Response to Questions from the Washington State Commission on Debt, from the Meeting of October 21, 2011.

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I. Comparing Census and Moody's Measures of the Highest Debt States Measured in Per Capita Terms

At the Commission meeting on October 21, we presented comparisons of two alternative measures of the top ten highest per capita debt states, one based on Census Bureau data and the other on Moody's data. In that presentation, the Census data came from 2007, whereas the Moody's data from 2010. Treasurer McIntire requested that 2007 data from Moody's be used to improve comparability.

The revised table is below. The conclusions are not changed. Washington is 5th by one Census measure and 16th by the other; whereas, Washington is 8th by the 2007 Moody's measure (Washington was 7th by the 2010 Moody's measure). The highest debt states tend to be the same regardless of the breadth of the debt measure. Of the 10 states listed by Moody's based on net tax supported debt, eight also appear in the list of the 10 states with highest state and local government long-term debt, as measured by the Census Bureau. Of the 10 states listed by Moody's based on net tax supported debt, seven also appear in the list of the ten states with highest state government long-term debt excluding private purposes, as measured by the Census Bureau.

Top Ten States, Alternative Measures of Outstanding Debt

2007 Per Capita State and Local All Long-term Debt	2007 Per Capita State Government Only Long-term Debt Excluding Private Purpose	2007 Per Capita State Government Only Long-term Net Tax-Supported Debt
Census	***Census***	***Moody's***
Alaska	Massachusetts	Massachusetts
Massachusetts	Hawaii	Connecticut
New York	New Jersey	Hawaii
Rhode Island	New York	New Jersey
Washington	Connecticut	New York
Colorado	Rhode Island	Delaware
New Jersey	Alaska	Illinois
Connecticut	Delaware	**Washington**
California	South Carolina	Rhode Island
Illinois	Louisiana	California
	Washington (16)	

II. Regression Analysis of State Government (only) Debt and Relative Position of Washington State

Treasurer McIntire also requested a regression analysis of interstate per capita debt levels that only examines state government debt. Our debt analysis (as opposed to analysis of new bond issues in 2008 – 2010) is based on Census Bureau data over the period 1992 to 2007. In this approach, a variable is included to represent every state except Washington. A positive (and statistically significant) coefficient on any state's dummy variable indicates whether that state has more debt relative to Washington, after adjustment for the differences in the economic, social, and political variables between those states. Similarly, a negative (and statistically significant) coefficient indicates that debt in that state is less than that in Washington, after adjustment for the differences in the economic, social, and political variables between those states.

The full regression results are on the following page. The states with positive coefficients (and statistically significant) on the dummy variable – indicating states that have greater per capita debt than Washington after adjustment for the differences in the economic, social, and political variables between those states – are Alaska, Connecticut, Delaware, Hawaii, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. All of these states, except New Hampshire and Vermont, also appear in the simple lists of states with per capita debt above or about the same level as Washington. Through this analysis, it appears that Washington has the 11th highest per capita debt, again adjusting for economic, social, and political differences in circumstances.

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. regress StateDebt LagStateDebt LocRevPer PerAge65 PerK12Enr Lib100CitId RealGSPPC FedRevPC Unemp BalPerExp DbtLimAmt No
> RevSpdLimit D2002 D2007 AL AK AZ AR CO  CA  CT DE FL GA HI ID IL IND IA KS KY LA ME MD MA MI MN MS MO MT NE NV NH NJ NM
>  NY NC ND OH OK OR PN RI SC SD TN TX UT VT VI  WV Wi Wy, vce(robust)

Linear regression                               Number of obs =     150
                                                F( 62,    87) =  146.84
                                                Prob > F      =  0.0000
                                                R-squared     =  0.9624
                                                Root MSE      =   514.6

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             |               Robust
   StateDebt |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
LagStateDebt |   .0067658   .1979054     0.03   0.973    -.3865927    .4001242
   LocRevPer |  -11.12304   17.90477    -0.62   0.536     -46.7107    24.46462
    PerAge65 |   12.82499   177.9664     0.07   0.943    -340.9024    366.5524
   PerK12Enr |  -13.23038   48.79849    -0.27   0.787    -110.2227     83.7619
 Lib100CitId |   1.605558   8.133186     0.20   0.844    -14.56003    17.77115
   RealGSPPC |  -44.60534    40.1771    -1.11   0.270    -124.4617      35.251
    FedRevPC |   169.3902   555.9502     0.30   0.761    -935.6211    1274.402
       Unemp |   47.25881   83.85707     0.56   0.575    -119.4162    213.9338
   BalPerExp |  -13.98601   9.352649    -1.50   0.138    -32.57541    4.603395
   DbtLimAmt |  -110.7904   200.6713    -0.55   0.582    -509.6464    288.0656
NoRevSpdLi~t |   320.3085    239.182     1.34   0.184    -155.0916    795.7085
       D2002 |   564.2114   224.6835     2.51   0.014     117.6287    1010.794
       D2007 |   1361.102   394.2035     3.45   0.001     577.5797    2144.624
          AL |  -1988.719   657.8123    -3.02   0.003    -3296.192   -681.2456
          AK |   7044.871   2229.232     3.16   0.002     2614.031    11475.71
          AZ |  -1561.437   656.0275    -2.38   0.019    -2865.363   -257.5116
          AR |  -2305.586    813.733    -2.83   0.006    -3922.968   -688.2036
          CO |    -439.23   620.8036    -0.71   0.481    -1673.144    794.6843
          CA |  -362.7568   379.0327    -0.96   0.341    -1116.125    390.6118
          CT |   4282.121   1025.554     4.18   0.000     2243.721    6320.522
          DE |   3908.296   1252.904     3.12   0.002     1418.014    6398.579
          FL |   -1479.71   1188.632    -1.24   0.217    -3842.245    882.8241
          GA |  -1721.264   499.516     -3.45   0.001    -2714.107   -728.4223
          HI |   2110.514   1215.863     1.74   0.086    -306.1455    4527.173
          ID |  -924.2462   531.5313    -1.74   0.086    -1980.722    132.2297
          IL |   191.5699   461.7457     0.41   0.679    -726.1998    1109.339
         IND |   -847.689   473.786     -1.79   0.077     -1789.39    94.01196
          IA |  -1261.565   817.1469    -1.54   0.126    -2885.733     362.603
          KS |  -1902.719   752.5488    -2.53   0.013    -3398.491   -406.9468
          KY |    -1148.9   625.9274    -1.84   0.070    -2392.999    95.19825
          LA |  -395.2031   301.1387    -1.31   0.193    -993.7488    203.3427
          ME |   226.0852   611.2692     0.37   0.712    -988.8785    1441.049
          MD |  -220.3501   290.8375    -0.76   0.451    -798.4212    357.7209
          MA |   5709.231   1378.746     4.14   0.000     2968.824    8449.637
          MI |  -637.3634   361.4898    -1.76   0.081    -1355.864    81.13677
          MN |  -1416.577   401.3305    -3.53   0.001    -2214.265   -618.8889
          MS |   -1649.44   663.9585    -2.48   0.015    -2969.129   -329.7504
          MO |  -393.8293    460.567    -0.86   0.395    -1309.256    521.5976
          MT |   624.0031   656.5151     0.95   0.345    -680.8917    1928.898
          NE |  -1632.147   684.0192    -2.39   0.019    -2991.709   -272.5846
          NV |  -149.9833   259.3921    -0.58   0.565    -665.5533    365.5866
          NH |   2714.242    990.032     2.74   0.007     746.4465    4682.038
          NJ |   2206.395   609.6382     3.62   0.000     994.6728    3418.117
          NM |  -574.1704    554.896    -1.03   0.304    -1677.086    528.7455
          NY |   2358.215   757.6405     3.11   0.003     852.3224    3864.108
          NC |  -1309.543   406.5848    -3.22   0.002    -2117.674    -501.412
          ND |  -684.9353   738.4807    -0.93   0.356    -2152.746    782.875
          OH |  -1269.268   484.7924    -2.62   0.010    -2232.845   -305.6904
          OK |  -1078.613   633.3247    -1.70   0.092    -2337.414    180.189
          OR |  -481.7916   405.2654    -1.19   0.238      -1287.3    323.7172
          PN |  -1198.666   804.5653    -1.49   0.140    -2797.827    400.4941
          RI |   3996.603    1051.01     3.80   0.000     1907.606     6085.6
          SC |  -322.4777   420.6406    -0.77   0.445    -1158.546     513.591
          SD |   414.2806   586.4707     0.71   0.482    -751.3935    1579.955
          TN |  -2115.016   613.6208    -3.45   0.001    -3334.654   -895.3786
          TX |  -1530.828   431.5593    -3.55   0.001    -2388.599   -673.0573
          UT |  -615.5746    571.664    -1.08   0.285    -1751.819    520.6695
          VT |   1135.177   679.7398     1.67   0.099    -215.8789    2486.234
          VI |  -712.1332   350.6197    -2.03   0.045    -1409.028   -15.23864
          WV |  -1072.041   863.2224    -1.24   0.218    -2787.789    643.7073
          Wi |   155.4047    397.599     0.39   0.697    -634.8663    945.6757
          Wy |  -356.0514   495.4646    -0.72   0.474    -1340.841    628.7381
       _cons |   3603.435   2188.477     1.65   0.103    -746.3997    7953.269
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III. Objective Reasons for a State to Spend More in Debt Financing

Treasurer McIntire also asked whether the data show if there are objective reasons (not political) for the state to spend more or less in debt financing. The statistically significant coefficients on economic variables in the regression analysis suggest one possible approach to this query.

In examining only state debt in the previous regression, we find no statistically significant influences besides state-specific effects described above and a growth in state debt across all states from 1997, to 2002, to 2007. Extending the regression analysis of debt through 2007 to include both state and local governments shows two additional economic factors that seem significantly related to debt. First, a larger fraction of the population enrolled in public schools is associated with greater per capita state-local debt. Second, greater revenue from the federal government is associated with less per capita state-local debt, which suggests that state and local governments see debt and federal aid as substitutes.

The regression analysis of state government borrowing during the 2008 – 2010 period identifies three objective economic factors that contribute to greater per capita borrowing. First, a larger fraction of the population enrolled in public schools is associated with greater per capita borrowing. Second, greater state GSP (income) is associated with greater per capita borrowing. Third, states with greater relative fiscal balances tended to borrow less.

Combining all of these results, one can begin to see several objective economic reasons for a state to borrow more or incur more debt:

(1) A state might borrow more to serve the K-12 public school population, either to adjust to growing enrollments or to replace older, depreciating facilities.

(2) Higher income states seem likely to borrow more or have higher debt simply because they also have higher amounts of public spending. If residents have relatively high incomes, they demand relatively more public services, which requires more public infrastructure.

(3) Third, states might borrow more or incur more debt if they have relatively lower alternative revenues, including relatively low federal aid and low state fiscal reserves relative to the budget.

IV. Use Regression Analysis to Show Influence of Local Debt Issues on State Debt Issues

Finally, Treasurer McIntire asked whether our statistical analysis could say anything about how the issuance of local debt in a state influences state debt. We interpret this as the suggestion to run the same regression analysis as reported above, but include another explanatory variable that would measure the amount of local debt activity in a state.

We regret to stay that in order to do this appropriately; we would need to account for the fact that the amount of local debt in a state is endogenously determined with the amount of state debt in a state. That is, the same explanatory variables used in the above regression explain both state debt and local debt. A more advanced regression analysis (two-stage least squares) is necessary to account for this (to yield results with any confidence) and it requires the finding of multiple, measurable factors across all states that determine the amount of debt issued by local governments and that do not determine the amount of debt issued by state governments. We have concluded that such measures are not readily available and thus we cannot fulfill the Treasurer's request on this.