The Vermont Legislative Research Service

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Regional Economic Modeling

In the 1990s many states began using dynamic economic modeling which "attempts to predict changes in the economies brought about by changes in fiscal policies."[1]

An example of one of these
their website, four differen
"input-output, general equi

[2] By using these
modeling approaches REMI seeks to captures inter-industry relationships within a region, long-run potential impacts of policy changes, and spatial dimensions of the economy such as transportation costs and firm access to human capital.

REMI offers a model called "PI+" which can be used to simulate the effects of policy or structural changes in "economic development, infrastructure, environment, energy and natural resources; and state and local tax changes."[3] Adam Fulton of REMI posits that dynamic economic modeling can be a valuable tool in terms of forecasting as well as impact assessment.[4] There are a number of states throughout the US using REMI models to review potential policy changes along with evaluating the impacts of legislation. REMI has an extensive list of clients, both private and public sector.[5] In the state of Vermont, REMI is

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[1] Arizona Joint Legislative Budget Committee, "Overview of Dynamic Revenue Forecasting," Arizona Legislature, February 10, 2006, accessed March 15, 2015, http://www.azleg.gov/jlbc/m-RevForecasting.pdf.
[2] REMI, "The REMI Model," January, 1, 2015, accessed March 6, 2015, http://www.remi.com/the-remi-model
[3] REMI, "PI," January 1, 2012, accessed March 6, 2015, http://www.remi.com/products/pi.
[4] Adam Fulton (REMI) in discussion with the authors, March 10,

used by the Vermont Employment Growth Incentive program[6] and has been used by other various state departments in reports[7] to evaluate the impacts of potential economic changes along with state economic reviews.

Dynamic Modeling in Vermont

After speaking to representatives from both the Statehouse and REMI, they recommended speaking to Tom Kavet, of Kavet, Rockler & Associates. Mr. Kavet is considered one of Vermont's foremost experts on the REMI model. In a phone interview conducted with Mr. Kavet, it was revealed that the most important part of the REMI modeling process is the research and effort to develop quality input data necessary to run the model. Mr. Kavet said, "98 percent of best practice REMI modeling is associated with research and developing high quality data inputs and model specifications,"[8] essentially, higher quality of inputs will yield higher quality results in the model. The example given about the importance of high quality inputs being critical to an accurate model was a consensus study conducted by Kavet, Rockler & Associates, LLC and Economic & Policy Resources, Inc., using REMI in the case of the shutdown of the Vermont Yankee power plant. The data to be used in specifying the model was developed via a consensus process over a sixteen month period by economic and energy experts, as well as state government and Vermont electric utilities officials. The primary purpose of this report was to develop a "general economic impact model that would allow future analyses of additional scenarios based on a variety of input assumptions."[9]

Mr. Kavet, when asked about using the model, said that it is important for the personnel running the model to be familiar with the specifics of each model application, as well as an expert with the model itself. This two-part requirement is important to avoid potential policy mistakes due to misuse and misinterpretation. He also said that an active relationship between users and REMI could result in an improved model and one more customized to the particular needs of the client and application. When asked about the REMI model in comparison to IMPLAN, another commonly used model, Mr. Kavet said that it [IMPLAN] is a useful model for those not able to afford REMI, but that it lacks many important components of the REMI model, including a time dimension, demographic detail, and behavioral econometric responses, to make a few. The IMPLAN model is

According to Mr. Kavet, Vermont currently uses REMI modeling for programs like the

The model, however, does include numerous policy variables that can be included in the input to represent different ways to balance the budget. Various states have been implementing the Tax-PI model and the PI+ model in a transparent manner that accounts for both taxes and spending. [15] When trying to predict future outcomes and changes in government budgets, the inclusion of a "forced" balanced budget in the model could also yield inaccurate results.

The model's goal is to forecast future economic impacts of a policy. Due to the modeler's lack of knowledge of the future budget as a whole, it is impossible to perfectly model the policy impact on the budget in the coming years. If the modeler uses the REMI public sector variables and is transparent with the assumptions she or he has made on how the budget will be balanced, then results of the model are the best forecast of policy impact.

State Experiences

California

With the assistance of outside consultants, the California Department of Finance developed the Dynamic Revenue Analysis Model (DRAM) in the mid-1990s. Legislation passed in 1994 required the use of dynamic revenue estimates for tax law changes with a static impact of more than $10 million. The legislation that required dynamic scoring expired in 2000, and the staff discontinued producing dynamic estimates in 2002.[16] The model discontinued because it

another contractor who has experience with these types of economic models to assist in the development of the Florida specific model.[20]

New Hampshire

New Hampshire currently uses REMI modeling in a similar manner to Vermont. The REMI website only lists the New Hampshire Department of Employment Security as one of their clients.[21] The model has been used in the state to provide accurate information for the lobbying of proposed projects, ranging from a study into installing scrubbers (air pollution control devices) at the Merrimack [power] Station[22] to a study looking at the economic impacts of The Northern Pass Transmission Project.[23] In both of these cases, the model was run by a third party (Gallagher, Callahan & Gartrell) for the companies lobbying for the projects. Both of these studies used REMI to look at the economic benefits to the state, including employment benefits. In Shapiro's study of The Northern Pass Transmission Project, the preliminary research into employment was conducted using the RIMS II model (a static model compared to REMI's dynamic model). The REMI model used in this study expanded on the preliminary RIMS II forecast by allowing the job forecasts to be broken down by sector, over a period of time.[24] In the instance of this project, the proposed expenditure was about $200 million. The cost of the Merrimack [power] Station scrubber project was $457 million when it passed in 2006.[25]

Texas

In Texas, the Revenue Estimating Division of the Office of the Comptroller of Public Accounts regularly uses dynamic analyses to model tax law changes. The office uses models that estimate the budgetary impacts of possible tax changes having "a static estimated cost exceeding $100 million." The model in Texas has some variation from other states because Texas does not have a state income tax and the majority of their revenue comes from sales and use taxes. As a result, their model is customized to take this into account as sales taxes and income taxes are treated similarly in REMI models. [26] Their work has been focused on

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analyzing "offsetting tax changes."[27] The office has also analyzed the economic impacts of