Moody's ANALYTICS

August 6, 2014

Stress-Testing State & Local Reserves

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Abstract

The recovery from 2009 to 2014 will go down in history as one of the longest and most lackluster in decades. One of the reasons for the persistent sluggishness has been the drag from state and local government spending due to the slow recovery of fiscal conditions. While some governments were overwhelmed by forces beyond their control, many were simply underprepared for a downturn, regardless of the size. This lack of preparation left some policymakers budgeting without a safety net at the absolute worst time. This paper aims to help policymakers ensure that government reserve levels are large enough to sufficiently protect their budgets and the economy from changes in the business cycle through the use of stress testing and Moody's Analytics alternative economic scenarios.

The recovery from 2009 to 2014 will go down in history as one of the longest and most lackluster in decades. It has taken nearly five years for the U.S. economy to regain all of the jobs lost during the Great Recession, which ended in mid-2009. One of the reasons for the persistent sluggishness has been the drag from state and local government spending due to the slow recovery of fiscal conditions (see Chart 1). While some governments were overwhelmed by forces beyond their control, many were simply underprepared for a downturn, regardless of the size. This lack of preparation left some policymakers budgeting without a safety net at the absolute worst time.

To safely navigate the twists and turns of the business cycle, states and local governments should set aside adequate reserves to avoid having to take extraordinary fiscal actions that may exacerbate an already-declining economy or slow recovery. Past research shows that large extraordinary fiscal actions can harm regional, and national, recoveries, differentiating performance relative to that of neighbors.[1] Gauging the size of adequate reserves is important, particularly as some governments have more volatile tax structures and can see their revenues rise and fall even more dramatically than the overall business cycle. Research has also shown that state taxes in general are becoming more volatile and more elastic relative to the economy as a whole[2] (see Chart 2). What is more, mandatory social spending programs, particularly Medicaid, are growing faster than revenues even under stable economic conditions (see Chart 3). A downturn can exacerbate that mismatch even further. The Great Recession showed that even with augmented funding from the federal government, state budgets can be squeezed by higher demand for mandatory public welfare services.

Simultaneously, policymakers also need to be conscious of being too conservative, so as not to deprive important programs of much-needed funding. The economic impacts of inadequate funding for education and transportation in particular can have devastating long-term effects. The question then posed to state and local government policymakers is how much to set aside to avoid a major fiscal correction without stunting economic growth.

Stress-testing

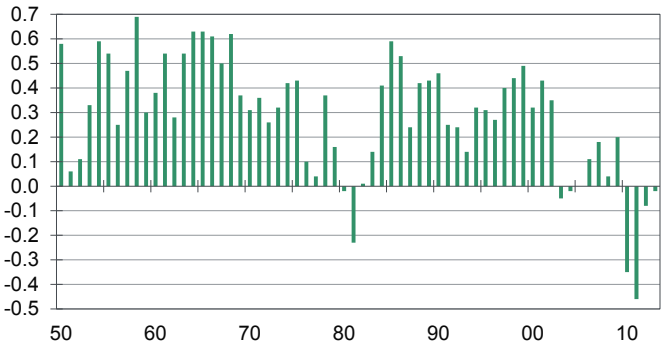
In the wake of the Great Recession, the private sector has become acutely aware of the necessity of planning for downturns. Moreover, the public sector in some cases has begun to mandate that the private sector, specifically banks, plan and "stress-test" for a rainy day. To direct some of those same standards back onto the public sector and help policymakers determine just how much reserves are enough, this paper aims to demonstrate methods to test the effectiveness of subnational government reserve levels by utilizing stress-testing and the Moody's Analytics alternative economic scenarios.

1 White, Dan, "A Tale of Two Recessions: The Influence of State Fiscal Actions on Regional Recoveries," *Regional Financial Review* (October 2011).

2 White, Dan, "Falling Behind: State Tax Revenues and the Economy," *Regional Financial Review* (October 2013).

Chart 1: Large Fiscal Fixes Slowed the Recovery

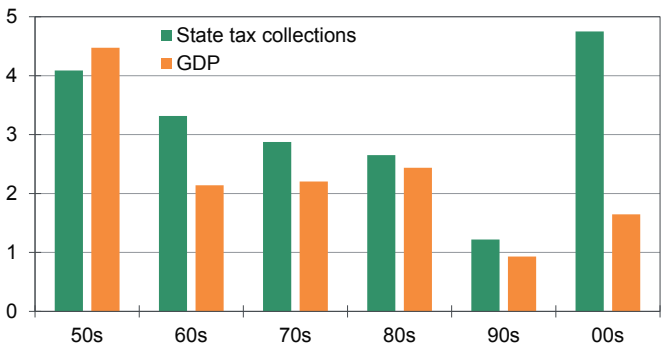
State and local govt contribution to % change in real GDP, ppts



Sources: BEA, Moody's Analytics

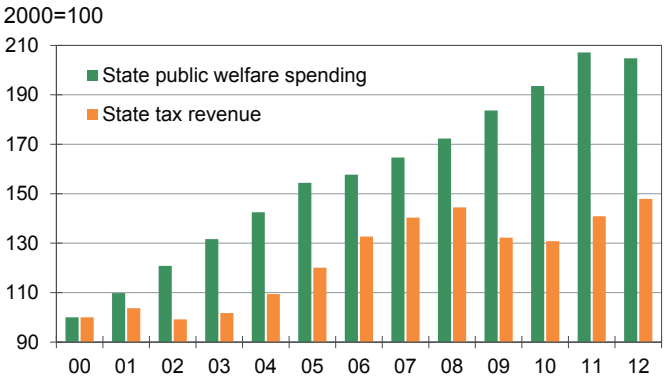
Chart 2: Increased Volatility in Tax Collections

Standard deviation of annual % change



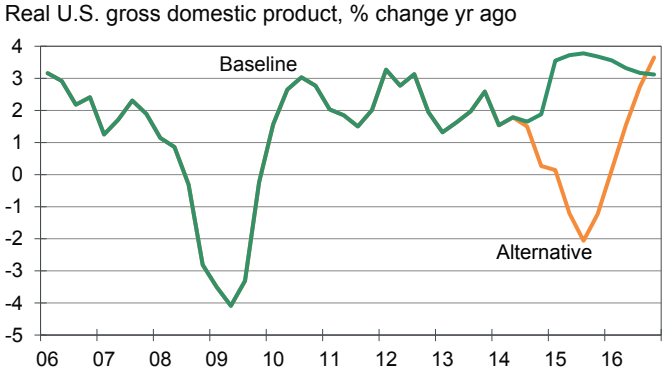
Sources: Census Bureau, BEA, Moody's Analytics

Chart 3: Welfare Spending Outpacing Revenues



Sources: Census Bureau, Moody's Analytics

Chart 4: Applying Economic Stress



Sources: BEA, Moody's Analytics

This type of stress-testing is a bit simpler at the state and local level than at the corporate or federal level because of balanced-budget requirements. States and local governments, in general, are not permitted to borrow for operations. Therefore, their spending habits are constrained by the amount of revenue they bring in. As revenues decline during a recession, subnational governments have less to spend, while at the same time they experience more demand for government services. To avoid drastically cutting spending or raising taxes, states and local governments would need to hold in reserve enough funds to maintain existing discretionary spending levels and meet higher demand for government social services.

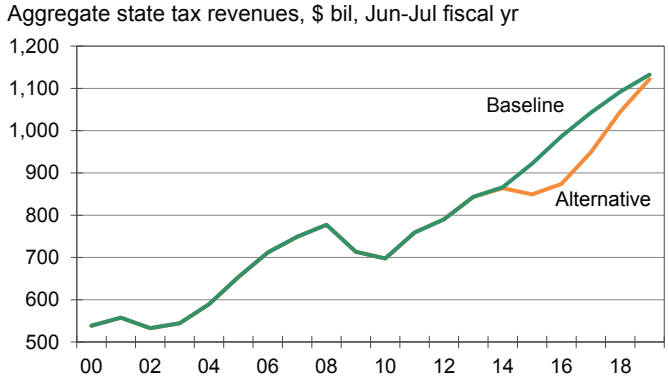
To best demonstrate a method for stress-testing subnational fiscal conditions, this paper will examine the near-term fiscal consequences of a moderate recession beginning in the second half of 2014, which coincides with the start of fiscal 2015 in most states, on aggregate state fiscal conditions (see Chart 4). It should be noted that Moody's Analytics does not assign a high probability to a near-term U.S. recession, and that the alternative scenario discussed in this paper is purely hypothetical and derived from potential downside risks to the baseline outlook. This is based on the Moody's Analytics S3 alternative U.S. macroeconomic scenario, a full description of which can be found in Appendix A. More precise analysis of individual states and local governments can also be performed using the Moody's Analytics proprietary alternative economic scenarios at the state, metro area and county level.

Generating fiscal stress

During a downturn, state governments experience fiscal stress through two major avenues: lower revenues and higher mandatory expenditures. On the revenue side of the equation, the stresses are caused primarily by weaker tax revenues, as taxes are ultimately a function of the economy on which they are levied. The Moody's Analytics proprietary state tax models were used to gauge the effect of a new hypothetical recession on aggregate U.S. state revenues. The models use OLS regression techniques based on aggregate state revenue data from the Census Bureau, and are stressed using alternative inputs from the S3 economic scenario (see Chart 5). Comparing the two scenarios, it becomes clear that a near-term recession would be costly to state governments, reducing fiscal 2015 revenues by almost 8%.

On the spending side, mandatory expenditures at the state level depend overwhelmingly on Medicaid. Spending on other public assistance programs such as the Supplemental Nutrition Assistance Program and Temporary Assistance for Needy Families would also increase during a downturn, but more than 90% of state mandatory spending flows through Medicaid. Thus, for the purposes of this paper, Medicaid will be the only program to be projected on the spending side. This forecast was prepared using the Moody's Analytics proprietary Medicaid forecast models. The models forecast Medicaid enrollment using OLS regression techniques based upon data provided by the Department of Health and Human Services and previous work on the Medicaid expansion provisions of the Affordable Care Act.[3] These enrollment forecasts are then coupled with projected spending per enrollee based on assumptions provided by the Centers for Medicare and Medicaid Services and histori-

Chart 5: Translating Into Fiscal Stress

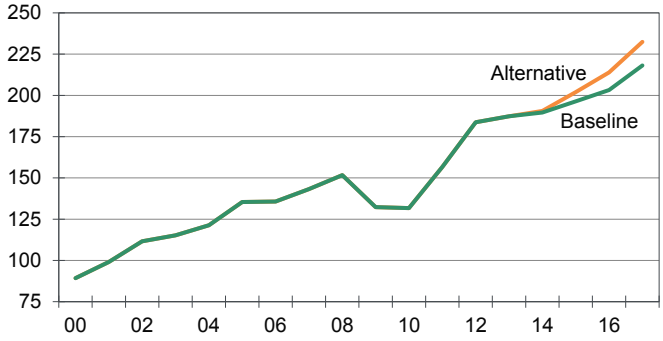


Sources: Census Bureau, Moody's Analytics

3 White, Dan, "Opting Out: The Effects of Medicaid Expansion on State Budgets and the Economy," *Regional Financial Review* (January 2013).

Chart 6: More Demand for Medicaid

Aggregate state Medicaid spending, $ bil, Jun-Jul fiscal yr



Sources: CMS, NASBO, Moody's Analytics

Table 1: Fiscal 2015 Baseline vs. Alternative Forecasts

	Baseline	Alternative	Difference
General fund revenue (bil)	$772.4	$711.6	$(60.84)
% change yr ago	6.4%	-1.9%	
Medicaid spending (bil)	$192.5	$197.0	$4.55
% change yr ago	3.6%	6.0%	
Combined fiscal stress (bil)			$65.39

Sources: NASBO, Moody's Analytics

cal state cost data. The overall state spending forecasts were stressed using alternative inputs from the S3 economic scenario in the enrollment forecasts. For the purposes of this paper, no changes were made to the forecasts for spending per enrollee under the alternative scenario. It is also important to note that state decisions to opt in to or out of the Medicaid provisions of the ACA were held constant throughout the baseline and alternative scenarios. Further, the alternative scenario assumes no additional assistance to states from the federal government because of the downturn. Comparing the two scenarios, we see that a mild recession would bring about an increase of about 3% in fiscal 2015 state Medicaid spending (see Chart 6).

Measuring preparedness

The differences in the baseline and alternative forecasts for both revenues and Medicaid spending provide a good estimate of the additional amount of funding that state governments would have to come up with to keep discretionary spending unchanged under the alternative scenario for fiscal 2015. To accomplish such a feat without significantly raising revenues or cutting spending, state governments would have to hold sufficient reserves in place to cover the shortfall. To estimate state preparedness in this regard, the shortfall was compared with reserve balances published by the National Association of State Budget Officers.[4] First, though, the forecasts for revenues and Medicaid spending had to be normalized to the NASBO data. The initial forecasts for each piece of the stress-testing puzzle are based on different data sources, resulting in minor discrepancies between historical base dollar amounts. To keep dollar amounts as uniform and comparable as possible, the forecasts for revenues and Medicaid spending were normalized by using historical NASBO data as a jumping-off point.

Using the NASBO data, we can see that a mild near-term recession would result in an aggregate fiscal 2015 state budget gap of approximately $64 billion, or 8.5% of general fund expenditures (see Table 1). This compares with planned fiscal 2015 reserve levels of about $43 billion, or 5.7% of expenditures.[5] Under such a scenario, state policymakers would be forced to cut discretionary spending or raise revenues by a combined $21 billion in fiscal 2015. This would suggest that the average state carry a minimum budget reserve of 8.5% of budgeted expenditures to ensure against revenue volatility from a downturn in the current fiscal year. Subsequent fiscal years, particularly for states with biennial budgets, would also be a challenge even under the assumption of a quick recovery, indicating that even higher reserve levels may be more appropriate for many states.

Significant issues

This analysis comes with several offsetting caveats. First and foremost, this paper is intended to demonstrate a method for examining the adequacy of state and local government reserve levels to handle economic stress. Thus, the numbers used in this analysis are in the aggregate and are compared with the Moody's Analytics baseline assumptions, which may differ significantly from actual state budget assumptions. In practice, such an analysis could be done more precisely using actual data from a respective state or local government and comparing that with an enacted or proposed fiscal baseline. For example, the baseline forecast used in this analysis assumes state revenue growth of more than 6% in fiscal 2015. According to NASBO survey data, states in the aggregate project revenues to increase by only 3.2% this fiscal year. Thus, the shortfall resulting from decreased revenues may be slightly overstated in this analysis.

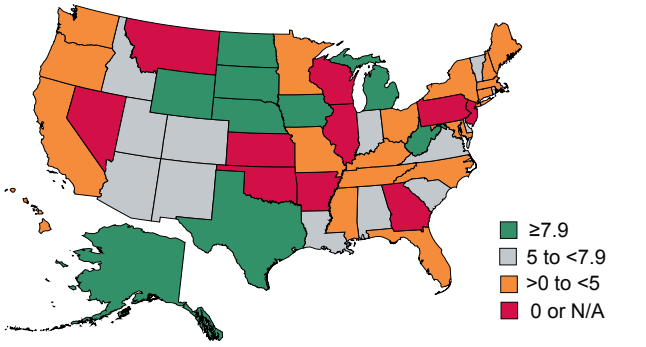
Second, the spending stresses outlined in this paper should be viewed as a lower-bound estimate because they rely entirely on Medicaid. Demand for other public assistance programs would increase under the alternative scenario used in this analysis. While the majority of general fund spending programs pale in comparison to the dollar amounts allocated to Medicaid, non-general fund spending such as unemployment insurance would see a large upsurge as well. This was not included in the calculations for this paper because of a dearth of reliable aggregate data, and because any such stresses

4 National Association of State Budget Officers, *Fiscal Survey of States* (Spring 2014).

5 The terms "planned" and "budgeted" are used to describe fiscal 2015 NASBO data because NASBO uses executive recommendations as the basis for its fiscal 2015 budget projections. Thus, the fiscal 2015 data included in this paper will differ slightly from the state budgets enacted by state legislatures and governors in the past few months.

Chart 7: Most State Reserves Fall Short

Rainy-day fund balances as % of expenditures, budgeted FY2015



Sources: NASBO, Moody's Analytics

would fall on state UI trust funds, not general funds. However, if this upsurge were large enough to exceed the limitations of those funds, as occurred in multiple states during the Great Recession, additional general fund spending might be necessary to compensate.

Last, the total amount of rainy-day reserve balances reported by NASBO can be misleading. Though it is true that aggregate reserve balances total almost $43 billion, or 5.7% of projected spending, two states, Texas and Alaska, make up more than 45% of that total. Controlling for the large permanent funds in those two states, U.S. states in aggregate hold only around $24 billion in reserves, or approximately 3.4% of projected spending (see Chart 7). This signals that under the alternative scenario the average state would have to cut spending or raise revenues to an even larger degree than the numbers laid out in this analysis. Such extraordinary fiscal actions would weigh further on economic growth and slow the pace of any subsequent recovery.

Policy applications

Despite these caveats, which can be eliminated through the use of more precise input data, this analysis shows that the Moody's Analytics alternative economic scenarios can be used to test the sensitivity of state and local government fiscal conditions to changes in the economy. The analysis also demonstrates the magnitude of damage that could be done to budgets and the economy if policymakers fail to adequately prepare for turns in the business cycle. To sufficiently protect their budgets and their economies from increased volatility and fiscal drag, state and local government policymakers should make reserve-budgeting and stress-testing a higher priority. At the very least, states and local governments should be reviewing their reserve policies and checking on their adequacy following such a tumultuous fiscal period. At best, policymakers should be diligently implementing statutory reserve guidelines based on such reviews and working to expand reserve levels while budget conditions are still improving. Continuation of current policies risks a repeat of the lackluster recovery and is not conducive to long-term economic growth.

Appendix A

Moderate Recession ("S3") Scenario

In this recession scenario, there is a 90% probability that the economy will perform better, broadly speaking, and a 10% probability that it will perform worse.

The downside 10% scenario, "Moderate Recession," is based on a number of assumptions. First, financial markets sell off on the belief that the Fed is mishandling the ending of quantitative easing. The 10-year Treasury yield jumps to 4.3% in the third quarter of 2014. The stock market drops sharply, lowering business sentiment, and higher mortgage rates cause housing to decline again. Capital flight from trade-deficit countries such as India, Brazil and Turkey causes them to weaken further, lowering U.S. exports. Also, a substantial correction in the Chinese housing market leads to a sharp reduction in public and private investment in the country, causing a significant deceleration in growth throughout Asia. Additionally, the euro zone drops back into recession, contributing to the economic and financial stress faced by heavily indebted nations in the region.

The combination of much weaker exports, business investment and housing drives the U.S. economy into a second recession that begins in the third quarter of 2014. Corporate bond spreads rise well above the baseline trend, lowering business investment further. However, Treasury bond yields drop back to the baseline levels the next quarter when the Fed addresses its mistakes and yields drop back to baseline levels. Also at that point, foreign investors once again see the dollar as a safe haven. The recession is less severe than the 2008-2009 downturn but lasts through the first quarter of 2015. Though oil and gasoline prices fall below the baseline level, the declines do not provide an offsetting improvement in consumer confidence.

Rising unemployment during the recession causes the decline in housing to persist even after mortgage interest rates decrease. Reduced federal support to housing relative to that in the 2008-2009 recession contributes to the weakness. House prices, as measured by the NAR median sale price, drop cumulatively by around 12% from the second quarter of 2014 through the second quarter of 2015. However, the trough is above that of 2011. Housing starts fall beginning in the third quarter of 2014 and hit a trough by mid-2015. Another wave of consumer retrenchment ensues. Unit auto sales decline starting in the third quarter of 2014 and are no higher than around 14 million throughout 2015. Low capacity utilization in manufacturing and weak demand cause business investment to fall significantly until mid-2015.

The recovery begins in the second quarter of 2015 but proceeds slowly over the next year. With the economy weak, the Fed keeps the fed funds target rate near 0% until the third quarter of 2016, nearly a year later than in the baseline. The cumulative peak-to-trough decrease in real GDP is 1.2%. The percentage change in real GDP, on an annual average basis, is 1% in 2014 and -1.1% in 2015. The contraction in the labor market causes the unemployment rate to hit a peak of 9.2% in the third quarter of 2015.

U.S. MACRO S3 SCENARIO—DIFFERENCE FROM BASELINE

	Units	14Q2	14Q3	14Q4	15Q1	2014	2015	2016	2017	2018
Gross Domestic Product	bcw$	-33.9	-261.8	-546.8	-818.6	-210.6	-999.2	-1050.9	-816.4	-500.2
Change	*%AR*	*-0.9*	*-5.7*	*-7.1*	*-6.8*	*-1.3*	*-4.9*	*-0.1*	*1.6*	*2.0*
Federal Budget	$ bil	-6.8	-25.3	-51.6	-80.0	-83.8	-424.5	-489.3	-397.2	-202.4
Total Employment	mil	-1.4	-3.0	-4.3	-5.2	-2.2	-6.0	-6.9	-6.0	-3.3
Change	*%AR*	*-4.2*	*-4.5*	*-3.7*	*-2.6*	*-1.6*	*-2.8*	*-0.6*	*0.8*	*1.9*
Unemployment Rate	%	0.1	1.0	2.2	2.7	0.8	2.9	2.8	2.4	0.8
Light Vehicle Sales	mil, SAAR	-0.3	-1.6	-2.5	-3.3	-1.1	-2.8	-1.1	-0.3	-0.1
Residential Housing Starts	mil, SAAR	-0.07	-0.26	-0.59	-0.85	-0.23	-1.02	-0.85	-0.08	-0.01
Median Existing-House Price	$ ths	-0.4	-10.8	-20.3	-25.5	-7.9	-28.1	-26.8	-19.0	-7.5
Change	*%YA*	*-0.2*	*-5.4*	*-10.1*	*-12.5*	*-4.0*	*-10.2*	*1.2*	*4.6*	*5.8*
Consumer Price Index	%AR	-0.5	-2.5	-3.1	-2.6	-0.6	-2.1	-0.2	0.7	1.1
Federal Funds Rate	%	0.0	-0.0	-0.0	-0.0	-0.0	-0.2	-1.8	-0.9	-0.0
Treasury Yield: 10-Yr Bond	%	0.00	1.14	0.00	-0.52	0.28	-0.76	-1.16	-0.36	-0.00
Baa Corp. - 10-Yr Treasury	DIFF	-5.2	-5.3	-5.4	-6.0	-5.4	-6.7	-8.9	-9.5	-9.3
Corporate Profits With IVA & CCA	$ bil	-11.8	-100.6	-244.6	-434.8	-89.3	-507.8	-510.9	-341.0	-133.8
Change	*%YA*	*-0.6*	*-4.7*	*-11.3*	*-22.2*	*-4.2*	*-21.4*	*1.4*	*10.3*	*10.7*
S&P 500	1941=10	-25.1	-242.7	-418.1	-513.7	-171.5	-476.9	-312.3	-162.2	-79.5
Change	*%YA*	*-1.6*	*-14.5*	*-23.6*	*-28.0*	*-10.4*	*-17.7*	*11.4*	*9.8*	*5.0*

U.S. MACRO S3 SCENARIO—FORECAST SUMMARY

	Units	14Q2	14Q3	14Q4	15Q1	2014	2015	2016	2017	2018
Gross Domestic Product	bcw$	16,031.6	15,950.1	15,812.4	15,693.8	15,924.3	15,750.9	16,209.6	16,901.6	17,591.7
Change	*%AR*	*3.3*	*-2.0*	*-3.4*	*-3.0*	*1.0*	*-1.1*	*2.9*	*4.3*	*4.1*
Federal Budget	$ bil	30.0	-194.5	-236.7	-319.3	-641.9	-1,132.6	-1,177.5	-1,029.0	-808.7
Total Employment	mil	137.0	136.2	135.7	135.6	136.7	136.1	138.6	141.9	145.5
Change	*%AR*	*-2.1*	*-2.3*	*-1.5*	*-0.3*	*0.2*	*-0.4*	*1.9*	*2.3*	*2.6*
Unemployment Rate	%	6.5	7.4	8.5	9.0	7.3	9.1	8.6	7.6	5.8
Light Vehicle Sales	mil, SAAR	15.8	14.8	14.2	13.6	15.1	14.1	15.0	14.9	14.8
Residential Housing Starts	mil, SAAR	1.04	0.97	0.82	0.65	0.94	0.65	1.09	1.90	1.90
Median Existing-House Price	$ ths	203.7	194.1	185.1	181.0	196.5	180.7	189.3	203.3	219.6
Change	*%YA*	*3.6*	*-2.7*	*-7.2*	*-10.9*	*0.4*	*-8.1*	*4.8*	*7.4*	*8.0*
Consumer Price Index	%AR	2.1	-0.3	-0.9	-0.4	1.3	0.2	2.3	3.6	3.9
Federal Funds Rate	%	0.1	0.1	0.1	0.1	0.1	0.1	0.5	2.7	4.1
Treasury Yield: 10-Yr Bond	%	2.63	4.11	3.15	2.82	3.16	2.99	3.64	4.36	4.51
Baa Corp. - 10-Yr Treasury	DIFF	2.7	3.9	4.1	3.9	3.3	3.8	3.1	2.5	2.3
Corporate Profits With IVA & CCA	$ bil	1,971.5	1,937.5	1,824.3	1,676.9	1,923.4	1,676.0	1,784.4	2,014.2	2,285.8
Change	*%YA*	*-5.6*	*-8.9*	*-16.1*	*-14.5*	*-8.5*	*-12.9*	*6.5*	*12.9*	*13.5*
S&P 500	1941=10	1,878.2	1,670.3	1,501.6	1,408.4	1,721.1	1,431.5	1,589.7	1,771.0	1,913.4
Change	*%YA*	*16.7*	*-0.3*	*-15.2*	*-23.2*	*4.8*	*-16.8*	*11.0*	*11.4*	*8.0*

About the Author

Dan White

Dan White is a senior economist at Moody's Analytics, responsible for covering state and local government fiscal concerns. Dan developed and maintains the firm's state and local tax revenue models. He also regularly presents to clients and conferences and has been featured in a number of print, radio, and televised media outlets, ranging from the Wall Street Journal to National Public Radio. He also has the pleasure of working closely with a number of state and local governments in a consulting role.

Before joining Moody's Analytics Dan worked as a financial economist for the New Mexico State Legislative Finance Committee in Santa Fe, where he forecast a variety of tax revenues, including sales, income, property, and oil and gas severance taxes. Additionally, he performed analysis on a wide range of public policy issues concentrated around economic development, public investment strategies, public pension reform, and debt management. Dan holds an M.A. in economics as well as undergraduate degrees in finance and international business from New Mexico State University.

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Economic & Consumer Credit Analytics

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