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Assessing the Affordability of State Debt

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Assessing the Affordability of State Debt

I. Introduction

States in New England and across the nation commonly issue debt in the form of bonds to finance the construction of roads, schools, and other capital investment projects. Bond financing allows these projects to commence in a timely manner, and also enables the costs of long-term assets to be shared by those who will benefit from them during the years of their useful life. Yet while borrowing plays a useful role in state finance, debt levels can, if unchecked, limit a state's ability to meet other objectives.

During the Great Recession and the associated state fiscal crisis, conflicting views on state debt emerged. On the one hand, some argued that states should take advantage of historically low interest rates by issuing bonds for infrastructure investments. Such borrowing, it was reasoned, would allow states to make needed long-term capital improvements while at the same time stimulating the economy in the short term. The American Recovery and Reinvestment Act of 2009 (ARRA) included several initiatives to further encourage capital borrowing, the most famous being the Build America Bond (BAB) program. This initiative increased the existing federal subsidies for state and local government bonds, while at the same time broadening the market to new classes of investors. In speaking of the BAB program, then-Treasury Secretary Timothy Geithner noted its potential short- and long-term economic benefits: "'Increasing state and local funding for capital projects doesn't just help rebuild our aging infrastructure,' said Geithner, 'It gets Americans back to work.'"[1]

While some stakeholders, including the federal government, were encouraging states to issue bonds to promote the economic recovery, others were questioning whether state governments were already financially overextended. The Great Recession had caused tax revenues to plummet, precipitating a fiscal crisis in which states across the nation were faced with unprecedented budget shortfalls. These challenges—along with stories about many states' massive unfunded liabilities for pensions and other retirement benefits, the recent federal debt ceiling controversies and the debt crises in several European countries—raised concerns about the ability of state governments in the United States to service their debt while meeting other obligations.

The New England states have not been immune to debt-related concerns. For example, in 2012 Maine's Governor Paul LePage made headlines by delaying the issuance of bonds that voters had approved three years earlier; he argued that it would not be prudent for the state to add to its debt until its fiscal house was in order.[2] A well-known conservative commentator in New Hampshire described a "debt explosion" occurring in the Granite State, noting that the state's general obligation debt grew more between 2007 and 2011 than it had over the prior 20-year period.[3] Connecticut's high fixed costs associated

1 U.S. Department of the Treasury, http://www.treasury.gov/initiatives/recovery/Pages/babs.aspx. Retrieved on July 15, 2013. See the glossary in appendix 1 for a fuller description of Build America Bonds and definitions of other debt-related terms.

2 Eric Russell, "Maine Could Afford to Borrow Millions, but Political Will to Issue Bonds is Questionable," *Bangor Daily News*, April 25, 2012. In addition to general concerns about the state's fiscal situation, Governor LePage was particularly concerned about the debt owed to the state's hospitals in the form of Medicaid underpayments, at one point pledging to release the bonds if the legislature agreed with his administration's plan to eliminate the hospital debt. More recently, the LePage administration has displayed a more pro-borrowing stance, calling for new debt to support infrastructure development and create jobs. See "Getting LePage, Dems on Track for Rational Bonds Debate," *Bangor Daily News*, August 15, 2013.

3 Charles Arlinghaus, "Yes, New Hampshire has a Debt Problem," *The New Hampshire Union Leader*, October 30, 2012. New Hampshire's increase in bonded debt between 2007 and 2011 is at least partly due to a decision to move the state's school construction aid program from the operating budget to the capital budget during the fiscal crisis associated with the Great Recession.

with its outstanding bonded debt was cited as a factor in the 2012 downgrade of the state's credit rating by one of the leading Wall Street rating agencies.[4]

In the wake of the Great Recession, these contradictory attitudes towards state debt have essentially magnified a tension that exists even in more normal economic times: namely, the need for states to balance their capital investment needs with their ability to meet debt service requirements given other priorities and obligations. This tension raises an important question: how can states gauge what is an *affordable* level of debt?

This report highlights some of the issues that must be considered by policymakers or analysts when assessing the affordability of state debt. It opens with a discussion of what affordability means and why it is important. The next section considers issues surrounding the measurement of state debt. Subsequent sections discuss commonly used metrics and approaches for assessing debt affordability, and provide illustrative data for the New England states. The paper concludes with some recommendations to help guide future affordability assessments, which are previewed below:

- **Improve the transparency surrounding state debt in its various forms.** There are many different types of obligations that may be described as state debt. Clear and readily available information can help to promote rational decisionmaking and potentially discourage unsound or risky borrowing practices.
- **Use multiple definitions of state debt.** Affordability assessments may focus primarily on net tax-supported debt—the obligations most typically supported in a state's general operating budget—but should also consider broader measures of state debt to better capture the overall burden borne by residents and businesses.
- **Use multiple debt burden ratios.** No single affordability metric is perfect. At a minimum, the concepts of debt service-to-revenues and debt-to-personal income can serve as reasonable gauges of near-term and longer-term burden.
- **Re-examine existing debt limits.** Limits that are too high can reduce a state's fiscal flexibility, yet ceilings that are too low can hamper a state's ability to invest adequately in capital infrastructure. Options such as a debt ceiling range or a target-and-cap can provide states with greater flexibility while placing a constraint on overall debt levels.
- **Exercise care with benchmarking debt against other states.** Cross-state comparisons can help to inform affordability assessments, but states should also take care to consider their own unique circumstances.
- **View debt affordability assessment as a complement to capital planning.** Ideally, debt affordability assessments should be used in conjunction with capital planning, as this can help states to ensure that their critical infrastructure needs are met while also maintaining fiscal discipline

II. What is the Concept of State Debt Affordability and Why Does It Matter?

The issue of affordability comes up each year as states determine how much new debt they can prudently issue to support capital projects. In principle, the amount of new debt deemed affordable should depend on cost-benefit analyses of the projects to be financed. Under this theoretical framework, decisions about capital projects and any debt used to finance them are made at the margin, irrespective of a state's existing level of debt or debt service—meaning the amount of interest and principal due in a particular period. When borrowing costs are low, one would expect more projects to pass the cost-benefit test, leading to increased debt issuance.[5] In practice, however, states

4 Moody's Investors Service, "Moody's Downgrades State of Connecticut General Obligation Bonds to Aa3 from Aa2 Rating and Assigns Stable Outlook," January 20, 2012. Moody's also cited Connecticut's high fixed costs for pensions, low pension funding ratios, and depleted reserves. See appendix 2 for more information about credit ratings in the New England states.

5 States actually face two separate but related decisions: whether to undertake a capital project and how to pay for it. The latter will depend on the relative costs and benefits of issuing debt or levying taxes.

usually do consider how issuing new bonds will add to their existing debt burden; indeed, many are subject to limitations on overall debt levels. There are several arguments in favor of such constraints.

First, proponents of a capital project may overstate its benefits and understate its costs. Because cost-benefit calculations are not always transparent, it may be difficult for the public to determine when such mis-estimation occurs. But even the most objective cost-benefit analysis typically requires making some assumptions or judgment calls. For example, certain benefits and costs are not easily monetized. There are also elements of uncertainty. It is impossible to know exactly what a state's economic or revenue picture will look like when a future debt service payment is due or what other competing priorities may loom large at that time. Policies aimed at constraining debt levels can help to provide states with some future fiscal breathing room.

Another reason for states to care about overall debt levels is simply that the overall benefits and costs associated with a project may differ from the project's fiscal benefits and costs. Many debt-financed projects may provide large benefits—such as the safety afforded by building a new bridge—but do not necessarily generate revenue to cover their debt service costs. Principal and interest payments associated with such investments must compete with other priorities for general tax dollars and other nondedicated revenues.

Finally, credit rating agencies look at a state's overall debt load when rating a new debt issue. A low credit rating may increase a state's borrowing costs or can even make it difficult for a state to attract investors.[6] Indeed, the concern about credit ratings appears to be a primary factor in motivating states to constrain their borrowing.

Bearing all of these factors in mind, the concept of debt affordability refers not to the outcome of a cost-benefit analysis for an individual project, but more broadly to a state's ability to repay all of its obligations without negatively impacting the provision of ongoing public services or raising taxes to anticompetitive levels.[7] Debt affordability is an important concept for state governments to consider, and not only because of the potential implications for state borrowing costs. For instance, the affordability of a state's debt can also affect the government's long-term fiscal sustainability—this concept refers to a state's ability to balance its revenues and expenditures over the years, while providing the services that the public demands and is willing to pay for. If a state's debt service requirements are too high, they can squeeze out funding for other priorities or lead to budget imbalances.

The affordability of a state's debt may pose additional implications for the state's economic competitiveness. States vie with one another based on, among other things, the public services they offer and the taxes they levy. A debt load that forces a state to cut back on public services or raise taxes to high levels relative to other states can make it more difficult to attract or retain residents and businesses. By the same token, a low relative debt burden could be a sign of low infrastructure investment, which potentially could offset any other competitive advantage a state might have.

III. Measuring State Debt

When assessing affordability, a key question is what constitutes state debt? In reality, there are several different types of obligations that may meet this description, though the recent

6 A 2011 analysis conducted by the Vermont State Treasurer's Office in response to a legislative inquiry provides a sense of how important a state's credit rating is to its borrowing costs. The report estimates that a ratings downgrade from AAA to AA would cost the state over $4.1 million in added borrowing costs over the life of a $150 million bond issue, whereas a downgrade to A would present $15 million in added costs. See State of Vermont, Vermont Legislative Joint Fiscal Office. The report, entitled "Relationship between Vermont's Credit Rating and Cost of Borrowing" and dated October 27, 2011, appears as one of the reports listed under the main subject subheading, "Capital Bill." The exact url is: http://www.leg.state.vt.us/jfo/capital_bill/Vermont_Credit_Rating_Impact_on_Cost_2011-10-27.pdf.

7 See W. Bartley Hildreth, *State of Kansas 2005 Debt Affordability Report* (2005). Of course, opinions differ on what constitutes necessary public services or a competitive level of taxes; for this reason "affordability" also is a somewhat subjective concept.

Box 1. Categorizing State Obligations

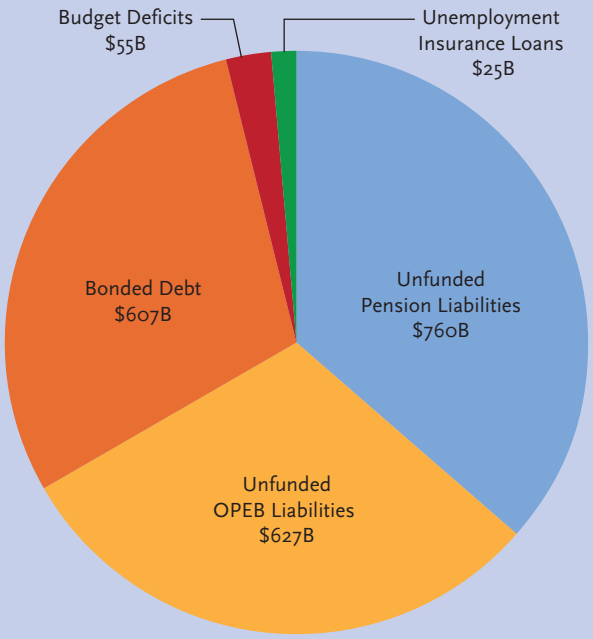
There are a number of different types of state government obligations that could arguably be described as debt. The Virginia-based organization State Budget Solutions identifies five such categories: bonded debt, unfunded pension liabilities, unfunded other post-employment benefit (OPEB) liabilities, budget deficits, and unemployment insurance loans.[1] Its annual report for 2012 estimates the total amount of these obligations for all 50 states (see figure B-1).

Bonded Debt

This category refers to bonds and notes—the primary forms of traditional state debt. Both allow states to borrow funds with a promise to repay a specified principal amount on a certain date—the maturity date—and to pay interest at a stated rate. The bonds and notes issued by state governments, as well as those issued by local government entities, are known as municipal securities. Like other types of securities, they may be traded on the secondary market. There are two main distinctions between bonds and notes. The first is that notes are

1 On its website, State Budget Solutions describes itself as "a non-partisan, non-profit, national public policy organization with the mission to change the way state and local governments do business." See http://www.statebudgetsolutions.org/about_us/.

Figure B-1. Broadly Defined Categories of State Government Debt in the United States



Source: State Budget Solutions, *State Debt Report*, August 2012.

Note: The estimate of bonded debt reported by State Budget Solutions and presented here is based on primary government debt reported in state CAFRs. The estimate of unfunded pension liabilities represents one of two estimates presented in the State Budget Solutions report and corresponds with "traditionally calculated" estimates presented by the Pew Center on the States and others. State Budget Solutions's preferred estimate for unfunded pension obligations, which is based on market-valued liabilities, is $2.8 trillion, much higher than $760 billion.

state fiscal crisis has tended to conflate them in the minds of some (see box 1). For the purposes of this report, state debt obligations refer to bonded debt. Yet even bond obligations vary based on their issuer, the revenues pledged to their repayment, or other terms (see table 1). That being said, several commonly used definitions of bonded state debt are described below.

A narrow definition of state debt focuses on general obligation (GO) debt. GO bonds are typically backed by the issuer's full faith, credit, and taxing power.[8] Generally speaking, this means that a state issuing GO bonds has promised to levy enough taxes to make full and timely debt service payments. Because of the perceived strength of the underlying pledge, GO bonds are typically associated with lower interest rates than other types of state debt, are used for funding a variety of capital projects, and may require approval by a majority of state voters. States report on their levels of outstanding GO debt in their comprehensive annual financial reports (CAFRs).

State CAFRs also report on so-called primary government debt, a broader category than GO debt. Primary government debt includes revenue bonds and other bond-type instruments issued by the primary state government and its blended component units.[9] Because state governments differ in their structure and organization, this classification of state debt is not always comparable across states. In Connecticut, for example, debt issued by state colleges and universities is reported as primary government debt, whereas in Maine it is not.

When gauging affordability, state policymakers and rating agencies tend to focus on so-called net tax-supported debt, which refers to debt obligations that are supported by state

8 The exact nature of the GO repayment promise will depend on the applicable state or local law. Detroit's ongoing bankruptcy proceedings have raised some questions about the safety of GO bonds in Michigan and possibly in other states. See, for example, Mary Williams Walsh and Steve Yaccino, "In Embattled Detroit, No Talk of Sharing Pain," *New York Times*, June 17, 2013.

9 See appendix 1 for further details. In Maine, for example, the Maine Governmental Facilities Authority is considered a blended component unit.

Box 1. (Continued)

typically shorter-term promises, frequently reaching their maturity date within one year, while bonds are longer-term debt obligations. Second, notes are payable from a defined source of anticipated revenue, such as taxes or grants. This may or may not be the case for bonds.

Unfunded Pension Liabilities

Unfunded pension liabilities represent the difference between the pension benefits promised to workers and the assets set aside to pay for them. Pension obligations, like bonded debt, are long-term liabilities that enjoy strong legal protections and represent a claim on state revenues that competes with debt service and other public spending. Yet bonded debt and pension obligations differ in important respects. While a state's outstanding bonded debt is known, the value of a state's pension obligation is dependent on a variety of assumptions as well as the actuarial methods used in its calculation, making the value of this liability more likely to fluctuate over time. States also have somewhat more flexibility regarding paying down unfunded pension liabilities—while not fiscally advisable, a state can choose not to make its actuarially computed annual pension contribution or to reduce its contribution in times of fiscal stress. For these reasons, unfunded pension obligations are sometimes referred to as a "soft" liability.

Unfunded OPEB Liabilities

OPEB liabilities represent the difference between other retirement benefits—primarily health care—promised to workers and the assets set aside to pay for them. OPEB liabilities represent another long-term challenge for state government. Like pensions, these are a "soft" liability, meaning that their value depends on a variety of assumptions (including assumptions about health care costs) and actuarial methods. Most sources indicate that the legal protections surrounding OPEB are weaker than those for pensions or bonded debt.

Budget Deficits

Budget deficits occur when a state's operating revenues exceed its operating expenses. Deficits typically must be bridged through a combination of revenue increases, spending cuts, and one-time infusions of money (such as from reserve funds or asset sales), though states sometimes resort to using accounting gimmicks too. Due to state balanced-budget requirements, deficits also must typically be resolved within a fiscal year. Although some state budgets suffer from structural problems (for instance, revenues growing more slowly than expenditures), the large operating deficits recently experienced by many states were caused largely by the weak economy. As conditions have improved these yearly deficits have tended to shrink, though some states continue to face challenges.

Unemployment Insurance Loans

Unemployment insurance (UI) loans are another largely cyclical issue stemming from the recent economic downturn, although some state UI systems also suffer from structural problems.[2] Between the onset of the Great Recession in late 2007 and the middle of 2011, at least 35 states borrowed from the federal government in order to continue paying UI benefits after depleting their trust funds. The principal and interest on UI loans are largely repaid by higher taxes levied on employers, although a number of states also cut benefits to unemployed workers to help shrink loan balances. An improving economy and replenishment of reserves will also allow states to retire their debt to the federal government.

* * * * *

A 2011 report from the nonpartisan Center on Budget and Policy Priorities noted that in the wake of the Great Recession there was a tendency to lump together state's short-term fiscal problems (such as deficits and UI loans, which are much smaller in dollar terms) with longer-term issues relating to debt, pension obligations and retiree health costs.[3] According to the report's authors this "create(d) the mistaking impression that drastic and immediate measures [were] needed to avoid an imminent fiscal meltdown." This conflation of shorter-and longer-term issues likely served to heighten negative attitudes among policymakers and the general public towards debt issuance by state governments.

2 See Jennifer Weiner, "When the Tide Goes Out: Unemployment Insurance Trust Funds and the Great Recession, Lessons for and from New England." New England Public Policy Center Research Report 12-1, Federal Reserve Bank of Boston, April 2012.

3 Iris J. Lav and Elizabeth McNichol, "Misunderstandings Regarding State Debt, Pensions, and Retiree Health Costs Cause Unnecessary Alarm," Washington, DC: Center on Budget and Policy Priorities, January 20, 2011.

government tax revenues that otherwise could be used for other purposes. Net tax-supported debt generally excludes debt that is self-supporting (such as bonds backed by roadway tolls or college dormitory charges) or debt for which the state's commitment of tax dollars is contingent on some shortfall in the pledged revenue source.

Each year Moody's Investors Service ("Moody's) presents estimates of net

Table 1. Ways of Classifying State Government Bonds

Classification	Examples
By Issuer	Primary State Government
	Component Unit
By Security	General Obligation
	Revenue
	Hybrid
By Revenues	General Taxes
	Dedicated Taxes
	User Fees
By Term	Short Term
	Long Term
By Taxability of Interest	Tax-Exempt
	Taxable
By Purpose	Public Purpose
	Private Purpose
	New Money
	Refunding
By Certainty of Liability	Known
	Contingent

Note: See glossary in appendix 1 for more detailed definitions of these terms.

tax-supported debt for the 50 states in its annual report entitled *State Debt Medians*. The other major rating agencies have developed their own debt measures, as have many individual states. Determining a state's net tax-supported debt may require judgment calls and there is sometimes disagreement among these entities over what types of obligations fit this label.[10] Despite this potential for subjectivity, net tax-supported debt may be more suitable for cross-state comparisons than either GO debt or primary government debt. For example, net tax-supported debt includes various liabilities that are paid from general tax dollars but lack a GO pledge (see Bunch 1991 for a general overview of these issues).[11] Net tax-supported debt attempts to include these liabilities. Additionally, by focusing on the revenues that secure the debt rather than on the issuer, the measure of net tax-supported debt is less affected by variation in state government structures than is primary government debt.

There are several reasons why net tax-supported debt may be the most relevant measure for debt burden calculations. First, conceptually it attempts to capture the obligations for which a state's general tax payers are most "on the hook." Second, debt service for this category of obligations is typically funded out of the state's general operating budget and thus competes most directly with other public services for scarce dollars.

However there are also arguments for considering a broader characterization of state debt when assessing affordability. While a state government may not be legally obligated to repay self-supporting or contingent debt in the event of a default, it may be compelled to do so nonetheless. First, a default in one of these obligations could still have a negative impact on the general government's credit rating.[12] State governments may also intervene in a potential default scenario simply to protect a public asset securing the debt.[13] Another justification for looking at a more expansive

10 Vermont, for instance, considers only its GO debt to be net tax-supported debt, whereas the rating agencies also include the state's special obligation transportation infrastructure bonds. Similarly, in its FY 2013 affordability analysis, Massachusetts notes that figures from Moody's include "certain debt issued by entities other than the Commonwealth for which the Commonwealth is not liable," including debt issued by the Massachusetts School Building Authority which is secured in part by a dedicated portion of the state's sales tax.

11 See Beverly S. Bunch, "The Effect of Constitutional Debt Limits on the State Governments' Use of Public Authorities," *Public Choice* 68 (1–3): 57–69. Some states are constitutionally prohibited from issuing GO bonds and other states restrict their use of GO bonds more heavily than other types of debt. In the face of such restrictions, some states substitute other financing arrangements that ultimately rely on general taxes. For example, a state may create a public authority to issue debt for the financing of a new government building. The building is then leased back to the state government with the lease payments, which are subject to appropriation, used to pay debt service on the bonds.

12 This argument was recently made in Rhode Island as the state grappled with whether to cover debt service payments associated with a loan made to the now-bankrupt 38 Studios by the state's economic development agency. The state's FY 2014 budget ultimately included funds to cover the year's debt service payments.

13 One Rhode Island political blogger noted that while the state government may have no legal or moral obligation to repay certain revenue debt issued by Rhode Island's state agencies, in the event of a default it is "unlikely to let its creditors take the assets that secure the loans, like buildings at URI or the Pell Bridge." See Ted Nesi, "An X-Ray of Rhode Island's State Debt," WPRI.com Blogs, September 2, 2010.

definition of state debt is that these obligations ultimately draw on the same underlying pool of resources for repayment.[14] Individuals and businesses paying high user fees to support various forms of revenue debt may have less of an ability and willingness to pay higher taxes to support other obligations. Thus a broader characterization of state debt obligations better captures the burden shouldered by those ultimately responsible for its repayment.[15]

There are several broad measures of state debt that may be considered. In addition to net tax-supported debt, Moody's *State Debt Medians* report includes estimates of so-called gross tax-supported debt. This measure includes certain types of self-supporting debt (for instance, GO bonds with an established history of being paid by a dedicated revenue source, or the revenue bonds of state enterprises), as well as contingent obligations like moral obligation debt or loan guarantees.

The Census Bureau also supplies some broadly defined estimates of state debt. Census debt statistics include all credit obligations incurred in the name of the government or any of its dependent agencies, regardless of what entity is actually responsible for servicing the debt or what revenues are pledged in its support.[16] Census debt statistics can be divided into short-term (a maturity less than one year) or long-term, with the latter representing the lion's share of state debt obligations.[17] Long-term debt can be further classified by whether the debt is issued for public or private purposes. Private-purpose debt, sometimes referred to as conduit debt, is debt issued by government entities on behalf of private-sector individuals and organizations, an arrangement that allows these entities to benefit from the government's lower (tax-exempt) interest rates. For example, conduit debt includes bonds issued by student lending authorities to provide loans to individuals for higher education or bonds issued by health and educational facilities authorities to finance the construction of private hospitals or colleges.

When assessing the affordability of a state's bonded debt obligations, some analysts also choose to include unfunded pension liabilities.[18] Pensions represent long-term obligations of state governments and, like bonded debt, enjoy strong legal protections. Rating agencies also consider these liabilities when assessing the financial health of states and assigning credit ratings, as retirement obligations also place a competing claim on state resources. For these reasons, states should consider their unfunded pension liabilities when contemplating the affordability of bonded debt. However, it is debatable whether bonded debt, largely incurred to finance capital projects, and retirement liabilities should be directly combined in a single debt measure given their inherent differences (see box 1).

14 Bahl and Duncombe (1993) use this argument to justify considering a broad definition of state debt. See Roy Bahl and William Duncombe, "State and Local Debt Burdens in the 1980s: A Study in Contrast," *Public Administration Review* 53 (1): 31–49. Moody's uses a similar argument when explaining why it considers "overlapping debt" in its credit analysis, noting that it "represents additional responsibilities of the same group of taxpayers." One could also apply this argument to privately-issued debt. See Steve Bocamazo, "The Role of Debt Position and Debt Management in Moody's Credit Analysis," in *Handbook of Debt Management*, ed. Gerald J. Miller, 545–547 (1996, New York: Marcel Dekker).

15 Similar arguments may be made for looking at state and local government debt combined. First, a state may be compelled to intervene when one of its local governments is unable to meet its obligations. In Rhode Island, fear of contagion from the City of Central Fall's bankruptcy spurred the state to adopt legislation giving bondholders priority among creditors. Second, local government debt represents another burden borne by taxpayers. Another argument, discussed later in the report, is that combining state and local government debt facilitates cross-state comparisons.

16 U.S. Bureau of the Census, *Government Finance and Employment Classification Manual*, October 2006. Dependent agencies include, but are not necessarily limited to, state agencies, boards, commissions, public utilities, authorities, or educational institutions. See appendix 3 for a listing of state-dependent agencies in the New England states.

17 Short-term debt is usually used to address imbalances in cash flows created by a mismatch in the timing of expenditures and revenue collections over the course of a fiscal year. While it is important for states to monitor the practice of short-term borrowing to manage a state's cash flow—and the credit rating agencies may regard a heavy use of short-term debt as warning sign of larger problems—this report focuses on assessing the affordability of long-term debt obligations.

18 See, for example, Charles Brecher, Kurt Richwerger, and Marcia Van Wagner (2003), "An Approach to Measuring the Affordability of State Debt," *Pubic Budgeting and Finance* 23(4): 65–85. One argument made in favor of combining the two types of obligations is that doing so may lead to greater cross-state debt comparability, especially as some states have converted some portion of their pension liabilities into traditional debt instruments through the use of pension obligation bonds.

IV. Metrics for Assessing Debt Affordability

Simply looking at absolute levels of state debt, however defined, does not necessarily tell us much about the affordability of this debt. Therefore, to gauge affordability, states and credit rating agencies typically rely on ratios comparing a state's debt with the resources available for its repayment. The most commonly used affordability ratios—also sometimes known as debt burden metrics—are presented in table 2.[19]

The metric most frequently used by state governments to assess the affordability of their bond obligations is debt service as a percent of state revenues. Five of the six New England states consider some version of this ratio, which compares the principal and interest costs associated with debt for a given period (usually a year) with revenues over the same length of time. The relevance of this ratio is clear—debt service represents the actual claim that outstanding debt places on currently available resources and indicates the degree of inflexibility imposed on state budgets. This ratio is also attractive to policymakers because both the numerator and denominator are largely within their control. A close alternative used by at least one state is debt service as a percent of state expenditures or appropriations.

Debt service-to-revenues is arguably the best indicator of the near-term affordability of state debt, as this metric reflects current costs and policies. However, it does not necessarily capture the long-term nature of most bonded debt commitments. A state's annual debt service requirement gives no real indication of how many years into the future such a claim will be made on state resources.[20] It can also paint a misleading picture of a state's debt burden if principal payments are back-loaded, or if there is a high likelihood that at a later date a state will be able to rollover its debt to achieve a lower interest cost through the issuance of refunding bonds.[21]

Given these limitations associated with annual debt service, many analysts choose to gauge affordability based on a state's outstanding debt at a given point in time. While this measure of debt only includes principal costs, it better captures the long-term nature of the obligation.[22] Several states, including

Table 2. Commonly Used Debt Affordability Ratios

Metric	States Employing Metric as Limit or Guideline
Debt-per-Capita	Georgia, Vermont, West Virginia
Debt-to-Personal Income	Georgia, Maryland, Minnesota, New York, North Carolina, Rhode Island, Vermont, West Virginia
Debt-to-State GDP	
Debt-to-Value of Taxable Property	Nevada, New Mexico, Utah, Wisconsin, West Virginia, Wyoming
Debt-to-Revenues	Connecticut, Delaware, Florida, Mississippi, Pennsylvania, Virginia
Debt Service-to-Revenues	Alaska, Delaware, Florida, Georgia, Hawaii, Louisiana, Maine, Maryland, Massachusetts, New Hampshire, New York, North Carolina, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia
Debt Service-to-Expenditures	Illinois

Source: State bond sale official statements collected from the Municipal Securities Rulemaking Board Electronic Municipal Market Access database (http://www.emma.msrb.org/) and other state documents.

Note: In Maine's case, the ratio of debt-to-revenues is considered for discussion purposes but is not a statutory limit or official guideline.

19 For information on the debt burden metrics and the methodologies used by the three U.S. credit rating agencies, see Fitch Ratings, "U.S. State Government Tax-Supported Rating Criteria," August 14, 2012; Moody's Investors Service, "U.S. States Rating Methodology," April 17, 2013; and Standard & Poor's, "U.S. State Ratings Methodology," January 3, 2011.

20 Some analysts consider the average speed of debt amortization in addition to traditional ratios that compare debt burdens to available resources.

21 The concern about potential back-loading can be mitigated by considering maximum annual debt service—or the maximum amount of principal and interest due on outstanding bonds in any future fiscal year—rather than the debt service due in the current fiscal year.

22 An alternative measure of debt affordability would look at estimates of the total principal and interest associated with the outstanding debt, as this method better captures the long-term nature of the obligation as well as both the interest and principal costs. In practice, this information is less frequently reported by states or used in affordability assessments. Using this method may yield fluctuating measures of the state's debt burden, as this method depends on whether states are exposed to variable interest rates or have the opportunity to refinance existing debt by issuing refunding bonds.

Connecticut, have limits or guidelines based on the ratio of outstanding debt to revenue.

Revenues, however, may not be the best marker of a state's long-term ability to pay as these receipts are highly dependent on current policy choices. In practice, states vary in their revenue-collecting efforts—meaning how intensively they tap their available resources. Some states choose to keep revenue collections low either as a matter of preference or because the need for publicly funded services is low. In theory, such states could raise their tax rates or expand their bases to raise additional revenue if necessary.

There are other challenges associated with using revenues as a measure of state resources. For example, revenues do not capture how much money a state holds in reserves.[23] There are also general measurement issues that can complicate this metric's usefulness. As with state debt, there is no single definition of revenues, so judgment calls are required for what to include and exclude. States expenditures are funded through a mix of sources including taxes, user fees, intergovernmental aid, and interest income that flow into governmental accounts. Most revenues are recurring, while some may be one-time cash infusions. Including the latter potentially distorts assessments of ability to pay.[24] Once revenue has been defined there is also the question of whether it should be measured based on a single year or the average of several years to smooth out anomalies or cyclical phenomena.

To avoid such challenges such as these, some analysts compare outstanding debt with broader indicators of state resources, with population being the most basic. Easy to compute, per capita metrics facilitate simple comparisons across states. However, at best these are only rough gauge of affordability, as few would argue that population is the best marker of a state's ability to pay its debts.

A better and commonly used indicator for ability to pay is state personal income. This measure represents income received by a state's residents, regardless of where the income is generated. Unlike revenues, state personal income is not directly dependent on current policy choices, but rather is the ultimate base from which most taxes and fees will be generated.[25]

Another measure of state resources is state gross domestic product (GDP), which reflects the economic output of a state, regardless of who receives the income associated with the output. This measure is also a proxy for the underlying pool of resources available to a state's government, though state GDP includes some elements that are not likely to generate revenues for a state and excludes others that are. Credit ratings agencies use this measure of resources primarily to facilitate comparisons of debt burdens between U.S. states and national governments. While the debt-to-GDP ratio can provide a common metric, there are key remaining differences between state and national governments and the debt they carry (see box 2).

Finally, a few states gauge debt affordability by comparing their outstanding debt to the assessed or market value of taxable property. Property values serve as a proxy for the wealth existing in a jurisdiction, but since these values do not reflect liquid resources, they are a less useful gauge of ability to pay

23 A given ratio of debt service-to-revenues would likely be considered more affordable in a state possessing a large rainy day fund compared to a state with no reserves. The three rating agencies do look at a state's reserves when assessing its creditworthiness, and some states consider their reserves when conducting debt affordability studies.

24 In selecting which revenues to include, care should be taken to "match" a debt obligation with the revenues potentially available to service it. For example, the Massachusetts FY 2013 debt affordability study excluded Massachusetts School Building Authority bonds from its definition of state debt. Likewise, this study excluded the portion of the state sales tax dedicated to repaying those bonds from its definition of revenue.

25 Personal income does not capture certain types of income—such as realized capital gains—on which states may collect taxes, nor does it account for the ability of states to export some portion of their revenue burden to non-residents. To correct for some of these deficiencies, some academics and analysts have used estimates of revenue capacity from the representative revenue system (RRS) when measuring debt burden. The RRS attempts to capture how much revenue a state could generate through its own underlying resource base if it relied on a nationally representative tax and fee schedule. While the RRS is perhaps a slightly better marker of ability to pay than personal income, the RRS is neither readily available (the last published version used data from FY 2002) nor straightforward to calculate, which limits its usefulness. See Bahl and Duncombe (1993) and Brecher, Richwerger, and Van Wagner (2003).

Box 2. State Government Debt versus National Debt

The recent controversies over the federal debt ceiling in the United States and the debt crises in several European nations have contributed to concerns about state government debt burdens and to general anti-debt sentiment. In reality, U.S. state government debt and the debt carried by national governments feature many differences.

State governments in the United States are generally prohibited from running operating budget deficits due to the presence of balanced budget requirements. Therefore, state governments mainly issue debt to finance infrastructure projects, which are funded through a separate capital budget. The majority of state government debt is long-term debt, often maturing over 20 to 30 years. And states generally do repay their debt when it matures rather than "rolling it over," meaning paying off an old debt with new debt.[1]

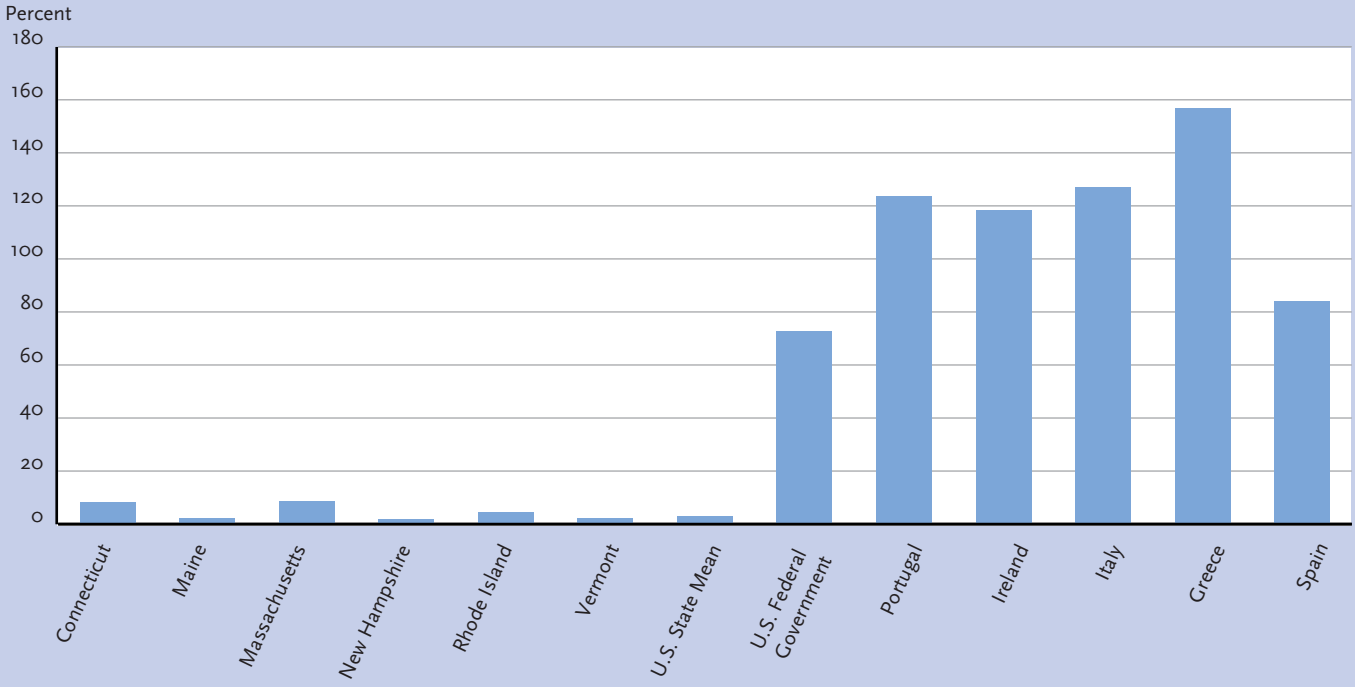
The U.S. federal government, like most national governments, is not required to balance its books each year and does not have separate operating and capital budgets. Deficits occur when overall spending—for both capital and operating purposes—exceeds revenues. Surpluses occur when revenues exceed expenditures. The national debt is the net sum of the current and all past deficits and/or surpluses.[2] The U.S. federal government and other national governments typically issue debt in a variety of maturities, and roll over the debt when it comes due. Problems can arise—as they recently did in Europe—when investors fear they will not be repaid in the future and refuse to roll over the debt, or are only willing to do so at a very high interest rate.

Given various differences in the nature of borrowing, the debt burdens of state governments tend to be much lower than for the U.S. federal government and other national governments. In 2012 the average ratio of state net tax-supported debt-to-GDP was under 3 percent, compared to 72.5 percent for the U.S. federal government and 156.9 percent for Greece (see figure B-2).

1 This is, of course, not always the case. For example, Massachusetts' FY 2011 budget relied on refinancing $300 million in principal due that year to avoid a spike in debt service payments and to provide budgetary relief. See "Mass. Senate Approves $300M Debt Restructuring," *Associated Press*, July 1, 2010; and "Debt Refinancing Strategy," FY 2011 House 2 Budget Recommendation: Issues in Brief. Available at http://www.mass.gov/bb/h1/fy11h1/exec_11/hbudbrief6.htm.

2 Fernando M. Martin and Christopher J. Waller, "Sovereign Debt: A Modern Greek Tragedy," *Federal Reserve Bank of St. Louis Review*, September/October 2012.

Figure B-2. A Comparison of Government Debt Burdens for New England, the U.S. Federal Government, and Selected European Countries: Debt-to-GDP



Source: State ratios come from Moody's Investor's Service's *State Debt Medians* report. National ratios come from the CIA World Fact Book.

Note: State ratios based on net tax-supported debt outstanding at the end of calendar year 2012; local government debt is not included. National ratios based on "public debt" as reported by the CIA. The five selected European countries had high debt levels in the wake of the global financial crisis. Collectively this group of countries is sometimes referred to as the PIIGS.

than personal income. Debt-to-property value ratios are most commonly used when measuring the debt burden of state or local governments that rely heavily on property taxes as a source of revenue.

To conclude, this review of commonly used debt burden metrics suggests that no single ratio stands out as the best gauge of affordability. For this reason, states should consider using multiple metrics. We recommend that states consider at least two ratios to capture different vantage points. Debt service-to-revenues captures affordability in the near term given current policy choices, whereas debt-to-personal income can provide a longer-term perspective.

V. Approaches for Assessing Debt Affordability

For any given debt burden metric there are at least two approaches for assessing affordability: the debt ceiling approach and the benchmarking approach (see Kriz and Wang 2012).[26] The debt ceiling approach compares a state's debt burden with a specific numeric threshold. Benchmarking, by contrast, compares a state's debt burden with those of other states. As with the ratios themselves, each approach has strengths and weaknesses.

Debt Ceiling Approach

Many states employ the debt ceiling approach through the use of debt limits.[27] Some limits are set forth in state constitutions or by statute whereas others are nonlegally binding guidelines adopted by a debt affordability committee, the state treasurer's office, or another state agency charged with monitoring the state's use of debt. Debt limits potentially promote affordability in at least two ways. First, they may directly impact affordability by constraining state debt levels.[28] Second, debt limits may have an indirect effect by improving a state's credit rating and thus lowering its borrowing costs.

An advantage of using the debt ceiling approach, relative to the benchmarking method, is that it is less data-intensive, only requiring debt estimates from the state being examined. The primary challenge associated with using debt ceilings is determining the "right" threshold. Set too high, a state may take on levels of debt that threaten its ability to provide public services without unduly raising taxes, and could potentially affect its credit rating (see box 3). However, a debt ceiling that is too restrictive can cause a state to forgo worthwhile infrastructure improvements or else rely on alternate and potentially less desirable methods of financing. Indeed, states have found various ways to circumvent restrictive debt limits, such as by issuing debt through public corporations and authorities.[29] These financing approaches, sometimes referred to as "backdoor borrowing," may be more costly and are often less transparent than issuing GO debt.[30]

26 Kenneth A. Kriz and Qiuishi Wang, "Measuring and Monitoring Debt Capacity and Affordability: Market- and Nonmarket-based Models," in *Handbook of Local Government Fiscal Health,* ed. Helisse Levine, Eric A. Scorsone, and Jonathan B. Justice, 453–474 (Burlington, MA: Jones and Bartlett). In addition to these approaches, Kriz and Wang also describe a third approach which essentially uses regression modeling to forecast debt burden in the future.

27 Some states fix a dollar limit on the amount of new debt they may issue or the amount of debt that is outstanding; however, many limits are "flexible," meaning these based on a ratio like the ones described in the previous section. For example, a state's outstanding debt service is not allowed to exceed a certain percentage of its revenues. States may have other debt restrictions in addition to limits. For example, Maine and Massachusetts both require that a legislative supermajority authorize the issuance of GO bonds. Maine, like many other states including Rhode Island, also requires a voter referendum on all GO bond authorizations.

28 The evidence on whether the presence of debt limits or other restrictions are associated with lower levels of state debt is unclear. Indeed, states with high debt levels may be more likely to adopt debt limits (or other formal debt policy measures) so as to appear to be prudently managing their debt. See the 2006 article by Dwight V. Denison, Merl Hackbart, and Michael Moody, "State Debt Limits: How Many Are Enough?," *Public Budgeting & Finance* 26(4): 22–39. Also see a 1995 article by James C. Clingermayer and B. Dan Wood, "Disentangling Patterns of State Debt Financing," *American Political Science* Review 89(1): 108–120.

29 Governments may also rely on pay-as-you-go or pay-go financing in the face of debt constraints. While pay-go financing does have advantages—no interest or other borrowing-related costs—it also reduces the ability of governments to smooth taxes over time and can pose issues of intergenerational fairness.

30 New York State's comptroller has been particularly critical of the Empire State's use of backdoor borrowing in the face of narrowly defined debt limitations and a cumbersome process for approving GO bond issues. See Office of the New York State Comptroller, "Debt Impact Study: An Analysis of New York State's Debt Burden," January 2013.

Box 3. Debt Burden and Credit Ratings

A state's existing debt burden is but one of many variables that play into its GO credit rating. The major credit rating agencies all consider several broad categories of factors in addition to debt when assigning credit ratings including economic, financial, and administrative factors. The specific subfactors that are included for each category, the indicators used to measure them, and their weightings vary across agency methodologies.

With many moving pieces and debt burden reflecting only a fraction of the puzzle, there appear to be few, if any cases, where a high debt burden alone triggers a rating downgrade. There have, however, been instances where a state's high debt load has been cited, among other factors, as contributing to a ratings change, including Moody's downgrade of Connecticut's GO debt in January 2012. The state's high debt load also may have adversely affected its credit rating in other ways— in the 1990s one Fitch analyst noted that Connecticut's high relative debt burden factored into the agency's decision not to upgrade its rating even though during that period the state was running budget surpluses.[1] Of course high debt does not always stand in the way of an upgrade if other factors are viewed favorably enough—Massachusetts saw its rating increased by Standard & Poor's in 2011 despite having one of the nation's highest debt burdens.[2]

In addition to the overall debt burden, the ratings agencies also consider whether states have engaged in certain debt or debt management practices. Moody's, for example, considers the presence of a formal debt affordability study to be a credit positive. Yet agencies tend to look poorly on a heavy use of cash-flow borrowing or the issuance of debt to finance budget deficits. In the past decade the latter has been cited as a factor driving downgrades in several states, including California, New Jersey, and Connecticut. Fitch noted Connecticut's deficit-borrowing practices and the high debt burden when downgrading the state's GO debt in 2010, writing: "The downgrade reflects the state's reduced financial flexibility illustrated by its reliance on sizable debt issuances during the current biennium to close operating gaps in the context of already high liabilities."[3]

1 Christopher Keating, "State's Bond Rating Drops," *Hartford Courant*, July 3, 2003.
2 Rodrique Ngowi, "S&P upgrades Massachusetts credit rating to AA-plus," Associated Press, September 17, 2011.
3 Fitch Ratings. "Fitch Downgrades Connecticut's GO Bonds to 'AA'; Outlook to Stable." June 3, 2010.

Table 3 shows the limits adopted by various states for selected debt ratios.[31] Ceilings for debt-to-personal income range from 2.5 to 6 percent, values described as moderate or moderately high by the ratings agencies. While there is a wider range of limits associated with the debt service-to-revenue ratio, the majority fall between 5 and 8 percent, values also considered moderate or moderately high. Some states employ a range of debt ceiling limits, while others have adopted a debt target in conjunction with a higher cap. These debt ceiling structures can offer states greater flexibility for responding to capital needs and opportunities while still attempting to impose fiscal discipline. Some states also have established formal mechanisms for exceeding an existing debt ceiling—for example, New Hampshire can exceed its statutory debt ceiling with a three-fifths vote of the state legislature.[32]

When assessing affordability with the debt ceiling approach, another consideration is whether to compare a state's debt burden to the ceiling at a single point in time (e.g. the next fiscal year) or whether to project debt burdens for future years. Most states that conduct a formal debt affordability analysis project debt capacity—the difference between a state's debt burden and the chosen debt ceiling—over some longer time horizon, typically five to ten years. Such longer-term projections can help to ensure that a state will not bump up against its debt limit in the future and can inform long-range capital planning, but these projections require making various assumptions about the amount and timing of debt issuance, interest rates, and growth in state resources. Sensitivity analyses can be useful in demonstrating how a state's available debt capacity changes when assumptions are varied or alternate debt issuance scenarios are considered.

Benchmarking Approach

Under the benchmarking approach, a state may compare its debt burden to national means or medians, or to a selected peer group of states. By focusing on how debt burdens match up across states, this approach may provide a less arbitrary basis for gauging affordability. Furthermore, the underlying

31 Note that comparisons of state debt limits should be viewed with some caution, as states may differ in their definition of state debt or revenues. See appendix 4 for more details and information on debt ceilings based on other ratios.

32 New Hampshire Statutes, Title 1, Chapter 6-C.

Table 3. Summary of Selected State Government Debt Ceilings

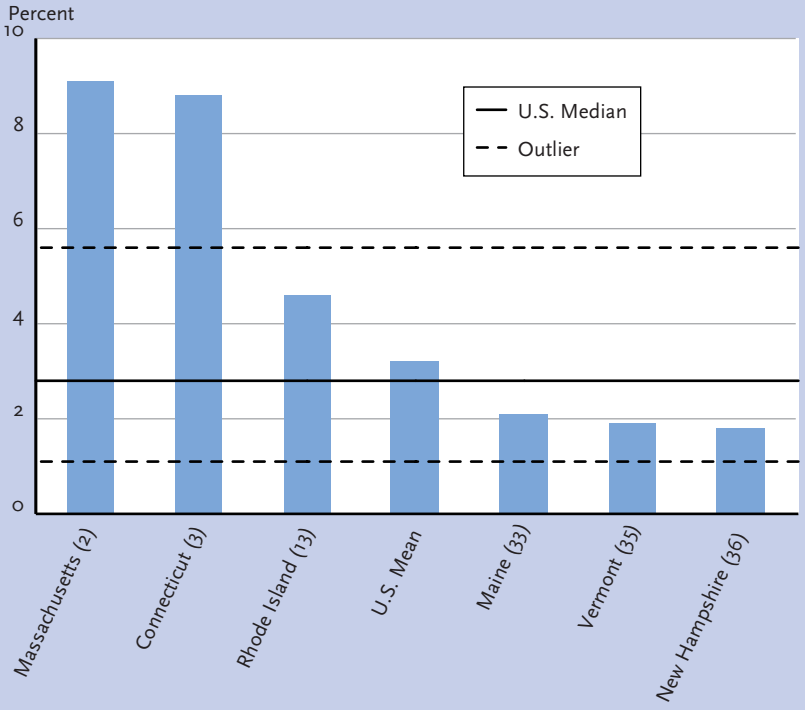
Metric	State	Ceiling (in Percent)	Source
Debt-to-Personal Income	Georgia	3.5	Guideline
	Maryland	4.0	Guideline
	Minnesota	3.25	Guideline
	New York	4.0	Statute
	North Carolina	2.5 (Target) 3.0 (Cap)	Guideline
	Rhode Island	5.0 – 6.0	Guideline
	Vermont	5-Year Mean and Median of AAA-Rated States	Guideline
	West Virginia	3.1	Guideline
Debt Service-to-Revenues	Alaska	8.0	Not clear
	Delaware	15.0	Statute
	Florida	6.0 (Target) 7.0 (Cap)	Statute
	Georgia	10.0	Constitution
		7.0	Guideline
	Hawaii	18.5	Constitution
	Louisiana	6.0	Constitution
	Maine	5.0	See note
	Maryland	8.0	Guideline
	Massachusetts	8.0	Guideline
	New Hampshire	10.0	Statute
	New York	5.0	Statute
	North Carolina	4.0 (Target) 4.75 (Cap)	Guideline
	Ohio	5.0	Constitution
	Oregon	0.0 – 5.0 (Capacity Available) 5.0 – 7.0 (Exceeds Prudent) 7.0 – 10.0 (Limits Reached)	Guideline
	Rhode Island	7.5	Guideline
	South Carolina	5.0	Constitution
	Tennessee	10.0	Statute
	Texas	5.0	Constitution
		2.0 (Target) 3.0 (Cap)	Guideline
	Vermont	6.0	Guideline
	Virginia	5.0	Guideline
	Washington	9.0	Constitution
	West Virginia	5.0	Guideline

Source: State bond sale official statements collected from the Municipal Securities Rulemaking Board Electronic Municipal Market Access database (http://www.emma.msrb.org/) and other state documents.

Note: In Maine's case, the ratio of debt service-to-revenues is considered for discussion purposes but is not a statutory limit or official guideline. The values presented in this table may not be directly comparable across states due to differences in definitions of state debt, debt service, or revenues. Some states (e.g. Georgia, Minnesota, North Carolina, and West Virginia) have additional debt ceiling guidelines associated with alternative definitions of state debt or revenues. See appendix 4 for more information.

Figure 1. How State Government Debt Burdens in New England Rank Nationally: Debt-to-Personal Income

2012 Net Tax-Supported Debt



Source: Moody's Investors Service data, with calculations by author.

Note: Ratios based on net tax-supported debt outstanding at end of the 2012 calendar year. Outlier thresholds represent one standard deviation above the 50-state mean of the square roots of the ratios. The national ranking appears in parentheses after the state.

premise of benchmarking—that it is a state's *relative* debt burden that really matters—aligns with the view that affordability is related to a state's economic competitiveness.

Of course, the benchmarking approach faces its own challenges, measurement being the first. Comparing debt ratios reported by the states themselves can be especially problematic as there may be inconsistences in the definitions of state debt and resources. Most states performing benchmarking comparisons rely on the standardized debt statistics reported by the one of the three ratings agencies or the Census Bureau for conducting comparisons. These data sources aim to provide more consistent statistics than individual state reports and do not involve the effort of assembly.

Second, even using comparably measured data, there may be important differences across states that contribute to valid differences in debt burden metrics and thus complicate cross-state comparisons. One key difference is that states vary considerably in the division of responsibility between state and local levels of government. States with more centralized government functions are likely to have higher state-level debt. States may also have different infrastructure needs or preferences that can influence debt levels, but these variations are not captured in traditional debt burden metrics (Swaine and Tannenwald 1997).[33] A state with a growing population or economy may legitimately require more capital investment, and thus carry more debt than a state that does not face these same conditions.[34] States with older infrastructure may also require higher levels of borrowing for repair or replacement. Indeed, lower debt burdens may not always be judged a virtue if they come at the cost of poor-quality roads, water systems, or facilities.

Some of the measurement differences across states can be controlled by the careful selection of a comparative peer group. Among the states that publish benchmark comparisons, common selection criteria for peer groups include geographic proximity, the population size, the credit rating, and the age or quality of infrastructure. Some analysts also make adjustments to traditional debt affordability ratios to make them more equivalent and thus comparable across states.[35]

Of course states may employ both the debt ceiling and benchmarking approaches. For example, a state may use benchmarking to help to inform the selection of a debt limit to be used in future years. Vermont formally combines the two methods; two of its adopted

33 Daniel G. Swaine and Robert Tannenwald, "Are State Government Debt Levels Too High?" *New England Fiscal Facts*. See http://www.bostonfed.org/economic/neff/neff17.pdf.

34 Various studies have considered other factors beyond economic and demographic indicators that may contribute to cross-state variations in state debt including past levels of debt, availability of reserves, federal aid, political ideology and the presence of debt of fiscal limits. See, for example, a 2011 study by Robert W. Wassmer and Ronald C. Fisher, "State and Local Government Debt, 1992–2008," *State Tax Notes* 61 (7): 427–436.

35 For example, Brecher, Richwerger, and Van Wagner (2003) adjusted debt burden ratios by a so-called Index of State Fiscal Responsibility, based on the state government share of state and local own-source revenue, to account for differing degrees of centralization across states.

Table 4. Cross-Comparative Measures of State Government Debt Burdens in New England: Debt-to-Personal Income

	State CAFRs (FY 2012)				Moody's (CY 2012)				U.S. Census Bureau (FY 2011)			
	General Obligation Debt		Primary Government Debt		Net Tax-Supported Debt		Gross Tax-Supported Debt		Public-Purpose Debt		Total Long-Term Debt	
	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank
Connecticut	6.7	2	9.3	2	9.1	3	12.6	2	8.9	6	15.0	5
Maine	0.9	27	2.1	38	2.1	33	10.1	5	5.8	21	11.9	13
Massachusetts	5.3	4	8.5	3	9.3	2	9.8	7	12.4	2	21.5	1
New Hampshire	1.6	23	2.5	35	1.9	36	4.3	26	6.2	17	14.1	7
Rhode Island	2.4	15	6.2	9	4.7	13	7.0	14	8.6	7	20.1	2
Vermont	1.9	20	2.0	39	1.9	35	5.7	20	6.3	15	13.3	10
U.S. Mean	1.8		4.2		3.4		5.2		5.4		9.4	
U.S. Median	1.3		4.0		2.8		4.3		5.1		9.0	
Outlier (Lower)	0.1		1.5		1.1		1.9		2.7		5.2	
Outlier (Upper)	3.6		6.8		5.6		8.6		8.1		13.6	

Source: State CAFR, Moody's Investors Service, U.S. Census Bureau, and U.S. Bureau of Economic Analysis data, with calculations by author.
Note: Ratios based on debt outstanding at end of the applicable fiscal (FY) or calendar (CY) year. Outlier thresholds represent one standard deviation above the 50-state mean of the square roots of the ratios.

debt ceilings are based on the mean and median of AAA-states (which change from year to year) rather than a fixed ceiling.[36]

VI. Debt Burdens in New England

This section of the paper will compare selected debt burden metrics for the New England states with national norms. Beyond providing a snapshot of state debt burdens in the region, the intent is to illustrate how the definition of state debt and the choice of debt burden ratio can impact interpretations of affordability.

Debt-to-Personal Income Ratios

When looking at net tax-supported debt relative to personal income (figure 1), we see wide variation in debt burdens across states even within the New England region. Massachusetts and Connecticut have the second and third highest debt-to-personal income ratios in the nation. These debt burdens are roughly double the amount for Rhode Island and are more than three times higher than the U.S. median. Debt burdens in the three northern New England states, by contrast, are all below the national median.

To see which states are statistical outliers based on this metric, we consider variation in the distribution of state ratios. We judge a state to be an outlier if its ratio is more than one standard deviation above or below the national average. Across the U.S. 10 states meet this criterion for this metric, with Massachusetts and Connecticut the only outliers among the New England States. These high ratios do not mean that these states will be unable to repay their debts—indeed, the ratings agencies have great confidence that they will—but rather indicates that these two states are imposing a relatively high debt burden on their residents which could potentially create fiscal problems or harm the states' economic competitiveness.[37]

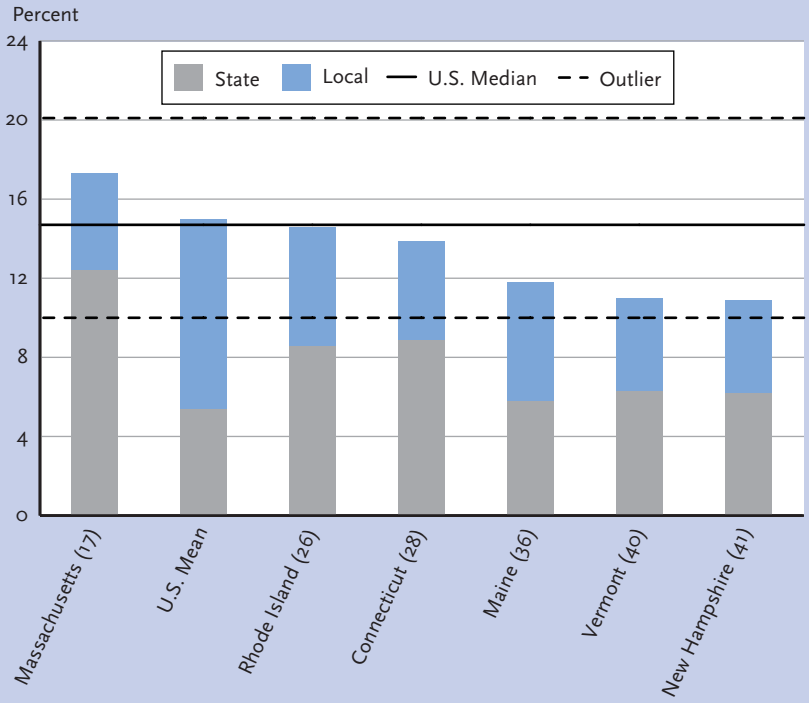
36 State of Vermont Capital Debt Affordability Advisory Committee, "Recommended Annual Net Tax-Supported Debt Authorization," September 2013. Available at: http://www.vermonttreasurer.gov/sites/treasurer/files/pdf/bonds/DebtAffordabilty2013.pdf.

37 This approach using one standard deviation above or below the national average was developed by Brecher, Richwerger, and Van Wagner (2003) to identify outliers among the 50 states using the authors' own unique debt burden measurement. They described the upper threshold as the beginning of a "danger zone," in which states were

Table 4 allows us to see how varying the definition of state debt changes the calculated debt burdens and state rankings.[38] Regardless of the definition of debt used, Connecticut and Massachusetts are consistently ranked at or near the top of state governments with high debt levels relative to personal income. The relative debt burdens in the other New England states tend to increase when the definition of state debt is expanded. From this observation, two natural questions follow: Why are the debt burdens in Connecticut and Massachusetts so high? And what is causing the relative burdens to increase in the other New England states when the definition of state debt is broadened?

Figure 2. How State and Local Government Debt Burdens in New England Rank Nationally: Debt-to-Personal Income

2011 Public-Purpose Debt



Source: U.S. Census Bureau and U.S. Bureau of Economic Analysis data, with calculations by author.

Note: Ratios based on long-term public-purpose debt outstanding at end of the 2011 fiscal year. Outlier thresholds represent one standard deviation above the 50-state mean of the square roots of the ratios. The national ranking for combined state and local debt appears in parentheses after the state.

One argument made by officials in Connecticut and Massachusetts, and affirmed by the ratings agencies, is that their state governments take on responsibilities that are more typically carried out by local governments in other parts of the country. County governments play a limited role in New England, and this arrangement shifts more responsibility to the region's state governments. Furthermore, Connecticut and Massachusetts both play a large role in funding local school construction costs through generous aid programs that are financed by state-issued debt. Indeed, debt related to school construction aid accounts for nearly a quarter of net tax-supported debt in Connecticut and over 15 percent in the Bay State.[39]

When only state government public-purpose debt is considered, Massachusetts and Connecticut rank second and sixth in the nation, respectively, in terms of the highest debt burdens (see third column from right in table 4). When local government obligations are included (see figure 2), Massachusetts' rank falls to the 17th place and Connecticut's to the 28th position.[40] The relative burdens for the other New England states also fall significantly, indicating that the concentration of government borrowing at the state level is a region-wide phenomenon. While lower local

in danger of harming their economic competitiveness. For the approach to have statistical meaning, the data in question should follow a normal distribution; for this reason the calculation of the outlier thresholds actually relies on the square roots of the debt burden ratios, which meet the test of normality in almost all cases considered, rather than the ratios themselves which do not. While Brecher, Richwerger, and Van Wagner (2003) focus only on an upper outlier threshold, we include the lower one here as well to mark states that have a very low debt burden as this could be a signal of underinvestment.

38 See appendix 5 for debt-to-personal income ratios for the 50 states.

39 Connecticut issues GO bonds to fund school construction. According to its CAFR, the state had approximately $4.5 billion in outstanding school construction debt at the end of FY 2012. In Massachusetts, debt for school construction aid is issued by the Massachusetts School Building Authority. This debt is secured by a dedicated portion of the Commonwealth's sales tax and is thus included in Moody's definition of net tax-supported debt. Outstanding MSBA debt equaled roughly $5.4 billion at the end of FY 2012. School building aid programs in other New England states tend to be smaller and funded by current revenues or a mix of current revenues and bonding, although New Hampshire turned to bonding the costs of its program in the recent fiscal crisis.

40 See appendix 5 for combined state and local debt-to-personal income ratios for the 50 states.

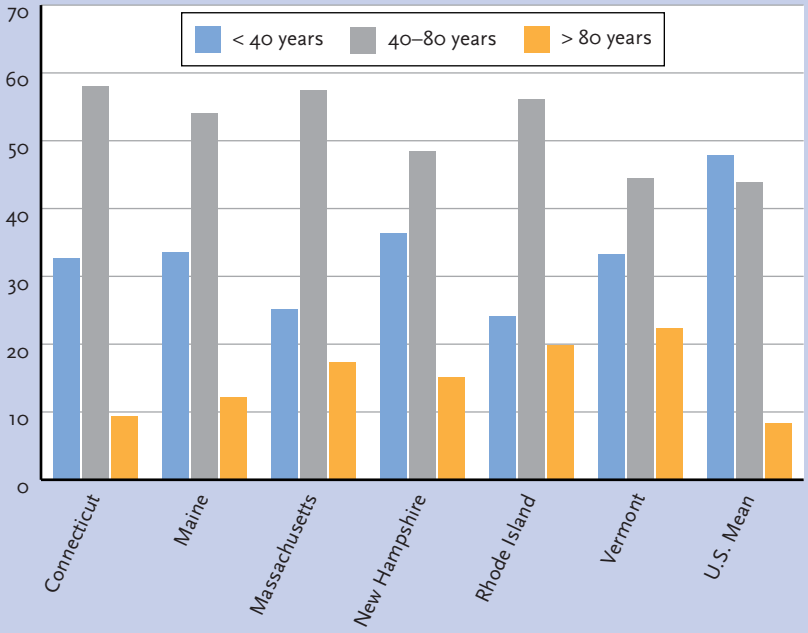
government debt ratios do not directly reduce the pressures facing state budgets, lower local burdens do affect affordability in a broader sense by mitigating the overall debt load shouldered by taxpayers.

A second argument sometimes heard in the northeastern states is that the infrastructure in this region is older than in other parts of the country. While we are aware of no metric that captures the average age of a state's entire infrastructure, the U.S. Department of Transportation does publish vintage statistics for the nation's bridges on a state-by-state basis. Figure 3 shows the distribution of bridge age for the New England states compared to the U.S. average. States in this region do have a below-average share of newer bridges (built within the last 40 years), and an above-average share of bridges older than 40 years.[41] If older infrastructure is indeed associated with higher costs or more frequent repairs, it could contribute to higher debt levels but the presence of aging infrastructure also could simply be signaling a greater unmet need for investment in these states.[42]

Thus these two common arguments—greater state government responsibility and older infrastructure—may partially explain why state government debt burdens in Connecticut and Massachusetts are high relative to the national average. These reasons are less helpful in explaining differences observed within the region, suggesting that there are other factors at play.

Figure 3. Age of Bridges in New England as of December 2011

Share of All Bridges (Percent)



Source: U.S. Department of Transportation, Federal Highway Administration data, with calculations by author.

As it turns out, Connecticut and Massachusetts have both engaged in borrowing practices that many other New England states have not, and these choices have contributed to their high relative debt burdens (see box 4). Such practices include using debt for non-capital purposes, such as Connecticut issuing pension obligation bonds and economic recovery notes and Massachusetts funding operating expenses through its capital budget. Both states have also taken on sizable capital investment projects, most notably the Bay State's Big Dig.

While Connecticut and Massachusetts stand out from the regional pack due to their consistently high state debt burdens, the other New England states are more notable for how their measured burdens change when the

41 Massachusetts, in particular, has a fairly large number of very old bridges—around 10 percent of all bridges in the Commonwealth were constructed over 100 years ago, more than any other state. As of December 2012 about 15 percent of the state's bridge area (in square meters) was structurally deficient, placing Massachusetts sixth among the 50 states with the highest number of structurally deficient bridges. In FY 2009 the Commonwealth launched its "Accelerated Bridge Program" which aims to rehabilitate and repair Massachusetts bridges that are structurally deficient, or that would otherwise become structurally deficient within the next few years. By completing bridge repair projects sooner than would otherwise be the case, the program aims to generate substantial cost savings. Debt issued to support the program is not subject to the state's annual administrative bond cap, though the program's debt service counts toward the state's debt service-to-revenue limit.

42 One may actually expect states with newer infrastructure to have higher debt because the bonds used to finance the original construction have not yet been repaid. Furthermore, whether older infrastructure is a sign of a greater need for new investment depends more on the quality of the existing infrastructure rather than the year it was constructed. An examination of data on bridge conditions suggests that the New England states tend to have higher than average shares of spans that are structurally deficient or functionally obsolete.

Box 4. Debt in Connecticut and Massachusetts

The high relative debt burdens in both Connecticut and Massachusetts stem from various factors beyond these states' roles in funding local school construction or the age of their bridges, roads, and water systems. Borrowing in these states includes debt incurred for non-capital purposes, as well as for the financing of large-scale state-level infrastructure projects.

Pension Obligation Bonds

In 2008 Connecticut issued over $2 billion in pension obligation bonds (POBs) to help fund its teachers' retirement system. In theory, POBs should pay for themselves—the proceeds from the issued bonds are invested in the pension fund with the expectation that the investment returns will exceed the debt service requirements. A risk that investment earnings would fall short of projections materialized in Connecticut, forcing the state to draw on other resources for repayment. Thus far no other New England states have issued POBs, though several other state as well as various localities have done so.[1] Connecticut's outstanding POBs as of the end of FY 2012 equaled close to $2.3 billion, representing about 12 percent of the state's net tax-supported debt.

Deficit Financing

Connecticut has also issued debt for the explicit purpose of funding budget deficits. In 2009 the state issued close to $1 billion in so-called economic recovery notes to address a yawning budget gap.[2] The state issued similar notes on four separate occasions in the 1990s and early 2000s, and intended to issue more in 2010 before an improving fiscal situation rendered this borrowing unnecessary.[3] While Connecticut is not the only state to have used debt in this manner, this type of financing is rare and is generally considered a poor financial practice.[4] As of the end of FY 2012 Connecticut had approximately $750 million in outstanding economic recovery notes, equal to about 4 percent of net tax-supported debt.

Issuing Bonds for Operating Costs

Since the 1990s Massachusetts has routinely used borrowed funds to support operating costs including salaries for highway workers. While it is unclear how much of the Bay State's outstanding debt is associated

1 Besides Connecticut, other states that have issued pension obligation bonds include California, Illinois, Oregon, and New Jersey.

2 Connecticut's economic recovery notes were required by law to mature in less than seven years. In addition to funding the general fund deficit, proceeds from the notes were also to be used to cover any interest payable or accrued on the notes through FY 2011 as well as the costs of issuance. PA 09-2, June Special Session—HB 6801, "An Act Authorizing Economic Recovery Notes."

3 These authorized, but never issued, bonds would have been backed by an assessment on consumer electric bills rather than general taxes. See Connecticut Office of Fiscal Analysis, "State Budget Projections," June 27, 2011.

4 Office of State Treasurer Denise L. Nappier, "Nappier Reports Connecticut Bond Sale Attracts Strong Investor Demand," Press Release. November 13, 2009; National Conference of State Legislatures, "NCSL Fiscal Brief: State Balanced Budget Provisions," October 2010; State Budget Crisis Task Force, "Report of the State Budget Crisis Task Force," July 2012.

definition of state debt is varied.[43] For example, the three northern New England states have fairly moderate debt ratios based on net tax-supported debt, but their relative burdens jump dramatically when debt from all state agencies and authorities is considered; this is also true for Rhode Island. These shifts are largely attributable to the high levels of public debt issued for private purposes—conduit debt—in the region. Indeed, Rhode Island has the nation's highest ratio of private-purpose debt-to-personal income (see figure 4), and the other New England states are also above the national average.[44]

It is not entirely clear why the New England states have made greater use of conduit financing than other parts of the country, but perhaps a more relevant concern

43 It is worth noting that Rhode Island's relative net tax-supported debt burden was also once among the highest in the nation but has gone down since the early 2000s. State officials attribute this decrease, in part, to improved debt management practices. The state also lowered its net tax-supported debt by securitizing tobacco settlement payments and using the proceeds to defease existing GO debt. See Rhode Island Office of the General Treasurer, "Fiscal Year 2011 Report on Debt Management to the Public Finance Management Board," February 2012 and E. Matthew Quigley, "Securitizing Tobacco Settlements: The Basics, The Benefits, The Risks," *New England Fiscal Facts*. See http://www.bostonfed.org/economic/neff/neff30/neff30.pdf.

44 Some conduit financing actually represents a state government issuing bonds on behalf of local governments for public purposes. In some cases, this debt, including bonds issued by the Rhode Island Health and Education Building Corporation on behalf of local public school districts, is mischaracterized in the Census Bureau data as private-purpose debt.

Box 4. (Continued)

with this practice, a January 2013 report by the Massachusetts Department of Transportation projected that $234 million in new revenue would be needed in FY 2014 to completely eliminate the use of bonds for the agency's daily operations and payroll.[5]

Big Investments

While these two southern New England states have issued debt for non-capital purposes, both have also borrowed heavily to fund infrastructure projects, and this practice has also contributed to their high debt loads. Connecticut, for example, has made significant investments at the University of Connecticut in recent years.[6] And Massachusetts' debt was significantly impacted by the Big Dig. Officially known as the Central Artery/Tunnel Project, the Big Dig was one of the most ambitious and the most expensive highway projects in U.S. history. The construction phase of the project spanned from 1991 to 2006, and carried a price tag that exceeded $15 billion when including mandated public transportation improvements, with over half of that amount financed by state debt.[7] Annual debt service payments have been estimated at roughly $550 million and will continue through 2038.[8] State officials have noted the challenges posed by the sizable Big Dig obligations. Regarding this debt, in 2012 Governor Deval Patrick said that " '[I]t's squeezing our ability to do a bunch of other things that we need to do to sustain the economy and the quality of life here.'"[9] To allow for new investment, and to shore up the existing transportation system, Governor Patrick requested $1.02 billion in new or higher taxes and fees dedicated to transportation in his FY 2014 budget proposal.[10]

5 Massachusetts Department of Transportation, "The Way Forward: A 21st Century Transportation Plan," January 2013. It is unclear how much of the Commonwealth's outstanding debt is associated with this borrowing. The transportation finance bill passed by the legislature later in 2013 aims to phase out this practice.

6 The UConn 2000 infrastructure program was established by the legislature in 1995. Extended several times, the program contemplated over $3 billion in project costs to be funded by general obligation bonds of the University and State. In June 2013 the legislature approved $1.5 billion in state general obligation bonds to be issued over the next ten years to support further investment at UConn to support expanded research and enrollment. See Annual Information Statement, State of Connecticut, February 28, 2013, and Jacqueline Wattles. "Senate Approves Bonding for UConn," *Connecticut News Junkie* blog, June 3, 2013.

7 Determining what share of the state's net tax-supported debt is associated with the Big Dig is complicated. As one journalist noted, "the project's borrowing costs sprawl across an array of original and refinanced bonds issued by the former Massachusetts Turnpike Authority, the MBTA, and the Commonwealth itself." See Eric Moskowitz, "True Cost of Big Dig Exceeds $24 billion with Interest, Officials Determine," *Boston Globe*, July 10, 2012.

8 Bob Salsberg, "Big Dig Cost Pegged at $24.3B, Lawmakers Told," *Associated Press*, July 10, 2012.

9 Bob Salsberg. "Debt from Big Dig Hampers Mass. Transportation." *Associated Press*. April 8, 2012.

10 Eric Moskowitz and Michael Levenson, "Patrick Pushes for Tax Hikes to Overhaul Transit System," *Boston Globe*, January 14, 2013. The Massachusetts legislature ultimately enacted a budget that would dedicate around $800 million in new revenues for transportation by 2018.

is whether this practice affects debt affordability. Conduit debt is typically not an obligation of the primary state government and typically its debt service is not paid from general state resources. Thus, from a budgetary perspective, conduit debt is far less important than net tax-supported debt. However, conduit debt does draw on the same underlying pool of resources. What's more, while it is usually self-supporting in practice conduit debt is sometimes backed by a moral obligation pledge of the state government.[45]

Debt Service-to-Revenue Ratios

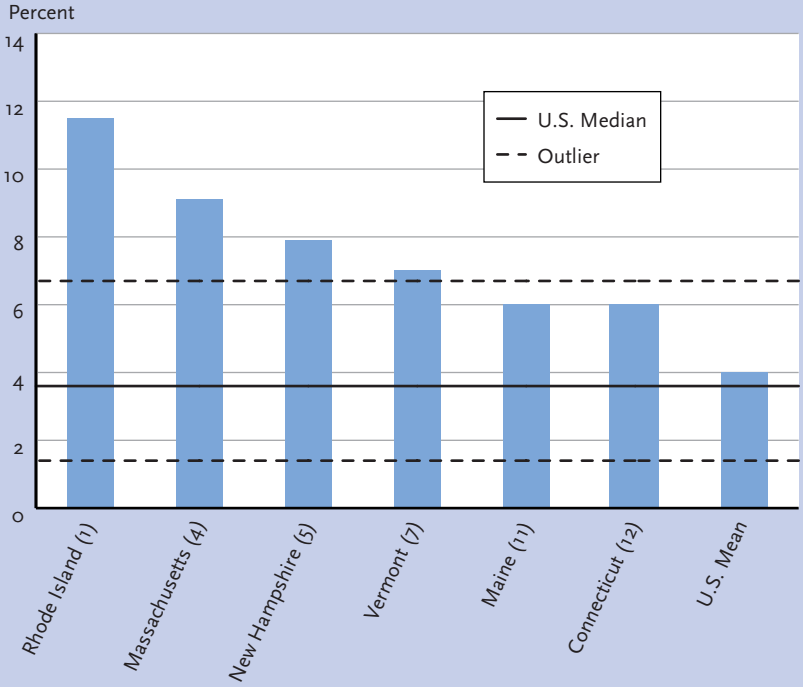
While debt-to-personal income ratios do well to represent the long-term burden debt imposes on state resources, ratios of debt service-to-revenues better capture the immediate pressure on state budgets. Table 5 shows ratios of debt service-to-revenue based on different definitions of state debt.[46] Due to the more limited reporting of debt service data, there are fewer options to consider than when

45 Among the New England states, Maine has made particularly heavy use of its moral obligation pledge for conduit debt, which helps to explain the state's relatively high level of gross tax-supported debt. The moral obligation pledge is viewed as a credit enhancement tool for lowering borrowing costs for the issuers in the absence of low-cost municipal bond insurance. The state has not historically had to cover debt service on such contingent liabilities. See Public Financial Management, Inc., State of Maine, "Moral Obligation Study," July 27, 2009. Available at http://www.maine.gov/treasurer/debts_bonds/State%20of%20Maine%20-%20Moral%20Obligation%20Study%20(2009-Sept-10).pdf.

46 See appendix 5 for debt service-to-revenue ratios for the 50 states.

Figure 4. How State Government Conduit Debt Burdens in New England Rank Nationally: Debt-to-Personal Income

2011 Private-Purpose Debt



Source: U.S. Census Bureau and U.S. Bureau of Economic Analysis data, with calculations by author.

Note: Ratios based on long-term private-purpose debt outstanding at end of the 2011 fiscal year. Outlier thresholds represent one standard deviation above the 50-state mean of the square roots of the ratios. The national ranking appears in parentheses after the state.

Table 5. Cross-Comparative Measures of State Government Debt Burdens in New England: Debt Service-to-Revenues

	State CAFRs (FY 2012)		Moody's (FY 2012)		U.S. Census Bureau (FY 2011)	
	Primary Government Debt		Net Tax-Supported Debt		General Government Debt (Interest Only)	
	Percent	Rank	Percent	Rank	Percent	Rank
Connecticut	10.3	1	12.7	1	6.3	2
Maine	2.4	28	6.4	19	3.0	18
Massachusetts	5.6	4	11.3	3	7.0	1
New Hampshire	2.9	23	6.8	17	6.3	3
Rhode Island	5.1	5	7.7	11	6.0	4
Vermont	1.5	37	2.8	38	2.2	29
U.S. Mean	2.8		5.2		2.8	
U.S. Median	2.8		4.9		2.4	
Outlier (Lower)	0.9		2.0		1.4	
Outlier (Upper)	4.7		8.5		4.1	

Source: State CAFR, Moody's Investors Service, and U.S. Census Bureau data, with calculations by author.

Note: Ratios based on debt service expenditure for the applicable fiscal year (FY). Outlier thresholds represent one standard deviation above the 50-state mean of the square roots of the ratios.

looking at metrics based on outstanding debt. State CAFRs, for example, do not report debt service separately for GO debt versus other forms of primary state government debt. The Census Bureau debt service statistics encompass a broader definition of state debt, but only capture the interest portion of debt service and do not distinguish between public- and private-purpose obligations.[47]

Looking at the relative positions of the New England states, we see again that Connecticut and Massachusetts have among the highest debt burdens regardless of the definition of debt used and that the region's remaining states have higher relative burdens when the definition of debt is expanded. This latter observation is likely due to the heavier use of authority-issued conduit debt in these states, a practice that tends to be associated with higher debt service-to-revenue ratios.[48] The impact is especially pronounced in New Hampshire and Rhode Island, which have the region's highest ratios of conduit debt to total debt.[49]

Table 6 shows how a state's relative debt burden ranking can change based on the choice of debt burden metric. Connecticut, Massachusetts, Rhode Island, and Vermont all have fairly similar rankings based on net tax-supported debt-to-personal income and net tax-supported debt service-to-revenues, however, relative debt burdens for Maine and New Hampshire are considerably higher based on the latter measure. The underlying reasons

47 The Census Bureau reports interest on general debt, which refers to state government debt exclusive of public utility debt. There are reasons for looking at interest costs as opposed to debt service costs. If one assumes that a state is choosing between debt financing and tax financing, the interest cost represents the marginal cost of borrowing.

48 The responsibilities of conduit debt-issuing authorities are largely limited to issuing debt and collecting revenues to service the debt, unlike primary state governments which are responsible for providing a broad range of services beyond debt issuance.

49 An alternative debt burden ratio, not commonly used by states, compares debt service with state personal income. Relative debt burdens for Maine and Vermont increase when looking at primary government debt service-to-personal income as opposed to primary government debt service-to revenues, while New Hampshire's relative debt burden falls. Connecticut, Massachusetts, and Rhode Island exhibit similar rankings based on the two metrics.

for these discrepancies differ for the two states and illustrate the limitations of using a single debt burden ratio to gauge affordability.

In New Hampshire's case, a driving factor behind the state's relatively high debt service ratio is the state's low revenue collection effort. In 2012, the Granite State had the nation's lowest ratio of revenue-to-personal income, which reflects tax policy choices as well as low service needs.[50] In theory, the state could tap deeper into its existing resources to meet its obligations if the need arose. New Hampshire's case thus illustrates how debt service-to-revenues by itself does not necessarily reflect a state's long-term ability to pay for its obligations.

Maine's example, by contrast, illustrates how the debt-to-personal income ratio does not best capture the short-term pressure debt can place on a state's budget. Reflecting a conservative attitude towards borrowing, Maine chooses to employ a rapid amortization schedule for its bonds, thus paying off its debt more quickly than many other states.[51] Rapid amortization can lower overall financing costs but can also reduce a state's short-term budget flexibility because its annual debt service costs are correspondingly higher. This type of background information is not apparent when looking solely at debt-to-personal income ratios.

Table 6. Regional Comparison of National Rankings by Debt Burden Metric

	National Ranking		
	Net Tax-Supported Debt-to Personal Income	Net Tax-Supported Debt Service-to-Revenues	Difference in Ranking
Connecticut	3	1	2
Maine	33	19	14
Massachusetts	2	3	–1
New Hampshire	36	17	19
Rhode Island	13	11	2
Vermont	35	38	–3

Source: Moody's Investors Service Data, with calculations by author.
Note: Positive difference in ranking represents a higher relative debt burden associated with debt service-to-revenues.

VI. Summary and Recommendations

Economic theory suggests that when interest rates are low, state governments should increase their borrowing for capital projects. There is evidence that in recent years the low interest rate environment, coupled with federal incentives such as the BAB program, did alter state borrowing patterns. Between 2008 and 2009, state net tax-supported debt grew by 10 percent in the United States, the highest annual increase in 10 years according to Moody's. More recently, however, state debt levels have remained relatively flat, though interest rates remain low. One Moody's analyst attributed the muted growth of the past two years to "legal debt limitations, state-level austerity spending, and anti-debt sentiment."[52]

The recent economic and fiscal downturn and the divergent attitudes on state government borrowing that have gained new urgency in the wake of these crises raise important questions about debt and its affordability. Long-term bonds play an important role in financing capital investment, which can confer both short- and long-run economic benefits. While recent anti-debt sentiment has likely been heightened by a conflation of short- and long-term challenges on the state and national levels, there are sound reasons for states to exercise prudence when making borrowing decisions. Indeed, high debt levels can squeeze state resources, making it difficult to meet other priorities.

Debt affordability relates to a state's ability to service its obligations without jeopardizing its ability to provide customary or desired public services at acceptable tax levels. Most concur that affordability is an important concept, but

50 New Hampshire is a prime example of a state with relatively high resources, as measured by indicators such as personal income, but relatively low revenues. See Jennifer Weiner, "How Does New Hampshire Do It? An Analysis of Spending and Revenues in the Absence of a Broad-based Income or Sales Tax," New England Public Policy Center Research Report 11-1, Federal Reserve Bank of Boston, April 2011.

51 This is apparent when looking at ratios of annual principal repayment to total annual debt service and annual principal repayment to outstanding debt. Maine's ratios are among the highest in the nation.

52 Moody's Investors Service, "Moody's: U.S. State Debt Growing at Slowest Pace in Years," May 30, 2013.

there is no single agreed-upon approach regarding its assessment. This report provides a framework for thinking about the issues confronting policymakers and analysts when gauging the affordability of a state's debt.

The first challenge in assessing affordability is simply determining what falls under the umbrella of state debt. Net tax-supported debt—or borrowing that is supported by general taxes and revenues that could otherwise be used for state operations—tends to be the focus of most affordability analyses, and with good reason. This definition includes the debt obligations for which a state's taxpayers are most directly liable, making the measure relevant for state budget discussions as well as a state's general credit rating.

Yet while net tax-supported debt may merit the most weight in affordability assessments, policymakers should also be cognizant of the burden imposed by other forms of state debt. Debt issued by state agencies or public authorities, whether for public or private purposes, may be contingent obligations of the state government; in any case, such obligations ultimately draw on the same underlying pool of state resources. A narrow focus on tax-supported debt may cause these other forms of debt to grow unchecked. In general, states should strive to promote greater transparency surrounding debt in its various forms. This approach can help to promote rational decision making, and may discourage unsound or risky borrowing practices.

Once debt has been defined, there are various metrics that are used to gauge the burden it places on state resources. All the commonly used debt burden ratios have their particular strengths and weaknesses, and no single metric tells the whole story. Based on these considerations, policymakers and analysts should consider employing multiple metrics rather than relying on a single ratio to assess debt affordability. At a minimum, debt service-to-revenues and debt-to-personal income can, respectively, serve as gauges for near-term and longer-term burdens.

After selecting appropriate debt burden metrics, the next challenge for policymakers is determining what values correspond to an affordable level of debt. There is no single objective answer, but the decision is an important one. Adopting affordability standards that are too high can threaten a state's fiscal flexibility, yet standards that are too restrictive can hamper a state's ability to invest adequately in capital infrastructure. While many states choose to focus on a single numeric threshold or debt ceiling for any given ratio, there are options that may better help states to balance these competing objectives. For example, a state may adopt a debt ceiling range rather than a single limit. An alternative used by a few states that is similar in practice, is to couple a debt cap with a lower debt target. Either approach provides a constraint on debt, while giving states greater flexibility to vary debt loads based on changing needs or opportunities. As a check, policies could be designed to require that greater scrutiny be applied to borrowing that occurs above the target. A well-defined process for exceeding an existing limit—such as a supermajority legislative vote—can also provide flexibility in extraordinary circumstances while potentially promoting greater transparency.

Limits may also be defined in a way to smooth the impact of one-time or cyclical events. One-time infusions of revenue, such as the grants states received under ARRA, may be excluded from state revenues for the purposes of measuring debt burdens. Likewise, revenues or other measures of state resources may be averaged over several years. These types of adjustments can help to ensure that states do not overextend themselves when times are good and or underinvest when times are lean.

A benchmarking analysis that takes care to recognize differences across states can help inform the selection of appropriate debt ceilings, as can guidance from ratings agencies. A state should also consider its own unique circumstances, including the age and quality of its infrastructure, its unfunded liabilities for pensions and other retirement benefits, and other pressing needs such as health care and education. The adopted limits should be

reevaluated periodically to ensure that these reflect changing conditions and priorities.

Of course, assessing the affordability of a state's debt should not be a substitute for the careful evaluation of the social costs and benefits of undertaking individual public infrastructure investments. Projects that do not meet a basic cost-benefit test should not move forward even if a state's debt burden is low. Rather, the assessment of affordability should be viewed as a complement to capital planning, allowing states to ensure that their most pressing infrastructure needs are met while still exercising fiscal discipline.

Appendix 1: Glossary of Key Debt Terms

Appropriation-Backed Bond: a bond that is backed by payments, subject to appropriation, equal to the amount of debt service made from the state government to the issuer (usually a public authority). Payments are frequently in the form of a lease.

Blended Component Unit: this is defined by the Governmental Accounting Standards Board as a component unit so intertwined with the primary government that its finances are reported as part of the primary government.

Bond: a debt instrument that entitles the owner (bondholder) to a fixed sum of money (principal) to be repaid on a certain date (maturity date) as well as regular interest payments at a stated or formula-defined rate. Compared to notes, bonds are typically longer-term obligations, often with terms of 10, 20, or 30 years, and may or may not be backed by a specified revenue source.

Build America Bonds (BABs): a taxable bond issued through 2010 under the American Recovery and Reinvestment Act. Build America Bonds (BABs) may be direct pay subsidy bonds or tax credit bonds. Direct pay subsidy bonds entitle the issuer to receive a direct subsidy (35 percent of the interest cost paid by the issuer) from the federal government. Direct pay subsidy BABs carry a higher interest rate than traditional tax-exempt bonds of similar credit quality, broadening their appeal to investors without federal tax liabilities. Tax credit bonds entitle the bondholder to receive, in lieu of interest payments, a credit against federal income tax.

Business-Type Activities: certain activities of a primary government for which fees are charged for a particular service.

Certificate of Participation (COP): a financing method by which an investor purchases a share of a facility's lease revenues rather than a bond backed by those revenues.

Component Unit: an entity defined by the Governmental Accounting Standards Board as a legally separate organization for which the elected officials of a primary government is financially accountable. The finances, including the debt, of a component unit may be reported as part of the primary government (blended component unit) or separately (discretely-reported component unit).

Conduit Debt: debt issued by a government entity on behalf of a third party, often a private individual or entity.

Contingent Liability: a liability, dependent on the outcome of a future event, that may be incurred by an entity. A state may have a contingent liability if its obligation to pay the debt service on a bond depends on the insufficiency of a pledged revenue stream.

Credit Rating: an opinion by a rating agency of the creditworthiness of a bond. References to a state's credit rating typically refer to the rating associated with the state's GO debt.

Defeasance: a provision that voids a bond when the issuer sets aside cash to repay the bond, thereby allowing the outstanding debt and the cash set-aside to cancel each other out. States typically use the proceeds from refunding bonds to defease existing debt.

Dependent Agency: an entity assumed by the Census Bureau to be dependent on the state government for meeting one of several characteristics related to the composition of the board controlling the agency (e.g. board comprised wholly or mainly by state government officials), the nature of the facilities controlled by the agency (e.g. facilities that serve the state government), and the financing of the agency (e.g. state government can review or modify agency budget).

Double-Barreled Bond: a type of hybrid bond that is backed by both a specified revenue source and a general obligation pledge.

Fixed-Rate: an interest rate on a bond that does not change over the life of the security.

General Obligation (GO) Bond: a bond that is usually backed by issuer's the full faith, credit, and taxing power, depending on the applicable state or local law. GO bonds are usually repaid using general funds rather than a specified revenue source.

Governmental Activities: basic services that are provided by primary state governments that typically include education, health and human services, justice and protection, and transportation.

Grant Anticipation Revenue Vehicle or (GARVEE) Bond: bonds issued for transportation projects backed by future federal highway aid.

Gross Tax-Supported Debt: a debt classification reported by Moody's that is defined to include net-tax-supported debt as well as "contingent debt liabilities that may not have direct tax support but represent commitments to make debt service payments under certain conditions (e.g. state guarantees and bonds backed by state moral obligation pledges that have never been tapped)."

Hybrid Bond: a bond that blends the characteristics of a general obligation bond and revenue bond, such as a double-barreled bond that is backed by a specified revenue source as well as a general obligation pledge.

Issuer: the government entity that borrows funds through the sale of bonds or other municipal securities. As a term, issuer is synonymous with borrower.

Moral Obligation Bond: a revenue bond that is also backed by a promise that any amount necessary to make up a deficiency in debt service will be included in the budget recommendation made to the state legislature or other governing body. While not legally obligated to do so, the legislature may appropriate funds to make up the shortfall.

Municipal Bond: the general term for a bond issued by a state or local government or their agencies or authorities. In most cases, the interest paid on municipal bonds is tax-exempt. The term "municipal security" applies more broadly to other types of debt instruments issued by state and local governments, including notes and certificates of participation.

Net Tax-Supported Debt: in general, this term describes debt that is repaid with state taxes or other nondedicated funds. Moody's defines this debt classification as "debt secured by state taxes or other operating resources which could otherwise be used for state operations, net of obligations that are self-supporting from pledged sources other than state taxes or operating resources." Tax-supported debt is shorthand for this longer terminology.

New Money Bond: a bond that raises funds for a new project or endeavor rather than for the purpose of defeasing existing bonds.

Note: an issuer's short-term obligation to repay a specified principal amount together with interest at a stated rate on a certain date. Unlike bonds, notes are almost always payable from a defined source of anticipated revenues. Notes usually mature in one year or less, though some have longer maturities.

Pension Obligation Bond (POB): a bond that is issued by a state or local government to finance an unfunded pension liability. Bond proceeds are typically invested in the issuer's pension fund.

Primary Government: an entity defined by the Governmental Accounting Standards Board to be a separately elected governing body—one that is selected by the citizens in a general election. Primary governments include state governments, general purpose local

governments, or a special purpose government entity that meets all of the following criteria: (a) has a separately elected governing body; (b) is legally separate; and (c) is fiscally independent, meaning that without the approval of another government entity it can determine its own budget, levy taxes and set rates or charges, and issue bonded debt.

Public Debt for Private Purpose: this is defined by the Census Bureau as "credit obligations of a government or any of its dependent agencies for the purpose of funding private sector activities, including debt that is backed solely by the private organization(s) whose activity is being financed." This debt category is typically referred to as conduit debt in state financial records.

Refunding Bond: a bond issued to defease outstanding bonds. Usually the proceeds from a refunding bond are set aside to pay the debt service on the original bond, with the set-aside cash essentially canceling out the original debt. Refunding bonds are typically issued to take advantage of lower current interest rates.

Revenue Bond: a bond which is backed by a specified revenue source, often one that is generated by the project financed by the bond. Typically the issuer is not required to pay debt service using any revenue source other than that specifically pledged to the bond's repayment. Revenue bonds typically carry higher interest rates than GO bonds, all else equal.

Taxable Bond: a bond for which the interest received by the bondholder is subject to federal income taxes.

Tax-Exempt Bond: a bond for which the interest received by the bondholder is not subject to federal income taxes. In many cases the interest will also be exempt from any state income taxes in the state of issue.

Term: the length of time between a bond's issuance and its maturity date, meaning the date its principal becomes due and payable to the bondholder.

Tobacco Settlement Securitization: the process of issuing bonds backed by settlement payments from the landmark tobacco settlement agreement between states and major U.S. tobacco companies in 1998. A number of states engaged in this practice to receive their settlement cash upfront rather than as a series of payments over time.

Variable-rate: an interest rate that changes over time according to market conditions or a pre-specified index or formula.

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For definitions of additional debt-related terms, see the Municipal Securities Rulemaking Board's Glossary of Municipal Securities (http://msrb.org/glossary.aspx). Some of the definitions appearing in this appendix are adapted from this more comprehensive glossary.

Appendix 2: Credit Ratings for the New England States

Ratings Scale for Investment-Grade Ratings			
	Fitch	**Moody's**	**Standard & Poor's**
Best Quality	AAA	Aaa	AAA
High Quality	AA+, AA, AA–	Aa1, Aa2, Aa3	AA+, AA, AA–
Upper Medium Grade	A+, A, A–	A1, A2, A3	A+, A, A–
Medium Grade	BBB+, BBB, BBB–	Baa1, Baa2, Baa3	BBB+, BBB, BBB–

New England Ratings as of September 2013			
	Fitch	**Moody's**	**Standard & Poor's**
Connecticut	AA	Aa3	AA
Maine	AA	Aa2	AA
Massachusetts	AA+	Aa1	AA+
New Hampshire	AA+	Aa1	AA
Rhode Island	AA	Aa2	AA
Vermont	AAA	Aaa	AA+

Source: Vermont Office of the State Treasurer, "State Bond Ratings Report," available at: http://www.vermonttreasurer.gov/debt-management/state-bond-ratings (visited November 1, 2013), and Steve Mistler. "Maine credit rating downgraded by agency." *Portland Press Herald*. January 23, 2013.

Note: In addition to the categories listed above, the ratings agencies also assign "outlook" and "watch" statuses to state debt to indicate the direction a rating is likely to move.

Appendix 3: New England State Government-Dependent Agencies

Table 3-1. New England State Government-Dependent Agencies

Connecticut	Maine	Massachusetts
Connecticut Development Authority	Maine Educational Loan Authority	Massachusetts Convention Center Authority
Connecticut Health and Educational Facilities Authority	Maine Finance Authority	Massachusetts Department of Transportation
Connecticut Higher Education Supplemental Loan Authority	Maine Governmental Facilities Authority	Massachusetts Development Finance Agency
Connecticut Housing Finance Authority	Maine Health and Higher Educational Facilities Authority	Massachusetts Home Mortgage Finance Agency
Connecticut Resources Recovery Authority	Maine Municipal Bond Bank Authority	Massachusetts Housing Finance Agency
University of Connecticut	Maine Public Utility Financing Bank	Massachusetts Port Authority
	Maine State Housing Authority	Massachusetts State Colleges Building Authority
	Maine Turnpike Authority	Massachusetts Water Pollution Abatement Trust
	University of Maine System	Massachusetts Water Resources Authority
		Massachusetts Bay Transportation Authority
		Route 3 North Transportation Association
		University of Massachusetts Building Authority
		Woods Hole, Martha's Vineyard, and Nantucket Steamship Authority

New Hampshire	Rhode Island	Vermont
New Hampshire Business Finance Authority	Narragansett Bay Commission	Vermont Economic Development Authority
New Hampshire Health and Education Facilities Authority	Rhode Island Clean Water Finance Agency	Vermont Educational and Health Buildings Financing Agency
New Hampshire Housing Finance Authority	Rhode Island Convention Center Authority	Vermont Housing Finance Agency
New Hampshire Municipal Bond Bank	Rhode Island Depositors Economic Protection Corporation	Vermont Municipal Bond Bank
University System of New Hampshire	Rhode Island Economic Development Corporation	Vermont State Colleges
	Rhode Island Health and Educational Building Corporation	Vermont Student Assistance Corporation
	Rhode Island Refunding Bond Authority	
	Rhode Island Resource Recovery Corporation	
	Rhode Island Student Loan Authority	
	Rhode Island Turnpike and Bridge Authority	
	Rhode Island Water Resources Board	
	Tobacco Settlement Financing Corporation	

Source: U.S. Census Bureau. "Individual State Descriptions: 2012." 2012 Census of Governments. Issued September 2013. http://www2.census.gov/govs/cog/2012isd.pdf.

Note: This table represents dependent agencies as defined by the Census Bureau and may not correspond exactly to entities classified as component units in state CAFRs. The Massachusetts Bay Transportation Authority was only recently classified by the Census Bureau as a dependent agency of state government. Prior to FY 2011 the MBTA was considered a special district government and its debt was included in Massachusetts local government debt statistics.

Appendix 4: Summary of Selected State Government Debt Ceilings

Table 4-1. Debt-per-Capita

State	Ceiling (in Dollars)	Source	Debt Subject to Limit	Definition of Resources
Georgia	1,200	Guideline	General Obligation and Guaranteed Revenue Debt excluding GARVEEs	Population
	1,500	Guideline	General Obligation and Guaranteed Revenue Debt including GARVEEs	Population
Vermont	5-Year Mean and Median of AAA-Rated States	Guideline	Net Tax-Supported Debt	Population
West Virginia	1,100	Guideline	Net Tax-Supported Debt	Population

Table 4-2. Debt-to-Personal Income

State	Ceiling (in Percent)	Source	Debt Subject to Limit	Definition of Resources
Georgia	3.5	Guideline	General Obligation and Guaranteed Revenue Debt excluding GARVEEs	Personal Income
	4.0	Guideline	General Obligation and Guaranteed Revenue Debt including GARVEEs	Personal Income
Maryland	4.0	Guideline	State Tax-Supported Debt (includes General Obligation Bonds, Consolidated Transportation Bonds, GARVEEs, Lease and Conditional Purchase Financings, Maryland Stadium Authority Revenue Bonds, and Bay Restoration Bonds)	Personal Income
Minnesota	3.25	Guideline	Tax-Supported Debt	Personal Income
	6.0	Guideline	General Obligation, Moral Obligations, Equipment Capital Leases, and Real Estate Capital Leases	Personal Income
New York	4.0	Statute	State-Supported Debt	Personal Income
North Carolina	2.5 (Target) 3.0 (Cap)	Guideline	Net Tax-Supported Debt (General Fund)	Personal Income
Rhode Island	5.0–6.0	Guideline	Tax-Supported Debt	Personal Income
Vermont	5-Year Mean and Median of AAA-Rated States	Guideline	Net Tax-Supported Debt	Personal Income
West Virginia	3.1	Guideline	Net Tax-Supported Debt	Personal Income

Table 4-3. Debt-to-Value of Taxable Property

State	Ceiling (in Percent)	Source	Debt Subject to Limit	Definition of Resources
Nevada	2.0	Constitution	General Obligation Debt (with Exclusions)	Assessed Value of Property
New Mexico	1.0	Constitution	Unclear	Assessed Value of Property
Utah	1.5	Constitution	General Obligation Debt	Market Value of Property
West Virginia	2.0	Guideline	Net Tax-Supported Debt	Assessed Value of Property
Wisconsin	Lesser of: 0.75% of Value of Property or 5% of Value of Property Less Net Indebtednesss	Constitution	New General Obligation Debt	Market Value of Property
	5.0	Constitution	Cumulative General Obligation Debt	Market Value of Property
Wyoming	1.0	Constitution	Unclear	Assessed Value of Property

Table 4-4. Debt-to-Revenues

State	Ceiling (in Percent)	Source	Debt Subject to Limit	Definition of Resources
Connecticut	160.0	Statute	Outstanding and Authorized but Unissued Debt Payable from General Fund Tax Receipts (with Certain Exclusions)	General Fund Tax Receipts
Delaware	5.0	Guideline	New Tax-Supported Obligations in Any One Fiscal Year (Excluding Refunding Bonds)	Estimated Net Budgetary General Fund Revenue for the Same Fiscal Year
Florida	50.0	Constitution	Full Faith and Credit Debt Outstanding (No Specific Pledged Revenue Source)	Total State Tax Revenues for Two Preceding Fiscal Years
Mississippi	150.0	Constitution	Unclear	Taxes, Licenses, Fees and Permits, Investment Income, Rental Income, Service Charges including Net Income from the Alcoholic Beverage Control Division , and Fines, Forfeitures and Penalties.
Pennsylvania	175.0	Constitution	All Net Debt (Limit Only Applies When State is Issuing Debt for Capital Projects Without Voter Referendum)	Average of Annual Tax Revenues for Five Preceding Fiscal Years
Virginia	115.0	Statute	General Obligation Debt (with Exclusions)	Average of Selected Tax Revenues for Three Preceding Fiscal Years

Table 4-5. Debt Service-to-Revenues

State	Ceiling (in Percent)	Source	Debt Subject to Limit	Definition of Resources
Alaska	8.0	Not clear	Debt Service on General Obligation Bonds, COPs, State-Supported University of Alaska Bonds, School Debt Reimbursement Program, the Capital Project Reimbursement Program, Certain Capital Leases	Unrestricted Revenue
Delaware	15.0	Statute	Maximum Annual Debt Service on Tax-Supported Obligations of the State and Transportation Trust Fund Debt Obligations	Estimated Aggregate Budgetary General Fund Revenue plus Trust Fund Revenue
Florida	6.0 (Target) 7.0 (Cap)	Statute	Debt Service on Tax-Supported Debt	Revenue Available to Pay Debt Service on Tax-Supported Debt
Georgia	10.0	Constitution	Maximum Annual Debt Service on General Obligation and Guaranteed Revenue Debt	Prior Year's State Treasury Receipts (less Refunds)
	7.0	Guideline	Debt Service on General Obligation and Guaranteed Revenue Debt, excluding GARVEEs	Prior Year Revenues
	8.0	Guideline	Debt Service on General Obligation and Guaranteed Revenue Debt, including GARVEEs	Prior Year Revenues
Hawaii	18.5	Constitution	Maximum Annual Debt Service on General Obligation Bonds (with Exclusions)	Average of General Fund Revenues for Three Preceding Years
Louisiana	6.0	Constitution	Debt Service on Net Tax-Supported Debt	General Fund and Dedicated Fund Revenues
Maine	5.0	Guideline	Unclear	General Revenue
Maryland	8.0	Guideline	Debt Service on State Tax-Supported Debt (includes General Obligation Bonds, Consolidated Transportation Bonds, GARVEE Bonds, Lease and Conditional Purchase Financings, Maryland Stadium Authority Revenue Bonds, and Bay Restoration Bonds)	Revenues

continued

Table 4-5. Debt Service-to-Revenues (Continued)

State	Ceiling (in Percent)	Source	Debt Subject to Limit	Definition of Resources
Massachusetts	8.0	Guideline	Debt Service on Direct Debt (General Obligation Bonds, Special Obligations, Certain Contract Assistance Obligations, and Interest on Federal Grant Anticipation Notes)	Annual Budgeted Revenues (excluding Off-Budget Revenues or Tax or Toll Revenues Dedicated to Various Debt-Issuing Authorities)
New Hampshire	10.0	Statute	Debt Service on Net Tax-Supported Debt	Unrestricted General Fund Revenues for the Previous Fiscal Year
New York	5.0	Statute	Previous Fiscal Year Debt Service on State-Supported Debt	Total Governmental Funds Receipts for the Previous Fiscal Year
North Carolina	4.0 (Target) 4.75 (Cap)	Guideline	Debt Service on Net Tax-Supported Debt (General Fund)	General Tax Revenues Adjusted for One-Time or Nonrecurring Items plus Certain Investment Income and Miscellaneous Revenues
	6.0	Guideline	Debt Service on Transportation-Related Debt (excluding GARVEEs)	Highway Fund and Highway Trust Fund Revenues (excluding Federal Revenues)
Ohio	5.0	Constitution	Debt Service on General Obligation and Special Obligation Bonds Paid from the State's General Revenue Fund (with Some Exclusions)	Estimated General Revenue Fund Revenues plus Lottery Proceeds from Fiscal Year of Issue
Oregon	0.0–5.0 (Capacity Available) 5.0–7.0 (Exceeds Prudent) 7.0–10.0 (Limits Reached)	Guideline	Debt Service on General Fund-Supported Debt	General Fund Revenues
Rhode Island	7.5	Guideline	Debt Service on Tax-Supported Debt	General Revenues
South Carolina	5.0	Constitution	Debt Service on General Obligation Debt (with Exclusions)	General Fund Revenues for Fiscal Year Preceding the Year Debt was Incurred
Tennessee	10.0	Statue	Maximum Annual Debt Service on General Obligation Bonds	Taxes, Licenses, Fees, Fines, and Permits Allocated to the General Fund, the Debt Service Fund, and the Highway Fund (excluding the Portion of those Taxes Shared with Local Governments)
Texas	5.0	Constitution	Debt Service on State Debt Payable from General Revenue Fund (with Exclusions)	General Revenue Fund Revenues (with Exclusions) Averaged for the Three Previous Fiscal Years
	2.0 (Target) 3.0 (Cap)	Guideline	Debt Service on Not Self-Supporting Debt	Unrestricted General Revenues (Rolling Three-Year Average)
Vermont	6.0	Guideline	Debt Service on General Obligation Debt	Annual Aggregate of General and Transportation Fund Revenues
Virginia	5.0	Guideline	Debt Service on Tax-Supported Debt Obligations	Blended Revenues
Washington	9.0	Constitution	Maximum Annual Debt Service on State Debt (with Certain Exclusions)	Average of General State Revenues for Three Preceding Years

continued

Table 4-5. Debt Service-to-Revenues (Continued)

State	Ceiling (in Percent)	Source	Debt Subject to Limit	Definition of Resources
West Virginia	5.0	Guideline	Debt Service on Net Tax-Supported Debt	All Revenues (including General Revenues, State Road Funds, Lottery Funds, and Certain Dedicated Severance Taxes)
	6.0	Guideline	Debt Service on Net Tax-Supported Debt	General Revenue Fund

Table 4-6. Debt Service-to-Expenditures

State	Ceiling (in Percent)	Source	Debt Subject to Limit	Definition of Resources
Illinois	7.0	Statute	Debt Service on General Obligation Bonds	General Fund and Road Fund Appropriations for Fiscal Year Immediately Preceding the Year of Issuance

Source: State bond sale official statements available at: http://www.emma.msrb.org/, and other state documents.

Note: In many cases the relevant time periods for measuring debt and resources are not clear from the documentation and are thus not described in the tables. In Maine's case the ratio of debt service-to-revenues is considered for discussion purposes but is not a statutory limit or official guideline. Prior to 2013, Massachusetts also had a statutory cap on general obligation debt service equal to 10 percent of total budgeted appropriations. 2012 legislation repealed this cap, though the state continues to place a statutory dollar limit on overall direct debt. Massachusetts's debt affordability guidelines also limit growth in new debt subject to the state's administrative bond cap to $125 million per year. New York's debt service to revenues limit is used to determine whether new debt can be issued in any given year, but does not necessarily restrict the amount of new issuance.

Appendix 5. Cross-Comparative Measures of State Debt Burdens in the United States

	State Government Debt-to-Personal Income											
	State CAFRs (FY 2012)				Moody's (CY 2012)				U.S. Census Bureau (FY 2011)			
	General Obligation Debt		Primary Government Debt		Net Tax-Supported Debt		Gross Tax-Supported Debt		Public-Purpose Debt		Total Long-Term Debt	
	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank
Alabama	0.4	34	1.0	45	2.5	29	5.3	21	5.0	26	5.5	42
Alaska	1.8	21	5.9	10	2.8	25	11.0	3	8.3	8	19.7	3
Arizona	0.0	40	4.4	22	2.5	28	2.6	36	4.8	29	6.4	37
Arkansas	0.7	30	2.8	31	1.2	43	1.2	48	2.8	41	3.9	47
California	4.9	6	7.2	6	5.8	9	6.1	18	7.3	10	9.3	24
Colorado	0.0	40	2.7	34	1.2	41	4.8	24	2.5	45	7.3	32
Connecticut	**6.7**	**2**	**9.3**	**2**	**9.1**	**3**	**12.6**	**2**	**8.9**	**6**	**15.0**	**5**
Delaware	4.9	7	4.9	20	6.2	7	9.8	6	9.1	5	15.8	4
Florida	1.8	22	4.0	25	2.8	24	4.3	27	5.2	23	5.8	40
Georgia	2.5	14	4.3	23	3.0	20	3.0	35	3.1	40	3.9	46
Hawaii	9.2	1	12.4	1	10.0	1	14.1	1	12.9	1	13.8	8
Idaho	0.0	40	2.7	33	1.6	39	3.7	31	1.8	47	7.7	30
Illinois	5.0	5	5.8	12	5.7	10	6.2	17	6.7	13	11.7	14
Indiana	0.0	40	0.5	48	1.2	42	1.9	42	4.2	34	9.6	23
Iowa	0.0	40	2.7	32	0.7	47	1.9	43	3.3	37	6.3	38
Kansas	0.0	40	3.8	27	2.8	27	3.2	34	4.7	30	6.0	39
Kentucky	0.0	40	5.5	16	5.9	8	7.9	12	6.1	19	10.2	19
Louisiana	2.1	17	7.0	8	3.7	17	4.4	25	6.2	16	10.6	16
Maine	**0.9**	**27**	**2.1**	**38**	**2.1**	**33**	**10.1**	**5**	**5.8**	**21**	**11.9**	**13**
Maryland	2.5	12	5.5	15	3.6	18	3.6	33	4.9	28	8.7	27
Massachusetts	**5.3**	**4**	**8.5**	**3**	**9.3**	**2**	**9.8**	**7**	**12.4**	**2**	**21.5**	**1**
Michigan	0.6	31	1.6	43	2.2	32	7.1	13	4.9	27	8.8	26
Minnesota	2.5	13	3.1	30	3.0	21	9.1	9	4.4	33	5.5	41
Mississippi	4.3	8	5.4	17	5.4	11	6.3	15	5.9	20	7.2	34
Missouri	0.2	38	1.9	40	1.8	37	1.8	44	2.8	42	9.2	25
Montana	0.4	33	0.9	47	0.9	46	1.7	45	2.6	43	12.2	12
Nebraska	0.0	40	0.1	50	0.0	50	0.1	50	1.0	49	3.1	49
Nevada	1.9	19	3.4	29	1.9	34	2.5	38	3.3	38	4.2	45
New Hampshire	**1.6**	**23**	**2.5**	**35**	**1.9**	**36**	**4.3**	**26**	**6.2**	**17**	**14.1**	**7**
New Jersey	0.5	32	8.3	4	7.6	4	8.9	11	10.9	3	14.1	6
New Mexico	0.4	35	5.1	19	3.8	16	3.8	30	7.2	12	11.6	15
New York	0.4	36	5.8	13	6.3	6	6.3	16	9.9	4	13.8	9
North Carolina	1.3	26	2.5	36	2.4	30	2.4	40	2.3	46	5.4	43
North Dakota	0.0	40	5.4	18	0.7	48	4.8	23	3.6	36	6.7	36
Ohio	2.0	18	4.1	24	2.8	26	4.0	29	4.0	35	7.1	35

	State and Local Government Debt-to-Personal Income				State Government Debt Service-to-Revenues						State and Local Government Debt Service-to-Revenues	
	U.S. Census Bureau (FY 2011)				State CAFRs (FY 2012)		Moody's (FY 2012)		U.S. Census Bureau (FY 2011)		U.S. Census Bureau (FY 2011)	
	Long-Term Public Purpose Debt		Total Long-Term Debt		Primary Government Debt		Net Tax-Supported Debt		General Government Debt (Interest Only)		General Government Debt (Interest Only)	
	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank
Alabama	16.6	18	17.6	35	0.6	46	4.9	25	1.5	43	2.8	36
Alaska	19.7	10	31.3	2	1.6	34	1.3	45	2.2	28	2.5	40
Arizona	18.2	12	22.9	18	2.8	24	5.1	23	2.3	26	4.8	12
Arkansas	9.5	45	13.9	47	0.9	44	3.0	35	0.9	50	2.3	45
California	23.3	3	25.9	9	4.8	6	9.2	7	3.5	12	4.9	11
Colorado	17.7	15	23.6	15	1.3	38	2.8	36	4.1	6	5.5	4
Connecticut	**13.9**	**28**	**20.0**	**27**	**10.3**	**1**	**12.7**	**1**	**6.3**	**2**	**5.3**	**6**
Delaware	14.8	25	22.5	19	3.6	15	7.8	10	3.5	11	3.9	24
Florida	17.9	14	20.4	26	3.6	16	7.6	12	1.9	36	3.5	28
Georgia	13.7	31	15.5	41	3.7	13	7.0	16	1.9	37	2.4	44
Hawaii	22.4	4	23.2	17	7.1	2	10.4	5	3.5	10	4.2	16
Idaho	6.3	49	12.2	49	1.5	35	2.8	37	2.4	25	2.5	41
Illinois	20.8	6	26.2	7	5.8	3	10.6	4	5.5	5	6.0	1
Indiana	15.6	21	21.4	23	0.0	50	1.9	43	3.2	15	4.1	20
Iowa	11.6	37	15.1	43	1.1	42	0.9	47	1.3	44	2.2	46
Kansas	15.4	23	23.6	14	2.8	25	4.5	27	1.8	39	4.9	10
Kentucky	18.6	11	28.9	3	3.4	18	7.2	15	2.9	19	5.8	2
Louisiana	13.8	30	22.2	20	2.4	29	4.5	28	3.9	8	4.5	14
Maine	**11.9**	**36**	**18.0**	**32**	**2.4**	**28**	**6.4**	**19**	**3.0**	**18**	**3.2**	**32**
Maryland	10.6	42	15.2	42	3.6	14	5.7	21	3.2	13	3.5	29
Massachusetts	**17.3**	**17**	**26.3**	**6**	**5.6**	**4**	**11.3**	**3**	**7.0**	**1**	**5.7**	**3**
Michigan	16.1	19	20.6	24	1.5	36	2.6	40	2.1	32	3.8	25
Minnesota	15.4	22	19.8	28	3.5	17	2.7	39	1.8	40	3.7	27
Mississippi	12.9	35	15.1	44	3.4	19	7.2	14	1.5	41	2.1	48
Missouri	13.1	34	20.6	25	1.8	33	3.9	30	3.0	17	3.9	22
Montana	6.3	48	17.0	37	1.0	43	2.4	41	2.7	22	2.6	38
Nebraska	13.5	32	16.5	39	0.0	49	0.2	49	1.0	48	2.4	43
Nevada	25.3	2	27.2	4	3.8	12	6.6	18	1.8	38	5.2	7
New Hampshire	**10.8**	**41**	**18.8**	**30**	**2.9**	**23**	**6.8**	**17**	**6.3**	**3**	**5.1**	**9**
New Jersey	18.1	13	21.7	21	3.2	20	8.8	9	4.0	7	4.1	21
New Mexico	15.8	20	23.8	13	3.1	21	5.9	20	2.3	27	2.8	35
New York	26.2	1	33.4	1	4.1	10	11.5	2	2.8	21	4.4	15
North Carolina	11.3	39	15.0	45	2.1	31	3.8	31	1.2	46	2.9	34
North Dakota	9.5	46	14.5	46	0.4	47	0.8	48	1.5	42	2.1	49
Ohio	10.5	43	17.8	34	3.1	22	4.1	29	2.4	24	3.3	31

continued

Appendix 5. Cross-Comparative Measures of State Debt Burdens in the United States (Continued)

	State Government Debt-to-Personal Income											
	State CAFRs (FY 2012)				Moody's (CY 2012)				U.S. Census Bureau (FY 2011)			
	General Obligation Debt		Primary Government Debt		Net Tax-Supported Debt		Gross Tax-Supported Debt		Public-Purpose Debt		Total Long-Term Debt	
	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank
Oklahoma	0.1	39	1.8	42	1.6	38	1.6	46	6.1	18	7.4	31
Oregon	3.6	10	7.5	5	5.2	12	11.0	4	7.5	9	9.8	21
Pennsylvania	2.1	16	2.2	37	2.8	23	3.7	32	4.5	32	8.5	28
Rhode Island	**2.4**	**15**	**6.2**	**9**	**4.7**	**13**	**7.0**	**14**	**8.6**	**7**	**20.1**	**2**
South Carolina	1.3	25	4.6	21	2.3	31	2.5	37	7.3	11	9.9	20
South Dakota	0.0	40	1.5	44	0.9	45	1.5	47	2.6	44	10.2	18
Tennessee	0.9	28	1.0	46	0.9	44	2.5	39	1.4	48	2.4	50
Texas	1.4	24	3.9	26	1.5	40	2.1	41	3.2	39	3.7	48
Utah	3.8	9	5.8	14	3.8	15	9.0	10	4.6	31	7.8	29
Vermont	**1.9**	**20**	**2.0**	**39**	**1.9**	**35**	**5.7**	**20**	**6.3**	**15**	**13.3**	**10**
Virginia	0.2	37	1.8	41	2.9	22	4.1	28	5.2	25	7.2	33
Washington	5.8	3	7.1	7	6.4	5	9.3	8	6.3	14	9.7	22
West Virginia	0.8	29	3.6	28	3.3	19	5.8	19	5.4	22	12.2	11
Wisconsin	3.2	11	5.9	11	4.7	14	4.8	22	5.2	24	10.3	17
Wyoming	0.0	40	0.1	49	0.1	49	0.1	49	0.4	50	5.1	44
U.S. Mean	1.8		4.2		3.4		5.2		5.4		9.4	
U.S. Median	1.3		4.0		2.8		4.3		5.1		9.0	
Outlier (Lower)	0.1		1.5		1.1		1.9		2.7		5.2	
Outlier (Upper)	3.6		6.8		5.6		8.6		8.1		13.6	

Source: Ratios of net tax-supported debt-to-personal income and net tax-supported debt service-to-revenues are as directly presented by Moody's Investors Service in its 2013 *State Debt Medians* report. Ratios of gross tax supported debt-to-personal income are calculated by author based on data presented by Moody's Investors Service in its 2013 *State Debt Medians* report. All other debt-to-personal income ratios are calculated by author using state CAFR or U.S. Census Bureau debt figures and U.S. Bureau of Economic Analysis personal income data. All other debt service-to-revenues ratios are calculated by author using state CAFR or U.S. Census Bureau debt and revenue figures. Outlier thresholds are calculated by author and represent one standard deviation above the 50-state mean of the square roots of the ratios.

Note: Debt-to-personal income ratios based on debt outstanding at end of the applicable fiscal (FY) or calendar (CY) year. Debt service-to-revenues ratios based on debt service expenditure for the applicable fiscal years (FY). Debt burden ratios for additional years can be found in an online data appendix to this report, available at http://www.bostonfed.org/neppc.

	State and Local Government Debt-to-Personal Income				State Government Debt Service-to-Revenues						State and Local Government Debt Service-to-Revenues	
	U.S. Census Bureau (FY 2011)				State CAFRs (FY 2012)		Moody's (FY 2012)		U.S. Census Bureau (FY 2011)		U.S. Census Bureau (FY 2011)	
	Long-Term Public Purpose Debt		Total Long-Term Debt		Primary Government Debt		Net Tax-Supported Debt		General Government Debt (Interest Only)		General Government Debt (Interest Only)	
	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank	Percent	Rank
Oklahoma	11.6	38	13.8	48	1.1	41	2.2	42	2.1	31	2.5	39
Oregon	20.3	9	24.4	12	3.9	11	9.5	6	2.2	30	3.7	26
Pennsylvania	15.4	24	23.3	16	2.1	32	5.0	24	2.6	23	4.2	17
Rhode Island	**14.6**	**26**	**26.1**	**8**	**5.1**	**5**	**7.7**	**11**	**6.0**	**4**	**5.4**	**5**
South Carolina	20.7	8	26.6	5	2.7	26	4.9	26	2.1	33	4.1	19
South Dakota	8.0	47	16.6	38	1.2	40	1.2	46	3.1	16	3.3	30
Tennessee	13.1	33	16.4	40	0.6	45	1.5	44	0.9	49	2.9	33
Texas	20.8	7	25.2	11	1.3	39	3.1	34	1.3	45	5.1	8
Utah	17.5	16	21.5	22	4.1	9	7.3	13	2.0	34	2.7	37
Vermont	**11.0**	**40**	**17.9**	**33**	**1.5**	**37**	**2.8**	**38**	**2.2**	**29**	**2.4**	**42**
Virginia	13.8	29	17.4	36	2.2	30	5.2	22	2.8	20	4.1	18
Washington	21.8	5	25.3	10	4.7	7	9.0	8	3.6	9	4.5	13
West Virginia	9.8	44	18.1	31	4.2	8	3.6	33	1.9	35	2.1	47
Wisconsin	14.1	27	19.4	29	2.6	27	3.8	32	3.2	14	3.9	23
Wyoming	3.5	50	8.9	50	0.1	48	0.2	50	1.1	47	1.1	50
U.S. Mean	15.0		20.6		2.8		5.2		2.8		3.7	
U.S. Median	14.7		20.5		2.8		4.9		2.4		3.7	
Outlier (Lower)	10.0		15.5		0.9		2.0		1.4		2.5	
Outlier (Upper)	20.1		25.7		4.7		8.5		4.1		4.9	

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The New England Public Policy Center was established by the Federal Reserve Bank of Boston in January 2005. The Boston Fed has provided support to the public policy community of New England for many years; NEPPC institutionalizes and expands on this tradition. The Center's mission is to promote better public policy in New England by conducting and disseminating objective, high-quality research and analysis of strategically identified regional economic and policy issues. When appropriate, the Center works with regional and Bank partners to advance identified policy options.

You can learn more about the Center by contacting us or visiting our website:

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