

# **A BRIEF ANALYSIS OF ISSUES ASSOCIATED WITH BONDING FOR THE STATE OF ARIZONA STUDENTS FIRST SCHOOL CAPITAL FINANCE PROGRAM**

**A Report from the Office of the University Economist**

**March 2007**

**Dennis Hoffman, Ph.D.**

Professor, Department of Economics; Director, L. William Seidman Research  
Institute; and Director, Office of the University Economist

Center for Competitiveness and Prosperity Research  
L. William Seidman Research Institute  
W. P. Carey School of Business  
Arizona State University  
Box 874011  
Tempe, Arizona 85287-4011

(480) 965-5362

FAX: (480) 965-5458

EMAIL: [Dennis.Hoffman@asu.edu](mailto:Dennis.Hoffman@asu.edu)

[wpcarey.asu.edu/research/competitiveness-prosperity-research](http://wpcarey.asu.edu/research/competitiveness-prosperity-research)  
[economist.asu.edu](http://economist.asu.edu)



## **TABLE OF CONTENTS**

Introduction	1
Track 1: Status Quo for Students First	2
Track 2: Bonding Options for Students First	6

## **LIST OF TABLES**

1. Analyzing the Cost of Bonding \$400 million in School Construction Costs	3
2. The Costs and Benefits of Bonding the Equivalent of \$400 Million Dollars Annually for the Next 10 Years	9

## INTRODUCTION

Students FIRST (Fair and Immediate Resources for Students Today), a constitutional system of school capital finance funded by revenues dedicated from the state sales tax, was enacted July 9, 1998 when Governor Jane Dee Hull signed legislation to restructure the funding mechanism for the construction of elementary and secondary (K-12) schools in Arizona. This paper will focus on (1) the facts and direct rationale behind the payment for K-12 school construction from a pool of current general fund dollars, as mandated in the existing Students FIRST provisions; and (2) the implications and logical consequences of bonding versus paying for capital improvements with cash on an annual basis.

The premise of this paper is that some form of debt financing undertaken at the state level for K-12 school construction is a viable option for Arizona. Because the primary issue can be obscured by a number of complexities (such as the question of whether school construction should be financed at the local or state level, and the determination of mechanisms to ensure equity in the allocation of school construction resources), the paper will *not* address the broader issue of how best to establish an optimal K-12 school construction funding structure. Further, the paper will *not* focus on legal avenues that utilize “lease to own” provisions that would permit the state to distribute the costs over time or “bond” for school construction.

The crux of the dispute over bonding as a mechanism for funding K-12 capital projects will be presented in the context of two alternative courses of action: “Track 1” designates the status quo strategy of cash payment for capital improvements, while “Track 2” represents a strategy for bonding that distributes the costs of the projects to taxpayers over the course of their useful life. The analysis is founded upon the perspective that neither option is wrong, *per se*. But, the choice of one over the other has significant consequences for Arizona.

## **TRACK 1: STATUS QUO FOR STUDENTS FIRST**

### **What are the Implications of Track 1: Cash Payment for Capital Projects?**

Paying cash for capital improvements seemingly aligns with a fiscally conservative strategy intended not to place undue burdens on future generations nor establish debt obligations that tie the hands of future legislatures. Cash payment resonates with policymakers concerned with the size of the public sector. Consistent with the objective of reducing the size of government, the allocation of operating dollars to capital improvements constrains the operating budget of state government and thereby reduces its number of available options.

### **The Interest Cost Concern**

Cash payment, as opposed to financing a purchase, saves interest that accrues over the life of the loan. As illustrated in the first column of Table 1, a 20-year loan of \$400 million at 5 percent interest results in total debt service, including allowances for origination fees, of \$632 million. In this case, debt financing interest costs add \$232 million dollars over the life of the loan. These interest payments are a reflection of what is paid in nominal terms over the life of the loan, but to understand the true costs (in today's dollars) net present value calculations are required. The impact of these principles, applied daily in private-sector decision-making, will be illustrated later in this paper.

### **The “We Can Afford It” Argument**

The amount currently being considered for capital expenditures, \$400 million, is small when compared with the total of the state general fund budget. Indeed, the sum is equivalent to approximately 3.6 percent of planned general fund expenditures. Why not allocate 3.6 percent of current income in order to avoid the need to pay \$232 million in financing expenses over the next 20 years? This question is critical to the discussion of debt financing. But if economic scale or the size of a given company or organization were the dominant factors in decisions regarding debt financing, then one would expect to observe debt assumption only in small organizations and businesses. Of course this is not the case. Businesses of all sizes borrow when it makes sense to do so, that is to say, when the benefits of borrowing outweigh the costs of borrowing. Careful consideration of both the costs and benefits of borrowing is given throughout this paper.

### **What are the Logical Consequences of Track 1?**

A number of consequences must be taken into account when considering the implications of cash payment for infrastructure and school construction. Understanding these consequences can guide decision makers in determining an optimal debt financing policy for the state of Arizona.

### **Fairness to Taxpayers Over Time**

With a cash payment strategy, Arizona taxpayers must pay today for infrastructure (in this case, school buildings) that will be consumed in the future by others. Arizona is among the leading states in the nation in terms of net in-migration, and many of those who will most directly benefit from the construction of these schools are today residents

**TABLE 1**  
**ANALYZING THE COST OF BONDING \$400 MILLION**  
**IN SCHOOL CONSTRUCTION COSTS**  
(Values in Millions)

	Interest on a 5%, 20-Year Loan	Net Present Value of Interest Expense: 4% Discount Factor	Net Present Value of Interest Expense: 6% Discount Factor
Total Debt Service Expense	\$632.2	\$438.7	\$373.3
Net Cost of Bonding	232.0	38.7	-26.7

of other states. Consider that hundreds of thousands of aging Arizona taxpayers are currently paying for 20-to-30 years of benefits that they, statistically, will not live to realize. Contrast these Arizona taxpayers with a couple from Iowa, let us say, who will one day move to Arizona and send their children to local schools. It is this family, and hundreds of thousands of other families from across the nation, who will reap the benefits of our investment in infrastructure today. With cash payment, taxpayers today pay for the infrastructure of residents in the future.

#### **Analyzing Forgone Opportunities**

The “opportunity cost” of a given decision must be assessed in terms of the benefits of an alternative foregone. With cash payment for school construction, the burden of opportunity costs that total approximately \$365 million annually (\$400 million less approximately \$35 million in annual debt service, assuming 5 percent interest on a 20-year obligation and all origination expenses) are incurred. In this case, opportunity costs must be measured by the possible alternative uses for a net \$365 million annually that are foregone by not using debt financing to fund K-12 school construction. Opportunity costs can be measured across an array of alternative uses. Following is a list of possible alternatives that span investment opportunities and tax relief possibilities, but many other alternatives might be considered:

- The elimination of income taxes for all working families and single seniors with incomes under \$50,000 per year (ASU’s income tax model estimates this at about \$300 million in 2007 assuming all dependent filers aged 65 and above with less than \$50,000 in adjusted gross income and all married joint status and head of household status filers).
- Simply reducing income taxes approximately 10 percent across the board or targeting business tax relief.
- The acceleration of highway construction plans with costs and miles constructed varying depending upon priorities.
- Increased funding for the construction of new state-of-the-art hospitals and clinics and related healthcare and research institutes and facilities.
- Strategic investments in higher education, ranging from investments in students such as tuition tax credits, or investments in the institutions themselves such as science and technology infrastructure and programs.
- Increased investment in the Arizona Department of Commerce to broaden economic development initiatives to help Arizona compete with similar efforts underway in other states and countries.

- Increases in teacher pay with possible incentives to help retain math and science teachers who have lucrative opportunities elsewhere.

### **Analyzing the Opportunities**

There is evidence from a variety of sources that these types of opportunity costs are important for the state. While Arizona is generally considered a state with a low tax rate, there is some evidence to indicate that taxes on low-income families are relatively high, at least higher in relative terms than for high-income families. A recent report on tax rates and tax burdens for the fifty states produced by the government of the District of Columbia documents the state and local combined tax burdens for families of three at income thresholds of \$25,000, \$50,000, \$100,000, and \$150,000. The report reveals that at the low-income threshold Arizona families actually pay about \$100 *more* than the national average in tax, with the state ranking 25th (with 1 being the highest) in tax burdens. As the income thresholds increase, Arizona's relative tax burden falls sharply and is considerably *less* than the national average.

A recent report conducted for Science Foundation Arizona documents that no fewer than 37 states are making or have made investments in science and technology that total tens of billions of dollars since the year 2000. Nineteen states are spending as much as \$365 million or more on these initiatives. Arizona's policy of paying cash for school construction limits the ability to compete on this strategic dimension. There are many and varied ways to engage in this competition, ranging from fully funding the state's obligation to the public-private research grant programs of Science Foundation Arizona, to expanded support for university research infrastructure, to tax incentive programs that encourage private business investments in basic research at the state's universities.

In the same spirit, other states and countries have established aggressive economic development strategies that extend beyond simple targeted tax relief. A high-level, well-coordinated, and cohesive (engaging all state and local stakeholders) economic development strategy for Arizona would be as effective as any particular tax reduction. The Industrial Development Authority (Ireland) and Enterprise Ireland serve as useful examples. Accompanying this strategy may be the need for targeted efforts to support the activities of businesses positioned to bolster Arizona's base or export industries. But tax incentives must be aligned with programs to build knowledge and skills in the workforce. Attracting base industries and quality job opportunities will require a broad-based effort. Base industries and service providers must see Arizona as a lucrative market to conduct business with access to buyers and distributors, a highly skilled labor force, and a business-friendly fiscal environment.

### **Shouldn't We Worry About Taking on a High Debt Burden?**

Arizona has relatively low levels of net tax-supported debt per capita when compared with other states. In the most recent data available from Moody's Investors Service, Arizona ranks 32nd overall in net tax-supported debt per capita. On a per capita basis the state's debt burden is 19.5 percent below the median state level and some 42.7 percent below that of the average burden across the states. On a percentage of personal income basis, Arizona's debt burden also looks quite low at about 2 percent of aggregate personal

income compared with 3 percent for the average debt load and 2.3 percent for the debt load of the median state.

### **What Conclusions Can Be Drawn Regarding Track 1?**

The choice of Track 1, by design, limits Arizona's options both in terms of its capacity for addressing the concerns of its current taxpayers and/or its potential to embark on strategic investments that can help gain competitive advantage. Specifically, Track 1 puts fiscal pressures on the state that are considerable today and will only continue to increase over time. If the state does not implement policies that take advantage of the efficiencies of the capital markets, policymakers will need to contemplate prospects for Arizona's fiscal condition 20 years hence. Unless capital markets are employed more efficiently, the 6 million residents of Arizona today will pay for the infrastructure for 10 million people, and in 20 years, the projected population of 10 million will be paying for the infrastructure for 15 million.

### **Cash Payment: Is It Really a Good Choice for Current Taxpayers?**

At first glance, Track 1 appears to deliver on the goal of fiscal conservatism. But choosing to avoid the capital markets for funding K-12 construction impedes the state's ability to make the most efficient use of public dollars. This option was not designed to benefit current taxpayers and ignores alternative uses of general fund dollars ranging from individual or business tax cuts to strategic investments in public infrastructure.

## **TRACK 2: BONDING OPTIONS FOR STUDENTS FIRST**

### **What are the Implications of Track 2:**

#### **The Enactment of a Bonding Mechanism for Capital Projects?**

The rationale for financing school construction projects over the life of the investment is clearly articulated in the Bonding for School Construction report produced for the Citizen's Fiscal Reform Committee in 2003. The basic argument is reproduced below.

#### **Rationale for Term Financing**

Financing capital projects such as school construction using debt financing is a capital budgeting practice akin to the investment decisions made in the private sector on a daily basis. Essentially, private-sector firms compare the discounted net revenues that accrue from private investment decisions with the cost of the financial capital required to fund any given project. Decisions to finance projects through either mechanism are based upon a simple comparison of the costs and net benefits of alternative private-sector initiatives.

Failure to employ the capital markets in this fashion would leave the private sector with a suboptimal number of completed projects and an underutilization of resources. Indeed, economies with poorly functioning capital markets languish because it is not possible to fund major capital items without long-term financing. In contrast, advanced economies with access to efficient, freely functioning capital markets flourish by using financing for capital expenditures. This is one of the key distinctions between first and third world economies.

The basic principle of efficient capital budgeting applies to school financing, even though schools do not yield net revenues from physical plants or production lines. To minimize costs and maximize public benefit, school districts should make building decisions that consider the advantages of access to capital markets. A newly constructed school can yield direct benefits (analogous to net revenues in the private sector) to students over the life of the school and indirect benefits to society that span generations. Arguably, it is difficult to translate the benefits of new schools into dollars, but they most certainly exist or new schools should not be built at all.

Debt financing is an appropriate mechanism for school construction because the benefits of new schools extend far beyond the year in which the school is constructed. Financing a school over its lifetime is an efficient way of matching benefits to costs in the same manner that private-sector firms match future net revenues to continuing debt service. Moreover, the students who benefit from new schools and families who move to new areas of development include future taxpayers.

#### **Measuring the True Cost of Financing**

The principle of matching benefits and costs over the life of a loan can best be understood by measuring the net present value of an action. Calculating the discounted costs of future payments is an elementary textbook finance exercise. As illustrated in Table 1, \$232 million in debt service expenses are incurred over 20 years due to debt financing \$400 million at 5 percent. But if future payments are discounted at a rate of 5 percent,



simple present value arithmetic implies that the costs of borrowing and debt financing are exactly the same. The next step is to calculate the appropriate discount factor for this exercise. One might use an average of interest rates over the past 20 years, the inflation rates on expenditure opportunities foregone by not debt financing, the cost of school construction itself, or any combination of a number of such factors. There is no single discount factor to apply to this problem but any likely value would approach 5 percent. For illustration, suppose an appropriate discount rate is 4 percent. As illustrated in the second column in Table 1, the net present value of all debt service charges over the life of a \$400 million 20-year loan (including origination charges) would be \$438.7 million. Thus, in this example, the cost of debt financing, expressed in net present value terms, would be about \$38.7 million.

### **Measuring the Costs of Financing for Current Taxpayers**

But the projections in this scenario do not even take into account the fact that Arizona's population is growing at a rate faster than 3 percent annually. A conservative estimate of population growth over the next 20 years is 2 percent per year. If the exercise is based exclusively on the number of current Arizona taxpayers it is important to note that today's taxpayers will not pay 100 percent of the future debt payments because debt financing allows future residents of the state to share in the burden. It is easy to measure how this consideration affects the costs and benefits for current Arizona taxpayers by reducing the nominal stream of debt obligations by 2 percent per year and recalculating the net present value of the costs incurred by current Arizona taxpayers by debt financing school construction. In the example above, the discount rate is increased by 2 percent annually since, each year, 2 percent of the future payments are absorbed by new taxpayers. So, as illustrated in column three of Table 1, the total discount factor for current Arizona taxpayers actually becomes 6 percent (the 4 in the example plus 2 for population growth). A recalculation of net present value for current taxpayers yields a net present value cost of \$373.3 million with the savings due to the fact that the rest of the obligation is the responsibility of people who are not taxpayers today.

In this scenario, then, it is actually about \$26.7 million cheaper for current taxpayers to debt finance school construction if the time value of money and the fact that future obligations are the shared responsibility of current taxpayers and those not living in Arizona today are considered. But is it fair to shift this some of this obligation to future taxpayers? Yes, because the debt is being incurred for capital improvements that will yield benefits to future generations.

### **What are the Logical Consequences of Track 2?**

As the example above illustrates, debt financing for capital improvements such as school construction accomplishes the objective of intergenerational equity for all taxpayers. It does *not* place an undue burden on future generations, but only a fair burden that matches the benefits that residents of Arizona in the future will receive. With debt financing, taxpayers today do not bear an undue burden for people who have not yet moved to Arizona.

### **More Perspective on the Efficiency of Debt Finance Versus the Current Structure**

Debt financing may also make the allocation of resources for school construction more efficient because school districts would no longer operate with the assumption that there is a fixed pool of \$400 million available annually for a share of which they are obliged to compete. Indeed, the \$400 million budget line in the general fund is itself an arbitrary figure, dictated by what policymakers today believe is available for this purpose. With bonding, the decision to embark on new school construction may indeed be determined by the true needs of the district rather than the incentive to tap a “fair share” of an existing pot of money that may not be available in perpetuity.

### **Is Arizona Drowning in Debt?**

In the Track 1 analysis, it was noted that the current debt burden of Arizona is relatively low. The state’s low burden is even more striking when compared with other rapidly growing states that presumably require significant infrastructure investments. Based on the latest release of the U.S. Census Bureau, Arizona leads the nation in population growth (essentially tied with Nevada), and the growth rates of both outstrip the next state in the ranking by about a full percentage point. Of the top 10 population growth states from 2005 to 2006, Arizona’s net tax-supported debt per capita ranks seventh highest (1 being the highest debt). Thus despite the pressing infrastructure requirements made necessary by the state’s rapidly burgeoning population, Arizona enjoys relatively low debt per capita and debt per income obligations outstanding. Adding \$400 million to these obligations on a per capita basis represents an increase of about \$65 per person, which will not change the state’s ranking in net tax-supported debt per capita.

### **What Conclusions Can Be Drawn Regarding Track 2?**

Track 2 aligns the growth trajectory of Arizona with a capacity to pay for capital projects over the course of generations and offers a number of fiscal efficiencies that reduce costs that will only increase over time. Drawing upon the analysis of opportunity costs in the Track 1 discussion, it is readily apparent that debt financing school construction enables the state’s policymakers to choose between a number of alternative courses of action while providing a fair and equitable system of matching the benefits and costs to Arizona taxpayers over time.

### **A Sea of Debt or Seizing Opportunities**

As the equivalent of \$400 million is financed each year, proponents of Track 1 will focus on mounting debt obligations. Indeed, as illustrated in Table 2, assuming the equivalent of \$400 million is financed annually in 20-year terms for each year in the next decade, the debt obligations cumulate and near the end of the decade, the annual debt service approaches today’s \$400 million annual outlay. The analysis above reveals that these seemingly large interest obligations are actually nominal in net present value terms and even smaller if we focus exclusively on today’s taxpayers. But simply pointing to future debt obligations without considering the \$365 million in annual forgone opportunities for annual strategic public investments or ongoing annual tax relief paints an incomplete picture of the situation. In the last column of Table 2, the cumulated dollars that are made available through annual bonding are tabulated — summing to over \$3.6 billion! It is indeed true that with 20-year obligations, debt service will continue to accumulate and

will do so as long as debt financing persists. So, the challenge for the state is to use the opportunity to leverage the strategic investments (in either expenditure programs or tax relief) so as to reap returns that can prove very beneficial to the state's economy and offset the lingering effects of future debt obligations.

Public dollars are scarce commodities and must be managed wisely and efficiently on the margin with dollars allocated to their highest value — to initiatives likely to yield the greatest future benefits for all Arizonans. Tapping the capital markets is an important aspect of this public finance management strategy.

**TABLE 2  
THE COSTS AND BENEFITS OF BONDING THE EQUIVALENT OF \$400  
MILLION DOLLARS ANNUALLY FOR THE NEXT 10 YEARS**

Year	Annual Total Debt Service	Extra Annual Operating Capital	Cumulated Operating Capital
1	\$35	\$365	\$365
2	70	365	730
3	105	365	1,095
4	140	365	1,460
5	175	365	1,825
6	210	365	2,190
7	245	365	2,555
8	280	365	2,920
9	315	365	3,285
10	350	365	3,650