This work is distributed as a Discussion Paper by the

STANFORD INSTITUTE FOR ECONOMIC POLICY RESEARCH

SIEPR Discussion Paper No. 02-19

Does Earmarking Matter? The Case of State Lottery Profits and Educational Spending

By
Neva Kerbeshian Novarro
Stanford University

December 2002

Stanford Institute for Economic Policy Research
Stanford University
Stanford, CA 94305
(650) 725-1874

DOES EARMARKING MATTER?

THE CASE OF STATE LOTTERY PROFITS AND

EDUCATIONAL SPENDING*

Neva Kerbeshian Novarro

December 9, 2002

ABSTRACT

This paper studies the effects of earmarking state lottery profits for educational spending. Since educational expenditures generally exceed the funds earmarked for education by a wide margin, this policy does not meaningfully constrain the legislature's ability to allocate aggregate profits across expenditure categories. Conventional economic reasoning therefore implies that this policy should have no effect on overall educational spending. I find, on the contrary, that a dollar of lottery profits earmarked for education increases current educational spending by roughly 36 cents more than a non-earmarked dollar and by 60 cents more than a dollar earmarked for other uses.

*Ph.D. Candidate, Stanford University Department of Economics. This research has been supported by The Bradley Foundation through a grant to the Stanford Institute for Economic Policy Research. Many thanks to Doug Bernheim, Antonio Rangel, John Shoven and the public economics group at Stanford for helpful advice and comments.

I. INTRODUCTION

States commonly pre-commit or "earmark" revenues from specific sources to specific expenditure programs. For example, in 1997, twenty-eight states dedicated cigarette and tobacco taxes, thirty-six states dedicated sales and use taxes, and all fifty states dedicated motor fuel taxes to specific programs [Fiscal Planning Services, 2000]. In the year 2000, on average 24% of total state expenditures were restricted by law for particular governmental functions or activities [NASBO, 2001].[1] The most common recipients of earmarked funds were transportation (22.8% of earmarked funds), elementary and secondary education (9.9% of earmarked funds), and higher education (13.9% of earmarked funds) [NASBO, 2001].

The pros and cons of earmarking have been extensively discussed in the literature. Opponents maintain that earmarking introduces inflexibility into budgets and can lead to a misallocation of resources with too much being given to earmarked programs [McMahon and Sprenkle, 1970; Deran, 1965; McCleary, 1991]. Proponents contend that earmarking protects high-priority programs from shifting majorities, inefficiency, and corruption, that it guarantees minimum levels of funding, and that it can facilitate agreement about raising revenues [Buchanan, 1963; Goetz, 1968; Browning, 1975]. According to widely used political economy models, however, earmarking should have no effect on the composition of state budgets when the earmarked dollars represent a small fraction of the total funding of an expenditure primarily financed through general revenues. In other words, earmarking should be irrelevant when it introduces no meaningful constraint on the budgeting process.

Earmarking has been studied in a variety of contexts, including intergovernmental grants from higher to lower levels of government and foreign aid to developing countries. Though these

[1] Fiscal Planning Services [2000] reported a mean value of 21.7% and a median value of 17.9% for 1997. The range among states varies considerably with Alabama earmarking 87.2% and Alaska earmarking 4.8% of revenues. These estimates are consistent with the percentages reported in 1979, 1984, 1988, and 1993.

studies have provided some insights into the effects of earmarking revenues and will be discussed below in more detail, their results arguably suffer from endogeneity bias.

State lotteries provide an excellent setting for studying the effects of earmarking. First, the thirty-eight states that currently operate lotteries had start-up dates ranging from 1964 to 2002, and lottery profit earmarking practices differ considerably across states. These factors contribute to variation in the data that can be exploited in estimation. Second, the earmarking constraints of lottery profits on educational expenditures are low and not binding. Third, lottery profits do not change the effective price of education (in contrast to grants that can have matching elements). These factors contribute to an ideal test setting for earmarking since conventional economic theory clearly predicts that earmarking lottery profits will be irrelevant for educational expenditures.

Several previous studies of state lotteries have concluded that earmarking is irrelevant. However, none of these studies use a methodology that allows the researcher to separate the effects of earmarking from the effects of operating a lottery. This and other critical issues that arise in interpreting the results of these studies will be discussed in Section II.

This paper explores the effects of earmarked lottery profits on educational expenditures. Education by far represents the most common choice as beneficiary of earmarked lottery profits and comparable data on educational expenditures across states and time is available. The study uses a panel dataset with observations at the state-year level and estimates a regression with fixed state and year effects. The paper also addresses an important endogeneity issue. The main results strongly reject the hypothesis that earmarking is irrelevant. A dollar of profits earmarked for education increases educational spending by approximately 36 cents more than a non-earmarked dollar and by approximately 60 cents more than a dollar earmarked for non-educational expenditures.

Section II of this paper describes the related literature. Section III provides background information on state lotteries. Section IV explains the theoretical background. Section V presents the empirical model and data. Section VI discusses estimation results. Section VII investigates issues of endogeneity. Section VIII concludes.

II. RELATED LITERATURE

A. Earmarking effects for state lotteries

Several related studies have explored the impact of introducing a state lottery with earmarked profits on educational expenditures. Mikesell and Zorn [1986], Borg and Mason [1987 and 1989], Stark et al. [1993], Spindler [1995], Summers et al. [1995], Land and Alsikafi [1999] and Garret [2001] identify the effects of the lottery by comparing the trend in educational spending before and after lottery adoption. Most of these studies examine only one state. Mikesell and Zorn [1986], Borg and Mason [1989], and Spindler [1995] investigate more than one state, but run a separate analysis for each. The time-trend studies report no significant increase in the trend in educational expenditures after lottery adoption. In fact, the studies document a decrease in educational expenditures following the adoption of a lottery for some states. None of these studies, however, use non-lottery states to control for what the trend in educational expenditures would have been in the lottery state had the lottery not been adopted. As such, none of these studies can rule out the possibility that the lottery actually had a significant and positive effect on educational expenditures.

Borg, Mason, and Shapiro [1991] use cross-sectional data of all fifty states and identify the effect of the lottery on state revenues with a dummy variable. The estimated coefficient on the lottery dummy is negative and statistically significant at the 10% level. Because state-fixed effects cannot be included in a cross-sectional framework, however, this study does not control for the correlation between educational expenditures and unobservable characteristics of states that adopt lotteries. In addition, a lottery dummy is a coarse measure of the effects of operating a lottery. The effects of lotteries can be better measured by controlling for the level of state lottery profits.

Glickman [1997] exploits panel data in an OLS regression framework with state and year fixed effects. In examining the impact of earmarked lottery profits on educational spending, Glickman estimates a statistically significant and positive coefficient on lottery revenues and a negative and statistically significant coefficient on a lottery dummy. However, Glickman includes only the ten states that, at the time, earmarked profits for education in his panel dataset. He does not compare lottery states that do and do not earmark profits. As such, Glickman cannot separate the effects of earmarking lottery profits from the effects of operating a lottery. This criticism holds for the previous studies as well. Though each of the studies described above addresses a question similar in spirit to the current paper, none can answer whether earmarking per se has any real effects on expenditures.

Evans and Zhang [working paper, 2002] have concurrently and independently written a study that closely relates to the current paper. As with this paper, Evans and Zhang use a panel dataset including all fifty states with state and year fixed effects to examine the impact of earmarked lottery profits on state educational revenues. The studies differ considerably, however, in the categorization of states among earmarking groups. In contrast to this paper, Evans and Zhang rely on state lottery websites for information on earmarking policies. As described below in Section V, lottery websites are often incomplete or inaccurate in their characterization of state earmarking policies and, as a result, Evans and Zhang misclassify some states. Also in contrast to this paper, Evans and Zhang assign the full amount of a state's lottery profits to a single category, either profits earmarked for education or non-earmarked profits, though over one-third of lottery states have earmarked lottery profits to multiple expenditure categories in the same year at some point. Though Evans and Zhang find results in the same direction as the current study, they generally cannot reject the hypothesis that earmarking is irrelevant.[2] Given the similarities of the models, it seems likely that Evans and Zhang would reject this hypothesis if they classified their data based on a more accurate depiction of state lottery earmarking laws.

B. Earmarking effects in other contexts

The relevance of earmarking has been tested in a variety of contexts. The earliest is intergovernmental grants. Phelps [1969] looks at highway grants. Zampelli [1986] explores federal aid earmarked for three separate public service categories. Weicher [1972], Bowman [1974], Feldstein [1975], Ladd [1975], Inman [1978], McGuire [1978], Johnson [1979], Olmsted, Denzau, and Roberts [1993], Peterson [1975], and Wyckoff [1991] each examine intergovernmental grants earmarked for education. Taken together, these studies suggest that between $0.22 to $0.78 of an earmarked dollar of lump-sum grants is spent in the designated public sector.

Earmarking effects have also been explored in the context of foreign aid. Foreign aid consists of loans and grants earmarked for economic development or military purposes. The literature includes a mix of single-country analyses with time-series data and multi-country analyses with cross-sectional data. Pack and Pack [1990, 1993] and Cashel-Cordo and Craig [1990] use reduced-form equations in estimating the effects of aid on expenditures. Heller [1975], McGuire [1982, 1987], Cashel-Cordo and Craig [1997], Khilji and Zampelli [1991, 1994], Gang and Khan [1990], Feyzioglu et al. [1998], Franco-Rodriguez [2000], and Swaroop et al. [2000] each develop structural models with a government that maximizes the utility of the median voter and estimate a fungibility parameter indicating the fraction of grants that can be converted into fungible resources. Almost all studies in this literature conclude that aid is either highly or completely fungible. Rejection of fungibility only occurs when the grant represents a large percentage of the total available funding.

---

[2] Evans and Zhang [2002] reject the hypothesis that earmarking has no effect at the 10% level when their model is run in first and fifth year differences form.

Certain limitations arise in considering earmarking effects in these contexts. Intergovernmental grants are not exogenous [Chernick, 1979; Islam and Choudhury, 1990], and foreign aid by definition is not exogenous. Furthermore, in both contexts, the effects of earmarking may be difficult to separate from grantor-decision effects. In these environments, the granting party provides funds in the expectation that the grant money will represent additional, incremental resources. Even if not explicit, the grants may have implicit matching conditions, and future grants may be contingent on current expenditures. On the other hand, in the case of state lotteries the purchasers of lottery tickets determine the size of the earmarked profits, and players of state lotteries likely are not strategic actors who base purchasing decisions on current educational expenditures in the state. Therefore state lotteries provide a context for studying the effects of earmarking revenues in isolation from grantor-decisions effects.

III. Background on State Lottery Earmarking Laws

Currently, thirty-eight states plus the District of Columbia operate state lotteries. While all states that operate lotteries have comparable profit objectives,[3] the method of distribution and intended use of these funds differ considerably across states. Table I lists the current legislated use of lottery profits for each lottery state. Note that Table I lists the *primary* legislated use of lottery profits. Many states have funds earmarked for more than one expenditure category. Appendix 1 lists the start-up date and earmarking policies in greater detail.

Among the states that earmark lottery profits, education by far represents the most common choice, with eighteen states earmarking at least some portion, and thirteen states earmarking the entire portion of profits to education. The details of how profits earmarked for education may be used vary across states. Nine states specifically restrict these profits to the elementary and secondary level only, while six states allow these profits to be used for institutions of higher learning. Three more states have earmarked lottery profits to education and

[3] States frequently describe profit maximization in their lottery mission statements printed in their annual reports and in their lottery legislation. See also Garrett [2001].

another specific category but allow the state legislature or treasury department to decide each year how to allocate the earmarked funds among the designated categories.[4]

Twelve states allocate most and eleven allocate nearly all lottery profits to the general fund. A state's general fund represents the predominant fund for financing a state's operations, and revenues for this fund primarily originate from broad-based state taxes.[5] Lottery profits allocated to the general fund are not earmarked for a specific expenditure category. Rather, each state's legislature decides every year how to divide the general fund among programs such as education, Medicaid, corrections, public assistance, and transportation. States on average finance approximately 48.1% of their operations with the general fund.[6] On average, elementary and secondary education receives 35% of general fund spending and higher education receives 12.2% of the general fund [NASBO, 2000].

Ten states earmark all or a significant percent of lottery profits to some specific category other than education such as senior citizen programs, transportation, economic development, state parks, natural resources, tourism, or property tax relief. Most of these states divide lottery profits among a few specific expenditure categories, usually in a fixed percent. Three of these states set percentage or dollar limits on the amount of profits earmarked for a specific cause and use the remaining profits for general fund spending. However, the bulk of profits benefit some specific cause. In addition to these ten states, a few more have a very small percent of their lottery profits earmarked for some specific expense. Specifically, subsequent to initiating the lottery seven states have added particular games with proceeds dedicated to some comparatively minor expenditure category such as the arts or sports stadiums.

[4] Specifically, New Jersey's lottery profits can be used for education and state institutions, West Virginia earmarks funds for seniors, education, state parks, and tourism, and Oregon's funds benefit economic development, education, and natural resource programs. In these three states, the legislature or treasury department has discretion over the division of profits among these categories.

[5] State personal income taxes and sales taxes account for the largest percentages of state general funds at 41.6% and 33.3% respectively (NASBO, 2000).

[6] States fund the remaining 26.0% from Federal Funds, 24.0% from earmarked funds, and 1.9% from bonds (NASBO, 2000).

As described in Appendix 1, earmarking policies frequently change over time. In fact, subsequent to initiating a lottery, the majority of states have legislated some change in their use of lottery proceeds. Table II summarizes some legislative changes of particular interest for this paper. Eight states enacted legislation earmarking funds for education following an initial period of unrestricted lottery profit use. One state which originally earmarked for education plus the other category currently does not earmark funds. Three additional states that originally earmarked for other, non-educational expenditures modified their earmarking policies significantly. One of these states replaced the other category with education, one state added education to the other category, and one state substituted the general fund for the other category.

IV. THEORETICAL BACKGROUND

A wide range of political economy models predict that earmarking lottery profits will have no effect on educational expenditures. To illustrate this prediction with the simplest version of these models, consider a median voter framework. An odd number of voters indexed by $i = 1,\ldots,I$ must choose a policy $\mu \in U = [0,1]$ where μ represents the fraction of a fixed budget that is spent on education versus non-education programs. Voters have single-peaked preferences on U, and μ_i represents i's favorite policy. Decisions are made by majority rule. It follows that the favorite policy of the median agent, denoted μ^{med}, is the Condorcet winner and thus the unique equilibrium outcome [by proposition 21.D.1 in Mas-Collell, Whinston, and Green, 1995, p. 802].

Now suppose new earmarking legislation requires the voters to spend a minimum of $\underline{\mu} \leq 1$ on education. The voters must now choose $\mu' \in U' = [\underline{\mu},1]$. For agents with $\mu_i \geq \underline{\mu}$, the favorite policy choice remains the same. For agents with $\mu_i < \underline{\mu}$, the favorite policy in the choice set becomes $\underline{\mu}$. It follows that if $\mu^{med} \geq \underline{\mu}$, the Condorcet winner is still μ^{med}. If $\mu^{med} < \underline{\mu}$, the Condorcet winner becomes $\underline{\mu}$.

This result is quite intuitive. If the earmarking constraint is less than what a majority of voters want to spend, the constraint has no effect on expenditure decisions. On the other hand, if the earmarking constraint exceeds the desired spending of the majority, the voters will choose the minimum required amount. Because lottery profits are small relative to the total amount spent on education,[7] this model predicts that earmarking these profits for education will have no effect on educational expenditures. Earmarking does not prevent a state from simply using the lottery funds to replace, rather than augment, funds that otherwise would have gone to education.

The insight of the median voter model holds in other political economy models as long as earmarking does not introduce a binding constraint in the budget of the relevant decision makers. Alternative models, however, predict that earmarking might have a real effect on budget allocations. Consider, for example, a Nash bargaining model of legislative policy-making in which, by changing the legislators' threat points, earmarking can lead to higher expenditures on education. Earmarking could also have an effect on politics if voters and/or politicians are subject to cognitive illusions of the kind identified in the behavioral economics literature. For instance, earmarking could produce framing effects whereby positing alternative frameworks for a decision problem may lead to violations of the principle of fungibility. Tversky and Kahneman [1981], for example, report that a significantly higher number of subjects indicated a hypothetical willingness to pay $10 for a theater ticket after losing a ten-dollar bill compared to after losing a theater ticket worth $10. In a separate study, Henderson and Peterson [1992] show that specifying different sources of money affects its purported use. They report that the (hypothetical) ranking over possible uses for $2000 received as a gift differed statistically from the ranking for $2000 received as a bonus.

[7] On average, state lottery profits represent the equivalent of 4% of total current educational expenditures, with a median value of 3%, and a maximum value of 29% for the state of Delaware in 2000 (author's calculations).

These theories provide the conceptual background for the hypotheses tested here. By comparing the estimated effects on educational expenditures of a dollar of lottery profits earmarked for education to a non-earmarked lottery dollar and a dollar earmarked for an other specific category, this paper provides an empirical test of the predictions of familiar economic models.

V. METHODOLOGY

A. Empirical model

The current study uses panel data including all fifty states for the years 1976-2000. The empirical model can be described by

$$CUREXP_{st} = \gamma L_{st} + \beta X_{st} + S_{s} + T_{t} + \varepsilon_{st}$$

where the dependent variable is total current educational expenditures per student at the elementary and secondary level. Current educational expenditures do not include any capital expenditures for education. Capital expenditures are lumpy, and the politics of bond issuance may differ significantly from the politics of current expenditure budgeting. In light of this, the analysis here focuses on current expenditures. L_{st} represents a vector of lottery profits earmarked for different categories and measured in dollars per student while γ represents the corresponding parameter vector. X_{st} denotes state demographic characteristics that may have an impact on or be an indicator of a state's demand for school spending. These controls include per capita state personal income, per capita (non-lottery) state revenue, the unemployment rate, a dummy variable indicating whether the state governor belongs to the Republican party, the percent of the population between the ages of 5 and 17, and the percent of the population over age 65. Year effects, T_t, control for factors that influence per-pupil educational expenditures across all states in a given year, such as the overall health of the national economy, federal educational programs, and the generosity of federal aid. State fixed effects, S_s, control for unobserved variables influencing per-pupil spending that tend to remain constant over time within a state, such as length of school year, state-laws regarding curriculum, the relative amount of educational funding from state versus local sources, and state political institutions. The variable ε_{st} represents a random error.

Because the dependent variable measures educational expenditures at the elementary and secondary level only, ideally L_{st} would include a category for lottery profits earmarked solely for K-12 education. This category, however, is difficult to construct in practice. Some states allow profits earmarked for education to be used at the post-secondary level. In addition, New Jersey, Oregon, and West Virginia earmark lottery profits for education and other expenditures without explicitly legislating the division of funds. As a result, it is not obvious how to determine what portion of lottery profits should be attributed to elementary and secondary education and what portion should be attributed to the other categories. One could divide profits according to the actual division of each state's lottery profits each year among the earmarked categories. This technique, however, may lead to an endogeneity bias as the possibility exists for legislatures in these states to base profit allocation decisions on whether an expenditure category has an unusually low or high budget in a certain year.

Two methods are used to address this problem. The first method sets $L_{st} = \begin{bmatrix} ED_{st} \\ GF_{st} \\ OS_{st} \end{bmatrix}$ where ED_{st}, represents education lottery profits, GF_{st} represents general fund profits, and OS_{st} represents other specific lottery profits. The broad category of education lottery profits includes all lottery profits earmarked at least in part to elementary and secondary education. In particular, lottery profits for the states listed in the first three columns of Table I are attributed to this education category in the year 2000. The general fund profits category includes all non-earmarked lottery profits. The other specific profits category includes profits earmarked for some specific category other than education and therefore includes only profits that legally cannot be used for expenditures on education.

States that do not operate a lottery in a given year have a zero value for each of these three category variables in that year. Once a state adopts a lottery, the dollar value of its lottery profits per student are entered into L_{st} based on the relevant lottery legislation. Because some states earmark lottery profits for more than one category, lottery profits in a given year may be divided among the variables ED_{st}, GF_{st}, and OS_{st} based on the state's legislation. For example, Minnesota law currently allocates 60% of lottery profits to the general fund and 40% to the environment. Therefore, for Minnesota, 60% of lottery profits are attributed to GF_{st} and 40% are attributed to OS_{st} in the year 2000. In addition, the categories frequently change for a state over time as state earmarking laws change. For example, Virginia's lottery profits are attributed to GF_{st} until 1995 and to ED_{st} thereafter because its legislation initially sent profits to the general fund but began earmarking all profits for education in 1995.

Ideally, the education lottery profits category would be narrowly defined to include only profits earmarked for K-12 level expenditures. A second method attempts to create this more narrowly defined category by treating a fraction of lottery profits in each state as earmarked solely for K-12 education based on exogenous state budget information. In this case, $L_{st} = \begin{bmatrix} K12_{st} \\ OLP_{st} \end{bmatrix}$ where $K12_{st}$ denotes lottery profits earmarked solely for K-12 education and OLP_{st} denotes the remaining lottery profits earmarked for some category other than K-12 education.

Lottery profits earmarked either entirely to K-12 education or entirely to something else are easy to categorize in this framework. However, for lottery profits earmarked to K-12 education plus some other category, determining the fraction to assign to $K12_{st}$ is not obvious. The approach taken here is to use the relative weight each category has in the state's entire budget to divide a dollar of lottery profits among the categories. The underlying assumption of this approach is that the state budget reflects the legislature's relative preference for spending on elementary and secondary education versus the other possible categories, and, as such, the legislature would decide to divide a dollar of lottery profits in the same proportion when given the freedom to do so.

Allocating lottery profits based on state budget shares in each year creates the potential for a spurious correlation between the dependent variable and $K12_{st}$. To see this, note that a higher percentage of lottery profits will be attributed to $K12_{st}$ in years in which K-12 education represents a larger percentage of the state budget. To address this problem, three alternative methods are used to divide lottery profits earmarked for education and some other category. The first variation divides profits according to the relative weight each category had in the state's entire budget in the previous year. The second variation divides profits according to the category's weight in the single year before the state first earmarked for education. The third variation divides profits in states that earmark to K-12 and higher education according to the average division of expenditures between K-12 and higher education for the entire United States in the year before the state began earmarking lottery profits for education. For this third variation, the budget divisions in the year before earmarking are used for New Jersey, Oregon, and West Virginia. National budget averages are difficult to obtain for these three states since the relevant budget categories of institutions, economic development, natural resources, and parks and tourism include different classes of expenditures in different states.

Since states spend a sizeable percentage of general fund dollars on elementary and secondary education each year, allocating lottery profits to the general fund is similar to earmarking some percentage of profits for elementary and secondary education and the remaining percentage to non-educational expenditures. Therefore, in each variation of this second model, thirty-five percent of all lottery profits earmarked for the general fund are attributed to $K12_{st}$ and the remaining sixty-five percent are attributed to OLP_{st}. This division is based on state average spending levels of 35% of general fund revenues for elementary and secondary education over the past twelve years (with a range from 1988 to 2000 of 32% to 36%) [NASBO, 2000].

B. Data

Table III provides statistics on the size of the thirty-seven state lotteries in operation in 2000. Lottery states on average brought in total revenues on the order of $955 million in 2000. The states on average used approximately 57% of total revenues for prize money, though the fraction of revenues paid out in prizes varied from 11% in South Dakota to 79% in Rhode Island. After paying out prizes and administrative expenses, lottery states on average kept 33% of total revenues as profits. On average, lottery states in 2000 brought in a profit of $324 million ($58 per capita) with New York bringing in the largest dollar value at $1.4 billion ($79 per capita). Measured in terms of profits per student enrolled in elementary and secondary education, lottery states on average earned approximately $353 per student, though this figure ranged from $42 per student in Montana to $2382 per student in Delaware in the year 2000.[8]

Data on state lottery profits in each year were primarily obtained from the U.S. Census Bureau's annual publication *Survey of Government Finances* for the years 1976 through 2000. However, for states that have certain lottery games with profits designated for a specific purpose, individual state lotteries provided more detailed data on profits available from each game. State lotteries contacted directly for this purpose include Arizona, Maine, Maryland, Washington, Oregon, and South Dakota. Because California's law earmarks proceeds to elementary and secondary and higher education based on average daily attendance, data on California's division of proceeds were also obtained directly from its lottery. Finally, as the *Survey of Government Finances* was missing one year of data for Texas and New York, these states were also contacted directly for proceeds data. The difference between the Census Bureau data and the state data for these eight states, excluding Oregon,[9] averages 7%, with a median difference of 3%.

---

[8] Delaware represents an outlier in terms of its level of lottery profits per student. Perhaps Delaware's relative success stems from the fact that it participates in Powerball, a multistate lottery, while many of the states neighboring Delaware do not.

[9] The Census Bureau's Oregon data is unreliable in recent years due to an accounting error in which the video lottery profits were doubled. (Personal E-mails from Debra A. Spinazzola, Census Bureau, Governments Division, 7/2/02 and 10/3/02.)

Budget offices in New Jersey, Oregon, and West Virginia provided detailed information on expenditures for each earmarked category (including education and institutions for New Jersey, economic development, education, and natural resources for Oregon, and education, seniors, and tourism for West Virginia). Appendix 1 details the contacts for this data.

State lottery profits are allocated among the categories in the profit vector L_{st} in each year according to the state lottery laws. Preliminary information on earmarking legislation was obtained from each state's official lottery website. However, state lottery websites often do not describe the earmark laws in each year since the lottery began. In addition, the websites often do not describe whether there is an explicit, legislated division of profits between categories in states that earmark profits to multiple categories. Furthermore, many websites list only the primary recipient of funds and do not list relatively minor recipients such as compulsive gambling treatment centers or stadiums. Because the majority of states have changed their earmarking legislation over time, obtaining an accurate historical depiction of earmarking laws required finding the most recent relevant statutes for each state, searching for amendment dates listed in the notes of the current statutes, and reading the pre-amended statute to identify changes in the earmarking law. State lottery or legislative offices were also contacted directly to clarify and double-check interpretation of statutes. See Appendix 1 for a list of each state's relevant statutes and personal contact information.

Data on current educational expenditures and enrollment statistics for each state are from the National Center for Education Statistics' Data Resource Center. Data on total state expenditures broken down by elementary and secondary education, higher education, and other education through 1999 are from the U.S. Census Bureau.[10] 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. The state revenues

[10] Donna Hirsch, Governments Division, U.S. Census Bureau provided this data (7/16/02).

used in the regression analysis do not include state lottery revenues. Unemployment data are from the Current Population Survey (CPS) of the Bureau of Labor Statistics. The CPS does not include population data prior to 1976 for 23 states. Unemployment data for these states prior to 1976 are from the Census Bureau's *Statistical Abstract of the United States*.

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.

VI. RESULTS

Table IV displays regression results for the first model which divides lottery profits into education lottery profits, general fund profits, and other specific lottery profits. The first regression suggests that an additional dollar of lottery profits earmarked for education is associated with an increase in educational spending of 79 cents. By contrast, an additional dollar of lottery profits assigned to the general fund is associated with an increase in educational spending of only 43 cents. The estimated coefficient of 19 cents on a dollar earmarked for some specific purpose other than education is not statistically different from zero. Taken together, these results suggest that earmarking lottery profits for education does in fact have a real effect on expenditures as one dollar of profits earmarked to education increases spending by 36 cents more than a dollar of non-earmarked general fund profits and by 60 cents more than a dollar earmarked for some category other than education. A Wald test of equality of education lottery profits and general fund lottery profits can be rejected at the 1% significance level. A Wald test of equality of the coefficient on education profits and other specific profits is also rejected at the 1% significance level. Finally, a Wald test of the equality of all three of these coefficients is rejected at the 1% significance level.

If the earmarking constraints were perfectly binding, a dollar of profits earmarked for education would increase educational expenditures by exactly one dollar. In addition, a dollar of profits combined with the general fund would increase educational expenditures by the same amount as other general fund dollars, and a dollar of profits earmarked for some other category would have no effect on educational expenditures. Interestingly, a Wald test that the coefficient on education lottery profits equals 1 cannot be rejected at the 10% significance level with an F-statistic of 2.55. Additionally, the coefficient on general fund lottery profits is not statistically different from 0.35, with an F-statistic of and the coefficient on other lottery profits is not statistically different from 0. A joint test of these three hypotheses, however, can be rejected at the 10% significance level with an F-statistic of 2.31.

The coefficients on personal income and state revenue are statistically significant and, as expected, positive. The unemployment rate also has a significant and positive coefficient. One explanation may be that in times of economic downturn, cutting educational spending has negative political consequences for legislators. The Republican dummy coefficient is statistically significant and negative suggesting educational spending per pupil on average is $60 lower when a Republican governor holds office. The coefficient on the percent of the population between 5 and 17 has a significant and large negative value suggesting that a 1% increase in the school-aged population is associated with an average decrease of $189 in educational expenditures per pupil. The coefficient on the percent of the population over age 65 is negative but not statistically significant at even the 10% level. The estimated coefficients on these control variables maintain roughly the same values in each of the subsequent regressions.

In the first regression of Table IV, state lottery profits earmarked specifically for capital expenditures on education are assigned to the category “other lottery profits” rather than “education lottery profits” since capital expenditures are excluded from the dependent variable. However, earmarking lottery profits for capital expenditures may free educational funds for use on current, non-capital educational expenditures. To address this concern, the second column of

Table IV considers an alternate definition of the three categories in L_{st} by attributing lottery profits earmarked for capital educational expenditures to the "education lottery profits" category. The results change very little with this reassignment, perhaps because only a few states earmark profits solely for capital expenditures.

As described in the previous section, while most state lottery profit data come from the same Census Bureau source, lottery profit data for states that have specific games earmarked for specific expenditures come from the individual state's lottery commission. To check the reliability of this data, Table IV includes in its third column a regression that replaces all state lottery data with Census Bureau data.[11] Using the Census Bureau data for all states requires the tradeoff that lottery profits cannot be assigned to categories according to the specific lottery game played. Thus, the third regression of Table IV assigns all lottery profits to the main earmarked category in cases in which the funds cannot be reasonably divided. The results of the third regression differ only slightly from the results in the first two regressions.

The fourth regression in Table IV drops New Jersey and Oregon from the analysis. Recall that New Jersey, Oregon, and West Virginia are the only three states that earmark to education and some non-education category without an explicitly legislated division of profits. In the case of West Virginia, the fraction of the total state budget used for the earmarked categories of seniors, state parks, and tourism is less than one percent.[12] Therefore, assigning lottery profits for West Virginia to the "education lottery profits" category seems sensible. The earmarked categories of state institutions in the case of New Jersey and economic development and natural resources in the case of Oregon, however, represent a nontrivial percent of the states' total budgets. Dropping New Jersey and Oregon from the analysis increases the coefficient on "other

[11] State data are still used for Oregon in years in which there is a known problem with the Census Bureau data.
[12] Steve Meester, West Virginia Budget Office, 6/27/02

lottery profits" somewhat. However, the regression results continue to highlight the significant effects of earmarking. Wald tests reject the equality of the coefficient on education lottery profits and general fund lottery profits at the 5% level, education lottery profits and other lottery profits at the 1% level, and equality of all three coefficients at the 5% level.

The final regression in Table IV substitutes current expenditures per student with educational revenues per student as the dependent variable. Educational revenues differ from current educational expenditures as they include funds available for capital projects. The results using educational revenues provide even stronger evidence that earmarking has real effects on budgeting. The estimated coefficients suggest that a dollar of lottery profits earmarked for education increases educational spending by 46 cents more than a non-earmarked dollar and by 90 cents more than a dollar earmarked for a non-educational expenditure. Furthermore, the joint hypothesis that these coefficients equal the values that indicate perfectly binding earmarking restrictions (1, 35, and 0 respectively) cannot be rejected at the 10% level with an F-statistic of only 0.45. However, as described above, current expenditures for education, which exclude lumpy capital expenditures, arguably provide a more accurate year-to-year measure of the lottery's effects.

Table V presents the results from the second model in which a fraction of each state's lottery profits is assigned to the category "K-12 education lottery profits" based on the state's earmarking legislation and exogenous state budget information. The four regressions only vary in the method used to divide profits in states that earmark funds to both K-12 education and other expenditures. The first regression divides profits according to the fraction of its total budget a state spent on K-12 education in comparison to the other earmarked category in each year. The estimated coefficients reject the hypothesis that earmarking is irrelevant. A dollar of profits earmarked for K-12 education is associated with an increase in educational spending of 74 cents while a dollar reserved for other expenditures is associated with an increase in expenditures of only 29 cents. A test of equality of these two coefficients can be rejected at the 5% level with an

F-statistic of 5.61. The coefficient on K-12 education lottery profits suggests that only 26 cents leaks out from educational spending. The leakage might be even smaller if adjusted for capital expenditures on education. However, the positive and statistically significant coefficient on other lottery profits per student suggests that earmarking restrictions do not work perfectly, and non-earmarked funds are at least partially fungible.

Regressions 2 through 4 in Table V vary the allocation of earmarked funds to the "K-12 education lottery profits" category as described in Section V. The results are quite similar. In each case, the test of equality of the coefficients on K-12 education lottery profits and other lottery profits is rejected at the 5% significance level.

For comparison purposes, the final regression in Table V substitutes current expenditures per student with educational revenues per student as the dependent variable and again uses national averages to divide lottery profits between categories. In this regression, it is not possible to reject the hypothesis that the earmarking restrictions are perfectly binding. The coefficient on other lottery profits is not statistically different from 0, the coefficient on K-12 education lottery profits is not statistically different from 1, and the joint test of these two hypotheses cannot be rejected at the 10% level.

VII. AN INVESTIGATION OF POLICY ENDOGENEITY

The model specification described above assumes that lottery profits have a causal impact on state educational expenditures. In order for this specification to be valid, the reverse must not be true; the model implicitly assumes that educational expenditures do not affect lottery profits. Therefore, the model's results will be biased if the policy decisions to adopt a lottery or earmark profits are endogenous to educational expenditures. For example, deteriorating state finances for education over time may affect the decision to adopt a lottery or earmark profits for education. This type of endogeneity would lead to a downward bias in the coefficient on lottery profits. Alternatively, a pro-educational taste shock could cause states to both increase educational expenditures and adopt a lottery or earmark profits to allow for even more funding for education. This second type of endogeneity would lead to an upward bias. Though the inclusion of state fixed effects controls for the possibility of differing underlying preferences for education among states that adopt a lottery or earmark profits, it does not control for the possibility that these preferences may be changing over time within a state.

To address concerns of policy endogeneity, timing effects are considered. The first two regressions in Table VI check for a difference in linear trends in current educational expenditures in the years before and after the adoption of a lottery relative to the baseline trends of states that have never adopted a lottery. The number of years before the lottery time trend is defined to equal negative one in the first year before lottery adoption, negative two in the year before that, and so on. The number of years after the lottery time trend equals one in the year of lottery adoption, two in the lottery's second year, and so on. The first regression in Table VI has a positive coefficient of 3.16 on the number of years before the lottery time trend, although this estimate is not statistically different from zero. Estimating the same regression beginning in 1970 produces a slightly negative point estimate (-0.69) that again is not statistically significant.[13] These regressions suggest that no significant trend in educational expenditures was present in lottery states prior to the adoption of a lottery in comparison to non-lottery states. In contrast, the coefficients on the number of years after the lottery time trend are positive and significant at the 1% level in both regressions. The coefficient of 41.39 suggests that, on average, lottery states increase educational spending per student by $41.39 each year after adopting a lottery. For example, a state that has a lottery for ten years spends on average $413.90 per student more that year than a state with a one-year-old lottery. Wald tests of the equality of the

[13] Because lottery revenue data is not used in the timing regressions, it is possible to extend the sample period back to 1970. However, the unemployment data prior to 1976 are from a separate data source and may not be as reliable as the later data. The other regressions in this paper cannot be extended back to 1970 because lottery revenue data is not available for these earlier years.

estimated coefficients on the years before and years after lottery trends are rejected at the 1% significance level.

The stark difference in the estimated coefficients on the year before and year after time trends provides some assurance against policy endogeneity. The binary decision to adopt a lottery represents the consummation of an ongoing process. If the adoption of a state lottery is driven by same process that is causing educational spending to change, then the results should demonstrate a similar increase in educational expenditures before and after adoption of the lottery.

To check for endogeneity of the decision to earmark lottery profits for education, the third regression in Table VI compares the linear trends in current educational expenditures in the years before and after a state earmarks lottery profits for education relative to the baseline trends of states do not earmark profits for education.[14] The number of years before and after earmarking time trends are defined analogously to the before and after lottery time trends. Here the results are quite similar to those in the first and second regressions. Specifically, the coefficient on the years before earmarking time trend is not significantly different from zero, while the years after earmarking time trend is positive and significant at the 1% level. Again the stark difference in the estimated coefficients on the year before and year after time trends provides some assurance against policy endogeneity.

The remaining regressions of Table VII include a dummy that equals 1 in each year after the relevant event—either adoption of a state lottery or earmarking lottery profits for education. Inclusion of the dummy allows for a shift in educational expenditures beginning in the year of lottery adoption or in the year earmarking for education begins. In each regression, the coefficient on the event dummy is negative and statistically significant. The point estimate of

[14] In the endogeneity analysis, states that earmark profits for capital expenditures only (New Mexico, Idaho, and Georgia) are treated as earmarking states as the objective is to check for trends in preferences for educational expenditures in general and not specifically for non-capital expenditures. However, the results are qualitatively similar when these states are not treated as earmarking states.

–101.61 in the fourth regression, for example, suggests that lottery states spend on average \$101.61 less on educational expenditures per student compared to non-lottery states in the year of lottery adoption. The results of the following table, however, suggest that the estimated negative coefficients on these dummy variables may be a statistical artifact resulting from imposing a linear structure on the effects of lottery profits over time.

Table VII considers non-linear timing effects by including a set of binary variables that equal 1 in specified time intervals before and after the event considered. In the first two columns, "6-10 years before lottery" represents a dummy variable set equal to 1 for a state in every year that is between 6 and 10 years before the adoption of that state's lottery and zero in every other year. For states that do not operate lotteries, each of these dummy variables is set equal to zero. The variable "1-5 years before lottery" is constrained to equal zero in every year for each state in order to avoid perfect colinearity in estimation. The coefficients on the years before lottery in the first regression change from 76.01 to –14.86 to –70.09 to 0, suggesting a slight U-shaped pattern. However, none of these estimated coefficients are statistically different from zero at conventional significance levels. In addition, a joint test of the equality of these coefficients cannot be rejected at the 10% significance level with an F-statistic of only 1.35. Therefore, there is not strong evidence for a striking trend relative to non-lottery states in educational expenditures per student in the years prior to the adoption of state lotteries and, as such, not strong evidence for policy endogeneity. The coefficients on the years after lottery adoption change from 78.97 to 101.92 to 115.59 to 554.82. Each coefficient increases in its statistical significance from the ten to one percent level. The joint test of equality of these coefficients is rejected at the 1% significance level with an F-statistic of 35.56. The results of the second regression, which extends the sample back to 1970, are qualitatively the same.

The third and fourth regressions explore non-linear timing effects of the decision to earmark lottery profits for education. Here the results are slightly more ambiguous as the coefficients on the years before dummies are increasing slightly over time. However, none of these estimated coefficients are statistically different from zero at conventional significance levels, and joint tests of the equality of these coefficients cannot be rejected at the 10% significance level with an F-statistic of only 0.56 in the third regression and 0.96 in the fourth regression, which extends the sample to 1970. Therefore, there is not strong evidence for a trend in educational expenditures prior to earmarking for states that earmarked lottery profits for education relative to states that did not. Oddly, the coefficient on the dummy indicator for 1-5 years after earmarking is negative, though not statistically significant. As before, the coefficients on the years after earmarking increase at an increasing rate over time. The joint tests of equality of these coefficients are rejected at the 1% significance level with F-statistics of 32.45 in the third regression and 32.61 in the fourth regression.

Overall, the results of Table VII provide evidence for a strong trend after adoption in educational expenditures per student that increases at an increasing rate as the lottery becomes more mature. An explanation for this increasing trend may be seen in Figure 1 which plots average lottery profits per student against the number of years the lottery has been in operation. This plot suggests that lotteries tend to provide low levels of profits to states during the early years after adoption. As a state lottery becomes more mature, lottery profits increase dramatically. The close parallel between the estimated coefficients on the years-after dummy variables in Table VII and the level of lottery profits in Figure 1 suggests that the lottery affects educational expenditures through the profits it generates. This pattern of evidence provides even more assurance against policy endogeneity. If the models' results are due to some pro-educational taste shock that caused an increase in educational spending and led to the adoption of the lottery, it seems unlikely that the effects of the lottery would persist and increase over time. Rather one would expect the effect to start out strong and remain flat or even dissipate over time.

An even simpler test of policy endogeneity can be seen in the regression results reported in Table VIII. Here a lottery dummy is used to capture the effects of state lotteries on educational expenditures. In the first regression, the coefficient on the lottery dummy is insignificant both statistically and economically. This provides evidence against policy endogeneity as the policy of adopting a lottery seems to have no effect on educational expenditures. Rather, as the next two regressions suggest, it is revenues, rather than lottery adoption that matter for educational expenditures.

The second regression in Table VIII adds total lottery profits per pupil to the equation. The coefficient on the lottery dummy is still statistically insignificant and has a negative point estimate. However, the coefficient on lottery profits is statistically significant and positive. Finally, the third regression in Table VIII includes both a lottery dummy and total lottery profits separated into earmarked categories. A comparison with Table IV shows that the coefficients on education lottery profits per student, general fund lottery profits per student, and other lottery profits per student change by no more than 4 cents with the introduction of a lottery dummy. The lottery dummy in this third regression continues to have a statistically insignificant and negative point estimate.

VIII. CONCLUSION

This paper quantifies the effects of state lottery earmarking policies on educational expenditures using panel data of all fifty states over the time period 1976 through 2000. The results suggest that a dollar of lottery profits earmarked for education increases educational spending by more than a non-earmarked, general fund dollar. In turn, a dollar earmarked for some specific category other than education has little, if any, leakage into educational spending. These results contradict popular political economy models which predict that earmarking is irrelevant for state budgeting and that lottery profits earmarked for education merely substitute for general funds that would have otherwise benefited education.

This paper also checks for policy endogeneity by examining the pattern of state educational expenditures in years before and after the adoption of state lotteries. The results of the timing analysis do not support the hypothesis that lottery adoption policies are endogenous.

Educational expenditures prior to lottery adoption have a similar pattern in comparison to states that never adopt a lottery, and expenditures appear to increase sharply over time following the adoption of a state lottery. The increasing effect of the lottery on educational expenditures coincides closely with the striking increase in the profits that lotteries generate over time. This fact suggests that the effect of the lottery on educational expenditures is not due to some preference shock or change in preferences for education over time prior to lottery adoption. This type of policy endogeneity would not lead to the observed increasing effect of state lotteries on educational expenditures over time.

State lotteries have become widespread in the United States over the past few decades, and the number of states that operate lotteries is expected to grow. North Dakota and Tennessee passed constitutional amendments in November of 2002 that remove bans on state lotteries. Of the remaining ten states currently without lotteries, state legislators in seven have plans to consider adopting a lottery in the next few years. (The only three states without proposed lottery legislation are Alaska, Hawaii, and Utah.) In addition, as discussed above, almost all lottery states have enacted some change or changes in their earmarking legislation subsequent to adopting a lottery. While some legislative modifications have been relatively minor, eight states have changed from a policy of unrestricted fund use to a policy of earmarking funds specifically for education. Given this history of state lottery earmarking policies, other states likely will re-evaluate state earmarking laws in the future. While the political motivation for earmarking legislation may revolve around gaining and maintaining political support for operating a lottery, this paper suggests that earmarking profits will in fact have real implications for educational spending in states.

The results of this paper also suggest that conventional political economy models of earmarking do not adequately describe the state budgeting process.

References

Borg, Mary O., Paul M. Mason, and Stephen L. Shapiro, *The Economic Consequences of State Lotteries* (Westport, CT and London: Greenwood, Praeger, 1991).

Borg, Mary O., and Paul M. Mason, "The Budgetary Incidence of a Lottery to Support Education," *National Tax Journal*, XL (1987), 533-546.

———, and ———, "Earmarked Lottery Revenues: Positive Windfalls or Concealed Redistribution Mechanisms?" *Journal of Education Finance*, LII (1989), 75-85.

Bowman, John H., "Tax Exportability, Intergovernmental Aid, and School Finance Reform," *National Tax Journal*, XXVII (1974), 163-174.

Browning, Edgar K., "Collective Choice and General Fund Financing," *Journal of Political Economy,* LXXXIII (1975), 377-390.

Buchanan, James M., "The Economics of Earmarked Taxes," *Journal of Political Economy*, LXXI (1963), 475-469.

Cashel-Cordo, Peter, and Steven G. Craig, "The Public Sector Impact of International Resource Transfers," *Journal of Development Economics*, XXXII (1990), 17-42.

———, and ———, "Donor Preferences and Recipient Fiscal Behavior: A Simultaneous Analysis of Foreign Aid," *Economic Inquiry*, XXXV (1997), 653-671.

Chernick, Howard A., "An Econometric Model of the Distribution of Project Grants," in Peter Mieszkowski and William Oakland, eds., *Fiscal Federalism and Grants-In-Aid* (Washington, D.C.: The Urban Institute, 1979).

Deran, Elizabeth Y., "Earmarking and Expenditures: A Survey and a New Test," *National Tax Journal*, XVIII (1965), 354-361.

Evans, William N., and Ping Zhang, "The Impact of Earmarked Lottery Revenue on State Educational Expenditures," University of Maryland working paper, October (2002).

Feldstein, Martin S., "Wealth Neutrality and Local Choice in Public Education," *American Economic Review*, LXV (1975), 75-89.

Feyzioglu, Tarhan, Vinaya Swaroop, and Min Zhu, "A Panel Data Analysis of the Fungibility of Foreign Aid," *The World Bank Economic Review*, XII (1998), 29-58.

Fiscal Planning Services Incorporated, *Dedicated State Tax Revenues: A Fifty-State Report*, (2000).

Franco-Rodriguez, Susana, "Recent Developments in Fiscal Response with an Application to Costa Rica," *Journal of International Development*, XII (2000), 429-441.

Gang, Ira N., and Haiden Ali Khan, "Foreign Aid, Taxes, and Public Investment," *Journal of Development Economics,* XXXIV (1991), 355-369.

Garrett, Thomas A., "Earmarked Lottery Revenues for Education: A New Test of Fungibility," *Journal of Education Finance*, XXVI (2001), 219-238.

———, "The Leviathan Lottery? Testing the Revenue Maximization Objective of State Lotteries as Evidence for Leviathan," *Public Choice*, CIX (2001), 101-117.

Goetz, Charles J., "Earmarked Taxes and the Majority Rule Budget Process," *American Economic Review*, LVIII (1968), 128-136.

Heller, Peter S., "A Model of Public Fiscal Behavior in Developing Countries: Aid, Investment, and Taxation," *The American Economic Review*, LXV (1975), 429-445.

Henderson, Pamela W., and Robert A. Peterson, "Mental Accounting and Categorization," *Organizational Behavior and Human Decision Processes*, LI (1992), 92-117.

Inman, Robert P., "Optimal Fiscal Reform of Metropolitan Schools: Some Simulation Results," *American Economic Review*, LXVIII (1978), 107-122.

Islam, Muhammed N., and Saud A. Choudhury, "Testing the Exogeneity of Grants to Local Governments," *Canadian Journal of Economics*, XXIII (1990), 676-692.

Johnson, Marvin B., "Community Income, Intergovernmental Grants, and Local School District Fiscal Behavior," in Peter Mieszkowski and William Oakland, eds., *Fiscal Federalism and Grants-in-Aid* (Washington, D.C: The Urban Institute, 1979).

Karcher, Alan J., *Lotteries* (New Brunswick: Transaction Publishers, 1989).

Khilji, Nasir M., and Ernest M. Zampelli, "The Fungibility of U.S. Assistance to Developing Countries and the Impact on Recipient Expenditures: A Case Study of Pakistan," *World Development*, XIX (1991), 1095-1105.

———, and ———, "The Fungibility of U.S. Military and Non-military Assistance and the Impacts on Expenditures of Major Aid Recipients," *Journal of Development Economics*, XLIII (1994), 345-362.

La Fleur, Teresa and Bruce La Fleur, *La Fleur's 2001 World Lottery Almanac* (Boyds, MD: TLF Publications, Inc, 2001).

Ladd, Helen F., "Local Education Expenditures, Fiscal Capacity, and the Composition of the Property Tax Base," *National Tax Journal*, XXVIII (1975), 145-158.

Land, Vance Q., and Majeed H. Alsikafi, "A Lottery's Impact on Instructional an Noninstructional Expenditures and Unrestricted Revenues for Education," *Journal of Education Finance*, XXV (1999), 149-174.

Mas-Colell, Andreu, Michael D. Whinston, and Jerry R. Green, Microeconomic *Theory* (New York, Oxford: Oxford University Press, 1995).

McCleary, William, "The Earmarking of Government Revenue: A Review of Some World Bank Experience," *The World Bank Research Observer*, VI (1991), 81-104.

McGuire, Martin C., "A Method For Estimating the Effect of a Subsidy on the Receiver's Resource Constraint: With an Application to U.S. Local Governments, 1964-1971," *Journal of Public Economics*, X (1978), 25-44.

———, "Foreign Assistance, Investment and Defense: A Methodological Study with an Application to Israel, 1960-1979," *Economic Development and Cultural Change*, XXXV (1987), 847-873.

———, (1982), "U.S. Foreign Assistance, Israeli Resource Allocation and the Arms Race in the Middle East: An Analysis of Three Interdependent Resource Allocation Processes," in *The Economics of Military Expenditures: Military Expenditures, Economic Growth and Fluctuations*, proceedings of a conference held by the International Economic Association in Paris, France, (1987), 197-238.

McMahon, Walter W., and Case M. Sprenkle, "Earmarking and the Theory of Public Expenditure," *National Tax Journal*, XXV (1972), 229-230.

Mikesell, John L., and C. Kurt Zorn, "State Lotteries as Fiscal Savior or Fiscal Fraud: A Look at the Evidence," *Public Administration Review*, XLVI (1986), 311-320.

National Association of State Budget Officers, *2000 State Expenditure Report,* (2001).

Olmsted, George M., Arthur T. Denzau, and Judith A. Roberts, "We Voted for This? Institutions and Educational Spending," *Journal of Public Economics*, LII (1993), 363-376.

Pack, Howard, and Janet Rothenberg Pack, "Is Foreign Aid Fungible? The Case of Indonesia," *Economic Journal*, C (1990), 188-194.

———, and ———, "Foreign Aid and the Question of Fungibility," *Review of Economics and Statistics*, LXXV (1993), 258-265.

Peterson, George E., "Voter Demand for Public School Expenditures," in John E. Jackson, ed., *Public Needs and Private Behavior in Metropolitan Areas* (Cambridge, MA: Ballinger, 1975).

Phelps, Charlotte D., "Real and Monetary Determinants of State and Local Highway Investment, 1951-66," *American Economic Review*, LIX (1969), 507-521.

Spindler, Charles J., "The Lottery and Education: Robbing Peter to Pay Paul?" *Public Budgeting and Finance*, XV (1995), 54-62.

Stark, Steven R., Craig Wood, and David S. Honeyman, "The Florida Education Lottery: Its Use As a Substitute for Existing Funds and Its Effects on the Equity of School Funding," *Journal of Education Finance*, XVIII (1993), 231-242.

Summers, Susan R., David S. Honeyman, James L. Wattenbarger, and M. David Miller, "An Examination of Supplantation and Redistribution Effects of Lottery Allocations To a Community College System," *Journal of Education Finance*, XXI (1995), 236-253.

Swaroop, Vinaya, Shikha Jha, and Andrew Sunil Rajkumar, "Fiscal Effects of Foreign Aid in a Federal System of Governance: The Case of India," *Journal of Public Economics*, LXXVII (2000), 307-330.

Tversky, Amos, and Daniel Kahneman, "The Framing of Decisions and the Psychology of Choice," *Science*, CCXI (1981), 453-458.

Weicher, John C. "Aid, Expenditures, and Local Government Structure," *National Tax Journal*, XXV (1972), 573-583.

Wyckoff, Paul Gary, "Testing Bureaucratic Influence on Local School Expenditures by Comparing Survey and Expenditure Data," *Review of Economics and Statistics*, LXXIII (1991), 331-335.

Zampelli, Ernest M., "Resource Fungibility, the Flypaper Effect and the Expenditure Impact of Grants-in-Aid," *Review of Economics and Statistics*, LXVIII (1986), 33-40.

Table I
Primary earmarked use of lottery profits in 2000

Elementary and Secondary Education	K-12 and Post-secondary Education	Education and Other Specific[1]	General Fund	Other Specific
New Hampshire	Ohio	New Jersey	Connecticut	Massachusetts[3]
New York	California	Oregon[3]	Maryland[3]	Pennsylvania
Michigan	Missouri	West Virginia	Rhode Island	Arizona[3,5]
Illinois	Florida		Maine[3]	Colorado[5]
Vermont	Georgia[2]		Delaware	Kansas[5]
Virginia	New Mexico[2]		Washington[3]	Wisconsin
Idaho (50%)[2]			Iowa[4]	Idaho (50%)
Texas			Minnesota (60%)	Indiana
Nebraska (50%)			Montana	Minnesota (40%)
			South Dakota[3]	Nebraska (50%)
			Kentucky[4]	
			Louisiana[4]	

Source: See Appendix 1
[1]Legislatures in these states have discretion over division of funds between education and another specific category
[2]Profits for K-12 education earmarked for capital expenditures only
[3]Added designated games with earmarked profits to relatively small expenditure (such as stadiums)
[4]Relatively small dollar amount or percentage earmarked for some specific expenditure
[5]Expenditure on other specific capped with overflow allocated to the general fund

Table II
Important legislative changes in earmarking policies

Legislative change	State	Start-up year	Year of change
General fund to education	Michigan	1972	1981
General fund to education	Illinois	1974	1985
General fund to education	Ohio	1974	1983
General fund to education	Washington	1982	2001
General fund to education	Missouri	1986	1994
General fund to education	Virginia	1988	1995
General fund to education	Texas	1992	1998
Education plus other to general fund	Montana	1987	1996
General fund to education plus other	West Virginia	1986	1990
Other to Education	Vermont	1978	1999
Other to Education plus other	Oregon	1985	1996
Other to general fund	Iowa	1985	1999

Source: See Appendix 1

Table III
Size of the 37 state lotteries in operation in 2000

	Mean	*Median*	*Minimum*	*Maximum*
State lottery revenues	$954,985,100	$475,545,000	$28,231,000 (Montana)	$3,490,861,000 (Massachusetts)
State lottery profits (revenues minus prizes and admin. costs)	$325,862,400	$157,430,000	$6,582,000 (Montana)	$1,365,100,000 (New York)
State lottery profits per capita	$58	$40	$8 (Montana)	$357 (Delaware)
State lottery profits per student	$354	$221	$42 (Montana)	$2382 (Delaware)
Prize payout ratio (total prizes/revenues)	57%	59%	11% (South Dakota)	79% (Rhode Island)
State return (profits/revenues)	33%	30%	15% (Minnesota)	83% (South Dakota)

Source: See Appendix 1. Based on author's calculations.

Table IV
The effects of earmarked lottery profits
Dependent variable: Current educational expenditures (or revenues) per enrolled student

Method: OLS with state and year fixed effects

Regression	1 Education combined model	2 Profits earmarked for capital expenditures w/ education	4 Data received from state lotteries replaced with Census Bureau data	5 New Jersey and Oregon dropped	3 Revenues as dep. var. and capital expenditures w/ education
Dep. Var. (DV) Mean of DV	Expenditures $4711	Expenditures $4711	Expenditures $4711	Expenditures $4648	Revenues $5241
Education lottery profits per student	0.79*** (0.13)	0.79*** (0.13)	0.79*** (0.13)	0.79*** (0.14)	0.85*** (0.17)
General fund lottery profits per student	0.43*** (0.09)	0.43*** (0.09)	0.46*** (0.09)	0.49*** (0.08)	0.39*** (0.11)
Other lottery profits per student	0.19 (0.15)	0.17 (0.16)	0.17 (0.15)	0.31** (0.15)	-0.05 (0.20)
Personal income per capita	0.18*** (0.01)	0.18*** (0.01)	0.18*** (0.01)	0.15*** (0.01)	0.17*** (0.01)
State (non-lottery) revenue per capita	0.20*** (0.02)	0.20*** (0.02)	0.20*** (0.02)	0.20*** (0.02)	0.14*** (0.02)
Unemployment rate	56.62*** (8.13)	56.61*** (8.13)	56.50*** (8.12)	47.66*** (7.90)	41.29*** (10.73)
Dummy variable for Republican governor	-60.32*** (20.60)	-60.55*** (20.59)	-60.60*** (20.56)	-67.77*** (20.05)	-93.91*** (27.18)
Percent of population between ages 5 and 17	-188.59*** (15.37)	-188.38*** (15.37)	-188.24*** (15.35)	-187.40*** (14.73)	-213.74*** (20.29)
Percent of population over age 65	-26.05 (21.10)	-25.46 (21.09)	-26.60 (21.06)	-54.13*** (20.22)	-56.91** (21.06)
Constant	3916.27*** (641.31)	3892.02*** (641.62)	3922.79*** (640.39)	6372.45*** (594.11)	6476.51*** (846.88)
Adjusted R^2 Observations	0.96 1250	0.96 1250	0.96 1200	0.96 1250	0.94 1250

Coefficients on state fixed effects and year fixed effects are not shown due to space considerations.
All dollar values measured in real (1996) dollars.
*10% significance level; **5% significance level; ***1% significance level

Table V

The effects of earmarked lottery profits

Dependent variable: Current educational expenditures (or revenues) per enrolled student

Method: OLS with state and year fixed effects

Regression	1 % in every year	2 % in every year lagged 1 year	3 % in year before first earmarked for education	4 % in year before with national average for ed/higher ed split	5 % in year before with national average for ed/higher ed split
Dep. Var. (DV) Mean of DV	Expenditures \$4711	Expenditures \$4711	Expenditures \$4711	Expenditures \$4711	Revenues \$5421
K-12 education lottery profits per student	0.74*** (0.14)	0.76*** (0.14)	0.71*** (0.14)	0.72*** (0.15)	0.83*** (0.15)
Other lottery profits per student	0.29*** (0.11)	0.28*** (0.09)	0.31*** (0.10)	0.31*** (0.11)	0.17 (0.14)
Personal income per capita	0.17*** (0.01)	0.18*** (0.01)	0.18*** (0.01)	0.18*** (0.01)	0.17*** (0.01)
State (non-lottery) revenue per capita	0.20*** (0.02)	0.20*** (0.02)	0.20*** (0.02)	0.20*** (0.02)	0.14*** (0.02)
Unemployment rate	56.16*** (8.15)	56.22*** (8.15)	56.16*** (8.16)	56.17*** (8.16)	40.88*** (10.77)
Dummy variable for Republican governor	-59.48*** (20.65)	-59.66*** (20.64)	-59.90*** (20.66)	-59.93*** (20.66)	-93.58*** (27.27)
Percent of population between ages 5 and 17	-189.87*** (15.40)	-189.89*** (15.40)	-190.35*** (15.40)	-190.26*** (15.41)	-216.00*** (15.41)
Percent of population over age 65	-27.29 (20.94)	-26.99 (20.94)	-27.37 (20.96)	-27.51 (20.95)	-58.16** (27.65)
Constant	3996.58*** (640.30)	3988.61*** (640.35)	4007.40*** (640.99)	4014.69*** (640.70)	6605.29*** (845.72)
Adjusted R^2	0.96	0.96	0.96	0.96	0.94
Observations	1250	1250	1250	1250	1250

Coefficients on state fixed effects and year fixed effects are not shown due to space considerations.
All dollar values measured in real (1996) dollars.
*10% significance level; **5% significance level; ***1% significance level

Table VI

Linear timing effects for lottery adoption and earmarking profits for education

Dependent variable: Current educational expenditures per enrolled student

Method: OLS with state and year fixed effects

Regression	1	2	3	4	5	6
Years	1976-2000	1970-2000	1976-2000	1976-2000	1970-2000	1976-2000
Event	Lottery	Lottery	Earmarking	Lottery	Lottery	Earmarking
Mean of DV	$4711	$4327	$4711	$4711	$4327	$4711
# years before event time trend	3.16 (3.91)	-0.69 (2.66)	3.03 (2.97)	10.81** (5.04)	3.85 (3.18)	9.34*** (3.34)
# years after event time trend	41.39*** (3.20)	37.14*** (2.56)	28.53*** (3.74)	43.75*** (3.39)	40.08*** (2.79)	34.68*** (4.02)
Event dummy				-101.61** (42.32)	-90.73*** (34.92)	-190.41*** (47.33)
Personal income per capita	0.14*** (0.01)	0.14*** (0.01)	0.18*** (0.01)	0.14*** (0.01)	0.13*** (0.01)	0.18*** (0.01)
State (non-lottery) revenue per capita	0.21*** (0.02)	0.22*** (0.01)	0.21*** (0.02)	0.21*** (0.02)	0.22*** (0.01)	0.21*** (0.02)
Unemployment rate	60.28*** (7.77)	42.40*** (6.97)	59.66*** (8.12)	57.65*** (7.83)	41.00*** (6.98)	58.47*** (8.08)
Dummy variable for Republican governor	-54.14*** (19.64)	-53.67*** (17.79)	-78.40*** (20.42)	-53.78*** (19.60)	-52.99*** (17.82)	-82.99*** (20.32)
Percent of population beween 5 and 17	-202.54*** (14.69)	-161.47*** (13.46)	-192.29*** (15.30)	-201.28*** (14.67)	-160.15*** (13.45)	-190.41*** (47.33)
Percent of population over age 65	-13.47 (20.71)	-25.20 (16.94)	-9.12 (20.86)	-18.36 (20.77)	-26.20 (16.91)	-12.00 (20.74)
Constant	4679.90*** (621.22)	4248.66*** (562.68)	3536.65*** (635.50)	4914.69*** (627.63)	4404.37*** (564.76)	3713.30*** (632.93)
Adjusted R^2	0.96	0.97	0.96	0.96	0.97	0.96
Observations	1250	1550	1250	1250	1550	1250

Coefficients on state fixed effects and year fixed effects are not shown due to space considerations.
All dollar values measured in real (1996) dollars.
*10% significance level; **5% significance level; ***1% significance level

Table VII

Non-linear timing effects for lottery adoption and earmarking profits for education

Dependent variable: Current educational expenditures per enrolled student

Method: OLS with state and year fixed effects

Regression	1	2	3	4
Years	1976-2000	1970-2000	1976-2000	1970-2000
Event	Lottery	Lottery	Earmarking	Earmarking
Mean of DV	\$4711	\$4327	\$4711	\$4327
16+ years before event	76.01 (99.58)	22.92 (53.27)	-61.59 (60.53)	-76.42 (49.54)
11-15 years before event	-14.86 (57.95)	-41.55 (45.31)	-58.64 (52.88)	-24.89 (49.46)
6-10 years before event	-70.09 (42.90)	-47.83 (40.31)	-15.30 (46.98)	-9.79 (47.18)
1-5 years before event	0	0	0	0
1-5 years after event	78.97* (40.50)	61.51* (35.90)	-31.61 (47.91)	-47.90 (48.73)
6-10 years after event	101.92** (44.72)	147.59*** (38.63)	21.31 (58.75)	92.56 (57.70)
11-15 years after event	115.59** (52.24)	166.74*** (44.65)	180.75** (71.67)	155.04*** (68.57)
16+ years after event	554.82*** (69.20)	638.52*** (57.35)	767.14*** (89.24)	670.05*** (78.41)
Other controls	*the same controls as in Table IV are included but not shown*			
Adjusted R^2	0.96	0.96	0.96	0.96
Observations	1250	1550	1250	1550

Coefficients on state fixed effects and year fixed effects are not shown due to space considerations.
All dollar values measured in real (1996) dollars.
*10% significance level; **5% significance level; ***1% significance level

Table VIII

The effects of operating a state lottery

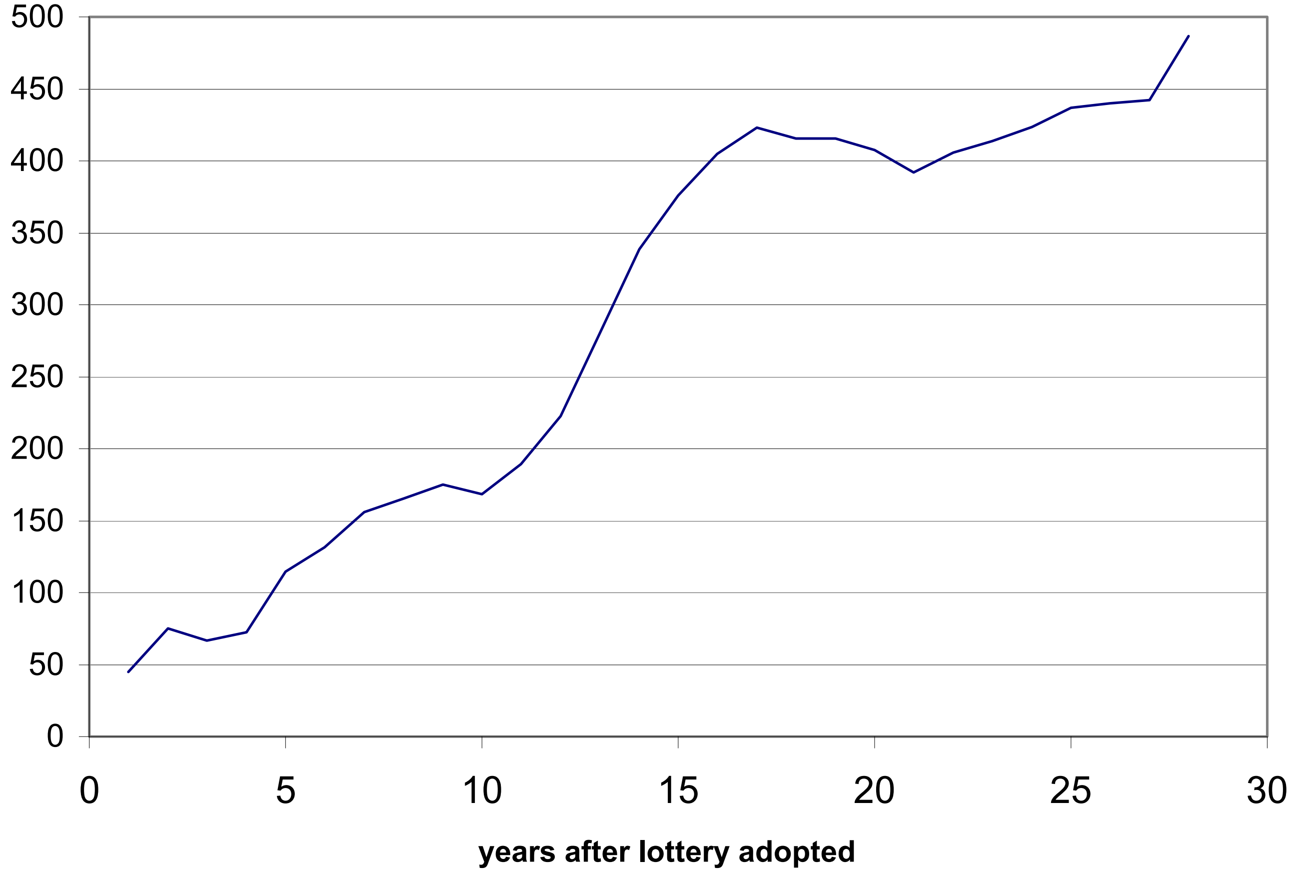
Dependent variable: Current educational expenditures per enrolled student

Method: OLS with state and year fixed effects

Regression	1 Lottery Dummy Model	2 Lottery Dummy and Lottery Profits	3 Lottery Dummy and Earmarked Lottery Profits
Mean of DV	\$4711	\$4711	\$4711
Lottery dummy	4.28 (34.89)	-39.60 (35.09)	-33.09 (35.32)
Total lottery profits per student		0.48^{***} (0.08)	
Education lottery profits per student			0.81^{***} (0.13)
General fund lottery profits per student			0.44^{***} (0.09)
Other lottery profits per student			0.23 (0.16)
Personal income per capita	0.19^{***} (0.01)	0.17^{***} (0.01)	0.17^{***} (0.01)
State (non-lottery) revenue per capita	0.21^{***} (0.02)	0.20^{***} (0.02)	0.20^{***} (0.02)
Unemployment rate	56.83^{***} (8.28)	54.75^{***} (8.21)	55.83^{***} (8.18)
Dummy variable for Republican governor	-72.51^{***} (20.91)	-60.46^{***} (20.69)	-60.47^{***} (20.60)
Percent of population between ages 5 and 17	-193.95^{***} (15.48)	-190.39^{***} (15.46)	-187.48^{***} (15.42)
Percent of population over age 65	-22.16 (21.98)	-35.05 (21.75)	-31.13^{***} (21.78)
Constant	3741.18^{***} (663.60)	4276.43^{***} (659.22)	4060.83^{***} (659.65)
Adjusted R^2	0.96	0.96	0.96
Observations	1250	1250	1250

Coefficients on state fixed effects and year fixed effects are not shown due to space considerations.
All dollar values measured in real (1996) dollars.
*10% significance level; **5% significance level; ***1% significance level

Figure I
Lottery profits per student in real (1996) dollars



Appendix I: Earmarking Laws

State:	Start date:	Use of profits:	Legislative authority:	Source of data:
New Hampshire	Mar. 1964	K-12 education.	N.H. CONST. Pt. 2, Art. 6-b; E-mails from Maura A. McCann, Director of Marketing, New Hampshire State Lottery (11/2100, 10/2/02).	U.S. Census Bureau, Governments Division, *Survey of Government Finances* 1976-2000.
New York	June 1967	K-12 education. Designated tickets in 1978 and 1979 earmarked for upkeep of athletic facilities.	N.Y. STATE FIN. LAW § 92-c (Consol. 2002); E-mail from New York Lottery (11/13/00).	Proceeds data from New York Lottery Press and Community Relations (2/12/02).
New Jersey	Dec. 1970	Education and state institutions. Institutions include heath services, human services, and military homes. Prior to FY 2001, correctional facilities also included.	N.J. STAT. ANN § 5:9-22 (West 2002); E-mails from state lottery office (11/13/00, 12/19/00); E-mail with information on institutions from Barbara Bruschi, State of New Jersey Department of Treasury, Office of Management and Budget (8/1/02).	Detailed data on appropriations in the New Jersey Budget, selected years, Barbara Bruschi, State of New Jersey Department of Treasury, Office of Management and Budget (faxed 8/1/02).
Connecticut	Feb. 1972	General fund.	CONN. GEN. STAT. § 12-812 (2001); CONN. GEN. STAT. § 12-568 (2001) (repealed 1996); E-mail from Connecticut Lottery (2/20/01).	*Survey of Government Finances.*
Massachusetts	Mar. 1972	Cities and towns; proceeds from designated games to arts.	MASS. ANN. LAWS ch. 10, § 35 (West 2002); MASS. ANN. LAWS ch. 10, § 57 (West 2002); E-mail from Lisa McDonald, Massachusetts State Lottery (11/13/00).	*Survey of Government Finances.*
Pennsylvania	Mar. 1972	Senior citizen programs.	72 PA. CODE § 3761-311 (2002); 72 PA. CODE § 3761-301 (2002).	*Survey of Government Finances.*
Michigan	Nov. 1972	K-12 education since May 1981; general fund prior.	MICH. COMP. LAWS § 432.41 (2001) *amended by* 1981 Mich. Pub. Acts 40; MICH. COMP. LAWS § 432.43 (2001) *amended by* 1981 Mich. Pub. Acts 40; E-mails from Michigan Lottery Public Relations Office (11/27/00, 12/12/00, 12/13/00); E-mail from Nancy	*Survey of Government Finances.*

			Whitmer, Reference Librarian, Library of Michigan, State Law Library (10/10/02).	
Maryland	May 1973	General fund; proceeds from designated games to stadiums since 1984.	MD. CODE ANN., STATE GOV'T § 9-120 (2001); E-mails from Maryland Lottery Public Affairs Office (11/13/00 and 12/1/00).	Data from Public Affairs Office, Maryland State Lottery (12/1/00).
Rhode Island	May 1974	General fund.	R.I. GEN. LAWS § 42-61-15 (2002).	*Survey of Government Finances.*
Maine	June 1974	General fund; proceeds from designated games to Outdoor Heritage Fund since 1996.	ME. REV. STAT. ANN. tit. 8, § 387 (West 2001); E-mail from J. Shaeffer, Maine Lottery (11/16/00).	Ticket specific data from Amanda L. Haskell, Maine Lottery (1/9/01).
Illinois	July 1974	K-12 education since 1985; general fund prior.	20 ILL. COMP. STAT. 1605/9 (2002); E-mails from Illinois State Lottery (11/13/00) and Illinois State Legislature (4/8/02).	*Survey of Government Finances.*
Ohio	Aug. 1974	Education since 1983; general fund prior.	Ohio Rev. Code Ann. § 3770.06 (Anderson 2002); E-mails from Priscilla France, Public Relations Assistant, Ohio Lottery (11/13/00) and Quan T. Kirk, Assistant Legal Counsel, Ohio Lottery Commission (2/4/02).	*Survey of Government Finances.*
Delaware	Oct. 1975	General fund.	DEL. CODE ANN. tit. 29, § 4805 (2001); E-mail from Brian Peters, Delaware Lottery (9/30/02).	*Survey of Government Finances.*
Vermont	Feb. 1978	K-12 education since July 1998; general fund for capital expenditures and debt service prior.	VT. STAT. ANN. tit. 31 § 654 (2001); E-mail from Alan Yandow, Vermont State Lottery Commission (11/13/00).	*Survey of Government Finances.*
Arizona	July 1981	Transportation, Heritage Fund, economic development, County Assistance Fund, general fund (after yearly minimum to others).	ARIZ. REV. STAT. ANN. § 5-522 (West 2001); E-mails from Miguel Ruiz, Arizona State Lottery (12/7/00).	Personal Excel file of Miguel Ruiz, Arizona State Lottery (12/7/00).
Washington	Nov. 1982	Education since 2001; general fund prior. Proceeds from designated games to sports stadiums since 1996.	WASH. REV. CODE ANN. § 67.70.042 (West 1995); WASH. REV. CODE ANN. § 67.70.042 (West 1999, 2002).	Data from *Washington State Lottery Annual Report* 1991, 1999, 2000.

Colorado	Jan. 1983	State parks (10%), conservation (40%), environment (50%). Beginning in FY 1999, environment capped at $35 million (1992 dollars) and additional goes to general fund.	COLO. REV. STAT. § 24-35-210 (2001).	*Survey of Government Finances.*
Oregon	Apr. 1985	Economic development, education (effective 1996), and at least 15% to natural resource programs (effective 1999). Proceeds from designated games go to sports programs at the post-secondary education level since FY 1990.	OR. CONST. art. XV, § 4; E-mail from Susan MacGlashan, Oregon Lottery (2/1/02, 5/28/02); E-mail from Lou Torres, Oregon Lottery (5/24/02).	Detailed proceeds data from Lou Torres, Public Affairs Office, Oregon Lottery (5/29/02); Detailed data on Oregon's budget for economic development, education, and natural resource programs from Jeramy Patton, Assistant Analyst, Budget and Management, Oregon Dept. of Administrative Services (7/12/02).
Iowa	Aug. 1985	General fund, tourism, school infrastructure and gambling treatment since 2001; general fund and 0.3% to gambling from 1999-2001; economic development, environment, natural resources, state fair, juvenile justice, and gambling treatment prior.	IOWA CODE § 99E.10 (2002).	*Survey of Government Finances.*
California	Oct. 1985	Education (distributed on a per student basis).	CAL. GOV'T CODE § 8880.4 (Deering 1998,2002); CAL. GOV'T CODE § 8880.5 (Deering 1998,2002).	Data on amounts distributed to K-12 vs. higher education from California Lottery, Public Affairs Office (12/15/00).
Missouri	Jan. 1986	Education since July 1993, general fund prior.	MO. CONST. art. III § 39(d); MO. REV. STAT. § 313.321 (2001); E-mail from Missouri Legislative Library (2/5/02).	*Survey of Government Finances*.
West Virginia	Jan. 1986	Seniors, education, state parks and tourism since July 1989; general fund prior.	W. VA. CODE § 29-22-18 (2002) (amended 1989); E-mail from West Virginia Lottery (11/13/00); E-mail from Nancy Bulla, West Virginia Lottery (7/9/02).	*Survey of Government Finances*; Detailed data on West Virginia's budget for education, senior services, and tourism from Steve Meester, Budget Analyst, West Virginia Budget Office (6/27/02).

Montana	June 1987	General fund since FY 1996; K-12 education (1990-1995), prisons (1.6% in 1992 and 9.1% not to exceed $1 million 1993-1995), and teacher retirement account for property tax purposes (1988-1989) prior.	MONT. CODE ANN. §23-7-402 (2001) (amended 1989, 1991, 1995); E-mail from Barbara Sawitzke, Montana Lottery (1/22/01).	*Survey of Government Finances.*
South Dakota	Sept. 1987	General fund; proceeds from designated games to property tax reduction since 1996 and to capital construction and human services since 1997.	S.D. Codified Laws § 42-7A-24 (Michie 2002).	Game specific proceeds data from Mary Jo Bibby, South Dakota Lottery (11/20/00).
Kansas	Nov. 1987	Transfers up to $50 million to economic development (85%) and prisons (15%); revenues above $50 million to general fund.	KAN. STAT. ANN. § 79-4801 (2001); KAN. STAT. ANN. § 79-4803 (2001); KAN. STAT. ANN. § 79-4804 (2001).	*Survey of Government Finances.*
Florida	Jan. 1988	Education.	FLA. STAT. ANN. § 24.121 (West 2001).	*Survey of Government Finances.*
Virginia	Sept. 1988	K-12 education since 1995, general fund prior.	VA. CODE ANN. § 58.1-4022 (1995, 2002); E-mail from Virginia Lottery Public Affairs (10/3/02); E-mail from Cherie Paup, Virginia Lottery (2/4/02); E-mail from Jennifer Faison, Information Officer, Virginia State Legislature (2/4/02).	*Survey of Government Finances.*
Wisconsin	Sept. 1988	Property tax relief since June 1991; prop. tax relief, farmland tax credits, and district attorney salaries prior.	WIS. STAT. § 25.75 (2001) (amended 1991); E-mails from Dottie M. Mosely, Wisconsin State Lottery (11/15/00, 12/15/00, 12/18/00).	*Survey of Government Finances.*
Kentucky	Apr. 1989	General fund and $3 million to literacy development, $7 million to education scholarships and $15 million to tuition grants in FY 2000; general fund and $14 million to tuition grants in FY 1999; general fund prior.	KY. REV. STAT. ANN. § 154A.130 (Michie 2001).	*Survey of Government Finances.*

Idaho	July 1989	School district buildings (50%) and state buildings (50%).	IDAHO CODE § 67-7434 (2002); E-mail re: information on permanent building fund from Amy Harwood, Idaho Public Information Specialist (11/21/00, 11/22/00).	*Survey of Government Finances.*
Indiana	Oct. 1989	Teacher retirement fund, build Indiana fund (designed to keep property taxes low), license plate tax relief, pension relief.	IND. CODE. ANN. § 4-30-16-3 (Michie 2002); Pension Relief information from Kevin Carey, Assistant Budget Director, Indiana State Budget Agency (12/13/00); Build Indiana Fund information from Alison Buckner, Communications Director, Treasurer of State's Office (2/6/02).	*Survey of Government Finances.*
Minnesota	Apr. 1990	General fund (60%) and environment (40%) since FY 1992; natural resources (40%), infrastructure (35%), and economic development (25%) in 1991; natural resources (50%) and econ. development (50%) in 1990.	MINN. STAT. § 349A.10 (2001); Minnesota State Lottery Milestones *available at* http://www.lottery.state.mn.us /mstones.html (last visited 10/3/02).	*Survey of Government Finances.*
Louisiana	Sept. 1991	General fund and $500,000 to compulsive gambling fund since 1998; general fund and $150,000 to compulsive gambling prior.	LA. ADMIN. CODE tit. 47 § 9092 (1997, 1998, 2002).	*Survey of Government Finances.*
Texas	May 1992	K-12 education since September 1997; general fund prior.	TEX. GOV'T CODE ANN. § 466.355 (West 1997, 2002); E-mail from Kathy Reyes, Open Records Coordinator, Texas Lottery Commission (5/28/02).	Kathy Reyes, Open Records Coordinator, Texas Lottery Commission (5/28/02).
Georgia	June 1993	Capital projects for education and post-secondary education only since FY 1999; unrestricted education prior.	GA. CONST. art. I, § 2, para. 8, *amended by* 1998 Ga. Laws 1686; E-mail from Georgia Lottery Corporation (12/21/00).	*Survey of Government Finances.*

Nebraska	Sept. 1993	Environment (49.5%), impulsive gamblers fund (1%), K-12 education ($1.5 million), and general fund (remaining balance) since 2002; environment and landfill closure (49.5%), K-12 education (49.5%), and impulsive gamblers fund (1% plus first $500,000) prior.	NEB. REV. STAT. ANN. § 9-812 (Michie 1997, 2000, 2002).	*Survey of Government Finances.*
New Mexico	Apr. 1996	Tuition assistance for post-secondary education since June 2001; capital outlay for public schools (50%) and tuition assistance for higher education (50%) in 2000; 60%/40% split prior.	N.M. STAT. ANN. § 6-24-24 (Michie 2002); E-mail from Lance Ross, Communications Manager, New Mexico Lottery Authority (11/21/00).	*Survey of Government Finances.*
South Carolina	Jan. 2002	Education.	S.C. CODE ANN. § 59-150-350 (Law. Co-op 2001); E-mail from Brian Rish, South Carolina Lottery (4/25/02).	Lottery too recent for current study.