

Toil and Trouble for Revenue Forecasters

Greater sensitivity to business cycles has made state tax revenues more difficult to predict

BY KARL RHODES

As the economy receded in March 2008, Barry Boardman was putting together his forecast of North Carolina tax revenues for fiscal year 2008-09. He knew that housing prices were declining sharply in sunshine states like California, Arizona, and Florida, but things didn't seem so bad in North Carolina. The housing boom there had been driven mostly by solid population growth — not wild speculation.

Boardman, the state's senior fiscal analyst, predicted a mild recession in North Carolina, but by October 2008, tax revenues were down 3 percent, then 9 percent, then 15 percent by the end of the fiscal year. North Carolina's exposure to the housing bubble may have been minimal, but its exposure to the ensuing contraction was substantial. "We weren't tying that together back in March of 2008," he says.

Forecasting state tax revenues is tricky, especially when the economy veers into a deep and prolonged recession, but state revenue forecasting errors have become increasingly large and pervasive during the past three recessions, according to a report by the Nelson A. Rockefeller Institute of Government at the State University of New York at Albany and the Pew Center on the States. The study, "States' Revenue Estimating: Cracks in the Crystal Ball," analyzed states' ability to forecast their tax revenues from 1987 through 2009.

"Errors in revenue estimates have worsened progressively during the fiscal crises that have followed the past three economic downturns," according to the report. "During the 1990-92 revenue crisis, 25 percent of all state forecasts fell short by 5 percent or more. During the 2001-03 revenue downturn, 45 percent of all state forecasts were off by 5 percent or more. And in 2009, fully 70 percent of all forecasts overestimated revenues by 5 percent or more."

Accurate revenue forecasts are important. They help states plan ahead, carefully consider the merits of individual budget decisions, and avoid massive across-the-board cuts like those that became necessary in 2009.

"It's been a constant challenge," Maryland Gov. Martin O'Malley told the Pew researchers. "No sooner do you make \$200 million in tough and painful cuts than the guys in green eyeshades come into your office and tell you that revenues have eroded further and you need to find another couple hundred. It's like trying to keep your nose above the waves while the riptide is pulling you under."

Revenue forecasters throughout the Fifth District tell similar stories. "The fall forecast of 2008 was the start of the downward revisions that continued until February of this year," says Norton Francis, director of revenue estimation

for Washington, D.C. "We became persona non grata, because every time we came around, we had bad news."

Revenue Forecasting 101

Revenue forecasters in Fifth District states and D.C. start with national forecasts purchased from IHS Global Insight and/or Moody's Analytics. They adapt the national projections to the unique economies within their states. Then they feed the data into estimating models that predict various categories of revenue based on how their states' tax structures capture portions of economic activity.

In the Fifth District, the most popular tools of the trade include simple trend analysis (projections based on the trajectory of past performance such as revenue from court fines and fees); time-series modeling (projections based on sequential data that reveal underlying factors such as seasonal differences in employment); and linear regression modeling (projections based on mathematical correlations between different types of data such as the relationship between personal income and sales tax revenue).

In addition to these statistical tools, all of the Fifth District jurisdictions, except D.C. and West Virginia, use some form of consensus forecasting, which brings officials from both the legislative and executive branches into the process, often joined by advisory groups of business leaders and external economists.

The Rockefeller/Pew study analyzed the effectiveness of each of these approaches and found that none of the methods was "significantly linked to the size of the errors." Other research indicates that combining multiple forecasts can lead to somewhat greater accuracy. North Carolina, for example, now considers two forecasts, one developed by the legislature's analysts and another prepared separately by the Office of State Budget and Management.

"We get together and kind of haggle back and forth," Boardman says. "It's an informal process. Then the governor and the legislature pick numbers — usually the consensus number."

Technological advancements also can improve revenue estimation. Forecasters in West Virginia, for example, have benefitted greatly from a new integrated tax information system that replaced a mainframe system that was installed in 1972 and never upgraded significantly. The new system, which became fully operational in 2009, allows forecasters to quickly access and analyze tax data in ways that were previously impractical or impossible.

"We were in the dark for many years," says Mark Muchow, West Virginia's deputy secretary of revenue.

Degree of Difficulty

The tools are getting better, but the task is getting harder. State revenues have become more sensitive to economic swings, according to Richard Mattoon and Leslie McGranahan, economists at the Federal Reserve Bank of Chicago. In a 2008 working paper, they conclude that from 1998 to 2007, state revenues were more sensitive to economic conditions than they were during the preceding two decades.

“While a one percentage point change in economic conditions led to a 0.9 percentage point change in income tax revenues prior to 1998, it corresponds to a 1.6 percentage point change during the 1998-2007 period,” they write. This trend appeared in 36 of the 43 states that collect income taxes, and it was statistically significant in 10 states, including North Carolina and Virginia. The authors attributed nearly all of this heightened sensitivity to states’ growing exposure to increasingly volatile capital gains revenue.

From 1970 to 2000, capital income — including capital gains — was “more than five times more volatile than wages and salaries or consumption,” according to a 2003 article in *State Tax Notes* by David Sjoquist and Sally Wallace, economists at Georgia State University.

Their analysis of Internal Revenue Service data also shows that capital gains have become a much larger component of state income tax proceeds. Capital gains, as a percentage of federal adjusted gross income, increased in every state and D.C. from 1990 to 2000. In the Fifth District, capital gains were up 211 percent in Maryland, 171 percent in D.C., 170 percent in Virginia, 152 percent in North Carolina, 150 percent in South Carolina, and 124 percent in West Virginia.

“About 20 to 25 percent of our general fund — that’s a big chunk — now comes from business income and capital gains,” Boardman notes. “Those are the sources of income that have been shown to swing from anywhere from plus 30 percent to minus 30 percent — even more — in any given year.” Corporate income tax proceeds always have been difficult to predict, but capital gains volatility is the worrisome wrinkle that has emerged during the past 12 years — caused primarily by wild swings in the stock market.

Revenue forecasters often say, “If I could predict the stock market, I wouldn’t need this job.” But predicting stock market gyrations is just the first step toward estimating capital gains revenue. Forecasters also have to consider how an increasingly diverse group of investors might respond to market performance and to tax policy changes — both real and anticipated.

The federal capital gains tax rate is expected to remain at 15 percent through 2012, says John Layman, chief economist and director of revenue forecasting for Virginia’s Department of Taxation. But then what? Antsy investors might be thinking: “The bracket is going up. I’m going to start culling my winnings and know that I am only paying 15 percent,” Layman says. (Most states treat capital gains as regular income.)

Forecasting capital gains revenue might be the ultimate challenge, but other growing components of personal income tax revenues also are difficult to predict. “We have seen a big shift over the past 20-some-odd years to a lot fewer corporate taxpayers,” Boardman notes. “With subchapter S (corporations) and LLCs and so forth, a lot of that income now comes through the personal income tax, which is making that a far more volatile source of revenue.”

Sales Tax Erosion

Most states have three main sources of revenue: sales tax, personal income tax, and corporate income tax. Sales tax revenue is the most predictable category, but sales taxes have been shrinking in many states as a percent of overall taxes.

Expenditures on services increased from 47.4 percent of consumption in 1979 to 58.8 percent in 2002, notes William Fox, an economist at the University of Tennessee, in a 2003 article in *State Tax Notes*. The corresponding decline in expenditures on goods relative to expenditures on services erodes the sales tax base because most goods are taxed by states while most services are not. In other words, state sales tax structures are still based on a manufacturing economy, Boardman says. “For most states, their sales tax bases were constructed back in the 1930s.”

More recently, technological advancements have chipped away at the sales tax base, Fox notes. The Internet has been the primary factor — facilitating tax-free transactions and blurring the lines between goods and services with downloadable books, music, and software. States, however, are starting to reclaim this sales tax territory.

“Virginia passed a law a few years ago that said, ‘If you want to bid on a contract in the Commonwealth, you have to be a registered sales tax dealer,’” Layman recalls. “Think about all the computer manufacturers out there that want to do business with Virginia. That made a big difference.”

Some states have raised their sales tax rates to offset the shrinking base, but some revenue erosion is self-inflicted. During the economy’s so-called “Great Moderation” from the mid-1980s to 2007, many states exempted food and nonprescription drugs from sales tax. This practice made many taxpayers happy, but it eliminated two of the most predictable sources of sales tax revenues.

The Perfect Storm

Sales tax shortfalls were not a major problem for most states during the revenue downturn of 2002 because consumer spending remained relatively strong during and following the 2001 recession. But the shrinking sales tax base has caused states to become more reliant on the more volatile personal income tax.

The rise in personal income tax proceeds that occurred in the 1990s — driven mostly by higher capital gains — more than offset erosion of sales tax bases. But after the dot-com crash, states that had become heavily dependent on capital gains found themselves in a bind.

Mindful of voters’ concerns about taxes, state policy-

makers may have missed an opportunity to shore up underlying tax structures. Many state leaders balanced their budgets by cutting costs, tapping rainy-day funds, and securitizing tobacco settlement payments instead of raising taxes as they had during previous recessions. These politically attractive alternatives “may have papered over structural imbalances in the state revenue and expenditure systems,” according to the Chicago Fed study. “While this one-time money (reserve balances and tobacco money) could balance their budgets in the short run, it did not force states to examine whether their revenue structure was in fact productive enough to meet expenditure demands.”

The 2002 revenue downturn highlighted this imbalance, but at the time, many experts viewed the severe shortfall as a dot-com aberration instead of a bellwether event. The National Governors’ Association called it “the perfect storm.” Fox called it a “100-year flood,” the worst revenue disturbance since at least 1970.

If state officials believed that the dot-com crash caused a perfect storm of revenue-forecasting errors, then it was reasonable for them to assume that nothing so disruptive would happen again anytime soon. Certainly, the stock market floodwaters receded slowly. The S&P 500 Index declined steadily for three years, but then it resumed a growth trajectory that was nearly identical to its rate of increase in the early 1990s. By mid-2007, the S&P 500 Index again was approaching its all-time high, but it would not stay there long.

The financial crisis that began to show itself in the second half of 2007 caused the stock market to fall even faster and further than it did during and following the dot-com calamity. Compared to the 2007-09 recession, the 2002 disturbance was more like a thunder shower than a perfect storm.

“The 2002 revenue crisis gave us the experience to handle 2008 and 2009,” says Layman in Virginia. “But now we had a financial recession and a housing recession together, and it was a killer.”

The housing market monster dragged sales tax revenues down with it as expenditures on home furnishings, fixtures, and building materials plunged. The unemployment rate peaked above 10 percent, much higher than the 6.3 percent mark following the 2001 recession. As housing prices continued to fall, many consumers ended up living in homes that were worth less than the balances on their mortgages.

“The level of wealth that you have is a big determinant of the amount you will spend,” Francis notes. “So losing the value of your house or losing your house will rein in your spending a lot.”

As the economy struggles to recover from the recession of 2007-09, uncertainty still clouds the crystal ball. The unemployment rate hovers above 9 percent. Nations struggle to pay their bills, and stock market volatility persists. After bottoming out in March 2009, the S&P 500 doubled

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by February 2011. Then it plunged 18.2 percent in late July and early August. In this environment, it doesn’t appear that forecasting state revenues is going to get easier.

What Can States Do?

State revenue forecasters will never master the vagaries of capital gains, but they are improving their models based on lessons learned from each business cycle.

After the 1990-91 recession, for example, Virginia replaced its statewide economic model with regional economic models. “The three largest metropolitan areas, and now the balance of the state, have their own equations to forecast professional business services, hospitality, education, and health care, because one size doesn’t fit all,” Layman says. Northern Virginia, in particular, has become the state’s economic engine during the past four decades with dramatic wealth creation from government contractors and information technology services.

On the other side of the Potomac River, D.C. is revisiting its economic models in light of new data from the most recent financial crisis and recession. “It’s going to be a challenge,” Francis says. “You don’t want to zero out that whole period, but you have to make decisions about whether it is an anomaly or whether it represents a new cycle.”

States could restructure taxes to place more emphasis on stable sources of revenue, such as the sales tax. Virginia raised its sales tax to 5 percent in 2004, and Iowa raised its sales tax to 6 percent in 2008. In addition to taxing goods, Iowa now taxes 94 types of services, but raising taxes or adding new taxes would be difficult during a weak recovery.

A more politically appealing strategy might be to smooth out the benefits of revenue windfalls. In this regard, states with high exposure to volatile capital gains might learn something from states with high exposure to highly variable energy prices.

West Virginia, for example, collected more than \$500 million in severance taxes from coal and natural gas companies in its most recent fiscal year — up sharply from about \$200 million in 2003. (Companies pay severance taxes based on the value of coal or natural gas they extract — or “sever” — from the state.) Anticipating the inevitable swing the other way, West Virginia has built one of the largest rainy-day funds (as a percentage of total budget) in the nation. When the price of coal goes up enough to create a huge budget surplus, as it did last year, West Virginia puts more money into the fund.

Would a similar approach work for the capital gains component of personal income tax revenue? Massachusetts,

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attack (apart from failed sabotage missions) to have taken place on American soil during the war.

“Back to a Sleepy Little Town”

Just as remarkable as the boom’s magnitude was how quickly it evaporated with the war’s end in 1945. The Army closed shop at Camp Davis and Fort Fisher the year before, and the Air Force followed in 1945. The last vessel was launched from the North Carolina Shipbuilding Company on April 16, 1946. Wilmington’s economy collapsed, and its 6-digit population plunged to roughly 50,000. Thousands of veterans returned to the city but there were few jobs for them. Wilmington’s somewhat parochial culture wasn’t always welcoming to would-be transplants, and many eventually moved on.

That’s what makes Wilmington’s World War II experience unique, Jones says. “The thing about [other war boomtowns] like Philadelphia, Long Beach, San Pedro, Norfolk, Newport News, is that after the war, they continued to thrive. There was no bell curve for them,” Jones says. “Everything went back to Wilmington being a sleepy little town.”

The \$20 million shipyard that had once employed up to 21,000 people became the center of a tug of war between the Maritime Commission and local interests looking to regenerate Wilmington’s economy. Nearby shipyards weren’t eager to welcome peacetime competition, and with perhaps a little nudging, the Maritime Commission decided to place the NCSC, along with three West Coast shipyards, in a

dormant reserve status while international tensions subsided. This prevented the shipyard from being sold or commissioned for alternative use. (It wasn’t until the end of 1949, after five years of negotiations, that the Maritime Commission finally leased the facility to the state of North Carolina to become the site of the state ports authority. The land itself was locked in legal battle until 1971.)

Another major blow to the economy came when the Atlantic Coast Line Railroad abandoned Wilmington as its headquarters in 1960. Wilmington wouldn’t see another boom until the completion of the I-40 highway in 1990, which provided a vital link from the ports to the inland Mid-Atlantic population, once again turning the city’s prospects around. Along with the North Carolina State Ports Authority, today Wilmington hosts a campus of the University of North Carolina, a tourism industry that pumps nearly \$400 million into the local economy each year, and the largest television and movie production studio outside of California. Its population is about 106,000 — roughly equal to its size during the war.

Though the economic boom belied sometimes painful conditions, many Wilmington residents remember World War II as one of the most exciting times of their lives. The city bustled with an energy and purpose it had never experienced. Though the boom faded, the city’s wartime heritage has remained. Many of the buildings — even some of the hastily constructed housing projects — are still in use today. Even more potent for the war’s witnesses is the memory of a handful of years when the city took on new life. **RF**

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a state with high exposure to capital gains, is about to find out. Last year, the state passed a law limiting the amount of capital gains revenue the state can include in its operating budget. Anything over \$1 billion will go into a rainy-day fund.

The Massachusetts strategy does nothing to improve revenue forecasting, but bigger rainy-day funds (especially in states that experience dramatic revenue swings) appear to be the best defense against inevitable forecasting errors in an increasingly unpredictable economic environment. **RF**

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