy sources within its RPS regime with the passage of House Bill 1308 in 2004, and the text of the bill explicitly states that a "renewable source means one or more of the following types of energy sources" and includes "**wind**," "methane from the **anaerobic decomposition** of organic materials," and "**energy from waves**" among its listed eligible renewable sources (2004). Since Maryland established its RPS regime with House Bill 1308, I do not need to worry that the state adopted the *wind*, *anaerobic decomposition*, and *wave energy* policy features prior to the passage of House Bill 1308 and consequently claim that the date of House Bill 1308's passage (April 10, 2004) is the date during which Maryland adopted the *wind*, *anaerobic decomposition*, and *wave energy* policy features.

House Bill 1308 does not mention the fourth policy feature (*solar water heat*), so I must search in chronological order through Maryland's 14 other government documents to identify when Maryland explicitly included *solar water heat* as an eligible renewable source in its RPS regime. I find that Maryland included *solar water heat* as an eligible renewable source under its RPS regime with the passage of Senate Bill 717 in 2011. Senate Bill 717 explicitly states that "energy from a **solar water heating** system is eligible for inclusion in meeting the renewable energy portfolio standard" (2011): I

therefore claim that Maryland adopted the policy feature of *solar water heat* on the same day (April 5, 2011) that the Maryland legislature passed the final version of Senate Bill 717.

It is hopefully clear from the Maryland examples why I start with the oldest Maryland document and work in chronological order to the most recent Maryland document when I am determining when Maryland adopted its respective policy features. It is important to start with the oldest document in order to record the correct date during which a state adopted a particular policy feature. Many states (including Maryland) repeat the names of the policy features listed in older documents in newer documents in order to maintain consistency and reduce ambiguity in legislation and rulemaking. This means that Maryland repeats that *wind*, *anaerobic decomposition*, and *wave energy* are included as eligible renewable sources within its RPS regime in multiple documents between House Bill 1308 (2004) and Senate Bill 717 (2011). If I started with Senate Bill 717 instead of House Bill 1308, I may incorrectly conclude that Maryland adopted the policy features of *wind*, *anaerobic decomposition*, and *wave energy* in 2011 rather than 2004. Giving the wrong date to the adoption of a policy feature is a serious problem since the date of a policy feature's adoption is used to distinguish innovation from emulation.

I repeat the process described in the Maryland examples across every state with an RPS regime and identify when each state adopted each policy feature within its RPS regime.[30] This process is extendable to policy domains beyond RPS; however, the

[30] I search through 306 government documents to find out when the 37 states with RPS regimes adopted their own respective policy features. The list of government documents analyzed in this project is available in the general appendix of this dissertation.

challenge for the analyst is to locate government documents that pertain to the policy domains under investigation.[31]

The fourth and final step involves coding each policy feature adoption from each state as a case of innovation or emulation. In the previous step, I time-stamped each policy feature of every state, meaning that I now know when each state adopted a particular policy feature. Here, I look at the adoption of a particular policy feature across the set of states that have adopted that *same* policy feature, and I look at when each state in this set of states adopted that same policy feature in order to determine whether a state innovated or emulated when it adopted that particular policy feature.[32]

Examples are again useful here, and I return to Maryland's adoption of the policy features of including *wind*, *anaerobic digestion*, *wave energy*, and *solar water heat* within its RPS regime. The operative question to answer is how I should characterize each of Maryland's four policy feature adoptions: is each adoption an example of innovation or emulation?

I begin with Maryland's adoption of *wind* as an eligible renewable source within its RPS regime. Maryland adopted this policy feature in 2004 while Iowa included *wind* as an eligible renewable source within its RPS regime in 1983. Since Maryland adopted

[31] This "challenge" is predicated on the assumption that other policy domains do not have organizations like DSIRE that have already identified the names of government documents pertaining to those policy domains An analyst could use keywords and search through libraries of government documents to find documents that pertain to a policy domain of interest.

[32] Recall the coding rule used here. A particular policy feature's adoption counts as an innovation if state *i* adopts the particular policy feature before any other state has adopted the same policy feature or within one year of state *j*'s adoption of the same policy feature if state *j* was the first state across all states to adopt the same policy feature. A particular policy feature's adoption counts as an emulation if state *i* adopts the same policy feature as state *j* but adopts this policy feature at least one year after state *j* has adopted it.

wind as an eligible renewable source over one year after the first state (Iowa) adopted *wind* as an eligible renewable source, Maryland's adoption of *wind* as an eligible renewable source counts as an example of emulation. I can also work through Maryland's adoption of *anaerobic digestion*, *wave energy*, and *solar water heat*. Maryland adopted *anaerobic digestion* in 2004 while Massachusetts was the first state to adopt *anaerobic digestion* in 2002; since Maryland's adoption occurred more than one year after the adoption by Massachusetts, Maryland's adoption of *anaerobic digestion* counts as a case of emulation. Maryland also emulated with respect to *wave energy*, since it adopted this policy feature more than six years after Massachusetts became the first state to include *wave energy* as an eligible renewable source within its RPS regime. Finally, Maryland emulated with respect to *solar water heat* since it adopted this policy feature in 2004 while Texas first adopted *solar water heat* in 1999.[33]

I repeat the coding process described in the aforementioned Maryland examples for each case of policy feature adoption[34] for every state that has an RPS regime and

[33] The adoptions of *wind* by Iowa, of *anaerobic digestion* and *wave energy* by Massachusetts, and of *solar water heat* by Texas all represent cases of innovation since in all of these cases, policymakers in the adopting states adopted a particular policy feature before any other state had adopted that same policy feature or within one year of the first state's adoption of that same policy feature.

[34] I would like to emphasize that in this project, I use all policy features identified by DSIRE experts *except* for those policy features that correspond to the actual amount of electricity that electric utility companies must procure from renewable sources (concrete examples include Michigan's policy feature stipulating that electric utility companies procure *10%* of electricity sold to consumers from renewable sources and Maryland's policy feature stipulating that electric utility companies procure *20%* of electricity sold to consumers from renewable sources). I do not include policy features dealing with standard amounts because it is difficult to see how one standard amount may be a case of innovation while other standard amounts may be cases of emulation even though the standard amounts in all of the cases are virtually the same. Suppose that four states had standard amounts of 10% and that a fifth state developed a new standard amount of 10.1%. Assume that the fifth state is the only state to have adopted the 10.1% standard

thereby create a master dataset that documents innovation and emulation at the level of RPS policy features across all states that have established RPS regimes. My coding process is agnostic to the type of governmental actor that adopts a particular policy feature. This is to say that a policy feature's adoption registers as an innovation or emulation *regardless* of the type of actor adopting the policy feature: in short, a legislature can emulate a regulatory agency and vice versa. My RPS policy feature master dataset includes examples where legislatures and public utilities commissions innovate and also includes examples where legislatures, public utilities commissions, and citizens (operating through the ballot initiative process) emulate.

I make my coding process agnostic to the type of governmental actor adopting policy in order to reflect the possibilities that different kinds of governmental actors can take on the risk of innovating; and that (2) legislatures, public utilities commissions, and citizens can observe and learn from the policy choices made by other governmental actors.[35] This coding process is again extendable to policy domains besides RPS and can potentially bring insights about the determinants of innovation and emulation in social, education, and welfare policy among other policy domains.

2.5 How I Utilize My Coding Process in this Dissertation

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amount. Since the fifth state adopted the 10.1% standard amount before any other state has done so (and is actually the only state to have adopted the 10.1% standard amount), the fifth state gets coded as an innovator. However, it is difficult to see how the fifth state's adoption of the 10.1% standard amount represents a stark departure from the more widespread standard amount of 10%. Although I could utilize my coding method with standard amounts, I choose not to do this and only analyze policy features (like what sources to include as eligible sources in an RPS regime, or whether to allow utilities to trade credits) that represent unique and qualitatively distinct choices from one another.

[35] This is a departure from the work of Walker (1969), who only looked at innovation among legislators and ignored the role that regulatory agencies play in policy innovation.

Here, I take my master dataset of innovation and emulation in RPS policy feature adoptions and use the master dataset as my point of departure for answering theoretically important questions about the conditions under which state governments innovate or emulate. In chapter 3, I extract legislative instances of innovation and emulation from the master dataset and use event history analysis to evaluate how variation in legislative professionalism and electoral vulnerability affect the innovation and emulation activity of state legislatures. Chapter 3 represents a novel attempt to use the richness and granularity of policy feature adoption data combined with the empirical and theoretical differentiation of innovation and emulation to explore why legislatures choose a riskier form of policy adoption (Bednar 2007; Volden, Ting, and Carpenter 2008; and Cai and Treisman 2009).

In chapter 4, I extract regulatory instances of innovation and emulation from the master dataset and use event history analysis to evaluate whether elected public utilities commissioners are more likely to innovate than are appointed public utilities commissioners. Chapter 4 represents a novel attempt to evaluate how regulatory agencies approach decisions to innovate or emulate and is also novel in terms of how it evaluates how a major institutional cleavage, whether public utilities commissioners are elected or appointed, affects the innovation and emulation activity of regulatory agencies.

In chapters 3 and 4, I do not account for the possibility that unmeasured aspects of a legislature's decision to delegate policy authority to regulatory agencies could decrease legislative adoption, increase regulatory adoption, and otherwise affect legislative *and*

regulatory innovation and emulation activity.[36] It is possible that a legislature in a particular state could simply allow a regulatory agency in that same state to adopt policy because the regulatory agency has a history of being an active and influential policymaker, and this possibility if true would probably affect estimates about legislative and regulatory innovation and emulation activity. A major goal of this project moving forward is to understand how the interplay of legislative and regulatory actors within the same state could affect the innovation and emulation behavior of legislatures and regulatory agencies.

In chapter 5, I extract legislative instances of innovation and emulation from the master dataset and use these extractions to evaluate when individual legislators embrace higher or lower risk when cosponsoring policy features. This chapter applies the innovation and emulation distinction to a legislative action—cosponsorship—that has not been studied using this distinction. However, my dataset on cosponsorship only includes observations from adopted policy features and does not include non-cosponsorship. Another goal of this project moving forward is to use the same coding process employed in this project to gather data on the cosponsorship of unadopted policy features. I will augment data on the cosponsorship of unadopted policy features with data on non-cosponsorship in order to get a better idea about the determinants of innovation and emulation in policy feature cosponsorship.

[36] I did not find evidence (save for the states of Arizona, New York, and Wisconsin after 2011) of legislatures formally authorizing public utilities commissions to manage all aspects of a state's RPS regime. Uncovering new ways in which a legislature and regulatory agency of the same state may influence the choices of one another is a fruitful avenue for future work.

Finally, in chapter 6, I discuss a potential opportunity for future analysis that utilizes the coding process developed in this project. In this project, I evaluate state governmental innovation and emulation at one level of direct federal influence on state governments: a negligible level of direct federal influence. While this analysis is useful in order to determine why state governments would innovate or emulate absent direct federal influence, it does not help evaluate how changes in the amount of federal influence exerted on state governmental officials affect the innovation and emulation behavior of those state governmental officials. I plan on using my coding process in an area where there is variation in federal influence on state governmental officials in order to determine how federal influence affects state governmental innovation and emulation.

The procedure that I have laid out in this chapter advances the field of policy adoption and diffusion in three ways. First, I identify a way to separate innovation from emulation and make them distinct outcomes that can be analyzed using the tools of quantitative social science. Although a number of scholars, including Walker (1969), Gray (1973), Boushey (2010), and Boehmke and Skinner (2012), have analyzed the determinants of policy innovativeness in the American states and also described innovation and emulation as representing distinct choices, none of these scholars devised a method of disentangling innovation from emulation and analyzed two outcomes as a single continuous outcome. My method of separating innovation from emulation allows analysts to determine how exogenous factors may differentially influence these two related but distinct types of policy adoption.

Second, the method that I develop here unites work on policy adoption with work on the diffusion, or spread, of policy. Early scholarship on policy innovativeness (Walker

1969 is a preeminent example) sought to identify unit-specific and non-spatial determinants of innovation in state policymaking (Franzese and Hays 2010). However, pioneering work by Berry and Berry (1990) linking the use of event history analysis to the study of diffusion ushered in a wave of research (Mintrom 1997; Volden 2006; and Pacheco 2012 are examples) where the focus of scholarship was no longer on unit-specific determinants of state policy innovativeness but rather directed toward the spatial determinants of the spread of policy across states. My method, which directly models the innovation and emulation distinction within the event history framework that largely made the switch to the study of diffusion possible, could allow for analysts to simultaneously study policy innovativeness and diffusion.

Third, my focus on the policy feature as the unit of adoption introduces a richness and granularity to the study of policy adoption and diffusion that is difficult to reproduce when employing the policy regime as the unit of adoption. The use of the policy feature as the unit of analysis opens up opportunities for the study of adoption by allowing scholars to incorporate greater diversity in state policymaking into their datasets of interest.

CHAPTER 3

Professionalism, Reelection, and Legislative Policy Innovation in the American States

Abstract

Scholars and policymakers have long argued that devolution promotes policy innovation. Possessing local knowledge and responding to local concerns, state lawmakers in a devolutionary environment engineer innovative solutions that are tailored to local problems and make their states "laboratories" of innovation. However, recent formal work in political science suggests that state lawmakers in a devolutionary environment may emulate (or copy policy) rather than innovate, as these lawmakers may face resource limitations and not want to endanger reelection prospects by innovating. Here, I leverage an original dataset from a developed policy area—renewable energy portfolio policy between 1983 and 2011—to empirically examine how variation in legislative professionalism and electoral vulnerability affects whether state-level lawmakers innovate or emulate. Modeling innovation and emulation as distinct and alternate choices and using multiple statistical analyses, I find that lawmakers are more likely to prefer emulation to innovation given increases in legislative professionalism or electoral vulnerability. The results challenge the view that state lawmakers naturally innovate given devolution and suggest that some federalization or subsidization of risk may be necessary to spur innovation by state lawmakers.

3.1 Introduction

The idea that devolution fosters innovative policy outcomes has a long history within political science as well as the broader policymaking community. Justice Brandeis, for example, mentioned (that) "a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country" (*New State Ice Company v. Liebmann* 1932). Several decades later, politicians from both parties invoked the view that devolution increases innovation to "end welfare as we know it" and transform welfare into a decentralized program (quoted in Apple 1995). Political scientists have also corroborated this view and investigated the process of state policy innovation (Walker 1969).

The argument linking devolution to the view that the states are innovation laboratories is straightforward. Giving policy responsibility to the states takes policy responsibility away from one actor (the federal government) and distributes it among fifty actors. Lawmakers in each of the fifty states respond to fifty different median voters and craft policies that they hope will appeal to each of those median voters. The result is a diversity in policymaking that would arguably be diminished if policy responsibility were centralized in the hands of a federal actor. Indeed, a rich literature on the diffusion of innovations across the states (Gray 1973; Berry and Berry 1990; Mintrom 1997; Volden (2002b, 2006); Grossback, Nicholson-Crotty, and Peterson 2004; Boehmke and Witmer 2004; Berry and Baybeck 2005; Nicholson-Crotty 2009; and Pacheco 2012) lends credence to the belief that devolution fosters innovation.

However, there is also reason to believe that devolution may *not* unlock the innovation potential of the states. If we take Brandeis's discussion of "novel"

policymaking literally and define innovation as a state's adoption of a policy that has not been adopted before (meaning that it is "untested") in another state, then there are two potential impediments to innovation. One impediment, demonstrated in a formal piece by Kollman, Miller, and Page (2000), comes from the view that innovation is resource intensive: lawmakers must figure out how to turn untested proposals into effective policies, and this task is easier if lawmakers possess resources that they can utilize to research about prospective innovations. Lawmakers at the state-level may not possess such resources, meaning that innovation at the state-level may not be likely.

The second impediment comes from formal work by Rose-Ackerman (1980), Volden, Ting, and Carpenter (2008), and Cai and Treisman (2009), and reflects the idea that the risk-aversion of lawmakers may inhibit innovation. If we believe Mayhew (1974) and think that lawmakers prioritize and pursue reelection, then it is possible that electorally vulnerable lawmakers may refrain from innovating due to the concern that innovating is risky because policy candidates for innovation have not been tested in comparable settings: simply put, the risk of innovating scares away reelection-seeking lawmakers.

The possibility that state-level lawmakers refrain from innovating suggests that they may prefer emulation, or the copying of a policy that already exists in another state. A policy candidate for emulation in state *i* has already been tested in state *j*, meaning that lawmakers in state *i* can free-ride off of the experiences of lawmakers in state *j* and tell voters that they are replicating "successes" found in state *j* (Volden 2006; and Pacheco 2012). A low legislative resource capacity may increase the likelihood of emulation as lawmakers operating in low informational environments view free-riding as a more accessible alternative to innovation. And since devolution involves transferring policy

responsibility from a (better resourced) federal legislature to (less resourced) state legislatures, it may increase emulation. At the same time, reelection-seeking lawmakers may prefer emulation to innovation since they gain the benefits of policy experimentation without paying the costs. And since devolution increases the number of comparable sources to emulate, it may increase emulation.[37]

Formal contributions from Kollman, Miller, and Page (2000), Rose-Ackerman (1980), Volden, Ting, and Carpenter (2008), and Cai and Treisman (2009), highlight the possibility that devolution could foster copycatting and turn the states into laboratories of emulation and *not* innovation. This possibility has normative implications because it suggests that a major justification for devolution (the increased diversity and innovativeness of policymaking) may not actually transpire given devolution. In this chapter, I analyze the policy adoption behavior of state legislatures in a devolved policy area—the development of renewables portfolio standards (or RPS programs) specifying that electricity used within the states come from renewable sources—and empirically evaluate how state-level variation in legislative professionalism (a common proxy for legislative resource capacity in the state politics literature) and electoral vulnerability affects the innovation and emulation behavior of state legislatures. I look at state

[37] A major assumption in the policy adoption literature, which I follow here, is that lawmakers emulate choices that have been made in *comparable* or peer settings. This assumption reflects the idea that choices made in comparable units are more likely to be successful in unit *i* compared to choices made in dissimilar units. Therefore, while the federal government could ostensibly emulate the states and vice versa, I do not take up this matter here because the federal and state governments are *not* comparable units (they are exposed to problems of different scale and scope due to differences in jurisdictional responsibilities). An extension of this assumption is that a given state government has more potential peer units to emulate than the federal government. The federal government could ostensibly emulate Mexico or France, but the differences between the United States and France are assumed to be greater than the differences between Illinois and Indiana.

legislative behavior under devolution to get a picture of how state legislatures act given an absence of federal involvement: a hallmark of devolution is a drastic reduction or even lack of federal involvement in the state policymaking process through rulemaking and grant giving (Peterson 1995); the federal government left RPS program development in the hands of the states (Rabe 2006), suggesting that the RPS policy area serves as a good laboratory to explore state legislative behavior in the absence of federal incentives.

Here, I also depart from convention in the empirical state policy adoption literature and frame innovation and emulation as distinct choices that state legislatures can make when they are adopting policy. Reframing innovation and emulation as distinct choices allows us to see whether legislative professionalism and electoral vulnerability have differential effects on innovation and emulation behavior and also allows us to evaluate empirically whether high legislative professionalism increases (decreases) the likelihood of innovation (emulation) and high electoral vulnerability decreases (increases) the likelihood of innovation (emulation). Using multiple statistical estimation techniques, I find support for the claim that removing federal influence from the state policymaking process may inhibit the innovativeness of state legislatures. Although high electoral vulnerability does *not* appear to lower the likelihood of innovation, it does increase the likelihood of emulation, suggesting that lawmakers who believe that they are facing an electoral threat will want to copy existing policy rather than create novel solutions. Moreover, I find no evidence that high legislative professionalism increases the likelihood of innovation but find strong evidence that high legislative professionalism increases the likelihood of emulation: this result is attributable to the idea that highly professional legislatures may be using their resources to conduct wider and more

thorough searches of existing policy rather than creating novel solutions. Taken together, the results suggest that I, in future research, explore whether federal involvement in the state policymaking process may increases the innovativeness of state policymaking.

The chapter proceeds as follows. I first situate my definitions of innovation and emulation within the broader policy adoption literature and explain why I believe that these new definitions map on nicely to the idea that innovation and emulation represent qualitatively distinct choices to policymakers. I then list hypotheses specifying potential ways in which legislative professionalism and electoral vulnerability could differentially affect the innovation and emulation behavior of state legislatures operating under devolution. I next describe my empirical procedure and results. Finally, I recap findings and discuss implications of the study.

3.2 Making Innovation and Emulation Distinct Types of Policy Adoption

While policy adoption scholars have long recognized that adopting untested policy and copying existing policy represent different conceptual actions, they have refrained largely from modeling innovation and emulation as distinct policy adoption choices.[38] Walker (1969), for example, characterizes innovation as the adoption of "a

[38] Important exceptions are Volden (2006) and Shipan and Volden (2008). Volden (2006) analyzes state-level legislative and bureaucratic *emulation* in a policy area with substantial federal intervention (the Children's Health Insurance Program) but does not model *innovation* explicitly or analyze how state-level legislative professionalism and electoral vulnerability comparatively affect the likelihood of innovation and emulation under devolution (the object of this study). In their 2008 study on the adoption of municipal antismoking policies, Shipan and Volden describe *imitation* as the act of copying another unit's policies in order to look like that unit but do not investigate *innovation* as a separate choice. Unlike Shipan and Volden, I do not identify different kinds of emulation but rather compare emulation to innovation. I also assume, in line the policy adoption literature, that a chief benefit of emulating is that state *i* can learn from

program or policy, which is new to the states adopting it, no matter how old the program may be or how many other states have adopted it," implying that a state could be an innovator regardless of when (with respect to other states) it chooses to adopt policy (1969: 881). Gray (1973) uses the same definition of innovation and shows that a given policy diffuses across the states in a S-shaped pattern.[39] Boehmke and Skinner (2012) modify Walker's measure of innovativeness to distinguish non-adopters from late adopters but do not make innovation and emulation distinct. Other foundational work on policy adoption and diffusion, including Berry and Berry (1990) and Mintrom (1997), also utilizes Walker's conceptualization of innovation and does not frame innovation and emulation as separate choices.

The decision to define innovation based on novelty to state *i* rather than novelty across all states is understandable in light of the fact that novel advances in policymaking sometimes occur in enforcement and implementation rather than adoption. However, this definition does not acknowledge that untested policy adoptions are different from tested

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the experiences of state *j*: thus while state *i* may emulate state *j* in order to look like state *j*, it is also hoping to learn from state *j*.

[39] Walker (1969) and Gray (1973), to be fair, mention "early" and "late" adopters. Walker devises an "innovativeness score" for state *i* that equals the number of years between state *i*'s adoption of a policy and the first state's adoption of that same policy divided by the total number of years in which states have been adopting the policy (if Massachusetts adopts policy X ten years after the Iowa becomes the first state to adopt X and states have been adopting X for twenty years, Massachusetts receives a score of 0.5). However, the innovativeness score does not account for the possibility that a state (for example, Ohio) adopting X two years after Iowa adopted it may encounter a very different choice risk from Iowa because Ohio can learn from Iowa. Ohio may still appear to be "innovative" since states have been adopting X for twenty years, but Ohio is still able to learn from Iowa and may even find the recency of Iowa's experience to be especially informative! Making innovation and emulation distinct choices allows us to capture a scenario where Ohio learns from and values the recency of Iowa's experiences. Gray (1973) defines early adopters as the first ten states to adopt a law but this again does not account for the possibility that the fourth state to adopt a law could be learning from the experiences of the first state.

policy adoptions because the lack of a track record potentially makes the untested adoptions riskier than tested adoptions. By categorizing innovation and emulation as distinct choices, we can compare the effects of legislative professionalism and electoral vulnerability on innovation and emulation under devolution and thus explore empirically whether the concerns of Rose-Ackerman (1980), Volden, Ting, and Carpenter (2008), and Cai and Treisman (2009) are borne out.

Here and throughout the dissertation, I define innovation as the choice by policymakers to adopt a policy *before* any other state has adopted that same policy. Since it is possible that policymakers across multiple states could be deciding simultaneously whether to innovate with respect to the same policy, I also define innovation as the choice by policymakers in a given state to adopt a policy *within* one calendar year after another state became the first state to adopt that same policy.[40] I consider emulation to be the choice by policymakers in a given state to adopt a policy *at least* one calendar year after another state became the first state to adopt that same policy. Distinguishing innovation from emulation based on a one-year (from the date of first adoption) timespan is not arbitrary: the diffusion literature assumes that learning takes time, and one-year is commonly employed (see Beck, Gleditsch, and Beardsley 2006; Swank 2006; and Volden, Ting, and Carpenter 2008 for examples) to reflect the amount of time required for policymakers in state *i* to learn about decision-making in state *j*. Since the choice to emulate assumes that policymakers in state *i* free-ride (and learn) from the experiences of

[40] By way of example, suppose that Ohio is the first state to adopt a specific policy in May 2009 while Michigan adopts that same policy in June 2009. We cannot claim fairly that Ohio innovated while Michigan emulated because the two states were likely simultaneously deciding whether to adopt that same policy. Relaxing the definition of innovation to include adoptions within one calendar year of the first state's adoption gets around the simultaneous adoption problem.

policymakers in state *j*, using the standard temporal representation of learning (one-year) to distinguish innovation from emulation makes sense. We can now turn to investigating whether state-level variation in legislative professionalism and electoral vulnerability has different effects on innovation versus emulation in devolved policy settings.

3.3 Examining Legislative Innovation and Emulation under Devolution

Before I list hypotheses about how variation in legislative professionalism and electoral vulnerability affect the innovation and emulation choices of legislatures, it is useful to discuss why legislatures innovate or emulate in the first place. Innovation and emulation are types of policy adoption; therefore, a discussion of why legislatures choose to innovate or emulate must consider why legislatures adopt policy. The literature on policy adoption clearly states why a legislature adopts policy: because members of the legislature desire reelection (Mayhew 1974), they adopt policy that they believe voters demand in hopes of gaining electoral support from those voters. Many scholars (including Walker 1969; Berry and Berry 1990; and Pacheco 2012) have linked policy adoption to the reelection desires of members of a legislature, and I follow this assumption here.

Since a legislature adopts policy when its members believe that doing so will improve their reelection chances and does not adopt policy when its members believe that doing so will not improve their reelection chances, the question shifts to why a legislature chooses to innovate rather than emulate when it adopts policy. Voters expect that their legislative members will both adopt the policies that they (the voters) desire and also serve as competent policy adopters (Pitkin 1967; and Volden 2006), and voters will

electorally reward or punish legislative members based on their opinions about the members' performances with respect to policymaking (Fiorina 1981; Ashworth 2012; and Bartels 2014). Based on their motivation for reelection, legislative members also want to be seen as competent policy adopters, and one way to develop a reputation for competence is to avoid adopting policies that could create significant and unanticipated costs for voters (Arnold 1990).

Adopting policies that create significant and unanticipated costs for voters could harm the reelection prospects of legislative members if voters are cost minimizers (as Arnold 1990 suggests they are) and view the significant and unanticipated costs from policy adoption as evidence of policymaking incompetence on the part of legislative members (Ashworth 2012; and Bartels 2014). A hypothetical example from RPS policy illustrates how adopting a policy that creates significant and unanticipated costs for voters could jeopardize the electoral security of legislative members. Suppose that voters in Michigan want their representatives to lessen the state's dependence on foreign oil, and suppose that the Michigan legislature responds to the concerns of voters by requiring that electric utility companies procure 40% of the electricity sold to consumers from renewable sources. Now suppose that Michigan's electric utility companies see their profitability threatened by this new regulation and initiate large rate increases to maintain profitability. Although Michigan voters desired legislative action to foster energy independence, they may be unhappy with the costs—large rate increases—associated with the legislature's policy choice and may punish legislative members for perceived incompetence in policymaking.

Members of a legislature therefore want to avoid adopting policies that could potentially create significant and unanticipated costs for voters, and one way to avoid this situation is to *emulate* when adopting policy. Emulation reduces the uncertainty associated with adopting a policy because an emulating legislature in state *i* can utilize the track record of a policy's performance in other states to determine whether the policy will generate significant and unanticipated costs for voters upon that policy's adoption in state *i* (Volden 2006). However, emulation requires the legislature in state *i* to import a policy that was designed in the context of a different state and hope that the imported policy will be deemed a good fit and be well received by voters in state *i* upon adoption (Volden 2006). Innovation, on the other hand, allows for the legislature in state *i* to uniquely tailor an adopted policy to the specific context of state *i* and may receive more support from the state's voters than emulation since it does a better job of addressing their particularistic and specific concerns. The risk of innovation for members of the legislature, however, is that it carries greater uncertainty than emulation since legislative members cannot utilize an existing track record to determine whether an innovative policy will create significant and unanticipated costs for voters upon adoption.

The choice between innovation and emulation thus represents a tradeoff between adopting a policy that is uniquely tailored to the context of a specific state but that carries high uncertainty about whether the policy will generate significant and unanticipated costs upon adoption versus adopting a policy that is not uniquely tailored to the context of a specific state but that carries low uncertainty about whether the policy will generate significant and unanticipated costs upon adoption (Bednar 2007).

This situation described above arguably occurred in 1994, when Minnesota became the first state to mandate that electric utility companies must meet part of their RPS obligation by procuring electricity from biomass-derived energy when its legislature passed Senate File 1706. Although the measure had support from the state's agricultural and environmental communities, many advocated for a pared down RPS system that more closely followed Iowa's existing RPS program out of fear that Minnesota's electric utility companies would push for unpopular rate increases in response to the biomass requirement. Minnesota became a leader in the area of biomass-based renewables, although one could see how rate increases by electric utility companies could have derailed the 1994 effort.

In sum, a legislature that innovates may be able to uniquely fit a policy to its state-specific context but cannot utilize the existing track record of that policy's adoption to determine whether the policy will create significant and unanticipated costs upon adoption. A legislature that emulates may not be able to uniquely fit a policy to its state-specific context but can utilize the existing track record of that policy's adoption to determine whether the policy will create significant and unanticipated costs upon adoption. Increases in legislative professionalism may change the nature of the choice between innovation and emulation by providing legislatures with the research tools needed to better predict whether innovation will generate significant and unanticipated costs upon adoption. Increases in electoral vulnerability may also change the nature of the choice between innovation and emulation by making legislative members more apt to avoid adopting policies that carry high degrees of outcome uncertainty. I now show how

legislative professionalism and electoral vulnerability influence a legislature's likelihood to innovate and emulate.

I first analyze how variation in legislative professionalism affects the innovation and emulation behavior of state legislatures. Although they use a different definition of innovation from the one employed here, scholars such as Walker (1969) and Boushey (2010) argue that higher levels of legislative professionalism correspond with an increased likelihood of innovation.[41] According to Walker and others, higher levels of legislative professionalism raise the likelihood of innovation because highly professional legislatures can devote more resources (in terms of time, money, and staff) toward researching how "new" proposals can meet some area of voter demand.[42] Walker even claims, for example, that "the states which provide the most extensive staff and research facilities in their legislatures ought to pioneer in the adoption of new programs" (1969: 885).

The positive association found between legislative professionalism and innovation in Walker (1969) should persist when we use the more stringent definition of innovation developed in this paper. This is because the same resources—time, compensation, and staff size—that lower the cost to legislatures of researching how "new" proposals (where "new" equals Walker's definition) meet some area of voter demand *also* lower the cost to legislatures of researching how untested and novel ("new" in my parlance) proposals

[41] Recall that Walker (1969) defines innovation as the adoption of a policy that is "new" to the state adopting it while I define innovation as the adoption of a policy that is "new" (within one-year of the first state's adoption) across the states adopting it.
[42] A "voter," if we follow Brandeis's claim that a legislature in state *i* experiments with policy if "its citizens so choose" is assumed to be the median voter in state *i*. The literature also assumes that a legislature's choice occurs with the consent of the median legislator.

meet some area of voter demand. In fact, work that links devolution to potential decreases in innovation on the grounds that the federal government possesses more resources than state governments (e.g. Kollman, Miller, and Page 2000) assumes implicitly that increased professionalism in state government should correspond with greater state-level innovation. I therefore expect that higher levels of legislative professionalism correspond with an increased likelihood of innovation, or the adoption of untested policy, by state legislatures.

Legislative Professionalism Innovation Hypothesis: *Higher levels of legislative professionalism correspond to an increased likelihood of innovation by state legislatures.*

A state's level of legislative professionalism also potentially affects whether that state's legislature emulates when it adopts policy. It may appear as if legislative professionalism should relate negatively with emulation since less professional state legislatures face higher costs to researching about prospective policy proposals (by virtue of *not* possessing sufficient time, money, and staff resources) and therefore have an incentive to emulate and free-ride off of the experiences of other states.

This line of reasoning, however, is misleading because it assumes that more professional state legislatures do *not* benefit from free-riding off of the experiences of other states. More professional state legislatures arguably gain the same core benefit from free-riding that less professional state legislatures gain: the opportunity to learn from the lessons of other states and adopt policies that have the potential to replicate "successes" (Volden 2006) found elsewhere. Additionally, more professional state legislatures may have a greater capacity to learn from the experiences of other states compared to less professional peers. Highly professional legislatures can devote more resources toward

doing the sorts of activities—establishing fact-finding commissions and authorizing staff to interview colleagues in other states—that foster learning. This implies that highly professional legislatures can conduct wider and more thorough searches than can less professional legislatures, leading to the possibility that legislative professionalism increases the likelihood of emulation by increasing the ability of legislatures to identify and vet policies that are potentially considered to be worthy of emulating.[43]

The relationship between legislative professionalism and emulation does not end there: legislative professionalism may actually increase the likelihood of emulation *more* than it increases the likelihood of innovation. My explanation here centers on the relative ability of institutions within a professionalized legislature—think committees and subcommittees of well-compensated legislators, fact-finding commissions, and staff study groups—to gain information about the potential ramifications (with respect to meeting the demands of the median voter) of innovating versus emulating. The potential ramifications of an innovative proposal, by virtue of its untested nature, are hard to predict, meaning that committees and subcommittees, commissions, and staff study groups cannot give concrete information to the general legislature about how an innovation will affect constituents because these experts do not have a basis (either from their own experience or the experiences of other states) for evaluating how the innovation will affect constituents. Committees and subcommittees, commissions, and staff study groups possess a stronger basis for evaluating how an emulation will affect constituents

[43] It may seem strange that legislative professionalism hypothetically increases the likelihood of innovation *and* emulation given that innovation and emulation are assumed to be distinct types of policy adoption. Remember, however, that the hypotheses describe trends in state policy adoptions over time, suggesting that an increase in the likelihood of innovation does not necessarily imply a decrease in the likelihood of emulation and vice versa.

and can even give the general legislature concrete examples—what Volden (2006) terms "evidence of success"—of how adoption of the policy played out in peer states. To the degree that a highly professional legislature values and follows confident advice from its institutional intelligence-gathering mechanisms, it will tend to emulate rather than innovate when adopting policy.

Legislative Professionalism Emulation Hypothesis: *Higher levels of legislative professionalism correspond to an increased likelihood of emulation by state legislatures. Moreover, legislative professionalism increases the likelihood of emulation more than it increases the likelihood of innovation.*

We now explore the relationship between electoral vulnerability and the innovation and emulation behavior of state legislatures.[44] The extant policy adoption literature suggests two ways in which variation in electoral vulnerability differentially affects legislative innovation and emulation. One claim centers on the idea that lawmakers refrain from innovating when they face concerns about reelection, as the lawmakers do not want to jeopardize reelection chances by adopting policy that has not been tested before in a similar context. This claim suggests that a legislature experiences a decreased likelihood of innovating as the electoral vulnerability of members of that legislature increases.

Electoral Vulnerability Innovation Hypothesis: *As the electoral vulnerability of members of a legislature increases, that legislature experiences a decreased likelihood of innovating.*

[44] One may imagine that legislative professionalism and electoral vulnerability have interactive effects on innovation and emulation. A term that captures *Legislative Professionalism*Electoral Vulnerability* fails to achieve statistical significance in any of the model specifications used in the paper.

The second claim centers on the idea that lawmakers experience an increased likelihood of emulating when they face concerns about reelection. What makes emulation so alluring for lawmakers is that they not only signal to constituents that they are adopting policies that advance the constituents' demands but also offer empirical proof to constituents that desired policy solutions have worked in comparable settings (see Volden 2006 or Pacheco 2012). Electorally vulnerable lawmakers may place added emphasis on pursuing policies that have demonstrated and observable results, as these lawmakers may be trying to maintain credibility with potentially skeptical constituents. As the electoral vulnerability of members of a legislature increases, that legislature potentially experiences an increased likelihood of emulating.

Electoral Vulnerability Emulation Hypothesis: *As the electoral vulnerability of members of a legislature increases, that legislature experiences an increased likelihood of emulating.*

3.4 Empirical Strategy for Evaluating Hypotheses

I evaluate my hypotheses by investigating state legislative innovation and emulation choices with respect to RPS policymaking. A RPS consists of a set of policies that seek to encourage the consumption of renewable energy by specifying that utilities produce or supply electricity from renewable sources (Rabe 2006).[45] RPS serves as an excellent laboratory for examining the policy adoption activity of state legislatures under

[45] Specific RPS policies include what sources a state considers to be "renewable" (e.g. coal gasification, hydroelectric, and solar thermal electric, etc.), the type of standard (e.g. amount of retail electricity supplied, amount of generating capacity, etc.), and whether utilities can meet RPS requirements by trading renewable certificates, or "credits." I document the full list of RPS policies in the appendix of the dissertation.

devolution because the federal government has ignored RPS policymaking and left this matter to the states. In 1983, Iowa's legislature made Iowa the first state to adopt a set of RPS policies; between that year and 2011, the most recent year for which verifiable data are available, 36 other states have developed RPS programs.[46]

RPS also serves as a suitable laboratory for investigating *legislative* policy adoption because the vast majority of state RPS policies have been adopted through legislative means (Rabe 2006): of the 609 cases of state RPS policy adoption analyzed in this project, 496 (or 81.4%) occurred through legislative means while 87 (or 14.2%) occurred through public utility commission rulemaking and 26 (or 4.2%) occurred through the ballot initiative process. The dominance of the legislature as the preferred route of policy adoption continues if we decompose the cases of policy adoption into respective cases of innovation and emulation: of 110 total cases of innovation, 91 (or 82.7%) occurred through legislative means while 19 (17.2%) occurred through public utility commission rulemaking (there is no record of any state innovating through the ballot initiative process); with respect to emulation, 405 out of 499 (81.1%) of cases occurred through legislative means while 68 out of 499 (13.6%) of cases occurred through public utility commission rulemaking and 26 out of 499 (5.2%) of cases occurred through the ballot initiative process. The overwhelming preponderance of legislative cases of policy adoption is a virtue of the data, as we want to evaluate how variation in

[46] My primary source of data was the *Database of State Incentives for Renewables and Efficiency* (DSIRE), the preeminent source for information on state RPS policymaking. The chief policy analyst at DSIRE informed me through telephone correspondence that 2011 was the last year for which DSIRE had verified state RPS policy information. DSIRE is a collaborative endeavor of the United States Department of Energy, the Interstate Renewable Energy Council, and the North Carolina Solar Center.

the professionalism and electoral vulnerability of legislatures affects the innovation and emulation activity of those legislatures.

A huge component of this project's data processing design involves distinguishing innovation from emulation in each RPS policy adoption and then isolating those cases where legislatures did the innovating and emulating. I first identify cases of state RPS policy adoption irrespective of the actor—whether it was a legislature, a public utility commission, or citizens using the ballot initiative process—adopting the policy. I then classify a specific RPS policy adoption as an example of innovation if state *i* adopts the policy before any other state adopted the same policy, or if state *i* adopts the same policy within a year after state *j* became the first state to adopt that same policy.[47] I classify a specific RPS policy adoption as an example of emulation if state *i* adopts a policy at least one year after state *j* became the first state to adopt that same policy. *Legislative* innovation and emulation simply describe cases where a legislature did the innovating and emulating.

Deciphering innovation and emulation requires that we obtain information on what RPS policies each state adopted as well as when each state adopted those policies. I gathered information about whether a state adopted a particular RPS policy by consulting the *Database of State Incentives for Renewables and Efficiency*, or DSIRE. Analysts at DSIRE created a comprehensive list of state RPS policies and identified the exact RPS policies that each state adopted. Analysts at DSIRE also name the enabling documents (a legislative act, public utility commission decision, or ballot amendment) that correspond to each state's adoption of RPS policy. I organize the 306 enabling documents in

[47] Remember that I relax the definition of innovation to account for the possibility that states *i* and *j* may simultaneously be considering whether to adopt the same policy.

chronological order and then assign a date to when state *i* adopted each of its RPS policies. I then code a specific policy adoption as a case of innovation or emulation based on whether a state adopted that policy within (or outside) of the one-year threshold discussed earlier.

In the chapter, I investigate two outcomes of interest. ***Legislative Innovation*** is a binary variable capturing those instances of state legislative RPS policy adoption that meet this paper's definition of innovation while ***Legislative Emulation*** is a binary variable capturing those instances of state legislative RPS policy adoption that meet this paper's definition of emulation. I structure the dependent data according to the conventions of event history analysis (Box-Steffensmeier and Jones 1997, 2004): this means that the choice to adopt a specific RPS policy enters the risk set for all states during the same year in which state *i* becomes the first state to adopt (in other words, innovate) that policy.[48] Once the choice to adopt a policy enters a state's risk set, it remains in that state's risk set until that state adopts the policy and the choice exits the dataset.[49] In total, there are 35,381 legislative choice opportunities; innovation occurred

[48] *All* states experience the risk of adopting a policy during the same year in which a state became the first state to adopt that policy since multiple states may be simultaneously considering whether to adopt that policy.

[49] This chapter is about *legislative* innovation and emulation. But I reemphasize here that policy adoption choices enter and exit the dataset based on adoption decisions made by *all actors* within and across the states. The 1996 decision by Arizona's public utilities commission to innovate by classifying solar thermal process heat as an eligible RPS resource implies that Arizona's legislature (from 1996 onward) does *not* have the choice to add solar thermal process heat since the adoption by Arizona's public utility commission means that this choice has exited the risk set for Arizona's legislature. Arizona's 1996 innovation also implies that the opportunity to adopt solar thermal process heat as an eligible renewable resource enters the risk set of the legislatures of the 49 other states in 1996. This opportunity exits the risk set of any one of the 49 other state legislatures if a legislature, a public utility commission, or citizens (through ballot initiative) in a given state adopts solar thermal process heat as an eligible resource.

in 91 (or 0.25%) of these opportunities while emulation occurred in 405 (or 1.14%) of these opportunities. The low probability of policy adoption (1.40% of opportunities, or (496/35,381)*100) is rightly low, as a specific kind of policy adoption (RPS policymaking) is not an everyday occurrence. Furthermore, the probability of innovation is correctly lower than the probability of emulation, as the policy adoption literature indicates that innovation is both riskier and rarer than emulation.

There are three explanatory variables of interest in this chapter. The first, ***Legislative Professionalism***, captures state *i*'s legislature's level of professionalism in year *t*. I measure a state legislature's level of professionalism using Squire's (2007) index of state legislative professionalism. Squire's index is the preeminent measure of legislative professionalism available in the state politics literature and compares a given state legislature to Congress—the prototypical professional legislature—with respect to three factors: time demands of legislative service (session length), salary and benefits, and staff resources.[50] A positive and significant association between *Legislative Professionalism* and *Legislative Innovation* gives support for the Legislative Professionalism Innovation Hypothesis. The Legislative Professionalism Emulation Hypothesis receives support if *Legislative Professionalism* relates positively with *Legislative Emulation* and the magnitude of association between *Legislative Professionalism* and *Legislative Emulation* is greater than that between *Legislative Professionalism* and *Legislative Innovation*.

[50] Squire's professionalism measure is the sum of three individual comparisons that capture state *i*'s legislature's session length, salary, and staff resources as percentages of Congress' amount of these three items.

The second and third explanatory variables capture different characterizations of legislative electoral vulnerability. ***Legislative Election Year*** is a binary variable capturing whether an election is held for seats in state *i*'s legislature in year *t*. The assumption here is that electoral vulnerability of legislators increases during the year of a legislative election since voters arguably pay more attention to the actions of incumbents during election years compared to off-years. A negative and significant association between *Legislative Election Year* and *Legislative Innovation* gives support to the Electoral Vulnerability Innovation Hypothesis while a positive and significant association between *Legislative Election Year* and *Legislative Emulation* gives support to the Electoral Vulnerability Emulation Hypothesis.

The second electoral vulnerability variable, ***Incumbent Vote Share***, captures the median vote share value that was earned by an incumbent legislator running for reelection in state *i* in the most recent election before time *t*.[51] *Incumbent Vote Share* reflects the possibility that the decisions of state *i*'s legislators in time *t* could be influenced by the mood of voters toward state *i*'s legislative incumbents in time *t-1*: an anti-incumbent mood in time *t-1* may elicit the impression of vulnerability among legislators in time *t* and ultimately influence policy adoption activity. A positive and significant association between *Incumbent Vote Share* and *Legislative Innovation* gives support to the Electoral Vulnerability Innovation Hypothesis while a negative and

[51] State legislative election data comes from Klarner, Berry, Carsey, Jewell, Niemi, Powell, and Snyder. I thank Anthony Fowler for providing this data.

significant association between *Incumbent Vote Share* and *Legislative Emulation* gives support to the Electoral Vulnerability Emulation Hypothesis.[52]

I incorporate a battery of controls, which fall into four groups. The first group includes variables that could affect legislative professionalism and legislative policy adoption activity by potentially affecting the amount of resources that are available to legislators. ***Percentage of State Per Capita Income*** captures state *i*'s per capita income in year *t* as a percentage of U.S. per capita income in year *t* and accounts for the possibility that state wealth is the real driver of legislative professionalism and legislative innovation activity. ***Term Limits*** is binary and equals 1 if state *i* enacted legislative term limits by year *t* and 0 otherwise. *Term Limits* could reduce legislative professionalism (Kousser 2005) and reduce the likelihood of legislative innovation as a result of reduced professionalism; at the same time, *Term Limits* could increase the likelihood of legislative innovation by weakening the reelection concerns of legislators. ***Laws Enacted*** captures state *i*'s legislative workload in year *t* and could relate to legislative professionalism and legislative policy adoption activity, as legislators may require greater resources to meet citizen demand for new laws.[53] Finally, ***Prior Bureaucratic*** and ***Prior Initiative*** capture

[52] As I mention in footnote 44, a term that interacts *Legislative Professionalism*Electoral Vulnerability* (using *either* form of electoral vulnerability) fails to achieve statistical significance in any of the model specifications used in this paper. But it is also possible that the effect of one form of electoral vulnerability on the policy adoption outcomes depends on the value of the other form of electoral vulnerability (meaning that a better operationalization of electoral vulnerability interacts *Legislative Election Year* and *Incumbent Vote Share* instead of keeping these as separate additive variables). However, a term that interacts *Legislative Election Year* and *Incumbent Vote Share* fails to achieve statistical significance in any of the model specifications used in this chapter.

[53] *Laws Enacted* reports the total number of laws adopted by a legislature regardless of whether those laws were adopted in regular or special sessions. I report this value because a professional legislature may utilize its resources to research special session lawmaking as well as regular session lawmaking.

the fractions of previous instances of policy adoption in state *i* that occurred through public utility commission rulemaking or the passage of a citizen ballot initiative. Public utility commissioners and ordinary citizens may take a lead in crafting a state's renewable energy portfolio regime because that state's legislature lacks the professionalism to handle the task.

A second group of controls includes one variable, ***Unified Democratic Government***, captures the Democratic Party's dominance of state *i*'s government in year *t* and reflects the possibility that adoption of renewable energy portfolio policies by state *i*'s legislature is due to control by the Democratic Party, which is generally more favorable toward environmental regulation than is the Republican Party, rather than legislative professionalism or electoral vulnerability.

The next group of controls captures the role that energy interests could play in influencing the legislative adoption of renewable energy portfolio policies. ***Percentage of Coal Consumption***, ***Percentage of Natural Gas Consumption***, ***Percentage of Petroleum Consumption***, and ***Percentage of Renewable Consumption*** reflect the percentages of total energy consumption in state *i* in year *t* that come from coal, natural gas, petroleum, or "renewable" sources.[54] Increases in these variables could correspond with an increased likelihood of legislative policy adoption, as energy interests try to create protections to preserve retail markets. Three additional energy-related variables are ***Solar Average***, the average daily amount of solar radiation received in state *i* over year *t* (units are in

[54] The U.S. Energy Information Administration, which compiles energy pricing and consumption data, includes the following sources under its definition of "renewable" energy: hydroelectric, wood and waste, ethanol, ethanol co-products, geothermal, solar, photovoltaic, and wind-based power. Many individual states, of course, have included conventionally nonrenewable sources (for example, coal-based energy sources) in their own renewable portfolio programs.

kilowatt-hours per square meter per day); ***River Miles***, the total mileage for perennial rivers in state *i* (units are in thousands of miles); and ***Shoreline***, the total mileage of coastline for any state that borders an ocean, the Gulf of Mexico, or any of the Great Lakes (units are in thousands of statute miles). Higher values in these variables may correspond to an increased likelihood of legislative policy adoption, as firms argue that exploiting these resources produces economic growth. Finally, I include state *i*'s ***Change in the Rate of Unemployment*** from year *t-1* to year *t* and state *i*'s consumer ***Energy Price*** (in 2011 dollars per million BTUs) to account for the possibility that different sectoral interests in the energy industry could use increases in these variables to either advocate or oppose the adoption of RPS policies.

The last group of controls accounts for the possibility that intrinsic state-specific properties and/or influences from neighboring states drive legislative innovation and emulation activity. ***Prior Innovation*** is the total number of previous instances of innovation that occurred in state *i* divided by the total number of previous instances of innovation that occurred across all states. ***Prior Emulation*** is the total number of previous instances of emulation that occurred in state *i* divided by the total number of previous instances of emulation that occurred across all states. These variables capture the innate propensity of a state to favor a particular form of policy adoption. ***Neighbor Innovation*** and ***Neighbor Emulation*** measure the fractions of total previous instances of innovation and emulation that occurred in states adjacent to state *i* and capture the influence that innovation and emulation behavior in neighboring states have on legislative innovation and emulation activity in state *i*. ***Year Count*** reflects the possibility that the hazard of adopting a specific RPS policy increases as the temporal distance from

that policy's first adoption increases. I finally include a ***Logged Year*** variable in all specifications using *Legislative Emulation* as the dependent outcome to account for the role that time plays in influencing legislative emulation activity.[55] In table 2, I display descriptive statistics for the variables used throughout analyses in this chapter.

TABLE 2: Variable Descriptions and Summary Statistics

Variable	Type	Structure	Mean
Legislative Innovation	Dependent	Binary	0.26% of Observations = Innovation
Legislative Emulation	Dependent	Binary	1.15% of Observations = Emulation
Legislative Professionalism	Explanatory	Continuous	0.18
Legislative Election Year	Explanatory	Binary	54.79% of Observations = Non-Election Years
Incumbent Vote Share	Explanatory	Continuous	72.86
% Per Capita Income	Control	Continuous	95.90
Term Limits	Control	Binary	69.05% of Observations = States without Term Limits
Laws Enacted	Control	Continuous	384.08
Prior Bureaucratic	Control	Continuous	0.05
Prior Initiative	Control	Continuous	0.01
Unified Democratic Government	Control	Binary	22% of Observations = Democratically Unified Governments
% Coal Consumption	Control	Continuous	23.23
% Natural Gas Consumption	Control	Continuous	20.80
% Petroleum Consumption	Control	Continuous	35.82
% Renewable Consumption	Control	Continuous	8.82

[55] Although Beck, Katz, and Tucker (1998) suggest using year dummy variables to account for the influence of time in discrete event history data, I do not utilize this strategy here. Year dummies consume many degrees of freedom but also perfectly predict outcomes in the years during which no policy adoptions occur. This means that we cannot (as Beck, Katz, and Tucker recommend) conduct likelihood ratio tests between constrained (no time variable) and unconstrained (year dummies) models, as perfectly predicted observations are dropped. Here, I follow the advice of Box-Steffensmeier and Jones (2004) and use likelihood ratio tests to assess the fit of and choose among four competing ways to model the effect of time (no temporal trend, a linear year trend, a quadratic year trend, and a logged year trend) on innovation and emulation.

Variable	Type	Structure	Mean
Change in Unemployment Rate	Control	Continuous	0.24
Energy Price	Control	Continuous	17.15
Solar Average	Control	Continuous	3.96
River Miles	Control	Continuous	26.30
Shoreline	Control	Continuous	2.14
Prior Innovation	Control	Continuous	0.01
Prior Emulation	Control	Continuous	0.01
Neighbor Innovation	Control	Continuous	0.07
Neighbor Emulation	Control	Continuous	0.06
Year Count	Control	Continuous	5.65
Logged Year	Control	Continuous	3.02
Quadratic Year	Control	Continuous	526.37

I estimate three different model specifications in this chapter. In model 1, I evaluate the determinants of *Legislative Innovation* and *Legislative Emulation* using logistic regression. In model 2, I analyze the same outcomes but use bivariate probit regression. A bivariate probit specification allows for the error structures of *Legislative Innovation* and *Legislative Emulation* to be related to one another, and this is desirable since I define the outcomes to be distinct types of the same process (policy adoption). In model 3, I evaluate the determinants of *Legislative Innovation* and *Legislative Emulation* using logistic regression but change the structure of the event history dataset in two ways: first, the *choice* to emulate with respect to a specific policy only enters the dataset once an innovation has occurred with respect to that same policy; and second, the *choice* to innovate with respect to a specific policy exits the dataset one calendar year after the first instance of the innovative policy's adoption. I include model 3 to check the robustness of the event history data structure utilized in models 1 and 2; however, making the risk sets of innovation and emulation nearly disjoint creates the theoretically strange situation where innovation has a higher choice probability ((91/4227)*100 or 2.15%) than

emulation ((405/31151)*100 or 1.30%).[56] To reflect the idea that no two choices made by a legislature in the same state are independent, I cluster standard errors within state for all specifications.

3.5 Results

In table 3, I display results from statistical analysis for models 1 and 2. In table 4, which immediately follows table 3, I display empirical results associated with model 3.

TABLE 3: Results from Empirical Analysis for Models 1 and 2

Variable/Model	Logit (1)		Bivariate Probit (2)	
	Legislative Innovation	Legislative Emulation	Legislative Innovation	Legislative Emulation
Legislative Professionalism	2.245	5.546***	0.911	2.218***
	(1.875)	(2.004)	(0.672)	(0.737)
Legislative Election Year	-0.352	-0.305	-0.142	-0.143
	(0.480)	(0.362)	(0.176)	(0.142)
Incumbent Vote Share	-0.007	-0.023**	-0.003	-0.008**
	(0.013)	(0.009)	(0.003)	(0.003)
% Per Capita Income	0.031	0.017	0.011*	0.006
	(0.020)	(0.014)	(0.006)	(0.005)
Term Limits	0.373	-0.449	0.154	-0.188
	(0.548)	(0.442)	(0.197)	(0.163)
Laws Enacted	0.0005	0.001**	0.0001	0.0005**
	(0.0005)	(0.0005)	(0.0002)	(0.0002)
Prior Bureaucratic	-1.212	-1.460	-0.444	-0.671
	(1.533)	(1.967)	(0.475)	(0.697)
Prior Initiative	-0.312	-1.222	-0.168	-0.501**
	(1.201)	(0.807)	(0.394)	(0.257)
Unified Democratic Government	-0.039	0.161	-0.001	0.063
	(0.615)	(0.382)	(0.209)	(0.151)

[56] Results do not change substantively when I use rare events logistic regression (King and Zheng 2001). Results also do not change substantively when I use multinomial logistic regression. I do not utilize multinomial logistic regression as a main estimation technique due to the violation of the IIA assumption: this is discernible theoretically since specific RPS policy adoption choices (say, including solar thermal energy and photovoltaic energy as eligible renewable sources) may serve as substitutes for one another. This is also discernible empirically, as results from the Seemingly Unrelated Hausman Test and Small-Hsiao Test indicate the violation of IIA. Results are available in the appendix of this chapter.

Variable/Model	Logit (1)		Bivariate Probit (2)	
	Legislative Innovation	Legislative Emulation	Legislative Innovation	Legislative Emulation
% Coal Consumption	0.044	0.015	0.016*	0.006
	(0.026)	(0.016)	(0.009)	(0.006)
% Natural Gas Consumption	0.011	0.010	0.004	0.002
	(0.038)	(0.025)	(0.013)	(0.009)
% Petroleum Consumption	0.069***	0.059**	0.027***	0.025***
	(0.026)	(0.023)	(0.010)	(0.008)
% Renewable Consumption	0.021	0.0006	0.007	0.0002
	(0.032)	(0.030)	(0.011)	(0.010)
Change in Unemployment Rate	0.019	-0.019	-0.0003	-0.018
	(0.263)	(0.159)	(0.084)	(0.057)
Energy Price	-0.015	-0.050	-0.005	-0.030
	(0.066)	(0.086)	(0.022)	(0.030)
Solar Average	-0.447	-0.178	-0.159	-0.081
	(0.412)	(0.247)	(0.128)	(0.090)
River Miles	0.001	-0.008	0.0005	-0.002
	(0.018)	(0.017)	(0.006)	(0.006)
Shoreline	-0.183	-0.311**	-0.071	-0.124**
	(0.127)	(0.127)	(0.044)	(0.049)
Prior Innovation	0.327	-13.121	0.151	-3.946
	(4.420)	(10.281)	(1.096)	(3.271)
Prior Emulation	-18.180	-36.457	-6.440	-10.903
	(15.037)	(28.933)	(4.318)	(7.024)
Neighbor Innovation	0.920	-0.517	0.362	0.109
	(1.898)	(2.557)	(0.659)	(0.658)
Neighbor Emulation	0.951	0.939	0.441	0.257
	(2.451)	(2.718)	(0.849)	(0.799)
Year Count	-1.653***	0.128***	-0.617***	0.058***
	(0.293)	(0.006)	(0.080)	(0.002)
Logged Year/ Quadratic Year	-	3.545***	-	1.370***
		(1.042)		(0.375)
Observations	35332 (91)	35332 (405)	35332 (91)	35332 (405)
Wald X^2	393.59***	1787.99***	1.6 x 10^6***	
Rho	-	-	-0.883***	

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 4: Results from Empirical Analysis for Model 3

Variable/Model	Logit (3)	
	Legislative Innovation	Legislative Emulation
Legislative Professionalism	2.496	5.497***
	(1.698)	(2.009)
Legislative Election Year	-0.443	-0.294
	(0.461)	(0.359)
Incumbent Vote Share	-0.008	-0.022**
	(0.013)	(0.009)
% Per Capita Income	0.031	0.017
	(0.022)	(0.015)
Term Limits	0.327	-0.497
	(0.551)	(0.440)
Laws Enacted	0.0006	0.001**
	(0.0005)	(0.0005)
Prior Bureaucratic	-1.347	-1.442
	(1.621)	(1.985)
Prior Initiative	-0.372	-1.251
	(1.204)	(0.810)
Unified Democratic Government	-0.032	0.147
	(0.620)	(0.381)
% Coal Consumption	0.044	0.016
	(0.027)	(0.016)
% Natural Gas Consumption	0.012	0.010
	(0.040)	(0.025)
% Petroleum Consumption	0.075**	0.059**
	(0.031)	(0.023)
% Renewable Consumption	0.022	0.011
	(0.032)	(0.030)
Change in Unemployment Rate	-0.083	-0.017
	(0.285)	(0.152)
Energy Price	-0.043	-0.482
	(0.099)	(0.085)
Solar Average	-0.462	-0.175
	(0.442)	(0.244)
River Miles	0.001	-0.008
	(0.018)	(0.016)
Shoreline	-0.201	-0.310**
	(0.131)	(0.126)
Prior Innovation	0.331	-13.339
	(4.521)	(10.224)
Prior Emulation	-20.132	-36.844
	(15.785)	(29.011)
Neighbor Innovation	0.987	-0.575
	(1.988)	(2.582)

Variable/Model	Logit (3)	
Neighbor Emulation	0.840 (2.507)	0.984 (2.745)
Year Count	-1.499*** (0.440)	0.108*** (0.006)
Logged Year/ Quadratic Year	-	3.472*** (0.994)
Observations	8148 (91)	27184 (405)
Wald X2	243.86***	1058.38***

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

Empirical results lend support to some but not all hypothetical claims. *Legislative Professionalism* does not achieve statistical significance with respect to *Legislative Innovation* in any of the models, thereby casting doubt on the Legislative Professionalism Innovation Hypothesis. At the same time, however, *Legislative Professionalism* achieves strongly positive statistical significance with respect to *Legislative Emulation* in models 1, 2, and 3. Moreover, the size of the coefficient ascribed to *Legislative Professionalism* is consistently larger in the case of emulation as opposed to the case of innovation across all specifications. *Legislative Professionalism*'s larger coefficient size (not to mention its stronger statistical robustness) in the case of emulation suggests that the likelihood of emulating increases more sharply given higher levels of legislative professionalization than does the likelihood of innovating. A comparison of *Legislative Professionalism*'s differential relationship with innovation versus emulation offers strong support for the Legislative Professionalism Emulation Hypothesis. Free-riding is not limited solely to semi-professional legislatures; rather, professional legislatures also free-ride, and professional legislatures may even have a greater capacity to learn from free-riding insofar as they possess the resources to conduct meticulous and far-reaching investigations of existing policy and select candidates that appear to offer the best fit.

The finding linking higher legislative professionalism to a sharper increase in the probability of emulation compared to innovation suggests that giving legislatures more resources and an increased capacity for research does not make these legislatures more likely to embrace the higher risk of innovating and creating uniquely tailored policy compared to choosing the lower risk option of emulating and importing a potentially less well tailored policy from another state. One reason for this may be that increased legislative professionalism might not reduce the uncertainty associated with innovating in a way that is meaningful for legislative members compared to how increased legislative professionalism reveals the merits (albeit not uniquely tailored merits) of emulation. Future research will borrow from the framework of Bednar (2007) and identify other factors that might reduce or otherwise make less important the uncertainty associated with innovating and increase the likelihood of legislative innovation.

Results in tables 3 and 4 also shed light on how legislative electoral vulnerability relates to *Legislative Innovation* and *Legislative Emulation*. The non-significance of *Legislative Election Year* with respect to both outcome variables and across all model specifications suggests that legislative electoral vulnerability may not increase during years in which legislators are running for reelection.[57] The other electoral vulnerability variable, *Incumbent Vote Share*, relates negatively (though nonsignificantly) with *Legislative Innovation*, reducing support for the Electoral Vulnerability Innovation Hypothesis. *Incumbent Vote Share* relates negatively but also achieves significance with respect to *Legislative Emulation* across all model specifications used in the analysis,

[57] *Legislative Election Year* remains non-significant (and the paper's substantive findings remain unchanged) if we drop states whose legislatures do not convene during election years from the analysis. I show these results in the chapter's appendix.

thereby lending support to the Electoral Vulnerability Emulation Hypothesis. The negative association between *Incumbent Vote Share* and *Legislative Emulation* confirms research by Volden (2006) and Pacheco (2012) and suggests that electorally vulnerable lawmakers use policy adoptions to signal to voters that they will try to replicate successes found elsewhere. But the significance of *Incumbent Vote Share* with respect to *Legislative Emulation* combined with the non-significance of this variable with respect to *Legislative Innovation* gives some empirical heft to the concern noted by Rose-Ackerman (1980), Volden, Ting, and Carpenter (2008), and Cai and Treisman (2009) that the desire for reelection increases the attractiveness for lawmakers to free-ride.[58]

The finding linking increased electoral vulnerability to an increased likelihood of emulation suggests that legislative members are more willing to adopt potentially less well tailored but low uncertainty policies as their own electoral security diminishes. While I cannot conclude that increased electoral vulnerability diminishes the likelihood

[58] Here, *Term Limits* relates positively with innovation and negatively with emulation but does not achieve statistical significance. In chapter 5, where I analyze cosponsorship instead of adoption, term limits still relates positively with innovation and negatively with emulation but also achieves statistical significance. Term limit provisions increase the likelihood that a cosponsor innovates (provided, of course, that the cosponsor likes the innovation) by shortening the time horizons of the cosponsor and reducing the probability that the cosponsor will be subject to electoral damage if the innovation produces unanticipated and undesired effects. A cosponsor from a state without term limits, in contrast, may have longer time horizons and like an innovation but choose to emulate in order to reduce the possibility that unanticipated and undesired effects of innovation create voter backlash. Term limits, I argue, have a stronger effect on the behavior of individual cosponsors rather than collective legislatures (the units responsible for adopting policy) because legislative decision-making requires a *multitude* of legislators to support an innovative policy proposal and believe that their own short time horizons will protect them from electoral damage caused by unanticipated and undesired effects from the innovative policy proposal. And while it is easy for an individual legislator from a state with term limits to support an innovative policy proposal and believe that his or her short time horizons reduce the probability of electoral damage from the unanticipated and undesired effects of innovation, it is harder to see a majority of voting legislators from a state with term limits making that same conclusion.

that legislatures innovate (since there is not a statistically significant and negative relationship between *Median Incumbent Vote Share* and *Legislative Innovation*, the differential findings of *Median Incumbent Vote Share* with respect to *Legislative Emulation* and *Legislative Innovation* provide a direction for future research and suggest that other currently unmeasured dimensions of electoral vulnerability could affect the tradeoff between innovation and emulation.

Since I employ logistic regression here, coefficients do not represent effects. In figure 1, I show predicted probabilities of legislative innovation and legislative emulation on the y-axis for increasing and substantively relevant values of *Legislative Professionalism* on the x-axis.[59] The predicted probabilities in figure 1 come from estimation using the bivariate probit specification (model 2 in table 3). Additionally, while I vary *Legislative Professionalism* along the x-axis, I hold continuous independent and control variables fixed at their sample means. I also hold three binary variables—*Legislative Election Year*, *Term Limits*, and *Unified Democratic Government*—fixed at 0 since this is the most common value for these variables.

[59] The mean value for *Legislative Professionalism* is 0.18. The lowest plotted value for *Legislative Professionalism* is 0.027, which is the professional score ascribed to New Hampshire, the state with the least professional legislature. The largest plotted value for *Legislative Professionalism* is 0.416, which corresponds to a distance of two standard deviations from the mean value of this variable. *Legislative Professionalism* is a stable slow moving variable and ranges from 0.027 (New Hampshire) to 0.659 (New York).

FIGURE 1: Predicted Probabilities of Legislative Innovation and Legislative Emulation as Legislative Professionalism Increases

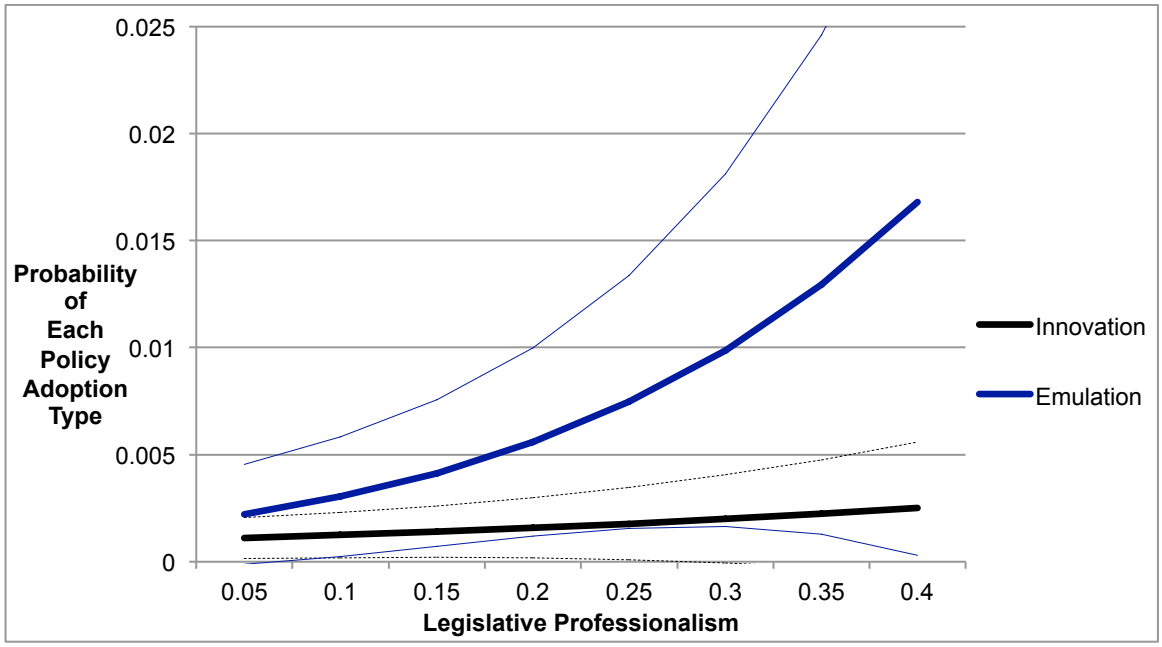


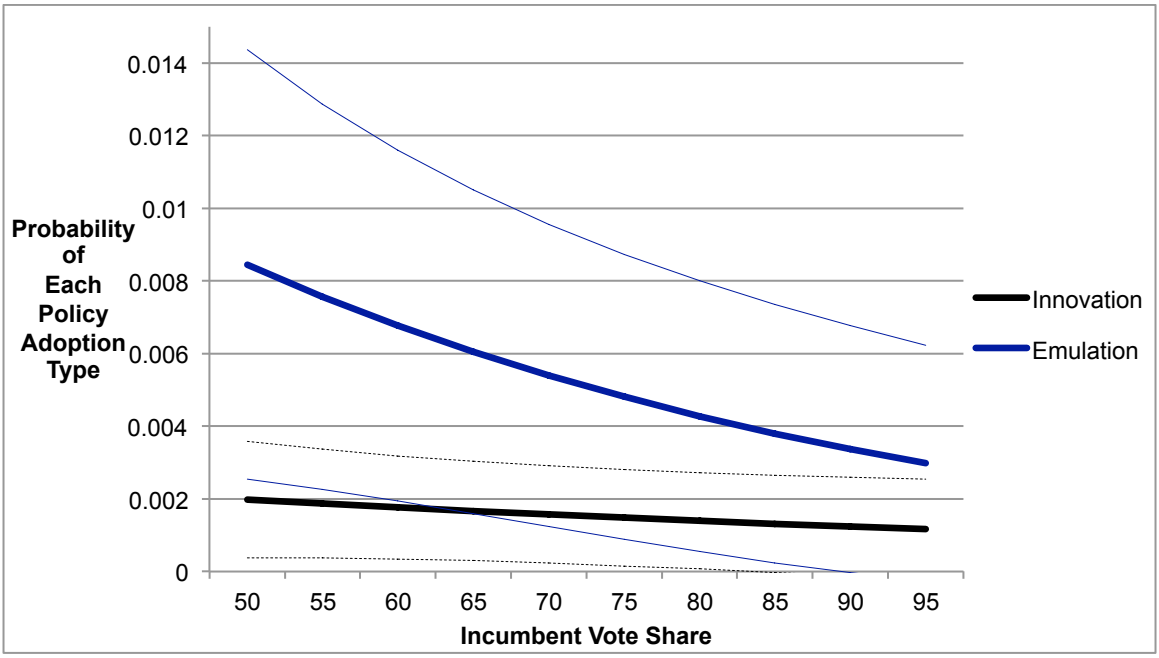
Figure 1 reiterates findings from the Legislative Professionalism Emulation Hypothesis. The slope of the main (bolded) predicted probability curve associated with legislative emulation increases by a greater magnitude given increases in *Legislative Professionalism* than does the slope of the main predicted probability curve associated with legislative innovation, suggesting that the resources from professionalism allow legislatures to cast a wide net, scrutinize among a menu of policies that exist elsewhere, and adopt those existing policies that they believe have a high probability of generating desired results. The lower bound of the 95% confidence curve for emulation, shown as the lower solid unbolded line in figure 1, is even located near the main curve for innovation for values of *Legislative Professionalism* ranging from 0.20 (near the mean value of this variable) to 0.30 (an almost two standard deviation increase from the mean),

suggesting that we can be reasonably certain about this finding.[60] Professionalism also increases the predicted probability of innovation. However, the more gradual slope associated with innovation suggests that professionalism simply does not provide legislators with as much information about innovation than it does about emulation. This is explainable since innovation is by its very nature largely unknown.

In figure 2, I show predicted probabilities for legislative innovation and legislative emulation on the y-axis for increasing and substantively relevant values of *Incumbent Vote Share* on the x-axis. The sample mean of *Incumbent Vote Share* is 72.78, and the standard deviation of this value is 21.46. I plot a range stretching from 50 (denoting when the median vote share earned by an incumbent legislator running for reelection in state *i* in the most recent election does not even exceed 50%) to 95 (denoting when the typical incumbent legislator running for reelection in state *i* faced little to no opposition in the most recent election). Here, note again that emulation has a steeper predicted probability curve than innovation. However, unlike in the case of professionalism, increases in *Incumbent Vote Share* markedly reduce the probability of emulation and gradually reduce the probability of innovation. This result is also explainable, as electorally vulnerable policy adopters may embrace emulation since they can credibly promise (to voters) to replicate successes found elsewhere. The difference in slopes between emulation and innovation as a function of decreasing electoral vulnerability gives weight to the concern that reelection concerns may spark copycatting in a devolutionary environment.

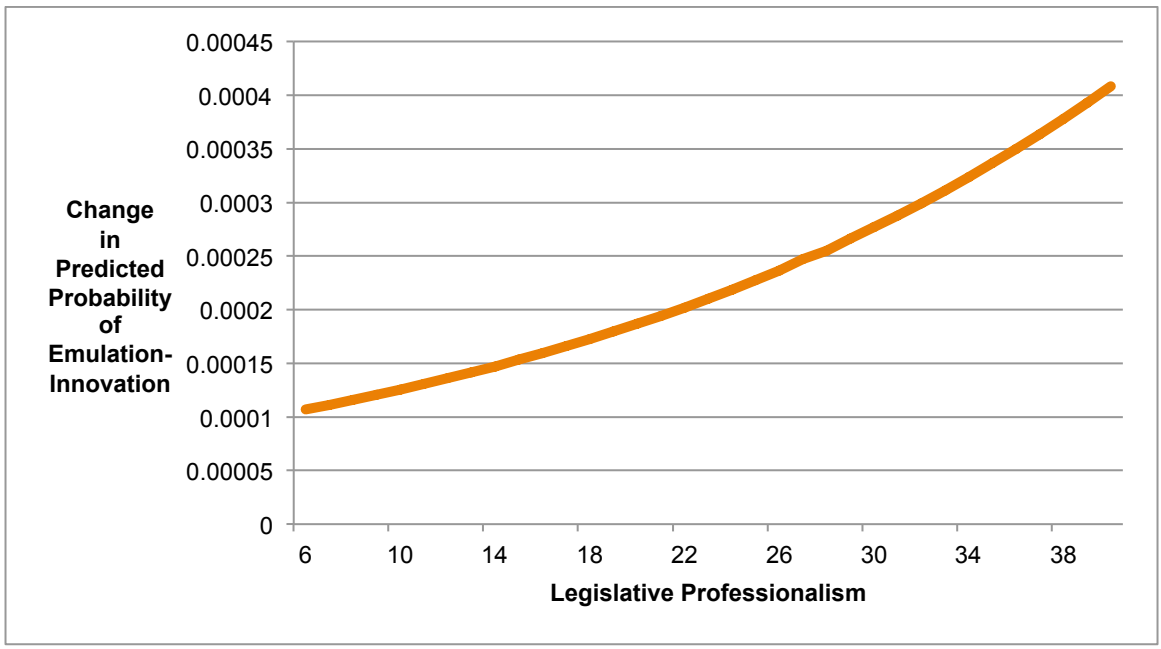
[60] In figures 1 and 2, the unbolded solid lines correspond to the upper and lower 95% confidence curves for emulation while the unbolded dashed lines correspond to the upper and lower 95% confidence curves for innovation.

FIGURE 2: Predicted Probabilities of Legislative Innovation and Legislative Emulation as Incumbent Vote Share Increases



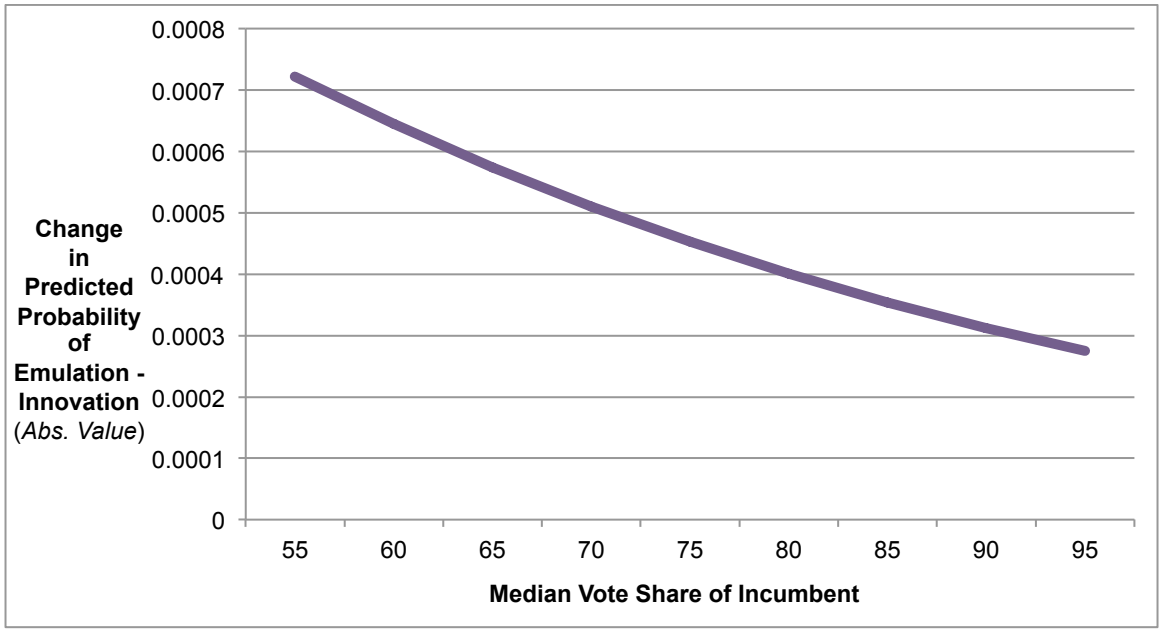
One concern about the predicted probability curves in figures 1 and 2 is that the sharper slope for legislative emulation could be the result of scaling. In other words, emulation may appear to have a sharper slope than innovation because the probability for emulation is much higher (and more observable) than the probability for innovation. To show that results are not due to scaling differences between innovation and emulation, I reproduce figures 1 and 2 but plot the change in the difference in the predicted probability of a legislature emulating versus innovating for given values of *Legislative Professionalism* and *Incumbent Vote Share*. The change in difference in the predicted probability of a emulating versus innovating represents the change in the relative preference of emulating over innovating and does not suffer from the same scaling issue as the predicted probability curves shown in figures 1 and 2.

FIGURE 3: Plotted Change in the Difference in the Probability of a Legislature Emulating Versus Innovating for Legislative Professionalism



The intensifying preference for emulation over innovation as *Legislative Professionalism* increases provides validation for the predicted probability results plotted in figure 1. A decreasing intensity of preference for emulation over innovation as *Incumbent Vote Share* increases provides similar validation for the predicted probability results plotted in figure 2.

FIGURE 4: Plotted Change in the Difference in the Probability of a Legislature Emulating versus Innovating for Incumbent Vote Share



3.6 Conclusion

In this chapter, I evaluate the policy adoption decisions of state-level policymakers under devolution. A number of scholars and political actors have linked devolution to increased innovativeness in policymaking even though a sizeable amount of formal work suggests that governmental resource limitations and risk-aversion among elected officials at the state-level not only reduces the likelihood of innovation but increases the possibility that state policy adopters will emulate. I attempt here to provide empirical clarity to this debate by analyzing how legislative resource capacity and legislative electoral vulnerability affect the innovation and emulation choices of state legislatures in a policy area—renewable energy portfolio regulation—that has been characterized by a noticeable lack of federal involvement.

Findings from my analysis do not completely challenge the view that the states are innovation laboratories under devolution: while the positive (albeit nonsignificant) relationship between legislative professionalism and innovation taps into concerns that governmental resource disparities across the states may inhibit the ability of the states to act as innovation laboratories, the slightly negative (again, albeit nonsignificant) relationship between legislative electoral vulnerability and innovation allays some of the concern that lawmakers' reelection fears will severely limit the production of innovative policy.[61] However, the greater strength of the positive association between increasing legislative professionalism and legislative emulation compared to that between increasing legislative professionalism and legislative innovation gives rise to the concern (if we value innovative policymaking as a desirable end) that well-resourced states with professional legislatures, *precisely* the type of states that theoretically are most enthusiastic about taking up innovation, would much rather emulate than innovate. This in turn suggests that a different factor besides legislative professionalism is driving the adoption of uniquely tailored but high uncertainty policy over less well tailored but less uncertain policy.

The second concern, again from the vantage point of those who view innovation as a desirable end, is the greater strength of the negative association between legislative incumbent vote share and legislative emulation compared to that between legislative incumbent vote share and legislative innovation. This result not only links electoral vulnerability to emulation but also suggests that emulation will continue to be favored so long as lawmakers are concerned about reelection.

[61] The concern that lawmakers' reelection fears reduce innovation would receive stronger empirical support if electoral vulnerability *decreased* the likelihood of innovation.

One implication of this research is that in programs that have not been completely devolved, the federal government can spur innovative policymaking at the state-level through strategic grant giving and rulemaking. Astute observers like Peterson (1995) have known this fact for a long time, of course, but what is unknown (at least from an empirical perspective) is how increases in the magnitude and form of federal intervention affect state-level innovation and emulation. An empirical analysis that relates variation in the magnitude and form of federal influence on state-level policymaking to variation in state-level innovation and emulation behavior would go a long way toward unpacking exactly how and when state-level innovation can be maximized.

A second implication of this research is that bureaucrats, by virtue of being nonelected, may potentially serve as wellsprings of innovation provided that their fear of upsetting elected bosses does not cause them to shy away from innovating. My renewable portfolio dataset, which focuses on a policy area where state legislatures dominate policymaking, largely precludes evaluation of how appointees approach the decision to innovate. An analysis of the factors that affect policy innovation behavior by appointees would add much to our understanding of state policy adoption and is an ideal extension to this project, and in the next chapter, I compare the innovation behavior of elected and appointed officials.

3.7 Appendix[62]

TABLE 5: Results for Models 1-2 Dropping States where Legislatures Skip Election Years

Variable/Model	Logit (1)		Bivariate Probit (2)	
	Legislative Innovation	Legislative Emulation	Legislative Innovation	Legislative Emulation
Legislative Professionalism	1.393	8.153***	0.625	3.041***
	(2.410)	(2.365)	(0.822)	(0.820)
Legislative Election Year	-0.110	-0.097	-0.039	-0.046
	(0.495)	(0.385)	(0.181)	(0.153)
Incumbent Vote Share	-0.004	-0.020**	-0.002	-0.007**
	(0.016)	(0.009)	(0.005)	(0.003)
% Per Capita Income	0.027	0.018	0.010	0.006
	(0.022)	(0.015)	(0.007)	(0.005)
Term Limits	0.278	0.571	0.084	-0.221
	(0.627)	(0.397)	(0.217)	(0.168)
Laws Enacted	-0.0002	0.0008	-0.0001	0.0003
	(0.001)	(0.0007)	(0.0003)	(0.0002)
Prior Bureaucratic	-18.637*	-18.195**	-6.437*	-6.407*
	(10.214)	(9.196)	(3.329)	(3.350)
Prior Initiative	0.139	-0.835	-0.003	-0.350
	(1.230)	(0.812)	(0.382)	(0.257)
Unified Democratic Government	0.349	0.148	0.114	0.087
	(0.625)	(0.532)	(0.217)	(0.195)
% Coal Consumption	0.048*	-0.003	0.018*	0.0002
	(0.028)	(0.017)	(0.010)	(0.007)
% Natural Gas Consumption	0.024	-0.018	0.011	-0.006
	(0.043)	(0.027)	(0.016)	(0.010)
% Petroleum Consumption	0.084***	0.029	0.034***	0.015
	(0.032)	(0.025)	(0.012)	(0.009)
% Renewable Consumption	0.052	-0.052	0.019	-0.011
	(0.038)	(0.062)	(0.014)	(0.018)
Δ Unemployment	0.128	0.015	0.042	-0.004
	(0.244)	(0.165)	(0.085)	(0.063)
Energy Price	0.014	-0.065	0.005	-0.039
	(0.067)	(0.091)	(0.024)	(0.032)
Solar Average	-1.118**	-0.068	-0.396***	-0.073
	(0.518)	(0.317)	(0.148)	(0.118)
River Miles	0.022	-0.033*	0.009	-0.011
	(0.026)	(0.020)	(0.008)	(0.007)
Shoreline	-0.179	-0.276**	-0.072	-0.098**
	(0.117)	(0.127)	(0.044)	(0.043)
Prior Innovation	1.273	-13.663	0.284	-3.790
	(4.369)	(11.132)	(1.247)	(3.445)

[62] I cluster standard errors by state in all statistical analyses displayed in the appendix.

Variable/Model	Logit (1)		Bivariate Probit (2)	
Prior Emulation	-23.977 (18.553)	-37.062 (30.045)	-8.453 (5.242)	-11.392* (6.873)
Neighbor Innovation	1.240 (1.830)	0.516 (2.170)	0.470 (0.653)	0.415 (0.611)
Neighbor Emulation	-0.051 (3.025)	0.391 (2.454)	0.067 (1.061)	0.075 (0.808)
Year Count	-1.665*** (0.329)	0.127*** (0.006)	-0.644*** (0.093)	0.057*** (0.002)
Logged Year/ Quadratic Year	-	4.855*** (1.366)	-	1.857*** (0.479)
Observations	31410 (81)	31410 (352)	31410 (81)	31410 (352)
Wald X^2	694.75***	2694.24***	1.5 x 10^9***	
Rho	-	-	-0.816***	

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 6: Results for Model 3 Dropping States where Legislatures Skip Election Years

Variable/Model	Logit (3)	
	Legislative Innovation	Legislative Emulation
Legislative Professionalism	2.126 (2.050)	8.098*** (2.368)
Legislative Election Year	-0.273 (0.490)	-0.086 (0.382)
Incumbent Vote Share	-0.006 (0.017)	-0.020** (0.009)
% Per Capita Income	0.031 (0.026)	0.018 (0.015)
Term Limits	0.183 (0.614)	-0.581 (0.398)
Laws Enacted	-5.2x10^-6 (0.001)	0.0007 (0.0007)
Prior Bureaucratic	-20.541* (10.602)	-18.298** (9.272)
Prior Initiative	-0.006 (1.246)	-0.869 (0.813)
Unified Democratic Government	0.403 (0.649)	0.130 (0.529)
% Coal Consumption	0.048* (0.028)	-0.003 (0.017)
% Natural Gas Consumption	0.022 (0.047)	-0.017 (0.026)
% Petroleum Consumption	0.098** (0.039)	0.029 (0.025)
% Renewable Consumption	0.054 (0.038)	-0.050 (0.061)

Variable/Model	Logit (3)	
Δ Unemployment	-0.032	0.017
	(0.278)	(0.165)
Energy Price	-0.057	-0.063
	(0.110)	(0.090)
Solar Average	-1.182**	-0.064
	(0.568)	(0.313)
River Miles	0.021	-0.033*
	(0.027)	(0.020)
Shoreline	-0.211	-0.273**
	(0.134)	(0.127)
Prior Innovation	1.788	-13.855
	(3.990)	(11.062)
Prior Emulation	-28.812	-37.197
	(18.828)	(29.830)
Neighbor Innovation	1.542	0.465
	(1.941)	(2.194)
Neighbor Emulation	-0.525	0.368
	(3.116)	(2.467)
Year Count	-1.514***	0.107***
	(0.499)	(0.006)
Logged Year/ Quadratic Year	0.002	4.761***
	(0.002)	(1.325)
Observations	7206 (81)	24204 (352)
Wald X^2	368.00***	1642.02***

*Significant 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 7: Results using Rare Events Logistic Regression

Variable/Model	Logit (1)		Logit (3)	
	Legislative Innovation	Legislative Emulation	Legislative Innovation	Legislative Emulation
Legislative Professionalism	2.218	5.497***	2.426	5.447***
	(1.874)	(2.002)	(1.693)	(2.007)
Legislative Election Year	-0.343	-0.304	-0.429	-0.292
	(0.479)	(0.361)	(0.459)	(0.359)
Incumbent Vote Share	-0.007	-0.022**	-0.008	-0.022**
	(0.013)	(0.009)	(0.013)	(0.009)
% Per Capita Income	0.029	0.016	0.029	0.016
	(0.020)	(0.014)	(0.021)	(0.015)
Term Limits	0.377	-0.470	0.321	-0.477
	(0.534)	(0.423)	(0.539)	(0.428)
Laws Enacted	0.0005	0.001**	0.0006	0.001**
	(0.0005)	(0.000)	(0.0005)	(0.0005)
Prior Bureaucratic	-0.867	-1.390	-0.960	-1.371
	(1.532)	(1.966)	(1.616)	(1.984)
Prior Initiative	0.174	-0.980	0.123	-1.008
	(1.201)	(0.806)	(1.200)	(0.810)

Variable/Model	Logit (1)		Logit (3)	
	Legislative Innovation	Legislative Emulation	Legislative Innovation	Legislative Emulation
Unified Democratic Government	-0.044 (0.614)	0.161 (0.381)	-0.039 (0.618)	0.147 (0.381)
% Coal Consumption	0.043 (0.026)	0.016 (0.016)	0.044 (0.027)	0.016 (0.016)
% Natural Gas Consumption	0.011 (0.038)	0.010 (0.025)	0.012 (0.040)	0.010 (0.025)
% Petroleum Consumption	0.068** (0.026)	0.059** (0.023)	0.073** (0.031)	0.058** (0.023)
% Renewable Consumption	0.021 (0.032)	0.001 (0.030)	0.022 (0.032)	0.001 (0.030)
Δ Unemployment	0.019 (0.263)	-0.017 (0.152)	-0.077 (0.284)	-0.015 (0.152)
Energy Price	-0.017 (0.066)	-0.048 (0.086)	-0.039 (0.099)	-0.046 (0.085)
Solar Average	-0.423 (0.411)	-0.175 (0.247)	-0.435 (0.441)	-0.173 (0.243)
River Miles	0.0008 (0.018)	-0.008 (0.017)	0.001 (0.018)	-0.008 (0.016)
Shoreline	-0.159 (0.127)	-0.305** (0.127)	-0.176 (0.131)	-0.303** (0.126)
Prior Innovation	1.232 (4.417)	-12.737 (10.274)	1.192 (4.508)	-12.958 (10.214)
Prior Emulation	-17.412 (15.027)	-36.028 (28.912)	-19.139 (15.737)	-36.411 (28.984)
Neighbor Innovation	1.067 (1.897)	-0.480 (2.555)	1.112 (1.982)	-0.538 (2.579)
Neighbor Emulation	0.862 (2.449)	0.964 (2.716)	0.766 (2.499)	1.011 (2.743)
Year Count	-1.606*** (0.292)	0.128*** (0.006)	-1.462*** (0.438)	0.108*** (0.006)
Logged Year/ Quadratic Year	-	3.469*** (1.041)	0.001 (0.001)	3.394*** (0.993)
Observations	35332 (91)	35332 (405)	8148 (91)	27184 (405)

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 8: Results using Multinomial Logistic Regression

Variable	Legislative Innovation	Legislative Emulation
Legislative Professionalism	2.441 (1.799)	5.550*** (2.006)
Legislative Election Year	-0.379 (0.480)	-0.305 (0.362)
Incumbent Vote Share	-0.008 (0.012)	-0.023** (0.009)

Variable	Legislative Innovation	Legislative Emulation
% Per Capita Income	0.031 (0.021)	0.017 (0.015)
Term Limits	0.324 (0.546)	-0.499 (0.442)
Laws Enacted	0.0005 (0.0005)	0.001** (0.0005)
Prior Bureaucratic	-1.286 (1.547)	-1.461 (1.968)
Prior Initiative	-0.334 (1.207)	-1.223 (0.808)
Unified Democratic Government	-0.021 (0.618)	0.161 (0.382)
% Coal Consumption	0.045 (0.027)	0.016 (0.016)
% Natural Gas Consumption	0.013 (0.039)	0.010 (0.025)
% Petroleum Consumption	0.072** (0.029)	0.059** (0.023)
% Renewable Consumption	0.023 (0.033)	0.0006 (0.030)
Δ Unemployment	0.002 (0.273)	-0.019 (0.152)
Energy Price	-0.021 (0.069)	-0.050 (0.086)
Solar Average	-0.447 (0.425)	-0.179 (0.247)
River Miles	0.001 (0.018)	-0.008 (0.017)
Shoreline	-0.192 (0.128)	-0.311* (0.127)
Prior Innovation	0.336 (4.466)	-13.139 (10.282)
Prior Emulation	-19.564 (15.387)	-36.509 (28.946)
Neighbor Innovation	0.919 (1.950)	-0.516 (2.560)
Neighbor Emulation	0.849 (2.445)	0.941 (2.719)
Year Count	-1.654*** (0.293)	0.128*** (0.006)
Logged Year	0.176 (0.434)	3.545*** (1.041)
Observations	35332 (91)	35332 (405)
Wald X^2	3.5 x 10^6***	

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 9: Independence of Irrelevant Alternatives Test Results following Multinomial Logistic Regression

Omitted Outcome	Chi^2 Value	Degrees of Freedom	P-value	Result
Hausman IIA Test				
Legislative Emulation	0.581	24	1	For H_0 (IIA upheld)
Legislative Innovation	0.338	23	1	For H_0 (IIA upheld)
Seemingly Unrelated Hausman IIA Test				
Legislative Emulation	98.805	25	0.000	**Against H_0 (IIA violated)**
Legislative Innovation	50.965	25	0.002	**Against H_0 (IIA violated)**
Small-Hsiao IIA Test				
Legislative Emulation	248.893	25	0.000	**Against H_0 (IIA violated)**
Legislative Innovation	476.441	25	0.000	**Against H_0 (IIA violated)**

TABLE 10: Value and Significance of *Legislative Professionalism*Incumbent Vote Share* across Model Specifications

Variable/Model	Large Logit		Bivariate Probit		Small Logit	
	Leg. Innovation	Leg. Emulation	Leg. Innovation	Leg. Emulation	Leg. Innovation	Leg. Emulation
Legislative Professionalism	-3.174 (6.477)	4.404 (4.972)	-1.102 (2.280)	1.456 (1.678)	-2.749 (6.535)	4.574 (5.028)
Incumbent Vote Share	-0.019 (0.014)	-0.025** (0.011)	-0.008 (0.005)	-0.010** (0.004)	-0.020 (0.014)	-0.024** (0.011)
Legislative Professionalism* Incumbent Vote Share	0.076 (0.088)	0.016 (0.071)	0.028 (0.031)	0.011 (0.024)	0.073 (0.089)	0.013 (0.072)

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 11: Value and Significance of *Legislative Professionalism*Legislative Election Year* across Model Specifications

Variable/Model	Large Logit		Bivariate Probit		Small Logit	
	Leg. Innovation	Leg. Emulation	Leg. Innovation	Leg. Emulation	Leg. Innovation	Leg. Emulation
Legislative Professionalism	1.441 (2.390)	4.768** (2.368)	0.568 (0.893)	1.943** (0.923)	1.698 (2.198)	4.705** (2.371)
Legislative Election Year	-0.750 (0.575)	-0.663 (0.629)	-0.310 (0.211)	-0.268 (0.255)	-0.834 (0.569)	-0.659 (0.624)
Legislative Professionalism* Legislative Election Year	1.787 (2.346)	1.652 (2.066)	0.770 (0.835)	0.592 (0.909)	1.757 (2.369)	1.689 (2.054)

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 12: Value and Significance of *Legislative Election Year*Incumbent Vote Share* across Model Specifications

Variable/Model	Large Logit		Bivariate Probit		Small Logit	
	Leg. Innovation	Leg. Emulation	Leg. Innovation	Leg. Emulation	Leg. Innovation	Leg. Emulation
Legislative Election Year	-0.129 (1.181)	-0.599 (0.925)	-0.059 (0.447)	-0.258 (0.406)	-0.240 (1.181)	-0.587 (0.922)
Incumbent Vote Share	-0.006 (0.017)	-0.024** (0.011)	-0.002 (0.005)	-0.009** (0.004)	-0.007 (0.018)	-0.024** (0.011)
Legislative Election Year* Incumbent Vote Share	-0.003 (0.017)	0.004 (0.013)	-0.001 (0.006)	0.001 (0.005)	-0.003 (0.017)	0.004 (0.013)

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

CHAPTER 4

The Institutional Determinants of Regulatory Innovation: Evidence from State Renewables Portfolio Standards

Abstract

In this chapter, I evaluate whether elected regulators are more likely to accept risk in the policy adoption process and innovate compared to appointed regulators. Elected regulators face reelection and may exhibit risk-aversion when adopting policies to safeguard reelection chances. At the same time, appointed regulators face scrutiny from legislative and executive bosses and may exhibit risk-aversion when adopting policies to reduce the chance of backlash at the hands of their bosses. Here, I compare the renewable energy portfolio standard policy adoption behavior of elected versus appointed state public utility commissioners and find that elected regulators are more willing to innovate than are appointed regulators. I argue that this result stems from elected regulators facing diminished oversight compared to appointed regulators, and this result implies that taking policy responsibility away from elected officials may *not* necessarily increase risk-taking in the policy adoption process.

4.1 Introduction

In 1999, the appointed commissioners of the Public Utility Commission of Texas—the agency charged with regulating that state's electric and telecommunications industries—made Texas the first state in the United States to include solar water heat as an eligible renewable source within Texas's renewables portfolio standard (RPS).[63] The action of the PUCT commissioners exemplifies what many regard as a key virtue of federalism: that individual states can innovate (Brandeis 1932; Walker 1969; and Gray 1973) and adopt untested policies to solve challenges; and that effective innovations (or "best practices") from any state or set of states can diffuse or spread to other states (Berry and Berry 1990; Case, Hines, and Rosen 1994; Mintrom 1997; Volden 2006; Shipan and Volden 2008; and Pacheco 2012) that face similar challenges.

The action of the PUCT commissioners is also noteworthy because a regulatory agency did the innovating. Much of the scholarship on policy innovation in the American states, including the opinion of Brandeis in *New State Ice Company v. Liebmann*, when he described the states as "laboratories" of innovation, focuses on legislative instances of innovation and ignores the role that regulatory agencies can play in adopting innovative policies (*New State Ice Company v. Liebmann* 1932). While the focus on legislative instances of innovation is understandable since state legislatures are the primary institutions responsible for writing and adopting laws, there are two reasons to investigate the policy adoption behavior of regulatory agencies.[64] First, regulators have high levels of policy-specific expertise (Wilson 1887; Epstein and O'Halloran 1999; Gailmard 2002;

[63] A renewables portfolio standard is a set of policies specifying that electricity providers generate some amount of electricity from renewable sources.
[64] I hereafter refer to "regulatory agencies" as "regulators."

and Huber and Shipan 2002) and may hold strong opinions about the kinds of policy options (including untested policy options) that are most appropriate to address specific programmatic challenges.

Second, regulators can either be appointed by the state executive (subject to confirmation by the state legislature) or elected in statewide races, and the method of regulator selection may influence the willingness of regulators to embrace the risk of adopting untested policy. At least three important pieces of scholarship (Rose-Ackerman 1980; Volden, Ting, and Carpenter 2008; and Cai and Treisman 2009) suggest formally that elected officials may forego innovation, or the adoption of untested policy, for emulation, or the borrowing of existing and tested policy, as they may not want to jeopardize reelection chances by adopting a policy that has not been adopted before in a comparable setting.[65] This finding suggests hypothetically that reelection concerns may make elected regulators *less* likely to innovate compared to appointed regulators, who do not face reelection concerns. At the same time, appointed regulators also face pressures—they can be dismissed, sanctioned, or forced to resign by legislative and executive bosses—and the fear of discipline by legislative and executive bosses may hypothetically make appointed regulators *less* likely to innovate compared to elected regulators, especially if elected regulators are willing to take more risks with respect to voters than appointed regulators are willing to take with respect to legislative and executive bosses.

[65] As I make clear later in the chapter (and consistent with the definition used throughout the dissertation), innovation refers generally to when a state adopts a policy *before* any other state adopts that policy. Emulation refers generally to when a state adopts a policy *after* any other state has adopted that policy. Innovation is assumed to be riskier than emulation because policymakers in state *i* are unable to free-ride off of the experiences of state *j* when they are deciding whether to adopt an innovative policy proposal.

In this chapter, I analyze the policy adoption behavior of elected versus appointed regulators and evaluate whether elected regulators are more or less likely to innovate compared to their appointed peers. This topic merits attention because the advocates of devolution argue that giving the states policy responsibility increases the innovativeness of policymaking and because regulators play a major role in developing state policymaking.[66] By investigating how the method of choosing regulators (a key distinction separating regulators into two groups) affects the willingness of regulators to innovate, we can better understand how institutional constraints influence the ability of regulators to act as wellsprings of innovative policymaking.

Here, I compare the policy adoption choices of elected and appointed state public utility commissioners with respect to the crafting of RPS programs and analyze the link between regulator type and innovation. State public utility commissions have historically been tasked with overseeing the actions of electric utilities and setting the rates that electric utilities charge customers; in recent years, these commissions have also played an increasingly prominent role in developing state RPS programs. Variation across the states in terms of whether regulators are elected or appointed may explain variation across the states in terms of the amount of policy risk that is accepted by regulators. RPS adoption data are well suited for theory testing for two reasons: first, the states have adopted RPS policies in the absence of federal intervention on state policymaking, which is important since such federal intervention (giving program-related grants to state governments, for

[66] There are many instances where devolution advocates claim that giving states policy responsibility increases innovative policymaking. A canonical example comes from the transformation of need-based welfare from a primarily federal (AFDC) to a more state-based (TANF) program. See Peterson (1995) for a detailed explanation about the arguments for and against devolution.

example, or requiring states to force utilities to generate electricity from renewable sources) can distort the policy adoption behavior of regulators[67]; and second, cases of innovation do not exclusively occur in states that have the same type of regulator.[68]

Conducting an empirical analysis of regulatory RPS policymaking across the fifty states, I find using several statistical techniques that elected regulators are more likely to innovate than are appointed regulators. Building on work from Besley and Coate (2003) and extending their theory to account for the policy risk choices of regulators, I argue that the difference in the risk acceptances of elected versus appointed regulators stems from a difference in how elected and appointed regulators are scrutinized by their respective principals (the median voter in state *i* for elected regulators, and a governor and/or interested members of the legislature in state *j* for appointed regulators). The median voter primarily cares about regulatory policy insofar as that policy affects his or her electricity rates (Besley and Coate 2003), meaning that elected regulators may be willing to accept the risk of innovating if they can convince the median voter that the innovation will not translate into substantial increases in consumer electricity rates. Governors and especially interested members of the legislature, on the other hand, care about broad aspects of regulatory policy (including but not limited to matters relating to consumer electricity rates), scrutinize how the actions of appointed regulators affect their own constituents (who may include representatives from regulated utilities that want higher

[67] I want to analyze the innovation behavior of state regulators under devolution. A hallmark of devolution is the absence of consistent federal financial inducements or rules on state policymaking. Throughout the time period (1983-2011) analyzed here, the RPS policy area was devolved to the states and featured a lack of federal intervention on state policymaking, thus making the RPS policy area an ideal candidate for exploration.
[68] This is to say that innovation has occurred in states with elected regulators *as well as* states with appointed regulators.

electricity rates), and could potentially try to punish appointed regulators.[69] Appointed regulators may try to protect themselves from the scrutiny of legislative and executive principals by choosing not to accept the risk of innovating.

Results in this chapter suggest that elected rather than appointed regulators may act as the central drivers of regulatory policy innovation. This may be a normative "good" in the sense that democratically accountable policymakers (rather than appointed policymakers) are taking the risk of adopting untested policies. However, it may be a normative "bad" in the sense that appointed regulators, who ostensibly possess greater policy expertise than their executive and legislative bosses, are unable or unwilling to translate that expertise into sound public policy.[70]

The chapter proceeds as follows. I first review literature pertaining to policy innovation and specifically policy innovation by regulators and introduce a new definition of innovation that in my opinion better captures the inherent risk embraced by innovators. In the second section, I state my hypothesis; and in the third section, I describe and state results from the statistical evaluation of the hypothesis. I then offer concluding remarks.

4.2 Adding Regulators to the Policy Innovation Story

[69] When I use the phrase "interested members of the legislature," I am referring to legislative members who have issue-specific interests, sit on committees and subcommittees overseeing regulatory decision-making, and attempt to steer regulatory decisions in a direction benefitting specific constituents and/or industries. Oklahoma Senator James Inhofe's scrutinization of the Environmental Protection Agency as a member of the Senate's Environment and Public Works Committee is a prominent national level example that comes to mind.

[70] The meaning of "sound public policy," of course, is subject to wide interpretation.

The bulk of extant scholarship on policy innovation generally follows two trends. First, the literature focuses largely on legislative policy innovation and ignores how regulators approach the policy adoption process.[71] This is unfortunate since regulators, by virtue of their policy-specific expertise and experience "on the frontlines" administering regulatory policy, may play a direct role in making the states laboratories of innovation. And second, the literature follows the lead of Walker (1969) and defines innovation as the adoption of "a program or policy, which is new to the states adopting it, no matter how old the program may be or how many other states have adopted it" (1969: 881). Scholars who study regulatory policy adoption, such as Berry (1994), who looks at the adoption of strategic planning practices by state agencies, and Teodoro (2009), who looks at the adoption of professional practices by municipal police and water chiefs, similarly consider a unit's adoption of a policy to be an example of innovation regardless of whether that policy was already adopted in a different unit.[72]

Making the definition of policy innovation independent of the order in which a unit adopted a particular policy is understandable in light of the view that much of the novelty in policymaking occurs in enforcement or implementation rather than adoption. However, this definition of policy innovation fails to account for the idea that untested policy adoptions may represent qualitatively different choices from another kind of adoption in which policymakers in one state can free ride off of the experiences of policymakers in other states. Untested policy adoptions are qualitatively different from

[71] Examples include foundational pieces of work such as Walker (1969), Gray (1973), Berry and Berry (1990), Mintrom (1997), and Nicholson-Crotty (2009).
[72] Neither of these works discusses the relationship between the method of selecting regulators (in terms of whether regulators are elected or appointed) and the policy adoption behavior of those regulators. This is justifiable, as these scholars did not study policy areas exhibiting a distinction between elected and appointed regulators.

tested policy adoptions insofar as the lack of a track record makes the untested policy adoptions riskier than tested policy adoptions. Theoretical work from Rose-Ackerman (1980), Volden, Ting, and Carpenter (2008), and Cai and Treisman (2009) claims that emulating, or adopting a policy that already has been adopted in another state, is a distinct *alternative* to innovating, or adopting a policy that has not been adopted in another state, and also claims that elected officials may refrain from innovating due to the fear that adopting policies that have not been vetted elsewhere could harm reelection chances. This theoretical work therefore suggests that variation in regulator type affects the kind of policy adoption choices that regulators make and necessitates that I frame innovation and emulation as separate kinds of policy adoption choices.

Here, I define innovation as the choice by policymakers in a given state to adopt a policy *before* any other state has adopted that same policy. To account for the possibility that two states could be deciding simultaneously whether to innovate with respect to the same policy, I also define innovation as the choice by policymakers in a given state to adopt a policy within one calendar year after another state became the first state to adopt that same policy.[73] I define emulation as the choice by policymakers in a given state to adopt a policy at least one year after another state became the first state to adopt that same policy. The choice to use one year (from the date of first adoption) to differentiate innovation from emulation is not arbitrary: much of the literature on the diffusion or

[73] A hypothetical example helps here. Suppose that Michigan is the first state to require that utilities purchase hybrid vehicles in May 2008 while Ohio requires that utilities purchase hybrid vehicles in July 2008. We cannot say definitively that Michigan innovated while Ohio emulated since the two states were probably simultaneously deciding whether to adopt the same policy. Extending the definition of innovation to include instances of adoption that occur within one year of the first instance of adoption gets around this simultaneous adoption issue.

spread of policy across units assumes that learning takes time, and one year is a common way (see Beck, Gleditsch, and Beardsley 2006; Swank 2006; Shipan and Volden 2008; and Volden, Ting, and Carpenter 2008 for examples) to capture the time required for policymakers in unit B to learn about decision-making in unit A. Since emulation implies that policymakers in unit B are free riding (and thus learning) off of the experiences of policymakers in unit A, I utilize the standard temporal characterization of learning found in the diffusion literature to isolate innovation from emulation. Having separated innovation from emulation and justified my definitions based on standard practice in the diffusion literature, I now analyze how elected versus appointed regulators behave differently from one another in the policy adoption process.

4.3 Regulator Type and Policy Innovation

In this chapter, I specify and test one hypothesis: that elected regulators are more likely to innovate than are appointed regulators. I argue that differences in the institutional constraints faced by elected versus appointed regulators account for why elected regulators are comparatively more willing to accept the risk of innovating. Elected regulators serve statewide voters, and statewide voters primarily care about regulatory policy choices insofar as those regulatory policy choices will not drive up electricity rates. This suggests that elected regulators face low opposition from statewide voters toward innovating provided that the regulators can convince voters that innovating will not translate into higher electricity rates. And since regulators actually set consumer

electricity rates, the claims of elected regulators may have some credibility with the voters electing them.[74]

In this chapter, I assume that regulators (regardless of whether they are elected or appointed) are career oriented and prefer not want to adopt policies that will generate backlash from principals. This does *not* mean that regulators do not care about policy as an end; rather, the policy goal is subordinate to the desire to satisfy the principal. In the paper, I do not explicitly model or formalize individual or group-level regulatory preferences. Public utility commission decisions are reached through a majority vote among commissioners.

Appointed regulators face incentive structures that are markedly different from those of elected counterparts. Appointed regulators serve governors and members of state legislatures, and these principals care about a range of regulatory issues including and going beyond the matter of consumer electricity rates. Principals with ties to utilities or from districts economically dependent upon utilities may seek to safeguard utility interests and punish appointed regulators whose decisions are perceived to be jeopardizing the health of utilities. At the same time, principals who are generally supportive of environmentally friendly regulatory choices (such as innovating with respect to RPS policy) may blame or otherwise punish appointed regulators if the choices of the appointed regulators produce unintended consequences that could jeopardize the

[74] Regulators must balance the profit needs of utilities with the desire among consumer-voters for lower electricity rates. A key insight from Besley and Coate (2003) is that states with elected regulators—who do not have to contend with oversight from legislatures or governors—typically have lower electricity rates than states with appointed regulators. However, there are limits to "how low" elected regulators can set rates. Utilities can challenge regulatory rate decisions in court, and elected regulators ostensibly do not want to set rates so low that utilities go out of business.

electoral security of those supportive principals.[75] Choosing not to adopt untested policy—in other words, choosing not to innovate—protects appointed regulators because the appointed regulators limit their own exposure to untested policies that could produce unintended consequences and heavily restrict their attention to tested policies of other states whose results have been observed and can be communicated to potentially skeptical principals.

Elected Regulator Innovation Hypothesis: *Elected regulators are more likely to innovate than are appointed regulators.*

I will now show that in the Elected Regulator Innovation Hypothesis, I extend Besley and Coate's (2003) analysis of the relationship between the election of regulators and electricity rates by demonstrating that their logic also connects the election of regulators to increased regulatory innovation.

Besley and Coate start by assuming that in all states, a majority of voters (including the median voter in each state) is "pro-consumer" and ceteris paribus favors lower electricity rates; a minority of voters in each state, on the other hand, is "pro-utility" and ceteris paribus favors higher electricity rates, as higher electricity rates imply higher profits for regulated utilities.[76] The authors also assume that the most salient aspect of regulatory policy for the median voter in any state (regardless of whether that state elects or appoints its regulators) is the rate that the median voter pays for his or her electricity.

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[75] For example, appointed regulators may mandate that 20% of the electricity produced in a state come from solar thermal sources. If that 20% requirement generates unemployment in the fossil fuel sector, then a pro-environment governor or legislator could suffer electorally due to the actions of the appointed regulators.

[76] The minority ostensibly favors higher electricity rates because their welfare is tied to the welfare of regulated utilities.

Besley and Coate then show why median voters in states with elected regulators are better able to translate their rate preferences into policy outcomes than are median voters in states with appointed regulators. While median voters in states with elected regulators can directly influence the electricity rate choices of elected regulators, median voters in states with appointed regulators select governors and legislators on their handling of a "bundle" of issues; Besley and Coate among others (Hagerman and Ratchford 1978; Navarro 1982; Boyes and McDowell 1989; and Smart 1994) hypothesize that within this bundle, regulatory issues are not as salient to median voters as are non-regulatory issues. The low salience of regulatory issues in gubernatorial and legislative elections allows for regulated utilities and gubernatorial and legislative allies to steer regulatory choices in a "pro-utility" direction, implying that electricity rates are higher in states with appointed regulators versus states with elected regulators.

The extension of Besley and Coate's argument to the matter of regulatory innovation is straightforward. Elected regulators know that median voters care predominantly about one regulatory issue—electricity rates—and infer from this knowledge that median voters are unlikely to oppose innovative policies so long as the regulators can convince median voters that innovating will not cause a spike in electricity rates. Appointed regulators know that policy experts in governors' offices and state legislatures care about several regulatory issues and may monitor a substantial amount of regulatory choices; the appointed regulators consequently reduce innovation to lower the chance of backlash from gubernatorial and legislative principals.

4.4 Empirical Analysis of the Argument

Here, I evaluate the Elected Regulator Innovation Hypothesis by using regression analysis to determine whether a regulator's method of selection (elected versus appointed) affects that regulator's propensity to accept risk and innovate when adopting policy. I specifically investigate the Elected Regulator Innovation Hypothesis through analyzing regulatory innovation with respect to RPS policymaking. An RPS refers to a set of policies that attempt to encourage renewable energy use by specifying that utilities generate or provide some amount of electricity from renewable sources (Rabe 2006).[77] During the 1983-2011 timespan of this study, the federal government left RPS policymaking in the hands of the states, and since Iowa became the first state to adopt a set of RPS policies in 1983, 36 other states have developed their own RPS programs.[78]

In many states, the adoption of RPS policies has been a purely legislative phenomenon. In 18 of the 37 states, however, regulators have adopted all (or more typically, some) of their states' respective RPS policies. My task empirically is to determine whether regulator type affects the likelihood of regulatory innovation.

Key steps, then, involve identifying cases of innovation in RPS policymaking as well as identifying those cases of innovation where regulators did the adopting. I identify cases of innovation by first identifying cases of policy adoption, regardless of who (whether it was a legislature, a regulatory agency, or a citizen-led ballot initiative) did the adopting, and then classifying a given policy adoption as an innovation if a state adopts

[77] Examples of RPS policies include what a state designates to be "renewable" energy (e.g. wind, photovoltaic, coal methane, etc.), the type of standard (e.g. amount of retail electricity supplied, amount of generating capacity, etc.), and whether utilities can trade credits to meet standards. All of the policies are listed in the dissertation's appendix.
[78] 37 states adopted RPS policies between 1983 and 2011. 2011 is the concluding year of my dataset, as it was the final year for which my primary data source, the *Database of State Incentives for Renewables and Efficiency*, had verified the accuracy of its information.

the policy before any other state adopted the same policy.[79] To account for the possibility that multiple states could choose simultaneously whether to innovate with respect to the same policy, I also classify a policy adoption as an innovation if a state adopts a policy within a year after another state became the first state to adopt the policy. Regulatory cases of innovation simply refer to those cases where public utilities commissions are the innovators.

Here, I leverage the *Database of State Incentives for Renewables and Efficiency* (DSIRE) to identify cases of innovation and identify when regulators did the innovating. DSIRE—a collaborative effort between the United States Department of Energy, the Interstate Renewable Energy Council, and the North Carolina Solar Center—developed a list of policies that fall under the rubric of RPS, identified the states that have adopted specific RPS policies, and identified the enabling documentation (whether it is a piece of legislation, a regulatory decision, or a ballot amendment) in which the different states adopted their respective RPS policies. I arrange all of the enabling documentation in chronological order and search each enabling document for evidence that a policy identified by DSIRE has been adopted as part of a state's RPS program. Here, "evidence" refers to finding text in the enabling documentation that explicitly links a policy identified by DSIRE to a state's RPS program: for example, DSIRE identified that Arizona includes landfill gas as an eligible energy source in its RPS program; a scan of all of Arizona's enabling documents reveals that Arizona first included landfill gas in its RPS program in Arizona Corporation Commission Decision 62506 (2000), which states that "an electric service provider shall be entitled to meet the portfolio requirement with

[79] Some RPS policies were adopted through ballot initiative in three states: Colorado, Missouri, and Washington.

electricity produced in Arizona by environmentally-friendly renewable electricity technologies that are defined as in-state *landfill gas* generators…" (2000: Attachment B). Once I have identified when a state adopts a particular RPS policy, I assign a date to that particular policy adoption based on the adoption date of the corresponding enabling document. I then classify a policy adoption as an innovation or emulation; emulation means that a state adopted a particular RPS policy at least one year after another state became the first state to adopt that same particular RPS policy.[80]

The main dependent outcome, ***Regulatory Innovation***, is a binary variable capturing when regulators innovate with respect to RPS policy adoption. My explanatory variable of interest is ***Direct Election***, which is also a binary variable and captures whether a state's regulators take office through direct election or appointment and confirmation by a governor and legislature. For the Elected Regulator Innovation Hypothesis to have a baseline amount of empirical support, I expect *Direct Election* to relate positively and significantly with *Regulatory Innovation*.

I compare the statistical relationship obtained by regressing *Regulatory Innovation* on *Direct Election* to the statistical relationship obtained by regressing a second dependent variable, ***Regulatory Emulation***, on *Direct Election*. *Regulatory Emulation* is a binary variable capturing when regulators emulate with respect to RPS policy adoption. Regressing *Regulatory Emulation* on *Direct Election* allows us to check the robustness of the statistical relationship between *Direct Election* and *Regulatory Innovation* by identifying whether the relationship captured in the Elected Regulator

[80] The date given to Arizona with respect to landfill gas was May 4, 2000 (the date of adoption for ACC Decision 62506). Arizona emulated with respect to including landfill gas in its RPS program, as Connecticut had already included landfill gas in its own RPS program via legislation (House Bill 5005) in 1998.

Innovation Hypothesis is actually germane to innovation. A significant and positive relationship between *Direct Election* and *Regulatory Innovation* combined with a significant and positive relationship between *Direct Election* and *Regulatory Emulation* would cast doubt on the validity of H_1, as this merely shows that elected regulators adopt more regulatory policies than appointed regulators. A significant and positive relationship between *Direct Election* and *Regulatory Innovation* combined with a nonsignificant (and preferably weaker) relationship between *Direct Election* and *Regulatory Emulation*, on the other hand, gives a stronger degree of support to the Elected Regulator Innovation Hypothesis by illustrating that elected regulators accept a statistically different and higher level of risk from appointed regulators when the choice under consideration is whether to adopt the riskiest policy type that is generally available.

I structure the dependent data according to the conventions of standard event history analysis (Box-Steffensmeier and Jones 1997, 2004). The choice to adopt a specific RPS policy enters the dataset during the same year in which an innovation with respect to that specific policy occurs. Once the choice to adopt a specific policy enters the dataset, a state that chooses *not* to adopt that policy receives a score of 0 until a policy adoption occurs and the corresponding state regulatory policy choice opportunity (the unit of analysis in this study) exits the dataset. [81] Over the 1983-2011 timespan, there are

[81] Although I care here about regulatory choice, remember that policy adoption choices enter and exit the dataset based on adoption decisions that are made by *all actors* within and across the states. The decision by the Iowa legislature in 1983 to innovate by adding wind energy as an eligible RPS resource gave regulators and other governmental actors in the other 49 states the opportunity to innovate (by classifying wind energy as an eligible RPS resource within a year of the Iowa legislature's decision) or emulate (by adding wind energy over a year after the Iowa legislature's decision) with respect to the same policy. Iowa's regulators, from 1983 onward, do *not* have the choice to add wind energy since the adoption by Iowa's legislature means that this choice has exited the choice

34,922 regulatory choice opportunities and 19 cases of regulatory innovation, meaning that regulatory innovation occurred in 0.054% of cases; additionally, there are 68 cases of regulatory emulation, meaning that regulatory emulation occurred in 0.194% of cases. While the case numbers and percentages associated with regulatory innovation and regulatory emulation seem extremely small, it is useful to remember that these case numbers and percentages are *correctly* small, as regulatory policy adoption in an issue area where the federal government has *not* mitigated the risk incurred by state policymakers is rare. Therefore, while the number of adoptions (and especially innovations) in the dataset admittedly leaves room for improvement, the very low probability of innovation serves as a reminder of how much risk regulators undertake when they choose to innovate. In table 13, I display the number of regulatory policy adoptions by state, disaggregated into categories of innovation and emulation.

TABLE 13: State RPS Policy Adoption by Public Utility Regulators[82]

State	Innovation	Emulation	Total Adoption
Arizona	8	15	23
Iowa	0	1	1
Maine	0	2	2
Massachusetts	1	1	1
Michigan	0	1	1
Nevada	0	4	4
New Hampshire	0	1	1
New Jersey	1	1	2
New Mexico	3	12	15
New York	4	15	19
North Carolina	0	1	1
North Dakota	0	1	1

dataset for Iowa's regulators. Similarly, the 1994 decision by Minnesota's legislature to emulate Iowa's wind energy policy means that the choice to adopt a wind energy policy was no longer available to Minnesota's regulators from 1994 onward.

[82] In the table, shaded rows refer to states with elected regulators. In this study, I list the following states as having elected regulators: Alabama, Arizona, Georgia, Louisiana, Mississippi, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, and Tennessee (prior to 1997).

State	Innovation	Emulation	Total Adoption
Ohio	0	1	1
Pennsylvania	0	1	1
Rhode Island	0	2	2
Texas	1	1	2
Vermont	0	5	5
Washington	0	1	1
Wisconsin	1	2	3
Total	19	68	87

I use four statistical models to evaluate the relationship between *Direct Election* and *Regulatory Innovation/Emulation*. In models 1 and 2, I compare the influence of *Direct Election* on *Regulatory Innovation* (model 1) to that of *Direct Election* on *Regulatory Emulation* (model 2) using logistic regression. In models 3 and 4, I re-estimate models 1 and 2 but utilize an alternate logistic procedure from King and Zheng (2001) that accounts for rare events data.[83] In the appendix of the chapter, I show results obtained from estimating models 1 and 2 via bivariate probit and multinomial logistic regression.[84]

[83] I assume that regulators decide simultaneously whether to innovate, emulate, or not adopt. One may believe that regulators choose to adopt a policy and *then* choose to innovate or emulate. This modeling decision seems implausible, however, as it assumes that regulators choose to adopt a policy *before* considering the risks that are associated with adopting that policy. Ample testimony from rulemaking documents (testimonies are appended to the rulemaking documents and come from hearings predating the decision date of the rulemaking) about the costs and benefits of various policy proposals suggests that regulators thought about risks before adopting policies.

[84] A bivariate probit setup links the error structure of *Regulatory Innovation* to the error structure of *Regulatory Emulation*. A multinomial logistic setup allows us to compare the influence of *Direct Election* across different nominally arranged outcomes (here, no adoption, emulation, and innovation). Results do not change substantively when using either of these alternate techniques. I do not utilize a multinomial logistic procedure as the primary regression technique, as the independence of irrelevant alternatives (IIA) assumption is violated since the addition of new renewable technologies can change the preference ranking of older renewable technologies.

I utilize the following controls for all model specifications, regardless of whether the dependent outcome is *Regulatory Innovation* or *Regulatory Emulation*.[85] ***Energy Price*** measures (in 2011 dollars per million BTUs) the average cost of energy for a user in state *i* in year *t*.[86] Higher energy prices could increase innovation if regulators—regardless of whether they are elected or appointed—use innovative policymaking to try to bring future electricity rates down. At the same time, higher energy prices could decrease innovation if regulators, again regardless of type, worry that innovative policymaking may increase future electricity rates.[87]

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[85] As I am using the *Regulatory Emulation* outcome as a placebo to check the robustness of results from the *Regulatory Innovation* outcome, I generally describe control variables in terms of how they influence *Regulatory Innovation* rather than how they may differentially influence *Regulatory Innovation* versus *Regulatory Emulation*. There are only two controls, which I describe at the end of this section, that are used with *Regulatory Emulation* but not *Regulatory Innovation*.

[86] The U.S. Energy Information Administration (EIA), which provides estimated energy price values, is agnostic in its technical notes about whether reported energy price estimates take consumer *electricity rates* into account or calculate user prices absent rate information (the cost of electricity for the end user typically includes raw energy generation and distribution costs plus a rate that allows a utility to make a profit). Regardless, *Energy Price* is important to include since it either captures raw inputs that factor heavily in the rate setting process or raw inputs plus contemporaneous rates.

[87] Here, I assume that *Energy Price* independently affects *Regulatory Innovation*. When I interact *Energy Price* with *Direct Election*, I fail to find statistical evidence that elected regulators innovate differently from appointed regulators when confronted with higher energy prices (there is nonsignificant evidence that elected regulators are more likely to innovate given higher energy prices than are appointed regulators). I do not believe that the lack of a significant *Energy Price*Direct Election* interactive term invalidates my argument supporting the Elected Regulator Innovation Hypothesis. The interactive term suggests that elected regulators innovate more than appointed regulators but restrictively attributes this difference in behavior to the condition of high energy prices. I argue that elected regulators innovate more because they serve principals who are largely uninterested in regulatory issues: elected regulators who want to innovate only need to be able to convince median voters that innovations will not raise electricity rates and may (given the non-significance of *Energy Price*Direct Election*) be able to make this argument in low as well as high energy price environments. I show estimation results for models including the *Energy Price*Direct Election* interaction term in the appendix of the chapter.

A second group of controls accounts for the possibility that variation in legislative capacity and state wealth could affect the likelihood of regulators choosing to innovate. ***Legislative Professionalism*** is state *i*'s amount of legislative professionalism (reported using Squire's index of professionalism) in year *t* and captures the idea that regulators are less likely to innovate in states with professional legislatures since these legislatures can turn to non-regulatory sources for policy-specific expertise (Squire 2007). ***Laws Enacted*** is a measure of state *i*'s legislative workload in year *t* and could increase or decrease the likelihood of regulatory innovation: legislatures enacting a high number of laws could face high workloads, giving regulators a greater opportunity to innovate; however, regulators in states with productive legislatures may be less likely to innovate since these legislatures are signaling that they are the prime adopters of policy. ***Legislative Election Year***, a binary measure of whether some members of state *i*'s legislature face reelection in year *t*, also captures the time constraints of legislators and could increase the likelihood of regulatory innovation. Finally, ***State Per Capita Income Percent*** captures state *i*'s per capita income in year *t* as a percentage of the national per capita income in year *t* and reflects the possibility that regulators from wealthier states may be more likely to innovate, as they may have access to more resources than regulators from poorer states.

A third group of controls captures the affect that energy interests may play in the regulatory policy innovation process. ***Percentage of Coal Consumption***, ***Percentage of Natural Gas Consumption***, ***Percentage of Petroleum Consumption***, and ***Percentage of Renewable Consumption*** reflect the total amounts of energy consumption in state *i* in

year *t* that come from coal, natural gas, petroleum, or "traditional" renewable sources.[88] Increases in these variables may spur regulatory innovation as sectoral interests attempt to carve out protections in retail markets by pushing for the inclusion of their sectors in RPS regimes. Three other energy-interest related variables are ***Solar Average***, the average daily amount of solar radiation received in state *i* over year *t* (in kilowatt-hours per square meter per day); ***River Miles***, the total mileage (in thousands of miles) for perennial rivers in state *i*; and ***Shoreline***, the total mileage (in thousands of statute miles) of coastline for any state that borders an ocean, the Gulf of Mexico, or any of the Great Lakes. Higher values in any of these variables may translate into more regulatory innovation, as sectoral interests try to convince regulators that tapping into these resources can spur economic growth. Finally, I include state *i*'s ***Change in the Rate of Unemployment*** from year *t-1* to year *t* to capture the possibility that regulators and/or sectoral interests could use rising unemployment to either call for or advocate against innovation with respect to RPS policies.

I include a binary measure of ***Unified Government*** to account for the possibility that opinions from the dominant party in state *i* in year *t* could influence the innovation choices of regulators by giving regulators a clearer signal (if a state's governor and legislature belong to the same party) about whether prominent political actors in the state support or oppose the proposed innovation. I lastly include temporal and spatio-temporal controls. ***Prior Regulatory Innovation*** and ***Prior Legislative Innovation*** record the total

[88] The U.S. EIA, the source of energy pricing and usage data, defines "traditional" renewable sources as the following: hydroelectric, wood and waste, ethanol, ethanol co-products, geothermal, solar, photovoltaic, and wind-based power. States can (and do) include traditionally non-renewable sources in their RPS programs: Michigan, Ohio, and West Virginia all include coal and coal derivatives as eligible "renewable" sources in their RPS programs.

number of previous instances of innovation (regulatory in the case of *Prior Regulatory Innovation* and legislative in the case of *Prior Legislative Innovation*) that occurred in state *i* divided by the total number of previous instances of innovation (regardless of the actor doing the innovating) that occurred across all states. These variables account for the inherent "leader" qualities of a given state and of different institutionally situated actors within that state and control for the possibility that inherent leader qualities could determine regulatory innovation behavior. ***Prior Regulatory Emulation*** and ***Prior Legislative Emulation*** are analogous variables that control for the possibility that the inherent follower qualities of a state and its different institutionally situated actors could also determine regulatory innovation behavior. ***Prior Neighbor Innovation*** and ***Prior Neighbor Emulation*** record the fraction of total previous instances of innovation and emulation, regardless of the actor adopting the policy, that occurred in states adjacent to state *i*. While *Prior Neighbor Innovation* reflects the possibility that innovative policymaking could drive state *i*'s regulators to innovate in ways different from those of neighboring states' policymakers, *Prior Neighbor Emulation* reflects the possibility that emulation in adjacent states could drive state *i*'s regulators to innovate by building on successful emulations that have diffused across adjacent states.[89]

The next two controls, ***Prior Initiative Emulation*** and ***Logged Year***, only apply to *Regulatory Emulation* model specifications.[90] *Prior Initiative Emulation* captures the

[89] An example from the RPS policy area would be if state A classified photovoltaic energy as an eligible renewable resource but did *not* require some percentage of electricity to be generated from photovoltaic sources. State B would then innovate by building on state A's policy and requiring that utilities generate some percentage of electricity from photovoltaic sources.

[90] Some may be concerned that I include two variables in the "placebo" (*Regulatory Emulation*) models that I do not include in the "treatment" (*Regulatory Innovation*)

possibility that state *i*'s regulators may be less likely to emulate if citizens in the same state have already emulated via the ballot initiative process.[91] *Logged Year* captures the effect that a general increase in time from 1983 onward may have on regulators' emulation choices.[92] The final control, ***Year Count***, applies to both the *Regulatory Innovation* and *Regulatory Emulation* model specifications and records the number of years elapsed since the first instance across the states of a *specific* RPS policy's adoption. *Year Count* reflects the possibility that the hazard of adopting a specific RPS policy increases as the temporal distance from that policy's first adoption increases. In table 14, I display summary statistics and descriptions of the variables utilized in this chapter.

TABLE 14: Variable Descriptions and Summary Statistics

Variable	Type	Structure	Mean
Regulatory Innovation	Dependent	Binary	0.05% of Observations = Innovation
Regulatory Emulation	Dependent	Binary	0.19% of Observations = Emulation
Direct Election	Explanatory	Binary	23.66% of Observations = Elected Regulators
Energy Price	Control	Continuous	17.15

models. Results associated with the placebo do not substantively change when I use the same exact variables used in the treatment case. I include these results in the chapter's appendix.

[91] I do not create a "***Prior Initiative Innovation***" variable because there are no cases of RPS innovation via ballot initiative. I also do not include "***Prior Initiative Emulation***" in the *Regulatory Innovation* model specification since there are no cases where a state's regulators innovate after citizens have emulated through the ballot initiative process.

[92] Beck, Katz, and Tucker (1998) argue for using year dummies to capture the effects of time in discrete event history settings. Year dummies, however, consume many degrees of freedom and in this case, perfectly predict outcomes in the years for which no policy adoptions occur. The result is that we cannot conduct a likelihood ratio test between the constrained (no time variable) and unconstrained (year dummies) models, as the software drops observations where failure is perfectly predicted. I therefore use likelihood ratio tests to assess the fit between competing parameterizations of time (I evaluate a linear year trend, a quadratic year trend, and a logged year trend) and include *Logged Year*, measured from the beginning of the dataset in 1983 onward, in the emulation specification. I do not include a general time trend in the innovation specification, as likelihood ratio tests do not support including the general time trend.

Variable	Type	Structure	Mean
Legislative Professionalism	Control	Continuous	0.18
Laws Enacted	Control	Continuous	383.38
Legislative Election Year	Control	Binary	54.50% of Observations = Non-Election Years
% State Per Capita Income	Control	Continuous	95.86
% Coal Consumption	Control	Continuous	23.21
% Natural Gas Consumption	Control	Continuous	20.83
% Petroleum Consumption	Control	Continuous	35.79
Solar Average	Control	Continuous	3.97
River Miles	Control	Continuous	26.33
Shoreline	Control	Continuous	2.16
Change in the Rate of Unemployment	Control	Continuous	0.24
Unified Government	Control	Binary	50.86% of Observations = Divided Governments
Prior Regulatory Innovation	Control	Continuous	0.04
Prior Legislative Innovation	Control	Continuous	0.20
Prior Regulatory Emulation	Control	Continuous	0.06
Prior Legislative Emulation	Control	Continuous	0.25
Prior Neighbor Innovation	Control	Continuous	0.07
Prior Neighbor Emulation	Control	Continuous	0.06
Prior Initiative Emulation	Control	Continuous	0.01
Logged Year	Control	Continuous	3.02
Year Count	Control	Continuous	5.77

4.5 Results

In tables 15 and 16, I show results from the logistic and rare events logistic analyses of *Regulatory Innovation* and *Regulatory Emulation*. In table 15, I also show estimates as odds ratios in order to facilitate the interpretation of results. In all analyses in this study, I cluster standard errors within state to reflect the idea that any two choices from the same state are not independent from one another.

TABLE 15: Estimation Results using Logistic Regression

Variable/Model	Regulatory Innovation		Regulatory Emulation	
Direct Election	2.373**	10.735 (+)	0.333	1.395 (+)
	(0.967)		(0.689)	
Energy Price	0.021	1.021 (+)	-0.072	0.929 (-)
	(0.131)		(0.077)	
Laws Enacted	0.0004	1.000 (+)	0.00001	1.000 (+)
	(0.001)		(0.001)	
Legislative Professionalism	7.077***	1185.264 (+)	6.586***	725.178 (+)
	(2.157)		(2.387)	
Legislative Election Year	2.288***	9.862 (+)	1.673***	5.329 (+)
	(0.787)		(0.464)	
% Per Capita Income	0.013	1.013 (+)	-0.018	0.981 (-)
	(0.024)		(0.029)	
% Coal Consumption	-0.062*	0.939 (-)	-0.026	0.973 (-)
	(0.035)		(0.023)	
% Natural Gas Consumption	-0.062	0.939 (-)	-0.009	0.990 (-)
	(0.052)		(0.025)	
% Petroleum Consumption	-0.039	0.961 (-)	-0.007	0.992 (-)
	(0.049)		(0.035)	
% Renewable Consumption	-0.165***	0.847 (-)	0.001	1.001 (+)
	(0.052)		(0.032)	
Solar Average	0.537	1.711 (+)	0.417	1.517 (+)
	(0.621)		(0.407)	
River Miles	-0.034	0.966 (-)	-0.040*	0.960 (-)
	(0.035)		(0.022)	
Shoreline	-0.062	0.939 (-)	-0.086*	0.916 (-)
	(0.091)		(0.050)	
Δ Unemployment	-0.288	0.749 (-)	-0.329	0.719 (-)
	(0.348)		(0.290)	
Unified Government	-0.215	0.806 (-)	-0.948**	0.387 (-)
	(0.356)		0.450	
Prior Regulatory Innovation	-2.181	0.112 (-)	1.578	4.845 (+)
	(2.835)		(1.597)	
Prior Legislative Innovation	-0.365	0.694 (-)	-0.477	0.620 (-)
	(1.135)		(0.902)	
Prior Regulatory Emulation	1.346	3.845 (+)	-1.286	0.276 (-)
	(2.743)		(1.597)	
Prior Legislative Emulation	-0.088	0.915 (+)	0.846	2.330 (+)
	(1.413)		(1.312)	
Prior Neighbor Innovation	0.971	2.640 (+)	2.553*	12.855 (+)
	(1.020)		(1.451)	

Variable/Model	Regulatory Innovation		Regulatory Emulation	
Prior Neighbor Emulation	2.672* (1.479)	14.469 (+)	1.154 (0.924)	3.172 (+)
Prior Initiative Emulation	-	-	0.841 (1.742)	2.320 (+)
Logged Year	-	-	1.655 (2.241)	5.235 (+)
Yearcount	-1.283*** (0.462)	0.277 (-)	0.129*** (0.020)	1.138 (+)
Observations	34922 (19)		34922 (68)	
Wald χ^2	2417.97***		589.77***	

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

Results from table 15 provide empirical support for the Elected Regulator Innovation Hypothesis: a positive relationship between *Direct Election* and *Regulatory Innovation*, significant at a threshold of 0.05, suggests that elected regulators are more likely to accept the risk of innovating than are appointed regulators. Expressed in terms of odds ratios, the odds of innovating are more than 10 times greater for elected compared to appointed regulators. This finding persists after controlling for other potential sources of innovation such as contemporaneous energy price, the influence of various energy sectoral interests, the influence of neighboring states, and previous innovative activity by state legislatures. Additionally, the significance of *Direct Election* with respect to *Regulatory Innovation* combined with the non-significance and weaker influence of *Direct Election* with respect to *Regulatory Emulation* suggests that the Elected Regulators Innovation Hypothesis is not an artifact of elected regulators simply choosing to adopt more policies than appointed regulators. Rather, elected regulators appear to embrace the risk of innovating while appointed regulators appear to reject this risk.

In table 16, I re-estimate the same models displayed in table 15 but use rare events logistic regression. *Direct Election* maintains a positive and significant relationship with

Regulatory Innovation, although *Direct Election* is now significant at the 0.10 threshold. *Direct Election* still fails to achieve significance and has a weaker (in terms of magnitude) relationship with *Regulatory Emulation*, implying that elected regulators demonstrate a greater risk acceptance than do appointed regulators.

TABLE 16: Estimation Results using Rare Events Logistic Regression

Variable/Model	Regulatory Innovation	Regulatory Emulation
Direct Election	1.653*	0.308
	(0.967)	(0.689)
Energy Price	0.012	-0.060
	(0.131)	(0.077)
Laws Enacted	0.0001	-0.00001
	(0.001)	(0.001)
Legislative Professionalism	5.752***	6.166***
	(2.155)	(2.385)
Legislative Election Year	2.046***	1.619***
	(0.786)	(0.463)
% Per Capita Income	0.003	-0.018
	(0.024)	(0.029)
% Coal Consumption	-0.039	-0.022
	(0.035)	(0.023)
% Natural Gas Consumption	-0.038	-0.006
	(0.052)	(0.025)
% Petroleum Consumption	-0.026	-0.005
	(0.049)	(0.035)
% Renewable Consumption	-0.068	0.006
	(0.052)	(0.032)
Solar Average	0.498	0.410
	(0.621)	(0.407)
River Miles	-0.048	-0.041*
	(0.035)	(0.022)
Shoreline	0.226**	-0.022
	(0.091)	(0.050)
Δ Unemployment	-0.244	-0.300
	(0.348)	(0.290)
Unified Government	-0.233	-0.914**
	(0.356)	(0.449)
Prior Regulatory Innovation	-2.748	1.646
	(2.833)	(1.596)
Prior Legislative Innovation	-0.341	-0.453
	(1.134)	(0.901)
Prior Regulatory Emulation	1.951	-1.313
	(2.741)	(1.596)
Prior Legislative Emulation	0.079	0.880
	(1.412)	(1.311)

Variable/Model	Regulatory Innovation	Regulatory Emulation
Prior Neighbor Innovation	1.592	2.548*
	(1.020)	(1.450)
Prior Neighbor Emulation	2.526*	1.170
	(1.478)	(0.924)
Prior Initiative Emulation	-	1.322
		(1.741)
Logged Year	-	1.317
		(2.240)
Yearcount	-1.157**	0.129***
	(0.462)	(0.020)
Observations	34922 (19)	34922 (68)

*Significant at 0.10; **significant at 0.05; ***significant at 0.01

4.6 Conclusion

My claim in this chapter is straightforward: due to a difference in institutional oversight, elected regulators are more willing than are appointed regulators to accept risk in the policymaking process and innovate when adopting policy. The difference in institutional oversight, one identified by Besley and Coate (2003), centers on the idea that elected regulators are accountable to median voters while appointed regulators are accountable to governors and state legislators. For median voters, the rate charged for electricity is the most salient aspect of regulatory policy; elected regulators consequently face low opposition to innovating from median voters provided that the regulators can convince median voters that innovating will not raise electricity rates. Governors and legislators, on the other hand, care about several aspects of regulatory policy including but going beyond electricity rates. These governors and legislators care about their own welfare and that of benefactors and constituents, and they may try to punish appointed regulators if they believe that those regulators are taking undesired or unnecessary risks. Appointed regulators may anticipate opposition from gubernatorial and legislative

principals and refrain from innovating in order to minimize possible backlash from these principals.

An issue that I do not address here is determining *when* elected regulators believe that they can convince median voters that innovating will not raise electricity rates. One plausible scenario, that the ability of elected regulators to convince voters depends on contemporaneous energy price levels, does not achieve statistical significance.[93] Two other plausible scenarios, which I endeavor to test in future iterations of this work, are that the ability of elected regulators to convince voters (1) varies positively with the frequency with which elected regulators agree with each other in regulatory decision-making; and (2) varies negatively with the amount of electoral vulnerability faced by those elected regulators.[94] In order to adequately evaluate these two scenarios, I need to address data limitations in two areas. To construct variables capturing regulatory agreement and electoral vulnerability, I first need to gather data on the frequency of unanimous decision-making across public utility commissions and data on the electoral histories of regulators in those states where public utility commissioners are elected. I secondly need to increase the number of adoptions in my dependent data by replicating my coding process in multiple issue areas in which regulators possess policymaking

[93] Recall that *Energy Price*Direct Election* does not achieve significance with respect to *Regulatory Innovation* or *Regulatory Emulation*. Using *ΔEnergy Price*Direct Election* as a substitute does not change results, as this interaction term fails to achieve significance with respect to *Regulatory Innovation* or *Regulatory Emulation*.

[94] A higher frequency of agreement among elected regulators in a given public utility commission indicates a higher degree of coalitional cohesion and could relate positively with the ability of regulators to convince voters if a higher degree of coalitional cohesion implies that regulators are sending voters a unified rather than divided message (a dissenting opinion is an example of a divided message). Higher electoral vulnerability could relate negatively with the ability of regulators to convince voters since the vulnerability implies that a substantial number of voters may not find the regulators to be credible.

authority. Expanding the dependent data will be challenging, as we still need to satisfy the criterion that dependent data come from policy areas where the federal government has largely refrained from interfering in state decision-making. However, expanding the dataset is crucial in order to gain enough variation in the data so that we can evaluate the interactive propositions outlined earlier in this paragraph.

This study has implications for how I evaluate advice from Rose-Ackerman (1980), Volden, Ting, and Carpenter (2008), and Cai and Treisman (2009) regarding risk-aversion by elected policymakers. These works focus primarily on legislative actors and raise the possibility that elected officials will refrain from innovating due to reelection concerns: applying this logic to regulatory actors suggests that appointed regulators may demonstrate greater risk acceptance in the policy adoption process than elected regulators because the appointed regulators are unencumbered by their own electoral considerations. Results from this analysis, conducted in a policy area marked by the absence of significant federal influence on state policymaking, suggest that elected regulators may actually embrace the risk of innovation more than appointed peers. Greater risk-taking by elected officials may be normatively good for democracy insofar as elected officials are taking risks that their voters support. However, reduced risk-taking by appointed officials might be normatively bad for policymaking insofar as appointees are unable to translate their expertise into concrete policy outcomes. Future research should evaluate how democratic control of the policymaking process can be reconciled with the need for expert policy designers who more often than not may be appointed rather than elected.

In the next chapter, I move away from analyzing the innovation and emulation choices of collective-level decision-makers (such as legislatures or public utility

commissions) and instead examine the innovation and emulation activity of individual legislators during the policy sponsorship process.

4.7 Appendix[95]

TABLE 17: Results using Bivariate Probit Specification

Variable/Model	Regulatory Innovation	Regulatory Emulation
Direct Election	0.745***	0.115
	(0.268)	(0.297)
Energy Price	-0.008	-0.027
	(0.034)	(0.023)
Laws Enacted	-0.00004	0.000005
	(0.0003)	(0.0002)
Legislative Professionalism	2.268***	2.354***
	(0.689)	(0.736)
Legislative Election Year	0.693***	0.547***
	(0.256)	(0.162)
% Per Capita Income	0.00002	-0.008
	(0.007)	(0.007)
% Coal Consumption	-0.023**	-0.009
	(0.010)	(0.006)
% Natural Gas Consumption	0.016	-0.002
	(0.013)	(0.007)
% Petroleum Consumption	-0.012	-0.002
	(0.015)	(0.001)
% Renewable Consumption	-0.053***	0.002
	(0.019)	(0.010)
Solar Average	0.155	0.153
	(0.159)	(0.119)
River Miles	-0.009	-0.017***
	(0.009)	(0.005)
Shoreline	-0.017	-0.027*
	(0.020)	(0.014)
Δ Unemployment	-0.114	-0.111
	(0.112)	(0.087)
Unified Government	-0.031	-0.290**
	(0.129)	(0.127)
Prior Regulatory Innovation	-0.452	0.670
	(0.834)	(0.572)

[95] I use state-clustered standard errors for all statistical results displayed in the appendix.

Variable/Model	Regulatory Innovation	Regulatory Emulation
Prior Legislative Innovation	0.051 (0.338)	-0.068 (0.279)
Prior Regulatory Emulation	0.485 (0.843)	-0.478 (0.589)
Prior Legislative Emulation	0.087 (0.372)	0.310 (0.357)
Prior Neighbor Innovation	0.445 (0.359)	0.929* (0.500)
Prior Neighbor Emulation	0.863* (0.515)	0.476 (0.344)
Logged Year	-	0.547 (0.591)
Yearcount	-0.377*** (0.132)	0.047*** (0.006)
Observations	34922 (19)	34922 (68)
Wald X^2	20921.75***	
Rho	-0.470	

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 18: Results using Multinomial Logistic Regression

Variable/Model	Regulatory Innovation	Regulatory Emulation
Direct Election	2.274** (0.990)	0.284 (0.707)
Energy Price	-0.011 (0.128)	-0.072 (0.078)
Laws Enacted	0.0008 (0.001)	0.00003 (0.001)
Legislative Professionalism	7.873*** (2.815)	6.574*** (2.390)
Legislative Election Year	2.266*** (0.797)	1.671*** (0.470)
% Per Capita Income	0.013 (0.026)	-0.017 (0.028)
% Coal Consumption	-0.060 (0.038)	-0.025 (0.022)
% Natural Gas Consumption	-0.068 (0.056)	-0.008 (0.024)
% Petroleum Consumption	-0.037 (0.055)	-0.006 (0.035)
% Renewable Consumption	-0.164*** (0.052)	0.003 (0.033)
Solar Average	0.605 (0.622)	0.513 (0.415)

Variable/Model	Regulatory Innovation	Regulatory Emulation
River Miles	-0.044	-0.050***
	(0.033)	(0.019)
Shoreline	-0.064	-0.088*
	(0.098)	(0.050)
Δ Unemployment	-0.388	-0.333
	(0.438)	(0.288)
Unified Government	-0.258	-0.953**
	(0.377)	(0.453)
Prior Regulatory Innovation	-2.394	1.592
	(3.042)	(1.651)
Prior Legislative Innovation	-0.389	-0.477
	(1.144)	(0.925)
Prior Regulatory Emulation	1.236	-1.329
	(2.922)	(1.595)
Prior Legislative Emulation	-0.322	0.796
	(1.550)	(1.262)
Prior Neighbor Innovation	1.611	2.586*
	(1.558)	(1.439)
Prior Neighbor Emulation	2.086	1.119
	(1.408)	(0.923)
Logged Year	1.089	1.728
	(1.245)	(2.211)
Yearcount	-1.235***	0.128***
	(0.400)	(0.020)
Observations	34922 (19)	34922 (68)
Wald X^2	84836.05***	

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

TABLE 19: Value and Significance of *Direct Election*Energy Price* Across Model Specifications

Variable/Model	Logit		Rare Events Logit	
	Innovation	Emulation	Innovation	Emulation
Direct Election	-0.015	1.441	-0.450	1.358
	(3.323)	(2.230)	(3.321)	(2.228)
Energy Price	-0.056	-0.052	-0.060	-0.041
	(0.213)	(0.081)	(0.213)	(0.081)
Direct Election*Energy Price	0.161	-0.071	0.147	-0.066
	(0.196)	(0.130)	(0.196)	(0.130)

TABLE 20: Results for *Regulatory Emulation* using Same Model used for *Regulatory Innovation*

Variable/Model	Logit	Rare Events Logit
Direct Election	0.391	0.358
	(0.741)	(0.740)
Energy Price	-0.013	-0.012
	(0.063)	(0.063)
Laws Enacted	-0.00008	-0.0001
	(0.008)	(0.0008)
Legislative Professionalism	5.579***	5.332***
	(1.149)	(1.408)
Legislative Election Year	1.672***	1.617***
	(0.471)	(0.471)
% Per Capita Income	-0.020	-0.019
	(0.024)	(0.024)
% Coal Consumption	-0.024	-0.021
	(0.021)	(0.021)
% Natural Gas Consumption	-0.003	-0.001
	(0.023)	(0.023)
% Petroleum Consumption	-0.011	-0.009
	(0.028)	(0.028)
% Renewable Consumption	0.001	0.006
	(0.031)	(0.031)
Solar Average	0.417	0.410
	(0.407)	(0.407)
River Miles	-0.040*	-0.041*
	(0.022)	(0.022)
Shoreline	-0.086*	-0.022
	(0.050)	(0.050)
Δ Unemployment	-0.284	-0.264
	(0.265)	(0.265)
Unified Government	-0.863**	-0.852**
	(0.386)	(0.386)
Prior Regulatory Innovation	1.710	1.750
	(1.509)	(1.508)
Prior Legislative Innovation	-0.357	-0.365
	(0.853)	(0.852)
Prior Regulatory Emulation	-1.125	-1.170
	(1.533)	(1.532)
Prior Legislative Emulation	1.063	1.078
	(1.077)	(1.076)
Prior Neighbor Innovation	1.601***	1.741***
	(0.585)	(0.585)
Prior Neighbor Emulation	1.867*	1.808*
	(1.082)	(1.081)

Variable/Model	Regulatory Innovation	Regulatory Emulation
Yearcount	0.136***	0.135***
	(0.016)	(0.016)
Observations	34922 (19)	34922 (68)
Wald X^2	511.07***	-

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

CHAPTER 5

Innovation in Policy Cosponsorship among State Legislators

Abstract

The extant literature on policy adoption has focused on collective-level legislative activity and ignored individual-level legislator-specific action, meaning that we know very little about how legislator-specific factors affect the innovation and emulation of policy. At the same time, the extent literature has overwhelmingly focused on policy adoption and ignored policy cosponsorship, meaning that we know very little about why legislators would cosponsor novel (or innovative) policy rather than emulate and support policy that already has been adopted. Assembling and analyzing a dataset of 7,079 cases of policy sponsorship pertaining to state renewable energy portfolio legislation, I argue and find that legislators are more likely to emulate when cosponsoring policy if they come from states with higher levels of legislative professionalism. At the same time, I argue and find that legislators are more likely to cosponsor innovative policy if they come from states with term limit provisions. The pro-emulation legislative professionalism result mirrors an earlier macro-level finding linking increased professionalism to a higher likelihood of emulation in policy adoption and suggests that individual legislators also respond to increases in legislative professionalism by favoring emulation over innovation. The pro-innovation term limits result suggests that reducing electoral accountability (by way of shortening legislators' time horizons) makes legislators more likely to embrace the risk of cosponsoring innovative and untested policy.

5.1 Introduction

In the first two empirical chapters of this dissertation, I evaluated the policy risk choices of collective state organizations operating under devolution. Regardless of whether the state organization consisted of legislators or public utilities commissioners, I characterized innovation and emulation choices as group-level decisions and ignored how individual state legislators view the choice to innovate or emulate.

Here, I evaluate the innovation and emulation choice from the angle of individual state legislators operating under devolution and examine the drivers of policy innovation and emulation in the cosponsorship process. Focusing on individual rather than collective decision-making is a useful way to extend and tease out the limitations of some of the dissertation's earlier findings. In chapter 3, for example, I identify legislative professionalism as a key factor influencing legislative policy emulation. While legislative professionalism could also positively influence individual-level emulation, it is possible that legislators may respond differently from legislatures to the absence or presence of legislative resources. Similarly, while chapter 3 also links a collective conceptualization of electoral vulnerability to increased emulation, it is possible that electorally vulnerable legislators may behave differently and choose, for example, to innovate instead of emulating.[96] In this chapter, I relate findings from chapter 3 to the micro-level environment of legislators and investigate factors driving legislator innovation and emulation.

[96] To borrow an analogy from sports, a vulnerable legislator could embrace the risk of innovation and view the act of innovation as a "Hail Mary" that may bolster reelection chances.

Here, I also depart from standard practice earlier in the dissertation and focus on legislator cosponsorship rather than adoption. Cosponsorship is an oft-neglected but important part of the legislative process, and cosponsors send a signal to constituents about their support for a policy by formally associating themselves with that policy proposal's advancement in the legislature (Krehbiel 1995; Kessler and Krehbiel 1996; Koger 2003; and Harward and Moffett 2010). While cosponsors do not take on the same level of commitment as sponsors—who are known for being the primary stewards of a policy proposal's advancement in the legislature (Schiller 1995; and Wawro 2000)—cosponsors still claim credit (Arnold 1990; and Koger 2003) for advancing the cause of a particular policy proposal and thus open themselves to blame from constituents if the policy proposal generates undesired effects upon adoption.

The fact that cosponsors could face pushback from constituents for their policy decisions suggests that cosponsors are perceptive about the novelty or untestedness of the policy proposals they choose to endorse through cosponsorship, and I evaluate how the factors of legislative professionalism, individual-level electoral vulnerability, and term limits influence whether legislators innovate or emulate when cosponsoring policy.[97]

[97] The bulk of the work (Krehbiel 1995; Schiller 1995; Kessler and Krehbiel 1996; Koger 2003; and Harward and Moffett 2010) on sponsorship and cosponsorship deals with the data-rich environment of the U.S. Congress, where records distinguish sponsors from cosponsors. My state-level data unfortunately does not identify main sponsors, meaning that we can only conduct this analysis at the level of cosponsors (ideally, we would be able to compare the innovation and emulation choices of sponsors with those of cosponsors). My state-level data also lacks information about the vote choices (including but not limited to sponsors and cosponsors) of individual legislators with respect to innovation and emulation (ideally, we would also be able to compare innovation and emulation during sponsorship, cosponsorship, and actual vote choice). Comparing innovation and emulation choices during sponsorship, cosponsorship, and actual vote choice (and locating the data to make this comparison possible) is a major priority of this project moving forward.

The factors of legislative professionalism, individual-level electoral vulnerability, and term limits arguably represent important explanators of innovation and emulation during cosponsorship, as they respectively capture the amount of resources that a legislator can devote to choosing between innovation and emulation, the amount of job security (based on a legislator's most recent electoral performance) that a legislator can draw upon in choosing to innovate or emulate, and the timeframe during which a legislator must deal with the aftermath of his or her decision. Analyzing the cosponsorship activity of 867 legislators from 30 states with respect to renewable portfolio standard (RPS) legislation and focusing on innovation or emulation during cosponsorship as a dependent variable, I find—in a result resembling a core finding from chapter 3—that increased legislative professionalism raises the chance that a legislator emulates during cosponsorship. At the same time and unlike in chapter 3, I fail to find a connection between individual-level electoral vulnerability (modeled here as a legislator's vote share in his or her most recent election) and emulation, suggesting that electoral vulnerability may potentially *not* play the same role in individual-level cosponsorship that it plays in collective-level policy adoption.[98] Finally, I find evidence that legislators from states with term limit provisions are more likely to cosponsor innovative policies than are legislators from states lacking term limits.

Taken together, the results here provide a fascinating look into the nature of individual-level policymaking during cosponsorship. While an increase in legislative professionalism allows individual legislators (like the legislatures in chapter 3) to learn more about the benefits of emulation and ultimately embrace emulation over innovation,

[98] I discuss why this may be the case at the end of this chapter and in the conclusion of the dissertation.

electoral vulnerability in the form of legislator vote share does not appear to alter a legislator's cosponsorship behavior.[99] The positive association between state term limit provisions and innovation during cosponsorship, however, suggests that legislators consider the potential electoral implications of their decision-making, as cosponsors with longer and more open-ended time horizons (the cosponsors from states lacking term limit provisions) appear more likely to emulate during cosponsorship and try to shield constituents (as well as themselves) from the risk of innovation.

The chapter proceeds as follows. I first review literature on the topic of cosponsorship and then hypothesize about how legislative professionalism, individual-level electoral vulnerability, and term limit provisions could affect innovation and emulation in cosponsorship. I then discuss my empirical strategy and present results. In a concluding section, I link findings here to those of earlier chapters.

5.2 Legislator Characteristics, Cosponsorship, and Innovation

A large literature about cosponsorship exists within American politics. However, almost none of this work connects cosponsorship to the vast literature on policy innovation and diffusion. Krehbiel (1995), Kessler and Krehbiel (1996), Koger (2003), and Harward and Moffett (2010) describe cosponsorship as a useful way for legislators to show outward support for a policy proposal without needing to commit themselves to the much more consuming task of shepherding the policy proposal through the legislative process. Cosponsorship ostensibly helps legislators send two signals to constituents: first, cosponsors show constituents that they are "taking positions" on issues that the

[99] Failure to reject the null, of course, does not mean that the null is true or that the alternative is false.

constituents care about (Mayhew 1974; and Koger 2003); and second, to the degree that cosponsors can persuade constituents that they play a key role in getting policy proposals desired by constituents adopted, cosponsors show constituents that they are producing desired policy outputs (Woon 2009).[100]

Much of the existing scholarship on cosponsorship deals with the legislator's decision to cosponsor versus not cosponsor rather than the legislator's decision to innovate or emulate during cosponsorship. A key question in many previous studies concerns the effect of a legislator's electoral vulnerability on his or her cosponsorship activity. Wilson and Young (1997), Harward and Moffett (2010), and Makse (2013) link increased electoral vulnerability to greater amounts of cosponsorship by legislators, as vulnerable legislators attempt to send signals about their productivity to voters. At the same time, Kessler and Krehbiel (1996) and Garand and Burke (2006) fail to find an association between electoral vulnerability and cosponsorship activity.

The existing literature's association of electoral vulnerability with the legislator's choice to cosponsor extends nicely into a central question of this chapter: how does electoral vulnerability affect whether a legislator innovates or emulates during cosponsorship? If legislators increase cosponsorship activity in response to rising electoral vulnerability, as some studies allege, then it is possible that legislators also adjust the type of cosponsorship that they pursue in response to electoral fortunes. A vulnerable legislator may emulate and cosponsor existing policy in order to signal to

[100] There is a debate within the cosponsorship literature as to whether cosponsors care more about position taking (Mayhew 1974, Kessler and Krehbiel 1996, and Koger 2003 advocate this view) or helping to adopt policy (Woon 2009 makes this claim). I sidestep and do not take a strong stance in this debate, except to say that I believe that cosponsors care about position taking *and* producing policy.

constituents that he or she is trying to replicate successes found elsewhere (Volden, Ting, and Carpenter 2008; and Pacheco 2012). At the same time, electorally vulnerable legislators who are desperate to save their careers may innovate and cosponsor novel policy in hopes that taking unprecedented action may improve their electoral fortunes.[101]

Existing literature on cosponsorship does not appear to mention legislative professionalism or term limits. This does not mean, however, that these two variables do not play roles in influencing innovation or emulation during cosponsorship. Legislative professionalism affects the amount of time, money, and staff that are available to legislators and may influence how the legislators approach the decision to innovate or emulate. And term limits alter the time horizons of legislators (Kousser 2005), arguably reduce electoral accountability (Ferraz and Finan 2011; and Alt, Bueno de Mesquita, and Rose 2011), and may change how legislators view the relative risk levels associated with innovating and emulating.

In the next section, I theorize about how legislative professionalism, electoral vulnerability, and term limits influence innovation and emulation during cosponsorship. First, however, I must clarify what I mean by "innovation and emulation during cosponsorship." In chapters 3 and 4, I utilized standard definitions of innovation and emulation. Namely, I gathered data on the adoption of RPS policies and arranged each case of policy adoption chronologically (based on the date of adoption listed in the enabling document associated with each case of policy adoption). Then, regardless of whether an adoption occurred through legislative, regulatory agency (public utility

[101] One way this could happen is if a legislator's unprecedented action manages to convince members of some constituency that the legislator could be an advocate for that constituency's interests.

commission), or ballot action, I classified the adoption as a case of innovation if a state adopted the policy before or within one year of the first state's adoption of the same policy.[102] Again, regardless of whether an adoption occurred through legislative, regulatory agency, or ballot action, I classified an adoption as a case of emulation if a state adopted the policy at least one year after another state's adoption of the same policy. This classification process resulted in the creation of a master list of cases of innovation and emulation in policy adoption. In chapter 3, I extracted *legislative* instances of innovation and emulation from the master list and then examined the determinants of legislative innovation and emulation in policy adoption. In chapter 4, on the other hand, I extracted *regulatory agency* instances of innovation and emulation from the master list and then examined the determinants of regulatory agency innovation and emulation in policy adoption.

Here, I use the *same* legislative instances of innovation and emulation in policy adoption that I used in chapter 3 to identify cases of legislator innovation and emulation in policy cosponsorship. A legislator in state *i* innovates if he or she is listed (at the time of state *i*'s adoption of a policy) as a cosponsor of a policy that has either not been adopted in any state but state *i* or has been adopted within one year of the first state's (state *j*) adoption of the same policy. A legislator in state *i* emulates if he or she is listed (at the time of state *i*'s adoption of a policy) as a cosponsor of a policy that has been adopted in state *i* at least one year after the same policy was adopted by another state. It is important to tie innovation and emulation in cosponsorship to innovation and emulation

[102] Recall that I relax the definition of innovation to account for the fact that policymakers from two states could simultaneously be deciding whether to innovate with respect to the same policy. Adding a one-year window to the definition of innovation helps us get around the simultaneous adoption issue.

in adoption so that cosponsors in state *i* can actually observe and learn (or not observe and learn, if they are innovating) from concrete policy outcomes in state *j*.[103] Since my instances of legislator innovation and emulation in cosponsorship come from the legislative instances of innovation and emulation in adoption (used in chapter 3), and since the legislative instances of innovation and emulation in adoption come from a master list of innovation and emulation in adoption that is agnostic about the source (whether it be a legislature, a regulatory agency, or citizens acting through a ballot initiative process) of the adoption, it follows that legislators in my conceptualization of innovation and emulation in cosponsorship are agnostic about the policy adopters (they could be legislatures, regulatory agencies, or citizens) they are following when they choose to cosponsor an emulative policy.[104]

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[103] A potential issue that could affect results is that cosponsorship occurs before adoption. This could create complications in cases where there is a temporal mismatch between the time of cosponsorship and the time of adoption. Basically, state *i* may emulate state *j* and adopt a policy a little over a year after state *j* adopted the same policy. However, a legislator from state *i* may cosponsor the policy adopted in state *j within* one year of state *j*'s adoption, meaning that the cosponsor is actually innovating (although his or her cosponsorship is classified as an emulation) since he or she may not observe the effects of state *j*'s adoption. As a robustness check, I deal with this issue by lengthening the definition of innovation to include two years from the date of the first state's adoption of a policy. A two-year definition of innovation allows us to claim that an emulating legislator in state *i* who cosponsors a policy that was first adopted by state *j* one year earlier has had at least one year to observe policy outcomes in state *j* before cosponsoring the policy in state *i* and (importantly) still has at least one year to observe policy outcomes in state *j* and decide whether he or she wants to remain a cosponsor of that policy in state *i*. Since I record the names of cosponsors at the time of a policy's adoption, this means that all emulating cosponsors have had at least two years to observe external policy outcomes and decide whether they want to still be cosponsors of a particular policy. Findings from the two-year definition of innovation corroborate findings from a one-year definition of innovation, and I include both sets of findings in the results section of this chapter.

[104] This is to say that a legislator in state *i* can emulate by cosponsoring a policy that has already been adopted in state *j* through regulatory agency action. Two issues worth pointing out now (and that I discuss in the data section of this chapter) concern (1) the

5.3 Legislative Professionalism, Electoral Vulnerability, Term Limits, and Innovation in Cosponsorship

As was in the case in chapter 3, I would like to first address why legislators even choose to innovate or emulate when cosponsoring policy. As with chapter 3, where innovation and emulation were simply different forms of adoption, here, innovation and emulation are different forms of cosponsorship. I therefore must establish why individual legislators choose to cosponsor policy. A fundamental reason why legislators cosponsor policy is to enhance their own reelection prospects (Mayhew 1974). Legislators know that constituents want them to advance policies that further constituent interests, and cosponsorship allows for legislators to concretely signal to constituents that they are furthering the interests of those constituents (Arnold 1990). A cosponsoring legislator therefore hopes that his or her cosponsorship activity will convince voters that the legislator takes the interests of constituents seriously and tries to further those interests (Fenno 1978; Arnold 1990; Schiller 1995; Wilson and Young 1997; Harward and Moffett 2010; and Makse 2013).

The connection linking a legislator's desire for reelection to his or her decision to cosponsor policy is well established (as seen by the citations in the above paragraph), and I follow this assumption here.[105] As was the case with a legislature's choice to adopt policy, a legislator cosponsors a policy when he or she believes that doing so will

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fact that I only look at the cosponsorship of adopted policies in this chapter; and (2) the fact that I do not look at when legislators choose not to cosponsor policy.

[105] This does not mean, of course, that non-electoral factors are irrelevant in influencing a legislator's decision to cosponsor policy. It does mean, however, that the desire for reelection is central to the legislator's choice to cosponsor policy.

improve his or her reelection chances and does not cosponsor a policy when he or she believes that doing so will not improve his or her reelection chances; the question then again shifts to why an individual legislator chooses to innovate rather than emulate when he or she cosponsors policy. Voters at the individual district level, like their counterparts at the state level who were featured prominently in chapter 3, expect that their legislators will cosponsor policies that they (the voters) desire and serve as competent policymakers (Pitkin 1967; and Volden 2006) and cosponsor policies that will perform well if adopted; furthermore, voters will electorally reward or punish legislators based on their evaluations of legislators' performances with respect to policymaking (Fiorina 1981; Ashworth 2012; and Bartels 2014). Individual legislators, who are motivated by reelection, also want to develop reputations as competent policymakers, and one way to build a reputation for competence is to avoid cosponsoring policies that could, if adopted, create significant and unanticipated costs for voters (Arnold 1990).

Cosponsoring a policy that if adopted creates significant and unanticipated costs for voters could damage the reelection chances of individual legislators if voters in the districts of those legislators are cost minimizers (Arnold 1990) and view the significant and unanticipated costs from the cosponsored and adopted policy as evidence of policymaking incompetence on the part of the individual legislators (Ashworth 2012; and Bartels 2014).

I use the same hypothetical RPS policy example from chapter 3 to illustrate how cosponsoring a policy that if adopted produces significant and unanticipated costs for voters could damage the electoral prospects of individual legislators. In this case, voters in a Michigan district want their representative to take action to increase energy

independence, and the Michigan representative responds by cosponsoring a policy requiring that electric utility companies in the state procure 40% of the electricity sold to consumers from renewable sources. Electric utility companies, including companies supplying energy to voters in the district of the cosponsor of the 40% requirement, initiate large electricity rate increases in order to assuage fears about firm profitability given the new requirement. Voters in the district of the cosponsor of the 40% requirement may be unhappy with the unanticipated costs, large electricity rate increases, associated with the 40% requirement and may punish the cosponsor for perceived incompetence in policymaking.

Individual legislators consequently want to avoid cosponsoring policies that if adopted could create significant and unanticipated costs for their voters, and a way to accomplish this goal is to *emulate* when cosponsoring policy. Emulation reduces the uncertainty associated with cosponsoring a policy because a cosponsor in state *i* can use the track record of a policy's performance in other states to evaluate whether the policy will produce significant and unanticipated costs for voters in his or her district upon that policy's adoption in state *i* (Volden 2006). Cosponsoring an emulation, however, requires that a legislator backs a policy that was designed in a different state, and it is possible that a policy designed in another state may not adequately fit the needs of voters—including voters in the district that the cosponsor represents—upon the adoption of the emulated policy in state *i* (Volden 2006). Cosponsoring an innovation, on the other hand, allows for a legislator to back a policy that is not only uniquely tailored to fit the specific context

of state *i* but may even fit much of the specific context of the district of the cosponsor[106]; the legislator consequently may receive more support from voters when he or she innovates rather than when he or she emulates since innovation can do a better job of addressing the particularistic concerns of voters. The risk of innovating for the individual legislator, however, is that innovation carries greater uncertainty than emulation since cosponsors cannot access an existing track record to evaluate whether an innovative policy that they support will create significant and unanticipated costs for voters upon adoption.

As with the case of legislative adoption in chapter 3, the choice between innovation and emulation here represents a tradeoff between cosponsoring a policy that is uniquely tailored to the context of a specific state and may even fit much of the context of a specific district within that state but that carries high uncertainty about whether the policy will generate significant and unanticipated costs upon adoption versus cosponsoring a policy that is not uniquely tailored to the context of a specific state, that may not adequately fit the context of a specific district within the importing state, but that carries low uncertainty about whether the policy will generate significant and unanticipated costs upon adoption (Bednar 2007).

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[106] It is extremely difficult to uniquely fit a policy the specific context of a *district* because the process of getting a policy turned into law requires multiple phases of compromise (e.g. committee gatekeeping followed by a general vote) by legislators across districts and each phase of compromise reduces the ability of any one legislator to uniquely tailor policy to the particular needs of his or her district. Nonetheless, a legislator may be able to tailor an innovative policy to very closely fit the context of his or her district insofar as the legislator can convince other legislators within the legislature that the specific needs of his or her district are the same as those across the state at large and that the other legislators should also address these same specific needs. The legislator may have more trouble tailoring a policy borrowed from another state to the specific needs of his or her district because the legislator must assume that the other state and his or her district share the same context, which is probably not the case.

I can now revisit the Minnesota example from chapter 3 to discuss the case of cosponsorship. In 1994, when Minnesota innovated and became the first state to require electric utility companies to meet part of their RPS obligations through the procurement of electricity from biomass-derived energy with the adoption of Senate File 1706, a number of legislators from districts dominated by agricultural interests not only cosponsored the biomass requirement, which incidentally was exceedingly well tailored to the needs of these districts since the requirement increased the demand for biomass products and established a captive buyer for those products, but convinced other members of the Minnesota legislature that it was also in their interest to support the biomass requirement. The cosponsors took a risk from innovating since allies of the electric utility companies claimed that the new regulation would raise consumer electricity rates. However, the cosponsors would not have adequately fit policy to the needs of their districts by simply emulating neighboring Iowa's RPS system—Iowa's program did not establish special obligations for electricity procurement from biomass materials and thereby did not provide a captive market for farmers—and successfully advanced policy that catered to the needs of their constituents by innovating.

In this chapter, I assume that a legislature and individual legislators respond to risk in the same way. I follow this assumption for two reasons. First, a legislature is an aggregation of individual legislators, and legislative decision-making occurs with the consent of a majority of legislators. Insofar as legislative decision-making merely captures the aggregation of legislator decision-making, I expect that a legislature and legislators respond to risk in the same way. My second reason for making this assumption, given that I am discussing cosponsorship, deals with the ubiquity of

cosponsorship within legislative policymaking. As Schiller (1995), Krehbiel (1995), Kessler and Krehbiel (1996), Koger (2003), Woon (2009), and Makse (2013) demonstrate, cosponsorship on a given policy is often practiced by a large group of legislators who are trying to show that a policy proposal has broad-based support within the legislature.[107] As the number of legislators within a legislature who cosponsor a particular policy increases, the way in which the cosponsors respond to risk will approximate the way in which a legislature responds to risk.

I acknowledge that a potential issue with assuming that a legislature and individual legislators respond to risk in the same way is that individual legislators within a legislature may not experience the same consequences as one another if a policy generates significant and unanticipated costs to voters upon adoption. Voters across districts may not perceive policy costs in the same way as one another, meaning that what voters in one district consider to be significant policy costs may be regarded as less significant policy costs in a different district.[108] Individual legislators may then differentially adjust their policy risk preferences based on their own opinions about how voters in their districts perceive the costs of policy. One way to account for the above issue would be to create heterogeneous risk functions for individual legislators based on knowing how voters in the districts of these legislators perceive policy costs in different

[107] This is definitely the case in the RPS policy domain, as 1051 legislators cosponsored Maryland's RPS policies while 876 legislators cosponsored South Dakota's RPS policies and 761 legislators cosponsored Illinois's RPS policies.

[108] An example from the RPS policy domain of voters in two districts perceiving unanticipated policy costs in different ways from one another comes from our hypothetical example of Michigan requiring utilities to procure 40% of their electricity from renewable sources, which in turn causes the utilities to initiate rate increases. Voters in a wealthy district may not care about the rate increases and may still support the 40% requirement while voters in a poor district may turn against the 40% requirement based on the rate increases.

ways from one another. Although I do not take up this endeavor in this project, analyzing possible heterogeneity in the risk preferences of legislators is a useful direction for future research.

Here, I use the tradeoff between the well-specified fit but high uncertainty of innovation and the more general fit but low uncertainty of emulation to evaluate how variation in legislative professionalism, electoral vulnerability, and the presence of term limit provisions affects the choice by legislators to innovate rather than emulate when cosponsoring policy. Legislative professionalism may alter the nature of the choice between innovation and emulation by giving legislators the research tools needed to better predict whether an innovation will produce significant and unanticipated costs to voters upon adoption. Electoral vulnerability may also alter the choice between innovation and emulation by making legislators less likely to cosponsor innovative policies, as these policies have high amounts of outcome uncertainty. Finally, the presence of term limits may alter the choice between innovation and emulation by truncating the time horizons of a legislator and potentially making that legislator more willing to embrace the risk of cosponsoring innovative policy. I now discuss how legislative professionalism, electoral vulnerability, and the presence of term limits influence a legislator's likelihood to innovate or emulate when cosponsoring policy.

Here, I explain how legislative professionalism, electoral vulnerability, and term limits affect innovation and emulation in cosponsorship. I first hypothesize about the effect of legislative professionalism on innovation and emulation in cosponsorship and link expectations here to those from chapter 3.

In chapter 3, while analyzing the policy adoption choices of state legislatures, I discovered that increased legislative professionalism actually drives emulation more than it does innovation.[109] I argued that increased legislative professionalism raises the likelihood of emulation more than innovation because increased professionalism raises the ability for members of a state legislature to learn about and vet the fit of a policy proposal that has already been adopted elsewhere *more* than it raises the ability for members of that legislature to learn about and vet the fit of a policy proposal that has never been adopted in any of the states.

A benefit of higher legislative professionalism, according to Walker (1969) and Squire (2007), is that it increases the amount of resources that members of a legislature can use to explore potential policy options. Assuming that members of a legislature receive a sudden increase in on-the-job resources (that is, an increase in legislative professionalism), and assuming that members of the legislature can use the additional resources to research about the fit of a tested policy proposal (a candidate for emulation) or an untested policy proposal (a candidate for innovation), I argue that members of a legislature obtain a better return on their research investment for investigating the fit of a tested policy proposal compared to investigating the fit of an untested policy proposal. Members of a legislature in state *i* can use the additional resources to interview legislators and communities affected by a policy's adoption in state *j* (or even states *j* and *k*)[110] and

[109] It is useful to remind readers that Squire (2007) argues that legislative professionalism consists of at least three components: session length (corresponding to the amount of time that a legislator spends on his or her job); legislator salary (corresponding to the amount of compensation that a legislator receives for performing his or her job; and staff size (corresponding to the number of individuals who work on behalf of the legislator).
[110] This is assuming that members of state *i*'s legislature are considering whether to adopt a policy that has already been adopted in states *j* and *k*.

get a good sense of how emulating states *j* and *k* could potentially succeed in state *i*. The members of state *i*'s legislature learn much less by spending the additional resources on researching about the fit of an untested policy proposal, as there are greater limits on how much research can uncover about a candidate for innovation compared to a candidate for emulation (which, unlike the untested candidate for innovation, has been tested and has an observable track record). The greater return on research investment associated with emulation leads to a situation where higher legislative professionalism increases the likelihood of emulation more than it increases the likelihood of innovation.

The finding above, which applies to macro-level legislative decision-making, also applies to the cosponsorship activity of individual legislators. Legislators cosponsor in part in order to signal (to constituents) that they helped to advance "successful" policy.[111] Legislators want to make sure that they are cosponsoring policies that are likely to be successful—since legislators do not help and may even hurt their own reputations in the eyes of constituents by cosponsoring policies whose effects are disliked by the constituents—and will utilize the tools of legislative professionalism (such as consulting with staff) to determine whether a policy they are considering to cosponsor is likely to be successful or not. To the degree that legislative professionalism generates a greater return on research investment with respect to tested policy proposals compared to untested policy proposals, and to the degree that legislative professionalism reveals concrete examples of cases where an adopted policy has been successful in other states (compared

[111] Here, "successful" policy refers to a policy that not only (1) addresses a problem that constituents believe needed to be addressed but (2) addresses the problem in such a way that constituents believe that they are receiving more from the policy than they are paying for it (constituents believe that they get more benefits from the policy than they lose in costs).

to not being able to reveal concrete cases of success with respect to an untested policy proposal), increases in legislative professionalism will correspond with an increased likelihood that legislators emulate rather than innovate when cosponsoring policy.

Legislative Professionalism Cosponsorship Emulation Hypothesis: *Rising legislative professionalism increases the likelihood that legislators will emulate rather than innovate when cosponsoring policy.*

In the above hypothesis, I expect that increased legislative professionalism raises the likelihood that a given case of cosponsorship is a case of emulation rather than innovation. I am not claiming that increased legislative professionalism decreases innovation and increases emulation: rather, I argue that the gap between the likelihood of emulating and innovating becomes larger as legislative professionalism increases.

My next set of hypotheses deal with the relationship between individual-level electoral vulnerability and innovation or emulation during cosponsorship. Chapter 2's macro-level analysis of electoral vulnerability and innovation or emulation during policy adoption showed that rising electoral vulnerability (modeled in chapter 2 as the median vote share earned by an incumbent legislator in his or her last election) increased the likelihood that a state legislature emulates when adopting policy.[112] Emulation allows lawmakers to not only signal to constituents that they are adopting policies that advance the constituents' demands *but also* lets lawmakers offer empirical proof to constituents that desired policy solutions have worked in comparable settings (Volden 2006; and

[112] Since I use median vote share (which in chapter 3 ranges from 50 to 95) to capture legislative electoral vulnerability, it is worth reminding readers that a decrease in median vote share corresponds to an increase in legislative electoral vulnerability.

Pacheco 2012).[113] Electorally vulnerable lawmakers may want to emulate more than their electorally secure counterparts because they can use the observable track record from an existing (already tested) policy to offer empirical proof to potentially skeptical constituents about their plans to replicate desired policy successes (Volden 2006) found elsewhere and try to sound more credible in the eyes of those constituents. Therefore, as the electoral vulnerability faced by members of a legislature increases, that legislature will be more likely to emulate when adopting policy.

Individual-level electoral vulnerability may also increase the likelihood of emulation during cosponsorship. A vulnerable legislator may also try to convince skeptical constituents that he or she, by cosponsoring a policy that has already been adopted in a comparable setting, is trying to replicate desired external policy successes and may use the external policy's observable track record to try to increase constituent confidence in his or her policymaking ability.

Electoral Vulnerability Cosponsorship Emulation Hypothesis: *As the electoral vulnerability of a legislator increases, that legislator is more likely to emulate and cosponsor policy that has already been adopted in another state.*

A different possibility, however, is that increased electoral vulnerability raises the likelihood that legislators innovate and cosponsor policy that has never been adopted in any state. The motivating idea here is that rising electoral vulnerability actually increases the risk acceptance of individual legislators, as legislators desperate to improve their

[113] While emulation and innovation may allow lawmakers to signal to constituents that they are adopting policies advancing the constituents' demands, only emulation lets lawmakers give empirical proof to constituents that desired policy solutions have worked in comparable settings.

electoral prospects resort to taking unprecedented action in order to build inroads with various constituencies and bolster their own electoral fortunes.[114]

Electoral Vulnerability Cosponsorship Innovation Hypothesis: *As the electoral vulnerability of a legislator increases, that legislator is more likely to innovate and cosponsor policy that has never been adopted in any state.*

In both of my electoral vulnerability hypotheses, I argue that the gap between the likelihood of emulating and innovating changes as electoral vulnerability increases.

My final hypothesis concerns the effect of term limit provisions on a legislator's likelihood to innovate or emulate when cosponsoring policy. The proliferation of term limit provisions across the U.S. states has been an institutional change of huge import. A number of interest groups have lauded term limit provisions as a way to reduce careerism and increase turnover in government.[115] Term limits set a maximum amount of time (typically two terms) that a legislator can serve in his or her position and thereby shorten the time horizons associated with that legislator's current position. The effect of shortened time horizons on the relationship between a legislator and his or her constituents has been the subject of considerable research within political science. Kousser (2005) mentions that term limits weaken the bond between a legislator and his or her constituents, as legislators have less of an incentive to maintain longstanding relationships with constituents. More recently, Ferraz and Finan (2011) and Alt, Bueno

[114] Taking unprecedented action, for example, may help a legislator convince members of some constituency that the legislator will be a reliable advocate for the interests of that constituency. Legislator vote share, the variable used to measure electoral vulnerability, nicely captures desperation among legislators since 23.4% of the observations for this variable are associated with a legislator vote share of less than 50%.

[115] One such group is the Heritage Foundation, which has been advocating the adoption of term limits at federal and state levels for over twenty years. Greenberg (1994) provides a good example of the popular case for term limits.

de Mesquita, and Rose (2011) show that term limits weaken the ability of voters to use elections to discipline the policymaking behavior of legislators.

Here, I argue that legislators from states with term limit provisions are more likely to cosponsor innovative policy compared to legislators from states without term limit provisions. Term limits, I argue, increase the likelihood that legislators cosponsor innovative policy by making legislators less worried about the downstream electoral risks associated with innovating. Legislators who come from states without term limit provisions may view their current positions as open-ended and long-term commitments and may refrain from innovating in order to reduce the possibility that unanticipated and undesired effects of innovation damage their electoral prospects. These legislators, to the degree that they cosponsor policy, may choose to emulate and cosponsor tested policy since they know more about the possible effects of the tested policy. Legislators who come from states with term limit provisions, on the other hand, may view their current positions as short-term commitments and be willing to cosponsor an innovative policy (provided, of course, that they support the innovative policy) since they may not be threatened electorally by unanticipated and undesired effects from the innovative policy.[116]

Term Limits Cosponsorship Innovation Hypothesis: *Legislators from states with term limit provisions are more likely to cosponsor innovative policies than are legislators from states without term limit provisions. Legislators from states without term*

[116] I acknowledge that a subset of legislators from states with term limit provisions may be upwardly mobile and may refrain from innovating in order to avoid jeopardizing their electoral prospects for higher office. However, in this chapter, I do not analyze the innovation and emulation behavior of this "upwardly mobile" group of legislators.

limit provisions are more likely to emulate and cosponsor tested policies compared to legislators from states with term limit provisions.

Here, I again argue that the gap between the likelihood of innovating and emulating changes if legislators come from a state that has term limit provisions.

5.4 Data and Empirical Strategy

In this chapter, I use regression analysis to evaluate the effects of legislative professionalism, electoral vulnerability, and term limit provisions on innovation and emulation during cosponsorship. I examine innovation and emulation during cosponsorship using the same renewables portfolio standard (RPS) data that has been employed throughout the dissertation. Recall that an RPS describes a set of policies that each promote renewable energy use by specifying that utilities provide some amount of electricity from renewable sources (Rabe 2006).[117]

RPS policymaking represents an excellent venue for studying the determinants of innovation and emulation during cosponsorship. First, the states created their RPS programs in the absence of federal intervention: this point is important since it shows that the state governments had agency in crafting their RPS programs and shows that cosponsors were not simply responding to federal mandates. Second, the vast majority of state RPS programs were created and modified through legislative action (Rabe 2006): this point is important since it suggests that RPS is an issue area where legislators actually had the opportunity to cosponsor policies. Finally, I have individual

[117] RPS policy examples include what a state counts as "renewable" energy (e.g. solar thermal electric, geothermal, etc.), the type of standard (e.g. amount of retail energy supplied, percentage of consumption, etc.), and whether utilities can trade credits to meet standards. All of the policies are listed in the dissertation's appendix.

cosponsorship data for the overwhelming majority of states where legislatures played a role in adopting RPS policies, meaning that I have substantial cross-state variation in the sample of legislators analyzed in this study.[118]

Creating the dependent variable—whether a legislator cosponsors an innovative policy or cosponsors a policy that has already been adopted in another state—is a two-step process. I first repeat the same process used to identify legislative instances of innovation and emulation in policy adoption from Chapter 3. To recap briefly, I consult the *Database of State Incentives for Renewables and Efficiency* (DSIRE) and obtain a list of major RPS policies as well as a list of the states that have adopted each RPS policy. From DSIRE, I also obtain the names of the 306 enabling documents that correspond to each state's adoption of an RPS policy. I chronologically arrange the 306 documents and assign a date to when each state adopted a particular policy. Then, regardless of what governmental actor—a legislature, public utility commission, or citizens through a ballot process—adopts, I code a policy adoption as a case of innovation if a state adopts a policy within one calendar year of the first state's adoption of that policy, and I code a policy adoption as a case of emulation if a state adopts a policy at least one calendar year after the first state's adoption of that policy.

In chapter 3, I used legislative cases of innovation and emulation in policy adoption to evaluate the legislative choice to innovate or emulate when adopting policy.

[118] In between 1983 and 2011, 37 states adopted RPS policies. In 33 of these states (not including Arizona, New Mexico, and New York, where public utilities commissions adopted *all* state RPS provisions, and Washington, where citizens voting in a ballot initiative adopted *all* state RPS provisions), legislatures adopted all or some of the provisions making up a state's RPS program. I have sponsor data for 30 of the 33 states where legislatures adopted RPS policies and unfortunately lack sponsor data for three states: Iowa, Kansas, and Massachusetts. In table 22, I give an overview of the number of instances of legislator innovation and emulation by state.

Here, I use legislative cases of innovation and emulation in policy adoption to identify cases of legislator innovation and emulation in policy cosponsorship. Namely, for each case of legislative innovation in policy adoption (from chapter 3), I find the names of all legislators who cosponsored the bill containing that innovation. I then code each legislator's cosponsorship of a given adopted policy innovation as a separate case of innovation in policy cosponsorship. I use an identical procedure for each case of legislative emulation in policy adoption and find the names of all legislators who cosponsored the bill containing the emulation. I then code each legislator's cosponsorship of a given adopted policy emulation as a separate case of emulation in policy cosponsorship. I importantly use the final versions of bills to identify the names of legislative cosponsors: this is done to avoid recording the names of cosponsors that rescind their cosponsorship prior to the adoption of a particular policy.

TABLE 21: Examples of Innovation and Emulation in Policy Cosponsorship

Policy Adoption	Is Adoption Innovation or Emulation?	Cosponsor	Is Cosponsorship Innovation or Emulation?
Geothermal (in Michigan RPS)	Emulation	Jane Doe	Emulation
Geothermal (in Michigan RPS)	Emulation	John Doe	Emulation
Coal Methane (in Michigan RPS)	Innovation	Jane Doe	Innovation
Coal Methane (in Michigan RPS)	Innovation	John Doe	Innovation

In table 21, I display the procedure linking a case of legislative innovation (or emulation) in policy adoption to a case of legislator innovation (or emulation) in policy cosponsorship. We see two hypothetical legislative policy adoptions: one where the Michigan legislature emulates and adopts geothermal energy as part of Michigan's RPS, and another where the Michigan legislature innovates and adopts coal methane energy as

part of Michigan's RPS. We also see that two legislators, Jane Doe and John Doe, cosponsored the legislation containing the cases of emulation and innovation. I code Jane Doe's endorsement of geothermal energy (an emulation in policy adoption) as a case of emulation in policy cosponsorship, and I code her endorsement of coal methane energy (an innovation in policy adoption) as a case of innovation in policy cosponsorship. I use the same coding process for the other sponsor, John Doe. This process nets 2 cases of innovation and 2 cases of emulation in policy cosponsorship based on 1 case each of innovation and emulation in policy adoption (two legislators each cosponsor the respective cases of innovation and emulation in policy adoption).

Repeating this process for 30 states from 1994 to 2011, I end up with a dataset that includes 1,184 cases of innovation in policy cosponsorship and 5,895 cases of emulation in policy cosponsorship. 1994 is the starting year of the dataset since this is the first year for which I could obtain cosponsorship data on RPS legislation. As is the case in the rest of the dissertation, 2011 is the final year of the dataset since is the last year in which analysts at DSIRE were able to verify their RPS policy data. In table 22, I give a state-specific breakdown of the number of cases of innovation and emulation in cosponsorship and the number of legislators that are included in the dataset.

TABLE 22: State Breakdown of Innovation and Emulation in Cosponsorship

State	Number of Legislators	Number of Cases of Cosponsored Innovation	Number of Cases of Cosponsored Emulation
California	9	10	75
Colorado	83	66	80
Connecticut	43	256	230
Delaware	27	0	289
Hawaii	43	111	467
Illinois	120	68	693
Indiana	7	7	140
Maine	21	63	58

State	Number of Legislators	Number of Cases of Cosponsored Innovation	Number of Cases of Cosponsored Emulation
Maryland	123	0	1051
Michigan	6	12	84
Minnesota	58	72	146
Missouri	3	0	13
Montana	2	0	10
Nevada	26	22	33
New Hampshire	6	12	102
New Jersey	17	11	7
North Carolina	19	35	225
North Dakota	3	3	27
Ohio	2	5	16
Oklahoma	23	23	253
Oregon	27	0	312
Pennsylvania	13	65	221
Rhode Island	5	0	45
South Dakota	73	73	803
Texas	10	10	100
Utah	7	2	56
Vermont	2	0	14
Virginia	2	2	20
West Virginia	2	16	32
Wisconsin	85	240	293
Total	867	5895	1184

My cosponsorship dataset is clearly hierarchical in nature, as individual legislators are nested within states (there are 867 sponsors in 30 states). Despite the hierarchical nature of the dataset, there are many instances in which I have very few (and commonly, even only one) observations per legislator. The lack of a large number of repeated observations per legislator makes the use of a mixed model impractical, as the legislator-specific error component will be massive and uninterpretable (Gelman and Hill 2007). I therefore follow the advice of Gelman and Hill (2007) and conduct my empirical

analysis using clustered errors at the higher level (the state level) observed in the dataset.[119]

The dependent variable, ***Cosponsorship Type***, is binary and captures whether a legislator cosponsors an innovative policy or cosponsors a policy that has already been adopted in another state. Emulation in cosponsorship takes a value of 0 while innovation in cosponsorship takes a value of 1, meaning that logistic regression reveals how changes in exogenous variables affect the probability that a given case of cosponsorship represents innovation rather than emulation. My dependent variable unfortunately does not capture the non-cosponsorship of policy. Ideally, I would have data capturing the non-cosponsorship of policy and would (similar to the procedure that was used to analyze innovation and emulation in policy adoption in chapters 3 and 4) use non-cosponsorship as a baseline and then investigate whether changes in the explanatory variables of interest[120] differentially affect the probability of innovating or emulating compared to remaining at the non-cosponsorship baseline. My empirical analysis, as it currently stands, explores how changes in the explanatory variables of interest affect innovation over a baseline of emulation, and while this analysis is useful insofar as it shows when (conditional on changes in the explanatory variables of interest) innovation is more likely than emulation, it does not address how the explanatory variables of interest affect

[119] In fact, a hierarchical logistic model (the "mixed effects logit" or "xtmelogit" in Stata) that includes both legislator (level 1) and state (level 2) error components will not converge despite numerous attempts.
[120] These are legislative professionalism, electoral vulnerability, and term limit provisions.

cosponsorship in the first place nor does it let us compare innovation and emulation over a common (non-cosponsorship) denominator.[121]

Gathering data on (and appropriately modeling) policy non-cosponsorship will be a challenging but necessary component of the project moving forward. At a minimum—assuming that I only use the same legislation that is already being analyzed in this study—I would need to gather the names of all legislators within a state who contemporaneously served alongside cosponsoring legislators but chose not to cosponsor the same legislation as the cosponsoring legislators, and I would need to add the choices of the non-cosponsoring legislators to my dataset.[122]

A second challenge involves the fact that my dataset only includes observations from adopted legislation. This feature of my dataset is an artifact of the data collection process used in the dissertation, as DSIRE—the source from which I obtained information about state RPS policies—only gathered data on adopted policies. A valid concern related to omitting data from non-adopted policy proposals is that the effects of my explanatory variables of interest may be different across samples of adopted versus

[121] My point here is that we must take care when interpreting the results of this chapter. Here, term limits relates positively with innovation (and negatively with emulation) and one may conclude that the presence of term limits increases the likelihood of innovation and reduces the likelihood of emulation. However, if we were to add cases of non-cosponsorship to the dataset and compare innovation and emulation to the non-cosponsorship baseline, it may be the case that term limit provisions *increase* the likelihood of both innovation and emulation (compared to not cosponsoring) but that the effect of term limits is stronger with respect to innovation than it is with respect to emulation. The interpretation given the addition of the non-cosponsorship baseline would still be that term limit provisions increase innovation more than emulation but we could no longer say (and would in fact be incorrect to say) that term limit provisions *decrease* the probability of emulation.

[122] This fix would at least account for non-cosponsorship within my dataset of adopted legislation. A second challenge—accounting for non-cosponsorship (and for that matter, innovation and emulation) in legislation that was *not* adopted is one that I next discuss.

non-adopted policy proposals. It may be the case (to again use a hypothetical example from my term limits variable) that legislators from states with term limit provisions appear to be more risk acceptant and supportive of cosponsoring innovations *because* these legislators have already received word that the innovations are likely to be adopted. An alternative proposition, of course, is that legislators from states with term limit provisions are just as risk averse as their peers from states lacking term limit provisions, and that the pro-innovation effect of term limits documented in this chapter is entirely an artifact of only analyzing adopted policies.

I unfortunately cannot address the above possibility without gathering data on the cosponsorship of non-adopted policies.[123] One way to gather this data moving forward would be to use keywords from the names of adopted RPS policies to search through state legislative records and identify bills (these bills would ideally contain RPS policies) that were ultimately not adopted by state legislatures.[124] Employing a data collection process identical to the one utilized in this chapter, I could then gather data on the cosponsorship activity associated with non-adopted legislation and then evaluate the effects of my explanatory variables of interest on innovation and emulation using the non-adopted sample. If empirical results in the non-adopted sample are substantively similar to empirical results in the adopted sample, then I can defend against the charge that empirical support for my theory is largely an artifact of selecting a sample wholly

[123] And given the earlier discussion about incorporating the choice of non-cosponsorship into my dataset, I would ideally gather data on the non-cosponsorship, innovation, and emulation of policies that were not successfully adopted.

[124] It is important to select non-adopted bills dealing with RPS policies for one reason: we still want to focus on a policy area where the federal government left policymaking in the hands of the states and moving away from RPS policy may introduce unwanted variation in federal involvement (and maybe other types of unwanted variation) into our dataset.

composed of adopted policies. Makse (2013) uses the aforementioned strategy to address selection issues in his study of sponsorship in criminal justice legislation (he also initially only looked at the sponsorship of policies that were eventually adopted), and moving forward, I plan to use the same strategy to address selection issues in this chapter.

Having provided an overview and discussed the limitations of my dependent variable, I now describe the study's three explanatory variables of interest. The first variable, ***Legislative Professionalism***, is Squire's preeminent (2007) measure of professionalism and captures the amount of resources (measured as the sum of three components: session length, legislator salary, and staff size) available to members of a legislature in state *i* in year *t*. Consistent with the pro-emulation finding from chapter 2 and with the Legislative Professionalism Cosponsorship Emulation Hypothesis, I expect that legislative professionalism will relate negatively and significantly with *Cosponsorship Type*, suggesting that rising legislative professionalism increases the probability that a legislator emulates rather than innovating when cosponsoring policy. My second explanatory variable of interest, ***Legislator Vote Share***, measures the vote share earned by a legislator in his or her last election and captures a legislator's level of electoral vulnerability.[125] A positive and significant relationship between *Legislator Vote Share* and *Cosponsorship Type* would lend credence to the Electoral Vulnerability Cosponsorship Emulation Hypothesis, as it links a lower vote share to increased emulation in cosponsorship. A negative and significant relationship between *Legislator Vote Share* and *Cosponsorship Type*, on the other hand, lends support to the Electoral

[125] The assumption here is that decreases in *Legislator Vote Share* correspond to increases in electoral vulnerability.

Vulnerability Cosponsorship Innovation Hypothesis by linking a lower vote share to increased innovation in cosponsorship.

The final explanatory variable of interest, ***Term Limits***, is binary and takes a value of 1 if members of a state legislature face a limit on the number of terms that they can serve and 0 if members of a state legislature face no such limit. A positive and significant relationship between *Term Limits* and *Cosponsorship Type* lends support to the Term Limits Cosponsorship Innovation Hypothesis, as this relationship suggests that legislators from states with term limit provisions are more likely to cosponsor innovative policy compared to legislators from states lacking term limit provisions.[126]

I include several legislator-specific control variables that may capture other explanations of innovation and emulation in cosponsorship. ***Non-Freshman Legislator*** is a binary variable that takes a value of 1 if a sponsor is serving in at least his or her second term and 0 if the sponsor is serving in his or her first term. It could be the case that on-the-job knowledge drives innovation in policy cosponsorship, and I include the *Non-Freshman Legislator* variable to account for this possibility. ***Legislator Party*** is a binary variable that takes a value of 0 if a cosponsor belongs to the Democratic Party and 1 if a

[126] A reader may wonder whether *Legislative Professionalism* and *Term Limits* interactively affect a legislator's choice to emulate or innovate during cosponsorship. I fail to find statistical evidence supporting this proposition, as a variable reflecting the multiplicative interaction of *Legislative Professionalism* and *Term Limits* does not achieve statistical significance in the empirical models utilized in this paper. Additionally, the *Term Limits* variable captures the existence of term limit provisions at the state level. I do not have data on whether an individual legislator is currently in his or her final term, nor do I have data on the number of years that an individual legislator has left before he or she must leave office due to term limit rules. I do have data on the number of years that a state allows legislators to serve before they must leave office, and I evaluate whether variation in the length of service allowed by a state affects innovation and emulation. I find evidence that corroborates the term limits result in this chapter, as legislators with shorter lengths of service are more likely to innovate when cosponsoring policy than are legislators with longer lengths of service.

cosponsor belongs to the Republican Party. RPS policymaking has traditionally been part of the Democratic Party's agenda, and it may be the case that Democratic legislators have driven innovation in cosponsorship. ***Dominant Party*** is a binary variable that takes a value of 1 if a cosponsor belongs to a party that possesses unified control of state government and 0 if a cosponsor belongs to a party that does not possess unified control of state government. It may be the case that legislators belonging to a dominant party (and emboldened by their affiliation with the dominant party regime) are more likely to innovate when cosponsoring policy. Finally, ***Legislator Chamber*** is binary and takes a value of 1 if a cosponsor is a Senator and a value of 0 if a cosponsor is a Representative or a Delegate. Makse (2013) showed that belonging to an upper chamber makes a legislator more likely to sponsor policy, and it is possible that a legislator's chamber of affiliation also affects whether that legislator innovates or emulates when cosponsoring policy.[127] Here, lower chamber legislators, who generally have shorter terms than their upper chamber colleagues, may want to quickly send signals of policy stewardship to constituents and may choose to emulate since they can use the track record of the (already tested) policy proposal to quickly draw attention to their own abilities as good policy stewards.

I also include a host of controls gathered at the state-specific level. ***Legislative Election Year*** is a binary variable that takes a value of 1 if state *i* holds a legislative election in year *t* and 0 otherwise. *Legislative Election Year* captures the possibility that policy cosponsorship activity could be driven by fears among cosponsors that an

[127] Makse argues that the smaller size of a Senate makes it easier for a senator to sponsor bills compared to a Representative.

upcoming election will usher in a new legislative environment that is less hospitable for the policy proposals being put forth.

Two more controls, ***Increase in Unemployment Rate***, and ***State Per Capita Income***, measure economic conditions in state *i* and capture the possibility that legislators from states with more robust economies may be more likely to cosponsor innovative policies. Three variables, ***Percentage of Coal Consumption***, ***Percentage of Petroleum Consumption***, and ***Percentage of Renewable Consumption*** capture the percentages of total energy consumption in state *i* in year *t* that come from coal, petroleum, or "renewable" sources.[128] The coal, petroleum, and renewable industries have tried to sustain markets at the point of sale (hence, the use of consumption) by lobbying for protections in the states where they have a sizeable retail presence. Therefore, it is possible that energy sector industries could mobilize legislative allies to cosponsor innovative policies.

I also include ***Solar Average***, the average daily amount of solar radiation received in state *i* in year *t* (in kilowatt-hours per square meter per day); ***River Miles***, the total mileage for perennial rivers in state *i* (in thousands of miles); and ***Shoreline***, the total mileage (in thousands of statute miles) of coastline for any state that borders an ocean, the Gulf of Mexico, or any of the Great Lakes. Higher values in these variables may correspond with increases in the likelihood that legislators will cosponsor innovative

[128] As in chapters 3 and 4, the definition of "renewable" for the *Percentage of Renewable Consumption* variable comes from the U.S. Energy Information Administration (EIA). Hydroelectric, wood and waste, ethanol, ethanol co-products, geothermal, solar, photovoltaic, and wind-based energy outputs are included under the EIA's definition of renewable energy.

policies, as sectoral interests may convince legislators that exploiting these resources can lead to economic growth.

Lastly, I include two state-specific variables, ***Prior Innovation***, and ***Neighbor Innovation***, which account for temporal and spatio-temporal influences on innovation in policy cosponsorship. *Prior Innovation* is the total number of previous instances of innovation that occurred in state *i* divided by the total number of previous instances of innovation that occurred across all states. *Prior Innovation* captures the possibility that innovation in policy cosponsorship is a function of the inherent innovativeness of state *i*. *Neighbor Innovation* measures the fraction of total previous instances of innovation that occurred in states adjacent to *i* and captures the possibility that innovation in policy cosponsorship could follow a neighborhood trend.

In table 23, I display descriptions and summary statistics for variables included in this chapter.

TABLE 23: Descriptive Statistics for Variables in this Chapter

Variable	Type	Structure	Mean
Cosponsorship Type	Dependent	Binary	16.7% of Observations = Innovation
Legislative Professionalism	Explanatory	Continuous	0.19
Legislator Vote Share	Explanatory	Continuous	64.2
Term Limits	Explanatory	Binary	24% of Observations = Term Limits
Non-Freshman Legislator	Control	Binary	77.4% of Observations = Non-Freshman Legislators
Legislator Party	Control	Binary	61.1% of Observations = Democrats
Dominant Party	Control	Binary	37.9% of Observations = Dominant Party Affiliation
Legislator Chamber	Control	Binary	61.2% of Observations = House Members
Legislative Election Year	Control	Binary	60.9% of Observations = Non-election Years

Variable	Type	Structure	Mean
Increase in Unemployment Rate	Control	Continuous	0.0005
% State Per Capita Income	Control	Continuous	103.5
% Coal Consumption	Control	Continuous	18.5
% Petroleum Consumption	Control	Continuous	40.1
% Renewable Consumption	Control	Continuous	8.8
Solar Average	Control	Continuous	3.6
River Miles	Control	Continuous	19.7
Shoreline	Control	Continuous	1.1
Prior Innovation	Control	Continuous	0.004
Neighbor Innovation	Control	Continuous	0.098

I estimate four model specifications in this study. First, I utilize a logit model and cluster standard errors by state to account for the realistic proposition that observations from the same state are not independent from one another. As a robustness check on results obtained using the logit model with state clustered errors, I secondly estimate a logit model using state random effects. The third and fourth models are analogous to models 1 and 2, except that I use a definition of innovation that lasts two years instead of one year.[129]

I cannot estimate a model using state fixed effects for two reasons: first, the *Term Limits* variable is time-invariant, meaning that state fixed effects would capture the variation contained in the *Term Limits* variable. Second, my data is largely cross-sectional rather than longitudinal in nature: I rarely have more than two years worth of observations for any one state. Including fixed effects with a lagged dependent variable

[129] Remember that using the two-year innovation variable serves as a robustness check and reduces the probability of temporal mismatch, where a legislator actually innovates in cosponsorship even though his or her legislature emulates in adoption. I discuss this phenomenon in greater detail in footnote 104.

(*Prior Innovation* and *Neighbor Innovation* contain lagged forms of the dependent variable) in a dataset containing a small number of time periods leads to Hurwicz bias, where fixed effects "downwardly bias the coefficient of the lagged dependent variable" (Beck 2005). I also should mention that I do not include either lagged dependent variable while using state random effects. I make this modeling choice to avoid the situation pointed out by Baum (2010), where including a lagged dependent variable in a random effects model introduces a correlation between the lagged dependent variable and the estimated unit error parameter.[130]

5.5 Results

In table 24, I display estimation results for the specifications using state clustered standard errors and state random effects.

TABLE 24: Estimation Results for One-Year Innovation

Variable	Logit with State Clustered Errors	Logit with State Random Effects
Legislative Professionalism	-8.027**	-69.602***
	(3.150)	(4.673)
Legislator Vote Share	-0.0001	0.0004
	(0.003)	(0.002)
Term Limits	1.779**	8.705***
	(0.769)	(1.361)
Non-Freshman Legislator	-0.056	-0.023
	(0.100)	(0.101)
Legislator Party	-0.138	0.096
	(0.192)	(0.098)
Dominant Party	-0.340	-0.481***
	(0.467)	(0.143)
Legislator Chamber	-0.878***	-0.234**
	(0.298)	(0.106)

[130] Remember that one of the core assumptions of random effects regression is that X variables are not correlated with *either* unit error or idiosyncratic error. I would like to thank Christopher Baum for helping to explain this issue via electronic correspondence.

Variable	Logit with State Clustered Errors	Logit with State Random Effects
Legislative Election Year	0.914 (0.869)	-0.066 (0.194)
Increase in Unemployment Rate	-0.264 (0.369)	-0.554*** (0.151)
% State Per Capita Income	0.018 (0.022)	-0.380*** (0.029)
% Coal Consumption	0.050* (0.027)	-0.430*** (0.025)
% Petroleum Consumption	0.108*** (0.020)	0.636*** (0.051)
% Renewable Consumption	-0.027 (0.036)	-0.900*** (0.051)
Solar Average	-1.070** (0.413)	-4.411*** (0.550)
River Miles	0.109*** (0.026)	0.511*** (0.035)
Shoreline	-0.351 (0.217)	-3.735*** (0.458)
Prior Innovation	2.082 (8.642)	-
Neighbor Innovation	2.318 (2.319)	-
Observations	7,079	7,079
Wald/Probability > χ^2	387.60***	2296.14***

*Significant at 0.10; **significant at 0.05; ***significant at 0.01

In table 25, I re-estimate the models from table 24 but substitute a two-year definition of innovation for the one-year definition used previously.

TABLE 25: Estimation Results for Two-Year Innovation

Variable	Logit with State Clustered Errors	Logit with State Random Effects
Legislative Professionalism	-5.056*** (1.725)	-28.397*** (2.002)
Legislator Vote Share	-0.0003 (0.004)	0.0005 (0.002)
Term Limits	1.246* (0.752)	5.255** (2.477)
Non-Freshman Legislator	-0.076 (0.103)	-0.029 (0.092)
Legislator Party	-0.126 (0.191)	0.076 (0.093)
Dominant Party	-0.548 (0.387)	-0.627*** (0.132)
Legislator Chamber	-0.689** (0.274)	-0.224** (0.098)
Legislative Election Year	0.570 (0.697)	-0.518*** (0.199)
Increase in Unemployment Rate	-0.472 (0.372)	-0.707*** (0.156)
% State Per Capita Income	0.009 (0.025)	-0.092** (0.044)
% Coal Consumption	0.040 (0.036)	-0.088 (0.059)
% Petroleum Consumption	0.090*** (0.022)	0.362*** (0.053)
% Renewable Consumption	-0.028 (0.038)	-0.492*** (0.089)
Solar Average	-0.683* (0.377)	-2.499** (1.013)
River Miles	0.081*** (0.017)	0.242*** (0.056)
Shoreline	-0.126 (0.186)	-0.637** (0.284)
Prior Innovation	-0.222 (7.822)	-
Neighbor Innovation	2.466 (2.652)	-
Observations	7,079	7,079
Wald/Probability > χ^2	245.84***	855.76***

*Significant at 0.10; **significant at 0.05; ***significant at 0.01.

Tables 24 and 25 provide support for the Legislative Professionalism

Cosponsorship Emulation Hypothesis and the Term Limits Cosponsorship Innovation

Hypothesis. Note that in all four empirical models, *Legislative Professionalism* relates negatively and significantly with *Cosponsorship Type*. This suggests that individual cosponsors, similar to the macro-level legislatures making adoption choices in chapter 3, also chiefly embrace emulation in response to increases in legislative professionalism. It also suggests, again in a response reminiscent from chapter 3, that factors besides legislative professionalism (such as legislator ideology, for example) may make the amount of uncertainty associated with innovating less important for legislators and increase the probability that legislators embrace the higher risk of innovation over emulation. Understanding how factors like ideology change the tradeoff between innovating and emulating is an important future direction of investigation.

Term Limits also maintains a consistent and statistically significant relationship with *Cosponsorship Type* in all four models, although the statistical significance associated with *Term Limits* is admittedly weakened in the model (from table 25) using a logit with errors clustered by state. The positive and significant relationship between *Term Limits* and *Cosponsorship Type* suggests that legislators from states with term limit provisions are more willing by virtue of their shorter time horizons to take risks and cosponsor innovative policy compared to legislators from states that lack term limit provisions. An implication of this finding is that reducing electoral accountability through imposing term limits changes the nature of the choice between innovating and emulating, as legislators with truncated time horizons may believe that the risk differential between innovation and emulation is actually quite small.

Interestingly, *Legislator Vote Share*, the variable that I use to measure electoral vulnerability and the direct individual-level analog to the statistically significant group-

level electoral vulnerability variable (*Median Vote Share of Incumbent Legislator*) used in chapter 3, does not achieve statistical significance here and even relates negatively with *Cosponsorship Type*, suggesting (with very little certainty given a comparison of coefficient and standard error sizes) that increases in electoral vulnerability make legislators more likely to innovate rather than emulate during cosponsorship. One possible explanation for the slightly negative and nonsignificant relationship between *Legislator Vote Share* and *Cosponsorship Type* may be that cosponsors respond heterogeneously from one another in response to rising electoral vulnerability. If one group of cosponsors responds to declining vote share by innovating and another group of cosponsors responds to declining vote share by emulating, then the overall relationship between *Legislator Vote Share* and *Cosponsorship Type* would appear inconclusive. This explanation, of course, does not preclude the possibility that a different conceptualization of electoral vulnerability may affect the legislator's choice between the well-specified fit and high risk of innovation versus the more general fit and low risk of emulation.

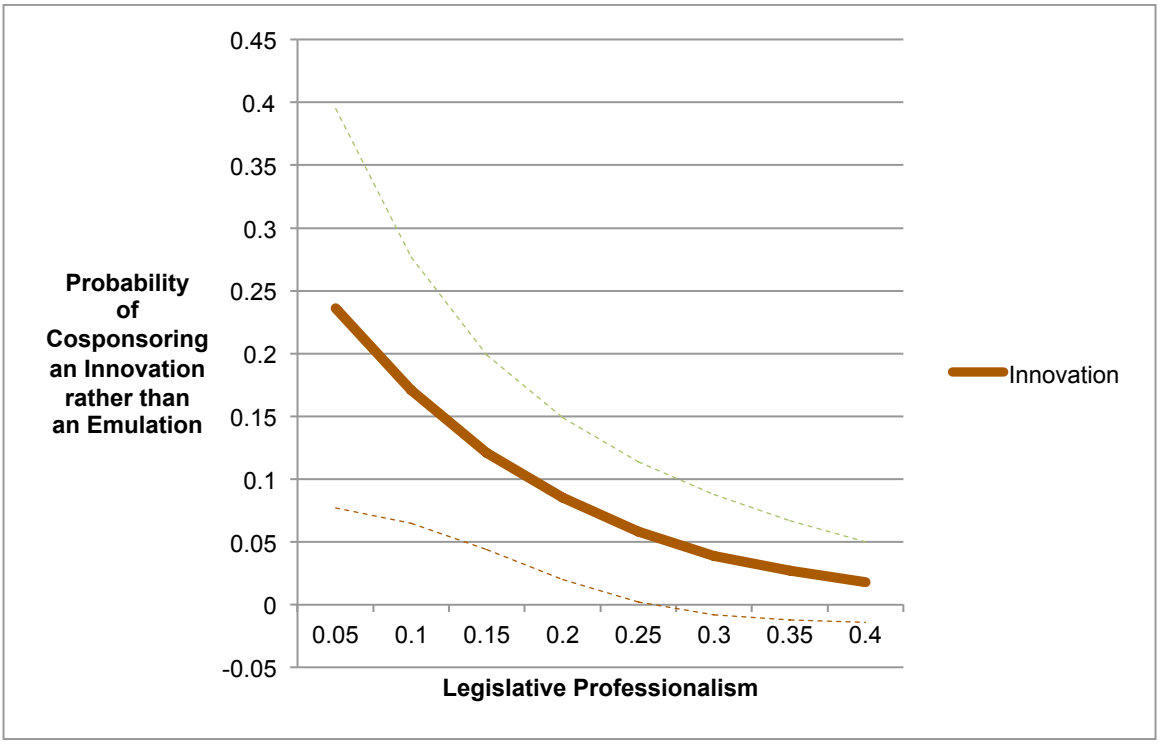
We can also try to explain why electoral vulnerability would affect the decision-making of a legislature (remember that policy adoption is a macro-level or legislative decision) but not the decision-making of an individual cosponsors. Many cosponsors arguably have a personal connection with the policies they support (this is a reason why legislators actually cosponsor policy) and may be committed to key parts of their policy agendas regardless of vote share concerns. In contrast, many voting members of a legislature may *not* have a personal connection with a given policy and may (in the absence of having a personal connection) be more likely to adjust their policy adoption choices in response to electoral considerations.

I also would like to draw attention to the finding linking membership in the lower chamber of a legislature to an increased likelihood of cosponsoring innovative policy. Although I include *Legislator Chamber* as a control rather than an explanatory variable of interest, the negative association between *Legislator Chamber* and *Cosponsorship Type* is puzzling and may be due to analyzing a policy area (RPS) where the bulk of early RPS policies were heavily cosponsored by lower chamber legislators.

Since the results from tables 24 and 25 show coefficients rather than effects, I display predicted probabilities in graphical and tabular form in order to capture the effects of *Legislative Professionalism* and *Term Limits* on *Cosponsorship Type*. In figure 5, I plot the likelihood of innovating rather than emulating during cosponsorship as a function of legislative professionalism. As with the comparable figures in chapter 3, I plot legislative professionalism from a lower bound of 0.05 to an upper bound of 0.40.[131] I use the logit model with state clustered standard errors and a one-year definition of innovation to generate predicted probabilities and set all binary variables to their most frequent values and continuous variables to their mean values.

[131] The lowest possible value for *Legislative Professionalism* is 0.027 (corresponding to New Hampshire's level of professionalism). The highest possible value for this variable is 0.659 (corresponding to California's professionalism). The median level of professionalism is 0.19, meaning that my plotted range (0.05 to 0.4) arguably captures low to high legislative professionalism.

FIGURE 5: The Effect of Legislative Professionalism on Innovation during Cosponsorship



In figure 5, the solid line describes how the probability of cosponsoring an innovation (rather than an emulation) changes for given values of legislative professionalism. The dashed lines show both upper and lower bound (95%) confidence curves for the predicted probability of cosponsoring innovation. Note that the predicted probability of innovating rather than emulating during cosponsorship decreases as legislative professionalism increases and indeed drops to approximately 7.5% once legislative professionalism rises slightly above its median value (0.19). This figure gives the reader a visual representation of the Legislative Professionalism Cosponsorship Emulation Hypothesis and suggests that increased legislative professionalism creates a pro-emulation bias among individual cosponsors.

In table 26, I show how the predicted probability of innovating rather than emulating during cosponsorship changes as we shift from a state without term limit provisions to a state with term limit provisions. As was the case with figure 5, I use the logit model with state clustered standard errors and a one-year definition of innovation to generate predicted probabilities and set binary variables to their most frequent values and continuous variables to their mean values.

TABLE 26: The Effect of Term Limits on Cosponsorship Type

Variable Values	Predicted Probability of Cosponsor Innovating versus Emulating
Term Limits = 0	0.086***
	(0.033)
Term Limits =1	0.359*
	(0.206)

*Significant at 0.10; **significant at 0.05; ***significant at 0.01

A useful way to interpret table 26 is to view (Predicted Probability when Term Limits = 1) – (Predicted Probability when Term Limits = 0) as the estimated effect that term limit provisions have on the likelihood that a legislator innovates rather than emulating when cosponsoring policy. Subtracting 0.359 by 0.086 yields a value of 0.273, and the positive magnitude of this value suggests that term limits increase the likelihood that legislators innovate rather than emulating during cosponsorship.

5.6 Conclusion

In this chapter, I look at innovation and emulation from the vantage point of legislators who are cosponsoring policy. My focus here represents a departure from the rest of the dissertation, as I analyze the actions of legislators rather than legislatures; and I study policy cosponsorship rather than policy adoption. This departure is useful because it first allows us to compare the behavior of individual legislators with that of macro-level

legislatures; and because it allows us to investigate whether the factors that affect policy adoption also affect cosponsorship. Cosponsorship has been an understudied and even underappreciated activity, and some scholars (Mayhew 1974) argue that cosponsorship is a relatively costless (for the legislator) way of signaling policy stewardship to constituents. My findings here—by linking rising legislative professionalism to increased emulation rather than innovation, and showing that the reduced electoral accountability from term limits makes legislators more willing to embrace the risk of cosponsoring innovative policy—suggest that legislators take their own risk tolerances into consideration when cosponsoring policy and also suggest that cosponsorship may not be as costless as some observers make it out to be.

The study admittedly suffers from two large defects that will need to be addressed moving forward. One defect centers around the omission of data dealing with non-cosponsorship. Adding non-cosponsorship data will improve the analysis by creating a more realistic baseline (non-cosponsorship) against which we can then compare probabilities of innovation and emulation. Legislative professionalism and term limits may both actually increase the probability of cosponsorship generally but have differential effects on the likelihood of innovation compared to emulation, and using a non-cosponsorship baseline would allow me to explore this possibility. The second defect centers around my exclusive use of cosponsorship data from adopted policies. It is possible that the empirical results presented here could be an artifact of only using adopted policies, and re-estimating my empirical models using cosponsorship data from non-adopted policies will help to guard against the possibility that selection bias has generated the results of this chapter. Incorporating data from non-cosponsorship and non-

adoption will allow me to provide a more robust confirmation of the story (and empirical results) displayed here.

CHAPTER 6

Implications and Concluding Thoughts about State Policy Innovation under Devolution

6.1 Recapping the Central Themes of the Dissertation

Conventional wisdom assumes that state policymakers operating under devolution will naturally choose to turn their states into "laboratories" of innovation (*New State Ice Company v. Liebmann* 1932) even though we know very little about why these policymakers would choose to innovate, or create novel and untested policy, rather than emulate and copy known policy that has already been tested in a comparable setting (or even comparable settings).

Conventional wisdom designating the states as innovation laboratories also ignores perceptive observations linking electoral vulnerability among state officials to increased risk aversion and consequently emulation (Rose-Ackerman 1980; Volden, Ting, and Carpenter 2008; and Cai and Treisman 2009) as well as observations linking resource limitations among state officials to increased incentives to free-ride off of the experiences of other states and emulate (Kollman, Miller, and Page 2000).

In this project, I analyze how electoral vulnerability and a key manifestation of state resource capacity—legislative professionalism—affect whether state officials

choose to innovate or emulate when crafting policy in an area characterized by a lack of direct federal intervention on state policymaking (that is, a policy area characterized by devolution). Understanding when state officials innovate or emulate given negligible federal involvement allows us to identify the limits of the narrative describing the states as laboratories of innovation and also opens the stage for future research in which we can examine how the centralization of policy may change how electoral vulnerability, legislative professionalism, and in the case of cosponsorship (as I will describe shortly), term limit provisions, affect state-level decisions to innovate or emulate.

Main Points from the Discussion of the Coding Process Utilized in this Project (Chapter 2)

In this chapter, I describe the RPS policy domain and discuss why analyzing this policy domain is useful for studying the determinants of state innovation and emulation. I also discuss the advantages of evaluating innovation and emulation at the level of the policy feature rather than using the policy regime, which has been the conventional analytical unit of choice employed by political scientists to study policy adoption. I then discuss one of the main tasks that I undertake in this project—separating innovation from emulation using the official documentation from state policymaking—and I walk the reader through a step-by-step account of my coding process.

I close with a discussion of how I use my coding process to evaluate the determinants of state-level innovation and emulation in legislative policy adoption, regulatory policy adoption, and legislator policy cosponsorship, and I identify three ways in which my coding method advances the field of policy adoption and diffusion. First, I build on theoretical suggestions from Walker (1969), Boushey (2010), and Boehmke and

Skinner (2012), and I devise a way for innovation and emulation to be separated into distinct outcomes that can then be analyzed using the tools of quantitative social science. Second, I unite work on the non-spatial unit-specific determinants of policy innovativeness with work on the spatial determinants of policy diffusion across states (Berry and Berry 1990; Mintrom 1997; Volden 2006; Franzese and Hays 2010; and Pacheco 2012) by creating a way to use event history analysis to simultaneously research about the unit-specific determinants of policy innovativeness and the spatial determinants of policy diffusion across states. And third, I show how using the policy feature as the unit of analysis allows researchers to incorporate a greater amount of diversity in state policymaking into their studies of adoption and diffusion.

Results and Main Points from the Analysis of Legislative Innovation and Emulation in Policy Adoption (Chapter 3)

I investigate the determinants of state innovation and emulation given devolution in three parts. In chapter 3, I study when legislatures—the main bodies charged with advancing policies across the states—choose to innovate or emulate when adopting policy. I apply a framework from Bednar (2007) to show that the legislature's choice to innovate rather than emulate represents a decision to uniquely specified but highly uncertain policy over more generally tailored but less uncertain policy, and I then investigate how legislative professionalism and electoral vulnerability affect the legislature's propensity to innovate or emulate. I specifically evaluate how a macro-level measure of electoral vulnerability, the *Median Vote Share of an Incumbent Legislator* in his or her last election, and legislative professionalism measured using the Squire Index (Squire 2007) affect legislative innovation and emulation in policy adoption. Devising a

way to empirically distinguish innovation from emulation and using data on state renewables portfolio standard (RPS) policy adoption for statistical analysis (RPS is a policy area where the states have dominated policymaking with negligible input from the federal government, I find that increased electoral vulnerability makes it more likely that a legislature will emulate when adopting policy. I also find that rising legislative professionalism increases the likelihood of legislative emulation more than that of legislative innovation.

Taken together, the electoral vulnerability and legislative professionalism findings complicate the narrative describing state governments operating under devolution as laboratories of innovation, because these findings suggest (giving some empirical heft to the formal theoretic claims of Volden, Ting, and Carpenter 2008 as well as Cai and Treisman 2009) that reelection concerns induce copycatting rather than the creation of novel policy. The legislative professionalism result problematizes our view of the conditions under which state legislatures serve as incubators of innovation because it suggests that better resourced legislatures possess a stronger relative preference for emulating rather than innovating than do less resourced legislatures, meaning that resources are not enough to overcome the high uncertainty of innovation. The pro-emulation legislative professionalism finding may also be bad from a normative perspective if it suggests that state legislatures do not rely on their own capacity to conduct research and instead mainly use advice from other potentially biased sources (such as interest groups) to innovative policy proposals.

Results and Main Points from the Analysis of Regulatory Agency Innovation and Emulation in Policy Adoption (Chapter 4)

Here, I switch my focus to the RPS policy adoption activity of regulatory agencies and specifically analyze decision-making by state public utilities commissions. The pro-emulation electoral vulnerability result from chapter 3 suggests that appointed policymakers may serve as the wellsprings of state policy innovation, as appointees are not subject to the pressures of reelection. Variation across the states in terms of whether public utilities commissioners are elected or appointed allows us to investigate whether appointed public utilities commissioners innovate more than their elected colleagues, and I undertake this analysis in chapter 4.

Employing a similar empirical strategy to the one utilized in chapter 3 but analyzing the RPS adoption choices of state public utilities commissioners instead of state legislatures, I find that elected public utilities commissioners are actually more likely to innovate compared to their appointed peers. Referring to and extending the work of Besley and Coate (2003), I argue that elected public utilities commissioners have more freedom to innovate than appointed commissioners because the elected commissioners serve principals (median voters) who care less about energy regulatory policy issues (save for the issue of consumer energy prices) than do the principals (state legislators and governors) of appointed commissioners. This means that elected commissioners are largely free to take on the risk of innovating so long as they can convince median voters that the innovations will not raise consumer energy prices. Appointed commissioners, on the other hand, may face serious questioning from legislative and gubernatorial bosses about how a potential innovation could harm the interests of legislative and gubernatorial allies, and the appointees may simply choose not to innovate in order to reduce the probability of facing pushback from legislative and gubernatorial principals.

The result linking the election of public utilities commissioners to innovation in policy adoption matters because it suggests that giving policy responsibility to appointees may not increase policy innovation and may in fact hinder the creation of novel policy. Although elected state officials are bound by electoral considerations and although the elected lawmakers from chapter 3 prefer to emulate as electoral vulnerability increases, it is elected officials (and at least with respect to policy adoption, *not* appointed officials) who serve as key producers of state policy innovation: this is true in the area of RPS policy adoption when we compare legislative innovation to regulatory agency innovation (in aggregate and percentage terms, legislatures innovate more than public utilities commissions and much more than citizens acting through the ballot initiative)[132]; and this is true within the universe of state public utilities commissioners, as elected commissioners are more likely to innovate than their appointed colleagues. The fact that elected state officials exercise restraint (by emulating in response to electoral pressures) but still innovate is arguably good on normative grounds because it suggests that while elections keep state officials accountable in terms of how these officials approach policymaking choices, elections do not make state officials so timid that they no longer try to find novel policy solutions to important societal challenges.

Results and Main Points from the Analysis of Legislator Innovation and Emulation in Policy Cosponsorship (Chapter 5)

[132] Recall that there is never a case of ballot initiative innovation in the dataset. In the appendix of the dissertation, I display the full list of RPS policy adoptions broken down by actor (legislature, regulatory agency, or ballot initiative). I also display the percentage of cases of innovation and emulation that occurred through legislative, regulatory agency, or ballot initiative action.

In this chapter, I evaluate the policy cosponsorship activity of legislators and identify characteristics that affect whether legislators innovate or emulate during cosponsorship. Cosponsorship is an important but underemphasized part of the policymaking process and understanding the dynamics affecting legislators' risk tolerances during cosponsorship will help to shed light on another way in which the states may or may not serve as laboratories of policy innovation. As was the case in chapter 3, I extend the work of Bednar (2007) and argue that the choice to innovate rather than emulate represents a decision to select uniquely specified but highly uncertain policy (innovation) over more generally specified but less uncertain policy (emulation).

A major goal of chapter 5 is to provide a micro-level comparison to the macro-level analysis conducted in chapter 3, and I evaluate whether electoral vulnerability and legislative professionalism exert the same effect on individual legislators' cosponsorship behavior that they exert on legislative adoption behavior. Unlike in chapter 3, here, I fail to find a meaningful relationship between electoral vulnerability and legislator innovation versus emulation in cosponsorship. One reason for the lack of a meaningful relationship between electoral vulnerability and legislator innovation versus emulation in cosponsorship could be that legislators within the cosponsorship sample behave differently from one another in response to rising electoral vulnerability: if rising electoral vulnerability causes some legislators to innovate and causes other legislators to emulate, we could get an inconclusive signal linking electoral vulnerability and innovation versus emulation in cosponsorship. We can also try to explain why electoral vulnerability would affect the decision-making of a legislature (remember that policy adoption is a macro-level or legislative decision) in chapter 3 but not the decision-making

of an individual cosponsors in chapter 5. Many cosponsors arguably have a personal connection with the policies they support (this is a reason why legislators actually cosponsor policy) and may be committed to key parts of their policy agendas regardless of vote share concerns. In contrast, many voting members of a legislature may *not* have a personal connection with a given policy that is up for adoption and may (in the absence of having a personal connection) be more likely to adjust their policy adoption choices in response to electoral considerations.

In chapter 5, I find that the effect of legislative professionalism on innovation versus emulation in cosponsorship mirrors the effect of legislative professionalism on policy adoption from chapter 3: namely, increased legislative professionalism induces a pro-emulation bias, as legislators obtain a better return on research investment for investigating and vetting the fit of an already tested policy rather than investigating and vetting the fit of a novel policy. The pro-emulation legislative professionalism potentially creates the same normative problem that I discussed when recapping implications from chapter 3: if better resources do not drive innovation, then what does? And is the answer to the "what does" question problematic from a normative good governance perspective?

My last finding relates term limit provisions to increased innovation in cosponsorship.[133] This finding matters from an electoral accountability perspective, as it suggests that shortening the time horizons of legislators makes them more willing to embrace untested policy since their career prospects may not be threatened by unanticipated and undesired effects of the untested policy. Short time horizons are not

[133] I would like to emphasize that I hope to check the robustness of the findings from chapter 5 by testing my empirical models using data on non-cosponsorship as well as the cosponsorship of non-adopted policies.

necessarily bad from an electoral accountability perspective if the legislators advance innovations that they genuinely believe are beneficial for constituents in the districts that they represent. However, short time horizons are bad if legislators advance pet innovations without giving much regard to the risk and potential downstream effects of the innovations.[134]

6.2 Overall Implications and Next Steps

Overall Implications

In this project, I add nuance and identify the limits to when we can expect state government officials operating under devolution to create novel policy and make their states laboratories of innovation. To be sure—if the policy area of RPS analyzed in this study serves as a useful guide—state governments *do* innovate. In fact, legislatures innovated 91 times with respect to RPS policy adoption, and innovations represented roughly 18% of all RPS policy adoptions. We additionally saw more evidence of innovation from the RPS policy adoption patterns of elected public utilities commissioners and the RPS cosponsorship behavior of legislators from states with term

[134] In chapter 3, *Term Limits* relates positively with innovation and negatively with emulation but does not achieve statistical significance. In chapter 5, term limits still relates positively with innovation and negatively with emulation but also achieves statistical significance. Term limits, I argue, have a stronger effect on the behavior of individual cosponsors rather than collective legislatures (the units responsible for adopting policy) because legislative decision-making requires a *multitude* of legislators to support an innovative policy proposal and believe that their own short time horizons will protect them from electoral damage caused by unanticipated and undesired effects from the innovative policy proposal. And while it is easy for an individual legislator from a state with term limits to support an innovative policy proposal and believe that his or her short time horizons reduce the probability of electoral damage from the unanticipated and undesired effects of innovation, it is harder to see a majority of voting legislators from a state with term limits making that same conclusion.

limit provisions.[135] All of these examples reveal evidence of the states acting as incubators of innovation.

However, on balance, my analysis indicates that state policymakers operating under devolution are more appropriately described as emulators rather than innovators. This is true in a definitional or functional sense—we perhaps *should* describe state policymakers as emulators because there are only so many novel policy solutions that a state government could create compared to the much larger pool of existing policy solutions that they could emulate—but it is more importantly true in terms of how state governmental characteristics increase the likelihood of emulation. The pro-emulation electoral vulnerability finding from chapter 3 suggests that the threat of electoral loss makes emulation more likely in institutions (state legislatures) that have been considered to be the engines of state policy innovation. And the pro-emulation legislative professionalism finding from chapters 3 and 5 suggests that even those in state government who are perhaps best equipped to innovate (by virtue of possessing ample resources) favor emulation and actually favor it by an intensifying margin. Both of these findings suggest that I explore whether other factors, such as government ideology, make those in the legislative branch more willing to embrace the higher risk of innovation.

There are two ways to interpret the assertion that states operating under devolution are better described as emulators rather than innovators. A positive interpretation focuses on the idea that more emulation is desirable because this means that a higher number of adopted policies are likely to be successful. According to this

[135] As I mention in chapter 2, I do not fully investigate how interactions between legislators and regulators could influence state policy innovation and emulation choices. Unpacking the nature of these interactions comprises part of my future research agenda.

view, to use language from evolutionary biology, emulation is better than innovation because emulated policies have survived and possess the requisite fitness needed to thrive in different environments. According to this view, we should therefore welcome increased emulation since citizens are largely shielded from the risks of untested and potentially unfit policies.

The second interpretation is negative and focuses on the paucity of state-level innovation under devolution as well as the quality of state-level innovation under devolution. The point about paucity refers to the idea that we depend on innovation in order to make the determinations of policy fitness described in the paragraph above and potentially reveal when a novel policy solution does a better job of addressing a problem than does an existing (and even widespread) policy solution. The point about quality indirectly comes from Kollman, Miller, and Page (2000) and refers to the idea that heterogeneous policy motivations across the states may yield a range of policy solutions that fail to effectively address a problem that is cross-state or multijurisdictional in scope.[136]

Incentivizing state policymakers to look beyond their own particularistic constituencies may improve the quality of state-level policy from a multijurisdictional perspective, and the federal government is arguably the actor most qualified to try to use incentives to change the behavior of state policymakers. The federal government

[136] This has arguably occurred with respect to innovation in the devolved issue area of RPS policymaking. While the large-scale and multijurisdictional problem addressed by RPS is the need to increase the use of "clean" (and especially carbon neutral) energy, a number of states where coal is a dominant source of energy have innovated by adding coal derivatives to their RPS standards. The coal-related innovations represent novel policymaking but represent less effective (or lower quality) policies from the vantage point of wanting to increase the use of clean or carbon neutral energy.

typically utilizes financial assistance or rulemaking (or a combination of both) to incentivize state policymakers to align state policy choices with federal prerogatives (Peterson 1995). Historically, the federal government has utilized rulemaking to force states to abandon ineffective and even morally reprehensible innovations, as was the case when the federal government put an end to state-level experimentation with Jim Crow laws. In this example, the federal government used the same rulemaking to force emulation by requiring state governments to honor both the Civil Rights Act and Voting Rights Act. The federal government has also used financial assistance to encourage state-level innovation, as was the case when the federal government gave grants to states that had devised novel ways to boost participation in the State Children's Health Insurance Program (Volden 2006). My objective moving forward is to investigate how the federal government directly influences state-level innovation and emulation activity.

Next Steps

As it turns out, the RPS issue area will soon provide an excellent test case for investigating how federal influence on state policymaking affects the innovation and emulation behavior of state-level officials. In June 2014, the federal Environmental Protection Agency, with the backing of the Obama administration, issued the Clean Power Plant Proposed Rule. This rule aims to encourage the use of clean and carbon neutral energy by mandating that states require power plants to generate electricity from cleaner sources: the rule, in other words, is functionally similar to an RPS policy and represents the federalization of RPS policy. The federal government currently aims to use a mix of guidelines and rulemaking to align state RPS policymaking with the EPA's

preferences.[137] Guidelines will provide advice to the states on how to lower the carbon emissions of power plants while rulemaking will set mandatory state-specific carbon reduction targets that the states must meet within a designated timeframe (usually that the states reach their mandated carbon reduction targets by the year 2030).

I plan to use the implementation of the EPA's Clean Power Plant Rule to compare state-level innovation and emulation in the absence versus the presence of federal influence on state RPS policymaking. It is possible that federal influence could change the effect of electoral vulnerability on state legislative innovation, as citizens supportive of federal environmental policy may reward state lawmakers for devising innovative ways to reduce power plant carbon emissions. It is also possible that federal influence could change the effect of legislative professionalism on state legislative innovation, as professionalized state legislatures may point to the EPA's guidelines as evidence of the potential success of innovative carbon emission cutting policymaking. Finally, federal influence could change the effect of term limit provisions on state legislator cosponsorship, as legislators from states with term limit provisions who want to signal their support for federal environmental policy (signaling this kind of support, for example, may help these legislators advance future career plans) may emulate and cosponsor policy that has already been endorsed by the federal government and adopted in other states.

Comparing state-level innovation and emulation in the absence and presence of direct federal influence will help us answer the longstanding question of whether

[137] It is possible that the federal government could also use financial assistance to incentivize state policymakers to align their policymaking with the goals of the EPA. However, current EPA plans do not mention routine financial help or any type of transfer system.

centralization increases state policy innovation or emulation. In this project, I have analyzed state innovation and emulation under the baseline condition of devolution and identified the limits to the claim that state officials operating free from federal intervention serve as wellsprings of innovation. However, I do not detail how changes in federal intervention affect state innovation and emulation. The next phase of this project will reveal exactly how the introduction of a federal actor changes the policymaking decisions of state government officials.

General Appendix

I. Coding Scheme: here, I discuss the coding scheme with respect to policy adoption. I do not discuss cosponsorship since cosponsorship data is extracted from policy adoption data. Chapter 4 includes a thorough discussion of the data processing procedure for cosponsorship data.

II. Definition of Innovation and Emulation:

Distinguishing innovation from emulation requires identifying the **chronological order** in which a given state adopted a specific renewable portfolio standard policy. State *i* **innovates** if it adopts policy *k* before any other state has adopted policy *k* OR if it adopts policy *k* within one calendar year of another state being the first state to adopt policy *k*. State *i* **emulates** if it adopts policy *k* at least one calendar year after another state became the first state to adopt policy *k*.

III. Identifying the Set of Policies that Comprise the Dataset:

Renewable energy policy specialists at the *Database of State Incentives for Renewables and Efficiency* (DSIRE) formulated a list of key state renewable energy portfolio standard policies and have identified whether state *i* has adopted a particular policy *k*.[138] The policies identified by DSIRE specialists fall into five groups:

1. *Eligible Renewable/Other Technologies:* What sources and/or technologies does state *i* include in its renewable energy portfolio standard?
2. *Standard Type:* What kind of standard does state *i* impose on electricity providers?
3. *Technology Minimum:* Does state *i* specify that some amount of the standard be met from any one specific renewable source or technology?
4. *Credit Trading:* Does state *i* allow electricity providers to trade credits or certificates in order to satisfy renewable energy portfolio standards?
5. *Voluntary or Mandatory:* Is the renewable energy portfolio standard levied on an electricity provider by state *i* voluntary or mandatory?[139]

Specific policies map onto each of the five groups listed above and comprise the set of all policies used in the dataset. The following tables display each policy identified by DSIRE sorted by each of the five groups (listed above) also identified by DSIRE. I display the name of the policy, the number of states that have adopted the policy, the year of first

[138] This information is available on the DSIRE website.

[139] DSIRE has data for two additional categories: (1) what kind of provider (e.g. investor-owned utilities versus rural cooperatives) falls under state *i*'s renewable energy portfolio standard; and (2) the actual rate (say, 15% of the electricity sold by provider *q* in state *i*) associated with state *i*'s renewable energy portfolio standard. I do not include policies from these two categories based on a 2013 phone conversation with Justin Barnes, then chief policy analyst at DSIRE, who stated that data from these two categories had not been checked for veracity. Barnes also stated that each of the policies listed by DSIRE was unique and identified in consultation with renewable energy industry experts.

adoption by a state, and the percentage and number of adoptions for that policy that occurred through legislative, regulatory/agency, and ballot initiative channels.

TABLE 27: Eligible Renewable/Other Technologies

Policy Name	# of States that Adopt	Year of First Adoption	Legislature % (#)	Agency % (#)	Initiative % (#)
Advanced Nuclear	1	2008	100% (1)	0% (0)	0% (0)
Anaerobic Digestion	22	2002	63% (14)	36% (8)	0% (0)
Biodiesel	4	2004	50% (2)	25% (1)	25% (1)
Biogas	1	2010	100% (1)	0% (0)	0% (0)
Biomass	35	1994	82% (29)	11% (4)	5.7% (2)
Biomass Thermal	2	2005	0% (0)	50% (1)	50% (1)
CHP/Cogeneration	9	1997	77% (7)	22% (2)	0% (0)
Clean Coal	2	2008	100% (2)	0% (0)	0% (0)
Co-Firing	1	2007	100% (1)	0% (0)	0% (0)
Coal Bed Methane	2	2009	100% (2)	0% (0)	0% (0)
Coal Gasification	1	2004	100% (1)	0% (0)	0% (0)
Coal Mine Methane	3	2004	100% (3)	0% (0)	0% (0)
Coal Technology	1	2009	100% (1)	0% (0)	0% (0)
Coal-Fired with Carbon Capture and Sequestration	1	2008	100% (1)	0% (0)	0% (0)
Compressed Air Energy Storage	1	2010	100% (1)	0% (0)	0% (0)
Daylighting	1	2006	0% (0)	100% (1)	0% (0)
Densified Fuel Pellets	1	2010	100% (1)	0% (0)	0% (0)
Electricity from Waste Heat	2	2007	100% (2)	0% (0)	0% (0)
Energy Demand Reduction	1	2011	100% (1)	0% (0)	0% (0)
Energy Recovery Processes	1	2003	100% (1)	0% (0)	0% (0)
Energy Storage	2	2002	100% (2)	0% (0)	0% (0)
Energy from Waste	1	2007	100% (1)	0% (0)	0% (0)
Ethanol	2	2004	50% (1)	50% (1)	0% (0)
Fuel Cells	8	1997	87% (7)	12% (1)	0% (0)
Fuel Cells using Renewable Fuels	21	1997	76% (16)	19% (4)	4.7% (1)

Policy Name	# of States that Adopt	Year of First Adoption	Legislature % (#)	Agency % (#)	Initiative % (#)
Fuel Produced by a Coal Gasification or Liquification Facility	1	2009	100% (1)	0% (0)	0% (0)
Gasification	1	2008	100% (1)	0% (0)	0% (0)
Geothermal Direct-Use	3	2006	66% (2)	33% (1)	0% (0)
Geothermal Electric	28	1997	78% (22)	14% (4)	7.1% (2)
Geothermal Heat Pumps	7	1999	57% (4)	42% (3)	0% (0)
Hydroelectric	35	1983	82% (29)	11% (4)	5.7% (2)
Hydrogen	9	2001	100% (9)	0% (0)	0% (0)
Integrated Gasification Combined Cycle Technologies	1	2009	100% (1)	0% (0)	0% (0)
Landfill Gas	35	1997	80% (28)	17% (6)	2.8% (1)
Low Emission Renewables	1	1998	100% (1)	0% (0)	0% (0)
Methanol	1	2004	0% (1)	100% (0)	0% (0)
Microturbines	1	2008	100% (1)	0% (0)	0% (0)
Municipal Solid Waste	18	1997	100% (18)	0% (0)	0% (0)
Natural Gas	1	2009	100% (1)	0% (0)	0% (0)
Nuclear	1	2011	100% (1)	0% (0)	0% (0)
Ocean Thermal	12	1997	83% (10)	8% (1)	8.3% (1)
Other Distributed Generation	3	2004	100% (3)	0% (0)	0% (0)
Photovoltaics	24	1996	83% (20)	16% (4)	0% (0)
Pumped Storage Hydroelectric Projects	1	2009	100% (1)	0% (0)	0% (0)
Recycled Energy	2	2007	100% (2)	0% (0)	0% (0)
Renewable Fuels	2	1997	100% (2)	0% (0)	0% (0)
Seawater AC	1	2004	100% (1)	0% (0)	0% (0)
Small Hydroelectric	10	1997	90% (9)	0% (0)	0% (0)
Solar AC	1	2004	100% (1)	0% (0)	0% (0)
Solar HVAC	1	2006	0% (0)	100% (1)	0% (0)
Solar Light Pipes	1	2010	100% (1)	0% (0)	0% (0)
Solar Pool Heating	2	1997	50% (1)	50% (1)	0% (0)
Solar Space Heat	6	2001	66% (4)	33% (2)	0% (0)

Policy Name	# of States that Adopt	Year of First Adoption	Legislature % (#)	Agency % (#)	Initiative % (#)
Solar Thermal Electric	35	1983	82% (29)	11% (4)	5.7% (2)
Solar Thermal Process Heat	7	1996	85% (6)	14% (1)	0% (0)
Solar Water Heat	11	1999	63% (7)	36% (4)	0% (0)
Synthetic Gas	2	2009	100% (2)	0% (0)	0% (0)
Tidal Energy	16	1997	87% (14)	6% (1)	6.2% (1)
Tire-derived Fuel	1	2009	100% (1)	0% (0)	0% (0)
Waste Coal	2	2004	100% (2)	0% (0)	0% (0)
Waste Heat	1	2008	100% (1)	0% (0)	0% (0)
Waste Tires	1	2003	100% (1)	0% (0)	0% (0)
Wave Energy	17	1997	88% (15)	5% (1)	5.8% (1)
Wind	37	1983	83% (31)	10% (4)	5.4% (2)
Zero-emission Technology	1	2002	0% (0)	100% (1)	0% (0)

TABLE 28: Standard Type

Policy Name	# of States that Adopt	Year of First Adoption	Legislature % (#)	Agency % (#)	Initiative % (#)
Percentage of Consumption[140]	1	2005	0% (0)	0% (0)	0% (0)
Percentage of Installed Capacity	1	2010	100% (1)	0% (0)	0% (0)
Percentage of Peak Demand Capacity	1	2009	100% (1)	0% (0)	0% (0)
Percentage of Retail	33	1996	81% (27)	12% (4)	6% (2)
Set Amount of Renewable Generating Capacity	5	1992	100% (5)	0% (0)	0% (0)

[140] "Percentage of Consumption" was issued by the Governor of Iowa and therefore fits in none of the actor (legislative, regulatory, or ballot initiative) categories.

TABLE 29: Credit Trading

Policy Name	# of States that Adopt	Year of First Adoption	Legislature % (#)	Agency % (#)	Initiative % (#)
Credit Trading	33	1997	75% (25)	15% (5)	9% (3)

TABLE 30: Technology Minimum

Policy Name	# of States that Adopt	Year of First Adoption	Legislature % (#)	Agency % (#)	Initiative % (#)
Biomass	2	1994	100% (2)	0% (0)	0% (0)
Customer-Sited	1	2004	0% (0)	100% (1)	0% (0)
Distributed Generation	4	2006	50% (2)	50% (2)	0% (0)
Hydroelectric	1	2007	100% (1)	0% (0)	0% (0)
Offshore Wind	1	2010	100% (1)	0% (0)	0% (0)
Photovoltaics	4	2004	100% (4)	0% (0)	0% (0)
Poultry Waste	1	2007	100% (1)	0% (0)	0% (0)
Solar	5	1997	60% (3)	20% (1)	20% (1)
Solar-Electric	3	2007	66% (2)	33% (1)	0% (0)
Swine Waste	1	2007	100% (1)	0% (0)	0% (0)
Wind	3	1994	66% (2)	33% (1)	0% (0)

TABLE 31: Voluntary/Mandatory

Policy Name	# of States that Adopt	Year of First Adoption	Legislature % (#)	Agency % (#)	Initiative % (#)
Mandatory	32	1983	84% (26)	9% (3)	9.3% (3)
Voluntary	11	2001	90% (10)	9% (1)	0% (0)

In the above tables (i-v), DSIRE provides information about columns 1 ("**Policy Name**") and 2 ("**# of States Adopting**"), as it lists the RPS policies adopted by each state on each state's respective RPS overview webpage. DSIRE **does not** provide information about **when** each state adopted its respective policy **or** what state governmental actor (a legislature, a public regulatory commission, or citizens) adopted each respective policy. This information, similar to that depicted in columns 3 and 4, is necessary in order to (1) code innovation and emulation and (2) identify **legislative and regulatory** instances of innovation and emulation that can be used in this analysis. DSIRE and the Union of Concerned Scientists, a secondary repository of RPS data, provide lists of laws and

regulations pertaining to each state's RPS program. I construct a library from the identified laws and regulations of all states and assign a date to each policy adoption based on when the law or regulation containing each respective policy adoption is adopted (this means that a respective policy appears in the law or regulation in which that policy is adopted).[141] I then use the definitions of innovation and emulation outlined on page 1 to code each policy adoption and then utilize the legislative (or regulatory) subset of adoptions to populate the event history dataset used in this paper. The full list of documents utilized for coding purposes is listed below. Bolded entries correspond to documents that contain the policy adoptions listed in Tables i-v above.

TABLE 32: Original Documents Used in Project

State	Document	Year
Arizona	**ACC Decision 59943**	1996
Arizona	**ACC Decision 62506**	2000
Arizona	ACC Decision 63334	2001
Arizona	ACC Decision 63486	2001
Arizona	**ACC Decision 69127**	2006
Arizona	**ACC Decision 72500**	2011
California	**SB 1078**	2002
California	**SB 1038**	2002
California	AB 57	2002
California	SB 67	2003
California	Docket 03-RES-1078	2003
California	Decision 03-06-071	2003
California	Rulemaking 04-04-026	2004
California	Decision 04-06-014	2004
California	Decision 04-06-015	2004
California	Decision 04-06-013	2004
California	Decision 04-07-029	2004
California	Ruling for Phase 2 of RPS Program	2004
California	Ruling Releasing Renewable Avoided Cost Calculation	2005
California	Decision 05-05-011	2005
California	Decision 05-07-039	2005
California	Decision 05-10-014	2005
California	Decision 05-11-025	2005
California	Decision 05-12-042	2005
California	**SB 107**	2006
California	AB 32	2006
California	Resolution E-3980	2006

[141] For laws, this date corresponds to when a bill clears both chambers of a legislature and takes its enrolled form. For regulations, this date corresponds to when a public regulatory commission makes an official decision concerning regulatory policy. For ballot initiatives, this date corresponds to the date of the election in which the initiative passed.

State	Document	Year
California	Decision 05-06-039	2006
California	Decision 06-10-019	2006
California	Decision 06-10-050	2006
California	SB 1036	2007
California	AB 809	2007
California	Decision 07-05-028	2007
California	Decision 07-07-027	2007
California	Decision 07-09-024	2007
California	Executive Order S-21-09	2009
California	AB 2514	2010
California	Decision 10-03-021	2010
California	**SBX 1-2**	2011
California	Decision 129354	2011
Colorado	**Ballot Initiative 37**	2004
Colorado	SB 05-143	2005
Colorado	Docket 05R-112E	2005
Colorado	**HB 1281**	2007
Colorado	**HB 1001**	2010
Connecticut	**H 5005**	1998
Connecticut	Docket 98-06-15	1998
Connecticut	H 6621	1999
Connecticut	**SSB 733**	2003
Connecticut	H 6428	2003
Connecticut	Docket 03-10-19	2004
Connecticut	Docket 04-02-07	2004
Connecticut	H 7501	2005
Connecticut	Docket 05-04-16	2005
Connecticut	Docket 04-01-13	2005
Connecticut	S 212	2006
Connecticut	Docket 05-07-19	2006
Connecticut	Docket 04-01-12RE01	2006
Connecticut	H 8006	2007
Connecticut	**H 7432**	2007
Connecticut	Docket 07-06-07	2007
Connecticut	Docket 03-12-10RE01	2007
Connecticut	Docket 05-04-16RE01	2007
Connecticut	Docket 07-08-11	2008
Connecticut	SB 1243	2011
Delaware	**SB 74**	2005
Delaware	Docket 56, Order 6793	2005
Delaware	Docket 56, Order 6885	2006
Delaware	Docket 56, Order 6931	2006
Delaware	Title 7 DNREC 106	2006
Delaware	**SB 19/House Amendment 1**	2007
Delaware	Docket 56, Order 7276	2007
Delaware	SB 328	2008
Delaware	Order 7377	2008

State	Document	Year
Delaware	Order 7494	2008
Delaware	SB 173	2009
Delaware	Order 7699	2009
Delaware	**SS 1 for SB 119**	2010
Delaware	SB 124	2011
Delaware	CDR 26-3000-3008	2005-2011
Hawaii	**SLH 2001, Act 272/HB 173**	2001
Hawaii	**SB 2474**	2004
Hawaii	**SB 3185**	2006
Hawaii	Order 23191	2007
Hawaii	Decision and Order 23912	2007
Hawaii	Memorandum of Understanding	2008
Hawaii	HB 1464	2009
Illinois	**Illinois Resource Development and Energy Security Act/ Public Act 92-0012**	2001
Illinois	**Public Act 095-0481**	2007
Illinois	SB 1987/Public Act 095-1027	2009
Illinois	**Public Utilities Act**	2009
Illinois	Public Act 96-0033	2009
Illinois	Public Act 096-0159	2009
Illinois	ICC Order 09-0342	2009
Illinois	ICC Docket 08-0519 Final Order	2009
Illinois	ICC Docket 09-0373	2009
Illinois	83 Illinois Administrative Code, Part 455	2010
Illinois	HB 1458	2011
Illinois	HB 1865	2011
Illinois	SB 1652	2011
Indiana	**SB 251**	2011
Iowa	**Iowa Code 476.41**	1983
Iowa	Chapter 1252, Sections 31-33	1990
Iowa	Chapter 1017	1992
Iowa	Chapter 1163, Section 97	1992
Iowa	**Chapter 1166, Section 1**	1992
Iowa	Chapter 1196, Section 11	1996
Iowa	Chapter 4, Sections 11 and 36	2001
Iowa	Chapter 1109, Section 4	2002
Iowa	Chapter 29, Sections 2-6	2003
Iowa	**Executive Order 41**	2005
Iowa	**Utilities Board Order, Docket AEP-07-1**	2007

State	Document	Year
Iowa	Chapter 1032, Section 106	2008
Iowa	Chapter 1126, Section 31	2008
Iowa	Chapter 1128, Sections 14-15	2008
Iowa	Chapter 1133, Sections 6 and 9	2008
Iowa	Chapter 1191, Section 129	2008
Iowa	Chapter 148, Sections 1-2	2009
Iowa	Chapter 1061, Section 180	2010
Iowa	IAC 199-15.11	2010
Iowa	Chapter 25, Section 125	2011
Iowa	Chapter 77, Section 1	2011
Kansas	**Renewable Energy Standards Act**	2009
Kansas	KAR 82-16	2010
Maine	**LD 1804/ Public Law 316**	1997
Maine	Docket 97-584	1998
Maine	Docket 2002-494, Chapter 311	2003
Maine	**Docket 2004-505**	2004
Maine	LD 2041	2006
Maine	Public Law 403	2007
Maine	Docket 2007-391	2007
Maine	**LD 2283**	2008
Maine	**LD 1810**	2010
Maine	Public Act 413	2011
Maryland	**HB 1308/SB 869**	2004
Maryland	PSC Comar 20-61	2005
Maryland	HB 1016/SB 595	2007
Maryland	HB 375/SB 209	2008
Maryland	HB 368/SB 268	2008
Maryland	HB 1166/SB 348	2008
Maryland	HB 471/SB 277	2010
Maryland	HB 1121/SB 690	2011
Maryland	**HB 933/SB 717**	2011
Massachusetts	**Chapter 164 Acts of 1997**	1997
Massachusetts	**225 CMR 14.00**	2002
Massachusetts	Policy Statement on the RPS Eligibility of Retooled Biomass Plants	2005
Massachusetts	**Green Communities Act/SB 2768**	2008
Massachusetts	225 CMR 15.00	2009
Massachusetts	220 CMR 17.00 Emergency	2010
Massachusetts	225 CMR 14.00	2010
Michigan	**Public Act 295**	2008
Michigan	**PSC Order U-15800**	2008
Michigan	PSC Order U-15900	2010

State	Document	Year
Minnesota	**Radioactive Waste Management Facility Authorization Law (SF 1706)**	1994
Minnesota	Docket RP-98-32	1999
Minnesota	**SF 0772**	2001
Minnesota	**HF 9**	2003
Minnesota	Docket CI-03-869	2004
Minnesota	**SF 4**	2007
Minnesota	Docket CI-04-1616 (1)	2007
Minnesota	Docket CI-04-1616 (2)	2007
Minnesota	SF 2996	2008
Minnesota	Docket CI-04-1616	2008
Minnesota	SF 1197	2011
Missouri	**SB 54**	2007
Missouri	SB 1181	2008
Missouri	**Proposition C**	2008
Missouri	4 CSR 240-20.100	2010
Missouri	SB 795	2011
Montana	**SB 415**	2005
Montana	HB 681	2007
Nevada	**1997 Restructuring Legislation**	1997
Nevada	**SB 372**	2001
Nevada	**NAC 704.8831-704.8893**	2002
Nevada	**AB 296**	2003
Nevada	**AB 429**	2003
Nevada	NAC 704.8901-704.8939	2004
Nevada	AB 3	2005
Nevada	Docket 05-7050	2006
Nevada	AB 1	2007
Nevada	SB 358	2009
Nevada	AB 150	2011
Nevada	NAC 7704.8831-704.8939	Ongoing
New Hampshire	**HB 873**	2007
New Hampshire	HB 1268	2008
New Hampshire	**PUC Chapter 2500**	2008
New Jersey	**Electric Discount and Energy Competition Act**	1999
New Jersey	**BPU Solar Transition Order**	2007
New Jersey	SB 2936	2008
New Jersey	**AB 3520**	2010
New Jersey	**SB 2036**	2010
New Jersey	**NJAC 14:8**	Ongoing
New Mexico	**PRC Case Number 3619**	2002
New Mexico	SB 43	2004
New Mexico	17.9.572 NMAC	2004

State	Document	Year
New Mexico	SB 418	2007
New Mexico	**17.9.572 NMAC**	2007
New Mexico	SB 549	2011
New York	**Case 03-E-0188 9/24/2004**	2004
New York	Case 03-E-0188 12/16/2004	2004
New York	Case 03-E-0188 4/14/2005	2005
New York	Case 03-E-0188 10/31/2005	2005
New York	Case 03-E-0188 11/2/2005	2005
New York	Case 03-E-0188 1/26/2006	2006
New York	Case 03-E-0188 6/28/2006 (1)	2006
New York	Case 03-E-0188 6/28/2006 (2)	2006
New York	Case 03-E-0188 6/28/2006 (3)	2006
New York	Case 03-E-0188	2009
New York	Case 03-E-0188 1/8/2010	2010
New York	Case 03-E-0188 2/16/2010	2010
New York	Case 03-E-0188 4/2/2010 (1)	2010
New York	**Case 03-E-0188 4/2/2010 (2)**	2010
New York	Case 03-E-0188 12/3/2010	2010
North Carolina	**SB 3**	2007
North Carolina	**04 NCAC 11 R08-64**	2008
North Carolina	SB 90	2009
North Carolina	SB 886	2010
North Carolina	NCUC Order, Docket E-100 Subsection 113	2010
North Carolina	**SB 75**	2011
North Dakota	**Administrative Code 69-09-08**	2006
North Dakota	**HB 1506**	2007
North Dakota	PSC Order, Case PU-07-318	2008
Ohio	**SB 221**	2008
Ohio	ORC 4928.64	2008
Ohio	**OAC 4901: 1-40**	2009
Ohio	**SB 232**	2010
Oklahoma	**HB 3028**	2010
Oregon	**SB 838**	2007
Oregon	OAR 330-160-0015 to 330-160-0050	2008
Oregon	**HB 3039**	2009
Oregon	HB 3674	2010
Oregon	PUC Order 10-200	2010

State	Document	Year
Pennsylvania	**SB 1030**	2004
Pennsylvania	AEPS Implementation Order 1	2005
Pennsylvania	AEPS Implementation Order 2	2005
Pennsylvania	Docket M-00051865	2005
Pennsylvania	Docket M-00051865 (1)	2006
Pennsylvania	Docket M-00051865 (2)	2006
Pennsylvania	Docket L-00050174	2006
Pennsylvania	Docket L-00050175	2006
Pennsylvania	HB 1203	2007
Pennsylvania	HB 2200	2008
Pennsylvania	Docket L-00060180	2008
Pennsylvania	**Docket M-00051865**	2009
Pennsylvania	Docket M-2009-2093383	2009
Rhode Island	**HB 7375**	2004
Rhode Island	Docket 3659	2005
Rhode Island	**CRIR 90-060-015**	2007
South Dakota	**HB 1123**	2008
South Dakota	Docket RM11-011 Final Rules	2011
Texas	**SB 7**	1999
Texas	**PUCT Substantive Rule 25.173**	1999
Texas	PUCT Project 26848	2003
Texas	PUCT Project 28407	2004
Texas	SB 20	2005
Texas	HB 1090	2007
Texas	PUCT Project 33492	2007
Utah	**SB 202**	2008
Utah	SB 99	2009
Utah	HB 192	2010
Utah	HB 228	2010
Utah	SB 104	2010
Vermont	**30 VSA 8001**	2005
Vermont	**CVR 30 000 054.4.300**	2006
Vermont	SB 209	2008
Vermont	Act 159	2010
Vermont	Act 47	2011
Virginia	**Code 56-585.2**	2007
Virginia	HB 1994	2009
Washington	**Initiative 937**	2006
Washington	Energy Independence Act	2006
Washington	**WAC 480-109**	2007
Washington	WAC 194-37	2008
West Virginia	**Code 24-2F-1/HB 103**	2009
West Virginia	SB 350	2010
West Virginia	Case 11-0249-E-P	2011

State	Document	Year
Wisconsin	**Act 204**	1998
Wisconsin	**Act 9**	1999
Wisconsin	**Act 141**	2006
Wisconsin	**SB 273**	2010
Wisconsin	**SB 81**	2011
Wisconsin	**CR 10-147**	2011

In table 33, I finally display total cases of innovation and emulation broken down by actor.

TABLE 33: Policy Adoption Innovations and Emulations by Actor

	Legislature	Regulatory Agency	Ballot Initiative
Innovation	91	19	0
Emulation	405	68	26

Bibliography

Alt, James, Ethan Bueno de Mesquita, and Shanna Rose. 2011. "Disentangling Accountability and Competence in Elections: Evidence from U.S. Term Limits." *American Journal of Political Science* 73 (1): 171-186.

Apple Jr., R.W. 1995. "States of Mind; You Say You Want A Devolution." *New York Times,* 29, January.

Arizona Corporation Commission Decision 62506 (2000). Retrieved 5 May 2014 from Arizona Corporation Commission database. Website http://www.azcc.gov/

Arnold, R. Douglas. 1990. *The Logic of Congressional Action.* Princeton: Princeton University Press.

Ashworth, Scott. 2012. "Electoral Accountability: Recent Theoretical and Empirical Work." *Annual Review of Political Science* 15: 183-201.

Associated Press. 2015. "Alabama Gay Marriage Fight Echoes States' Rights Battles." 15, February.

Bartels, Larry. 2014. "Ideology and Retrospection in Electoral Responses to the Great Recession." In *Mass Politics in Tough Times*. Eds., Larry Bartels and Nancy Bormeo.

Baum, Christopher. 2010. "Models for Longitudinal/Panel Data and Mixed Models." Course notes available at http://www.economics.adelaide.edu.au/research/seminars/Stata_Lecture3.pdf

Beck, Nathaniel. 2005. "Time-Series Cross-Section Data – Dynamics – Continuous." Course notes available at http://www.nyu.edu/classes/nbeck/q2/morning.short.pdf

Beck, Nathaniel, Jonathan Katz, and Richard Tucker. 1998. "Taking Time Seriously: Time-Series-Cross-Section Analysis with A Binary Dependent Variable." *American Journal of Political Science* 42 (4): 1260-1288.

Beck, Nathaniel, Kristian S. Gleditsch, and Kyle Beardsley. 2006. "Space is More than Geography: Using Spatial Econometrics in the Study of Political Economy." *International Studies Quarterly* 50: 27-44.

Bednar, Jenna. 2007. "Credit Assignment and Federal Encroachment." *Supreme Court Economic Review* 15: 285-308.

Berry, Frances. 1994. "Innovation in Public Management: The Adoption of Strategic Planning." *Public Administration Review* 54 (4): 322-30.

Berry, Frances, and William Berry. 1990. "State Lottery Adoptions as Policy Innovations." *American Political Science Review* 84 (2): 395-415.

Berry, William, and Brady Baybeck. 2005. "Using Geographic Information Systems (GIS) to Test Theories of Interstate Influence and Geographic Diffusion in Public Policy Making." *American Political Science Review* 99: 505-519.

Besley, Timothy, and Stephen Coate. 2003. "Elected Versus Appointed Regulators: Theory and Evidence." *Journal of the European Economic Association* 1 (5): 1176-1206.

Boehmke, Frederick, and Paul Skinner. 2012. "State Policy Innovativeness Revisited." *State Politics and Policy Quarterly* 12 (3): 303-329.

Boehmke, Frederick, and Richard Witmer. 2004. "Disentangling Diffusion: The Effects of Social Learning and Economic Competition on State Policy Innovation and Expansion." *State Politics and Policy Quarterly* 57 (1): 39-51.

Boushey, Graeme. 2010. *Policy Diffusion Dynamics in America*. New York: Cambridge University Press.

Box-Steffensmeier, Janet M., and Bradford S. Jones. 2004. *Event History Modeling: A Guide for Social Scientists*. New York: Cambridge University Press.

Box-Steffensmeier, Janet M., and Bradford S. Jones. 1997. "Time is of the Essence: Event History Models in Political Science." *American Journal of Political Science* 41 (4): 1414-1461.

Boyes, William J., and John M. McDowell. 1989. "The Selection of Public Utility Commissioners: A Reexamination of the Importance of Institutional Setting." *Public Choice* 61(1): 1-13.

Brandeis, Louis. 1932. Opinion quoted in *New State Ice Company versus Liebmann*, 285 U.S. 262.

Cai, Hongbin, and Daniel Treisman. 2009. "Political Decentralization and Policy Experimentation." *Quarterly Journal of Political Science* 4 (1): 35-58.

Case, Anne, James Hines Jr., and Harvey Rosen. 1994. "Copycatting: Fiscal Policies of States and Their Neighbors." *NBER* Working Paper No. w3032, http://ssrn.com/abstract=232066.

Connecticut Legislature, Substitute House Bill 5005 (1998). Retrieved 5 May 2014 from Connecticut General Assembly website. Website http://www.cga.ct.gov/

Database of State Incentives for Renewables and Efficiency. 2013-2014. North Carolina

Solar Center, North Carolina State University, and the Interstate Renewable Energy Council. Accessed on multiple dates.

Epstein, David, and Sharyn O'Halloran. 1999. *Delegating Powers: A Transaction Cost Approach to Policy Making under Separate Powers*. New York: Cambridge University Press.

Fenno Jr., Richard. 2002. *Home Style: House Members in their Districts*. New York: Longman.

Ferraz, Claudio, and Frederico Finan. 2011. "Electoral Accountability and Corruption: Evidence from the Audits of Local Governments." *American Economic Review* 101 (4): 1274-1311.

Fiorina, Morris P. 1981. *Retrospective Voting in American National Elections*. New Haven: Yale University Press.

Franzese Jr., Robert J., and Jude Hays. 2010. "Interdependence in Comparative Politics: Substance, Theory, Empirics, Substance." *Comparative Political Studies* 41 (4/5): 742-780.

Gailmard, Sean. 2002. "Expertise, Subversion, and Bureaucratic Discretion." *Journal of Law, Economics, and Organization* 18 (2): 536-555.

Garand, James, and Kelly Burke. 2006. "Legislative Activity and the 1994 Republican Takeover." *American Politics Research* 34 (2): 159-188.

Gray, Virginia. 1973. "Innovation in the States: A Diffusion Study." *American Political Science Review* 67 (4): 1174-1185.

Greenberg, Dan. 1994. "Term Limits: The Only Way to Clean up Congress." *Heritage Foundation* (Backgrounder # 994).

Gelman, Andrew, and Jennifer Hill. 2007. *Data Analysis using Regression and Multilevel/Hierarchical Models*. Cambridge: Cambridge University Press.

Grossback, Lawrence, Sean Nicholson-Crotty, and David Peterson. 2004. "Ideology and Learning in Policy Diffusion." *American Politics Research* 32: 521-545.

Hagerman, Robert L., and Brian T. Ratchford. 1978. "Some Determinants of Allowed Rates of Return on Equity to Electric Utilities." *Bell Journal of Economics* 9(1): 46-55.

Harward, Brian, and Kenneth Moffett. 2010. "The Calculus of Cosponsorship in the U.S. Senate." *Legislative Studies Quarterly* 35 (1): 117-143.

Holland, Stephen P., Jonathan E. Hughes, and Christopher R. Knittel. 2009. "Greenhouse Gas Reductions under Low Carbon Fuel Standards." *American Economic Journal: Economic Policy* 1: 106-146.

Home Rule and Community Rule Commission of the Scottish Liberal Democrats. "Federalism: The Best Future for Scotland." Available at http://www.smith-commission.scot/wp-content.uploads/2014/10/Scottish-Liberal-Democrats-Submission-1.pdf

Huber, John, and Charles Shipan. 2002. *Deliberate Discretion? The Institutional Foundations of Bureaucratic Autonomy*. New York: Cambridge University Press.

Kessler, Daniel, and Keith Krehbiel. 1996. "Dynamics of Cosponsorship." *American Political Science Review* 90 (3): 555-566.

King, Gary, and Langche Zeng. 2001. "Logistic Regression in Rare Events Data." *Political Analysis* 9(2): 137-163.

Klarner, Carl, William Berry, Thomas Carsey, Malcolm Jewell, Richard Niemi, Lynda Powell, and James Snyder. *State Legislative Election Returns* (1967-2010). ICPSR34297-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2013-01-11. http://doi.org/10.3886/ICPSR34297.v1

Koger, Gregory. 2003. "Position Taking and Cosponsorship in the U.S. House." *Legislative Studies Quarterly* 28 (2): 225-246.

Kollman, Ken, John Miller, and Scott Page. 2000. "Decentralization and the Search for Policy Solutions." *Journal of Law, Economics, and Organization* 16 (April): 102-28.

Kousser, Thad. 2005. *Term Limits and the Dismantling of State Legislative Professionalism*. Cambridge, UK: Cambridge University Press.

Krehbiel, Keith. 1995. "Cosponsors and Wafflers from A to Z." *American Journal of Political Science* 39 (4): 906.

Madison, James. 1788. "Federalist, No. 51." Available at http://press-pubs.uchicago.edu/founders/documents/v1ch10s16.html

Makse, Todd. 2013. "Policy Attributes, Legislative Entrepreneurship, and the Diffusion of Innovations."

Maryland General Assembly, Senate Bill 717 (2011). Retrieved 2 May 2013 from Maryland General Assembly website. Website http://mgaleg.maryland.gov/

Maryland General Assembly, House Bill 1308 (2004). Retrieved 1 May 2013 from Maryland General Assembly website. Website http://mgaleg.maryland.gov/

Mayhew, David. 1974. *Congress: The Electoral Connection*. New Haven: Yale University Press.

McCann, Pamela. Forthcoming. "The Strategic Use of Congressional Intergovernmental Delegation." *Journal of Politics*.

Minnesota Legislature, Senate File 1706 (1994). Retrieved 9 May 2013 from Minnesota Legislature website. Website http://www.leg.state.mn.us/

Mintrom, Michael. 1997. "Policy Entrepreneurs and the Diffusion of Innovation." *American Journal of Political Science* 41 (3): 738-770.

Navarro, Peter. 1982. "Public Utility Commission Regulation: Performance, Determinants, and Energy Policy Impacts." *The Energy Journal* 3 (2): 119-139.

Nicholson-Crotty, Sean. 2009. "The Politics of Diffusion: Public Policy in the American States." *Journal of Politics* 71: 192-205.

Pacheco, Julianna. 2012. "The Social Contagion Model: Exploring the Role of Public Opinion on the Diffusion of Antismoking Legislation across the American States." *Journal of Politics* 74 (1): 187-202.

Peterson, Paul. 1995. *The Price of Federalism*. Washington: Brookings Institution Press.

Pitkin, Hanna. 1967. *The Concept of Representation*. Berkeley: University of California Press.

Rabe, Barry. 2006. "Race to the Top: The Expanding Role of U.S. State Renewable Portfolio Standards." *Pew Center on Global Climate Change*, Arlington, 1-36.

Rabe, Barry. 2004. *Statehouse and Greenhouse: The Emerging Politics of American Climate Change Policy*. Washington DC: Brookings.

Randazzo, Ryan, and Robert Anglen. "APS, Solar Companies Clash over Credits to Customers." *Arizona Republic* 21 October 2013.

Rose-Ackerman, Susan. 1980. "Risk Taking and Reelection: Does Federalism Promote Reelection?" *Journal of Legal Studies* 9 (3): 593-616.

Schiller, Wendy. 1995. "Senators as Political Entrepreneurs: Using Bill Sponsorship to Shape Legislative Agendas." *American Journal of Political Science* 39: 186-203.

Shipan, Charles, and Craig Volden. 2008. "The Mechanisms of Policy Diffusion."

American Journal of Political Science 52 (4): 840-857.

Smart, Susan. 1994. "The Consequences of Appointment Methods and Party Control for Telecommunications Pricing." *Journal of Economics and Management Strategy* 3 (2): 301-323.

State Energy Consumption Estimates. June 2013. United States Energy Information Administration. Accessed on multiple dates.

State Energy Price and Expenditure Estimates. June 2013. United States Energy Information Administration. Accessed on multiple dates.

Squire, Peverill. 2007. "Measuring State Legislative Professionalism: The Squire Index Revisited." *State Politics and Policy Quarterly* 7 (2): 211-227.

Stigler, George. 1971. "The Theory of Economic Regulation." *The Bell Journal of Economics* 2 (1): 3-21.

Swank, D. 2006. "Tax Policy in an Era of Internationalization: Explaining the Spread of Neoliberalism." *International Organization* 60: 847-882.

Teodoro, Manuel 2009. "Bureaucratic Job Mobility and the Diffusion of Innovations." *American Journal of Political Science* 53 (1): 175-89.

Volden, Craig, Michael Ting, and Daniel Carpenter. 2008. "A Formal Model of Learning and Policy Diffusion." *American Political Science Review* 102 (3): 319-332.

Volden, Craig. 2006. "States as Policy Laboratories: Emulating Success in the Children's Health Insurance Program." *American Journal of Political Science* 50 (2): 294-312.

Volden, Craig. 2002b. "The Politics of Competitive Federalism: A Race to the Bottom in Welfare Benefits?" *American Journal of Political Science* 46 (2): 352-363.

Walker, Jack L. 1969. "The Diffusion of Innovations among the American States." *American Political Science Review* 63 (3): 880-899.

Wawro, Gregory. 2000. *Legislative Entrepreneurship in the U.S. House of Representatives*. Ann Arbor: University of Michigan Press.

Wilson, Rick, and Cheryl Young. 1997. "Cosponsorship in the U.S. Congress." *Legislative Studies Quarterly* 22 (1): 25-43.

Wilson, Woodrow. 1887. "The Study of Administration." *Political Science Quarterly* 2 (2): 197-222.

Woon, Jonathon. 2009. “Issue Attention and Legislative Proposals in the U.S. Senate.” *Legislative Studies Quarterly* 34 (1): 24-54.