PUBLIC INVESTMENT USING DEBT FINANCING AND THE EFFECT ON ECONOMIC ACTIVITY: PERSPECTIVES FOR THE STATE OF ARIZONA

A Report from the Office of the University Economist

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This brief report provides conceptual perspectives on public investment using debt financing. Empirical evidence of the relationship between public investment and economic activity is provided, showing that moderate levels of debt do not impair economic growth and may provide a stimulus to growth.

Arizona's public debt currently is low relative to national standards. Related to this low debt, public investment in infrastructure has fallen behind the state's population and economic growth over the last 15 years. Because of low interest rates and a construction slump that will reduce construction costs, current conditions are ideal for public investment using debt financing.

BACKGROUND

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.

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 financial 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 the decision to put public infrastructure in place, be it in the form of public highways, prisons, elementary and secondary schools, water treatment facilities, or university buildings, even though these investments do not yield net revenues from physical plants or production lines. To minimize costs and maximize public benefit, policymakers 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 — many of whom have not yet moved to Arizona or even been born — over the life of the school and indirect benefits to society that span generations. Similarly, roads deliver benefits over their lifetime of use and these benefits accrue to citizens who have yet to move to Arizona and to future generations. While it is difficult to translate the benefits of public investments into dollars, such benefits certainly exist or new schools or new roads should not be built at all.

Debt financing is an appropriate mechanism for public capital investments because the benefits of the new physical capital extend far beyond the year in which the facility is constructed. For example, 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, drivers who use the new roads, and families who move to new areas of development include future taxpayers. Failure to utilize debt financing is unfair to current taxpayers — especially the elderly who may not live to realize the benefits — and inefficient since a suboptimal amount of public infrastructure is put in place to serve current and future needs.

FEDERAL GOVERNMENT DEBT PERSPECTIVES

While sound reasoning supports the notion of debt finance, when the topic of debt arises many people think of the obligations of the federal government. Images of mounting debt, foreign ownership, unfairly saddling future generations, etc. come to mind. The federal debt in nominal dollars is shown in Figure 1.

An analysis of federal debt in nominal dollars provides an incomplete picture for a host of reasons: primarily, it fails to account for growth in the nation's population and economy, and it does not consider inflation. In Figure 2, federal debt outstanding relative to the size of the economy, as measured by gross domestic product (GDP), is displayed.

Figure 2 provides a very different perspective on the size of federal debt. The major acceleration of debt occurred in providing financing for the Second World War. The large public expenditures during the war years were the likely catalyst for lifting the nation out of the doldrums of the Great Depression. Few would disagree with the argument that the benefits of taking on this debt at this time exceeded costs. The benefits of financing accrued immediately and, following the postwar adjustment for conversions from wartime to peacetime manufacturing, set the stage for economic growth that has exhibited a steep trajectory (see Figure 3).

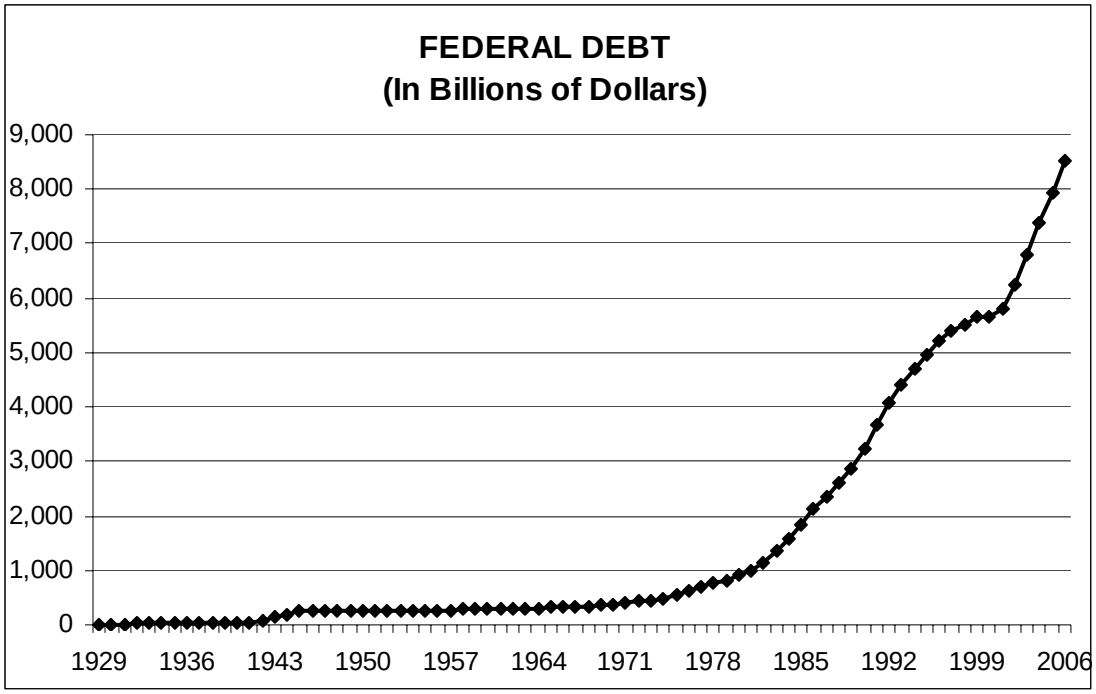
Moreover, taking on debt during a time when the investment was warranted did not create an irreversible thirst for acquiring more debt. Indeed, federal debt as a share of GDP declined steadily from 1946 through 1974 and did not begin to rise until 1982.

Federal debt as a share of GDP rose substantially from 1982 through 1993. This rise has a number of explanations. For example, tax cuts in the early 1980s were not offset with expenditure reductions, and military spending increased. However, the fiscal policies of the 1980s may have set the stage for business investments that stimulated robust economic growth in the 1980s and 1990s.

The data illustrated in Figures 1 through 3 suggest that there is no discernible correlation between acceleration in the federal debt burdens and negative economic performance. Indeed, it appears that strategic public-sector investments might stimulate future growth. However, the decision to use debt financing should incorporate the consideration of other factors.

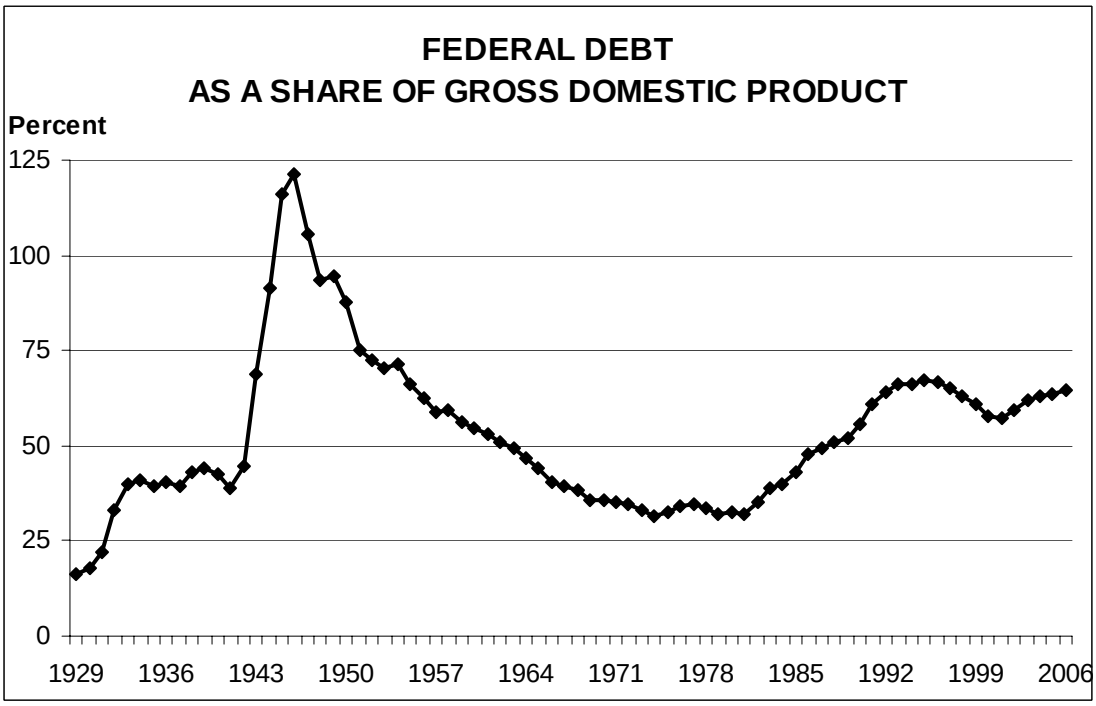
Using debt to finance current consumption bestows benefits on current taxpayers while shifting burdens to future generations. Hence, debt financing should be used only for investments that yield long-term benefits. This allows the cost of the investment that is

FIGURE 1



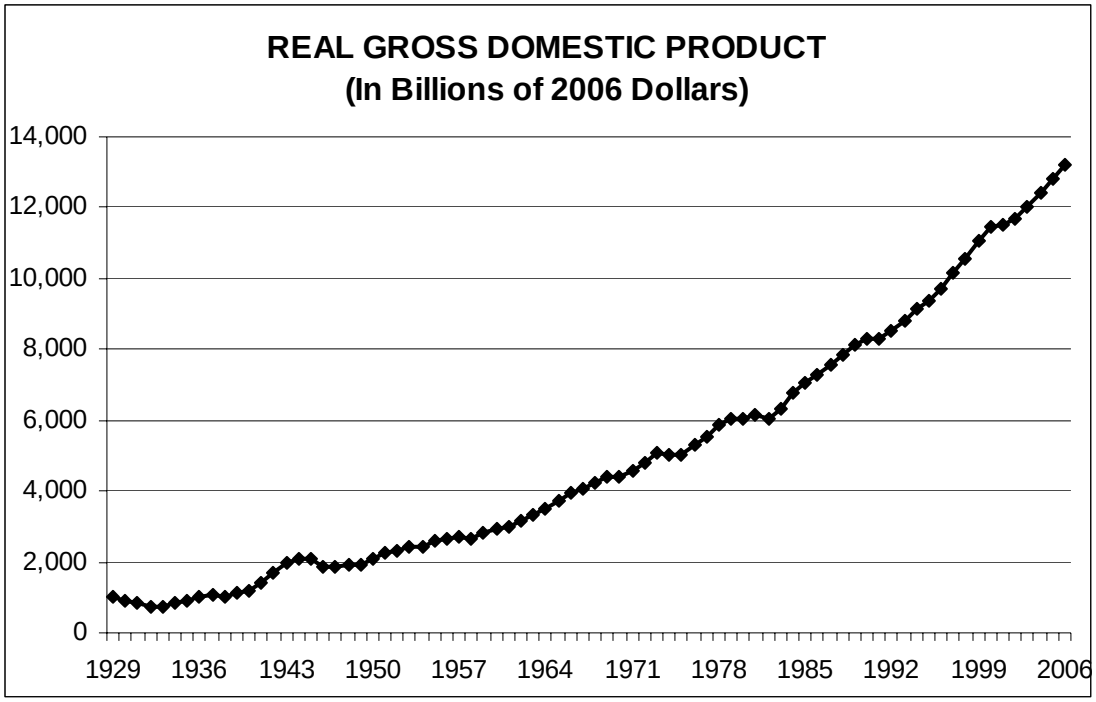
Source: Source: U.S. Department of Treasury.

FIGURE 2



Source: U.S. Department of Treasury and U.S. Department of Commerce, Bureau of Economic Analysis.

FIGURE 3



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

borne by future taxpayers to be matched by benefits of the investment. The result is intergenerational equity.

Investments in enterprises that yield clear economic benefits that offset the prevailing costs of capital are economically efficient. Borrowing when interest costs are historically low is optimal. The decision to invest using debt financing over time is an exercise in weighing costs and benefits.

BORROWING AT THE STATE AND LOCAL GOVERNMENT LEVEL

The principles of public finance discussed in the background section of this report apply to state and local governments as well as to the federal government. Long-term state and local government investments that use debt financing yield long-term benefits that exceed the ongoing costs of capital and achieve intergenerational equity. State and local governments that borrow simply to fund current consumption (with no discernible ongoing benefits) are passing costs on to future generations of taxpayers. However, by the same logic, state and local governments that pay cash today for long-term capital investments are burdening current taxpayers — especially those who will not live to reap the benefits.

State and local governments across the United States issue debt for investments in public infrastructure. The amounts of these investments are reported by the U.S. Census Bureau. In years ending in ‘2’and ‘7’ the data come from the Census of Governments; in other

years the data are derived from a survey of state and local government finances. The outstanding debt (in nominal dollars) of state and local governments in Arizona is compared to selected states and the national total in Table 1. Comparison states were chosen based on proximity to Arizona and and/or fast growth similar to that of Arizona.

The figures reported by the Census Bureau include public debt for private purposes that are not contained in the annual bonded indebtedness report produced annually by the Governor's office. Rates of change from the bonded indebtedness report are in line with observations from the Census Bureau. Readers interested in knowing the precise amounts of public indebtedness should refer to the annual bonded indebtedness reports. The focus in this report is on the Census Bureau data since they allow comparisons with other states, thereby adding perspective to the discussion of Arizona's debt obligations.

As seen in Table 1, state and local government debt nationally has increased substantially in recent decades. Arizona's debt has risen as well. Outstanding state and local government debt is expressed as a share of gross domestic product by state in Table 2. Just as the comparison of Figures 1 and 2 present different images of federal debt burdens, Table 2 presents a different picture than Table 1 by scaling the debt burdens of state and local governments against the sizes of their economies. Overall shares of debt obligations by state and local governments are far lower than the obligations of the federal government (presented in the far right column of the Table) and have grown at a much slower rate.

Since 1977, debt obligations as a share of gross domestic product by state have increased nationally. In each of the states displayed, a sharp rise in the percentage of debt was followed by a decrease. The difference in the debt percentage between 1977 and 2005 ranges from modestly higher in Georgia and Arizona to substantially higher in Colorado and Utah. In Arizona, the relative debt burden has fallen, almost back to the proportion of 1977, after rising sharply from 1977 to 1987 and reaching a maximum in 1992. Note that the percentage in 1977 was a little above the national average, while the shares in 2002 and 2005 were lower than the U.S. average.

TABLE 1
TOTAL OUTSTANDING DEBT OF STATE AND LOCAL GOVERNMENTS
(Millions of Current Dollars)

	National Total	Arizona	Colo-rado	Florida	Georgia	Nevada	Texas	Utah
1977	$257,532	$2,851	$2,195	$8,156	$4,169	$722	$13,061	$686
1982	399,290	6,612	5,158	13,134	7,550	1,593	24,343	3,548
1987	718,657	14,103	11,200	40,627	14,253	3,341	53,274	9,119
1992	975,609	19,110	16,295	55,278	20,718	5,789	65,364	10,433
1997	1,221,501	21,252	19,440	70,449	25,884	10,251	78,349	11,991
2002	1,681,377	26,606	28,466	90,316	34,301	15,773	119,226	13,250
2005	2,066,755	32,830	39,108	110,713	37,917	18,494	150,606	14,831

Source: U.S. Department of Commerce, Census Bureau, State and Local Government Finances.

In Table 3, outstanding state and local government debt is expressed in inflation-adjusted dollars per person. From 1982 through 1992, state and local government per capita debt burdens were higher in Arizona than the national average, and higher than in the comparison states other than Utah. However, debt burdens in 2002 and 2005 were well below national norms. Real per capita debt increases in Arizona have not kept pace with that of the nation since 1992 despite the state's growing demands for public infrastructure based on its rapid population growth. Other fast-growing states like Florida and Nevada have taken on debt burdens at a greater rate than has Arizona.

TABLE 2
OUTSTANDING PUBLIC DEBT AS A SHARE OF GROSS DOMESTIC PRODUCT

	State and Local Government								
	National Total	Arizona	Colorado	Florida	Georgia	Nevada	Texas	Utah	Federal Debt
1977	13.0%	14.7%	8.7%	12.3%	10.2%	9.6%	10.0%	6.6%	34.4%
1982	12.4	18.9	10.9	10.5	11.1	11.2	9.3	19.1	35.1
1987	15.4	23.8	17.8	19.6	12.2	14.9	17.6	36.1	49.6
1992	15.8	24.0	19.1	19.5	13.1	15.9	15.5	29.2	64.1
1997	14.8	16.7	14.6	18.0	10.9	17.1	13.1	21.2	65.2
2002	16.2	15.5	15.6	17.3	11.2	19.4	15.2	18.2	59.5
2005	16.7	15.5	18.2	16.6	10.6	16.8	15.2	16.8	63.8

TABLE 3
DEBT AND INTEREST PAYMENTS IN INFLATION-ADJUSTED (2005) DOLLARS

	National Total	Arizona	Colorado	Florida	Georgia	Nevada	Texas	Utah
	Real Per Capita State and Local Government Debt							
1977	$3,292	$3,299	$2,287	$2,577	$2,247	$2,991	$2,781	$1,464
1982	3,106	4,123	3,036	2,260	2,408	3,256	2,861	4,102
1987	4,577	6,332	5,301	5,226	3,543	5,038	4,946	8,386
1992	4,978	6,388	6,101	5,300	3,978	5,607	4,817	7,435
1997	5,308	5,316	5,732	5,496	3,991	6,885	4,703	6,702
2002	6,329	5,299	6,861	5,872	4,327	7,886	5,942	6,179
2005	6,970	5,515	8,386	6,231	4,152	7,667	6,569	5,955
	Real Per Capita Interest Payments on Outstanding State and Local Government Debt							
1992	$332	$458	$430	$353	$252	$416	$343	$531
1997	313	287	371	342	244	358	286	369
2002	327	277	350	324	215	409	302	307
2005	310	225	373	315	180	355	288	280

Source (Tables 2 and 3): U.S. Department of Commerce, Census Bureau, State and Local Government Finances, and Bureau of Economic Analysis.

Interest payments on the debt also are provided in real per capita terms in Table 3. In part due to reduced interest rates, real per capita interest payments in Arizona from 1997 through 2005 were substantially less than the level in 1992. Nationally, real per capita interest payments essentially were unchanged.

Those expressing concern about the rise in Arizona's debt point to the growth of outstanding debt obligations in recent years. Yet, debt as a share of gross domestic product in Arizona was no higher in 2005 than in 2002, and less than in the preceding years, and per capita interest payments were lower. Applying growth rates from the Governor's public indebtedness reports to the last available Census Bureau figure for 2005 suggests that the outstanding state and local debt figure for Arizona in 2007 might be as high as $40 billion, including all forms of debt at the combined state and local government level as well as public debt for private purposes. But gross product in Arizona likely eclipsed $250 billion in 2007, leaving debt as a share of gross product below 16 percent — below 1997 levels and well below levels observed in prior years. This would leave Arizona's debt load below the levels maintained by Nevada, Utah, Florida and Colorado in recent years. Thus, the concern about rising debt in Arizona ignores the rapid acceleration that has taken place in the size of the state's economy and, with it, increased pressures for public infrastructure.

State and Local Government Debt and Economic Performance

The relationship between economic growth and debt financing at the state and local government level can be evaluated by comparing Tables 2 and 3 to Table 4. Average annual real growth in gross domestic product by state for the five years (three years for the 2005 observation) immediately proceeding the indicated year is displayed in Table 4. Except for the five years preceding 1992, when Arizona's growth only slightly outpaced the national average, economic growth in Arizona has been considerably greater than the U.S. average. The slower pace of growth relative to the national average in the late 1980s and early 1990s can be traced largely to a severe real estate slump in Arizona and a decline in federal spending for defense goods manufactured in Arizona.

Wide differentials in economic growth between Arizona and the nation were present from the late 1970s through the middle 1980s and again in the mid-1990s, when debt burdens were higher than the national average. Since the mid-1990s, the differential in economic growth rates between Arizona and the nation have been smaller, at a time when debt burdens dropped below the national average. Having a debt burden that was very high in comparison with the rest of the nation and with comparison states in 1992 did not prevent Arizona from being among the leaders in economic growth over the subsequent five-year period. Indeed, the debt obligations of the 1970s and 1980s provided public infrastructure that may have helped fuel economic growth during that period and into the succeeding period.

The data suggest that relatively high debt loads do not necessarily impede economic growth. The argument for taking on additional debt needs to be made on the merits of the infrastructure investment, such as a sound investment that will yield long-term economic

TABLE 4
AVERAGE ANNUAL GROWTH IN REAL GROSS DOMESTIC PRODUCT

	National Total	Arizona	Colo-rado	Florida	Georgia	Nevada	Texas	Utah
1982	0.8%	3.0%	3.9%	3.9%	1.4%	4.0%	5.2%	2.7%
1987	4.4	7.7	2.6	7.3	7.9	6.1	-0.3	3.2
1992	2.3	2.7	2.8	3.1	2.8	6.7	3.4	3.7
1997	3.8	7.7	7.2	4.5	6.3	8.2	5.2	7.5
2002	2.9	4.3	4.6	4.1	3.4	4.4	3.7	3.3
2005	3.1	4.4	2.8	5.5	2.5	7.7	5.2	3.9

Source: U. S. Department of Commerce, Bureau of Economic Analysis.

benefits, and considerations of costs and benefits at a particular point in time, such as the costs of capital finance and construction.

INFRASTRUCTURE NEEDS IN ARIZONA

The pace of investments in, and financing of, infrastructure in Arizona has been much discussed in recent years. Major reports on the state's future transportation needs and broad public and private utility infrastructure needs are scheduled for release this year. One issue is whether the public sector has provided public infrastructure sufficient to support current and impending population growth. A second issue is whether private utilities have been provided the opportunity by regulators to price service delivery at levels that allow them to put requisite infrastructure in place. The current discussion pertains to the first issue and will be confined to items categorized in the general fund of state and local governments, including education, transportation, and public safety. Issues of water, power, communications and other infrastructure that are delivered by a mix of public, private, and quasi-public entities will be considered in a separate report.

Population growth in Arizona, the nation, and comparison states is presented in Table 5. The growth rate in Arizona has been eclipsed only by Nevada in recent years. The somewhat lesser percentage gains in Arizona in recent years result from the increasing size of the state's population; numeric population gains rose during the 1990s and 2000s.

The pace of public service delivery to serve growing populations in the comparison states can be examined historically from the Census Bureau data on state and local government finances. Table 6 presents government general fund spending on a real per capita basis (top panel) and as a share of gross product (bottom panel) for Arizona, the nation, and the group of comparison states. General expenditures span education, transportation, public health and welfare, public safety, environment and natural resources, and general government functions. Expenditures for current operations and capital outlays are included. Financing sources include taxes and other revenues of state and local governments, federal funds distributed to state and local governments, and borrowing.

The data in Table 6 indicate that Arizona's per capita spending from 1977 through 1992 was nearly equal to the national average and ranked second or third among the states displayed. As a share of gross product, Arizona was above the national average and ranked first or second among the seven states. By 1997, and continuing in 2002 and 2005, Arizona had fallen well below the national average on both measures. It was lowest among the seven states on per capita expenditures, and third on share of gross product.

Public expenditures for education, from preschool through graduate school, are compared in Table 7. Again, the expenditure data include current operations and capital outlays by

TABLE 5
AVERAGE ANNUAL PERCENTAGE GROWTH IN POPULATION

	National Total	Arizona	Colo-rado	Florida	Georgia	Nevada	Texas	Utah
1982	1.1%	3.6%	2.6%	3.3%	1.6%	5.4%	3.1%	3.4%
1987	0.9	3.5	1.3	2.8	1.9	3.0	1.6	1.5
1992	1.1	2.6	1.4	2.6	1.9	5.7	1.3	1.8
1997	1.2	3.9	2.8	2.2	2.4	5.5	2.1	2.9
2002	1.1	2.8	2.3	1.9	2.3	4.2	2.0	1.9
2005	1.0	3.0	1.2	2.1	2.0	3.6	1.8	2.3

Source: U.S. Department of Commerce, Census Bureau.

TABLE 6
STATE AND LOCAL GOVERNMENT GENERAL FUND EXPENDITURES

	National Total	Arizona	Colo-rado	Florida	Georgia	Nevada	Texas	Utah
				Per Capita Inflation-Adjusted (2005) Dollars				
1977	$3,489	$3,356	$3,647	$2,939	$2,749	$3,728	$2,747	$3,201
1982	3,372	3,180	3,355	2,788	3,030	3,679	2,832	3,122
1987	4,163	4,265	4,402	3,640	3,704	4,222	3,621	3,954
1992	4,988	4,613	4,867	4,535	4,301	5,133	4,127	4,133
1997	5,421	4,452	5,160	4,946	5,041	5,306	4,586	5,030
2002	6,522	5,139	6,556	4,733	5,841	5,900	5,552	6,015
2005	6,778	5,527	6,219	6,343	5,552	6,177	5,726	5,823
				Expenditures as a Share of Gross Domestic Product				
1977	13.7%	15.0%	13.9%	14.0%	12.5%	12.0%	9.9%	14.4%
1982	13.5	14.6	12.0	13.0	13.9	12.6	9.2	14.6
1987	14.0	16.1	14.8	13.7	12.8	12.5	12.9	17.0
1992	15.8	17.3	15.3	16.7	14.2	14.5	13.3	16.3
1997	15.1	14.0	13.2	16.2	13.8	13.2	12.7	15.9
2002	16.7	15.0	14.9	13.9	15.1	14.5	14.2	17.8
2005	16.2	15.5	13.5	16.9	14.1	13.5	13.3	16.4

Source: U.S. Department of Commerce, Census Bureau, State and Local Government Finances, and Bureau of Economic Analysis.

state and local governments. The evidence in Table 7 is similar to that of overall spending. Arizona spent significantly on education from the 1970s into the 1990s but more recently has lagged the nation and most comparison states — especially in real per capita spending.

Highway spending by state and local governments — almost exclusively spending that provides multiyear benefits — appears in Table 8. The spending represents all expenditures from state and local sources: taxes and other revenues, borrowing, and federal assistance.

The data in Table 8 convey a story consistent with that of education and overall spending. Highway investments across the state were relatively large through 1992. The Maricopa County freeway investment is especially prominent in 1987. However, in more recent years, investments in highways to provide for current and impending population growth have lagged the nation and other fast-growing states — especially when the comparison is based on real per capita measures.

A focus on capital outlays provides additional perspective. Data are available since 1992 and include all capital outlays, including lease-purchase contracts, for combined state and local governments. Construction of schools, roads, public hospitals, correctional facilities, parks and recreational facilities, sewers, solid waste disposal facilities, and

TABLE 7
STATE AND LOCAL GOVERNMENT GENERAL FUND EXPENDITURES ON EDUCATION

	National Total	Arizona	Colo-rado	Florida	Georgia	Nevada	Texas	Utah
				Per Capita Inflation-Adjusted (2005) Dollars				
1977	$1,314	$1,504	$1,667	$1,074	$1,024	$1,243	$1,192	$1,707
1982	1,202	1,372	1,412	964	989	2,248	1,175	1,503
1987	1,444	1,616	1,609	1,158	1,293	1,206	1,467	1,655
1992	1,657	1,604	1,722	1,410	1,402	1,550	1,614	1,781
1997	1,821	1,551	1,887	1,459	1,788	1,612	1,825	2,012
2002	2,239	1,753	2,169	1,677	2,195	1,850	2,278	2,425
2005	2,325	1,831	2,166	1,801	2,179	1,865	2,303	2,209
				Expenditures as a Share of Gross Domestic Product				
1977	5.2%	6.7%	6.4%	5.1%	4.7%	4.0%	4.3%	7.7%
1982	4.8	6.3	5.1	4.5	4.5	7.7	3.8	7.0
1987	4.9	6.1	5.4	4.4	4.5	3.6	5.2	7.1
1992	5.3	6.0	5.4	5.2	4.6	4.4	5.2	7.0
1997	5.1	4.9	4.8	4.8	4.9	4.0	5.1	6.4
2002	5.7	5.1	4.9	4.9	5.7	4.6	5.8	7.2
2005	5.6	5.1	4.7	4.8	5.6	4.1	5.3	6.2

Source: U.S. Department of Commerce, Census Bureau, State and Local Government Finances, and Bureau of Economic Analysis.

TABLE 8
STATE AND LOCAL GOVERNMENT GENERAL EXPENDITURES ON HIGHWAYS

	National Total	Arizona	Colo-rado	Florida	Georgia	Nevada	Texas	Utah
				Per Capita Inflation-Adjusted (2005) Dollars				
1977	$295	$347	$313	$221	$269	$414	$234	$427
1982	268	312	294	224	319	409	329	231
1987	332	584	379	270	298	452	371	368
1992	344	368	412	326	269	387	295	285
1997	357	325	413	359	293	470	294	447
2002	434	378	675	436	366	650	364	466
2005	418	353	472	450	197	663	432	361
				Expenditures as a Share of Gross Domestic Product				
1977	1.2%	1.5%	1.2%	1.1%	1.2%	1.3%	0.8%	1.9%
1982	1.1	1.4	1.1	1.0	1.5	1.4	1.1	1.1
1987	1.1	2.2	1.3	1.0	1.0	1.3	1.3	1.6
1992	1.1	1.4	1.3	1.2	0.9	1.1	0.9	1.1
1997	1.0	1.0	1.1	1.2	0.8	1.2	0.8	1.4
2002	1.1	1.1	1.5	1.3	0.9	1.6	0.9	1.4
2005	1.0	1.0	1.0	1.2	0.5	1.5	1.0	1.0

Source (Tables 7 and 8): U.S. Department of Commerce, Census Bureau, State and Local Government Finances, and Bureau of Economic Analysis.

buildings to house general government operations are included in the capital outlay figures (see Table 9).

The trends observed in the expenditure categories discussed above prevail with capital outlay expenditures. In 1992, Arizona was above the national average in real per capita outlays and ranked third among the seven states. Capital outlay expenditures as a share of the Arizona economy were the highest among the comparison states in 1992. Since then, Arizona has ranked sixth or seventh on per capita expenditures and fourth to sixth as a share of gross product. Capital outlays were below the national average on a real per capita basis in 2002 and 2005, despite the state's continued much more rapid growth. Capital outlays as a share of gross product were 0.6 percentage points less in 2002 and 2005 than in 1992.

An Independent Assessment of Infrastructure Needs

The American Society of Civil Engineers reported serious deficiencies with respect to Arizona's schools in its 2005 report card on infrastructure assessment for the state:

- 64 percent of Arizona's schools have at least one inadequate building feature.
- 69 percent of Arizona's schools have at least one unsatisfactory environmental condition.

TABLE 9
STATE AND LOCAL GOVERNMENT GENERAL FUND EXPENDITURES ON CAPITAL OUTLAYS

	National Total	Arizona	Colo-rado	Florida	Georgia	Nevada	Texas	Utah
				Per Capita Inflation-Adjusted (2005) Dollars				
1992	$463	$587	$629	$513	$455	$740	$417	$436
1997	561	591	647	593	599	907	466	755
2002	787	716	956	851	861	968	795	860
2005	817	806	901	934	668	1,161	912	843
				Expenditures as a Share of Gross Domestic Product				
1992	1.9%	2.9%	2.6%	2.5%	2.0%	2.7%	1.8%	2.2%
1997	1.9	2.2	2.0	2.3	1.9	2.7	1.5	2.8
2002	2.2	2.3	2.4	2.7	2.4	2.6	2.2	2.8
2005	2.0	2.3	2.0	2.5	1.7	2.5	2.1	2.4

Source: U.S. Department of Commerce, Census Bureau, State and Local Government Finances, and Bureau of Economic Analysis.

At the same time, Arizona's burgeoning school-age population is placing huge demands on the need for new buildings. With 3 percent annual growth in the elementary and secondary school population projected through 2020, some 37 million additional square feet in space will be required. According to a recent report to the Board of Regents, the state's universities will require over 14 million new square feet by 2020, with considerable portions devoted to costly research laboratory space. The cost of elementary, secondary, and university construction easily could exceed $15 billion (in inflation-adjusted dollars), not considering the recent acceleration in the cost of construction. These estimates do not include the needs of community colleges, which have received increased pressure to deliver programs that develop specific technical expertise to an ever-changing labor market landscape.

The American Society of Civil Engineers also reported serious deficiencies with respect to Arizona's highways, along with estimates of costs borne by citizens as a result of these deficiencies:

- Twenty-nine percent of Arizona's major urban roads are congested.
- Vehicle travel on Arizona's highways increased 52 percent from 1990 to 2003, comparable to the population increase.
- Driving on roads in need of repair costs Arizona motorists $459 million a year in extra vehicle repairs and operating costs — $120 per motorist annually.
- Congestion in the Phoenix metropolitan area costs commuters $812 per person per year in excess fuel cost and lost time.
- Congestion in the Tucson area costs commuters $507 per person per year in excess fuel cost and lost time.

The estimated costs for addressing these needs have yet to be established, but failure to keep pace with highway needs in recent years may prove very costly to Arizona

taxpayers. The costs are borne regardless of policy action — either in the costs of congestion or in the expenditures required to ameliorate the congestion pressures.

The American Society of Civil Engineers also reported:

- Arizona has almost $6.2 billion in wastewater infrastructure needs.
- Arizona generates 1.10 tons of solid waste per capita.

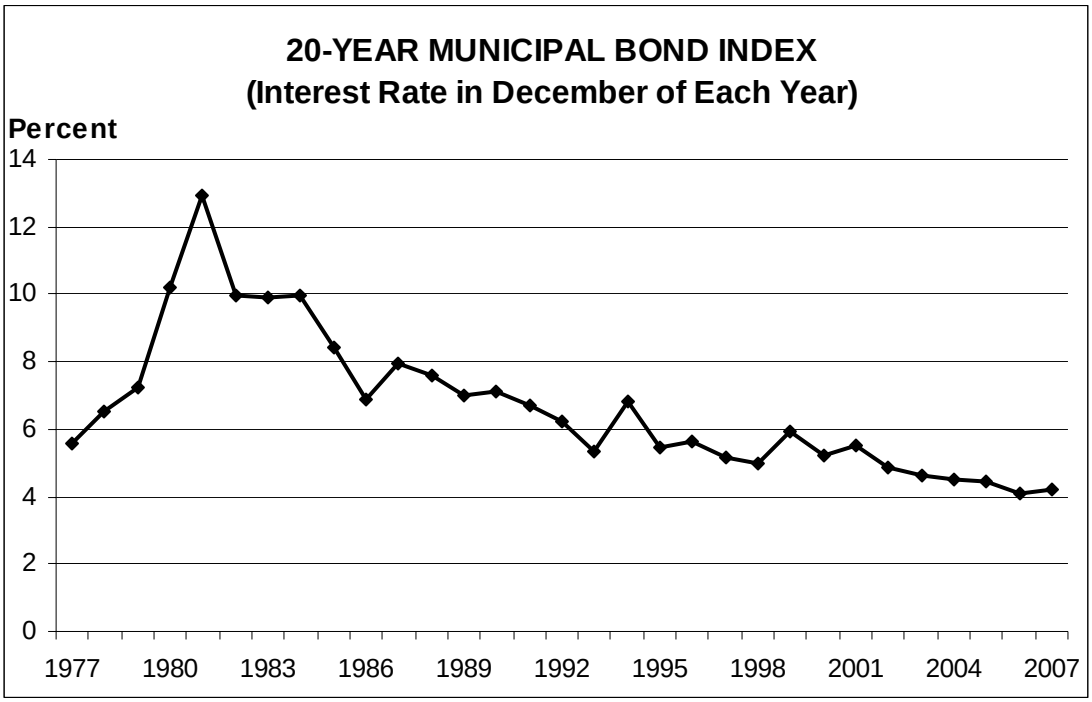
The modest pace of general expenditures in recent years has exacerbated these problems.

Thus, the relatively slow pace of spending in Arizona in the face of economic and demographic pressures has been manifested in some pressing public infrastructure needs. While the focus of this report is on public-sector infrastructure, there is no reason to believe that infrastructure needs in the private and quasi-public energy, water, and communications sectors are not equally pressing.

Timing Considerations

Debt financing is much less costly when interest rates are low and when construction costs have moderated due to the construction sector being in the trough of its cycle. Figure 4 presents municipal bond rates historically. Interestingly, when Arizona's state and local government debt levels were considerably higher in the late 1970s and 1980s, the cost of capital was considerably higher than today. The cost of acquiring debt currently is at a historically low level.

FIGURE 4



Source: Federal Reserve Board and Economagic.com.

A sharp downturn in residential construction currently is underway. While commercial construction has held up well to date, some real estate experts have noted that most of the current activity is the result of plans put in place several years ago. Few new big-ticket projects have been planned recently. This follows the typical cycle and suggests that the pace of commercial construction will wane over the next year or two — just as the economy struggles to lift itself from the current downturn.

Plans formulated today by state and local governments to address infrastructure needs may prove very timely. The debt could be acquired at historically low interest rates and the publicly financed construction would occur at the trough of the private-sector construction cycle.

Using debt financing purely as a tool to stimulate economic growth is not necessarily a prudent use of credit markets. However, if the debt is used to address real infrastructure needs, and the construction of facilities yield long-term benefits, an added benefit of debt financing is a boost to the economy, particularly to a slumping construction sector.

As an example, using the input-output model IMPLAN to assess the effects of a $1.2 billion university construction proposal, economists estimated an impact of $1.6 billion in total economic activity and 26,655 jobs while the project was being constructed. The authors noted that an assessment of the overall impact should include the opportunity costs of funds, alternative uses of the money, and other issues. If debt finance were used to pay for this activity now, borrowing costs would be minimized, the construction stimulus would occur when most needed, and benefits and costs would be distributed across current and future taxpayers.

CONCLUDING THOUGHTS

That Arizona state and local governments may be positioned to take on more debt load without placing the state in a position where it is overly debt laden relative to other state and local governments or relative to historical conditions is not in itself a rational for taking on more debt. Following the principles of public finance discussed earlier, debt should be taken on only to finance those projects that yield long-term benefits to future citizens and when capital markets offer favorable terms regarding costs and benefits of each project.

Arizona’s explosive population growth has resulted in pressing needs for infrastructure and public services. From 1992 through 2005, the state accounted for more than 5 percent of the nation’s population growth — one in 20 new U.S. residents was an Arizonan. Over the same period, state and local governments in Arizona expended less than 2 percent of the nation’s total capital outlays for public infrastructure. The imbalance has manifested itself in a need for new education facilities, new highways, and other public infrastructure.

While population and economic growth has remained strong — the current downturn is cyclical in nature — it is unclear whether the standard of living and quality of life can be

maintained. The pace of public infrastructure investments will dictate how well future growth will be accommodated.

Prudent use of the debt financing capacity that Arizona enjoys can allow citizens to address these infrastructure needs without resorting to tax rate increases. While the cost of capital is at historic lows, Arizona state and local policymakers could follow the lead of many in the private sector and use capital markets efficiently and in a timely manner that promotes intergenerational equity to address the pressing public-infrastructure needs.