

HOW FAR BEHIND IS MY STATE?
THE ROLE OF ECONOMIC ACTIVITY AND STATE
PARTISANSHIP IN DETERMINING EPR POLICY

By

TANES RIANGLAEM

Bachelor of Arts in English for Business Communication
Asian University
Chonburi, Thailand
2008

Master of Arts in Media, Peace and Conflict Studies
University for Peace
San José, Costa Rica
2013

Master of Education in Teaching English as an International Language
Shinawatra University
Pathumthani, Thailand
2017

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF ARTS
May, 2023

HOW FAR BEHIND IS MY STATE?
THE ROLE OF ECONOMIC ACTIVITY AND STATE
PARTISANSHIP IN DETERMINING EPR POLICY

Thesis Approved:

Dr. Kristin Olofsson

Thesis Adviser

Dr. Joshua Jansa

Dr. Cole Harvey

ACKNOWLEDGEMENTS

I would like to acknowledge and give credit to my thesis advisor, Dr. Kristin Olofsson, who offered guidance and advice throughout my journey of writing this thesis. Dr. Olofsson has been very supportive, understanding, and always available to answer all of my questions. I would also like to thank my thesis committee member, Dr. Joshua Jansa, for his guidance on the method section and for coaching me on using STATA. Working with both Dr. Olofsson and Dr. Jansa has inspired me to continue exploring more in the area of public policy, regulatory policy, environmental policy, and state politics. Additionally, special thanks go to another committee member, Dr. Cole Harvey for his constructive feedback and valuable comments.

I would also like to express my sincere gratitude to all faculty members of the Department of Political Science for their continued support and intellectual contributions that have helped shape my understanding of research methodology, particularly Dr. Brooke Coe, Dr. Holley Hansen, Dr. Seth McKee, Dr. Haruka Nagao, Dr. Stephen Nemeth, Dr. Eve Ringsmuth, Dr. Alex Smith, Dr. Erica Townsend-Bell, and a former faculty member, Dr. Matthew Motta.

Finally, my heartfelt thanks go to my family, my life partner, and my friends for their unconditional love, patience, and encouragement throughout my academic journey here in the United States. I would also like to extend my appreciation to the Office of the Public Sector Development Commission for granting me a 2-year leave to pursue my postgraduate study at Oklahoma State University.

Name: TANES RIANGLAEM

Date of Degree: MAY, 2023

Title of Study: HOW FAR BEHIND IS MY STATE? THE ROLE OF ECONOMIC
ACTIVITY AND STATE PARTISANSHIP IN DETERMINING EPR
POLICY

Major Field: POLITICAL SCIENCE

Abstract: In 2018, the United States Environmental Protection Agency estimated that the total generation of municipal solid waste in the U.S. alone was 292.4 million tons, approximately 25% of which are plastics, glass, and metal materials. Most of these wastes are managed by state and local governments. Extended Producer Responsibility (EPR) systems internalize externalities of municipal waste by forcing manufacturers and importers of plastics, glass and metal materials to take a significant degree of responsibility for the environmental impacts of their products. EPR policy is intended to shift the financial burden of waste management away from consumers and local governments to producers or brand owners. The policy concept is currently more common in European Union countries, where it is mostly regulated within the context of waste electrical and electronic equipment (e-waste), batteries and end-of-life vehicles. In the U.S., EPR policy is not yet widely popular and there is no federal law that requires producers to take such responsibilities; policies have been enacted on a state-by-state basis. This paper, therefore, studies the relationship between adoption of EPR laws and several state internal characteristics: state reliance on the manufacturing sector, business-friendly climate of each U.S. state, and state partisanship between 1991 and 2022. The findings indicate that states that have a friendly-business climate and Republican-controlled governments tend to adopt fewer EPR laws. Results also show that dependency on the manufacturing sector does not influence the adoption of EPR policy and previous adoptions of EPR policy across states poses a positive significant influence over the adoption of EPR laws. These findings enable policymakers to create effective policy to enhance waste management systems and address environmental issues.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
II. REVIEW OF LITERATURE.....	8
III. THEORY	13
IV. METHODOLOGY	21
V. FINDINGS	26
VI. CONCLUSION.....	32
REFERENCES	34

LIST OF TABLES

Table	Page
1. SUMMARY OF THE VARIABLES.....	27
2. ADOPTION OF EPR LAWS ACROSS US STATES AS A FUNCTION OF STATE INTERNAL DETERMINANTS.....	29

LIST OF FIGURES

Figure	Page
1. EPR LAWS MAP	3

CHAPTER I

INTRODUCTION

The United States Environmental Protection Agency (EPA) announced the new National Recycling Goal, which is to increase the national recycling rate to 50 percent by 2030 (EPA, 2020). This is a challenging and ambitious goal, because to reach the goal, it requires strong cooperation and committed effort from different stakeholders ranging from households, local governments, state governments, and private sectors. In line with this, environmental interest groups such as Green Peace and World Wildlife Fund (WWF) have questioned committed efforts from the industries and their sincerity in solving the waste disposal problem.

Recent data from EPA shows that the total generation of municipal solid waste in 2018 alone was 292.4 million tons or 4.9 pounds person per day (EPA, 2020). Consequently, consumers and local governments have spent vast amounts of money to handle waste disposal and waste management systems. To tackle this pressing issue, the idea of placing responsibility for a product's end-of-life environmental impacts on producers was introduced, known as Extended Producer Responsibility (EPR). EPR policy is an environmental policy that intends to shift the financial burden of waste management away from consumers and local governments to producers or brand owners. The Organisation for Economic Co-operation and Development (OECD) stated EPR policy is one of the policy options that aims to reduce waste management costs, reduce materials use and enhance product reusability and recyclability (OECD, 2021).

Extended Producer Responsibility (EPR) is a concept in which manufacturers and importers of the products take a significant degree of responsibility for environmental impacts of their products (OECD, 2021). The concept is also known as “polluters pay the price”. EPR policy is more common in European Union countries, where they regulate within the context of waste electrical and electronic equipment (e-waste), batteries and end-of-life vehicles (OECD, 2014). EPR policy has also been widely implemented among OECD members, and in Scandinavian countries and Japan.

In the United States, the concept is not yet widely popular. The U.S. Congress passed the Resource Conservation and Recovery Act (RCRA) in 1976 to address the increasing problems on municipal and industrial waste. The law authorizes the EPA to control hazardous waste including generation, transportation, treatment, storage and disposal of hazardous waste through EPA’s regulations and guidance. However, the RCRA Act is heavily focused on solid waste control, such as toxic solids, liquids, and gases. There is no federal law that specifically requires producers to take such responsibilities for treatment and disposal of consumer products; it has left each state to decide on EPR policy.

According to the Product Stewardship Institute (PSI), there are over 100 active EPR laws covering 16 different products across the United States (PSI, 2022). Figure 1 presents the current overall picture of EPR in the United States; we can visually see that the adoption of EPR policy is more common in the west coast and northeastern regions of the country, while it is less common in the midwest and the south.

Gray 1987; and Dean et al. 2000). Davis argued that policy decisions are largely influenced by political factors such as the partisan orientations of the statewide electorate and the ideological makeup of state voters as well as economic resource variables such as the generation of revenue from taxes (2017). Therefore, when it comes to policy adoption, state governments often have to take factors such as environmental protection, citizen well-being, economic development, citizens' ideology into consideration before adopting certain environmental policy.

Unlike the Clean Air Act of 1970 and Clean Water Act of 1972, the EPA does not hold the authority to enforce EPR policy at a state level. State governments are not obligated to adopt such a policy and this is where the issue of federal tension arises. In the case of EPR policy, EPA cannot regulate all states to comply with uniform standards on product stewardship; they can only provide a guideline and best practices on EPR adoption to state and local governments.

In reference to EPR policy and federalism, some states are far more advanced than others.

California alone has 11 laws dedicated to EPR making it the most progressive states on EPR policy; these Californian EPR laws regulate different types of products such as paint, carpet, mattress, pesticide containers, mercury thermostats, pharmaceuticals and sharp waste

(CalRecycle, 2023). California's EPR laws aim to create a setting for markets that reflect the environmental impacts of a product, and to which producers and consumers respond

(CalRecycle, 2023). The state agency that handles and enforces California's EPR policy is the Department of Resources Recycling and Recovery, which is also known as CalRecycle.

CalRecycle oversees statewide waste management programs and various initiatives on recycling; it also developed its own EPR framework and checklists for stakeholders, which is considered more advanced than what the EPA has offered. What we see from California's EPR policy is beyond the baseline level of protection that the federal agency has suggested and this can be seen as "race to the top", and California certainly succeeded in reaching the top.

Maine is another state that has adopted EPR policy with nine relevant laws, making it the second most progressive state on the list. These laws were passed to foster sustainable systems for the production and use of products, and Maine's EPR policy is marked as an integral part of Maine's solid waste management strategy (Maine Department of Environmental Protection, 2022). Maine's Department of Environmental Protection is the primary agency that oversees the implementation and enforcement of EPR policy. Maine's laws specify product stewardship responsibilities for end-of-life management for different products such as batteries, electronic waste, cell phones, paint, mercury-added lamps, mercury thermostats (Maine Department of Environmental Protection, 2022). Some states such as Connecticut and Washington have also developed more advanced and comprehensive EPR policies of their own and named them as "EPR-plus" policies (Quinn, 2023). This also results from the "race to the top" phenomenon, which generally takes place when a state has a high level of self-autonomy to determine which policy to adopt and allow the room to foster policy innovation.

Waste Dive, the journalism site dedicated to provide news and insights on waste and recycling trend, stated that strong support from high-ranking officials like state governors matters in adopting EPR policy and stakeholder engagement on EPR bills could make or break legislation (Quinn, 2023). These stakeholders include producers, brand owners, state governments, local governments, public officials, interest groups, environmental advocacy groups and residents. By nature, the stakeholders that are in favor of environmental policy are environmental advocacy groups and affected residents, while those who are not in favor of the policy are producers, brand owners and the interest groups that advocate for the private sector. The stand of state governments, local government and public officials is generally congruent with public opinion, culture of the state, and state partisanship.

On the other end, there are still 17 states that have not yet adopted any EPR law. In the context of EPR policy, the empirical explanation is limited to conclude why a large number of states have not yet adopted the policy. Waste Dive stated that “Recycling is generally seen as a bipartisan issue” (Quinn, 2023). This statement indicates that the decision to adopt or not adopt certain policy depends on which party controls the state government. Quinn (2023) also stated that it depends on local infrastructures that have capacity to support the recycling policy. The concerns over relevant costs, economic competition and disagreements with manufacturers could often slow down the policy adoption process (Miller, 2021; and Quinn, 2023). Gradus et al. (2019), who investigated the drivers of curbside recycling program adoptions in 1,856 local governments, added that the adoption of curbside recycling is limited by capacity constraints, public expenditures and wealth of the community. Their findings are well-aligned with comments from Quinn (2023) and Miller (2021) that costs and capacity matter.

Because literatures related to EPR policy in the U.S. are still very limited, this study aims to study the relationship between adoption of EPR policy and several state internal characteristics: state’s reliance on the manufacturing sector, business-friendly climate of each U.S. state, and state partisanship between 1991 and 2022. I intend to explore the state’s internal determinants that influence adoption of EPR policy; these internal determinants include the economic conditions and state partisanship of the 50 U.S. states. With this, I argue that states that are more reliant on the manufacturing sector are less likely to adopt EPR policy and those with business-friendly climates tend to adopt less EPR laws as well. I also expect to see Republican-controlled states adopt fewer EPR laws than Democrat-controlled states. I use a fixed-effects model for my analysis, using STATA to estimate the effect of internal characteristics of each state on adoption of EPR policies.

Over the course of this paper, I first discuss existing empirical evidences related to the impacts of EPR policy and environmental regulations. Following this brief empirical discussion, I explain my theory in the context of state policy adoption theory and the role of state internal determinants. Next, I introduce the dataset, followed by results, and I finally conclude with a discussion of results and provide directions for future research.

CHAPTER II

REVIEW OF LITERATURE

Extended Producer Responsibility (EPR) policy is more common in European Union countries, where they regulate within the context of waste electrical and electronic equipment (e-waste), batteries and end-of-life vehicles (OECD, 2014). EPR policy is also widely implemented among OECD members and Scandinavian nations. In the U.S., the concept is not yet widely popular. The U.S. Congress passed the Resource Conservation and Recovery Act (RCRA) in 1976 to address the increasing problems on municipal and industrial waste. The law tasks the United States Environmental Protection Agency (EPA) with controlling hazardous waste including generation, transportation, treatment, storage and disposal of hazardous waste through EPA's regulations and guidance. However, the RCRA Act is heavily focused on solid waste control such as toxic solids, liquids, and gases. There is no federal law that specifically requires producers to take such responsibilities for treatment and disposal of consumer products; it has left each U.S. state to determine a suitable law that fits their contexts. Since EPR policy generally aims to regulate manufacturers on the treatment or waste disposal of post-consumer products, state policy makers are often confronted with choices between protecting the environment and promoting economic development (Stream 2002).

It is not only policy makers who find it hard to balance between preserving the environment and economic prosperity; policy scholars often debate over trade-offs between environmental protection and the economic benefits on environmental policy.

Empirical evidence thus far on EPR policy has sorted generally into two sides: one that is in favor of EPR policy and another that goes against it. Starting with those on pro-EPR side, Esenduran et al. (2019) used an economic model to test their theory on the effects of EPR policy. The findings suggested that EPR policy that focuses on producer responsibility alone can reduce the total landfill diversion and welfare amid competition. Esenduran et al. (2019)'s study answers the ultimate goal of EPR policy that is to reduce waste generated by the manufacturers and cost burdens off from the local governments. In addition to this, Zhao et al. (2021)'s findings revealed that the EPR policy significantly improves green technology innovation and promotes the more advanced green invention patents. This implies that if the state enacts more EPR laws, it will influence businesses to adopt more advanced green technologies into their business operations, which will benefit the state economically and the environment in the long run. Similar to Rahmani et al. (2021)'s study, which found that when recycling technology choice is adopted, collective recycling systems can lead to higher environmental and economic benefits than individual recycling systems because collective recycling systems provide stronger incentives for recycling technology improvements. Both Zhao et al. (2021)'s and Rahmani et al. (2021)'s studies reconfirm that EPR laws not only help reducing risks on the environment, they also bring in economic benefits. Lastly, Smulders (1995) also argued that improvements in the environmental quality that follow environmental policy can boost the productivity of the environment and economic growth, because the environment provides necessary inputs to economic production and accumulation processes (Smulders 1995, 1).

On the opposite end, some scholars claim that adopting strict environmental policy can negatively affect the economy. Some evidence has shown that the overall impact of domestic regulation on environment negatively affects the manufacturing sector (Babool and Reed 2010; Gray and Shadbegian 1993; Gray 1987; and Dean et al. 2000). Gray and Shadbegian's (1993)

study, which focuses on the connection between productivity and measures of environmental regulations for plants in paper, oil and steel industry concluded that more regulated plants have significantly lower productivity levels and slower productivity growth rates than those plants what were not heavily regulated. Similar to Gray's (1987) work that found the Occupational Safety and Health Administration (OSHA) and the United States Environmental Protection Agency (EPA) regulation reduced productivity growth in the average manufacturing industry by 0.44 percentage points per year, over 30 percent of slowdown in the 1970s. Gray (1987) also stated that the reason manufacturing industry in the U.S. is largely affected because the industry is highly regulated by the two agencies compared to other industries. On top of this, Dean et al. (2000) also revealed that environmental regulations pose significant impacts on formation of small-scale businesses across a broad range of manufacturing industries, while those regulations pose no effect on large-scale businesses. These findings are in the same direction where they addressed negative impacts on the manufacturing sector caused by government environmental regulations.

As for EPR laws specifically, Milanez and Bührs (2009), who studied the development and implementation of EPR policy in Brazil, concluded that institutional capacity is required to successfully implement EPR policy. Although one of the goals of EPR policy is to motivate companies to invest in innovation and develop preventive and more efficient solutions to their business operations, they found that manufacturers in Brazil failed to stimulate effective environmental innovation and their operational costs were actually increased. Milanez and Bührs (2009)'s findings are very different from Zhao et al. (2021)'s study, which assessed the impacts of EPR policy on corporate green technology innovation in mainland China, where they found a positive relationship. Milanez and Bührs (2009) argued that EPR policy is not necessarily an effective strategy to improve environmental performance, unless institutional capacity is strong. In addition to this, McKerlie et al. (2006), who studied a product stewardship initiative

in Canada, found that one of the major challenges is how the jurisdictional responsibilities are divided amongst the different levels of government and there is lack of federal mandates to implement EPR resulted in regional and variations when implementing such a policy (McKerlie et al. 2006, 624-625).

We have witnessed both pros and cons of impacts from environmental regulations on the private sector, economy, environment and the related industries. However, there are not many empirical evidences found specifically for the case of EPR policy in the United States, which is one of the contributions of this study, we can learn from similar industries such as energy, and oil and gas industry. In particular, we can extrapolate factors that influence the state to adopt environmental policy. Davis's (2014) findings stated that if oil and gas drilling activities dominate the area, there tends to have strong support for fracking operations from residents and city officials. This implies that despite the impacts caused by drilling activities, the community may support the industry if the industry is tied with residents' incomes and community's revenues. This behavior and reaction towards certain environmental policy may differ from region to region depending on how dominant the industry is. Davis (2017) found that policy decisions are largely influenced by political factors such as the partisan orientations of the statewide electorate and the ideological makeup of state voters as well as economic resource variables such as the generation of revenue from taxes. This finding indicated that decisions on environmental policy go beyond the issue of environmental protection; decisions involve political agendas such as getting re-election and public opinion.

Kang (2002) confirmed that the administrative structures of state environmental programs as well as the environmental ideology of state representatives significantly influence state economic development. The unified structure of the state environmental programs can help reduce transaction costs for different administrative organization (Feiock and Stream 2001; Kang 2002; Lüthi and Prässler 2011). In addition, the party that takes control of the state

government has considerable impact on patterns of state economic growth. Feiock and Stream (2001) also asserted that state policies and administrative institutions play an important role in influencing environmental policy, private resource allocation decisions and return on investments of the private sector. Their findings confirmed that certain administrative arrangements for environmental regulation may enhance economic development as transaction costs are lessened. As for the role of party affiliation in relation to environmental policy at the state level, Pacca et al. (2021) who studied the influence of lobbying, electoral incentives and U.S. state governor's party affiliation on environmental expenditures found that Democratic governors spend more on the environment than Republican governors. However, in oil-abundant states and those states where polluting industries are economically important to the states, Democratic governors decrease their environmental expenditures (Pacca et al. 2021, 561). Pacca et al.'s (2021) findings correlated with Davis's (2014) findings: the state or the community may support the industry if the industry is tied with residents' incomes and state's revenues, but in case of Pacca et al. (2021), they primarily focused on the elected state officials. Through a literature review, I have discovered some key internal determinants of the state that might pose significant influence on the adoption of EPR policy including state dependency on the sector, regulatory climate for businesses and state partisanship, which will be discussed with more details in the theory section.

CHAPTER III

THEORY

The United States is a country where federalism appears to be the most obvious feature of the system of governance (Hanson 2018, 29). Its governance system grants states a certain level of power to determine their own paths and enact laws that are intended to meet demands and satisfy needs of their constituents. The relationship between states are not federal, but confederal, which constitutionally recognizes power of each U.S. states on equal footing (Hanson 2018).

Because of the nature of governance, we have witnessed how different states react to certain policy differently such as health policy, economic policy, social policy and environmental policy. With this level of autonomy to form, innovate and adopt their own policy, we often see policy move throughout the nation in a process termed “policy diffusion”. Colvin and Jansa (2019) defined policy diffusion as a process when policies adopted in one place are then introduced and adopted elsewhere. The states or subnational governments, therefore, can be seen as “laboratories of democracy”, where they can experiment with different policies and learn from one another (Colvin and Jansa 2019; Shipan and Volden 2008).

To understand how state governments adopt a certain policy, it is important to explore factors that influence a state’s decision to adopt a policy. Past research has identified two mechanisms: internal determinants and regional diffusion models. Internal determinants can be described as “political, economic, and social characteristics internal to the state, which can lead a state government to innovate the policy” (Berry and Berry 1990, 396). Regional diffusion

models aim to predict whether or not states are likely to emulate the policies of other states within close geographical proximity (Walker 1969). Berry and Berry (1990) used state lottery adoptions to test their theory on the internal determinants and regional influences with the assumption that a state without a lottery will likely adopt one in a given year, which is determined by the internal determinants and influenced by the pattern of lottery adoptions of the nearby states. Berry and Berry (1990) believed that both economic and political conditions have the effects on the motivation of state political officials to adopt the state lottery program, which is aligned with my theory that economic and political conditions as the state's internal determinants can play a major role in influencing the adoption of EPR policy among U.S. states. Their result revealed that "both internal political and economic characteristics of a state and the number of previously adopting neighboring states are found to influence the probability of a lottery adoption" (Berry and Berry 1990, 410). Their finding inspired me to pay closer attention to internal factors that might reflect states' motivation to adopt the policy. Hwang and Gray (1991) reiterated Berry and Berry's (1990) argument that states adopt policy strategies in order to maximize their standing, particularly to strengthen their economic positions and increase a state's competitiveness. Wong (1988) and Ringquist and Garand (1999) also argued that state internal characteristics such as political factors play an important role in policy outcomes, and agreed that economic concerns also influence the shape of policy objectives. These authors' arguments are connected to my study as I expect political-economic factors including a state's dependency on the manufacturing sector, a state's business climate and state partisanship to influence EPR policy adoption at the state level.

Another policy sub-area that can be referenced to the case of EPR policy is climate change policy. Matisoff's (2008) study specifically focused on the adoption of state climate change policy and a state's characteristics that drive the state to adopt policy change. He found some internal determinants that influence policy innovation on climate change including

environmental conditions of the state and demands of citizens. The key obstacle in adopting climate change policy that he found was a state's dependency on carbon-intensive industries such as coal and natural gas. My argument is similar to Matisoff's (2008) argument, in which he stated that the states that produce coal and natural gas are less likely to adopt energy efficiency and renewable energy policies, in order to protect local industries (Matisoff 2008, 534).

This is the same way I argue that states that are more reliant on the manufacturing sector will be less likely to adopt EPR policy. In addition to Matisoff's (2008) work, Bromley-Trujillo (2012) also studied state internal determinants in the U.S. and focused on why states vary in their level of environmental program support. Bromley-Trujillo found that wealthy states with strong environmental interest groups and Democrat party-controlled governments are most likely to address environmental issue. Bromley-Trujillo's (2012) argument is connected to my argument in the way that Republican party-controlled governments are less likely to adopt the EPR policy, which I will discuss this argument later in my H3.

For this study, I will only focus on Extended Producer Responsibility policy (EPR), which is a concept in which manufacturers and importers of the products take a significant degree of responsibility for environmental impacts of their products (OECD, 2014). EPR policy is intended to shift the financial burden of waste management away from the consumers and local governments to producers or brand owners. While EPR laws are known to be widely adopted in certain region of the U.S. such as in the west coast and northeastern regions, EPR is still considerably new to many U.S. states as more than half of the U.S. states have none or only one EPR law adopted. I, therefore, intend to explore further by looking into state internal characteristics that influence states to adopt EPR policy. Scholars have used different measures to assess how innovative U.S. states are. Walker (1969) was among the first scholars whose works were focuses on constructing innovation score based on the speed with which the states adopted the new policy programs in comparison to other U.S. states. On top of Walker's (1969)

work, Nicholson-Crotty et al. (2014) developed a measure of collective policy innovation, which measures formal cooperative policy arrangements among the states and compares their measure to other existing measures of internal state policy innovation. Their findings indicated that state innovativeness is often a statistically and substantively important determinant of collective policy innovation (Nicholson-Crotty et al. 2014, 321). Nicholson-Crotty et al.'s (2014) study provided a constructive guidance on how scholars can study state innovativeness. This study will focus on why some states are more receptive to EPR policy than others.

In the United States, because there is no federal law that specifically requires producers to take responsibilities for treatment and disposal of consumer products, each state has been left to decide. According to the Product Stewardship Institute (PSI), there are more than 100 active EPR laws covering 16 different products across 33 U.S. states (PSI, 2022). As EPR policy aims to regulate manufacturers on the treatment or waste disposal of post-consumer products, trade-offs between environmental protection and economic benefits often remain a debatable topic. Considering EPR policy as policy innovation, state governments may find it challenging in balancing environmental protection, citizen well-being and promoting economic development. I argue that when a state is highly reliant on manufacturing activity, they are less likely to adopt EPR policy, because the state is concerned more about economic benefits, tax revenues, and economic competition among U.S. states.

Davis (2014), who studied fracking policies in Colorado, Pennsylvania and Texas addressed that tension between regulatory policy and economic development policy are relatively common. His findings revealed that if oil and gas drilling activities dominate the area, there tends to be strong support for fracking operations from residents and public officials. Additional work from Davis in 2017 on fracking policies in the United States found that 1) states with higher severance tax rates were significantly more likely to adopt policies that mitigate environmental

risks and 2) economic structure leads to increasing support for environmental preservation policies including development policies that are environmentally sustainable (Davis 2017). These findings imply that despite the environmental impacts caused by fracking activities, the community and the state government may support the industry if the industry is tied with residents' incomes and community's revenues. This behavior and reaction towards certain environmental policy may differ from region to region depending on how dominant the industry is. Davis's findings from both studies support my argument that when economic factors become the important criterion in policy decision making, concern on the environmental policy may become less prioritized agenda.

H1: *States that are highly reliant on the manufacturing sector tend to adopt fewer EPR laws than states that are less reliant on the manufacturing sector.*

When taking tax revenue into account, one of the main sources of income for all the states are from businesses, this is one of the main reasons why all states are competing to attract more businesses into their states. Having more businesses mean much more than taxes, but employment, movement of skilled workforce and long-term fiscal stability for the state. Businesses and manufacturers, therefore, often seek for a business-friendly climate to do businesses. To illustrate the impact of regulatory policy, the case of California where businesses are running away from California to a more business friendly climate and states which offer more-favorable tax laws can be a good example (Ohanian and Vranich 2021; Makris et al. 2007; McGee 2017; and Walczak 2017). These large cooperates include Tesla - the world's largest electric car producer, who decided to relocate its corporate headquarter from Palo Alto, California to Austin, Texas in 2021, as well as Oracle, Caterpillar, Hewlett Packard Enterprise who also decided to leave California in the past recent years. Hoover Institution at Stanford University identified at least 265 headquarters of California businesses have relocated outside California

and also revealed that regulatory climate and favorable tax laws are among the top reasons these cooperates leave the state (Ohanian and Vranich, 2021).

One characteristic of a friendly-business climate is imposing less regulations to businesses. EPR policy is considered as environmental regulatory policy that imposes regulatory requirements related to waste disposal and waste management on manufacturers. Thus, manufacturers are more likely to stay away from those strictly regulated states and EPR policy can be one of the factors that when brand owners consider where to do their businesses. Luthi et al. (2011) studied how different factors influence decision making on company level and examined project developers' policy preferences to enhance the deployment of wind energy. The findings showed that wind energy project developers value risk mitigation highly. Legal security, short administrative process duration, and favorable grid access regulations are among important aspects that investors consider. Their findings imply that businesses are strongly concerned about a state's regulatory climate and legal security, especially when they are doing business expansion and starting a new project. Their findings also explain the relocation phenomenon in California in the past 5 years, where businesses have fled to states that offer a more-friendly business climate and favorable tax laws.

H2: *Business-friendly states tend to adopt fewer EPR laws than less business-friendly states.*

Finally, political factors such as the partisan orientations and the ideological makeup may play their part in shaping EPR policy. Berry and Berry (1990) stated that the public officials can be influenced by the political and economic environment of their own state. On a similar note, state legislatures tend to adjust the content of the policy to fit the political and economic circumstances of their own states as well (Jansa et al. 2018). Boushey (2016), who tested whether electoral pressure leads government to disproportionately emulate policy innovations that reinforce popular stereotypes, found that state governments are more likely to adopt policy

innovations that extend benefits to strong support, popular, and powerful target populations (Boushey 2016). Although his work was focused on criminal justice policies adopted across state governments, I can still relate his work to my study as I learned how electoral pressure influences the probability that state governments choose to adopt policy innovation.

Mallinson (2021) explored the patterns of the spread to understand how the relative importance of ideological and neighbor adoption cues change over time and what factors influence those cues. Mallinson (2021) tested how geographical and ideological cues increase or decrease in importance over time, his findings revealed that not all policy innovations are subject to the influence of neighbor state adoption cues, while ideological neighbors often serve as source of policy innovations (Mallinson 2021, 82). Additionally, his results showed that the influence of policy and political cues have shifted over times (between 1960 to 2014) and that polarization plays an important role in such a shift. Mallinson's (2021) study proved that the dynamic of policy diffusion is not static, but it evolves over the time. Mallinson demonstrated that when it comes to policy diffusion, being neighbors may not be as influential as shared ideology. This might superficially answer why California and Arizona do not share a similarity when it comes to policy adoption, even though the two states share a border. Knowing that political polarization matters in term of conditioning neighbor and ideological cues also helps to understand why certain policies are adopted while some are being neglected. Certain policies might be tied to political polarization and adoption could affect the political game as well as political gain within state politics.

Caughey et al.'s (2017) work focused more on the partisanship of state officials. They analyzed the effects of party control of state legislatures and governorships. Their findings revealed that partisan effects on state policy have consistently increased over the past eight decades, with a dramatic growth since 1980s onwards, more importantly the authors found a supportive evidence that partisan polarization has increased partisan effects on policy.

The authors also pointed out that “greater policy effects when and where Democrats and Republican identifiers diverge more in their policy views and where roll-call voting in the state legislature is more polarized by party” (Caughey et al. 2017, 1343). Caughey et al.’s (2017) finding is linked to Mallinson’s (2021) study in the way that ideological cues do matter, particularly when the ideological gap between candidates and elected officials is growing wider. Partisan polarization takes place across all levels of actors from state constituents to state officials; polarization can cause policy effects as evidenced by Caughey et al.’s (2017) findings that more Democratic officials are increasingly likely to support liberal policies without reservation.

Because accounting for ideology, partisanship and electoral competition are considered as the political forces that lead the state governments to support certain policies I, therefore, include the partisan orientation of the statewide electorate as the third hypothesis.

H3: *Red states tend to adopt fewer more EPR laws than blue states.*

CHAPTER IV

METHODOLOGY

Dependent Variable: My dependent variable is EPR laws enacted by each U.S. state.

As these EPR laws have been adopted at the state level, I draw data from the Product Stewardship Institute, which collected data on producer responsibility programs, policies and laws across 50 U.S. states from 1991 to 2022 (Product Stewardship Institute, 2022). Their dataset is the most comprehensive dataset available on EPR laws, consists of 101 laws across 16 product categories across all U.S. states. My unit of analysis of the dataset is the “EPR law”, which was enacted by the state governments; these laws regulate a manufacturer’s responsibility for its product extending to post-consumer management of that product and its packing. These laws can be categorized into two features: 1) the laws that shift financial and management responsibility with government oversight, upstream to manufacturers and away from the public sector, and 2) the laws that offer incentives to manufacturers to incorporate environmental considerations into the design of their product and packing (Product Stewardship Institute, 2022). To increase validity of my study, I include all the data from 1991 to 2022, providing a 32-year span to study the role of state internal determinants across U.S. states.

Since my dataset is a state-level panel dataset and I believe that individual observations belong to certain groups driven by my hypotheses: H1.) states that are more reliant on the manufacturing sector; H2.) states with a business-friendly climate; and H3.) Republican-controlled states versus Democrat-controlled states, I will use a fixed-effects model for

my analysis, using STATA to estimate the effect of internal characteristics of each state on adoption of EPR policies.

Independent Variables: As my research aims to measure the influence of state's internal determinants, I select three different independent variables that are aligned with my three hypotheses.

H1: *States that are highly reliant on the manufacturing sector tend to adopt fewer EPR laws than states that are less reliant on the manufacturing sector.*

To measure how each U.S. state is dependent on the manufacturing sector, I use the percentage of GDP generated by the manufacturing sector in each U.S. states from 1991 to 2022. I collect data from the U.S. Bureau of Economic Analysis (BEA)'s database because the BEA is known for its accurate and objective data about the U.S. economy. I use the annual Gross Domestic Product (GDP) in current dollars by state and GDP by manufacturing industry in current dollars by state from 1991 to 2021 to create a measure of each state's dependency on the manufacturing sector. Both the total GDP and GDP by manufacturing industry are in millions of current dollars. I only include 50 U.S. states, and exclude District of Columbia on purpose, because the district lacks certain characteristics of statehood and congress has to review all DC legislations before it can become a law.

Because BEA's website offers two data series, with industry details for the year 1987-1997 based on the 1987 Standard Industrial Classification (SIC) and year 1997-2021 based on the 2012 North American Industry Classification System (NAICS)¹, I have to integrate the two data series to complete my data on state GDP from 1991 to 2021. In addition to this,

¹ NAICS data series is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. It was developed to replace the SIC system (U.S. Census Bureau, 2023). Because of the discontinuity in the GDP by state time series at 1997, where the data change from SIC industry definitions to NAICS industry definitions, BEA's website placed a cautionary note that users should take a careful consideration when appending the two series (The U.S. Bureau of Economic Analysis, 2020). I fully acknowledge BEA's cautionary note. However, in keeping with prior empirical works, I have chosen to use the appended dataset.

since BEA’s website only provides its data up to year 2021, I therefore calculate the average increase using GDP data from 2016 to 2021 and apply that average increase to year 2022 as a close approximation of each state’s 2022 GDP. This calculation of the average increase applies to both the total GDP and GDP by manufacturing industry.²

H2: *Business-friendly states tend to adopt fewer EPR laws than less business-friendly states.*

To measure a business-friendly climate in each U.S. state, I use state corporate income tax rates across 50 U.S. states from 1991-2022 as a proxy to assess a state’s business climate. I incorporate two data sources from the Correlates of State Policy Project of Institute of Public Policy and Social Research of Michigan State University (IPPSR), and the Urban-Brookings Tax Policy Center (TPC). Both sources offer comprehensive data on state corporate income tax rates. However, the Correlates of State Policy Project only includes data on state corporate income tax rates from 1941 to 2019, with the absence of 2015 to 2018. To fill the missing gap, I have to incorporate additional data from the Urban-Brookings Tax Policy Center as they offer more recent data on state corporate income tax rates from 2002 to 2022. Similar to the previous measurement, I exclude District of Columbia on purpose as the district lacks certain characteristics of statehood. Because some states use flat rates while some states use progressive rates, I decide to code only the highest corporate income tax rates. For those states that do not have corporate income tax such as Nevada, Ohio, South Dakota, Texas, Washington and Wyoming, I code their tax rates as “0” value.

H3: *Red states tend to adopt fewer EPR laws than blue states.*

To measure state partisanship, I use governor affiliated party and party that controls both chambers of state legislature across 50 U.S. states from 1991 to 2022, known as “state party trifecta”. I use this as a proxy for political ideology because voting behavior is often tied with party identification; most voters are likely to support policies from the elected officials from

² The reason I decide not to skip year 2022 is because there were some EPR laws adopted among U.S. states in 2022, therefore including year 2022 is believed to increase the validity of my study.

the parties with which they share affiliation. Hence, using state government trifecta³ is one of the appropriate proxies to measure state partisanship. I collect data from the National Governors Association, which lists all the current and former governors by their years from service since the establishment of statehood (The National Governors Association, 2023). Republican governors are coded as 0, while Democratic governors are coded as 1. Governors with no affiliated party are coded as 2; this also includes those who changed their status from being with the affiliated party to the independent governor and vice versa while they were in office such as former governor of Rhode Island, Lincoln Chafee, and former governor of Florida, Charlie Crist. For those governors who were affiliated with political parties other than Republican and Democrat party such as Connecticut party, which won the 1990 gubernatorial election in the state of Connecticut, I also code this group of governors as 2. When there were two governors from the different parties ended and began their terms in the same year, I code by which governor was in the office for that particular year the longest. In addition to data from the National Governors Association, I also collect data from Ballotpedia.org, which provides data on party that control state legislature including state upper house and lower house from 1992 to 2023. However, Ballotpedia.org only provides data from 1992 onwards. I then have to import data from State Partisan Balance Data from Harvard Dataverse to fill the missing gap for year 1991. I code those years that Republican party controlled both houses as 0 and 1 for those years that Democrat party took a full control of both houses. I also code those years where both houses were not unified as 2. Nebraska is also coded as a 2, as their legislature is unicameral legislature. I then use STATA to generate a new variable called “party control” and to combine governor affiliated party and party that takes control of both chambers of the state legislature. I also recode this “party control” variable as 2 if state legislature and governorship were controlled by Democrat party, 1 if divided, 0 if controlled by Republican party.

³ State government trifecta is a term to describe single-party government, when one political party holds the governorship and majorities in both chambers of the state legislature (Ballotpedia 2023).

Control Variable: To enhance the internal validity of my study, I control for previous adoptions, which is coded at the state-level. The control variable is a rolling count of the number of EPR law adoptions by all states in all previous years, captures the diffusion pattern and adoption trend from 1991 to 2022 across U.S. states.

CHAPTER V

FINDINGS

The range of collected data for this study is between year 1991 and 2022.

Table 1 presents the summary of the variables. Mean and mode for EPR laws are both 0, because there are 17 U.S. states that have not yet adopted any EPR law in their states. 1991 was the first year that EPR laws emerged, the states that first enacted EPR laws were Minnesota, New Jersey and Vermont. Then after 10 years four additional states adopted more EPR laws. Around 2010, there was a sizable increase in the number of adoptions, when 32 states adopted 66 regulations and by the end of 2022, there was a total of 101 EPR laws across 33 states. The state that has adopted most EPR laws is California, which has already adopted 11 EPR laws. Maine is ranked second with nine adopted EPR laws and Vermont is ranked third with eight adopted EPR laws.

Table 1: Summary of the variables

Variables	Obs.	Mean	Median	Mode	Std. Dev.	Min	Max
Year	1,600	N/A	N/A	N/A	N/A	1991	2022
Dependent Variable:							
EPR laws in each U.S. state	1,600	.846875	0	0	1.544318	0	11
Independent Variables:							
Percentage of GDP from manufacturing sector	1,600	13.36915	13.17	N/A	6.072638	1.586469	30.91498
Corporate income tax	1,600	6.502785	6.95	0	2.87882	0	12.25
Party control	1,600	.9275	1.0	1.0	.7168088	0	2
Control Variable:							
Previous Adoptions	1,600	39.1875	21.50	8	35.10053	0	94

The mean of percentage of GDP generated from the manufacturing sector is 13.37 and its median is 13.17. During the study period, Hawaii was the least dependent state on the manufacturing sector with 1.59% of its GDP generated from the sector in 2020 and Indiana was the most dependent state with 30.91% of its GDP generated from the sector in 1998. Overall, Indiana, North Carolina and Wisconsin are among the top three states that are highly reliant on the manufacturing sector, while Hawaii, Alaska and Nevada are the bottom three. For corporate income tax (CIT), the mean of CIT rate is 6.5% and the median is 6.95%. The state with the highest CIT rate was Pennsylvania from 1991-1993 with 12.25% CIT rate. Overall, the top five states with highest CIT rates are Pennsylvania, Iowa, New Jersey, North Dakota and Connecticut. For those states that do not charge corporate income tax, such as Ohio, South Dakota, Texas, Washington and Wyoming, their value is set as 0. For party control, 2 represents state legislature and governorship that were controlled by Democratic party, 1 if divided, 0 if controlled by Republican party. The mean for party control is .9275,

which means that average of unified governments at the state level is slightly leaning towards the split between Democrat-controlled government and Republican-controlled government.

For the previous adoption, which is a rolling count of the number of EPR law adoptions by all states in all previous years from 1991 to 2022 across all U.S. states, the smallest value is 0 as there was no EPR law adopted prior to year 1991 and the 94 is the highest value as the total number of adopted EPR laws in 2021 was 94. The total number of EPR laws adopted from 1991 – 2022 is 101 laws.

Table 2 presents the results of my fixed-effects regression. The model provides test results across my three hypotheses, which I found surprising as some evidences confirm my theory, while some disconfirm certain aspects of my theory.

Table 2: Adoption of EPR Laws Across US States as a Function of State Internal Determinants

Variables	Model 1
Percentage of GDP generated by the manufacturing sector	-0.0387 (0.0419)
Corporate income tax	0.0912* (0.0507)
State government trifecta	
Split government (1)	0.314** (0.120)
Unified Democratic government (2)	0.905*** (0.251)
Previous adoptions (control variable)	0.0203*** (0.00487)
Constant	-0.369 (0.869)
<i>N</i>	1600
adj. <i>R</i> ²	0.439

Robust clustered standard errors in parentheses

Fixed effects for year are not included in the table⁴

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

For Hypothesis 1, I initially expected that the states that are more reliant on the manufacturing industry would be less likely to adopt EPR laws. The result reveals a negative relationship between the percentage of GDP generated from the manufacturing sector and the number of EPR laws adopted. However, the result is not statistically significant as its p-value is 0.361. This means that there is not sufficient evidence at the 95% confidence level that a significant linear relationship exists between the percentage of GDP generated from the manufacturing sectors and the number of EPR laws adopted. This result implies that

⁴ I also ran goodness-of-fit tests to determine if my data is representative of the full population and reflect the normal distribution. The GOF test results were acceptable and confirmed that the data fits a distribution from a population with a normal distribution.

the state's dependency on the manufacturing industry does not influence the adoption of EPR laws. The result might explain policy adoption among states where both the percentage of GDP generated from the manufacturing sector and the number of adopted EPR laws are high, such as Oregon and Vermont. Taking this result in another direction, using percentage of GDP generated from the manufacturing sector may not be the most appropriate measure to capture the relationship between certain environmental policy and the dependency on the sector. To sharpen my future research, I could integrate the employment generated from the sector, the value of state tax collected from the sector, and/or the strength of interest groups as additional measures.

For Hypothesis 2, I expected that business-friendly states would be less likely to adopt EPR laws than those with less-business friendly climates. I measure business-friendly climate in each U.S. state by using state corporate income tax rates as a proxy. The model reveals a positive relationship between corporate income tax rates and the number of EPR laws adopted with p-value of 0.078, thus the relationship is significant. All else equal, a one unit increase in corporate income tax rate is an increase of 0.09 in the adoption of EPR laws. The result, therefore, implies that a state's business-friendly climate influences the adoption of EPR laws, although the magnitude of that influence is not large.

For Hypothesis 3, I expected that Republican-controlled state governments would be less likely to adopt EPR laws than Democrat-controlled state governments. With no surprise, the result shows a positive relationship between party control of state government and the adoption of EPR laws. All else equal, moving from Republican-controlled governments to split governments is an increase of 0.31 in the adoption of EPR laws, while moving from Republican-controlled governments to Democrat-controlled governments is an increase of 0.90. When compared between Republican and Democrat-controlled state governments, the results revealed the likelihood of policy adoption as statistically significant with p-value of 0.001;

this implies that Democrat-controlled states are more likely to pass EPR policies. Hence, it confirms my theory that ideology, partisanship and electoral competition can be considered as political forces that prompt state governments to support certain policies. In this case, partisanship at a state level drives red states to adopt less environmental policies than blue states.

In addition to my three key independent variables, the relationship between my control variable, “previous adoptions” and the number of adopted EPR laws also shows a positive significant linear relationship. All else equal, a one unit increase in previous adoptions is an increase of 0.02 in the adoption of EPR laws. This indicates that previous adoptions of EPR policy across states poses a significant influence over the adoption of EPR laws.

CHAPTER VI

CONCLUSION

The literatures regarding environmental regulations and roles of internal determinants provide a solid understanding on how state governments determine the adoption of their environmental policy based on state internal characteristics. In this study, I mark state's dependency on the manufacturing sector, state business-friendly climate and state partisanship as state internal determinants and I use the adoption of EPR policy to test my theory. I argue that states that are more reliant on the manufacturing sector are less likely to adopt EPR policy and those with a business-friendly climate tend to adopt less EPR laws as well. I also expect to see Republican-controlled states adopt less EPR laws than Democrat-controlled states.

The findings are both surprising and unsurprising. The results reveal that there is no significant relationship between the percentage of GDP generated by the manufacturing sector and the adoption of EPR laws. However, the findings show that states with low to zero corporate income tax and Republican-controlled state governments adopt less EPR laws. This implies that the states with a friendly-business climate are less likely to adopt EPR policy, and that red states tend to adopt significantly less EPR policy compared to the blue states. The findings also reveal that previous adoptions of EPR policy across states poses a positive significant influence over the adoption of EPR laws.

The findings help policymakers to understand the importance of state internal determinants such as economic activity and state partisanship. They also enable policymakers to

create effective policy to enhance waste management systems and address environmental issues at the state-level. Since the study of EPR policy in the U.S. is still very limited, this study opens a pathway for exploration of how and why different states adopt such a policy. Scholars in the areas of environmental policy are encouraged to look further into a particular measure for manufacturing reliance that is more fine-grained to capture the economic condition of the state. Scholars may choose to include other measures that could potentially reflect state's dependency on the manufacturing sector such as the amount of employment generated from the sector, the value of state tax collected from the sector, or the strength of interest groups representing manufacturing businesses. In addition to continued exploration regarding the adoption of EPR policy, it becomes increasingly important to assess the effectiveness of the policy and whether state policy adoption will have impact on the amount of state's waste disposal and operations costs of a state's waste management system. Depending on the availability of data and resources, I intend to conduct a further investigation of the effects of the internal determinants on EPR policy at a city level as I have witnessed some variations among major cities in the U.S..

REFERENCES

- Babool, Ashfaqul, and Michael Reed. 2010. "The Impact of Environmental Policy on International Competitiveness in Manufacturing." *Applied Economics* 42 (18): 2317–2326.
- Ballotpedia. 2023. "Gubernatorial and Legislative Party Control of State Government." *Ballotpedia* [website].
http://ballotpedia.org/Gubernatorial_and_legislative_party_control_of_state_government
- Ballotpedia. "State Government Trifectas." *Ballotpedia* [website].
https://ballotpedia.org/State_government_trifectas
- Berry, Frances Stokes, and William D. Berry. 1990. "State Lottery Adoptions as Policy Innovations: An Event History Analysis." *American Political Science Review* 84 (2): 395-415.
- Boehmke, F., M. Brockway, and B. Desmarais. 2019. "State Policy Innovation and Diffusion (SPID) Database v1. 0. Harvard Dataverse; 2018"
- Boushey, Graeme. 2016. "Targeted for Diffusion? How the Use and Acceptance of Stereotypes Shape the Diffusion of Criminal Justice Policy Innovations in the American States." *American Political Science Review* 110 (1): 198-214.
- Bromley-Trujillo, Rebecca. 2012. "States Take the Lead: The Determinants of State Environmental Policy Activity." *In State Politics and Policy Conference Houston, TX: University of Kentucky*.
- Caughey, Devin, Yiqing Xu, and Christopher Warshaw. 2017. "Incremental Democracy: The Policy Effects of Partisan Control of State Government." *Journal of Politics* 79 (4): 1342-1358.
- Caleb, Lucas and Joshua McCrain. 2020. "CSPP: A Package for The Correlates of State Policy Project Data Package Version 0.1.0."
- CalRecycle. 2023. "Product Stewardship and Extended Producer Responsibility (EPR)". *CalRecycle* [website]. <https://calrecycle.ca.gov/epr/>
- Colvin, Roshaun and Joshua M. Jansa. 2019. "California's 'Fair Pay to Play' Law for College Athletes Has Other States Racing to Join Up. Here's Why." *Washington Post*. November 18.
- Davis, Charles. 2014. "Substate Federalism and Fracking Policies: Does State Regulatory Authority Trump Local Land Use Autonomy?." *Environmental Science and Technology* 48 (15): 8397-8403.

- Davis, Charles. 2017. "Fracking and Environmental Protection: An Analysis of U.S. State Policies." *The Extractive Industries and Society* 4 (1): 63-68.
- EPA. 2020. "National Overview: Facts and Figures on Materials, Wastes and Recycling". *The United States Environmental Protection Agency* [website]. <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials>
- EPA. 2020. "U.S. National Recycling Goal". *The United States Environmental Protection Agency* [website]. <https://www.epa.gov/recyclingstrategy/us-national-recycling-goal#:~:text=The%20National%20Recycling%20Goal%20is,is%20managing%20materials%20more%20sustainably>.
- Esenduran, Gökçe, Atalay Atasü, and Luk N. Van Wassenhove. 2019. "Valuable E-waste: Implications for Extended Producer Responsibility." *IISE Transactions* 51 (4): 382-396.
- Feiock, Ronald C., and Christopher Stream. 2001. "Environmental Protection versus Economic Development: A False Trade-off?." *Public Administration Review* 61 (3): 313-321.
- Gradus, Raymond, George C. Homsy, Lu Liao, and Mildred E. Warner. 2019. "Which U.S. Municipalities Adopt Pay-As-You-Throw and Curbside Recycling?." *Resources, Conservation and Recycling* 143: 178-183.
- Gray, Wayne B., and Ronald Shadbegian. 1993. "Environmental Regulation and Manufacturing Productivity at the Plant Level."
- Gray, Wayne B. 1987. "The Cost of Regulation: OSHA, EPA and the productivity slowdown." *The American Economic Review* 77(5): 998-1006.
- Hanson, L. Russell. 2018. "Intergovernmental Relations." Chap. 2 in *Politics in the American States: A Comparative Analysis*, eds. Gray, Virginia, Russell L. Hanson, and Thad Kousser, 28-56. CQ Press.
- Hwang, Sung-Don, and Virginia Gray. 1991. "External Limits and Internal Determinants of State Public Policy." *Western Political Quarterly* 44 (2): 277-298.
- Jansa, Joshua M., Eric R. Hansen, and Virginia H. Gray. (2019). "Copy and Paste Lawmaking: Legislative Professionalism and Policy Reinvention in the States." *American Politics Research* 47(4): 739-767.
- Jordan, Marty P. and Matt Grossmann. 2020. "The Correlates of State Policy Project v.2.2." East Lansing, MI: Institute for Public Policy and Social Research (IPPSR).
- Kang, Joohyun. 2002. "Do State Environmental Protection Programs Constrain State Economic Growth?." *International Journal of Economic Development* 4 (3-4).
- Klarner, Carl. 2013. "State Partisan Balance Data, 1937 – 2011." Harvard Dataverse V1 <https://doi.org/10.7910/DVN/LZHMG3>
- Lüthi, Sonja, and Thomas Prässler. 2011. "Analyzing Policy Support Instruments and Regulatory Risk Factors for Wind Energy Deployment: A Developers' Perspective." *Energy Policy* 39 (9): 4876-4892.

- Maine Department of Environmental Protection. 2022. "Maine's Product Stewardship Programs". *Maine Department of Environmental Protection* [website]. <https://www.maine.gov/dep/waste/productstewardship/index.html>
- Makris, Katerina, Hugh Watson, and Corrs Chambers Westgarth. 2007. "Is California Dreaming?." *Young Lawyers Journal* 36: 14-15.
- Mallinson, Daniel J. 2021. "Who Are Your Neighbors? The Role of Ideology and Decline of Geographic Proximity in the Diffusion of Policy Innovations." *Policy Studies Journal* 49 (1): 67-88.
- Matisoff, Daniel C. 2008. "The Adoption of State Climate Change Policies and Renewable Portfolio Standards: Regional Diffusion or Internal Determinants?." *Review of Policy Research* 25 (6): 527-546.
- McGee, Robert W. 2017. "How can California be a Bad State for Business if its per Capita GDP Keeps Growing?." Available at SSRN 2944438.
- McKerlie, Kate, Nancy Knight, and Beverley Thorpe. 2006. "Advancing Extended Producer Responsibility in Canada." *Journal of Cleaner Production* 14 (6-7): 616-628.
- Milanez, Bruno, and Ton Bührs. 2009. "Extended Producer Responsibility in Brazil: The Case of Tyre Waste." *Journal of Cleaner Production* 17 (6): 608-615.
- Miller, Chaz. 2021. "An American EPR: Monopolies and Other Unintended Consequences." *Waste 360* [online news article], March 30. <https://www.waste360.com/legislation-regulation/american-epr-monopolies-and-other-unintended-consequences>
- National Governors Association. 2023. "Former Governors." *National Governors Association* [website]. <https://www.nga.org/former-governors/>
- Nicholson-Crotty, Sean C., Neal D. Woods, Ann O'M. Bowman, and Andrew Karch. 2014. "Policy Innovativeness and Interstate Compacts." *Policy Studies Journal* 42 (2): 305-324.
- OECD. 2014. "The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges." *OECD Global Forum on Environment: 3-17*.
- Ohanian, Lee, and Joseph Vranich. 2021. "California Business Headquarters Now Leaving Twice as Fast, With No End in Sight." *Hoover Institution, Stanford University* [website], August 24. <https://www.hoover.org/research/california-business-headquarters-now-leaving-twice-fast-no-end-sight>
- Pacca, Lucia, Daniele Curzi, Gordon Rausser, and Alessandro Olper. 2021. "The Role of Party Affiliation, Lobbying, and Electoral Incentives in Decentralized U.S. State Support of the Environment." *Journal of the Association of Environmental and Resource Economists* 8 (3): 617-653.
- PSI. 2022. "EPR Laws in the United States." *Product Stewardship Institute* [website]. <https://productstewardship.us/epr-laws-map/>
- PSI. 2022. "What Is Extended Producer Responsibility (EPR)?" *Product Stewardship Institute* [website]. <https://productstewardship.us/what-is-epr/>

- Quinn, Megan. 2023. "EPR Still Top Recycling Issue for State Policymakers, But Plastics and Repair Laws also on the Horizon" *Waste Dive* [online news article], January 30. <https://www.wastedive.com/news/us-recycling-policy-outlook-epr-plastic-chemical-recycling-repair/641494/>
- Rahmani, Morvarid, Luyi Gui, and Atalay Atasu. 2021. "The Implications of Recycling Technology Choice on Extended Producer Responsibility." *Production and Operations Management* 30 (2): 522-542.
- Ringquist, Evan J., and James C. Garand. 1999. "Policy Change in the American States." *American State and Local Politics: Directions for the 21st Century*: 268-285.
- Shipan, Charles R., and Craig Volden. 2008. "The Mechanisms of Policy Diffusion." *American Journal of Political Science* 52 (4): 840-857.
- Smulders, Sjak. 1995. "Environmental Policy and Sustainable Economic Growth." *De Economist* 143 (2): 163-195.
- Stream, Christopher. 2002. "Regulating the Environment: Economic Development and the States." *International Journal of Economic Development* 4 (3-4).
- Tax Policy Center. 2022. "State Corporate Income Tax Rates." *Tax Policy Center*. [website]. <https://www.taxpolicycenter.org/statistics/state-corporate-income-tax-rates>
- U.S. Bureau of Economic Analysis. "NAICS Gross Domestic Product (GDP) by State." U.S. Bureau of Economic Analysis. [website]. <https://apps.bea.gov/itable/?ReqID=70&step=1&acrnd=1>
- U.S. Bureau of Economic Analysis. "SIC Gross Domestic Product (GDP) by State." U.S. Bureau of Economic Analysis. [website]. <https://apps.bea.gov/itable/?ReqID=70&step=1&acrnd=1>
- U.S. Bureau of Economic Analysis. 2020. "Cautionary Note about Annual GDP by State Discontinuity." *Bureau of Economic Analysis*. [website]. <https://www.bea.gov/cautionary-note-about-annual-gdp-state-discontinuity>
- United States Census Bureau. "North American Industry Classification System (NAICS) U.S. Census Bureau." *United States Census Bureau*. [website]. <https://www.census.gov/naics/>
- Varshney, Sanjay B., and Daniel H. Tootelian. 2009. "Cost of State Regulations on California Small Businesses Study." *El Dorado Hills*
- Walczak, Jared, Scott Drenkard, and Joseph Henchman. 2017. "State Business Tax Climate Index." Tax Foundation. [Website]. <https://statetaxindex.org/>
- Walker, Jack L. (1969). "The Diffusion of Innovations among the American States." *American Political Science Review* 63(3): 880-899
- Wong, Kenneth K. 1998. "Economic Constraint and Political Choice in Urban Policymaking." *American Journal of Political Science* (1988): 1-18.
- Zhao, Yinyin, Benhong Peng, Ehsan Elahi, and Anxia Wan. 2021. "Does the Extended Producer Responsibility System Promote the Green Technological Innovation of Enterprises?: An Empirical Study-based on the Difference-in-Differences Model." *Journal of Cleaner Production* 319: 128631.

VITA

Tanes Rianglaem

Candidate for the Degree of

Master of Arts

Thesis: HOW FAR BEHIND IS MY STATE? THE ROLE OF ECONOMIC ACTIVITY
AND STATE PARTISANSHIP IN DETERMINING EPR POLICY

Major Field: Political Science

Biographical:

Education:

Completed the requirements for the Master of Arts in Political Science at
Oklahoma State University, Stillwater, Oklahoma in May, 2023.

Completed the requirements for the Master of Education in Teaching English as
an International Language at Shinawatra University, Pathumthani, Thailand in
2017.

Completed the requirements for the Master of Arts in Media, Peace and Conflict
Studies at University for Peace, San José, Costa Rica in 2013.

Completed the requirements for the Bachelor of Arts in English for Business
Communication at Asian University, Chonburi, Thailand in 2008.

Experience:

Public Sector Development Officer
Office of the Public Sector Development Commission
Thailand's Office of the Prime Minister

Professional Memberships:

The Midwest Political Science Association (MPSA)