THE BUSINESS ECONOMIST AT WORK: THE ECONOMICS FUNCTION AT THE COLORADO LEGISLATIVE COUNCIL

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The Economics Department of the Colorado Legislative Council is a nonpartisan research group. Its chief function is to provide the General Assembly with reliable revenue forecasts used to prepare the state budget, ?which is the responsibility of the legislature rather than the Governor. The economics staff also conducts research relating to various tax and legislative issues.

THE PRIMARY function of the Economics Department at the Legislative Council is to provide the General Assembly with quarterly revenue forecasts, analyze and forecast the national and Colorado economies, and evaluate legislative revenue and budget issues. The Legislative Council of the Colorado General Assembly is a nonpartisan research agency that provides information to the Legislature.

REVENUE ESTIMATING

As is the case with most states, Colorado's constitution requires the state's budget to be balanced. Given this requirement, it is necessary to estimate the amount of revenue available for funding state government operations. Colorado is different than many states insofar as the General Assembly writes the budget and decides upon the levels of program by program appropriations. In most states this responsibility lies with the Governor. As a result of the role the Legislature plays in the budget process, the General Assembly needs a comprehensive, reliable forecast of revenues. Furthermore, it is important,to be as accurate as possible in estimating revenues. A 1 percent error in the revenue forecast is equivalent to $27 million. The economics profession's standard 5 percent error is equivalent to $135 million of our General Fund (operating budget), clearly an unacceptable error rate. Even a 1 percent error rate is pushing the tolerance of policy makers, as $27 million is equivalent to funding either the Colorado Department of Revenue or the Colorado Department of Health.

If revenues are underestimated, this causes programs to be underfunded or not funded at all, thus depriving citizens of potentially necessary services. Meanwhile, if revenues are overestimated, this causes a budgetary shortfall, necessitating budget cuts, tax increases, or a reduction in the reserve set aside for revenue fluctuations. Increasingly, however, the reserve is being used for over expenditures, especially for spiralling Medicaid costs; thus, one can no longer count on the reserve to bail out an overly optimistic revenue forecast. This leaves budget cuts and/or tax increases as the remedies for overestimated revenues, both of which are unpopular options for policy makers.

In order to produce the revenue forecast, a national forecast must first be compiled. In spite of the publicity given to Colorado's "energy boom" in the late 1970s and early 1980s, the state's economy is very sensitive to the national business cycle. Colorado, however, does experience somewhat of a muted business cycle compared with the nation. When the nation goes into recession typically the nationwide work force shrinks, whereas in Colorado job growth merely slows. Meanwhile, during national expansions, the state's job growth usually far exceeds nationwide gains. Once a national forecast is formulated, then a forecast of Colorado's economy is produced. We use several econometric models to produce the state's forecast.

After the statewide forecast is developed, we prepare forecasts of tax revenues by tax source. The bulk, 55 percent, of Colorado's General Fund revenues is derived from the individual income tax, 34 percent comes from excise taxes; and 4 percent is obtained from the corporate income tax. The remainder of the General Fund revenues is comprised of miscellaneous taxes, such as estate taxes, insurance taxes, and court receipts.

Prior to modelling these revenues, it is important to adjust the data for law changes where possible. Throughout the years, there have been significant law changes affecting even the smallest of revenue sources. Some law changes are fairly easy to take into account, such as a change in the tax rate or a change in the distribution formula that affects the amount of revenue received. Others, however, are less clear cut. For instance, Colorado's definition of taxable income

for individual income tax purposes follows the federal tax code with some minor modifications. The 1986 Tax Act broadened the federal tax able income base. It is very difficult to ascertain how the base broadening affected income taxes in the state because Colorado's tax form is simplified to the point of providing almost no information regarding the tax base. We can only gain this information from federal tax tapes, which are available with a lag. For instance, we recently obtained federal tax data for 1988. In the case of corporate income taxes, businesses are allowed to carry forward losses for fifteen years and can amend their taxes for previous years as well. Disaggregating the data, however, to distinguish corporate tax liability adjusted for these carry forwards and amendments is not possible, given the way in which the data are collected. Hence, problems of data consistency are always a factor in revenue forecasting.

In order to forecast revenues we use many different models. We have elaborate structural econometric regression models for all of the major tax sources. For instance, sales taxes are disaggregated by industry classification, then each component is modelled accordingly. Individual income tax es are disaggregated into the components of withholding, estimated payments, case with returns, and re funds. Individual income taxes are modelled by component and in aggregated form. An additional input into the individual income tax forecast is a simulated model of 3,000 Colorado income tax returns maintained by the Department of Revenue. We provide the Department with our income and employment forecasts, and they then apply the forecasts to their sample data.

In addition to structural econometric models, we also have ARIMA and exponential smoothing models for the tax concepts. These time series models are good only for short-term forecasting and are thus only relied upon when there are significant data consistency problems or when the tax concepts are relatively small.

In addition to these more standard models, we are experimenting with neural computing for some of our more difficult revenue streams. In a joint venture with Colorado State University, we are attempting to use neural computing to forecast corporate taxes. In the past, we have tried disaggregating corporate tax es by industry and modelling the components as a function of industry profits per Colorado worker. Given the poor data on corporate tax receipts, this and other models did not prove fruitful. Neural computing uses a computer model that mimics the functionality of the human brain identifying patterns in data and learning from them.

After the models are run and forecasts are chosen the data must then be adjusted for accruals. Once the accrual forecast is complete, the net General Fund revenues are analyzed with respect to appropriations, transfers, and the ending balance to ascertain whether the Fund is in surplus or deficit. If the reserve has fallen to 2 percent or less of appropriations, the General Assembly and the Governor must take action to restore the reserve to the 2 percent level.

POLICY RESEARCH AND MONITORING THE ECONOMY

In addition to revenue forecasting, other functions are performed by the Economics Department at the Legislative Council. Whenever the General Assembly is considering increasing or decreasing taxes, they request an analysis of the resulting revenue and economic impacts. When the Legislature considers tax reform or a significant alteration of the tax structure, we are called upon to analyze the revenue impacts.

A good example of the type of research we do was recently evidenced by United Airlines' request for thirty-year job tax credits in return for locating a maintenance facility employing 4,500 people in Denver. We were asked to analyze the fiscal and economic impact of the request. The tax credits were not tax credits m the purest form, however. Rather, if their value exceeded United's Colorado income tax liability, the state would have been obligated to write a check to United for the difference. In total, we valued the tax credits at $206 million in inflation-adjusted 1991 dollars.

The analysis took into account direct and indirect Job creation, and the amount of in-migration that would be necessary to accommodate the job growth. It was then necessary to quantify the revenues and costs associated with the project. Income, sales, use, cigarette, liquor, and gasoline taxes were the primary revenues to be received. Meanwhile, new residents would have increased demand for education, public safety, and social services. Hence, the increased cost of government service provision as well as the cost of the job tax credits were analyzed. Not surprisingly, the original request for tax credits indicated that Colorado would suffer a net revenue loss. Meanwhile, the original request was also found to be in conflict with the state's constitution, hence a different, less costly deal was crafted by the legislature.

Unfortunately, the state lost its bid for United's maintenance facility to Indianapolis, Indiana. Although Indiana's bid was nominally valued somewhat lower than Colorado's, Indiana has a large pool of unemployed auto workers nearby that can be retrained to accommodate the maintenance facility. Consistently, labor pool availability and productivity rank at the top of the list of factors that businesses cite as key to their location or expansion decisions. Colorado does not have a large pool of unemployed industrial workers.

Examples of other research projects are as follows:

1. Construct a model of worker's compensation claims to see how various changes in the worker's compensation law affects the cost of doing business in Colorado.
2. Analyze the effect of various tax limitations on the state's budget.
3. Ascertain the revenue loss associated with indexing capital gains income with inflation and the effect on investment in the state.
4. Investigate the revenue implications of extending the sales tax to various services.
5. Examine the income and price elasticity various taxes for modelling purposes an. the purpose of investigating how federal changes affect state revenue receipts.
6. Provide the budget committee with inflation estimates for the important cost categories state governments.
7. Update the General Assembly monthly or economic events in the state and national economies.

To date, much of our work is in the field of revenue estimation and economic analysis. Currently however, the state's budgetary problems are evolving from unexpected expenditures, not fluctuating revenues. As a result, in the future, we ma, analyzing and forecasting the volatile expend) categories. The two problematic spending areas Medicaid and school funding. Unexpected increases in Medicaid caseloads caused an $80 million short fall in this fiscal year. Meanwhile, public school kindergarten through twelfth grade school enrollment increased 12,200 in fiscal year 1990-91 15,600 in fiscal year 1991-92. This comes after decades where annual growth was less than 5 students. Because Colorado funds education c per pupil basis, such large enrollment gains a significant hit to the budget. Large, unaticipated fluctuations in expenditures squeeze state budgets and are a natural area where the economics function can lend its forecasting expertise.

CONCLUSION

There are a variety of functions performed legislative economists. The most important function of the job is to provide the General Assembly v reliable revenue forecasts, upon which they base their budget. It is extremely important that such a function be located in a nonpartisan research group so that politics do not color the end product. In addition to revenue forecasting, legislative economists conduct research relating to various tax; legislative issues. The research can range from revenue raised by applying the sales tax to soda I to the fiscal effect of United Airlines locating a maintenance facility in the state. Suffice to say the is interesting and varied with never a dull moment!

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