

# Inquiry: The University of Arkansas Undergraduate Research Journal

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Volume 7

Article 9

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Fall 2006

## An Investigation of Changes in Contributions of State Lotteries to Education Over Time

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### Recommended Citation

Parker, A. L. (2006). An Investigation of Changes in Contributions of State Lotteries to Education Over Time. *Inquiry: The University of Arkansas Undergraduate Research Journal*, 7(1). Retrieved from <https://scholarworks.uark.edu/inquiry/vol7/iss1/9>

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## AN INVESTIGATION OF CHANGES IN CONTRIBUTIONS OF STATE LOTTERIES TO EDUCATION OVER TIME

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### Abstract:

*Arkansas is one of many states in this country that is experiencing an education funding crisis. Despite the fact that states have started taking more responsibility for the funding of their public schools since the mid-1950s, litigation over education funding has occurred in almost every state in the United States. Litigation in Arkansas began in the 1980s and continues today with the Lake View case. Several alternatives have been proposed to reform the state's education system and its methods of funding, including school consolidation, raising taxes, and adopting an education-supporting lottery.*

*Lotteries have become very popular revenue raising mechanisms in the United States since the 1960s. Supporters of lottery adoption claim that lotteries are significant revenue raisers for new and existing programs and that they are better than increasing taxes. Opponents of lottery adoption contend that lotteries are regressive, implicit taxes and that the revenues from lotteries are fungible and do not increase education funding.*

*Data will be analyzed to determine whether lottery prize payout ratios have increased significantly over time, and whether changes in lottery prize payout ratios have had an impact on the money expended on public education. Based on this information and previous research, a recommendation will be made as to whether adopting an education-supporting lottery would be an effective and adequate way to help fund public education in the state of Arkansas.*

### Background:

#### *History of Arkansas Education Litigation*

The State of Arkansas' education system has been under fire since 1983, when *Du Pree v. Alma School District* was filed. In that case, the Arkansas Supreme Court ruled that there was "no rational relationship to education needs in the state's method of financing public schools." The Court also said that the variations in funding between the state's districts could not be justified by

the fact that the districts were "locally controlled." That ruling left the state with the ultimate responsibility to ensure an equitable public education system (*DuPree v. Alma School District*, 279 Ark. 340, 651 W.W.2d 90 (1983)).

Although the state did modify its funding formula in response to the Court's order, the education system was again tested in 1992 with *Tucker v. Lake View School Dist. No. 25*, and in 2000 with *Lake View School District v. Huckabee*. Lake View was the poorest school district in the state, and the district claimed that the way that the state allocated funds to school districts was inequitable. In 2001, a trial court in the state recognized that the education funding system was unconstitutional, saying that "The school funding system now in place . . . is inequitable and inadequate under . . . the Arkansas constitution." The court cited the Education Article of the state constitution, which declares that "the State has an absolute duty . . . to provide an adequate education to each school child." The court added, "Too many of our children are leaving school for a life of deprivation, burdening our culture with the corrosive effects of citizens who lack the education to contribute." The trial court ordered that, in order to be constitutional, the new funding system would have to be based on the amount of money needed to provide an adequate education for students (*Tucker v. Lake View School Dist. No. 25*, 323 Ark. 693, 917 S.W.2d 530 (1996); *Lake View School District v. Huckabee*, 351 Ark. 31, 78-79, 91 S.W.3d 472 (2002)).

According to the ruling of the Arkansas Supreme Court on November 21, 2002, which affirmed the trial court's ruling, an adequate educational system includes "adequately paid teachers, sufficient equipment to supplement instruction, and learning facilities that are [adequate]" (ACCESS Project-a, 2002). The State was given until January 1, 2004 to perform a cost study and create a constitutional funding system as outlined by the Arkansas Supreme Court (ACCESS Project-a, 2002). As a result of the state missing its January 2004 deadline to provide a constitutional funding system, Special Masters were appointed by the court. They maintain that "the Legislature [has] shortchanged

educational adequacy” and “the General Assembly [has] failed to make education its No. 1 priority” (Sadler, 2005).

#### *Costs of, and Proposals for, Reform*

The Arkansas Joint Committee on Educational Adequacy released a study in 2003 that estimated the additional amount of money that the state would have to spend to provide an adequate education to Arkansas’ students. The cost study found that annual funding would have to increase by \$848 million, to a total annual education budget of almost \$3.5 billion. At the time of the ruling, 41% of the State’s budget was dedicated to education (ACCESS Project-a, n.d.) In order to contribute an additional \$848 million per year to education, legislators and citizens alike have proposed many alternatives to raise additional revenue and/or cut costs in other areas. One of the most controversial solutions, backed by Governor Mike Huckabee, was a plan to consolidate schools that were under a minimum enrollment number. The Governor, using multiple studies on consolidation, proposed the plans because of the potential cost savings associated with merging small districts. The Governor’s plan was partially realized when the General Assembly passed legislation requiring the consolidation of districts with fewer than 350 students (ACCESS Project-a, n.d.). In addition to the consolidation plans, legislators suggested increasing sales taxes, which could bring in almost \$368 million in additional revenue per year. That amount would be almost half of the amount needed, as determined by the aforementioned cost study. Other proposals have included increasing other taxes, like income or property, and adopting a state-run lottery (Nelson, 2003; Robinson, 2003; Barnett, Ritter, & Lucas, 2003).

In October 2002, nearly a month before the Arkansas Supreme Court’s ruling in the *Lake View* case, researchers at the University of Arkansas conducted the fourth annual “Arkansas Poll.” Because of the immense attention and controversy surrounding the education crisis in the state, researchers used the poll to solicit Arkansans’ views concerning education reform and funding. In 2002, participants in the poll said that education was the second most important issue facing them. The nearly 800 Arkansans polled said that they would approve of such reforms as increasing teacher salaries, improving school facilities, and increasing vocational education opportunities. Arkansans were also asked about where they thought that the money needed for the reforms (at that time, it was estimated at over \$700 million) should come from (e.g. taxes, lottery adoption, cutting back government services.) Responses indicated that increasing taxes to fund education was the least desired option. Only two of the alternatives provided, adopting a state lottery and cutting back on government services, received a 50% or more approval rating. The researchers concluded that nearly 60% of Arkansans support the adoption of a lottery to help fund public education (Barnett, Summers, & Parry, 2003).

#### *Recent Arkansas Litigation*

In 2005, the Arkansas Supreme Court agreed to reopen the *Lake View* case after a motion was filed on behalf of dozens of Arkansas school districts. The motion claimed that the education budget approved by the legislature for the 2005-2006 school year violated the former *Lake View* opinion that required adequate funding for schools (ACCESS Project-a, n.d.).

Near the end of 2005, the Special Masters that had been appointed by the court submitted their recommendations in a “Findings of Fact” report. In summary, the Masters had several key points including: (1) education has not been the first priority of the state, (2) the amount of foundation funding for 2005-2006 should have been increased for a cost of living adjustment, (3) inefficiencies in the system could be best resolved through consolidation rather than by other approaches, (4) funds designated for school facilities are nowhere near the amount needed, and (5) the state is placing a larger responsibility of education funding on local governments and districts, and it is shrinking away from its own constitutional obligation (Bureau of Legislative Research, 2005).

A final decision from the Arkansas Supreme Court on the latest motion is still pending.

#### *Recent Arkansas Education Reform Proposals*

Democrat Bill Halter has recently announced that he will be running for Lieutenant Governor of the State of Arkansas. Since he announced his candidacy at the beginning of the year, Halter has laid out his personal education funding plan: adopting an education-supporting lottery. He has said that Arkansans are going to neighboring states to play the lottery anyway, and

“that the children of Arkansas should be the beneficiaries” (Blomeley, 2006). Halter claims that adopting a lottery could generate up to \$250 million per year for the state’s education system, a figure that is over four times the estimate given by the Arkansas Department of Finance and Administration’s (DFA) director Richard Weiss. The DFA’s estimate is based on lottery proceeds of states that are similar to Arkansas in size and composition (Thompson, 2006). Halter says that his proposal would send the money to college scholarships, pre-kindergarten programs, and teacher salaries. He also said that lottery revenue would add to, not replace, existing education funding (Sadler, 2006b).

In addition, Democrat Drew Pritt is currently working on a ballot proposal for the adoption of a lottery. His current proposal allocates most of the money to teacher salaries and school facilities construction. If the Attorney General approves the measure, and if Pritt can obtain enough signatures, the proposal may make it on the November 7<sup>th</sup> ballot (Sadler, 2006a).

#### *State Lottery Adoption and Success*

In 1964, New Hampshire introduced the first legal lottery of the 20<sup>th</sup> century. The measure was approved by 76% of voters

in a referendum (Hansen, 2005). Alicia Hansen, a staff writer for the Tax Foundation, says that the passage of the lottery was in part due to the fact that gambling was becoming more acceptable, while opposition to tax increases was growing. In addition, New Hampshire ranked the lowest in the nation in education spending, and the lottery was seen as a way to increase public school funding without increasing existing taxes or introducing new ones (e.g. a sales or income tax) (Hansen, 2004).

Today, forty-two states and the District of Columbia operate lotteries. In two of those states, Oklahoma and North Carolina, voters have just recently approved their operation. State-run lotteries are currently the most popular form of gambling in the nation, with more than half of Americans participating in recent years. In addition to being popular, state-run lotteries have also been very successful, with total spending on lotteries in the United States at nearly \$45 billion in 2003; with an average 31% takeout ratio (revenues less prizes), lotteries transferred about \$14 billion to state coffers that year (Hansen, 2004).

With over 80% of all states operating a lottery, and with the billions of dollars raised in revenue and the profits transferred to state coffers, state-run lotteries are extremely successful revenue-raisers. Currently, lotteries are used by some states to increase the money in their General Fund, while others have "earmarked" lottery profits for specific programs, such as economic development (Arizona and Oregon), the environment (Colorado and Nebraska), local food banks (Washington), and education. Education, by far, is the most popular program for which lottery profits are earmarked, with 24 of the 42 states earmarking profits for this purpose. Below is a map of the United States, with designations for the states that earmark proceeds for education (Hansen, 2004; Education Commission of the States-b, n.d.).

Many states, especially larger states and those that have been in operation for a longer period of time, have recorded astonishing transfers to state coffers and programs since their lotteries began. For example, New York, whose lottery began in 1967, and Texas, whose lottery began in 1992, have transferred over \$21 billion to education and \$9.7 billion to education and the General Fund, respectively, since their lotteries' inceptions. Many programs, including local food banks, education, and libraries, are being funded by and are benefiting from the adoption of a lottery (Hansen, 2004). Table 1 provides general information on each state's lottery, including how the lottery was approved and what programs are supported by lottery proceeds.

#### *Pros and Cons of the Lottery*

There are many economic benefits that can be realized from adopting a lottery to raise money for education and other worthwhile programs. Some of the arguments used in supporting lottery adoption are addressed below.

- The lottery is a "voluntary" tax
- The lottery provides funding for new and existing programs

- Lotteries are significant revenue raisers
- Lotteries keep citizens' money in-state

Despite the benefits provided by a lottery, lotteries are not without their opponents. There are many economic and social costs that may be incurred as a result of lottery adoption. Some of the arguments used in opposition to lottery adoption are addressed below.

- The lottery is not a voluntary tax
- Earmarking lottery money does not work because of the fungibility of state money
- Per pupil education spending may or may not increase
- The lottery is immoral
- The lottery may produce compulsive gamblers
- The lottery is a regressive implicit tax
- Lottery money is not a significant amount in state budgets
- Lottery revenues are unpredictable
- Lottery revenues may be unsustainable
- Lottery adoption may decrease public support for other education funding methods

#### **Method:**

The purpose of this research paper is to investigate two questions. The first question is to determine if state lottery prize payout ratios have changed significantly over time. The second question is whether lottery prize payout ratios significantly impact education spending in states with lotteries.

To answer the first question of whether prize payout ratios have increased over time, we have developed a regression model. The model is:

$$\text{LOTTPERPRIZE} = \text{YEAR} + \text{LOTTYEARS} + \text{NEIGHBOR} + \text{STATEPOP} + \text{PERCAPREV}$$

Where:

LOTTPERPRIZE is the state's prize payout ratio,

YEAR is the calendar year,

LOTTYEARS is the number of years that the state's lottery has been in operation,

NEIGHBOR indicates whether the state has a bordering lottery state,

STATEPOP is the state's population, and

PERCAPREV is the per capita revenue received by the state.

To answer the second question of whether prize payout ratios have had an effect on the amount of money spent on education, we have created the following model:

$$\text{SCHSPEN} = \text{PAYRATIO} + \text{NEIGHBOR} + \text{ENROLL} + \text{NUMSCHOOL} + \text{TAXBURDEN} + \text{GNP}$$

Where:

SCHSPEN is the education spending from all sources,

PAYRATIO is the prize payout ratio of the state's lottery,

ENROLL is the number of students enrolled in school within the state,

NUMSCHOOL is the number of school districts within the state,

TAXBURDEN is the per capita tax burden of the state's citizens, and

GNP is an economic indicator for the United States.

The data for the above variables (with the exception of the variables discussed below) were obtained from the Statistical Abstracts of the United States for the years 1977 to 2002.

The LOTTYEARS variable data was determined by obtaining the year of lottery adoption and adding a year for each additional year to determine the lottery's age. The variable data reported in a given year is the cumulative number of years of lottery operation for each state.

Data from the LOTTYEARS variable was used to determine the input data for the NEIGHBOR variable. A map of the United States was used to determine each year if the states that had lotteries were bordered by any other states that had lotteries. Data for the variable were coded with a "1" or a "0," with "1" meaning that there was a bordering lottery state and "0" if there was not.

The TAXBURDEN variable data were derived from using State Tax Collections information from the Statistical Abstracts of the United States and dividing by the STATEPOP variable data, which was also retrieved from the Statistical Abstracts.

For each regression model, three analyses were completed. The first is for all observations (i.e. all states), the second is for states that earmark lottery proceeds for education, and the third is for states that do not earmark lottery proceeds for education.

### Results:

The results for the first regression model, measuring whether lottery prize payout ratios have changed over time, are displayed in Table 1. The results for the second regression model, measuring whether education spending has changed over time, are displayed in Table 2.

### Lottery Prize Payout Ratios

The analysis of all states in the first model together revealed significant relationships between the dependent variable LOTTPERPRIZE and two independent variables, YEAR and LOTTYEARS. As expected, there is a significant positive relationship between time and prize payout ratios; as time passes, payout ratios tend to increase. Similarly, there is a significant positive relationship between the maturity of the lottery and payout ratios. That is, as lotteries age, payout ratios tend to increase. This result supports the idea that as lotteries mature, lottery commissions increase lottery prizes to keep interest and maintain revenues (Mikesell, 1987).

As for the analysis of states that earmark lottery proceeds for education, the YEAR and PERCAPREV independent variables were found to have significant relationships to LOTTPERPRIZE. PERCAPREV has a significant negative relationship with lottery prize payout ratios. As per capita state revenue increases, lottery prize payout ratios tend to decrease.

The analysis of states that do not earmark lottery proceeds for education revealed no significant relationships between the LOTTPERPRIZE variable and the independent variables.

### State Education Expenditures

The second regression model was designed to determine whether various independent variables affect the amount of money expended on public education. There were several significant relationships discovered in the second regression model when all states were analyzed. The results revealed a significant negative relationship between PAYRATIO and SCHSPEN. Three significant positive relationships between SCHSPEN and independent control variables ENROLL, TAXBURDEN, and GNP were also found.

The significant negative relationship between PAYRATIO and SCHSPEN indicate that as prize payout ratios (PAYRATIO) increase, the amount of money expended on education (SCHSPEN) decreases. This can be expected because although increases in prize payout ratios are thought to increase lottery revenues, the increased outflow of revenue to prizes may negatively affect the amount of money transferred to state coffers and education programs. An increase in the percentage of lottery income designated for costs (i.e. lottery prizes) would mean a lower percentage of income would be transferred to state coffers and education.

As the number of students enrolled in public schools increase (ENROLL), it is expected that states will have to increase their total education spending (SCHSPEN) to accommodate the additional students. This expectation is confirmed by the significant positive relationship seen between education expenditures and the number of students.

Similarly, it is expected that as each person in the population pays more taxes (TAXBURDEN) that a portion of that additional money will be used to support public education (SCHSPEN.) This is a reasonable expectation given that state education programs represent the single largest part of states' budgets. This expectation is confirmed by the significant positive relationship demonstrated between education expenditures and per capita tax burden.

It is expected that as GNP increases, state education spending (SCHSPEN) will also increase. As the production and output of the country or a specific state increases, it can be expected that the increased benefit realized from that income will be used (at least in part) to fund programs such as education. This expectation is confirmed by the significant positive relationship shown between education expenditures and GNP.

The results of the regression models for states that do and do not earmark lottery proceeds for education mirror the results for the group of all states as discussed above.

**Discussion:**

The results of the current study should be considered as Arkansans determine whether or not a lottery would be an adequate and effective way of funding public schools within the state. Several significant and important relationships from the results that may impact citizens' decisions regarding lottery adoption will be discussed next.

*Lottery Prize Payout Ratios*

The results that the passage of time and lottery age are significantly related to prize payout ratio were expected. As time passes and the lottery matures, lottery players will expect a higher return on the money that they spend playing lottery games. As players lose interest in lottery games where prize payout ratios remain stable over time, state lottery commissions increase these ratios to renew interest and to maintain and increase ticket sales. These results are consistent with the results of a study discussed earlier, "Evaluating the Life Cycles of Education-Supporting Lotteries." The results of the study indicate that while lottery revenues continue to increase, they are increasing

**TABLE 1**  
Results for Regression Equation Regarding Changes in Payout Ratios (LOTTPERPRIZE)

|               | All States<br>Coefficient<br>(t-statistic) | <u>Earmarking</u><br>Coefficient<br>(t-statistic) | <u>Not Earmarking</u><br>Coefficient<br>(t-statistic) |
|---------------|--|---|---|
| INTERCEPT     | <b>-9.85552</b><br>(-4.43)                 | <b>-14.64738</b><br>(-6.59)                       | -3.18797<br>(-0.80)                                   |
| YEAR          | <b>0.00523</b><br>(4.65)                   | <b>0.00765</b><br>(6.80)                          | 0.00186<br>(0.93)                                     |
| LOTTYEARS     | <b>0.00139</b><br>(2.60)                   | 0.00066816<br>(1.45)                              | 0.00234<br>(1.95)                                     |
| NEIGHBOR      | -0.00554<br>(-0.25)                        | -0.00590<br>(-0.30)                               | -0.02554<br>(-0.61)                                   |
| STATEPOP      | 1.93203E-7<br>(.32)                        | -4.299E-7<br>(-0.89)                              | 0.0000031<br>(1.32)                                   |
| PERCAPREV     | -0.000011<br>(-1.36)                       | <b>-0.0000167</b><br>(-2.07)                      | 0.0000013<br>(0.08)                                   |
| ADJUSTED R-SQ | 0.0985                                     | 0.2593  | 0.0561  |

Variables with significant differences (measured at the .05 level) are denoted by their appearance in bold and italics

**TABLE 2**  
Results for Regression Equation Regarding Education Spending (SCHSPEN)

|               | All States<br>Coefficient<br>(t-statistic) | <u>Earmarking</u><br>Coefficient<br>(t-statistic) | <u>No Earmarking</u><br>Coefficient<br>(t-statistic) |
|---------------|--|---|--|
| INTERCEPT     | 1326338<br>(0.86)                          | <b>16981971</b><br>(3.37)                         | -840796<br>(-0.90)                                   |
| PAYRATIO      | <b>-10971405</b><br>(-3.92)                | <b>-47474899</b><br>(-4.85)                       | <b>-3889122</b><br>(-2.29)                           |
| NEIGHBOR      | -465765<br>(-0.63)                         | 66974<br>(0.04)                                   | -292016<br>(-0.62)                                   |
| ENROLL        | <b>5410.9172</b><br>(38.74)                | <b>5978.395</b><br>(20.44)                        | <b>5366.90855</b><br>(28.57)                         |
| NUMSCHOOL     | -401023<br>(-0.67)                         | <b>-5124523</b><br>(-3.34)                        | -196956<br>(-0.40)                                   |
| TAXBURDEN     | <b>1646.40675</b><br>(4.84)                | <b>6378.74266</b><br>(5.62)                       | <b>1031.96396</b><br>(5.24)                          |
| GNP           | <b>0.00029882</b><br>(4.01)                | -0.00033759<br>(-1.47)                            | <b>0.00022502</b><br>(4.89)                          |
| ADJUSTED R-SQ | 0.9027                                     | 0.9067  | 0.8736   |

Variables with significant differences (measured at the .05 level) are denoted by their appearance in bold and italics

at a diminishing rate. This effect is also stronger for older lotteries which are reaching maturity in their product life cycle. It can be reasonably concluded that one factor that is keeping lotteries growing is the increasing of prize payout ratios and other marketing techniques such as new product introductions. However, while there is no limit on the number of new products that may be released to encourage lottery players to participate, there may be a limit on the percentage of lottery revenues that can be reasonably paid out in prizes. Eventually, prize payout ratios will no longer be able to be increased and still maximize revenue, which may partly lead to the decline in real lottery sales as predicted by the study's authors (Mason, Steagall, Shapiro, & Fabritius, 2005).

Surprisingly, the presence of a neighboring state with a lottery did not significantly influence prize payout ratios. This was not the expected outcome, given Mikesell's findings that the presence of a neighboring lottery state and lottery maturity are the two factors that most influence lottery revenues. Due to his findings, it was expected that the competition of a neighboring lottery state would cause a state to increase its lottery's prize payout ratio in order to outperform neighboring competitors (Mikesell, 1987).

#### *State Education Expenditures*

The results of the second regression model have many implications for states that currently have lotteries supporting education and those states that are considering adopting an education-supporting lottery.

There has been a debate over whether lottery prize payout ratios should be increased or decreased to maximize revenue and proceeds to education. The results of the current study indicate that increasing prize payout ratios will decrease the amount of money expended on education. Thus, before a state decides that its lottery's prize payout ratios should be increased in order to maximize revenue, it should determine whether the increase in payout ratio will increase or decrease the lottery proceeds (or profit) to education. States should focus more on maximizing profits instead revenues from lotteries. Lotteries have been approved by voters because it is believed that the proceeds from the lottery will benefit important state programs such as education. Thus, increasing the amount of money that can be used to support programs (i.e. the lottery's profit) should be viewed as more important than increasing the amount of lottery revenue.

#### *Implications*

The analysis of the two regression models taken together leads to an interesting conclusion. First, the model measuring prize payout ratios indicates that payout ratios are increasing as a function of both time and lottery maturity (among other variables.) The passage of time and lottery age are two variables which cannot be controlled. Second, the model measuring education spending indicates that education spending is inversely

related to lottery prize payout ratios. That is, as lottery payout ratios increase, total education spending decreases, regardless of whether lottery proceeds are earmarked for education or used for some other purpose. The results of the two models suggest that lottery prize payout ratios will increase as a function of time and maturity, and these increases in prize payout ratios will tend to decrease total education spending over time.

The results of the study create many questions which should be considered before a lottery is adopted in the state of Arkansas. First, can Arkansas effectively compete with neighboring states if a lottery is adopted, and would its prize payout ratio be high enough to compete with neighboring states? Similarly, would the amount left over after prizes are paid be enough to help fund education? Currently, four of Arkansas' five bordering states have lotteries. Two of the states' lotteries, Missouri and Louisiana, have been in operation for 21 and 15 years, and have payout ratios of 65% and 55%, respectively. The other two neighboring lotteries, in Tennessee and Oklahoma, have only been recently adopted, and information from the states' lottery websites report current prize payout ratios of 58% and 52%, respectively. Thus, the state of Arkansas could reasonably expect to pay out between 50-60% in prizes in order to effectively compete. States that currently have payout ratios within that range transfer approximately 30 to 40% of lottery revenues to education or other programs.

Another question concerns how much revenue and proceeds to education could be expected from lottery adoption in the state of Arkansas. As discussed earlier, estimates of lottery profits from the proposed Arkansas lottery range between \$60 million (Arkansas Department of Finance) and \$250 million (Arkansas Lieutenant Governor candidate Bill Halter.) The large discrepancy between the estimates should be investigated, and an updated estimate of the amount of money that could be raised through a lottery should be made based on states with similar composition and demographic variables. Although the revenue and profit estimates provided by Bill Halter and the Arkansas Department of Finance and Administration are promising, the estimated increase in education spending may not be as much as expected. As discussed above, Arkansas' neighboring states that have lotteries and relatively high prize payout ratios may decrease the profits that the Arkansas lottery and education system would realize, as Arkansas would have to raise its prize payout ratio to remain competitive. Using the results of the current study, an increase in the prize payout ratio can be expected to negatively impact money expended on education.

In addition, will the amount of money raised through a lottery make a difference in education spending, when the "extra need" determined by the cost analysis is in the hundreds of millions of dollars? Given a reasonable estimate of potential lottery revenues and profits to education, Arkansans must determine whether lottery adoption is the best way to increase funding for public education. Although many may view the

revenues as “extra money” paid through a “voluntary tax,” other research on lottery states’ experiences should be considered. Research on lottery data previously discussed has found that lottery revenues only make up on average 2.25% of any state’s general revenue. Still other evidence suggests that even earmarking lottery proceeds for education may not actually increase education spending; instead, lottery profits may replace the money currently spent on education.

If it is determined that lottery revenues will not make a significant difference in education spending, Arkansans and state legislators should question whether there is a better way to increase the amount of money available in the state’s budget to spend on public education, such as tax increases or further consolidation of schools. While the current study did not intend to determine whether another method of funding would be better for increasing and maintaining education spending within the state, the results of this study imply that raising taxes may increase education funding. As formerly discussed, one of the control variables in the second regression model, tax burden per capita, had a significant positive relationship with total public school spending. Thus, while there are mixed results as to whether lottery revenues and profits would be sustainable and whether they would increase education spending over time, the results of the model imply that increasing taxes, although unpopular with the state’s citizens, may be a more adequate and effective way of funding public education within the state.

### Conclusion:

A review of the literature has shown that the education funding crisis is not unique to the state of Arkansas, and it demonstrates that states have gone to different lengths in order to solve their funding problems. Research from the Arkansas Poll conducted in 2002 revealed that education is a top priority for Arkansans, and that the lottery is the most widely supported mechanism for increasing funding of public education in the state. While there are advantages and disadvantages to the lottery, both social and economic, forty-two states currently have lotteries, all of them reporting their lotteries as successful revenue-raisers. Arkansas can learn from the mistakes and successes of the states that have already adopted lotteries, those that are mature and the states that have only recently jumped on the lottery bandwagon. Arkansans should carefully weigh the pros and cons of an education-supporting lottery and should consider the economic and social costs and benefits associated with lottery adoption.

The results of the current study imply that over time as lottery prize payout ratios increase, education spending tends to decrease. While the results may be disappointing for those in favor of adopting an education-supporting lottery, the results point the state towards a funding method that may be more effective at increasing education funding: raising taxes. Both of these funding methods deserve further review by state legislators and citizens, especially as the Arkansas General Assembly begins its next legislative session in April 2006.

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### Faculty comments:

Professor Deborah Thomas, Ms. Parker's mentor, explains the method and value of her student's research. She says,

Ms. Parker's interest in the potential value of a state lottery to support state programs began in a political science class, where she learned of the recent education funding litigation in our state. She approached me about investigating a tax aspect of this issue. After extensive background reading and discussions, we decided to investigate the use of lotteries for funding education.

This is a timely issue for the State of Arkansas. The Lakeview Supreme Court ruling and the recent determination of inadequate funding by court-appointed special masters have increased the pressure on the Arkansas state legislature to find additional support for the state's schools. Proposals for the adoption of a state lottery are re-emerging. Bill Halter, candidate for lieutenant governor, is one of many promoting a lottery to fund education ([billhalter.com/Issues#excellent](http://billhalter.com/Issues#excellent)). A petition to amend the state constitution to allow a state-run lottery and other types of gambling has been certified by the Secretary of State for the next general election ([www.sos.arkansas.gov/elections\\_006\\_amendments.html](http://www.sos.arkansas.gov/elections_006_amendments.html)).

Ms. Parker spent countless hours compiling the data for this project. She searched Statistical Abstracts of the United States for a twenty-five year period (1977-2002) to extract information about education and lotteries for each state. The resulting database includes hundreds of items of information that we hope can be used for future research.

Ms. Parker's initial research questions are: (1) Have lottery payout ratios increased over time? We hypothesize that as lotteries age, payout ratios increase in order to continue to attract players; and (2) Have changes in lottery payout ratios impacted the amount spent on education? We hypothesize that as payout ratios increase (decrease), the amount spent on education in the state will decrease (increase). We also investigate whether results differ between states that earmark lottery profits for education and those that do not.

Ms. Parker's statistical analysis indicates that lottery payout ratios have increased over time, particularly for states that earmark lottery proceeds for education. She also finds that payout ratios are negatively related to education spending in a state; as payout ratios increase, education spending in the state decreases. These primary findings, as well as other results, are of interest to state policy makers as they consider instituting a lottery as a source of funding for education.