Overview of Dynamic Revenue Forecasting

Summary

The use of dynamic revenue forecasting to evaluate proposed tax law changes varies at the federal and state level. Congressional agencies take some behavioral effects into account, but they stop short of producing dynamic revenue estimates that may result from changes in fiscal policies. At the state level, 10 to 25 agencies use dynamic forecasting models in some circumstances. In general, the dynamic revenue feedback usually is between the 2% to 20% of the direct, or static, impact.

Definition of Static and Dynamic Forecasting

The impact of proposed tax law changes on revenue collections is done initially with a *static* analysis. A change such as a tax rate reduction or an increase in the tax base would be applied to the existing baseline revenue forecast. For example, if a 10% reduction in individual income tax rates were to be enacted, the static approach would estimate that future tax collections would be reduced by 10% from the baseline forecast. Since this approach does not account for potential changes in economic growth or in taxpayer behavior that may be induced by tax law changes, static impact calculations may not estimate their full effects accurately.

Interest in *dynamic* methods increased during the 1990s. Dynamic forecasting goes beyond the static approach and attempts to predict changes in the economy brought about by changes in fiscal policies. In turn, the amount of revenue gained or lost from the subsequent changes in economic activity results in a "dynamic" estimate, which should better reflect the true impact of the policy change.

In order to estimate dynamic effects, it is necessary to develop a model that can produce statistical estimates of taxpayer responses to policy changes. The static estimates are put into the model, which is then used to calculate the additional impact as the economy responds to the changes. For example, an income tax rate reduction would generate added disposable household income. The dynamic model would forecast the level of added revenues resulting from this higher disposable income.

Dynamic revenue feedbacks are often expressed as a percentage of the static estimate. For example, a 10% revenue feedback means that 10% of an income tax reduction is offset by added revenue. Typically, a dynamic analysis will provide a feedback estimate 5 years following the tax change, which allows time for the initial impact to flow through the economy and produce the offsetting change in revenue.

The Federal Government

While dynamic modeling is a very useful public finance tool, it is a very complex analysis. It is even more dependent on a set of assumptions than the static analysis. The assumptions often include subjective judgments about the expected economic responses

to fiscal policy changes. As a result, use of dynamic models varies greatly at the federal and state level.

The Joint Committee on Taxation (JCT) is required to prepare estimates for most revenue legislation. In 2005, JCT issued a report describing their budget scoring methodologies. JCT reported that their models do take taxpayer behavioral responses into account, but only within the context of the fixed baseline economic forecast. They do not address potential changes in the economy's growth path in scoring tax proposals.

For example, a 10% individual income tax cut could be modeled in the baseline forecast by raising household incomes and reducing tax collections by the same amount. Under the JCT methodology, the offsetting tax revenue resulting from increased household spending can be calculated. The JCT, however, does not take the next step in a fully dynamic estimate, which would attempt to model the impact of tax law changes on future economic growth. In this case, as the tax cut flows through the economy, it could generate additional employment, capital spending, savings, etc., with the added economic growth producing more revenue. Due to the large number of factors affecting the broader economy outside of tax law, JCT has concerns about its ability to capture the macroeconomic impacts accurately.

The Congressional Budget Office (CBO) is assigned by law the task of making baseline projections of revenues and outlays and estimating the effects of spending proposals. Like JCT, CBO does not add these broader macroeconomic dynamic effects to most of its official estimates. However, CBO published a brief in December 2005 that addressed the dynamic impact of a hypothetical 10% cut in all federal tax rates on individual income. As a percentage of the conventional ("static") estimate, the simulation showed dynamic feedbacks after five years ranging from 1% to 21%, depending on the changes made to the behavioral assumptions in the model. The dynamic feedback from two conventional macroeconomic models (Global Insight and Macroeconomic Advisers) was 13% and 14%, respectively.

Experience from the States

Several states have begun producing dynamic estimates of tax law changes in recent years, while others have reduced or abandoned their earlier efforts. In 2003, the Heritage Foundation sponsored a survey of all the states and reported that 10 states were using dynamic revenue forecasting methods. Of those, five used models developed by Regional Economic Models, Inc. (REMI), while the others used other models or methods. In 2004, 16 states were reported to be using REMI models, while REMI's own literature in 2005 said that "more than half" of state governments were using its models. The REMI models generate a full dynamic estimate, including the impact of tax law changes on subsequent economic growth.

Among the states that developed their own models, California and Nebraska have discontinued their use.

California: With the assistance of outside consultants, the California Department of Finance developed its Dynamic Revenue Analysis Model (DRAM) in the mid-1990s. 1994 legislation required the use of dynamic revenue estimates for tax law changes with a static impact of more than $10 million. The staff used the model extensively for several years and reported revenue feedbacks of: 18% for corporate income tax reductions; 4% for individual tax reductions; and, 12% for sales tax reductions. The legislation that required dynamic scoring expired in 2000, and the staff discontinued producing dynamic estimates by 2002. The model was expensive and difficult to maintain, key personnel left the agency and were not replaced, and the results were not sufficiently different from static analyses to influence policy decisions.

Kentucky: The Office of State Budget staff used the REMI model to analyze a tax package in 2004 that included $100 million increases (each) in the individual income, corporate license, and cigarette excise taxes. The dynamic revenue loss of the $300 million tax package was estimated to be $(18.1) million, or 6%, in 2008.

New Mexico: The New Mexico Legislative Finance Committee staff has acquired the REMI model with the intent to produce dynamic revenue estimates. The state's Department of Finance and Administration used REMI to produce dynamic estimates of personal income tax rate reductions enacted in 2003. In the fifth year (2008) following enactment, the total dynamic revenue feedback was estimated to be about 2%.

Ohio: In 2005, the Ohio Department of Development contracted with REMI to perform a comprehensive and detailed analysis of a broad tax reform package. REMI's analysis also included estimates of some of the partial dynamic effects induced by some of the specific tax changes in the package. REMI estimated that the fifth-year revenue feedback of a sales tax increase was (11)%; for the personal income tax, it was (8)%; for the corporate franchise tax, (10)%; and, for the tangible personal property tax, it was (9)%.

Oregon: The Oregon Legislative Revenue Office (LRO) uses its own Oregon Tax Incidence Model (OTIM) to analyze tax proposals. OTIM is structurally similar to the California DRAM model and is maintained by LRO staff with the assistance of consultants. In 2003, the model was used to analyze several tax law changes, including a phased increase in the corporate income tax sales factor from 80% to 100%. The bill also included an increase in the research and development (R & D) tax credit. The published revenue impact analysis showed a dynamic revenue feedback of approximately 12% five years after enactment. In 2005, the LRO revenue impact analysis of an expansion of the R & D credit estimated a dynamic feedback of approximately 14% from the enhanced credit.

LRO staff said that they typically observe revenue feedbacks in the 10% to 15% range when they simulate individual income tax reductions.

Texas: The Texas Office of the Comptroller of Public Accounts (OCPA) staff uses a REMI model to analyze tax law changes. Most of their work has been to analyze offsetting tax changes; for example, a $100 million property tax cut combined with a

$100 million increase in the corporate franchise tax would have a revenue-neutral static impact. The staff, using the REMI model, estimates the dynamic revenue feedback of such a proposal to be an increase of about 3% to 5%.

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