**Lotteries, the American States and the Federal Government: A Formula For Perpetual Success or Inevitable Destruction in Education Policy?**

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**ABSTRACT**
Lotteries have gained immense popularity for enhancing fiscal resources for social intervention programs such as education. However, the fiscal significance of lotteries for accomplishing educational equity across the American states has been empirically challenged. Much of the literature on lotteries suggests that financial reliance on state operated lotteries for educational embellishment may actually hinder the process of educational egalitarianism. Through pooled time series regression analysis this project intends to demonstrate that states earmarking lottery dollars for education are receiving fewer fiscal allocations for education from the federal government than states opting to by-pass adopting a lottery for education. The data for this project will include fourteen variables over a twenty-year period covering all fifty states. Due to the relatively small amount of federal spending on education, (9 percent or $38 billion) critics may argue that this project is limited because it fails to offer any real solutions for eradicating the fiscal burden of financing education across the American states.

**INTRODUCTION**

Education reformers have attempted to create a more equitable school system in America by shifting the fiscal responsibility from the local level to state and federal governments.
However, immense opposition towards federal involvement of education emerged as a result of these attempts. One of the most recent events pitted the Reagan administration against the Department of Education (Robertson and Judd, 1989).

Shifting the fiscal burden of education to the states (devolution) was a major element of Reagan’s presidential platform. The major problem with this plan was the sudden burden placed on state governments without adequate resources to cover these new educational expenses. Reagan decreased federal spending on education leaving the American states in a position to fund social programs such as education the best way possible (Wong, 1989). This is when the lottery as a revenue generating device began to reappear (Miller and Pierce, 1997). The usage of lotteries as a revenue-generating device for governmental entities in the American states has recently witnessed an explosion in popularity (Spindler, 1995). Lotteries have proven to be appealing mechanisms for producing revenue because they are considered a voluntary tax: individuals pay the tax because they want to instead of having to pay the tax because the government demands it. The voluntary aspects of lotteries are extremely appealing to governors and legislators because resources for social intervention programs are generated without unpopular tax increases (Rubin, 1993). Earmarking lottery dollars for education is just one scheme political and administrative functionaries have chosen to strengthen the allure of lotteries (Rodgers and Stuart, 1995). Numerous empirical studies have demonstrated the inadequacy of lotteries as a revenue generating mechanism for education. For instance, high administrative costs hinder lottery proceeds for education, and fluctuations in lottery play from year to year impede its reliability (Mikesell, 1989). This project intends to add to the literature on the
inadequacies of lotteries by illustrating that states with lotteries receive less federal funding for education, compared to states without lotteries.

Why is this research important? Lotteries are by far the most popular form of legalized gambling. However, some states just cannot have a lottery, such as Tennessee. Tennessee’s constitution specifically outlaws the adoption of a state lottery. Therefore, many states are adopting alternative means of gambling such a casino gambling in Mississippi. Mississippi has toyed with the idea of spending its casino profits for education. This research project will offer empirical evidence that states with lotteries will receive less federal spending on education, assisting in explaining the decrease in education spending over time.

LITERATURE REVIEW

Federal Spending On Education

The original Federal Department of Education (however, not an independent cabinet until President Carter) was created in 1867 to collect information on schools and teaching that would assist the states in establishing and efficient and effective school system. However, through several amendments and acts the Department of Education’s administrative assistance powers has increased tremendously. The passage of the Second Morrill Act in 1890 gave the Office of Education the responsibility for administering support for land-grant colleges and universities. In 1919 the Smith-Hughes Act and the 1946 George-Barden Act gave the Office of Education administrative control over vocational education focusing strictly on agriculture, industry, and home economics for America’s high school students. Following World War II, the “GI” bill authorized postsecondary education assistance that would eventually lead to almost 8 million veterans receiving college training. The Cold War is responsible for establishing the first

The Elementary and Secondary Education Act (ESEA) of 1965 established the single largest federal aid to education program in American history. Poverty-stricken schools were the principle beneficiaries of ESEA, receiving instructional materials and educational research training to make a better quality educational environment in their particular area for educational improvement. ESEA provided federal assistance to local educational agencies with a large conglomerate of low-income families (Dye, 1992).

Early in the Reagan administration, the Education Consolidation and Improvement Act of 1981 consolidated ESEA and other federal educational grant programs into single block grants for states and communities. The purpose was to give states and local school districts greater discretion over the use of federal educational aid. President Reagan tried throughout his administration to limit the federal government's role in education. At one point he even proposed abolishing the Department of Education (DOE) to emphasize that education should be the responsibility of state and local governments and not the federal government. But educational interests were too well organized in Congress to permit the demise of DOE. Reagan's active secretary of education, William Bennett believed that the federal government's role should be one of advising the states and stimulating and encouraging educational reform. The result was a gradual decline in the 1980s of the federal percentage of total educational
funding in the nation (Dye, 1992). The Department of Education currently spends roughly $38 billion a year on primary, secondary, and postsecondary education, roughly 2½ percent of the federal budget (Department of Education, 2000).

*Gross Domestic Product*

According to the Department of Education, the primary indicator that determines the amount of revenue spent by the federal government on education is the gross domestic product (GDP). The GDP of the U.S. is the amount of gross revenue that the U.S. receives from all its economic activities. Excluded from this figure are the corporate holdings outside the country that generate revenue. This figure is known as the Gross National Product (GNP). Each year a percentage of the GDP is used to fund social intervention programs such as education (Peters, 1996). Currently, the federal education expense is two percent of our GDP, or 38 billion dollars (U.S. Department of Education, 2000).

*Presidential and Congressional Ideology*

The Reagan legacy serves as a prime example of the ideological preference of the president playing a major role in the amount of revenue the federal government spends on education. Historically, Democratic presidents endorsed spending more on education than Republican presidents. Democratic ideology advocates egalitarian tenets that promote equal education to all Americans because it is the one social intervention program that possesses the potential for allowing individuals to direct their future. With the Democratic Party controlling Congress during most of the Reagan presidency, (only exception was in 1982 when the Republicans controlled the Senate) the prevalence of ideological factors is evident as well. Despite copious attempts by the Reagan administration to cut federal spending on education,
Congress restored most of the cuts in federal school aid recommended by President Reagan, but the president succeeded in limiting the growth of federal educational spending. This era in America politics serves as a prime example of ideological preferences of a president (Republican) against the opposing parties (Democratic) control over Congress (Peters, 1996).

Election Year

As a result of these ideological preferences Democratic incumbents during an election year tend to increase spending on social intervention programs such as education, compared to Republican incumbents. The literature suggests that during an election year the federal government increases its spending for social intervention programs such as education. Therefore, during an election year it is believed that Democratic presidential and congressional incumbents spend more on education compared to Republican incumbents.

State Spending On Education

Despite the growth of Federal involvement in education policy since the development of the Office of Education, education has primarily been a state and local responsibility in the United States (U.S. Department of Education, 2000). Historically, funding for education in the American states relied solely on property taxes administered by local governments. This mechanism, however, resulted in disproportionately funded school districts. Zoning laws among local governments created a hierarchical structure of private property. On one side of town land was valued much higher than its counter part. As a result the wealthy in society conjugated towards the section of town that was more affluent, while the less affluent could only afford to live in the poor section of town. When American society embraced the concept of educating its
citizenry, public local school districts began emerging across the nation. In order to pay for this social expense the property tax was adopted by local governments. With property taxes being higher for the more affluent in society because of zoning laws, the schools in these districts received more funding for education. In turn, the more affluent schools were able to create a learning environment that was much more advanced than its counterpart across town. Evidence of the inadequacies of generating revenue through property taxes can be seen even today in the disparity among America’s school districts (Burns, 1994). For example, in the 1995-96 school year public schools spent, on average, $6,855 per pupil (in constant 1998 dollars). In the 1994-95 school year, relatively high wealth school districts (those with a median household income of $35,000 or more) spent more per pupil than school districts with less wealth. The distribution of expenditures across functional areas was slightly different according to the wealth of school districts. For example, wealthy school districts spent slightly less proportionally than poorer school districts (those with a median household of less than $20,000) (Department of Education, 2000).

Education, according to the National Center for Education Statistics, accounts for the single largest expense in most state and local government operating budgets. For instance, in the educational year of 1992-93, expenditures were estimated at more than $375 billion for all public schools and colleges. Generally, this money comes from a combination of local and state taxes, federal grants-in-aid programs; but the balance between these sources has shifted considerably over the years. Local tax revenues consist almost entirely of property taxes and sales taxes; however, despite the regressive effects of such taxes, these devices share in revenue generating popularity (Department of Education, 1998).
Due to educational incongruity, the prevailing funding mechanism of local taxation for generating educational revenue began receiving immense criticism in the early 1970s. During the 1970s and 1980s, state governments began assuming more of a role in funding educational programs. Wong notes that the average state’s share of total educational funding increased from 41 percent in 1968 to about 50 percent in 1986. With this increase in state funding for education came a decrease in local funding of about 50 percent in the 1960s to 43 percent in the 1980s. Wong stipulates that elementary and secondary education expenses now consume nearly a quarter of the average state budget and that post-secondary schools account for another 12 percent.

*Gross State Product*

The characterization of school financing as a conflict between local control ideals and equal opportunity correctly summarizes the traditional discourse revolving around this social intervention issue (Robertson and Judd, 1989). Within many states a wide range of disparity between school districts exists because of taxable wealth (gross state product) and tax rates. Basically, some states possess capacious gross state products while other states exhibit feeble levels of wealth. Further exacerbation of wealth disparity between school districts exists because of the imbalance in the distribution of commercial, industrial, utility, public, tax-free, and residential property, as well as, an uneven distribution of school-aged children. Consequently, those children living in poor neighborhoods receive a lower standard of education than children from wealthier communities (Peters, 1996). In turn, children from less affluent communities enter the job market or post-secondary educational institutions and find themselves delinquent in the necessary skills to adequately compete. Thus, more affluent individuals receive better jobs
and educations compared to individuals who originate in less affluent households (Grissmer, Flanagan, Williamson, 1997).

**Political Culture**

One explanation for the educational spending disparity among the American states is political culture (Elazar, 1984). Elazar believes that the United States shares a general political culture that is, in turn, a synthesis of three major subcultures. The values of each culture were brought to this country by the early settlers and spread unevenly across the country as various ethnic and religious groups moved westward. The three major categories Elazar identifies are: individualistic, moralistic, and traditionalistic. The individualistic subculture emphasizes the marketplace. Government’s role in society is limited in order to let market mechanisms prosper. In contrast to the individualistic view is the moralistic subculture, which believes the government’s role, is to advance the public interest. People who settled the southern region of this country brought the traditionalistic culture with them. They sought economic opportunities through a plantation-centered agricultural system. They believed government’s role is limited to maintaining the existing social order, with little participation in governmental affairs. Since the Constitution of the United States makes no provisions for supporting public education, many states define education as a privilege instead of a fundamental right. This view of education is a leading value in traditionalistic and individualistic states. Hence, according to Elazar’s theory individualistic and traditionalistic states tend to spend less on education, compared to moralistic states. This indirectly effects federal spending on education because one of the primary indicators in the formula used by the federal government to determine spending for states is the amount of money each state spends on education. Therefore, states spending less on education
will receive less federal resources for education, compared to states that spend more on education.

*Other Social Indicators: Per Capita Income, Population, Number of Students*

In determining the amount for federal spending of education for each state, federal administrators use the following formula or index: \( \text{Income of taxpayers} + \frac{\text{population of each state}}{\text{number of students}} \). The index is the number of dollars of revenue raised for each student from each $100 of income received by each member of the population. In 1996, the national effort for elementary and secondary education was 23.5, a slight decrease of 3.2 in 1994. Federal spending per pupil was 20.6 in 1996, 10.7 points below its benchmark of 31.3 in 1966. However, according to the Department of Education, federal education spending per student has been relatively stable since 1970, except for a drop in the early 1980s. After remaining relatively stable during the 1980s, elementary and secondary public education revenue as a percentage of Gross Domestic Product (GDP), rose between 1988 and 1992, but did not rebound to the level of the early to mid-1970s. Higher education spending as a percentage of GDP has remained about 1 percent since 1970 (U.S. Department of Education, 2000).

Despite these virtuous intentions of federal and state public educational administrators, educational expenditures from the federal government vary quite dramatically from year to year leaving states with the problem of adequately funding education (Bosner, McGregor, and Oster, 1996). With America’s emergence into a global economy, it is perilous for the United States to establish an education system second to none. In order to achieve this goal adequate financing mechanisms must be in place, because states are left to use their creativity to create enough
revenue to pay for their largest policy expense, education due to the unpopularity of federal involvement in education (Lewis and Maruna, 1996).

Lotteries

A recent phenomenon receiving immense popularity for generating revenue to cover educational expenses is the lottery. The allure of lotteries and other forms of gambling as a source of revenue enhancement for state and local governments ascribes amply to the continued emergence of legalized gambling over the past two decades. Currently, thirty-seven states and the District of Columbia operate lotteries, while other states debate their legalization. Legalized gambling accounts for one of the fastest growing industries in the United States. From 1982 to 1990, expenditures on legalized gaming increased at almost two times the rate of income; and by 1992, revenues from state sanctioned gambling operations averaged approximately $30 billion a year (Gross, 1998).
A lottery is a game of chance in which individuals have an equal opportunity of winning prizes. It is defined as a form of gambling in which chances to share in a distribution of prizes are sold (Mikesell and Zorn, 1986). For centuries lotteries have provided fun and entertainment. The first state-organized lottery began in Italy in 1530. England soon adopted the idea and, during the early 1600s, the first settlers imported the lottery idea to America. In America, the first lottery was held in Jamestown in 1612 and provided half the budget for the town’s operations. George Washington used a lottery to assist in the funding of the continental army, and Thomas Jefferson used a lottery to fund public projects. Prior to taxation, lotteries were especially popular in the South because the proceeds were used to fund the construction of bridges, toll roads and schools. From 1790 until the Civil War, lottery proceeds funded the construction of 300 schools, 200 churches and 50 colleges, including Harvard, Yale and Princeton (Department of Audits and Accounts, State of Georgia, 1998).

The first modern state-operated lottery was authorized in 1964 in New Hampshire. The proceeds were used to support education. Today, lotteries are legal in 37 states, plus the District of Columbia, and revenues fund a variety of initiatives, including education, transportation, prison construction, economic development, environment and natural resources programs, and senior citizen centers. The U.S. still remains the leader in public organized lotteries, but the uses of such social mechanisms are becoming quite popular throughout the world. Their spread can be attributed to the fact that they have become a popular leisure activity and have provided crucial funding for governments and public causes. Worldwide lotteries extend over the continents of Europe, Asia, Australia, Africa and are also in Canada and Latin America (Department of Audits and Accounts, State of Georgia, 1998).
Theoretically, legalized gambling intends to raise revenues without increasing the tax burdens of the lower class (Mikesell, 1989). The utilization of gambling in the United States for raising revenues to pay for the colonial Army began as early as the 1700s (Rodgers and Stuart, 1995). During the next two centuries, various forms of gambling were inscribed to finance road repairs, elevate revenues for universities and colleges, while insuring the availability of expenditures for other social intervention programs. However, corruption emerged as an unwanted side effect of sanctioned gambling, and in 1893 the Federal Government prohibited all lottery sales (Geary 1997). New Hampshire was the first state to reinstate the lottery in 1963, and in 1988, only Nevada and New Jersey operated legal casino gambling. Presently, forty-two states engage in some form of legalized gambling, while only Hawaii and Utah forbid wagering entirely (Gross, 1998). Numerous state and city political leaders as panaceas for ailing local economies promote gambling enterprises of various kinds. The prospect of new jobs for workers and revenues supplementing state and local budgets encourage numerous public officials to join forces with gambling developers for actively promoting the expansion of the industry (Livernois, 1987).

In order to sell the idea of lotteries to the American voters, many political functionaries have sold the issue as a mechanism for enhancing elementary, secondary and postsecondary education. Barry (1995) postulates that lottery profits in Georgia in 1995 yielded $85 million in scholarships which allowed more than 100,000 Georgia high school graduates to receive post secondary education. Also, $157 million allowed 48,000 four year old’s to attend pre-kindergarten. In 1995, other beneficiaries of the Georgia lottery included public schools, which purchased computers, satellite dishes, and media technology and the state university system,
which obtained $98.7 million in computer equipment. In 1993, the lottery became a long-term solution to Georgia’s decrepitated educational system, and the program has contributed significantly to Georgia’s educational system since its inception. Profits from the lottery support the Help Outstanding Pupils Educationally (HOPE) Scholarship Fund, which allows students who maintain a B average in high school to receive free tuition at instate colleges and universities. This scholarship fund improved the standards within the Georgia university system since fewer students go out of state to college, and as a result, Georgia Tech’s SAT average score is one of the highest in the nation among public universities.

Florida was the first southern state to pass the lottery in 1986. Over a ten-year period, the lottery earned more than $7.8 billion for education (N.E.A., 1997). Florida law requires that $.38 of each $1.00 raised by the lottery be directed into the state’s Educational Enhancement Trust Fund. These funds are distributed to the state’s 67 public school districts, 28 community colleges, and nine universities. Preschool programs, minority teacher scholarship programs, the Bright Futures College Scholarship Program, determined by each school district’s, community college, and state university symbolize the use of lottery profits. The Bright Futures College Scholarship Program allows Florida high school graduates demonstrating a GPA of at least 3.5 in a college preparatory program and a score of 970 on the SAT or 20 on the ACT or a passing score on the Florida College Placement Test to receive full tuition for attending instate colleges, universities, or vocational programs (N.E.A., 1997). Students, who meet the same requirements, except that their GPA is 3.0, receive 75% tuition from the state of Florida.

The implementation of a college scholarship program, similar to Georgia’s and Florida’s, recently received attention in Kentucky. In fiscal year 1999, the Kentucky Educational
Excellence Scholarships (KEES) began giving students who stay in Kentucky to attend a college, university, or other approved post secondary educational system tuition vouchers. Also, Kentucky plans to award need based scholarships financed by lottery profits. Current beneficiaries of FY 1998 profits for the Kentucky lottery include Kentucky Vietnam Veterans who received a one-time bonus of $32 million, the State’s educational system, which received $214 million, and the State’s General Fund, which obtained the remainder of more than $850 million (Rodgers and Stuart, 1995).

While lotteries are touted by many as a means of increasing funds for needy state programs, opponents contend that lotteries are not the panaceas that policy makers and voters raved about. Miller and Pierce (1997) examined the financial aspects of education lotteries short-term and long-term effects. They found that states that adopted lotteries increased spending on education per capita during the early years of the lottery, but as time passed these same states witnessed an overall decrease in spending for education. In turn, through pooled time series analysis, the authors were able to determine that states without lotteries actually increased their spending on education over time. Four major problems permeate the literature on why lotteries, as a source for generating revenue is a “fiscal hoax. (p.34).” They are: 1) lottery proceeds decline over time; 2) lottery dollars are actually shifted to other programs (fungibility); 3) lottery revenues are used to finance a tax cut; 4) and finally states with lotteries receive less federal funding for education compared to states without lotteries.

In the initial inception of lotteries into a state, the mechanism receives intense play by individuals trying to “get rich quick” (Mikesell and Zorn, 1986: 312) Therefore, during the infancy years of the lottery in a particular state, especially those states with lotteries, that are
surrounded by states without lotteries, (e.g., Georgia is surrounded by Tennessee, Alabama and South Carolina all of which have rejected the inception of a lottery) the amount of players is quite high. However, as the newness of the lottery wears thin the mechanism receives less and less play, especially if a bordering state adopts a lottery or another form of gambling such as casinos. If states earmark lotteries dollars to pay for a large portion of their education expense, based off prior figures, and the declining of lottery proceeds because of lack of play, the educational expenses of a state may not be covered (Mikesell, 1989). Bracy (1995) points out that on the average lotteries account for approximately 3.8 percent of a state’s education budget even though the general public is lead to believe that schools are receiving more money and that the lottery provides a large portion of their needed funds. Furthermore is the fact that all lotteries tend to decline in revenue production for public programs over time.

The second major problem with lotteries funding education is the idea of fungibility. Spindler (1995) reinforces the notion of fungibility in reference to lottery dollars for education. Spindler examines the lotteries of New York, New Hampshire, Ohio, Michigan, California, and Montana to determine their impact on educational revenue enhancement of public education expenditures. Through ARIMA time-series modeling, the author successfully supports the notion that lottery revenues are fungible. He attributes this fungibility to the “politics of the budgetary process” because education expenditures are highly visible to the public, and are plagued with fiscal and political restraints (p. 60). Spindler contends that in states where lottery revenues are earmarked for education, revenues actually substitute for general fund expenditures. Hence, Spindler concludes by postulating that state lotteries are robbing “Peter to pay Paul” (p.61). Fields (1996) supports Spindler’s notion and contends that the failure of Florida’s lottery
in meeting everyone’s expectations of success expounds on the limitations of this revenue enhancing mechanism. He points out that even though Florida’s educational system has received billions of dollars from lottery proceeds, the state legislature has taken non-lottery monies previously designated for education for the funding of other state commitments. Public education’s share of the state budget in Florida has decreased more than 5 percent over the past decade since the lottery began in 1986 (NEA, 1997). Even though revenues from lottery sales were intended to enhance the state’s educational system, the legislature was not legally bound to boost education with these profits. As a result, the earmarking of revenues from lotteries to replace regular, budgeted educational funds instead of enhancing education depicts Florida’s education policy.

A third major problem with lotteries is when the proceeds are used to finance a tax cut. Lotteries have proven to be appealing mechanisms for producing revenue because they are considered a voluntary tax: individuals pay the tax because they want to instead of having to pay the tax. The voluntary aspects of lotteries are extremely appealing to governors and legislators because resources for social intervention programs are generated without unpopular tax increases, and in some cases tax cuts occur because a surplus of revenue exists from the lottery (Rubin, 1993). This is quite appealing to governors and legislators in their reelection bids for office. Rodgers and Stuart (1995) stipulate that “the revival of lotteries,” despite immoral concerns and “negative distributional effects,” has occurred because of the belief that lotteries, instead of other tax instruments, raise additional revenue by generating smaller efficiency losses than other taxes; therefore, lotteries are less painful to voters (p. 244). In turn political leaders will endorse tax cuts and replace the lost revenue with lottery dollars. Tax cuts are highly
favorable political platforms used by incumbents for being reelected. Unfortunately, many times social intervention programs such as education will be the first to suffer so politically ambitious individuals can maintain their tenure in office (Jones and Amalfitano, 1994).

Why are these findings so dramatic? Many southern states such as Mississippi have been debating whether or not to earmark their gaming dollars for education. If Mississippi or another state were to adopt a similar mechanism for covering the high cost of education, they too may also witness budgetary discrimination from the federal government.

**THEORY**

In theory, several lotteries across the American states have witnessed popularity for enhancing spending on primary, secondary, and post-secondary education in order for states to pay its largest expense. With education policy strictly being an issue of primary concern for states, the federal government has played a limited role in this policy issue. One reason for limited federal involvement in education is ideological preferences among political and appointed functionaries. For instance, Republican leaders, such as president Reagan, endorsed reducing substantially the amount of spending to the states for education. Countering Reagan’s education plans were the U.S. Congress, which reinstated most of the budget cuts performed by the administration. The 1980s were a prime example of a Republican president fighting for his ideological preferences against a democratically controlled Congress.

Another major factor in determining the amount of spending states receive for education is the Gross Domestic Product (GDP). The Gross Domestic Product is the amount of total earnings that the United States as a whole generates each year. Therefore, the higher the GDP the more money that states will receive from the federal government. Other indicators used by
the federal government for determining the amount of spending each state receives for education is Gross State Product (GSP), number of students in elementary, secondary and post-secondary education, and the population of each state.

Traditionally, the financing of education in the states has been a function performed by state and local governmental entities. One of the most important indicators of state spending on education is the Gross State Product (GSP). This is the total earnings each state in the Union generates each year. States with a higher GSP tend to spend more on education compared to states with lower levels of GSP. Additionally, states with larger numbers of students and populations tend to receive more federal dollars for education than states with fewer numbers of students and smaller populations.

One explanation for these financing disparities among states is political culture. Elazar stipulates that three subcultures exist across the nation that defines the states. They are: traditionalistic, individualistic, and moralistic. Elazar contends that traditionalistic states and individualistic states spend less on education because they view education as primarily a duty of the states and not the federal government. In turn, since total spending on education is a major indicator of federal spending on education, traditional and individualistic states tend to receive less federal spending on education compared to moralistic states.

The lottery is a mechanism being employed by many states as a device for generating revenue for education. One of the main reasons this mechanism is so popular today is that states operate lotteries and many of these states earmark all or a portion of lottery proceeds to education. This reinforces the historical position that education should be controlled by the states. Unfortunately, empirical evidence demonstrates that lotteries insignificantly affect the
amount of revenue generated to cover the education expense. Studies have shown that states adopting lotteries have witnessed a decrease in educational spending over time. Several reasons account for this decrease. For example, the decline in lottery sales over time, fungibility of lottery dollars, and the use of lottery dollars to fund tax cuts. However, no literature exists dealing with the decline of federal spending on education for states with lotteries. Therefore, the purpose of this research project is to empirically test this social phenomenon. One reason this may be occurring is the misperception of the significance of financing education with lottery dollars by federal and state political and appointed functionaries. For instance, federal administrators, in determining the amount of fiscal allocations for education to states, may view states with lotteries as capable of financing their own education systems without their assistance. With the controversial issue of federal involvement in education, less federal involvement in education is welcomed. Therefore, states with lotteries receive less federal spending, as the lottery grows older. Furthermore, as previously mentioned, by Miller and Pierce (1997) state spending on education has decreased over time for states with lotteries. They attribute this decrease to a decline in lottery sales over time, the fungibility of lottery dollars, and the use of lottery dollars to fund tax cuts may also prohibit the amount of spending on education by the states. This research project intends to add to the literature by arguing that a decrease in federal spending to states with lotteries is also another explanation as to why spending on education has decreased for states with lotteries.

Why is this research important? Lotteries are by far the most popular form of legalized gambling. However, some states just cannot have a lottery such as Tennessee. Tennessee’s constitution specifically outlaws the adoption of a state lottery. Therefore, many states are
adopting alternative means of gambling such as a casino gambling in Mississippi. Mississippi has toyed with the idea of spending its casino profits for education. This research project will offer empirical evidence that states with lotteries will receive less federal spending on education, assisting in explaining the decrease in education spending over time.

**HYPOTHESES**

\( H_1 \): Democratic presidents tend to spend more on education compared to Republican presidents.
\( H_2 \): Democratic Congressmen tend to spend more on education compared to Republican Congressmen.
\( H_3 \): The amount of GDP per year determines the amount of federal spending for education.
\( H_4 \): The more affluent the state the more fiscal allocations for education they will receive from the federal government, compared to less affluent states.
\( H_5 \): States spending more on education will receive more fiscal allocations for education from the federal government, compared to states spending less on education.
\( H_6 \): States with larger numbers of students receive more federal dollars for education compared to states with less students.
\( H_7 \): States with higher levels of population receive more federal funding for education compared to states with lower population levels.
\( H_8 \): Individualistic states spend less on education than traditionalistic states and in turn receive less federal funding for education.
\( H_9 \): Individualistic states spend less on education than moralistic states and in turn receive less federal funding for education.
\( H_{10} \): Traditionalistic states spend less on education than moralistic states and in turn receive less federal funding for education.
\( H_{11} \): States operating lotteries receive less federal funding for education compared to states without a lottery.
\( H_{12} \): States with lotteries receive less federal spending per pupil than states without lotteries.
\( H_{13} \): States spending higher amounts of revenue per student for education receive more federal spending from the federal government.
\( H_{14} \): States with higher levels of per capita income receive more federal spending for education compared to states with low levels of per capita income.
\( H_{15} \): During a presidential election year the federal government spends more on education than non-election years.

**DATA**

*Conceptual Definitions*

The conceptualizations of the variables used in this research project are as follows:

**Federal Spending on Education by State (dependent variable)** - the amount of spending the federal government spends each year on education.

**Presidential Ideology** - the political party affiliation of the president.

**Congressional Ideology** - the political party affiliation of the members of Congress.

**Gross Domestic Product (GDP)** - the amount of earnings the United States received as a whole.

**Gross State Product (GSP)** - the amount of earnings each individual state received as a whole.

**Per Capita Income** – the average income of each person in each state.
**State Spending on education** - the amount of spending on education by each state.

**State Spending Per Pupil** – the amount of revenue spent on education per pupil each year.

**Number of students** - the number of elementary, secondary, and post-secondary students in each state.

**Population** - the number of residents of each state.

**Political culture** - the political culture of each state defined in Elazar’s terms as traditionalistic, individualistic, and moralistic.

**Lottery Proceeds** - the amount of revenue states with lotteries earmark for education.

**Lottery** – is the dummy variable to assist in explaining some of the unexplained variance.

**Election** – Presidential election year.

**Operationalization**

The data for these variables will be gathered from the archival files of the Bureau of the Census, Bureau of Economic Analysis, and the Department of Education. Two models will be tested for empirical results. These models include 1) aggregate data and 2) the amount of spending change from year to year over time.

Deduced from the theoretical constructs previously stated were 13 exogenous variables predicting the single endogenous variable of spending on public education by states in the southern geographical region of the U.S. The operationalization of each variable will occur as following: Federal spending on education will be gathered from the Census Bureau and coded as aggregate date, spending change and percentage change in spending over time. Presidential ideology will be gathered from the Census bureau and coded 0 for Democratic presidents and 1 for republican presidents. Congressional ideology will be gathered from the Census Bureau and coded 0 for Democratic control of Congress or 1 for Republican control of Congress. Gross Domestic Product (GDP) will be gathered from the Bureau of Economic Analysis and coded as aggregate spending change and percentage change over time. Gross State Product (GSP) will be gathered from the Bureau of Economic Analysis and coded as aggregate spending, spending change and percentage change over time. The number of students will be gathered from the
Census bureau. The population of each state will be gathered from the Census Bureau. Political culture of each state will be coded according to Elazar’s measures: 1) individualistic, 2) moralistic, and 3) traditionalistic. Lottery proceeds will be gathered from the Census Bureau and coded as aggregate spending, spending change and percentage change over time. The dummy variable (Lottery) will be coded 0 for states with a lottery and 1 for states without a lottery. The variable year is a counter variable used to identify the year those states with lotteries adopted this revenue-generating device.

**METHODODOLOGY**

Some states are just more likely to adopt a lottery for funding education compared to other states. For this reason the lottery affects the budgetary allocations each year of those states with a lottery. This research project uses “pooled time series cross-sectional data analysis” as the measuring device for the previously stated hypotheses (Beck and Katz, 1996: 1). One of the most promising advantages of using pooled time series cross sectional analysis is its ability in offering explanations of the past, while simultaneously predicting the future behavior of exogenous variables in relation to endogenous variables. Pooled time series cross sectional analysis allows the researcher to focus on more than one case in predicting social phenomenon, whereas simple time series analysis strictly deals with specific cases at different time points causing data management complications, while also being costly and time consuming. Furthermore, ARIMA time-series methods of data analysis place an overwhelming emphasis on the burden of controlling for autocorrelation and heteroskedasticity to ensure data dependability. Autocorrelation and heteroskedasticity do pose threats to data analysis, however, according to Beck and Katz (1996) they are more of a “nuisance” than a real threat (p. 3). ARIMA models of
time-series analysis focus more on controlling autocorrelation and heteroskedasticity than discovering and explaining social phenomenon. The dimensions of the pooled time series used in this study are 50 states and 20 points in time (years).

Furthermore, accurate findings on the effects of lotteries over a long period of time may fail to represent reality when multivariate regression models of data analysis are used to explain revenue development. Spindler noted that multivariate regression for data analysis in revenue enhancement of lotteries over time possesses problems of high levels of multicollinearity between variables and collinearity in the time series (Spindler, 1995). Therefore, pooled time series cross sectional data analysis is called upon for predicting if the lottery’s evolution through time has contributed to the enhancement of educational resources among the southern states.

Despite the numerous advantages of pooled time series analysis using N (number of cases) at T (time points) for predicting the future of a particular social intervention program, a number of methodological disadvantages limit the usage of this data measuring device. The basic assumptions underlying traditional Ordinary Least Squares (OLS) regressions are violated in a pooled model, and such departures may exhibit severe consequences for the reliability of the estimators (Stimson, 1985). For instance, the following assumptions are usually made in regards to the error term in pooled time series regression.

1) The error term has a mean of zero,
2) The error term has a constant variance over all observations,
3) The error terms corresponding to different points in time are not correlated (Ostrom, 1978).

The accuracy of the regression model is inevitably measured by the error term. Hence, if the standard error is small, then all of the sample estimates based on the sample size tend to be similar and considered representative of the population parameters. The exact opposite is true if
the error term is large, then the statistics fail to represent the population parameters. Of the previously mentioned assumptions, the error term corresponding to different points in time failing to correlate is the most important assumption violation. When the observations from different points in time are correlated, one of the assumptions is violated, usually the latter one. When this violation occurs autocorrelation is present, creating estimators that negate true representation of social phenomenon. Autocorrelation violates an assumption of the regression model that the residuals are independent of one another. Its presence affects the accuracy of the error term, which biases the model’s t-ratios and the confidence limit. Autocorrelation may be eliminated from a research project by identifying and including an independent variable that explains part of the unexplained variance. Beck and Katz (1996) address the issue of autocorrelation by calling it more of a nuisance than a real problem. They contend that lagging the endogenous variable(s) will assist in controlling for serial correlation. A lagged regression model relates a current endogenous variable to past values of the exogenous and endogenous variables reducing the risk of autocorrelation.

A second major methodological problem with pooled time series cross-sectional data analysis is heteroskedasticity. In pooled data, some units, for a variety of reasons, are inherently more various than others at all times. This technique is commonly called Least Squares with Dummy Variables (LSDV). Such differential variability is usually of modest concern in un-pooled data because it affects only a single case at a time. In pooled data, however, it is likely to inflict a larger amount of harm to data sets. For instance, basic size differences between units are one such endemic source of heterogeneity. For example, the error terms for California and New York are more likely to be greater than those for New Hampshire and North Dakota (Miller and
Pierce, 1997). To account for the differences among states, intercepts for the cross-sectional unit are employed. On the reasonable assumption that variation is roughly a fixed proportion of size, analysis of units of substantially different sizes induces heteroskedasticity in any regression. But the problem can take on considerable proportion that causes concern when each cross section consists of T cases in time. Therefore, the size problem of the sample can be reduced by standardizing the data (Beck and Katz, 1995). However, the small number of cases in this project almost eliminates all possibilities of heteroskedasticity. This project is concerned primarily with the impact that lotteries will have on financing education. The emphasis of this study is concerned more with changes across time rather than across states. LSDV allows this project to meet its goals by controlling for the cross-sectional variation in education spending. Its failure to deal with the concerns of cross-sectional differences is irrelevant (e.g., interest groups strength, state liberalism, media influence, etc.).

To account for OLS bias the following dummy variable was added to the data set LOT to assist in explaining a portion of the unexplained variance. The additional variable PRES was used to further account for OLS bias. A final step used to prevent autocorrelation and heteroskedasticity was to compute the regression model in the SPSS statistical package for the social sciences. This package was preferred to other leading statistical packages is because it has built in mechanisms to control for serial correlation and heteroskedasticity.

Multicollinearity possesses the potential of skewing data therefore; precautionary measures are necessary in the successful prevention of this methodology problem. A check for problems associated with multicollinearity will begin by reviewing the VIF tolerance levels once
the regression models are successfully computed. Any high correlation levels among the exogenous variables will receive the appropriate measures to correct these problems.

**MODEL:**

The estimated regression equation is written as follows:

\[
Y \ (FEDSPEDU) = a + (B_1) FPERPUP + (B_2) PRESID + (B_3) CONGID + (B_4) GDP + (B_5) GSP + (B_6) PERCAPITA + (B_7) SPEDU + (B_8) SPERPUP + (B_9) NUMSTU + (B_{10}) POPUL + (B_{11}) POLCUL + (B_{12}) LOTTERY + (B_{13}) DUMMY + (B_{14}) ELECTION + E
\]

- Presidential Ideology
- Congressional Ideology
- Gross Domestic Product (GDP)
- Gross State Product (GSP)
- Per Capita Income
- State Spending on Education State
- Spending on Education Per Pupil
- Number of students
- Population
- Political culture
- Lottery Proceeds
- Lottery
- Election

Federal Spending on Education
(dependent variable)
### FINDINGS

<table>
<thead>
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<th>Model Two</th>
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<td>SPEDU</td>
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Note: ** = (p > .05: One Tailed T-Test)

** = (p > .001: One Tailed T-Test)

B-values are in parentheses

Error Terms are in Bold

### DISCUSSION

Despite only two exogenous variables expressing an acceptable significance level (presidential ideology and political culture) among the predictors in the two models reported, the F-value of 6.474, with a significance level of .000 demonstrates evidence that a relationship exists between the thirteen exogenous variables and the one endogenous variable in model one.
Furthermore, the .07 adjusted R-square value shows that only 7 percent of the variance is being explained in model one.

Represented in model two, as a significant indicator in the regression equation is the dummy variable lottery. However, this model is significant at the .001 level of significance, but has a low F-value at 2.683. Furthermore, the adjusted R-square of .021 indicates that not very much is being explained in this regression model.

In reference to multicollinearity, the reported VIF levels of 1.163 for presidential ideology and 1.156 for GSP are respectable by the academic literature (Fox, 1992). The Durbin-Watson statistics for model one (1.193), and model two (2.156) indicate that autocorrelation and heteroskedasticity are absent from the model. All of the null hypotheses have failed to be rejected except hypotheses 1 (presidential ideology) and 7, 8, 9, & 10 (political culture). Although the dummy variable reported an acceptable p-value we felt it failed to explain any occurrence in the two models because the actual lottery variable was insignificant in both models.

These findings suggest, along with much of the other literature regarding the lotteries influence on education, that the lottery is having little to no affect on the amount of revenue states receive from the federal government for financing education. These results suggest that presidential ideology and political culture are the dominant indicators. One reason we believe that the presidential ideology variable was so significant was the time period we studied. The time period we incorporated into our study covered the Reagan Legacy and his drastic cuts in education. The regression model accounted for these cuts and measured them against several
years where education spending was high during democratic presidencies such as Carter and Clinton.

The coding scheme used in the political culture variable may have significantly contributed to this variable's influence. Elazar defined political culture in three ways, moralistic, individualistic, and traditionalistic. Therefore, we coded the variables one, two, three. This variable in fact tells us that moralistic states tend to spend more on education than individualistic states, and that individualistic states tend to spend more on education compared to traditionalistic states. In the formula the federal government uses to determine federal spending on education by state, one of the main predictors is the amount of spending that each individual state spends on its students' education. Therefore, if one state spends more money on education than another state, the federal government is going to reward that state by giving them more federal dollars to spend on education. This may help in understanding why the political culture variable was significant in the study.

LIMITATIONS

The ambiguity of using aggregate data for this project may result in a failure to represent reality. Aggregate data’s ambiguity sometimes hinders its ability to accurately paint a picture of what is really taking place in a specific instance of political phenomenon. Also, due to the relatively small amount of federal spending on education, ($38 billion) critics may argue that this project is limited because it fails to offer any real solutions for eradicating the fiscal burden of financing education across the American states. Furthermore, the coding scheme used in the political culture variable may not be the most appropriate scale available. Ira Sharkansky’s piece The Utility of Elazar’s Political Culture, argued that Elazar’s coding scheme was inadequate for
explaining political culture because it failed to account for states that are divided in culture. Sharkansky developed his own scheme, which may be more appropriate in future studies similar to this one.

CONCLUSION

Lotteries have gained immense popularity for enhancing fiscal resources for social intervention programs such as education. However, the fiscal significance of lotteries for accomplishing educational equity across the American states has been empirically challenged. Much of the literature on lotteries suggests that financial reliance on state operated lotteries for educational embellishment may actually hinder the process of educational egalitarianism. The initial accusation of this project was that states with lotteries would receive less federal funding for education, because the lottery enables them to pay for the high cost of education. We found no significant reports that indicate such an event is occurring. The data seemed to suggest that states with lotteries are probably receiving more funding from the federal government. This is primarily due to the formula driven process of determining education dollars for states. States that spend more on education are usually rewarded more money by the federal government. Hence, most states that have lotteries spend more on education compared to states without lotteries because they are more affluent (Miller and Pierce, 1997). The data for this project included fourteen variables over a twenty-year period covering all fifty states. Due to the relatively small amount of federal spending on education, (9 percent or $38 billion) critics may argue that this project is limited because it fails to offer any real solutions for eradicating the fiscal burden of financing education across the American states.
BIBLIOGRAPHY


