Do Policy-Makers Earmark to Constrain their Successors?
The Case of Environmental Earmarking

Neva K. Novarro

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Department of Economics
College of the Holy Cross
Box 45A
Worcester, Massachusetts 01610
(508) 793-3362 (phone)
(508) 793-3710 (fax)
http://www.holycross.edu/departments/economics/website

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Abstract

This paper examines whether legislators earmark funds in order to constrain the spending of future legislators with different preferences. Specifically, panel data is used to estimate the probability a new environmental earmarking law is passed as a function of Democrats holding and subsequently losing majority control of the government. The results of this study do not support this hypothesis. In fact, Democrats with a large majority who subsequently lose this majority power following the next election are found to be *less* likely to earmark funds for the environment. One possible explanation for this finding may be that competing forces make it more difficult for Democrats to pass legislation earmarking funds for the environment in the years before losing power, even if they have an increased incentive to do so. However, further results of this paper do not support this hypothesis. Rather, the evidence suggests Democrats do not earmark strategically.

JEL Classification Codes:

Keywords: public finance, earmarking, environment

[†]Neva K. Novarro, Department of Economics, Box 187A, College of the Holy Cross, Worcester, MA 01610-2395, 508-793-3835 (phone), 508-793-3710 (fax), nnovarro@holycross.edu

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I. Introduction

This paper presents and tests the hypothesis that legislators earmark funds in order to constrain the spending of future legislators with different preferences. The practice of earmarking taxes has been popular in the United States. According to the Tax Foundation, states on average earmarked a sizeable 54% of tax revenues in 1954.[1] Though this average has decreased in recent decades, earmarking has maintained its standing as a significant budgetary policy practice with states earmarking on average somewhere between one-fifth and one-quarter of tax revenues in each year surveyed from 1979 to 1997 (FPSi, 2000).[2]

The effects of earmarking revenues has received a fair amount of attention in the academic literature. Most empirical studies on the subject have focused on the effects of earmarking on expenditures. A review of these studies can be found in Novarro (2003). Other empirical studies explore the effects of earmarking on revenues or rent-seeking behaviors via the actions of organized interest groups (Wyrick and Arnold, 1989; Kimenyi, Lee, and Tollison, 1990). Theoretical papers on the subject have focused for the most part on situations in which earmarking may be efficient or optimal (see Buchannan, 1963; Goetz, 1968; Browning, 1975; Athanassakos, 1990; McMahon and Sprenkle, 1972; Jiang, 2001; Bos, 2000; Pirttila, 1999; Marsiliani and Renstrom, 2000).

While much has been written describing the effects of earmarking in terms of government finance or outcomes of earmarking in terms of efficiency, a puzzle remains as to why policy-makers would choose to enact earmarking legislation in the first place. Why would a rational government in one period willfully place restrictions on its own budgetary discretion in a future period? A recent paper by Bret and

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[1] Earmarking is defined as precommitting or designating funds for a specific program. In this paper, the dedication must occur via the state's constitution or statutes to qualify as an earmarked tax.
[2] Though common, earmarking as a practice has been hotly debated in policy and academic circles. Wilkinson (1994) and McCleary (1991) summarize and discuss recent political and economic arguments for and against earmarking.

Keen proposes a model in which earmarking is more likely to occur when a politically weak incumbent has a higher probability of being replaced by a policy maker with divergent preferences (Bret and Keen, 2000). This model suggests a possible rationale for why legislators might choose to pass earmarking legislation. Specifically, current legislators with expectations that the future budgetary authority will not favor their own pet program might pass legislation earmarking funds for the program in order to ensure its financing in the future.

Models describing the actions of a current government when being succeeded by government with different preferences have been explored in a variety of contexts unrelated to the earmarking literature. Persson and Svensson (1989) show that a conservative government may borrow more when it knows it will be succeeded by a more expansionary government than when it knows it will remain in power in the future. Tabellini and Alesina (1990) develop a model that explains budget deficits as the result of current voters' inability to bind the choices of future voters. Alesina and Tabellini (1987 and 1989) and Tabellini (1989) analyze general equilibrium models in which two parties with different preferences for the level of public spending and the level of taxation randomly alternate holding power in office. Each of these studies suggest that uncertainty about who will have policy-making power in the future can lead to policy choices that would not have otherwise been made.

This paper explores whether Democrats who control the state legislature are more likely to earmark funds for the environment in cases in which they expect to lose this control to a Republican government in the future. As a proxy for Democrats' prior election expectations, this paper uses data on whether or not Democrats in control of the state legislature actually lost control after the next election under the assumption that actual loss is correlated with expected loss of power.

The focus on laws that earmark funds for environmental purposes stems from a few factors. First, earmarking taxes for environmental protection is a common practice in the United States.[3] Table 1 ranks the most common recipients in terms of dollar amounts of earmarked taxes received in 1997.

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[3] Earmarking taxes for environmental protection is also common in France, Germany, Italy, the Netherlands, British Columbia, Britain, and Japan (Marsiliani and Renstrom, 2000).

Conservation (which includes natural resources, wildlife, fisheries, land acquisition, parks and recreation, and historical preservation) ranks sixth having received $1051.4 million in earmarked taxes in 1997 and environmental clean-up (hazardous substance clean up, control, prevention, abatement and remediation, solid waste management, water quality assurance, liter control, and reclamation projects) ranks eighth having received $537 million in earmarked taxes in 1997 (FSPi, 20000). Second, the environment represents a foundational political platform of the Democratic Party. Two recent polls by Gallop (June 12, 2002) and Zogby (June 18, 2002) suggest that voters trust the Democratic Party more than the Republican party to deal with environmental issues. As such, the environment represents a program for which Democrats might fear loss of funding when a Republican government holds political power. Finally, as Bret and Keen (2000) couched their theory of earmarking in terms of the environment, this seems the most natural setting in which to test the implications of their model.

The results of this study provide no support for the hypothesis that Democrats earmark in order to constrain their Republican successors. In fact, Democrats with a large majority who subsequently lose this majority power following the next election are found to be *less* likely to earmark funds for the environment. One possible explanation for this finding could be that competing forces make it more difficult for Democrats to pass legislation earmarking funds for the environment in the years before losing power, even if they have an increased incentive to do so. However, further results do not find any effect of Democrats subsequently losing power on total environmental expenditures. This later finding suggests that Democrats do not have less power to enact their favored policies in the years preceding the loss of power. Rather it seems Democrats do not earmark strategically.

The remainder of this paper is organized as follows. Section II presents the empirical model. Section III describes the data. Section IV presents the results. Section V explores competing forces to earmarking legislation. Section VI concludes.

II. Model

The main empirical model can be described by

$$LawPassed_{st} = \beta_1 Control_{st} + \beta_2 LosesControl_{st} + \beta_3 SizeMaj_{st} + \beta_4 X_{st} + S_s + T_t + \varepsilon_{st}$$

where the dependent variable is an indicator that equals one if the state passed any laws earmarking taxes for the environment in that year and zero otherwise. Note that the indicator equals one in the year a law passes and zero in each following year until new legislation that earmarks taxes for the environment is passed. $Control_{st}$ represents a vector of dummy variables indicating a party majority in both the state house and senate. Under the assumption that a party that controls the entire legislature can successfully pass its most preferred policies into law, and that Democrats favor higher spending on environmental programs in comparison to Republicans, the expected coefficient on $Control_{st}$ is nonpositive for the Republican party and nonnegative for the Democratic party. All else equal, legislatures in which Republicans control both houses are at most equally likely to pass environmental earmarking laws as legislatures with split control. Likewise, legislatures in which Democrats control both houses are at least equally likely to pass environmental earmarking laws as legislatures with split control. $LosesControl_{st}$ represents a vector of dummy variables indicating a party currently has control of both the state house and senate, but loses control of one or both parties after the next election. Assuming election outcomes are correlated with Democrats' expectations of election outcomes, the coefficient on the variable indicating that Democrats lose their complete control of the legislature is expected to have a positive sign. This prediction is based on the hypothesis that, all else equal, Democrats in control of both the house and senate earmark in order to ensure funding for programs that benefit the environment when they predict that they will be forced to give up some of their budgetary authority to the Republicans after the next election. A nonpositive coefficient is expected on the variable indicating that Republicans lose their complete control of the legislature. $SizeMaj_{st}$ represents a vector of variables that control for the size of a party's majority. The size of the majority for the Democratic party equals the minimum fraction of Democrats in the house and senate when the Democratic party holds control of both. The size of the

majority for the Republican party has a parallel construction.[4] A party with a large majority can more easily pass its preferred policies into law. However, a party with a large majority has a higher likelihood of remaining in power after the next election, all else equal, and therefore has less of a need to pass earmarking legislation. As such, the expected sign of the coefficient on this variable is ambiguous. Interacting the size of the majority with the indicator for losing control of the legislature, however, leads to a clear prediction. Specifically, Democrats with a large majority who subsequently lose control of the legislature are expected to be more likely to earmark funds for the environment. This prediction stems from the combined assertions that Democrats with a large majority have an easier time getting legislation passed, and that Democrat who expect to lose control of the legislature have an increased incentive to pass environmental earmarking legislation in order to constrain the spending of their successors.

So far the discussion has completely ignored the political affiliation of the state's governor. A state's governor has the power to veto any bill accepted by the house and senate. If a governor does veto a bill, generally only a two-thirds majority in both the house and senate can override the veto. Conceptually, for the analysis here, the governor can be considered on par with the legislature. Complete political control, in this case, would require a majority in the senate and house as well as having a governor of the same party. A party loses control, and under the hypothesis passes earmarking legislation, when it no longer has a majority in either house or when the governor changes party after an election. On the other hand, the politics of a veto may be very different from the politics of simply voting no on an environmental earmarking bill. A veto may be more conspicuous and significant in the eyes of the constituency. Because arguments can be made for treating the governor either as equivalent to or distinct from the legislature, this paper empirically explores both models.

A potential problem with the analysis in the previous paragraph is that the occurrence of a party losing control of the state legislature may be closely correlated with other factors that affect the likelihood of environmental earmarking. For example, suppose Democrats in power only earmark *more frequently*

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[4] The size of the majority variable has a range of 0 to 0.5 where 0 indicates a lack of majority for that party and .5 indicates a full majority for that party.

when they expect to be replaced by Republicans as the majority party after the next election. Suppose Democrats in power also pass environmental earmarking legislation when they have a large environmentally-conscious constituency reminding them to do so. As the indicator for Democrats holding the majority in both the house and senate and subsequently losing this control after the next election is likely to be correlated with a decreasing environmentally-conscious constituency, the coefficient on the Democrat indicator in *LosesControl*$_{st}$ may be biased downward. To ameliorate this problem, it would be ideal to include a control that measures the level of support the constituency has for environmental earmarking in each year. Several variables are considered as proxies for this measure and are included as state demographic controls (represented by X_{st} in the equation above). Proxies experimented with include the fraction of voters who identify themselves as Democrats, the fraction of voters who identify themselves as Liberals, and the state citizen ideology (the mean position on a liberal-conservative continuum of the active electorate in a state) and government ideology (the mean position on a liberal-conservative continuum of the elected public officials in a state weighted according to power) as constructed in Berry et al. (1998).[5]

Several other institutional and demographic controls thought to affect the likelihood of environmental earmarking are included in X_{st}. Institutional controls include an indicator for whether the state has spending limits and an indicator for whether the state has a supermajority tax requirement. Spending limits include both tax and expenditure limits. Nine states have adopted binding spending limits between 1984 and 1997, the time period under study.[6] The most common type of spending limit restricts the growth rate of general fund expenditures or revenues to the growth rate of personal income or the rate of population and inflation (Poterba and Rueben, 1999). Given the stricter limits on expenditures

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[5]Berry et al. construct measures of state citizen and government ideology based on roll call voting scores of state congressional delegations, the outcomes of congressional elections, the partisan division of state legislatures, the party of the governor, and various assumptions regarding voters and political elites. A better proxy would be something more directly related to a voter's level of environmental concern, such as membership in environmental organizations. Unfortunately, the largest national environmental organizations, the Sierra Club and Greenpeace, do not track membership by state.

[6] In the analysis here, the indicator for whether a state has a spending limit equals one only when that spending limit is binding. In other states, a legislative majority can override the advised spending limit.

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in states with spending limits, legislators from these states may fear their pet program has a greater chance of facing funding cuts in the future and therefore may be more likely to pass earmarking legislation when they have the opportunity to do so. As such the expected sign of the coefficient on the indicator for having a spending limit is positive. Unlike revenue limits, supermajority tax requirements do not cap existing taxes. However, a legislative majority (usually of three-fifths, two-thirds, or three-fourths) is required to pass any new taxes. Nine states instituted supermajority requirements between 1984 and 1997. The coefficient on the variable indicating a supermajority tax requirement is ambiguous. On the one hand, the difficulty in raising additional taxes may motivate legislators to pass earmarking legislation to ensure funding for their pet program if the budget gets tight in the future. On the other hand, legislators may find it easier to pass legislation that earmarks funds from new taxes as opposed to legislation that earmarks funds from taxes already in place. As such the predicted coefficient could be positive or negative depending on the accuracy and strength of these opposing claims. A control for the number of environmental earmarking laws already in effect is also included as this could affect the likelihood of legislators passing new, additional environmental earmarking laws. State revenue per capita and the state unemployment rate are also included as demographic controls.

State fixed effects, represented by S_s in the equation above, control for state-specific propensities to earmark funds for the environment that do not change over time. For example, a particular state may have a stronger proclivity for earmarking taxes in general for any purpose. Year fixed effects, represented by T_t in the equation above, control for year-specific propensities to earmark funds for the environment that do not differ across states. These include factors that affect the nation as a whole in a particular year, such as the introduction of new federal legislation designed to protect the environment.

III. Data

The ideal dataset would contain detailed current and historical information on each state law earmarking funds for the environment. Constructing this dataset is difficult in practice. Because in theory a state could pass legislation earmarking the revenues from any source for the environment, finding all such laws would require an exhaustive examination of each state's legislation. The issue

becomes especially complex as laws passed at one date may be repealed at another date. As a result, examining the current legislation in every state for a given year would not be sufficient.

In an attempt to get as close to the ideal dataset as possible, this paper utilizes four reports that detail earmarked state tax revenues for four particular years. Fiscal Planning Services, Inc. (FPSi) published a comprehensive report describing all dedicated state tax revenues for the year 1997 (FPSi, 2000). The National Conference of State Legislatures (NCSL) published three reports providing information for the years 1984, 1988 and 1993 (NCSL, years). FPSi based its report on states' published statutes supplemented with legislative reports and documents and a review by the state tax agency. NCSL relied on surveys of state officials. As a result, though FPSi describes its methodology as consistent with the methodology adopted by the NCSL, the FPSi report appears more detailed and complete.[7]

The history of each statute that earmarked funds for the environment listed in the FPSi report was researched using *Lexis*, *Westlaw*, and hardcopies of previously published statutes. The NCSL reports do not cite statutes, but current and historical statutes were found in most cases using *Lexis* and *Westlaw*. State legislative offices and state law libraries were contacted in unclear cases for verification. This study focuses on the period from 1984, the year covered in the first NCSL report, through 1997, the year covered in the most recent FPSi report. Though a number of laws listed in these reports were passed prior to 1984, focusing the study on 1984-1997 provides the most consistent methodology as laws may have been passed and subsequently repealed prior to 1984, leading to their exclusion from these reports.

Decisions made in creating the dataset for this study included how to define earmarking and what to include as a benefit to the environment. Certain laws included in the FPSi and NCLS reports were excluded from the dataset. FPSi defines earmarked as "…those receipts directed to specific purposes as established in statute and which can only be redirected through subsequent changes in law or acts of the legislature through the appropriations process..." (FPSi, 2000). This study followed the definition provided by FPSi but excluded laws that granted the legislature any year-by-year budgetary discretion.

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[7] FPSi left out only 3 laws earmarking taxes for the environment that were reported in NCSL surveys and were still in effect as of 1997.

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Alaska is not included in this study as the Alaska constitution places strong prohibitions on the practice of earmarking funds.[8] Determining which earmarked laws have the purpose of benefiting the environment presents another challenge. Laws that earmark funds for forests and marine life are included if the statutory language describes conservation or preservation purposes and excluded if statutory language describes commercial or economic development purposes. Completely excluded from the study are laws that earmark funds for the promotion of state livestock, agricultural purposes, and water development projects.

Though the FPSi report represents a careful and complete study of earmarked taxes in 1997, FPSi does not include other revenue sources such as fees, penalties, or assessments in its report.[9] The prior NCSL reports do include some revenues designated as "fees" or "assessments". These statutes were not included in the study in order to retain consistency with the FPSi report.[10] This omission represents one limitation of the data for the current study as the hypothesis in question makes no distinction between taxes and other revenue sources. A second limitation concerns the frequency of the published reports. The current study would miss any laws both enacted and repealed between the years included in the reports. However, as described below, legislators infrequently repealed these laws. A more significant disadvantage of the dataset is the lack of information on the restrictiveness of each law in terms of constraints placed on the state budget authorities. Ideally this study would weight laws by their potential strength.[11]

This study includes 105 laws passed between 1984 and 1997 that earmark funds for the environment. Eight of these laws were subsequently repealed. Four repeals occurred during or before 1997 and four occurred since 1997. Every law earmarking funds for the environment detailed in the

[8] The constitution prohibits earmarking except for the Alaska Permanent Fund, when required by the federal government, and for dedicated funds in existence prior to the constitution. The legislature has, however, found it convenient to establish special accounts in the general fund to track certain kinds of revenues and expenditures (FPSi, 2000).

[9] FPSi distinguishes between taxes and other revenue sources based on statutory language stating "… if statutory language referred to a revenue source as a tax, and if it directed a portion or all of its receipts to a specific purpose, then it was included in this report" (FPSi, 2000).

[10] A total of 12 fees, surcharges, or assessment were included in NCSL reports and not in the FPSi report. Regressions results that include these statutes are qualitatively unchanged.

[11] This would require an extreme amount of detailed data to construct in practice.

reports was included except four for which legislation describing the earmarking could not be found.[12] Table 2 breaks down the number of laws passed by state. The majority of states passed one or two laws earmarking funds for the environment during this time period. Ten states did not pass any such earmarking laws. Washington passed the most laws at eight followed closely by California and Florida at seven. The most common taxes earmarked for the environment during this time period were petroleum and motor fuel taxes (19 states), mineral severance taxes (10 states), real estate transfer taxes (9 states), dry-cleaning, pollutants, and hazardous substance taxes (9 states), and sales and use taxes (6 states). Table 3 breaks down earmarking laws passed during 1984-1997 by the environmental program designated as the recipient of the earmarked taxes. Earmarking laws most frequently designate funds for conservation projects, hazardous waste and cleanup of underground storage tanks, and air and water pollution control.

Information on the number of legislators and their political party membership for each state's house and senate come from *The Book of States*. As Nebraska has a unicameral, nonpartisan legislature, this state is dropped from the analysis.[13] Election years also come primarily from *The Book of States*.[14] Information on state spending limits and state supermajority tax requirements come from Poterba and Rueben (1999). Data on citizen and government ideology as defined by Berry et al. (1998) are from the ICPSR Publication-Related Archive. Estimates of the fraction of citizens in each state who are Democrats, Republicans, Liberal, and Conservative come from CBS News-*New York Times* polls as compiled by Wright et. al (1985) and downloaded from website. State population data by age and in total are from the Census Bureau's *Current Population Reports*. State personal income data are from the Bureau of Economic Analysis' *Survey of Current Business*. Total state revenue data are from the U.S. Census Bureau's *State Government Finances* annual reports. Unemployment data are from the Current

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[12] Of these four, two appeared in the 1997 FPSi study and two appeared only in earlier NCSL studies.
[13] The Nebraska legislature is nonpartisan in that the candidate's political party is not listed on the election ballot. In addition, Nebraska's legislative leadership is not based on political party affiliation. Interestingly, Nebraska *has* passed legislation earmarking funds for the environment.
[14] The Book of States had several errors in the listed election years. For these, verification of the correct election years came from states' secretary of state elections division.

Population Survey (CPS) of the Bureau of Labor Statistics. Total state data on natural resource and general expenditures come from the U.S. Census Bureau's *State Government Finances* annual reports. All nominal dollar values are converted to real dollars values with 1996 as the base year using the gross domestic product implicit price deflator obtained from the Bureau of Economic Analysis.

IV. Results

Table 4 presents the number of environmental earmarking laws passed broken down by political control of the senate, house, and governor seat. During the time period under study, the dataset includes 209 observations in which Democrats have held control of the entire state legislature and governor seat and 85 observations in which Republicans have held complete control. When ignoring the political party of the governor, the gap between the Democrats and Republicans becomes even larger with 374 observations of Democrats holding a majority in both branches of the legislature compared to 142 observations for Republicans. Split majorities in the house and senate occur 139 times for Democrats and 145 times for Republicans. In terms of frequency, environmental earmarking laws are passed in 12.4% of observations with a Democratic governor and a Democratic majority in the house and senate and in 8.2% with a Republican governor and a Republican majority in the house and senate. Ignoring the political party of the governor, these numbers grow to 13.1% and 11.8% respectively. The fact that these laws have been passed more frequently when the Democrats control the legislature (and governor seat) fits with the predictions of the model. Interestingly, earmarking laws have been passed with the highest frequency, 21%, when Democrats have held the majority in the Senate and the Republicans have held the majority in the house.

In Table 5, the number of environmental earmarking laws passed is broken down by the number of observations in which Democrats and Republicans controlled the government, but subsequently lost this control after the next election. Environmental earmarking laws passed in 23.2% of the 43 observations in which Democrats held the majority in the senate and house but lost this majority in one or both houses following the next election. For the Republican party, the frequency is 19.2% of 26

observations. With the addition of the requirement that the governor also have the same political identity, Democrats passed environmental earmarking laws in 19.7% of the 66 observations while Republicans passed these laws in 6.7% of the 15 observations in which the party subsequently loses either the majority in the house or senate (or both) or the governor seat.

When comparing the frequency of the enactment of environmental earmarking laws broken down by party control, the raw numbers described in Table 4 and Table 5 follow the predicted direction. Specifically, a strongly Democratic government passes these laws more frequently than a strongly Republican government. In addition, Democrats in power who subsequently lose their legislative majority pass these laws more frequently than similarly situated Republicans. This last finding is consistent the hypothesis that Democrats earmark for the environment in order to constrain the spending of Republicans who will soon come to power.

These raw numbers, while quite suggestive, do not control for the many differences between states that may affect the propensity to pass earmarking legislation. Starting from a simple probit regression that includes only the indicators for a party having majority control and for a party losing majority control, the positive and significant relationship disappears with the addition of state fixed effects. If the governor seat is ignored, the positive and significant relationship also disappears with the inclusion of either a spending limit dummy or an indicator for the number of earmarking laws already in effect in the state. These findings indicate that the relationship suggested by the raw data may be driven by underlying differences in states' likelihood of passing environmental earmarking legislation that is correlated with but not caused by changes in legislative power.

Table 6 presents the estimated coefficients from regressing the equation described above (which includes all the regressors) as a probit model. For the regressions in Table 6, the governor is treated as separate from the house and senate in defining what constitutes a majority of legislative power. In the first regression, the coefficient on the dummy variable indicating Democrats lose control of their senate and house majority is positive, as expected, but not statistically significant. In fact the coefficient on the dummy variable indicating Republicans lose control of their majority is also positive, with an even

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slightly larger point estimate, though again not statistically significant. The one variable that stands out as having a clear impact on the probability a new environmental earmarking law is passed in a particular state and year is the number of earmarking laws already in effect. The stock of environmental earmarking laws already on the books has a statistically significant negative impact on the likelihood of passing new laws. The coefficient of –0.53 translates into a decrease of 9% in the probability of passing new environmental laws. None of the remaining controls have a apparent influence.

The second regression in Table 6 adds controls for the size of the Democratic and Republican majority. The estimated coefficients suggest a positive relationship between the size of the Democratic majority and the probability of passing environmental earmarking laws and a negative relationship between the size of the Republican majority and the probability. However, again neither of these coefficients have statistical significance. The estimated coefficients on the remaining regressors included change little as a result of adding the size of majority controls.

The third regression in Table 6 includes a term that interacts the size of the majority with the indicator for losing senate and house majority control. If Democrats can somewhat accurately predict losing power after the next election, the expected sign on this coefficient for the Democrats is positive. Democrats with a larger majority will find it easier to pass legislation that ensures funding for environmental programs, and given that Republicans will be in control after the next election, Democrats have an increased incentive to ensures such funding. The estimated coefficient on this interaction term, however, turns out to be negative for Democrats and positive for Republicans, though neither is statistically significant. The estimated coefficients on the remaining regressors remain largely unchanged.

The fourth regression in Table 6 includes an interaction of the indicator for losing majority control with an indicator for the year before the election in order to explore issues related to the timing of the enactment of environmental earmarking legislation. If Democrats have an increased probability of enacting earmarking legislation when they expect to lose a significant number of legislative seats to Republicans, they may be even more likely to pass this legislation when the danger becomes imminent in

the year before the election. The estimated coefficient on this interaction term, however, is positive, but again not statistically significant.

The final regression in Table 6 includes the interaction of the indicator for losing majority control with the size of the majority with the indicator for the year before the election. The triple interaction terms have a negative, non-statistically significant point estimate for the Democrats, and a positive estimated coefficient for the Republicans that is significant at the 10% level. Contrary to the hypothesis discussed above, the positive estimated coefficient for the Republicans suggests that Republicans with a larger majority have a higher probability of earmarking when the loss of majority control becomes imminent.

In Table 7, the implications of holding control of the houses of the legislature as well as the governor seat and subsequently losing control of at least one of these is explored. The results of the first two regressions are qualitatively similar to the results reported in the first two regressions of Table 6. In the third regression, which includes the interaction between the indicator for losing political control and the size of the majority, the indicator for Democrats lose their political control is negative and significant at the 1% level. This suggests that Democrats with a larger majority have a decreased probability of passing environmental earmarking laws before subsequently losing majority control. One possible explanation is that Democrats with a larger majority underestimate the likelihood that they will lose power after the next election, and as a result, they do not see a need to earmark for the environment. The coefficient on the interaction between the indicator for losing majority control interacted with the size of the majority and the year before the election indicator, reported in the fourth regression of Table 7, is significant at the 10% level and also has a negative sign.   This suggests that Democrats with a larger majority have a decreased probability of passing environmental earmarking laws even when the loss of majority control becomes imminent.

The results from Table 6 and Table 7 provide no evidence for the hypothesis that Democrats earmark for the environment in order to ensure a minimum level of spending on the environment by Republicans who gain power in the future. As discussed previously, the fraction of the population that

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identify themselves as Democrats is included to control for changing attitudes toward environmental spending over time. However, perhaps this measure does not constitute an adequate control. Unfortunately, surveys of environmental attitudes that cover all states over the time period under study are not available.[15] Table 8 experiments with three alternative measures of citizen ideology: the fraction of the population who identify themselves as liberal, a measure of citizen ideology, and a measure of government ideology. Note higher scores on the two ideology measures denotes a higher degree of liberalism. The results of Table 8 follow the same pattern as those reported earlier, with the exception that the indicator for a state having a spending limit achieves statistical significance at the 10% level.

V. An Investigation of Competing Forces to Earmarking Legislation

The results of the previous section do not support the hypothesis that Democrats in power earmark for the environment in order to constrain spending by their Republican successors. One possible explanation for this finding could be the presense of competing forces between the incentives for Democrats to pass this legislation and their ability to do so in practice. Democrats in power who subsequently lose this power to Republicans have an increased incentive to pass earmarking legislation. However, the same forces that lead to the loss of power by Democrats may make it increasingly difficult for Democrats to pass their proposed bills. In other words, Democrats may have already lost power in the legislature before the election takes place. If so, this competing force could account for the lack of an observed relationship between Democrats losing power and the probability of passing earmarking legislation.

In order to investigate this hypothesis, Table 9 shows regression results obtained from using the fraction of the state budget spent on natural resources as the dependent variable. If Democrats in power

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[15] Berry et al. states "The deficiencies of current indicators of ideology could be eliminated if we had direct access to citizen's and leaders' political orientations. Unfortunately, surveys of citizens' attitudes are only available for some states, and then only in selected years" (Berry et al., 1998, p. 329). Wright, Erikson, and McIver state, "The reason for the underdeveloped nature of research on state electorates is not theoretical but practical. We simply do not have data at the state level comparable to the in-depth surveys provided by the National Election Studies and other national surveys" (Wright et al, 1985).

have a decreased ability to enact policy changes during the term before Republicans take control, they would be less likely to support the environment in other ways. As such, the fraction of the state budget spent on natural resources would also decrease in the period before losing power. The first regression of Table 9 includes a dummy variable indicating Democrats lose control of their senate and house majority. The estimated coefficient does not differ statistically from zero. As such, there is no evidence that Democrats have a decreased ability to support environmental causes in the years before losing power to Republicans. The remaining regressions in Table 9 include various other controls. However, the coefficient on the indicator for Democrats lose control of their senate and house majority does not differ statistically from zero in any of these specifications.

The second regression in Table 9 adds controls for the size of the Democratic and Republican majority. As expected, a larger Democratic majority in the legislature is associated with a higher fraction of the budget going towards natural resource expenditures. The third regression in Table 9 includes a term that interacts the size of the majority with the indicator for losing senate and house majority control. The fourth regression in Table 9 includes an interaction of the indicator for losing majority control with an indicator for the year before the election. The final regression in Table 9 includes the interaction of the indicator for losing majority control with the size of the majority with the indicator for the year before the election. None of these interaction terms achieve statistical significance.

Overall, the results of Table 9 combined with the previous results suggest that Democrats do not have less power to enact their favored policies in the years preceding the loss of power. Rather it seems Democrats may not earmark strategically to constrain Republican successors.

VI. Conclusion

Earmarking taxes is a common practice in the United States. Despite its widespread appeal among policy-makers, few researchers have studied the reasons legislators have for placing restrictions on their own ability to budget funds. This paper empirically tests the hypothesis that legislators earmark for the environment in order to constrain the budget of successors with divergent policy preferences. The

results of the paper do not support this hypothesis. In fact, it appears that Democrats with a larger majority earmark *less* in the period before losing political control of the state legislature. As further results of this paper suggest that these Democrats do not suffer from a decrease in political power to budget expenditures for natural resources in general, it seems that Democrats do not earmark strategically. From a political standpoint, legislators could benefit from understanding the advantages of using earmarking as a commitment tool for future budgetary decision-makers.

From a theoretical standpoint, the question remains as to what actually does motivate legislators to earmark funds. Several alternative theories come to mind. An assumption inherent in the empirical model of this paper is that earmarking has no impact on election outcomes. If this assumption is false and in fact passing earmarking legislation does affect the majority status of political parties, the empirical estimates presented in this paper suffer from endogeneity bias. An empirical model that tests for any effects of earmarking on re-election outcomes would be useful. Another possibility is that earmarking funds helps legislators get support for passing new taxes. An empirical model that tests the likelihood of passing a new tax as a function of whether or not the proposed bill earmarks the proceeds would be enlightening in this regard. Certainly the puzzling question of why so many taxes are earmarked would benefit from further research.

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Table 1
Summary by purpose: Rank order

Purpose	Total Dedicated (in millions of 1997 dollars)	Rank
Transportation	$31,011.6	1
Education	24,020.2	2
Local Governments	23,709.6	3
Health	3,872.3	4
Debt Service	2,876.5	5
Conservation	1,051.4	6
Public Safety	899.7	7
State Building/Public Works	734.4	8
Environmental Clean Up	537.0	9
Human Services	415.8	10
Tourism	267.2	11
Housing	145.6	12
Regulation	98.9	13
Economic Development	89.5	14

Source: Fiscal Planning Services, Inc. (2000)

Table 2
Number of states that passed specified number of laws 1984-1997

Number of laws passed	Num. states	States
0	10	AL, AK, GA, KY, MI, NH, RI, TN, UT, WY
1	14	IN, IA, ME, MN, MS, NE, NV, NM, ND, OH, OR, PA, SC, VT
2	12	AR, CO, ID, KS, LA, MA, MO, NY, OK, SD, TX, WI
3	5	DE, HI, IL, MD, VA
4	1	WV
5	4	AZ, CT, MT, NJ
6	1	NC
7	2	CA, FL
8	1	WA

Table 3
Programs that received earmarked funds 1984-1997

Recipient of earmarked funds	Number laws
conservation generally	19
hazardous waste and underground storage tanks	18
air and water pollution and quality assurance	16
solid waste cleanup and recycling programs	15
fish and wildlife	12
parks	10
reclamation of lands	8
forests	7

Table 4
Summary of number of laws passed by political control

	Majority in Senate	Majority in House	Governor Seat	Number obs. in category	Number laws passed	Laws passed as percent
Democrats	yes	yes	yes	209	26	0.124
	yes	yes	no	165	23	0.139
	yes	yes	--	374	49	0.131
	yes	no	yes	25	2	0.080
	yes	no	no	29	6	0.207
	yes	no	--	54	8	0.148
	no	yes	yes	58	7	0.121
	no	yes	no	27	4	0.148
	no	yes	--	85	11	0.129
	no	no	yes	70	7	0.100
	no	no	no	89	7	0.079
	no	no	--	159	14	0.088
Republicans	yes	yes	yes	85	7	0.082
	yes	yes	no	57	6	0.105
	yes	yes	--	142	13	0.118
	yes	no	yes	23	4	0.174
	yes	no	no	62	6	0.097
	yes	no	--	85	10	0.118
	no	yes	yes	30	6	0.200
	no	yes	no	30	3	0.100
	no	yes	--	60	9	0.150
	no	no	yes	165	22	0.133
	no	no	no	220	28	0.127
	no	no	--	385	50	0.130

Notes: The Democrats holding power does not equal Republicans not holding power due to ties in the house or senate. A party is defined to hold the majority only if there is a strict majority. In addition, there are 7 cases in which the political party of the governor is independent.

Table 5

Summary of number of laws passed by subsequent loss of political control

	Number obs. in category	Number laws passed	Law passed percent
Democrats			
lose Senate-House majority	43	10	0.232
lose Senate-House-Governor majority	66	13	0.197
Republicans			
lose Senate-House majority	26	5	0.192
lose Senate-House-Governor majority	15	1	0.067

Notes: loses control means had control and lost control after next election of either house, senate, or governor seat.

Table 6
Likelihood of passing earmarking laws by political power
Dependent variable: Indicator for whether environmental earmarking law was passed

Method: Probit estimation with state and year fixed effects

Regression	1	2	3	4	5
Democrats hold majority of senate and house	-0.21 (0.32)	-0.45 (0.36)	-0.47 (0.37)	-0.47 (0.37)	-0.45 (0.37)
Democrats lose senate-house majority	0.40 (0.34)	0.49 (0.35)	0.89 (0.55)	0.44 (0.42)	0.62 (0.39)
Republicans hold majority of senate and house	-0.53 (0.36)	-0.48 (0.51)	-0.42 (0.52)	-0.54 (0.52)	-0.43 (0.53)
Republicans lose senate-house majority	0.67 (0.43)	0.65 (0.46)	0.38 (0.66)	0.31 (0.55)	0.19 (0.53)
Year before election dummy	-0.04 (0.25)	-0.05 (0.26)	-0.06 (0.26)	-0.09 (0.27)	-0.04 (0.26)
Size of Democrat majority		3.96 (2.53)	4.35* (2.56)	4.08 (2.53)	4.15 (2.53)
Size of Republican majority		-1.35 (3.86)	-1.88 (4.06)	-1.04 (3.91)	-2.10 (4.13)
Democrats lose interacted with size of majority			-7.60 (8.03)		
Republicans lose interacted with size of majority			4.64 (8.07)		
Democrats lose interacted with year before election				0.12 (0.58)	
Republicans lose interacted with year before election				0.91 (0.72)	
Democrats lose interacted with size maj. and year before					-6.91 (9.20)
Republicans lose interacted with size maj. and year before					18.47* (10.74)
Republican governor dummy	-0.02 (0.21)	-0.01 (0.21)	-0.01 (0.21)	-0.01 (0.21)	-0.01 (0.21)
Number of earmarking laws already in effect	-0.53*** (0.11)	-0.56*** (0.11)	-0.55*** (0.11)	-0.56*** (0.11)	-0.55*** (0.11)
Fraction Democrats in population	-1.54 (1.97)	-1.70 (1.99)	-1.81 (2.01)	-1.58 (1.99)	-1.81 (2.01)
Spending limit dummy	0.65 (0.40)	0.66 (0.41)	0.70* (0.41)	0.67 (0.41)	0.67 (0.41)
Supermajority tax requirement dummy	-0.02 (0.46)	-0.14 (0.47)	-0.15 (0.47)	-0.12 (0.47)	-0.17 (0.47)
Unemployment rate	0.13 (0.09)	0.15 (0.09)	0.14 (0.09)	0.15 (0.09)	0.13 (0.09)
Real state revenue per capita (in thousands)	-0.06 (0.57)	-0.17 (0.58)	-0.16 (0.58)	-0.10 (0.58)	-0.11 (0.58)
Constant	-0.56 (3.10)	0.12 (3.16)	0.14 (3.18)	-0.23 (3.18)	-0.04 (3.18)

Coefficients on state fixed effects and year fixed effects not shown . *10%, **5%, ***1% significance levels.

Table 7
Likelihood of passing earmarking laws by political power
Dependent variable: Indicator for whether environmental earmarking law was passed

Method: Probit estimation with state and year fixed effects

Regression	1	2	3	4
Democrats hold majority of senate, house, and governor	-0.07 (0.31)	-0.33 (0.42)	-1.11** (0.54)	-0.55 (0.45)
Democrats lose senate-house-governor majority	0.50 (0.35)	0.55 (0.35)	2.03*** (0.65)	0.96** (0.40)
Republicans hold majority of senate, house, and governor	-0.29 (0.38)	-0.12 (0.61)	-0.12 (0.63)	-0.23 (0.64)
Republicans lose senate-house-governor majority	0.002 (0.69)	-0.11 (0.74)	-0.34 (1.19)	-1.78 (2.34)
Year before election dummy	-0.06 (0.26)	-0.06 (0.26)	-0.02 (0.27)	0.10 (0.27)
Size of Democrat majority		1.84 (1.97)	5.85* (2.57)	3.36 (2.16)
Size of Republican majority		-1.82 (4.36)	-2.19 (4.44)	-1.43 (4.37)
Democrats lose interacted with size of majority			-8.62*** (3.16)	
Republicans lose interacted with size of majority			5.50 (23.65)	
Democrats lose interacted with size maj. and year before				-6.02* (3.12)
Republicans lose interacted with size maj. and year before				69.34 (52.55)
Number of earmarking laws already in effect	-0.52*** (0.10)	-0.53*** (0.10)	-0.58*** (0.11)	-0.55*** (0.10)
Fraction Democrats in population	-1.15 (1.92)	-1.12 (1.94)	-0.92 (1.95)	-1.10 (1.96)
Spending limit dummy	0.59 (0.40)	0.56 (0.40)	0.59 (0.40)	0.58 (0.41)
Supermajority tax requirement dummy	-0.05 (0.45)	-0.09 (0.45)	-0.17 (0.45)	-0.14 (0.45)
Unemployment rate	0.13 (0.09)	0.13 (0.09)	0.12 (0.09)	0.14 (0.09)
Real state revenue per capita (in thousands)	-0.12 (0.57)	-0.15 (0.57)	-0.17 (0.58)	-0.21 (0.58)
Constant	-0.39 (3.07)	-0.16 (3.09)	0.05 (3.16)	0.17 (3.15)

Coefficients on state fixed effects and year fixed effects not shown .
*10%, **5%, ***1% significance levels.

Table 8

Likelihood of passing earmarking laws by political power

Dependent variable: Indicator for whether environmental earmarking law was passed

Method: Probit estimation with state and year fixed effects

Regression	1	2	3	4	5	6
Democrats hold majority of senate and house	-0.44 (0.36)	-0.44 (0.36)	-0.46 (0.36)	-0.46 (0.36)	-0.45 (0.38)	-0.45 (0.38)
Democrats lose senate-house majority	0.49 (0.35)	0.62 (0.39)	0.50 (0.35)	0.64 (0.39)	0.50 (0.35)	0.63 (0.39)
Republicans hold majority of senate and house	-0.49 (0.51)	-0.44 (0.53)	-0.47 (0.51)	-0.43 (0.53)	-0.49 (0.54)	-0.44 (0.55)
Republicans lose senate-house majority	0.60 (0.46)	0.16 (0.53)	0.60 (0.46)	0.15 (0.53)	0.61 (0.46)	0.15 (0.53)
Year before election dummy	-0.06 (0.26)	-0.05 (0.26)	-0.06 (0.26)	-0.05 (0.26)	-0.05 (0.26)	-0.05 (0.26)
Size of Democrat majority	3.87 (2.52)	4.02 (2.52)	3.91 (2.52)	4.06 (2.52)	3.80 (2.57)	3.94 (2.58)
Size of Republican majority	-1.09 (3.89)	-1.85 (4.17)	-1.08 (3.91)	-1.83 (4.18)	-1.20 (3.88)	-1.94 (4.17)
Democrats lose interacted with size maj. and year before		-6.90 (9.22)		-7.28 (9.24)		-7.06 (9.29)
Republicans lose interacted with size maj. and year before		17.84 (11.05)		18.27* (10.97)		18.58* (11.11)
Fraction Liberals in population	-2.08 (2.38)	-1.50 (2.44)				
Citizen ideology measure			0.01 (0.02)	0.01 (0.02)		
Government ideology measure					-0.001 (0.01)	-0.002 (0.01)
Republican governor dummy	-0.01 (0.21)	-0.02 (0.21)	0.01 (0.21)	0.001 (0.21)	-0.04 (0.37)	-0.05 (0.38)
Number of earmarking laws already in effect	-0.56*** (0.11)	-0.54*** (0.11)	-0.57*** (0.11)	-0.55*** (0.11)	-0.56*** (0.11)	-0.55*** (0.11)
Spending limit dummy	0.67* (0.41)	0.68* (0.41)	0.68* (0.41)	0.69* (0.41)	0.68* (0.41)	0.69* (0.41)
Supermajority tax requirement dummy	-0.13 (0.47)	-0.15 (0.47)	-0.10 (0.47)	-0.13 (0.47)	-0.12 (0.47)	-0.14 (0.47)
Unemployment rate	0.14 (0.09)	0.13 (0.09)	0.15 (0.09)	0.13 (0.09)	0.14 (0.09)	0.13 (0.09)
Real state revenue per capita (in thousands)	-0.21 (0.58)	-0.14 (0.58)	-0.14 (0.58)	-0.09 (0.58)	-0.17 (0.58)	-0.11 (0.58)
Constant	0.23 (3.18)	-0.18 (3.20)	-0.37 (3.34)	-0.49 (3.35)	-0.46 (3.23)	-0.62 (3.24)

Coefficients on state fixed effects and year fixed effects not shown . *10%, **5%, ***1% significance levels.

Table 9

Likelihood of passing earmarking laws by political power

Dependent variable: Expenditures on natural resources as a fraction of general expenditures

Method: OLS estimation with state and year fixed effects

Regression	1	2	3	4	5
Democrats hold majority of senate and house	-0.20***	-0.26***	-0.26***	-0.26***	-0.26***
	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)
Democrats lose senate-house majority	0.01	0.04	0.09	0.004	0.03
	(0.07)	(0.07)	(0.12)	(0.09)	(0.08)
Republicans hold majority of senate and house	0.01	-0.05	-0.05	-0.07	-0.06
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)
Republicans lose senate-house majority	-0.07	-0.04	-0.03	-0.10	-0.08
	(0.08)	(0.09)	(0.12)	(0.11)	(0.10)
Year before election dummy	0.004	0.003	0.002	-0.007	-0.001
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Size of Democrat majority		0.84**	0.86**	0.85**	0.85**
		(0.38)	(0.38)	(0.38)	(0.38)
Size of Republican majority		0.55	0.56	0.59	0.53
		(0.54)	(0.56)	(0.55)	(0.54)
Democrats lose interacted with size of majority			-0.95		
			(1.76)		
Republicans lose interacted with size of majority			-0.15		
			(1.48)		
Democrats lose interacted with year before election				0.06	
				(0.12)	
Republicans lose interacted with year before election				0.15	
				(0.14)	
Democrats lose interacted with size maj. and year before					0.37
					(1.66)
Republicans lose interacted with size maj. and year before					1.72
					(1.93)
Republican governor dummy	-0.02	-0.01	-0.01	-0.01	-0.01
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Number of earmarking laws already in effect	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Fraction Democrats in population	0.35	0.35	0.35	0.37	0.35
	(0.30)	(0.30)	(0.30)	(0.30)	(0.30)
Spending limit dummy	-0.06	-0.06	-0.05	-0.05	-0.06
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Supermajority tax requirement dummy	0.02	0.01	0.01	0.02	0.01
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Unemployment rate	0.02	0.02	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Real state revenue per capita (in thousands)	-0.36***	-0.36***	-0.36***	-0.35***	-0.35***
	(0.09)	(0.08)	(0.08)	(0.08)	(0.08)
Constant	2.42***	2.44***	2.44***	2.44***	2.44***
	(0.30)	(0.30)	(0.30)	(0.30)	(0.30)

Coefficients on state fixed effects and year fixed effects not shown . *10%, **5%, ***1% significance levels.