

: Can DSS improve state government tax revenue projections?

In the United States, state governments forecast tax revenues, prepare spending budgets based on the forecast, and then track and monitor tax receipts and expenditures. This past year has been especially difficult for the forecasters. Here in Iowa we have experienced major tax revenue shortfalls. Rather than raising taxes to meet budgeted needs, our state legislature has cut budgets. This Ask Dan! briefly examines why state tax revenue projections are so "bad" this year, the revenue estimating decision process, and then the role, if any, DSS play and could play in tax revenue projections. Web resources have been invaluable for collecting information for this Ask Dan!, but I would welcome comments from those with "first hand" knowledge of using DSS in revenue estimating.

People in many states in the United States are asking why state tax revenue projections are so "bad". One reads many explanations. The shortfall is caused by the national recession. The terrorist attacks have reduced consumer spending and hence sales taxes. More people are unemployed, personal income is down and hence there has been a much "higher-than-expected" increase in income tax refunds. There is a continuing Medicaid shortfall. And there is a ripple effect theory ... an unexpected effect of the federal government's stimulus package and changes in depreciation schedules was a major reduction in state corporate income taxes. It sounds like part of the blame falls to errors in specifying a revenue estimating model. Model-driven DSS should be able to assist forecasters in examining impacts of changes in state and federal tax laws and the impact of changes in personal income on tax refunds and hence the impact on tax revenues.

What about process problems? Here in Iowa we have a 3 person revenue estimating board. These "experts" are supposed to take the politics out of tax revenue projections. It is not clear however how they arrive at their forecasts. A state legislator told me they don't use any decision support systems. The revenue numbers continue to fall and the shortfalls seem to only get worse.

Lynn Okamoto, a staff writer for the Des Moines Register, reported May 8, 2002 the "Off-the-mark revenue estimates over the past year have led to criticism of the Revenue Estimating Conference, the three-person panel that lawmakers rely upon to determine the size of the state budget pie." Iowa Governor, Tom Vilsack, recently replaced his appointee to the panel with banker Holmes Foster. Foster noted in an interview with Okamoto, "This isn't an exact science. I would characterize it as a very intelligent guess."

What is the revenue estimating decision process? **IT DEPENDS!** Processes vary among the states. In Michigan, a Revenue Estimating Conference is held each January and it is a major part of the budget process. According to a document at the State of Michigan Web site (<http://www.michigan.gov>), during the conference, "national and state economic indicators are used to formulate an accurate prediction of revenue available for appropriation in the upcoming fiscal year." The Web page also notes "The principal participants in the conference are the State Budget Director and the Directors of the Senate and House Fiscal Agencies or their respective designees. Other participants may include the Governor and senior officials from the Department of Treasury." A second Revenue Estimating Conference takes place in June of each year.

In Florida, the following seven step revenue estimating process is used (<http://www.fgfoa.org>):

1. The process begins with a national economic forecast.

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2. The national economic forecast establishes the basic parameters for making a state economic forecast.
3. Once a particular level of state economic activity is agreed upon, state revenues can be forecast.
4. Demographic and other relevant data are taken into consideration.
5. The principals use the adopted national and state economic forecasts to derive forecasts of state revenue collections.
6. For the General Revenue Fund, separate forecasts are made for each major tax source.
7. The forecasts for each separate tax source are debated, and a consensus forecast is agreed upon.

In Tennessee, the "revenue estimating process generally starts twelve months before a fiscal year begins. Revenue collections are tracked on a monthly basis, and this information, along with specific long-run forecasts of individual sectors of the economy, is used to form the basis for the next fiscal year's estimated revenue collections. Preliminary estimates are supplied to the Department of Finance and Administration in mid-summer by the Department of Revenue and the University of Tennessee Center for Business and Economic Research. Tax estimates are recalculated in October and November and refined in December and January for inclusion in the Governor's Budget Document (from www.state.tn.us/finance/bud/overview/revsource.pdf).

According to a web page at the State of Tennessee Web site, their revenue estimating process incorporates the "Good Practices in Revenue Estimating" endorsed by the National Association of State Budget Officers and the Federation of Tax Administrators. The web page notes this "requires the use of national and state economic forecasts, development of an official revenue estimate, monitoring and monthly reporting on revenue collections, and revision of estimates when appropriate."

In Rhode Island, a Revenue Estimating Conference develops a consensus forecast (cf., <http://www.budget.state.ri.us>).

In general, estimators are supposed to take into account state tax law changes, federal tax law changes, and updated economic factors. In some U.S. states, the revenue estimating authority is in the executive branch (e.g., Treasurer, Comptroller, or revenue collection agency). In other states, authority has been placed in a consensus conference process.

What role, if any, do Decision Support Systems play in tax revenue projections? The Federation of Tax Administrators (<http://www.taxadmin.org>) holds an annual Revenue Estimation and Tax Research Conference. At the 2001 conference in Minneapolis, the agenda included working sessions on Dynamic Estimation and Modeling, Data Base/Blurring Techniques, Tax Expenditure Reporting/Estimation Techniques, and Revenue Forecasting. Michael Lipsman of the Iowa Department of Revenue and Finance presented a paper titled "Hunting for Leading Indicators: The Iowa Experience". Reece Womack, Oklahoma Tax Commission, presented "A Survey on the Use of Multivariate Time series Analysis in State Revenue Forecasting." William Witzleben, New York Dept. of Taxation and Finance, presented "Corporate Tax Simulations -- Modeling and Distributional

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Analysis." From what I can tell some tax administrators are using data and models to support revenue estimating. The sophistication of the DSS is however unclear.

The American Economics Group (www.americaneconomics.com) sells a software product called RevCast™ for State and Local Government Revenue Forecasting. Their marketing materials claim it can help prepare accurate monthly forecasts of taxes and other revenue, link revenue expectations to forecasts of the regional economy, track monthly revenue against target forecast ranges, receive early warning of revenue shortfalls or surpluses and reduce revenue-estimating volatility. RevCast™ sounds almost too good to be true. If you are using the product, let me know how it is working.

What's going wrong with the processes, models, and Decision Support Systems? Some possibilities ... the forecasters and decision makers may be

1. Making consensus estimates based on limited information.
2. Relying too much on simple moving average forecasts.
3. Using simplistic revenue models that need major revisions or incorrectly specifying the revenue model (cf., Haynes and Henry, 1974).
4. Using incorrect data or data that is outdated.
5. Failing to recognize the economy has fundamentally changed (cf., Haynes and Henry, 1974).
6. Reading tea leaves instead of using a crystal ball; perhaps they need Crystal Ball 2000 (the Excel add-in at <http://crystalball.com>).

Building a new model-driven Decision Support System or improving current DSS won't eliminate the current revenue shortfalls ... all Decision Support Systems can do is give decision makers better, more timely estimates so they can prepare better budgets, respond faster to changes in the economy and tax laws, and hopefully reduce the impact of future revenue shortfalls or make proactive changes to reduce any shortfalls. As Haynes and Henry (1974) note, "forecasting is both an art and a science (p. 135)." Let's not forget the science of forecasting.

References

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Author: Daniel Power

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