Analyzing and Evaluating Changes in State and Local Government Debt*

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> *California, New York and other states are showing many of the same signs of debt overload that recently took Greece to the brink -- budgets that will not balance, accounting that masks debt, the use of derivatives to plug holes, and armies of retired public workers who are counting on benefits that are proving harder and harder to pay.*
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> "State Debt Woes Grow Too Big to Camouflage," *New York Times*, March 30, 2010[1]

Even before the fiscal effects of the recent recession, there was concern about the long-run fiscal viability of state and local government budgets. Major structural changes in the economy, important demographic shifts, and a continual narrowing of state-local tax bases had generated concerns about persistent structural deficits (see Fisher, 2010). The recession that began in 2007 and its aftermath have created nearly unprecedented fiscal pressure on these governments, exacerbating these long-run fiscal concerns. One important aspect of these concerns is whether state and local governments have burdened themselves and their citizens with excessive debt.

The purpose of this paper is to examine the current status of state and local government debt in the U.S., to report how that debt has changed in level and composition over the past 15 years, and to explore various economic and political reasons for interstate differences in debt magnitudes and composition and changes in those values over this period. Has state-local debt risen in relative terms, and if so, to what degree? If subnational government debt has increased, does the evidence suggest that those higher debt levels are creating an increasingly difficult fiscal situation for states and localities? To what degree do states differ in the levels of debt, and what economic or political factors seem to explain interstate differences? Finally, are there clear factors that seem to have influenced increases in state-local debt in recent years? Answers to these questions would seem to provide two benefits. First, the answers will help put the current fiscal situation of state-local governments in context and suggest whether additional borrowing may be appropriate. Second, the information and approach may assist individual states in evaluating their own debt levels.

[1] http://finance.yahoo.com/banking-budgeting/article/109211/state-debt-woes-grow-too-big-to-camouflage .

The paper is divided into four main sections. The first section includes an overview of state and local debt in the United States, focusing on magnitudes, composition, and changes in the past 15 years. The second section presents a discussion of how interstate differences in debt might be evaluated, with an illustrative application to six selected states. The third section presents the results of regression analysis to examine the reasons for interstate differences in debt and changes in debt over time. A summary of the results and discussion of the implications for policy comprise the last section.

MAGNITUDES AND COMPOSITION OF STATE AND LOCAL DEBT

In 2008, state and local governments in the United States had accumulated a total outstanding debt of nearly $2.6 trillion (according to the most recent data collected by the United States Census Bureau). In 2009 dollars this amounted to about $8,560 per person.[2] As shown in Table 1, the degree of this debt has grown substantially in the past forty years. However, until recently the magnitude of state and local government debt remained relatively stable compared to the size of the economy (13 to 16 percent of GDP) and compared to the annual total revenue of subnational governments (75 to 90 percent). However, between 2002 and 2007 state and local debt increased substantially faster than GDP and revenue. So much, that in 2008 it represented almost 18 percent of GDP and 96 percent of annual revenue.

Insert Table 1 Here

There was also a continuous centralization of subnational government borrowing between 1960 and 1990. Though, since 1992 the division of debt between state and local governments has remained stable. State governments now account for about 39 percent of the total subnational government debt and local governments about 61 percent. Even though the magnitude of aggregate state and local debt may seem large, the annual cost in state and local government budgets is quite modest. In 2008, annual interest payments on the outstanding debt required only 3.8 percent of total state and local revenue. However, this simple summary obscures important differences between types of state and local debt, the debt levels of different types of local governments, and debt levels among the various states.

[2] Throughout this report we translate historic dollars values into 2009 equivalent dollars so they are easily comparable to current dollars. We could not translate into 2010 equivalent dollars because the deflator to do this is not yet available.

Types and Purposes of Debt

State and local governments borrow money for three purposes: (1) to finance public capital projects or public facilities, (2) to support and subsidize private activities such as private home mortgages, student loans, and industrial or commercial development; and (3) to provide cash flow for short-term spending or for special projects. Furthermore, state and local governments may borrow to pay off old debt sooner if interest rates fall (refinancing or refunding).

Different types of state and local government bonds correspond to the different reasons why state and local governments borrow. The vast majorities of bonds issued carry a repayment period of more than one year and are labeled "long-term" debt. Long-term debt appropriately finances public capital projects and private-purpose activities. In contrast, short-term debt (taken on for less than a year) is commonly used to smooth cash flows. Since 1992, long-term debt has accounted for more than 98 percent of outstanding state and local government debt.

General obligation (GO) bonds pledge the full-faith and credit of the issuing government as security. The responsible government may use revenue from any tax or charges to repay the debt. If existing revenue sources are not sufficient for that purpose, then the government pledges to raise taxes or charges to generate the necessary funds. Revenue bonds (sometimes called non-GO bonds) pledge revenues from only a particular source related to the project (such as bridge tolls, student room and board fees, and similar) to pay the interest and principal back to the bond's investors. Investors view revenue bonds as more risky investments than GO bonds and thus require higher interest rates from the borrowing governments. State and local governments also use revenue bonds when the borrowed funds support allowed private investment (private-activity bonds).

Measuring the Relative Magnitude of State and Local Debt

Measuring the magnitude of debt that a state or local government has incurred traditionally involves comparing aggregate debt (a "stock") or components of that total debt (such as long-term debt) to various annual measures of fiscal and economic capacity (which are "flows"). The most common measures of annual economic activity to compare debt against include population, income generated by economic

activity in the jurisdiction (gross domestic product), personal income of residents, revenue received by the government, and/or the magnitude of a governmental tax base (especially the property tax base in the case of local governments). Here we present three measures of relative state and local debt burden: (1) real debt per person (that is, debt adjusted for inflation changes divided by population), (2) debt as a percentage of gross state product (GSP) for the jurisdiction, and (3) debt as a percentage of the appropriate annual government revenue. We also present the annual cost to the government from outstanding debt (that is the annual interest payments on the debt, as a percentage of annual revenue).

Real per capita debt for all state and local governments increased from $5,917 in 1992 to $8,351 in 2007 (2009 dollars), or by about 41 percent. As shown in Figure 1, essentially all of this growth arose from increased long-term debt incurred by state and local governments for traditional public purposes.

Insert Figure 1 Here

Comparing state and local debt to a state's GDP offers a similar conclusion. As shown in Figure 2, since 1992 only long-term debt for traditional public purposes increased relative to GDP. Overall, state and local debt outstanding increased from 15.8 percent of GDP in 1992, to 17.6 percent in 2007.

Insert Figure 2 Here

It is also relevant to compare debt to the total revenue of a state or local government. As shown in Figure 3, outstanding state and local debt varied between 76 percent and 93 percent of annual state and local revenue between 1992 and 2007. Variation in state and local revenue affects the variation in the ratio among these four years more than aggregate outstanding debt. Over these years, debt increased more or less continuously, but the increase appears relatively greater when compared to years when state and local revenue grew relatively slowly. Among these four years, fiscal years 1992 and 2002 came at the end of national recessions, whereas fiscal years 1997 and 2007 came after periods of economic growth.[3] Thus, it makes most sense to compare 2007 with 1997. Comparing these two years suggests that total outstanding state and local debt is about the same size relative to total state and local revenue.

[3] The official dates for United States recessions in this period are July 1990-March 1991, March 2001-November 2001, and then the latest recession that began in December 2007 and ended in June 2009.

Thus, as of 2007 in aggregate it does not appear that state and local governments in the United States incurred outstanding debt disproportionate to their annual budgets.

Examining debt for all state and local governments in aggregate could obscure the fact that different forms of subnational governments may have pursued different debt policies. Thus, it is also important to compare debt levels among state governments and the various types and levels of local governments. Although state and local debt has risen in relative terms (real debt per capita, as a percentage of GSP, and as a percentage of annual revenue), we have seen that the increase has been concentrated in long-term debt for traditional public purposes (excluding debt for private purposes). Within that growing category of long-term debt, the largest increase has been in debt incurred by or on behalf of school districts, as shown in Figure 4. Nationally, school district long-term debt has gone from six percent of total state and local long-term debt to 13 percent since 1992.

Insert Figure 4 Here

The annual demand that outstanding debt makes on state and local budgets comes in the form of interest payments. From 1992 to 2007, interest paid by state and local governments in aggregate decreased relative to annual revenue, declining from 5.5 percent of revenue in 1992 to 4.5 percent in 1997, 4.8 percent in 2002, and 3.5 percent in 2007. This is the result of a combination of changes in debt relative to revenue and changes in the interest rates that state and local governments face. Disaggregating by type of subnational government, annual interest paid on outstanding debt decreased as a share of revenue from 1992 to 2007 for all types of state and local governments, except for school districts, as shown in Figure 8. This result reinforces the point that much of the growth in this recent 15-year period has been in debt by or on behalf of schools.

Insert Figure 5 Here

Unfunded Public Pension Costs

In addition to public subnational debt acquired through the issuance of bonds, the concept of state and local "debt" should perhaps include other future financial liabilities of state and local governments. In particular we are thinking of future pension costs. Essentially, these liabilities represent deferred

compensation to employees. Depending on contractual and other legal aspects, as well as the governments' practices of funding this deferred compensation, these liabilities may also represent a claim on future public receipts and assets.

Measuring future liability for employee pension costs is not straightforward. It requires an estimate of both the value of assets for the pension program and a value for future liabilities, with the difference being the "unfunded liability". First, asset values vary substantially from day-to-day because most state and local pension funds invest in stocks, bonds, and real estate whose market values fluctuate. Therefore, unfunded pension liability will differ depending on when the asset value estimates are made. Second, estimates of pension liability depend on whether liabilities are counted for all retirees and current public employees assuming they work to retirement or only liabilities incurred to date (which excludes some future liabilities if current employees continue to work). Finally, extremely relevant for a value calculation is the discount rate used to calculate the present value of future liabilities or, equivalently, the rate of return that pension funds can expect to earn.

The rate of return issue is as follows. Most states assume they will earn an average rate of return of about eight percent and use that to calculate unfunded liability or the ratio of assets to liability. However, most analysts believe that a state planning to earn an eight percent rate of return on its portfolio could only do so by incurring substantial risk. This implies that such a value for a risk-adjusted rate of return is too high. More realistic perhaps is that states should expect to earn average rates of return of four to five percent, the rate on long-term United States Treasury bonds. However, if the long-term Treasury bond rate is used to discount future pension liabilities, rather than the eight percent that states commonly used, then the estimate of future liability grows.[4]

The Public Fund Survey (http://www.publicfundsurvey.org) collects and reports financial information for state and local government pension programs. The survey information, which claims to represent more than 85 percent of state pension members, comes primarily from retirement system annual

[4] If states earn a four to five percent return on investment annually rather than eight percent (risk adjusted), then states must allocate greater funds to investment to meet future liabilities.

financial reports, augmented by actuarial valuations, benefits guides, and interviews with retirement system staff members. As shown in Table 2, information from these state reports shows that in 2009 real dollars, state pension programs had assets of $2.53 trillion in 2007, and $2.67 trillion in 2008. Future liabilities equaled $2.95 trillion in 2007 and $3.06 trillion in 2008. Using these measures, the unfunded future liability for these pension programs was around $420 to $450 billion in 2007/2008. This implies that the implicit debt for unfunded future pension liability is about five times smaller than the traditional financial debt of states and localities (around $2,600 billion as shown earlier in Table 1).

Insert Table 2 Here

Novy-Marx and Rauh's (2009) estimate of unfunded state pension liability for the years 2005 through 2008 yielded very different conclusions. These authors provide several liability estimates for each year, including one using the rate of return assumed by each state and one using the rate of return implied by United States Treasury bond rates. For 2007, the authors estimate state pension fund assets to be $2.87 trillion and future liability (in present value terms) to be $2.90 trillion (assuming the state return estimates) or $4.51 trillion (using Treasury bond returns). As shown in Table 2, the unfunded state pension liability in 2007 by their measure was between $30 billion and $1,630 billion.

For 2008, the estimates of Novy-Marx and Rauh changed dramatically. Assets were valued after the December stock market decline associated with the financial market crisis. In addition, a decline in Treasury bond rates served to increase the present value of future liabilities.[5] Using this approach, the authors estimate state pension fund assets to be $1.96 trillion and future liability (in present value terms) to be $3.02 trillion (assuming the state return estimates) or $5.23 billion (using Treasury bond returns). By these measures, the unfunded state pension liability in 2008 is between $1,060 billion and $3,270 billion (2009 dollars).

Depending on the estimation method, in 2007 state pension programs exhibited unfunded liabilities between $30 billion and $1,630 billion. Unfunded pension liability was larger in 2008. Depending on the estimation method, these estimates place it somewhere in the range of $1,060 to $3,270

[5] The assumption is that the lower returns available after December 2007 continue to prevail into the future.

billion. In comparison, state and local government outstanding financial market debt in fiscal year 2007 was $2,490 billion and $2,580 billion in 2008. Comparison of these different financial liabilities is difficult not only because of the legal distinctions, but also because of the variability in pension liability estimates by time and evaluation method. Nonetheless, a reasonable guess is that the unfunded future pension liabilities of state and local governments are between 50 to 100 percent of traditional financial market debt. We believe, therefore, that it is imperative to consider a state's future pension liabilities when asking whether its debt load is "sustainable" and/or "affordable".

Summary of Debt Status

State and local government debt has increased in relative terms over the past 15 years and especially in this decade, whether measured relative to population, GDP, or state-local government revenue. Despite this increase in the magnitude of debt, the annual budget cost of debt in the form of annual interest payments has decreased relative to the size of state-local budgets. Importantly, it seems, the increase in state-local debt has been in long-term debt for traditional public purposes, rather than state-local borrowing for so called private purposes. The major component of the increase in long-term debt has been debt incurred by school districts for K-12 education purposes. Finally, the implicit debt created by unfunded future pension liabilities for state-local employees is substantial and may even approach the traditional outstanding bond debt in magnitude.

METHODS FOR POLICYMAKES TO EVALUATE DEBT DIFFERENCES AND CHANGES

Evaluating the magnitude of debt that a state or local government has incurred traditionally involves comparing that aggregate debt (a "stock') to various annual measures of fiscal and economic strength (which are "flows"). It is also possible to compare debt to the magnitude of various debt limits set constitutionally or statutorily in a state. Although there are some "rules of thumb" that may be useful in estimating roughly how high a government's debt is by any of these measures, there are no absolute objective standards, partly because governments differ dramatically in political and economic circumstances. Therefore, more complete and comprehensive methods to evaluate debt are desirable.

The literature suggests three alternative approaches to evaluating public debt amounts. These include examination by affordability, optimality, or comparability.

***Affordability*: Demands on Economic and Fiscal Resources**

The most basic concept of debt evaluation is to compare debt (or debt costs) to measures of the economic or fiscal capacity of the jurisdiction or government. The most straightforward question is whether there are (or will be) sufficient resources to afford the debt or debt costs. For instance, do residents of a jurisdiction have sufficient income to repay the debt and interest costs, or does the public entity have sufficient revenue to repay the debt? It is these types of questions that lead to computing simple measures such as debt as a fraction of jurisdiction or resident income, debt as a fraction of the government's revenue, and interest costs as a fraction of revenue. But such an approach can be misleading because even if residents have sufficient income or governments have sufficient revenue, it seems unlikely that they would want to devote all of that income or revenue to debt. Individuals and governments may want to purchase other things.

A more refined version of these questions, then, is whether individuals and governments can afford the debt and everything else that they want to purchase.[6] From the perspective of individuals or residents of a jurisdiction, the issue is the magnitude of taxes they are willing to pay to cover the costs (interest and principal payments) of government debt. From the perspective of a government, the issue is the fraction of revenue required for debt costs and whether the remaining revenue is sufficient to fund other demanded public services. These questions lead to examining changes in the ratios of debt (or debt costs) to income and revenue. If the ratio of debt to income or debt to revenue is growing, then there may a potential for debt to crowd out other purchases or public services.

Even this second approach to affordability may be too simplistic, as some argue that it is the ratio of debt (or debt costs) to income and revenue in the future that matters, rather than the current values. There are two reasons why considering future ratios may give a different picture than current ones. First,

[6] Think of the following question for a person or family: "Can I afford a Ferrari?" One may have sufficient income to buy a Ferrari (it is affordable) but not to buy a Ferrari and a house and food (not affordable with other things).

even with constant tax rates, revenue in the future may be lower if tax bases do not grow as expected or some taxes are not used. Second, the share of the budget required for services not financed by debt may rise. If the relative costs of public services not financed by debt increase, then providing those services will require a larger share of budgets in the future than currently. Or citizen demands may change because of demographic changes, mandating a different set of public services. To deal with the first issue, some authors essentially argue that states should evaluate debt relative to long-term or future revenue streams. Along these lines, one study (Brecher *et.al*, 2003) compares debt and unfunded pension liabilities to what revenues would be if the government had a "representative revenue system," a concept developed a number of years ago by the United States Advisory Commission on Intergovernmental Relations. Another study (Baker *et.al*, 2002) calculates the present value of revenue and compares that to the present value of future expenditures plus debt.

***Optimality*: Optimal Investment in Public Services and Facilities**

Recognizing that all state governments (except Vermont) have some type of requirement for a balanced budget, essentially all long-term state-local debt is used to acquire some form of capital goods rather than to pay for current public services. Thus, an entirely different approach to evaluating debt is to ask whether a state is buying the level of public facilities and public services desired and demanded by residents and then financing the appropriate share of those costs with debt.

This approach requires estimating both demand for public services (the residents of all jurisdictions are not expected to want the same types, quantity, or quality of public facilities) and the optimal financing mix between taxes and debt (residents of different jurisdictions may prefer to finance different percentages of public facility costs with debt). Temple (1994) uses this exact approach. A complication is that these two aspects are not independent. If a jurisdiction faces relatively low costs of debt (low borrowing rates), it may induce residents to demand greater amounts of public facilities. Or jurisdictions that over consume public services (taxes high relative to income) may find that perceived financial risk causes borrowing costs to increase.

***Comparability*: Comparison to Other Similar Governments**

Finally, it might be most straightforward and clear for states to evaluate debt use by comparing to other states' various measures of debt use after accounting for differences in economic circumstances, population and geographic characteristics, and political structure. All states (or all cities and so on) are not expected to have the same relative levels of debt because of differences in circumstances. The relevant question is whether a jurisdiction's debt level is unusually high (or low) after adjusting for those different circumstances. We demonstrate the comparability approach in two ways, first with a simple tabular comparison of subnational debt level in six "similar states" and then in a more complex regression analyses that enables the finding of separate state specific effects on debt use.

Six Selected States Compared

Although the regression analysis of state debt use reported in the following section of this report provides a more complete interstate comparison, it is also illustrative to compare debt levels and composition in a state to a selected set of "similar" states. In what follows, we take the position of a public official in California and compare that state's debt situation to that in four other large and urban states (Florida, Illinois, New York, and Texas), and one other border state (Arizona).

Many similarities and a few key differences are immediately apparent from the 2007 summary data in Table 3. First, subnational government debt in California is not substantially out of line compared to these other five states. Although California's per capita state and local debt may appear relatively high (exceeded only by New York), California's debt compared to the size of the state's economy is in the middle among these states (lower than in New York and Illinois, about the same as Florida, and higher than in Texas and Arizona). Compared to the magnitude of state and local government annual revenue, however, California's public debt is the lowest among these states – and substantially lower than in Illinois, New York, and Texas. Similar observations arise when we compare California to the average of all states, rather than just these five large, urban states. Although per capita public debt seems high (14% above the U.S. average), outstanding public debt relative to the size of the state's economy or relative to state-local government revenue is not dramatically different than for the average of all states.

Insert Table 3 Here

Rather than comparing California and other selected states based on debt levels in a single year (2007), one can also compare these states in terms of how debt amounts have changed over time. Table 4 contains the changes in the three measures of debt amounts for these states and the U.S. overall (real per capita debt, debt percentage of state GSP, and debt percentage of revenue) from 1992 to 2007; Figures 9 and 10 contain comparisons of real per capita debt and debt relative to annual state-local government revenue. Real per capita state-local debt increased substantially in California over this period, by $1,750 or about 65 percent. Among these states, only Illinois and New York had larger increases, whereas real per capita debt in Arizona declined.

Insert Table 4, and Figures 6 and 7 Here

However, the perspective is quite different if one compares changes in state-local debt to changes in gross state product or state-local government revenue. The state-local debt share of GSP declined in all six of these states since 1992, that is state-local debt did not increase as fast as GSP or the size of the states' economies. In contrast, state-local debt increased nationally more than GDP (so the ratio of debt to GDP rose). In California, state-local debt declined from 13.9 percent of GSP in 1992 to 8.8 percent in 2007, a decrease of more than five percentage points. Among these six states, only Illinois had a larger relative decrease. Comparing state-local debt to state-local revenue, debt in California increased just slightly more than revenue over this period, from 69.5 percent in 1997 to 70.6 percent in 2007. Among these six states, Arizona and Florida stand out as states where debt grew much less than government revenue, whereas Illinois is the state where debt increased substantially more than revenue. Debt relative to revenue in 2007 remained higher in Illinois, New York, and Texas than in California. Focusing only on California, it seems clear that state-local debt has not grown relative to the size of the state's economy or relative to the size of state-local budgets since 1992.

As noted previously, the largest increase in debt nationally since 1992 has been in debt incurred by or on behalf of school districts. Nationally, school district long-term debt rose from six percent of total state-local long-term debt to 13 percent since 1992. This trend is especially strong in California, where school district debt increased from 1.4 percent to 15.1 percent of outstanding long-term debt

between 1992 and 2007, as shown in Figure 8. The state government's share of long-term debt remained at about 34 percent of the total, whereas the shares for other types of local governments – counties, municipalities, and special districts – declined. Thus, over this 15-year period, long-term school district debt essentially replaced long-term debt by other local governments.

Insert Figure 8 here

Table 5 offers a comparison of school district debt in California in 2007 to school district debt in the five other comparison states. School district debt is substantially greater in Texas, both in absolute amounts and relative to the size of the economy and government budgets, than in any of the other states. In contrast, school district debt is relatively low in Arizona and New York. California appears in the middle of these six states in terms of debt issued by school districts, comparable to Florida and Illinois.

Insert Table 5 Here

In summary, outstanding state-local government debt in California in 2007 is not substantially different relative to either the size of a state's economy or relative to subnational government budgets compared to other large, urban states. However, California has issued relatively less short-term debt than other states and has used public debt for private purposes to a relatively less degree than other states. Consequently, outstanding long-term debt for traditional public purposes is a bit higher in California than other states. A substantial portion of the increase in long-term debt in California since 1992 has arisen from growing school district borrowing. The outstanding debt and the annual interest payments on debt remain a relatively low fraction of state-local government budgets in the state. A policy maker or official in any state or locality could follow a similar approach in evaluating that jurisdiction's debt.

REGRESSION ANALYSIS OF SUBNATIOBNAL DEBT

We next pursue regression analyses of the levels of state and local debt issued by the 50 states between 1992 and 2007. Such an analysis allows us to quantify the factors that have driven differences in debt across the states over the time period observed and determine if state-specific trends beyond these expected causal factors have influenced any one state's debt. Such a regression-based comparison offers

one way of determining whether any jurisdiction is out of line with respect to other states regarding its degree of state and local debt activity.

A brief examination of similar past studies helps to place our regression analysis in the appropriate context. These studies offer valuable insights into both the choice of dependent variable and the economic and political theories to consider when selecting the appropriate explanatory variables. A description of the specific regression models used here and descriptive statistics for the variables used to implement it follow. The results of two different forms of regression analysis are presented, providing some suggestions as to what is driving differences in subnational debt activity across the states and changes in state-local debt over time.

Previous Research on Differences in Subnational Debt Activity

Bahl and Duncombe (1993) was one of the first studies to use regression analysis to determine the factors that drive differences in debt burdens across the states. They define a state's debt burden as the total amount of a particular form of debt issued at a point in time in a state (a stock) divided by the state's total personal income for the previous year (a flow). For three years (1988, 1989, and 1990) and 49 states (Alaska deemed an outlier and excluded), Bahl and Duncombe gather inflation-adjusted data on debt load for (1) total state and local debt, (2) state and local government only debt, (3) full faith and credit state and local government only debt, and (4) public non-guaranteed debt. They hypothesized that differences in these values were due to four general factors: (1) service demand differences accounted for by population and income differences, (2) expansionary government differences controlled for with per-capita spending in different expenditure categories and limitations on debt imposed by the state, (3) debt mix as measured by private or public non-guaranteed debt as a fraction of total debt, and (4) historic debt burden from 1977. Bahl and Duncombe find that population, population density, historic debt burden and current expenditure exerts a positive influence on most of the measures of current debt used in their analysis, whereas the use of private purpose debt and a debt limit exerts a negative influence. This study laid the groundwork for further studies of this nature. But we are suspect of putting too much credence on their specific regression findings given that many of the chosen explanatory variables are endogenous to

the process of a debt level decision for a state and also highly correlated with each other. Furthermore, in this study there was no attempt to control for the statistical issues that arise when using cross sectional data over time to create a pooled data sample.

Trautman (1995) followed with a regression analysis of pooled 1984, 1985, and 1986 data on real per-capita long-term debt issued by the 50 states. She was interested specifically in finding the effect of debt limitation rules on the issuance of debt, but included other political and institutional factors that also influence state debt activity. These included the degree of decentralization in state and local government, use of a capital budget, executive tenure remaining, executive appointment power, and number of state public authorities authorized to issue debt (which she appropriately modeled as endogenous). Furthermore, she accounted for the expected effect of service demand differences by including as explanatory variables the percentage state population urban, college educated, greater than age 65, and per-capita income. Trautman also included dummies for three of the four major Census Regions, but no state or time dummies to account for the panel nature of her data. Her findings support the notion that debt management and strong executive control reduce the amount of debt activity exhibited by a state.

Clingermayer and Wood (1995) provided the first regression study of long-term, per-capita state debt that we found that explicitly accounted for the panel nature of the data used – 48 states (Alaska and Hawaii excluded) observed over the 29 years between 1961 and 1989. Observing that debt levels from a state over time are not stationary (last year's debt makes up the bulk of this year's), they first difference the dependent variable and all explanatory variables included in their regression analysis. Appropriately, they also deal with autocorrelation and heteroskedasticity concerns. Clingermayer and Wood (1995) hypothesize that the observed differences in debt levels are due to economic, political, and institutional factors. Economic factors measured only in the year that debt observed include real per-capita income, real per-capita own source state and local revenues, and real per-capita federal revenue. Economic factors measured in the year debt observed and for the previous nine years include the change in the three previous described economic factors, and the change in short-term debt. Two additional economic variables include an interest rate measure across the years and a dummy variable to account for 1986 tax

reform. Their inclusion of political and institutional explanatory variables was extensive and incorporated real federal debt (constant across states in a given year), a measure of political liberalism in the state (constant across years in a given state), degree of electoral competition in the state, degree of divided government in the state, fiscal centralization as measured by the ratio of state revenue to all state and local revenues, a dummy if a tax or spending limit is in place, and a dummy if a debt limit is in place. All of the economic factors included as explanatory variables in the Clingermayer and Wood regression study are statistically significant and exhibit the expected direction of effect. A more liberal and electorally competitive state exhibits greater debt, while a state with a Democrat as governor and a Republican legislature exhibits less debt. Surprisingly, they find the presence of tax and spending limits in a state is associated with greater per-capita debt levels.

Finally, Ellis and Schansberg (1999) examine the reasons why the change in real long-term debt levels varies across states by crafting a regression study that weights this measure by either a state's population or its total state and local government spending. Note the difference in dependent variable used here (change in debt level) from what is used (total debt level) in the previous studies just discussed. The Ellis and Schansberg data set consists of 29 annual observations between 1966 and 1994 for all 50 states. They also believe that economic, political, institutional, and constituency factors drive these differences. The panel nature of their data set is accounted for with a one-way error component regression model that subtracts the observed mean of a variable in a given time period across the 50 states from its observed value in a state. In statistical terms this is equivalent to including a set of state dummy variables in the regression. Ellis and Schansberg find that a higher percentage young (old) exerts a positive (negative) influence on both measures of a state's change in debt level, whereas per-capita income exerts a positive influence on change in debt per capita and a negative influence on change in debt per government spending. Only a few of the included political and institutional explanatory variables exerted a statistically significant influence on either debt measure. These findings were that a Republican majority in the upper house reduces debt per population, whereas same party control of upper

and lower houses, or a governor with at least one more term to serve, increases state debt per dollar of government spending.

The review of pervious articles suggested the following insights regarding our own regression analysis of the topic. First, it is necessary to use a panel data set that contains observations from the states spread out over multiple years. Doing so offers the increased variation of not only observing differences in debt burden across the states, but differences over time within a state. But when adopting this approach, the fixed effects on state debt that are constant in one year for all states and constant in a state over multiple years need to be accounted for. In addition, we need to control for inflationary effects through the use of real dollar values. Second, the choice of how to measure debt burden is important. We only wish to examine long-term debt (taken on for more than a year). But as demonstrated by the choices in previous studies, it is important to distinguish between different forms of long-term debt when trying to explain what drives differences in it. For instance, the causes of differences in public debt taken on for private purposes are likely to be different than public debt for public purposes.

Furthermore, there has emerged a clear consensus on the general casual factors that drive differences in long-term debt burdens across the states. Broadly defined these factors can be categorized as economics, politics, institutions, and demographics. The inclusion of explanatory variables that account for all of these factors helps to insure that a regression analysis does not suffer from "omitted variable bias" (that the influence picked up from one explanatory variable is not due to the variable being correlated with another explanatory variable that has been left out). One must also be on the lookout for the inclusion of explanatory variables that are endogenous to the determination of a state's debt load. One example from the previous research is the use of government spending to explain debt activity. Here there is not a clear dependent and independent variable designation as debt activity also influences government expenditure. If this simultaneous determination is not accounted for, regression estimation yields a biased causal effect of government expenditure on debt. Our solution is to specify a reduced-form regression model that excludes clearly endogenous explanatory variables. Also, in research of this type, explanatory variables can be determined exogenously but still move closely together. Termed

"multicollinearity," this occurrence is a worry because it biases the standard error of regression estimates upward and reduces the likelihood of statistical significance. Its occurrence needs calling out if present. "Heteroskedasticity" and "autocorrelation" are also two technical regression considerations that are likely to be present. Both introduce biases into the calculated standard errors of regression estimation. Corrections for these are available if detected.

A Regression Model of Determinants of State Debt

Data are from the decennial Census of Governments on the nominal level of long-term state and local debt in the 50 states for the years 1992, 1997, 2002, and 2007. In addition, we have information on the amount of this public debt used for private purposes, and a separate measure of the long-term debt issued by schools in the 46 states where the school district is not specifically a part of state government. We place all of these measures in thousands of dollars and 2009 real terms, and divide by state population (to account for obvious scale effects) in the respective year to come up with the four dependent variables we chose to use in our regression analysis: (1) Real Long Term Debt Per Capita, (2) Real Public Debt Private Purpose Per Capita, (3) Real Long Term Debt Less Private Per Capita, and (4) Real Long Term School District Debt Per Capita.

Debt levels across states and over time, measured in any of the four ways describe above, are modeled as follows:

$Debt_{i,t}$ = f (Demographics$_{i,t}$, Politics$_{i,t}$, Economics$_{i,t}$, Institutions),

where,

Demographics = f (Percentage Pop Age 65 Plus, Percentage Pop Public K-12 Enrolled, Previous Five Year Growth Public K-12 Enrollment),

Politics = f (Lower House Leg Democ Majority Prev Five Years),

Economics = f (Percentage Pop Poor, Percentage Pop Urban, Real Gross State Product Per Capita),

Institutions = f (Percentage S/L Gov Rev from Local, Real Fed Intergov Rev to S/L Gov PC, Limit Debt Issue by Amount, Supermajority Required to Raise Taxes, No Mandatory Revenue or Spending Limit),

i = 1,2,3, …50 states and t = 1992, 1997, 2002, and 2007.

We include this choice of explanatory variables because they account for the four general factors expected to influence the level of subnational debt issued in a state. The specific explanatory variables chosen to represent the general factors are similar to variables used in previous studies. We have taken a parsimonious approach to variable choice to try and avoid issues of multicollinearity and endogeneity. Table 6 below offers the source and descriptive statistics for all variables used in this analysis.

Insert Table 6 Here

Recall that our goal in estimating this regression analysis is twofold. First, we desire to offer information on the explanatory variables that exert a statistically significant influence on debt. Second, we wish to determine that if after accounting for these widely noted causal factors, has particular states offered more or less debt than the other states. As noted in Wooldridge (2000, Chapters 13 and 14) there are two ways by which to estimate a panel data regression. The first is by "first-differencing" observations on all variables for two consecutive time periods observed. In our study we accomplish this by subtracting 1992 values from 1997, 1997 values from 2002, and 2002 values from 2007. This yields one less cross section of observation, but as explained by Wooldridge (p. 429), offers an effective way to control for the fixed-effects within a state that are constant over time and affect its debt issue, but are non-measurable using available explanatory variables. The benefit of using this approach is that it avoids the use of a set of state dummies and the resulting introduction of multicollinearity into the regression. If present, we can also correct for heteroskedasticity and autocorrelation. The downside to the use of first differencing in a panel data regression analysis is that it does not yield the fixed effect regression estimates necessary to determine if a specific state was offering more or less debt over this period than other states.

An alternative to first differencing is a "fixed effects" regression model that pools state observations on debt over time and includes a set of time dummies and a set of state dummies to account for and measure these influences. Though as just noted, this is likely to introduce multicollinearity and reduce the likelihood of finding statistically significant influences on the dependent variable. Also, it is

difficult to account for the presence of both heteroskedasticity and autocorrelation if present in a fixed effects regression. Wooldridge's (p. 447) suggestion is to report the results of both of these regression models because there is no definite rule to decide which is the more appropriate. This is exactly the procedure we follow.

Regression Results

To estimate the first-differenced version of the regression model, a set of time dummies to represent the three different first-differenced cross sections of data were utilized. Woolridge (p. 430) suggests this inclusion to control for time specific effects not picked up through the other explanatory variables. We begin this estimation by first estimating four first-differenced regressions with our variety of explanatory variables. In each case, a Breusch-Pagan test for heteroskedasticity indicates its presence and we then re-estimate with standard errors that are robust to the clusters of different states included in each regression. The residuals from these regressions are retrieved and used to test for AR(1) autocorrelation as suggested by Wooldridge (p. 431). In doing this, only the regression using Real Long Term Debt Less Private Per Capita as a dependent variable exhibits positive serial autocorrelation, which left uncorrected, will likely bias a regression coefficient's standard errors downward. We correct for this by "quasi-differencing" (Wooldridge, 2000, p. 388) the first-differenced observations in this regression using the estimated rho of 0.58 derived from the AR(1) test for autocorrelation and re-estimating. Table 7 contains the results of these four first-differenced regressions, corrected for heteroskedasticity and autocorrelation where appropriate.

Insert Table 7 Here

The regression results recorded in Table 7 assume that the effect of any of the casual variables on debt is consistent across the 15-year time period observed. In Table 8, the same four regressions as in Table 7 are estimated again, but with only the first-differenced regression data from 2007 less 2002. The purpose in doing such is twofold, first, to see if the same explanatory variables are important to the level of different forms of debt observed across the states in this latest time period and second, to test whether a

state's unfunded pension liability per person exerts an influence on the level of debt it procures. The consistent variable used to represent unfunded pension liability is only available for this later period.

Insert Table 8 Here

Four fixed-effect regressions using the same data as employed for the first-differenced regressions are also estimated. Again, a Breusch-Pagan test for heteroscedasticity indicates its presence in all four regressions. We thus re-estimate with standard errors that are robust to the clusters of different states included in each regression. Table 9 contains these regression results. As just discussed, we also wish to test whether the amount of unfunded real state pension liability exerts an influence on debt issue. Because a consistent measure of this explanatory variable is only available for 2002 and 2007, we re-estimate the four regressions in Table 7 using a panel data set derived from only these two cross sections. Table 10 contains these results. These are also informative to check if the influences of explanatory variables in these most recent periods are different than calculated for all four periods.

Insert Tables 9 and 10 Here

Interpretation of Regression Results

Turning first to the first-differenced results for the full 1992 to 2007 time period in Table 9, the only explanatory variable found to exert a statistically significant influence on all four forms of debt is federal intergovernmental revenue per capita. A thousand dollar (2009 real dollars) increase in federal revenue sharing per capita reduces long term debt per capita by slightly more ($1,040); the same change in federal revenue per capita sharing reduces private purpose debt per capita by $454, public debt less private purpose debt by $329, and school district debt by $264. The only influence detected from an institutional restraint was the absence of any form of revenue or spending limit raising real long term debt per capita by $209. The only significant political influence fell upon public debt less private where the average presence of a lower legislative house that was majority Democrat over the previous five years raised this value by $243. Public debt less private rose by $68 for every thousand dollar increase in real gross state product per capita, fell $35 for every one percent increase in the population urban, and fell $18 for every one increase in the previous five year growth rate of school age children in the state. Not surprisingly,

school age children in the state influenced school district debt. A one percentage point increase in children raised school debt by $39, while a similar change in the five year growth rate of school aged children lowered it by $3.

As reported in Table 8, estimates of these same first-differenced regressions using only the 2007-2002 differences show that the presence of school age children exerted a significant influence on all four forms of debt. In addition, the negative influence of not having a revenue or spending limit extended beyond just real long term debt, to now include real long term debt less private debt. Notably, unfunded pension liability never had a statistically significant effect on debt.

What is perhaps most noteworthy about the results derived from the first-differenced regressions is the absence of statistical significance among many of the causal factors found to be significant in previous studies. This could be due to the presence of multicollinearity among the set of explanatory variables included here, but an examination of the variance inflation factors calculated for each regression coefficient indicates that this is not the case. This absence of significance is likely due to these causal factors being correlated with state-based fixed effects that once controlled for, reduce the statistical significance of demographic, political, economic, and institutional factors previously found important. This is confirmed in our own running of these regression without first-differencing (and therefore without fixed-effect controls) where more of these explanatory variables were found to be significant.

The fixed effects regression results in Tables 9 and 10 confirm the lack of statistical significance for many of the explanatory factors found significant in previous studies. For the full sample of states from 1992 to 2007, real federal intergovernmental revenue was again found to exert a significant influence on all four forms of debt with magnitudes of effect that were similar to that calculated in the first-differenced regression. For all but private debt for public purposes, the percentage of school age children in a state exerted a positive influence. For the 2002 and 2007 sample, these results held but not to the same degree as the full sample. Again, unfunded pension liability never influenced debt issue.

As stated earlier, the primary purpose of running fixed effects regressions was to derive state specific effects. This is accomplished through a set of state dummies that exclude California and thus sets

it as the baseline state by which to compare the regression coefficients calculated for all other states. For all of the fixed effects regressions, we first ran a similar regression that excluded the state dummies. F-tests indicated that the set of state dummies as a whole exerted a statistically significant influence on all measures of debt, independent of the time period observed. The primary purpose of running the fixed effect regressions is to observe the state specific effects derived within them. A positive (negative) regression coefficient on a state dummy in Tables 9 and 10 indicates that relative to California, and holding other causal factors included in the regression constant, this state has taken on more (less) debt. Thus, in answer to our question of whether a single state has taken on too much debt, it is appropriate to turn to an examination of these regression coefficients. For the purpose of this discussion, we again use California.

A tally of state dummy variables that are statistically significant for each type of debt, for each of the two samples used in the fixed effects regressions, is particularly illuminating. For the entire 15 year period, 11 states issued more long term debt per capita than California and none issued less. Given an average issue of $6,711 across all states, the fixed effects regression model indicated that the State of New York's amount over California's (after controlling for other causal factors expected to drive differences) was the largest at $3,075. When only examining private purpose debt per capita, the number above California jumped to 24 with still zero below. With private purpose debt per capita debt exhibiting an average value of $2,229 across all states, Montana's amount over California's was the largest $2,493. Turning to an examination of public debt less private offers different results, five states were above California and 16 states were below. Exhibiting an average value of $4,482, Idaho issued the least public debt less private relative to California at -$2,280; while New York issued the most at $1,858. There were far fewer states that exhibited school district debt per capita different than California with one being above and two being below. Remember that these results characterize 1992 to 2007.

The state dummy results recorded in Table 10 instead characterize the comparison of California to other states for only the two most recent years available. Here the findings for long term debt, private debt, and school debt are remarkably similar to that reported in Table 9. In these debt categories,

respectively there are 15, 23, and two states found as offering more than California. But for long term debt less private, the number of states offering more than California has risen from three to five, while the number offering less has dramatically declined to three from the 16 shown in Table 9 for the entire period.

Conclusions from Regression Findings

The review of the previous literature indicated what other studies have found regarding the factors that affect differences in debt issuance by state. This survey yielded a regression model and concerns to be aware of when using it that we then use to conduct our own empirical study of the importance of institutional, economic, political, demographic, unfunded pension liability and non-measurable state specific factors on differences in four different measures of real state debt per capita. Following this analysis we conclude that:

- Relative to 1992, and controlling for causal and state specific factors expected to cause differences in debt issue, across all four forms of debt examined there was little change in amount issued in 1997, an increase in 2002, and an even further increase in 2007. (Based upon time dummy variables from fixed effects regressions in Table 9.) Thus, consistent with the simple observation, state-local debt has been increasing in relative terms.

- The most persistent influence on state debt per capita of all types is federal intergovernmental revenue per capita. A thousand dollar increase in this value lowers long-term debt per capita by a just over that amount for the entire period observed and by about -$600 in 2002 and 2007. (Based upon first-differenced regression results in Tables 9 and 10.)

- However, the most persistent influence on all forms of debt in 2002 and 2007 is the percentage population in K-12 public schools. A one percentage point increase raises public debt less private by $134 per capita. (Based upon first-differenced regression results in Table 9.)

- Only slightly more than half of the variance in long-term debt per capita and public debt less private debt per capita is explainable through the causal factors used in previous studies. This falls to less than a third for private purpose debt per capita, and is between a third and a half for school district debt. (Based upon the R-squared values from first-differenced regressions in Tables 7 and 8.)

- About half of the variance in private purpose debt per capita is due to state specific factors that are constant over time and not represented by the included political, economic, demographic, and economic factors. In 2002 and 2007, state specific factors in California placed it on par with all but six states. Three states (New York, Texas, and Washington) spent more and three states spent less (Oklahoma, South Dakota, and Wyoming). Furthermore, when looking instead at long term debt per capita and public debt less private debt, California's state specific spending is respectively less than 15 and 23 states in 2002 and 2007. This seems to indicate that California

debt in this category is not grossly out of line. (Based upon fixed-effects regression results in Table 10.)

- Regarding the question of whether the amount of unfunded pension liability in a state affects its debt decision, the answer appears to be no. In none of the four most recent first-differenced regressions or the four most recent fixed-effect regressions where a state's unfunded pension liability per capita was included as an explanatory variable, was it ever found to exert a statistically significant effect. (Based upon regression results in Tables 8 and 10 using the 2002 and 2007 data set.)

SUMMARY AND POLICY IMPLICATIONS

An assessment of subnational government debt levels may be accomplished by examining affordability, optimality, or comparability. Affordability involves comparing debt levels to the magnitude of the economy or to the size of the government budget, either currently or a forecast of these measures for the future. Optimality recognizes the tie between debt and investment in public capital. The issue is whether government is investing in the quantity and quality of public capital desired by residents and financing the appropriate share of that cost with debt. Comparability involves evaluating debt by comparing to other "similar" governments after allowing for important differences in circumstances. In this paper we use the conceptual method of comparability to examine whether a particular state's debt is out-of-line.

Whether measured relative to population, GDP, or state-local government revenue, subnational government debt in the United States has increased in relative terms over the past 15 years and especially in this decade. This is confirmed both by the aggregate data and the pooled time-series regression analysis. Despite this increase in the magnitude of debt, the annual budget cost of debt in the form of annual interest payments has decreased relative to the size of state-local budgets. Importantly, it seems, the increase in state-local debt has been in long-term debt for traditional public purposes, rather than state-local borrowing for so called private purposes. The aggregate analysis shows that the major component of the increase in long-term debt has been debt incurred by school districts for K-12 education purposes. Similarly, the regression analysis shows that K-12 school enrollment is a major factor explaining state debt differences.

The application of the analysis to the most populated state – California – supports the overall

aggregate and regression results. Our comparative analysis does not suggest that the aggregate level of public debt in California is especially problematic. We conclude that debt levels are not especially high compared to the size of the economy in California, nor compared to the size of government budgets. Furthermore, debt levels in California are not substantially different than in other states after considering differences in population and income. And much of the growth in California's debt over the past 15 years seems related to growth in enrollment in public primary and secondary schools, suggesting that the increased debt corresponds to increased investment in public education facilities.

Because the analyses in this report suggests that public debt levels are influenced by K-12 public school enrollment, federal aid, and some political/institutional factors, future debt levels are likely to be determined by changes in these underlying factors. Forecasting future debt levels depends, therefore, on forecasts of the underlying determining factors.

In many ways, this review of state-local government debt is quite positive, suggesting appropriate fiscal behavior on the part of these governments rather than profligacy. Debt magnitude has risen, but interest costs have decreased relative to state-local budgets. In most instances, lower borrowing costs would make more debt optimal, which is consistent with the observations. Still, one might be concerned about rising debt if the reason was ambiguous or unclear, leading to concerns that states and localities were incurring debt for inappropriate purposes. In fact, however, the analysis suggests that increased state-local debt has been influenced by two primary factors – K-12 school enrollment and federal intergovernmental aid. In the first instance, if states and local school districts are incurring debt to fund new school facilities or to replace or maintain aging facilities, then long-term debt is indeed funding public capital investment in a sector that seems crucial to long-run economic growth. In the second case, state-local debt seems to be a substitute for federal aid (increases in federal aid leading to lower debt levels). This seems to imply that states are making somewhat reasoned fiscal decisions to utilize fiscal resources cautiously rather than to increase spending when the option is available.

These results may also have implications for the behavior of state and local governments during this period of slow economic growth following the recession. With municipal interest rates at near-record

lows (2 – 3%), it may be an opportune time for states and local governments to borrow for important capital and infrastructure projects. Even though debt levels have risen and may seem high, the capacity for additional borrowing seems available, as annual interest costs for outstanding state-local debt have declined in the past 15 years and now average only about 3 percent of revenue.

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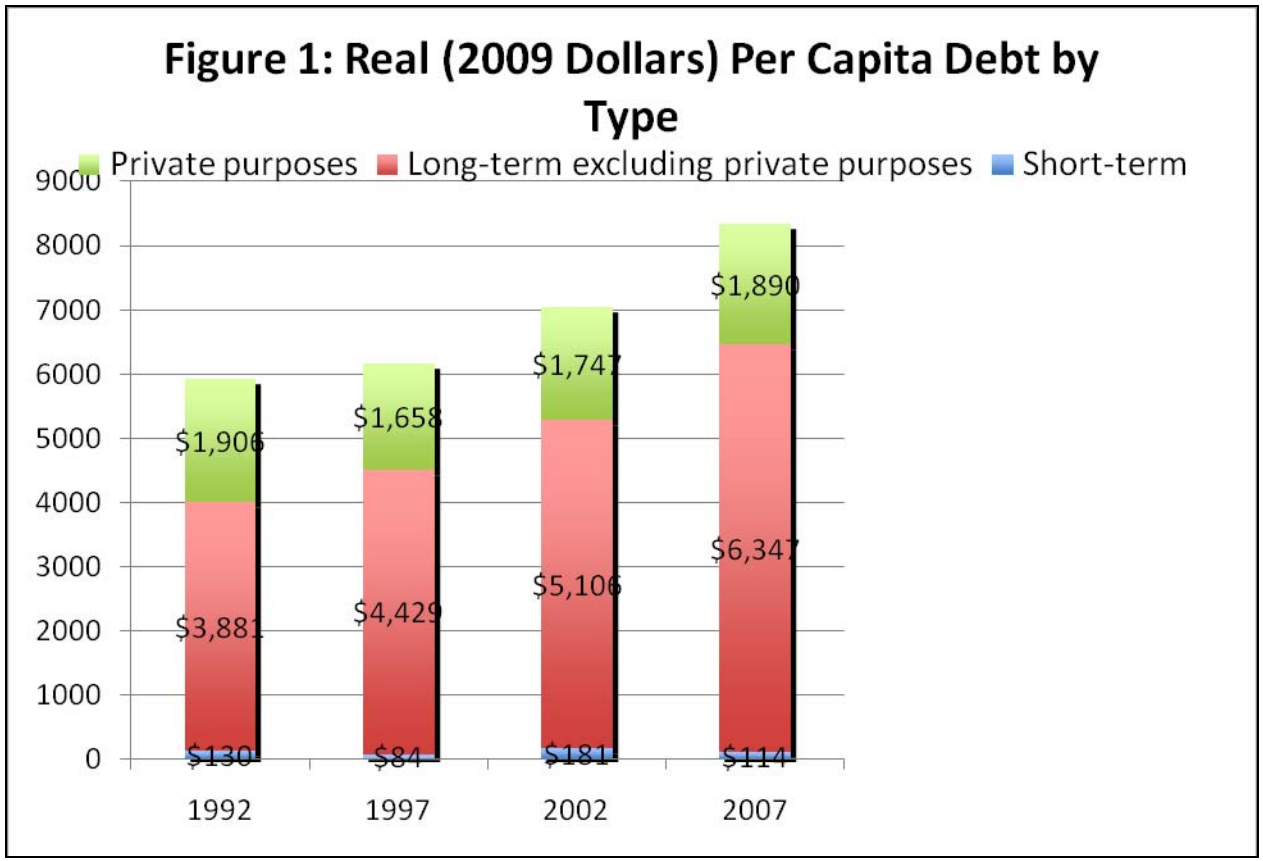


Figure 1: Real (2009 Dollars) Per Capita Debt by Type
Private purposes
Long-term excluding private purposes
Short-term
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
$1,906
$3,881
$130
$1,658
$4,429
$84
$1,747
$5,106
$181
$1,890
$6,347
$114
1992
1997
2002
2007

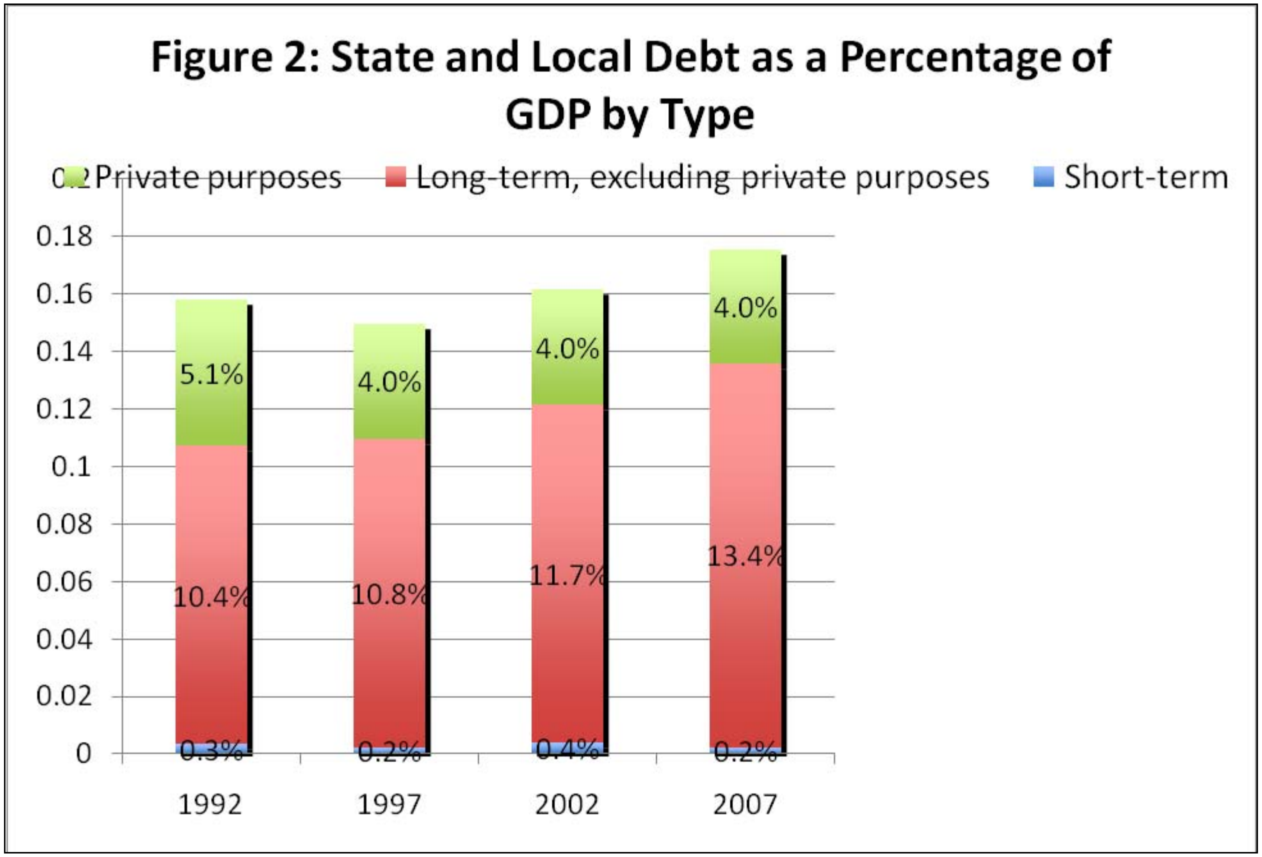


Figure 2: State and Local Debt as a Percentage of GDP by Type
Private purposes
Long-term, excluding private purposes
Short-term
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
5.1%
4.0%
4.0%
4.0%
10.4%
10.8%
11.7%
13.4%
0.3%
0.2%
0.4%
0.2%
1992
1997
2002
2007

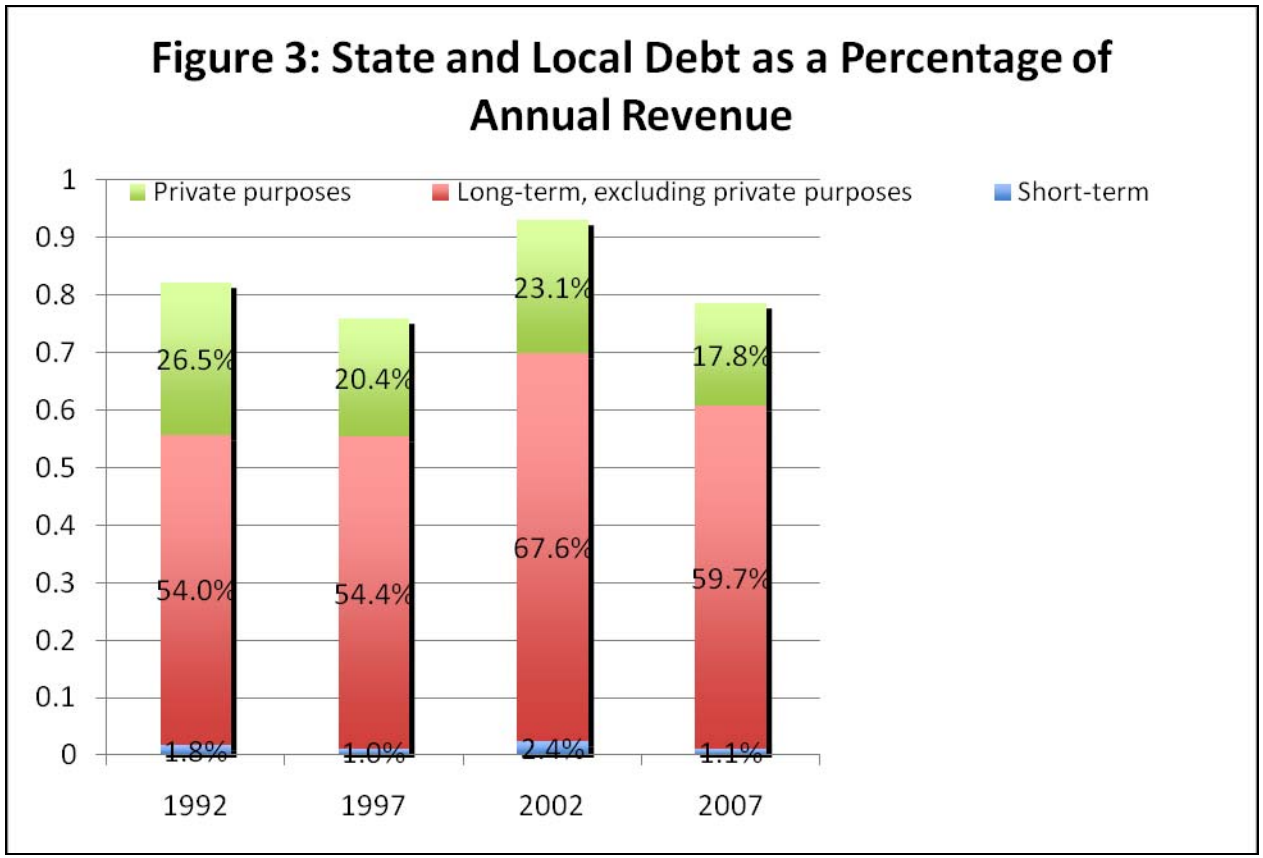


Figure 3: State and Local Debt as a Percentage of Annual Revenue
Private purposes
Long-term, excluding private purposes
Short-term
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
26.5%
54.0%
1.8%
20.4%
54.4%
1.0%
23.1%
67.6%
2.4%
17.8%
59.7%
1.1%
1992
1997
2002
2007

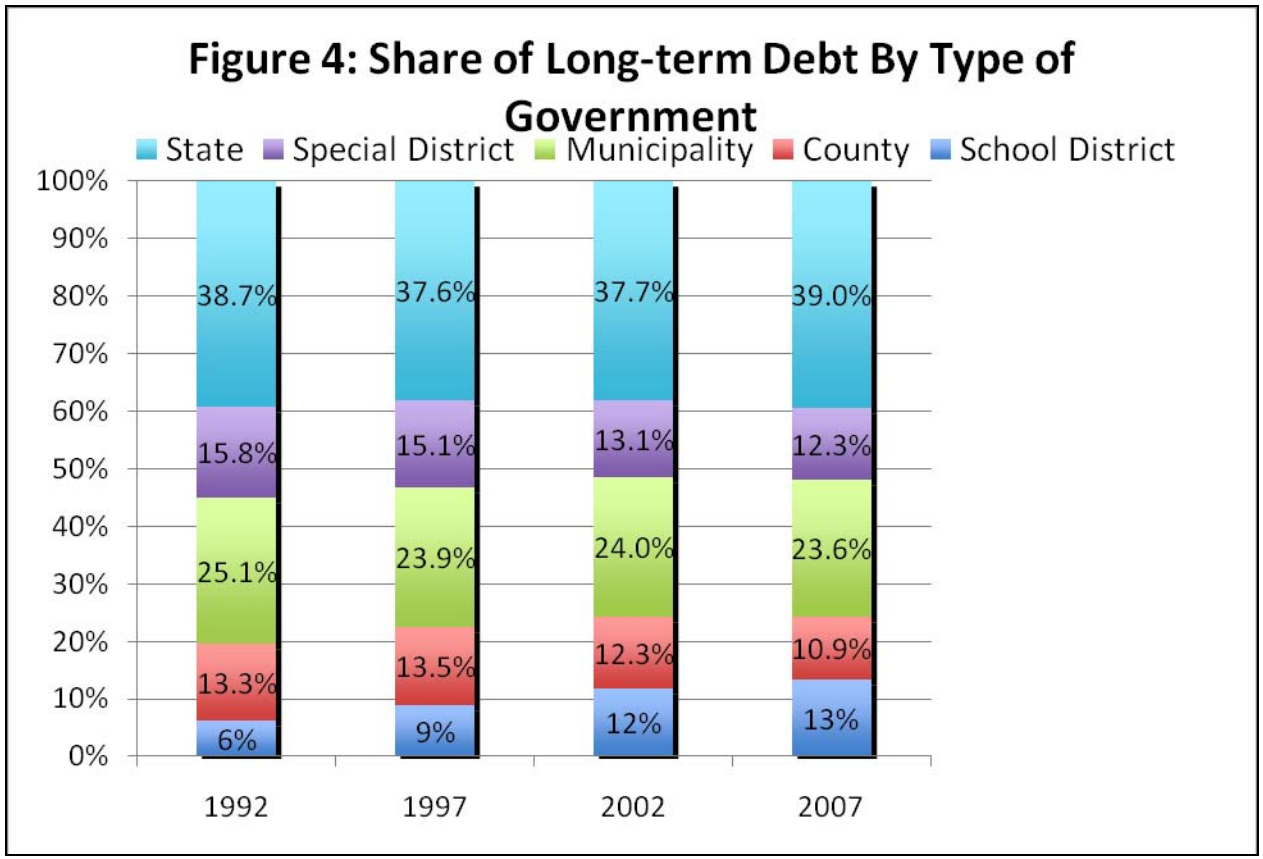


Figure 4: Share of Long-term Debt By Type of Government
State
Special District
Municipality
County
School District
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
38.7%
15.8%
25.1%
13.3%
6%
37.6%
15.1%
23.9%
13.5%
9%
37.7%
13.1%
24.0%
12.3%
12%
39.0%
12.3%
23.6%
10.9%
13%
1992
1997
2002
2007

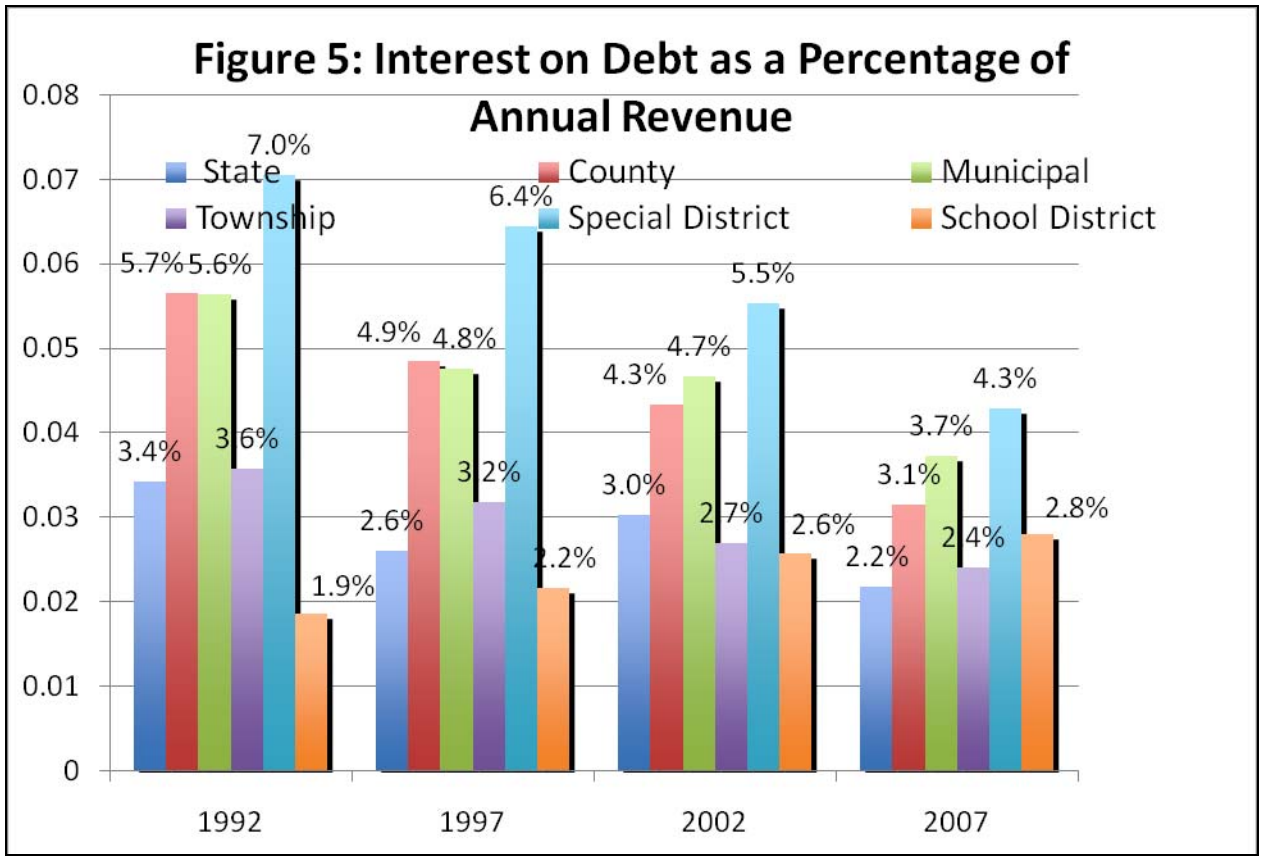


Figure 5: Interest on Debt as a Percentage of Annual Revenue
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
State
County
Municipal
Township
Special District
School District
1992
1997
2002
2007
3.4%
5.7%
5.6%
3.6%
7.0%
1.9%
2.6%
4.9%
4.8%
3.2%
6.4%
2.2%
3.0%
4.3%
4.7%
2.7%
5.5%
2.6%
2.2%
3.1%
3.7%
2.4%
4.3%
2.8%

Figure 6: Debt Per Capita for California and Comparable States

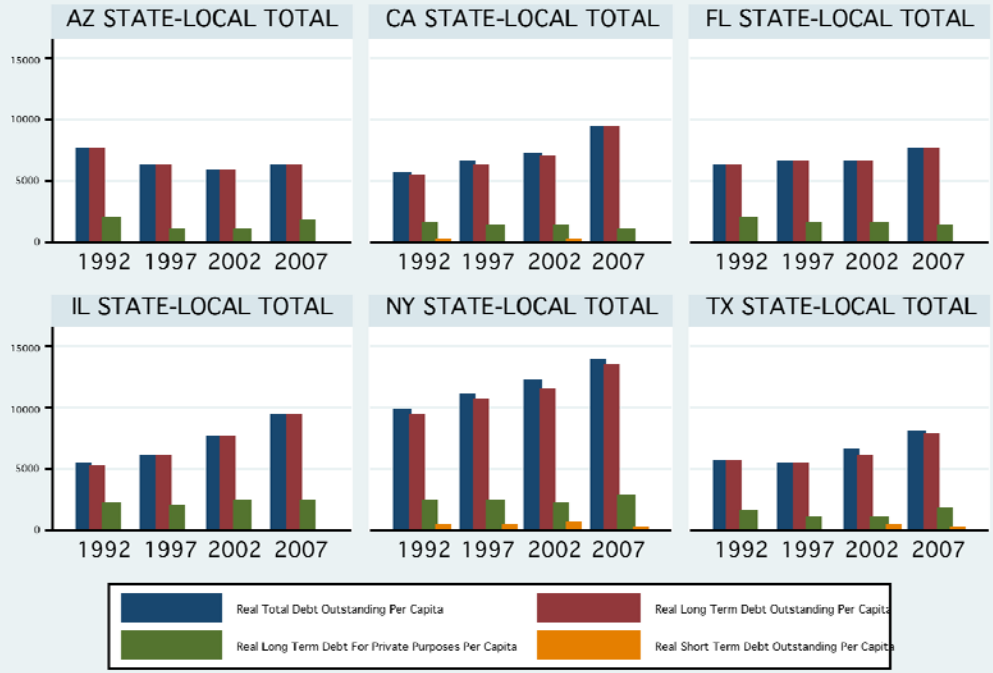
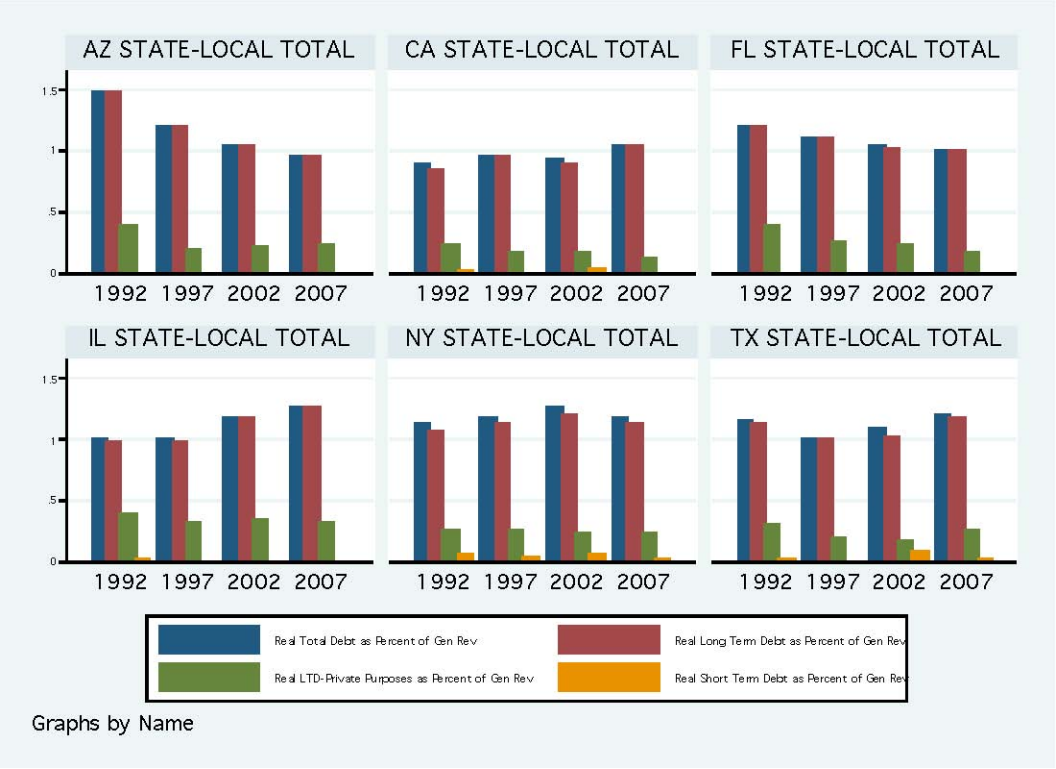


Figure 7: Debt as a Percentage of General Revenue for California and Comparable States



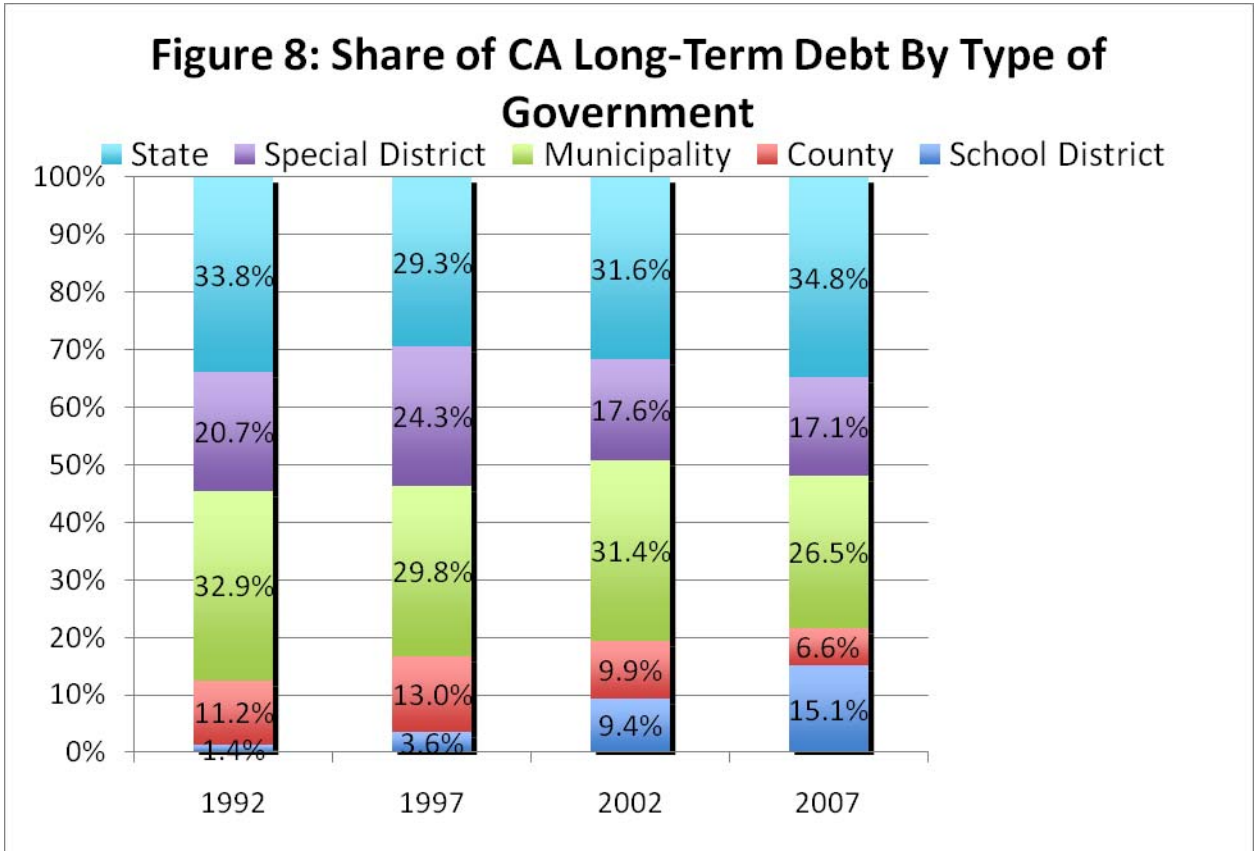


Figure 8: Share of CA Long-Term Debt By Type of Government
State
Special District
Municipality
County
School District
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
33.8%
20.7%
32.9%
11.2%
1.4%
29.3%
24.3%
29.8%
13.0%
3.6%
31.6%
17.6%
31.4%
9.9%
9.4%
34.8%
17.1%
26.5%
6.6%
15.1%
1992
1997
2002
2007

Table 1: United States' Total State and Local Government Debt Outstanding

Year	Real Total Debt (2009$s billions)*	Real Per Capita Debt (2009$s)*	Debt as a Percentage of GDP	Debt as a Percentage of Annual Revenue	State Share of Debt	Local Share of Debt
2008	$2580	$8560	17.8%	95.9%	39.4%	60.6%
2007	$2490	$8340	17.1%	78.6%	38.8%	61.2%
2002	$2010	$6980	16.1%	93.1%	38.1%	61.9%
1997	$1590	$5920	14.7%	75.8%	37.4%	62.6%
1992	$1400	$5630	15.4%	82.3%	38.2%	61.8%
1987	$1030	$4240	15.9%	86.1%	37.0%	63.0%
1982	$791	$3410	13.0%	73.9%	36.9%	63.1%
1977	$749	$3460	12.9%	76.9%	35.0%	65.0%
1972	$719	$3450	14.4%	92.1%	31.2%	68.8%
1967	$596	$3010	14.0%	106.6%	28.3%	71.7%
1964	$517	$2690	14.5%	113.2%	27.1%	72.9%
1962	$465	$2390	13.8%	116.3%	27.3%	72.7%

*Using the CPI Deflator available at http://www.measuringworth.com/uscompare .

Source: U.S. Bureau of the Census, *Governmental Finances*, various years; U.S. Department of Commerce, Bureau of Economic Analysis, National Income Accounts data, various years.

Table 2: State Pension Funding Estimates
(2009 real trillions of dollars*)

Source and Year	Assets	State Estimated Liabilities	Discounted Liabilities at Treasury Bond Rate	Underfunding with State Estimates	Underfunding withTreasury Bond Discounting
Public Fund Survey					
2007	$2.53	$2.95	NA	-$0.40	NA
2008	$2.61	$3.06	NA	-$0.45	NA
Novy-Marx and Rauh					
2007	$2.87	$2.90	$4.51	-$0.03	-$1.63
2008	$1.96	$3.02	$5.23	-$1.05	-$3.27

*Using the CPI Deflator available at http://www.measuringworth.com/uscompare .

Table 3: Comparison of Debt in California and Selected States in 2007

Debt Measure	California	Arizona	Florida	Illinois	New York	Texas	United States
Per Capita Total State-Local Real* Debt (in dollars)	$9,495	$6,572	$7,663	$9,482	$13,873	$8,386	$8,351
Per Capita Short-term Real Debt (in dollars)	$27	$23	$22	$17	$294	$214	$114
Per Capita Long-term Real Debt (in dollars)	$9,468	$6,550	$7,641	$9,464	$13,579	$8,172	$8,237
Per Capita Public Real Debt for Private Purposes (in dollars)	$1,091	$1,659	$1,222	$2,348	$2,743	$1,871	$1,890
Total State-Local Debt as Percent of GSP	18.3%	16.0%	18.1%	18.9%	23.5%	16.5%	17.6%
Short-term Debt as Percent of GSP	0.1%	0.1%	0.1%	0.0%	0.5%	0.4%	0.2%
Long-term Debt as Percent of GSP	18.3%	15.9%	18.0%	18.8%	23.0%	16.1%	17.3%
Public Debt for Private Purposes as Percent of GSP	2.1%	4.0%	2.9%	4.7%	4.6%	2.5%	4.0%
State-Local Debt as Percent of Annual Revenue	70.6%	76.5%	77.5%	97.5%	88.6%	96.6%	78.6%
Short-term Debt as Percent of Annual Revenue	0.2%	0.3%	0.2%	0.2%	1.9%	2.5%	1.1%
Long-term Debt as Percent of Annual Revenue	70.4%	76.3%	77.3%	97.4%	86.8%	94.2%	77.5%
Public Debt for Private Purposes as % Annual Revenue	8.1%	19.3%	12.4%	24.2%	17.5%	21.6%	17.8%
Annual State-Local Interest Paid as a Percent of Revenue	3.2%	3.2%	3.2%	4.5%	4.0%	4.4%	3.5%
Economic Characteristics							
Population	35,979,208	6,192,100	18,088,505	12,718,011	19,356,564	23,369,024	298,593,212
Real Per Capita GSP	$50,078	$39,720	$41,013	$48,546	$57,088	$49,148	$47,094

Sources:U.S. Census Bureau; U.S. Department of Commerce, Bureau of Economic Analysis.

*Using the CPI Deflator available at http://www.measuringworth.com/uscompare .

Table 4: Change in State-local Debt Amounts from 1992 to 2007

Debt Measure	California	Arizona	Florida	Illinois	New York	Texas	United States
Per Capita Total State-Local Real Debt							
Change, 1992 to 2007	$3,754	-$1,195	$1,302	$4,097	$4,027	$2,622	$1,431
Percentage Change, 1992 to 2007	65.4%	-15.4%	20.5%	76.1%	40.9%	45.5%	41.1%
Per Capita Long-term Real Debt							
Change, 1992 to 2007	$3,916	-$1,215	$1,288	$4,149	$4,255	$2,466	$1,415
Percentage Change, 1992 to 2007	70.5%	-15.6%	20.3%	78.0%	45.6%	43.2%	42.3%
Total State-Local Debt as Percent of GSP							
Change, 1992 to 2007	-5.1%	-16.3%	-10.8%	-4.3%	-10.5%	-7.5%	1.8%
Long-term Debt as Percent of GSP							
Change, 1992 to 2007	-4.7%	-16.3%	-10.8%	-4.1%	-9.6%	-7.6%	1.9%
Total State-Local Debt as % of Annual Revenue							
Change, 1992 to 2007	1.1%	-41.8%	-23.8%	13.0%	-3.1%	-1.3%	-3.7%
Long-term Debt as Percent of Annual Revenue							
Change, 1992 to 2007	*3.2%*	*-42.0%*	*-23.9%*	*13.9%*	*-0.1%*	*-2.8%*	-2.9%

Table 5: 2007 Comparison of School District Debt in California and Selected States

Debt	California	Arizona	Florida	Illinois	New York	Texas
Per Capita Total State-Local Real School District Debt (in dollars)	$1,433	$775	$944	$1,399	$845	$2,319
Per Capita Short-term Real School District Debt (in dollars)	$8	$1	$1	$11	$62	$96
Per Capita Long-term Real School District Debt (in dollars)	$1,425	$774	$943	$1,389	$783	$2,222
Total State-Local School District Debt as Percent of GSP	2.8%	1.9%	2.2%	2.8%	1.4%	4.6%
Short-term School District Debt as Percent of GSP	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%
Long-term School District Debt as Percent of GSP	2.8%	1.9%	2.2%	2.8%	1.3%	4.4%
State-Local School District Debt as Percent of Annual State-local Revenue	10.7%	9.0%	9.5%	14.4%	5.4%	26.7%
State-Local School District Debt as Percent of Annual State-local Revenue	0.1%	0.0%	0.0%	0.1%	0.4%	1.1%
State-Local School District Debt as Percent of Annual State-local Revenue	10.6%	9.0%	9.5%	14.3%	5.0%	25.6%
Economic Characteristics						
Population	35,979,208	6,192,100	18,088,505	12,718,011	19,356,564	23,369,024
Public School Enrollment	6,406,750	1,068,249	2,671,513	2,118,276	2,809,649	4,599,509
Public School Enrollment per 1000 Population	178	173	148	167	145	197
Number of Dependent School Systems (Municipalities and Counties)	58	14	na	na	36	1

Table 6: Variable Description, Source, and Descriptive Statistics

Variable Name	Source	Mean (Std. Dev.)	Max. (Min.)
Dependent Variables			
Real Long Term Debt PC* (1000 $s)	Census of Governments; 1992, 1997, 2002, and 2007 . http://www.census.gov/govs/estimate/ Consumer Price Index; 1982-84 Base Year. http://www.bls.gov/data/ U.S. Census American FactFinder; 1992, 1997, 2002, and 2007 . http://factfinder.census.gov/servlet/SAFFPopulation?_submenuId=population_0&_sse=on	6.711 (3.040)	22.355 (1.995)
Real Public Debt Private Purpose PC (1000 $s)	Census of Governments; 1992, 1997, 2002, and 2007 . http://www.census.gov/govs/estimate/ Consumer Price Index; 1982-84 Base Year. http://www.bls.gov/data/ U.S. Census American FactFinder; 1992, 1997, 2002, and 2007 . http://factfinder.census.gov/servlet/SAFFPopulation?_submenuId=population_0&_sse=on	2.229 (1.530)	13.666 (0.386)
Real Long Term Debt Less Private PC (1000 $s)	Census of Governments; 1992, 1997, 2002, and 2007 . http://www.census.gov/govs/estimate/ Consumer Price Index; 1982-84 Base Year. http://www.bls.gov/data/ U.S. Census American FactFinder; 1992, 1997, 2002, and 2007 . http://factfinder.census.gov/servlet/SAFFPopulation?_submenuId=population_0&_sse=on	4.482 (2.399)	16.176 (0.729)
Real Long Term School District Debt PC (1000 $s)	Census of Governments; 1992, 1997, 2002, and 2007 . http://www.census.gov/govs/estimate/ Consumer Price Index; 1982-84 Base Year. http://www.bls.gov/data/ U.S. Census American FactFinder; 1992, 1997, 2002, and 2007 . http://factfinder.census.gov/servlet/SAFFPopulation?_submenuId=population_0&_sse=on	0.679 (0.613)	3.733 (0.006)
Explanatory Variables			
Percentage Pop Age 65 Plus	U.S. Census Population Estimates; 1986, 1991, 1996, 2002, and 2006 . http://www.census.gov/popest/archives	12.62 (1.91)	18.55 (4.23)
Percentage Pop Public K-12 Enrolled	U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics, 2009, http://nces.ed.gov/programs/digest/.	17.17 (3.06)	33.05 (8.49)
Previous Five Year Growth Public K-12 Enrollment	U.S. Department of Education, National Center for Education Statistics, Digest of Education Statistics, 2009, http://nces.ed.gov/programs/digest/.	4.01 (6.67)	33.20 (-13.27)
Lower House Leg Democ Majority Prev Five Years	Composition of State Legislatures by Political Party Affiliation, *U.S. Statistical Abstract*, http://www.allcountries.org/uscensus/469_composition_of_state_legislatures_by_political.html .	0.575 (0.496)	1 (0)
Percentage Pop Poor	U.S. Census Poverty Table 21. http://www.census.gov/hhes/www/poverty/data/historical/people.html	12.51 (3.50)	24.62 (5.78)
Percentage Pop Urban	U.S. Census Decennial Census; SF1; 1990 and 2000; http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_submenuId=datasets_1&_lang=en&_ts=	69.94 (14.78)	94.44 (32.19)
Real Gross State Product PC (1000 $s)	Bureau of Economic Analysis; Regional Economic Accounts; 1992, 1997, 2002, and 2007 . http://www.bea.gov/regional/gsp/ Consumer Price Index; 1982-84 Base Year. http://www.bls.gov/data/ U.S. Census American FactFinder; 1992, 1997, 2002, and 2007 . http://factfinder.census.gov/servlet/SAFFPopulation?_submenuId=population_0&_sse=on	42.260 (12.897)	104.136 (19.673)
Percentage S/L Gov Rev from Local	Census of Governments; 1987, 1992, 1997, and 2002 . http://www.census.gov/govs/estimate/	48.70 (9.57)	69.45 (19.01)
Real Fed Intergov Rev to S/L Gov PC (1000 $s)	Census of Governments; 1987, 1992, 1997, and 2002 . http://www.census.gov/govs/estimate/ Consumer Price Index; 1982-84 Base Year. http://www.bls.gov/data/ U.S. Census American FactFinder; 1992, 1997, 2002, and 2007 . http://factfinder.census.gov/servlet/SAFFPopulation?_submenuId=population_0&_sse=on	1.497 (0.635)	4.634 (0.408)
Limit Debt Issue by Amount	*Budget Processes in the States* (1992, 1997 2002, 2008), NASB0, http://www.nasbo.org/Publications/BudgetProcessintheStates	0.690 (0.446)	1 (0)
Supermajority Required to Raise Taxes	*State Tax and Expenditure Limits* (2008), NCSL, http://www.ncsl.org/default.aspx?tabid=12633 .	0.195 (0.397)	1 (0)
No Mandatory Revenue or Spending Limit	*State Tax and Expenditure Limits* (2008), NCSL, http://www.ncsl.org/default.aspx?tabid=12633 .	0.480 (0.500)	1 (0)
Unfunded Real State Pension Liability PC (1000s)	*The Public Fund Survey*, **http://www.publicfundsurvey.org .**		

*PC = Per Capita

Real dollars measured in 2009 constant dollars based upon the Bureau of Labor Statistics Consumer Price Index for all U.S. urban consumers.

Table 7: First Differenced Regression Results (1997-1992, 2002-1997, 2007-2002)

Dependent Variables Explanatory Variables	Real Long Term Debt PC	Real Public Debt Private Purpose PC	Real Long Term Debt Less Private PC^	Real Long Term School District Debt PC
Constant	-0.133 (0.088)	-0.038 (0.049)	-1.582** (0.714)	0.044** (0.023)
2002-1997 Dummy	0.346** (0.168)	0.190** (0.092)	-0.059 (0.172)	0.096** (0.039)
2007-2002 Dummy	0.775*** (0.173)	0.317*** (0.118)	0.422*** (0.139)	0.072** (0.037)
Percentage Pop Age 65 Plus	-0.082 (0.137)	-0.101 (0.082)	0.021 (0.077)	0.025 (0.030)
Percentage Pop Public K-12 Enrolled	0.115** (0.051)	-0.003 (0.033)	0.068 (0.050)	0.039*** (0.013)
Previous Five Year Growth Public K-12 Enrollment	-0.016 (0.010)	-0.002 (0.005)	-0.018** (0.010)	-0.003* (0.002)
Lower House Leg Democ Majority Prev Five Years	0.261 (0.184)	0.174 (0.135)	0.243** (0.105)	-0.028 (0.019)
Percentage Pop Poor	0.018 (0.017)	0.005 (0.011)	0.030 (0.019)	0.001 (0.003)
Percentage Pop Urban	-0.010 (0.016)	-0.002 (0.010)	0.035*** (0.008)	-0.005 (0.005)
Real Gross State Product PC (1000 $s)	0.039 (0.033)	0.015 (0.022)	0.068** (0.028)	0.003 (0.006)
Percentage S/L Gov Rev from Local	0.019 (0.020)	0.013 (0.015)	0.012 (0.012)	-0.001 (0.003)
Real Fed Intergov Rev to S/L Gov PC (1000 $s)	-1.040*** (0.371)	-0.454** (0.207)	-0.329* (0.477)	-0.264*** (0.091)
Limit Debt Issue by Amount	0.023 (0.109)	0.078 (0.051)	-0.199 (0.122)	-0.016 (0.027)
Supermajority Required to Raise Taxes	0.022 (0.134)	0.023 (0.081)	0.067 (0.174)	0.021 (0.019)
No Mandatory Revenue or Spending Limit	0.209** (0.101)	0.058 (0.057)	-0.003 (0.143)	-0.005 (0.029)
Observations	150	150	150	135~
R-Squared	0.501	0.252	0.663	0.373

~ AK, HA, MD, NC, and VA excluded due to statewide school districts whose bond issue is measured in total state and local bond measures.
^Presence of AR(1) serial correlation corrected for. All standard errors are robust for intra-group correlation among a state, relaxing the usual requirement that observations be independent. That is, the observations are assumed independent across states but not necessarily within a state across years.

Table 8: First Differenced Regression Results Including Unfunded Pension Liability (2007-2002)

Dependent Variables Explanatory Variables	Real Long Term Debt PC	Real Public Debt Private Purpose PC	Real Long Term Debt Less Private PC	Real Long Term School District Debt PC
Constant	0.536** (0.212)	0.141 (0.100)	-0.393** (0.195)	0.081 (0.078)
Unfunded Real State Pension Liability PC	-0.006 (0.094)	0.016 (0.056)	-0.022 (0.087)	-0.011 (0.034)
Percentage Pop Age 65 Plus	0.013 (0.232)	-0.112 (0.129)	0.126 (0.248)	0.266* (0.149)
Percentage Pop Public K-12 Enrolled	0.191** (0.047)	0.057** (0.028)	0.134*** (0.041)	0.028* (0.017)
Previous Five Year Growth Public K-12 Enrollment	-0.052*** (0.016)	0.001 (0.009)	-0.052*** (0.015)	-0.008* (0.005)
Lower House Leg Democ Majority Prev Five Years	0.001 (0.176)	0.065 (0.106)	-0.064 (0.131)	-0.024 (0.041)
Percentage Pop Poor	-0.008 (0.032)	0.014 (0.015)	-0.022 (0.027)	0.004 (0.008)
Percentage Pop Urban	NA	NA	NA	NA
Real Gross State Product PC (1000 $s)	-0.011 (0.028)	-0.027 (0.018)	0.016 (0.026)	0.011 (0.011)
Percentage S/L Gov Rev from Local	-0.026 (0.018)	-0.007 (0.008)	-0.019 (0.017)	-0.003 (0.007)
Real Fed Intergov Rev to S/L Gov PC (1000 $s)	-0.602*** (0.322)	-0.214 (0.218)	-0.391 (0.327)	-0.425*** (0.151)
Limit Debt Issue by Amount	0.190 (0.156)	0.176** (0.068)	-0.015 (0.129)	-0.071* (0.040)
Supermajority Required to Raise Taxes	NA	NA	NA	NA
No Mandatory Revenue or Spending Limit	0.389** (0.112)	0.018 (0.107)	0.365*** (0.138)	0.046 (0.067)
Observations	50	50	50	45~
R-Squared	0.622	0.238	0.613	0.486

~ AK, HA, MD, NC, and VA excluded due to statewide school districts whose bond issue is measured in total state and local bond measures.
All standard errors are robust for intra-group correlation among a state, relaxing the usual requirement that observations be independent. That is, the observations are assumed independent across states but not necessarily within a state across years

Table 9: Fixed Effects Regression Results (1992, 1997, 2002, 2007)

Dependent Variables Explanatory Variables	Real Long Term Debt PC	Real Public Debt Private Purpose PC	Real Long Term Debt Less Private PC	Real Long Term School District Debt PC
Constant	1.542 (3.044)	0.739 (1.407)	0.798 (2.606)	-0.216 (0.120)
1997 Dummy	0.114 (0.119)	-0.053 (0.064)	0.168* (0.099)	0.038 (0.041)
2002 Dummy	0.667*** (0.206)	0.143 (0.110)	0.523** (0.221)	0.188** (0.078)
2007 Dummy	1.600*** (0.289)	0.390** (0.165)	1.212*** (0.278)	0.320*** (0.109)
Percentage Pop Age 65 Plus	-0.190 (0.175)	-0.140 (0.105)	-0.050 (0.108)	0.030 (0.051)
Percentage Pop Public K-12 Enrolled	0.132** (0.051)	0.006 (0.028)	0.126*** (0.041)	0.042*** (0.015)
Previous Five Year Growth Public K-12 Enrollment	-0.008 (0.013)	0.004 (0.007)	-0.012 (0.011)	-0.002 (0.004)
Lower House Leg Democ Majority Prev Five Years	0.242 (0.200)	0.148 (0.142)	0.095 (0.099)	-0.070 (0.049)
Percentage Pop Poor	0.017 (0.025)	0.009 (0.012)	0.008 (0.018)	0.001 (0.006)
Percentage Pop Urban	-0.003 (0.024)	0.006 (0.012)	-0.008 (0.022)	-0.005 (0.010)
Real Gross State Product PC (1000 $s)	0.029 (0.035)	0.011 (0.020)	0.018 (0.026)	0.001 (0.009)
Percentage S/L Gov Rev from Local	0.015 (0.018)	0.006 (0.011)	0.009 (0.014)	0.00003 (0.0052)
Real Fed Intergov Rev to S/L Gov PC (1000 $s)	-1.128** (0.536)	-0.598* (0.263)	-0.688* (0.412)	-0.306* (0.258)
Limit Debt Issue by Amount	0.074 (0.188)	0.062 (0.097)	0.008 (0.188)	0.030 (0.060)
Supermajority Required to Raise Taxes	0.150 (0.215)	0.099 (0.095)	0.048 (0.153)	0.037 (0.062)
No Mandatory Revenue or Spending Limit	0.029 (0.152)	-0.031 (0.080)	0.056 (0.127)	-0.126 (0.070)
AL Dummy	-0.458 (1.026)	0.713 (0.608)	-1.163 (0.790)	-0.254 (0.373)
AK Dummy	5.191*** (1.186)	4.020*** (0.495)	1.178 (1.037)	-
AZ Dummy	0.409 (0.699)	0.547 (0.413)	-0.127 (0.427)	-0.052 (0.193)
AR Dummy	-0.920 (1.433)	1.189 (0.852)	-1.803* (1.026)	-0.278 (0.440)
CO Dummy	0.616** (0.332)	0.473*** (0.177)	0.142 (0.276)	0.207 (0.153)
CT Dummy	1.650** (0.822)	1.188** (0.492)	0.472 (0.538)	-0.376* (0.211)
DE Dummy	1.854* (0.962)	2.099*** (0.542)	-0.232 (0.729)	-0.295 (0.291)
FL Dummy	1.567** (1.307)	1.203 (0.767)	0.374 (0.805)	-0.173 (0.408)
GA Dummy	-1.227 (0.712)	-0.103 (0.319)	-1.120* (0.655)	-0.188 (0.323)
HI Dummy	1.902* (0.601)	0.426 (0.713)	1.494** (0.678)	-
ID Dummy	-1.493 (1.141)	0.793 (0.656)	-2.280*** (0.821)	-0.359 (0.349)
IL Dummy	0.400 (0.384)	0.797*** (0.233)	-0.391 (0.275)	0.099 (0.163)
IN Dummy	-0.490 (0.825)	0.642 (0.514)	-1.133* (0.576)	0.421 (0.286)

IA Dummy	-0.468 (1.327)	1.039 (0.811)	-1.496* (0.860)	-0.411 (0.400)
KS Dummy	-0.054 (0.967)	1.055* (0.589)	-1.102* (0.631)	-0.137 (0.323)
KY Dummy	0.943 (1.267)	1.846*** (0.692)	-0.887 (0.994)	-0.218 (0.418)
LA Dummy	-0.050 (0.884)	0.881* (0.501)	-0.916 (0.651)	-0.152 (0.244)
ME Dummy	0.521 (1.574)	1.621* (0.920)	-1.088 (1.171)	-0.417 (0.529)
MD Dummy	-0.083 (0.500)	0.707*** (0.261)	-0.779* (0.405)	-
MA Dummy	2.708*** (0.713)	1.760*** (0.442)	0.956** (0.447)	-0.285** (0.171)
MI Dummy	-0.149 (0.721)	0.629 (0.449)	-0.775 (0.494)	0.210 (0.225)
MN Dummy	0.404 (0.748)	0.796* (0.404)	-0.389 (0.583)	0.177 (0.304)
MS Dummy	-0.895 (1.409)	0.718 (0.769)	-1.599 (1.103)	0.320 (0.439)
MO Dummy	-0.234 (0.988)	1.027* (0.577)	-1.249* (0.681)	-0.185 (0.284)
MT Dummy	0.872 (1.495)	2.493** (0.952)	-1.617* (0.970)	-0.378 (0.404)
NE Dummy	0.146 (0.895)	0.927 (0.569)	-0.776 (0.592)	-0.251 (0.325)
NV Dummy	0.793* (0.414)	-0.213 (0.187)	1.008*** (0.326)	0.469*** (0.135)
NH Dummy	1.038 (1.117)	2.096*** (0.615)	-1.049 (0.880)	-0.315 (0.439)
NJ Dummy	1.352* (0.722)	0.859* (0.452)	0.501 (0.434)	-0.102 (0.171)
NM Dummy	-0.173 (0.920)	0.996* (0.539)	-1.154* (0.654)	0.134 (0.246)
NY Dummy	3.075*** (0.481)	1.224*** (0.308)	1.858*** (0.296)	0.044 (0.170)
NC Dummy	-0.488 (1.004)	0.507 (0.544)	-0.994 (0.841)	-
ND Dummy	0.544 (1.614)	1.903* (1.029)	-1.347 (1.002)	-0.482 (0.451)
OH Dummy	-0.209 (0.929)	0.945 (0.592)	-1.148** (0.561)	-0.220 (0.258)
OK Dummy	-0.688 (1.097)	0.705 (0.691)	-1.386* (0.721)	-0.445 (0.284)
OR Dummy	0.855 (0.950)	0.639 (0.593)	0.228 (0.579)	-0.115 (0.249)
PA Dummy	1.724 (1.187)	1.792** (0.748)	-0.056 (0.708)	0.223 (0.340)
RI Dummy	2.638** (1.124)	2.416*** (0.751)	0.235 (0.596)	-0.257 (0.213)
SC Dummy	0.463 (1.222)	0.663 (0.695)	-0.193 (0.905)	0.025 (0.374)
SD Dummy	0.381 (1.467)	2.167** (0.903)	-1.774* (1.008)	-0.400 (0.452)
TN Dummy	-0.706 (0.920)	0.424 (0.487)	-1.120 (0.741)	0.465 (0.331)
TX Dummy	-0.671 (0.480)	0.087 (0.236)	-0.751* (0.395)	-0.209 (0.162)
UT Dummy	-0.469 (0.659)	0.255 (0.382)	-0.715 (0.462)	-0.253 (0.197)
VT Dummy	-0.689	1.749*	-1.056	-0.349

	(1.648)	(0.926)	(1.292)	(0.600)
VA Dummy	-0.403 (0.584)	0.517 (0.336)	-0.913 (0.589)	-
WA Dummy	1.159** (0.554)	0.145 (0.285)	1.0223** (0.428)	0.143 (0.189)
WV Dummy	0.607 (1.775)	2.249* (1.102)	-1.627 (1.242)	-0.497 (0.534)
WI Dummy	0.368 (0.978)	0.965 (0.577)	-0.594 (0.675)	-0.119 (0.325)
WY Dummy	0.322 (1.038)	2.256*** (0.641)	-1.917*** (0.697)	-0.198 (0.352)
Observations	200	200	200	180~
R-Squared	0.937	0.920	0.941	0.872

Standard errors are robust for intra-group correlation among a state, relaxing the usual requirement that observations be independent. That is, the observations are assumed independent across states but not necessarily within a state across years.

Table 10: Fixed Effects Regression Results (2002, 2007)

Dependent Variables Explanatory Variables	Real Long Term Debt PC	Real Public Debt Private Purpose PC	Real Long Term Debt Less Private PC	Real Long Term School District Debt PC
Constant	-4.650 (5.972)	-0.152 (3.109)	-4.408 (6.185)	-4.951 (4.686)
2007 Dummy	0.438 (0.271)	0.118 (0.126)	0.326 (0.266)	0.078 (0.091)
Unfunded Real State Pension Liability PC	0.121 (0.173)	0.054 (0.097)	0.063 (0.154)	-0.022 (0.085)
Percentage Pop Age 65 Plus	0.082 (0.371)	-0.082 (0.202)	0.153 (0.379)	0.261 (0.243)
Percentage Pop Public K-12 Enrolled	0.179*** (0.067)	0.052 (0.041)	0.127*** (0.055)	0.028 (0.023)
Previous Five Year Growth Public K-12 Enrollment	-0.045* (0.024)	0.002 (0.013)	-0.047** (0.021)	-0.009 (0.008)
Lower House Leg Democ Majority Prev Five Years	-0.035 (0.252)	0.050 (0.148)	-0.079 (0.188)	-0.019 (0.062)
Percentage Pop Poor	-0.004 (0.043)	0.014 (0.020)	-0.018 (0.036)	0.004 (0.011)
Percentage Pop Urban	0.061*** (0.018)	0.012 (0.011)	0.048 (0.188)	0.008 (0.008)
Real Gross State Product PC (1000 $s)	-0.004 (0.040)	-0.023 (0.027)	0.020 (0.035)	0.011 (0.014)
Percentage S/L Gov Rev from Local	-0.032 (0.025)	-0.009 (0.011)	-0.022 (0.024)	-0.003 (0.009)
Real Fed Intergov Rev to S/L Gov PC (1000 $s)	-0.726 (0.500)	-0.251 (0.310)	-0.476* (0.480)	-0.412* (0.223)
Limit Debt Issue by Amount	0.184 (0.213)	0.163* (0.090)	0.016 (0.176)	-0.068 (0.059)
Supermajority Required to Raise Taxes	1.561 (1.621)	0.451 (0.822)	1.036 (1.626)	1.675 (1.463)
No Mandatory Revenue or Spending Limit	0.375** (0.160)	0.003 (0.150)	0.358 (0.191)	0.050 (0.087)
AL Dummy	4.542 (1.383)	0.738 (0.635)	0.742 (1.330)	1.122 (1.094)
AK Dummy	6.271** (3.109)	3.612*** (1.798)	2.539 (3.311)	NA
AZ Dummy	-0.603 (0.880)	0.219 (0.373)	-0.794 (0.866)	-0.484 (0.482)
AR Dummy	0.626 (1.070)	0.989* (0.516)	-0.415 (1.032)	1.031 (0.989)
CO Dummy	2.785 (1.848)	1.146 (0.997)	1.552 (1.915)	2.173 (1.661)
CT Dummy	1.447** (0.677)	1.285*** (0.392)	0.136 (0.633)	0.452 (0.829)
DE Dummy	0.560 (1.271)	2.109*** (0.687)	-1.517 (1.254)	-0.984* (0.586)
FL Dummy	0.884 (1.392)	1.047 (0.823)	-0.152 (1.428)	NA
GA Dummy	0.866 (2.167)	0.161 (1.182)	0.611 (2.190)	1.860 (1.913)
HI Dummy	NA	NA	NA	NA
ID Dummy	-0.291 (1.601)	0.730 (0.923)	-1.097 (1.583)	1.543 (1.508)
IL Dummy	1.310 (1.189)	1.094** (0.526)	0.178 (1.167)	1.443 (1.086)
IN Dummy	1.183 (1.330)	0.856 (0.662)	0.255 (1.300)	0.996 (1.157)
IA Dummy	0.598 (1.047)	1.081* (0.611)	-0.524 (0.940)	0.698 (0.754)

KS Dummy	0.653 (1.101)	0.927 (0.599)	-0.317 (1.029)	1.324 (1.009)
KY Dummy	1.043** (0.527)	1.452*** (0.345)	-0.387 (0.550)	-0.277 (0.297)
LA Dummy	-0.733** (0.371)	0.374* (0.191)	-1.089 (0.393)	-0.228 (0.173)
ME Dummy	2.441** (1.167)	1.808*** (0.547)	0.579 (1.103)	0.740 (0.920)
MD Dummy	0.001 (1.218)	0.936 (0.626)	-0.981 (1.204)	NA
MA Dummy	3.418*** (0.803)	2.236*** (0.412)	1.150 (0.750)	0.558 (0.879)
MI Dummy	1.469 (1.334)	0.866 (0.636)	0.535 (1.300)	1.715 (1.179)
MN Dummy	1.520 (1.326)	0.979 (0.709)	0.481 (1.309)	1.797 (1.310)
MS Dummy	NA	NA	NA	NA
MO Dummy	-0.417 (0.799)	0.853* (0.438)	-1.245 (0.803)	-0.474 (0.487)
MT Dummy	1.748* (1.495)	2.438** (0.552)	-0.750 (0.970)	0.897 (1.071)
NE Dummy	1.151 (1.249)	1.121 (0.652)	-0.011 (1.158)	0.970 (0.966)
NV Dummy	1.454** (0.643)	-0.248 (0.404)	-1.700 (0.625)	0.620*** (0.239)
NH Dummy	2.143 (1.345)	2.143*** (0.758)	-0.058 (1.326)	1.266 (1.334)
NJ Dummy	1.311* (0.764)	0.847* (0.442)	0.437 (0.714)	0.984 (0.921)
NM Dummy	0.281 (1.148)	0.845 (0.618)	-0.601 (1.128)	1.321 (1.301)
NY Dummy	4.001*** (1.230)	1.580*** (0.594)	2.377** (1.155)	1.039 (1.077)
NC Dummy	2.259 (1.672)	0.894 (0.861)	1.275 (1.662)	NA
ND Dummy	0.595 (0.852)	1.487*** (0.469)	-0.923 (0.767)	0.545 (0.858)
OH Dummy	0.180 (0.913)	0.979* (0.495)	-0.833 (0.834)	1.014 (0.899)
OK Dummy	1.313 (0.779)	0.064 (0.428)	-1.358* (0.780)	-0.820* (0.486)
OR Dummy	0.085 (0.730)	0.191 (0.322)	-0.079 (0.733)	-0.029 (0.346)
PA Dummy	1.654* (0.866)	1.874*** (0.543)	-0.224 (0.818)	1.023** (0.479)
RI Dummy	1.275*** (0.455)	2.103*** (0.218)	-0.839* (0.459)	0.505 (0.707)
SC Dummy	2.528* (1.243)	0.596 (0.698)	1.872 (1.216)	1.897 (1.237)
SD Dummy	-0.215 (0.976)	1.877** (0.556)	-2.062* (1.040)	0.861 (0.589)
TN Dummy	1.507 (1.524)	0.600 (0.780)	0.842 (1.497)	0.964 (1.272)
TX Dummy	1.222 (1.926)	0.346 (0.236)	0.797* (1.950)	2.405 (1.751)
UT Dummy	-0.269 (2.253)	0.126 (1.321)	-0.483 (2.233)	1.960 (2.043)
VT Dummy	2.647* (1.411)	1.914** (0.728)	0.652 (1.396)	1.245 (1.373)
VA Dummy	1.047	0.890	0.104	NA

	(1.428)	(0.803)	(1.403)	
WA Dummy	1.135*** (0.357)	0.099 (0.183)	1.047*** (0.349)	0.108 (0.147)
WV Dummy	1.234 (0.917)	1.786* (0.433)	-0.576 (0.854)	0420 (0.646)
WI Dummy	1.887 (1.259)	1.173* (0.708)	0.651 (1.175)	1.310 (1.103)
WY Dummy	0.832 (1.651)	2.178*** (0.912)	-1.401*** (1.606)	1.347 (1.533)
Observations	100	100	100	90~
R-Squared	0.983	0.971	0.982	0.964

Standard errors are robust for intra-group correlation among a state, relaxing the usual requirement that observations be independent. That is, the observations are assumed independent across states but not necessarily within a state across years.