Revenue Study Commission
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Policy Analysis

The commission is charged with determining a generally accepted and effective economic modeling approach to assess the impact of tax preference expenditures. Such analysis should assess the economic effect of the policy as reflected in employment, incomes, and other measures of economic activity, as well as the revenue cost relative to the revenue gain to state and local governments. This brief will discuss modeling and analysis options available for these assessments.

To assess the economic and fiscal effects of government tax expenditure policies requires some model of the affected economy that accounts for the linkages between various industries, households, and government. These models can be of varying complexities, both as to their internal construction and their external utilization. They can require varying amounts of input detail and generate varying amounts of output detail. It is safe to say, though, that all such models will generate the economic metrics policymakers are most interested in: employment and income. Below is a discussion of typical off-the-shelf models, static input-output models and dynamic economic models. Other considerations relevant to this type of analysis are also discussed.

Static Input-Output Models

These models are based on data reflecting the inputs from all supplying industries that are necessary to produce a unit of output by a particular industry of interest. The collection of input and output data for all industries is often transformed into tables of "multipliers" that reflect how much of a given change in the economic activity of a particular industry in a particular region will be associated with changes in all the other industries in the region. Users typically provide geographically and industrially detailed information on the initial economic change experienced by particular industries; a change in output (spending), earnings, or employment. The models trace the impacts of changes on directly and indirectly affected industries, and generate estimates of total spending, value added, earnings, and employment in the geographic area for which the model data apply.

RIMS II model

The most widely known of these models is generated by the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System; commonly known as RIMS II. This model is based on national input-output tables that are made region-specific by incorporating place-of-residence personal income

data and place-of-work wage and salary data. Regional multipliers are produced that summarize the impact on all directly and indirectly affected industries, within the region of study, from a change in final demand, employment, or earnings in an industry of interest. The RIMS II model is considered the most simple and inexpensive of these types of models, but provides only a small number of metrics; output, earnings, employment, and value added. However, the model is widely known and used.

IMPLAN model

A second example of this type of model, that is also widely known and used, is available from MIG, Inc (formerly Minnesota IMPLAN Group, Inc.); commonly known as the IMPLAN model (IMpact analysis for PLANing). The IMPLAN model regionalizes input-output accounts and resulting multipliers and extends them to a broader set of transactions in an economy including trade outside the region, final consumers, and non-market transactions such as transfers between institutions and from government to households, utilizing a social accounting matrix approach (an input-output model for more than just transactions between industries). Three types of effects are estimated, the direct effect (the known change being evaluated), indirect effects (the business to business transactions required to satisfy the direct effects), and the induced effects (local spending on goods and services by households satisfying the direct and indirect effects). The IMPLAN model is more extensive and more regionally specific than the RIMS II model, and is provided with a software interface and hardware device for data storage, model manipulation, information input, and output reporting. Consequently, it is more expensive to obtain and maintain than a RIMS II model. While the model has extended capabilities and is widely used, it is still basically an input-output model producing a limited set of metrics.

Both of the models described above are static models of the economy, reflecting relationships between industries and other entities in the economy at the point in time applicable to the data used to build the models. The primary underlying source data can be fairly dated, but both models also incorporate more recent data, albeit date more limited in scope than the primary data, in an attempt to make the model results as current as possible.

These input-output (multiplier) models are not dynamic models of the economy. They are based on a set of relationships between various sectors of the economy at a point in time, and do not account for the effects of wage and price adjustments, labor and population flows, and substitution effects between inputs and outputs as an initiating change ripples through the economy over time.

These models are also primarily designed to evaluate the linkages in an economy associated with a given project or facility, where information about the project's purchasing, employment, or sales are known or reasonably estimated. They are designed to inform the user about the local requirements that will be necessary to

support the project. They are not well suited to generating estimates of new or incremental economic activity that might result from a change in taxing or spending policy that is of interest to this commission, even though they have been applied to those broader applications. The goals of this commission are likely to be best addressed by the type of model discussed below.

Dynamic Economic Models

A dynamic economic model accounts for the input-output relationships between industry sectors discussed above, but also incorporates the effects of wage and price adjustments, consequent substitution effects in production inputs and the consumption of outputs, labor and population flows, and productivity changes as an initiating change ripples through the economy. These models allow the user to model directly what the policy or program in question is actually doing to business costs, or household conditions. The model is then left to determine the amount of economic activity that results from the policy implemented.

REMI model

The most widely known and used model of this type is provided by Regional Economic Models, Inc. and is commonly known as the REMI model. The model incorporates elements of input-output (as discussed above), general equilibrium (long-run supply and demand balancing occurs), econometrics (structural relationships and economic response speeds are estimated statistically), and economic geography (productivity and competitiveness benefits of labor and industry concentrations are accounted for). Changes in the behavior of firms and individuals in response to changes in economic conditions are included, and changing economic responses are calculated over time so that a path of response relative to a baseline is estimated; making the model dynamic in both an economic and temporal sense.

The REMI model is specifically designed for the kind of economic and fiscal policy analysis this commission is exploring. A large number of policy variables can be changed (various business costs including taxes, industry sales, types of demand, personal taxes, demographics, employment etc). Rather than assume that a policy has a given dollar affect on industry spending, demand, or employment as input-output models require, the REMI model allows the user to directly change the variable(s) that the policy is actually affecting, such as business production costs, energy costs, taxes, industry or firm level demand, or personal disposable income, as examples. The direct, indirect, and induced economic activity caused by the policy variable change is traced through the economy over a multi-year time horizon.

The REMI model is considered the best model of its kind, and is essentially in a class of its own with regard to the breadth and depth of its capabilities. Consequently, the REMI model is substantially more expensive than the input-output class of models. However, the State already has access to versions of this model through licenses currently maintained by the Department of Transportation (the LFO was formerly a secondary licensee on the DOTD license), the Division of Administration, and the

Revenue Department. The Revenue Department version specifically includes governmental fiscal analysis capabilities.

Other Considerations

Costs/Resources

The models discussed above are off-the-shelf commercially available models. They are constructed by their respective organizations, with their underlying data typically updated annually. Users have recurring costs to either purchase updated information or maintain a model license that provides data updates, model improvements, and technical support. In addition, some training costs are involved to understand the basic functioning of the model and the effective use of the model.

RIMS II models are very inexpensive at $275 per region (statewide, metro area, parish), and need to be repurchased with each annual data update. The BEA occasionally offers low cost training seminars in Washington, D.C., requiring travel expenses. However, as discussed above, these models are not actually designed for the purposes this commission is considering (but do tend to be used for those purposes).

IMPLAN models are somewhat more expensive, and a variety of data packages are offered. Typical statewide packages run from roughly $3,000 to $7,000 for one user for initial data/software/device, then repurchases of updated data each year. Various training options are available (onsite, offsite, seminars, media etc) with consequent costs. These models also are not actually designed for the purposes this commission is considering (but do tend to be used for those purposes).

REMI models are considerably more expensive, with basic statewide versions costing over $40,000 for the first year license (data/software) with $10,000 per year or more for annual license renewal. Unlimited support is provided, both technical and modeling, but training is required, with consequent travel costs. However, versions of the REMI model are already licensed by the DOA and LDR, with the LDR version having additional government fiscal analysis capabilities.

There are other models commercially available, but these are usually proprietary in the sense that they are developed and used by a private consulting group that contracts to do the desired analysis with its own model. This approach is likely to be fairly expensive, depending on the consultant, the number of analyses desired, and scope of each analysis. It is also possible to construct the equations and obtain/maintain the data for an in-house model with some comparability to these commercially available models. However, such an exercise would be much more expensive and time consuming, and result in much less extensive and less capable models than these commercial versions.

Even when utilizing one of the commercially available models there can be other material costs associated with this type of analysis, depending on the particular policy being evaluated and the scope of the analysis desired. A considerable amount of time and effort may have to be devoted to gathering data from various agencies

and entities. Iowa has a fairly extensive evaluation program in place utilizing the REMI model, and gathers data from numerous state agencies involved in the programs (Vo-Tech system, Labor Dept., Health Dept., Agriculture Dept. etc), as well as industry groups surveying member firms, and utilizes the expertise of university personnel when needed. At a minimum, time and effort is involved within each agency that has to be diverted from other activities. To the extent private data is necessary, explicit costs may also be incurred.

What Is To Be Evaluated

This leads to a consideration of what specific policies/programs are to be evaluated. Louisiana has over 400 such policies/programs. Many of which may be very important to their beneficiaries but which are small enough from a state level perspective to not warrant the effort required to adequately evaluate them. A size threshold may have to be considered, above which evaluation is desired, or a priority order of evaluation established based on a size threshold or some other criteria. It will take a considerable amount of time and effort to evaluate all of the policies/programs currently in place, and new ones are added virtually every year. Some filtering or prioritization protocol is necessary.

From a practical standpoint, it is not likely that analysis on existing programs or newly proposed programs can be carried out in the period immediately preceding and during legislative sessions. Existing staff in both the executive and legislative branches become increasingly devoted to existing session activities, and are not likely to be able to devote material time to this analysis. In the case of odd numbered year sessions, there may be a few hundred bills proposed to modify existing tax expenditures or establish entirely new ones. The ability to subject even a small number of these bills to this analysis is severely limited if not essentially zero. This analysis may be suited only to interim periods, and even then to only a small number of policies/programs.

Actual vs Scenario Evaluations

With programs that have been ongoing for some time, there is actual experience data likely to be available (although it may still require some effort to obtain information useful for evaluation purposes). However, there will always be a number of programs that have not yet ramped up to meaningful participation levels but that might warrant evaluation. In such cases, the lack of actual program data does not have to preclude any evaluation from occurring. Sample scenarios can be established as the input data and evaluated as if they were actual data evaluations. Obviously, the evaluation results cannot be viewed as estimates of actual impact of the policy or program, but sample results can still be informative as to what impacts might occur at different scenario levels. Standard metrics such as cost per job, net fiscal loss ratio, public cost per private value added dollar can still be generated for scenarios and provide some information as to the numeric worth of the policy/program. This kind of ex ante analysis can be carried out for current

programs too young to have much actual data, and for proposed policies/programs before they have been implemented.

Credibility of Analysis

To insure the integrity of the analysis being considered by this commission, it should be carried out by analysts who are neither proponents or opponents of any proposal. Standardized approaches to analyzing all proposals should be utilized. The same model employed for each analysis, and a predetermined set of assessment metrics should be generated for each analysis.

It should be understood that regardless of the level of sophistication of these models, the absolute results based on them are not likely to be reliable enough for specific governmental budget adjustments. The analyses can still be quite informative as to the general affects and costs and benefits of different policy proposals, but primarily by comparing the results of analysis of proposals to each other, not by relying on the specific values of results of individual proposals.

Analysis Already Being Done

It should be noted that the State already engages in a biennial economic and fiscal analysis of the four media incentive programs administered by LED. The last report was issued in April 2011. Preparation of the next report will begin this fall with a report issued in the spring of 2013. In each round of analysis the State has contracted with a private consultant to carry out the analysis, and the IMPLAN model has been typically used for this analysis. The LFO has been involved in the last two rounds of these analyses in the following respects: (a) insuring that reasonable estimates of the total amount of direct film production spending in the state is utilized in the analysis, (b) requiring no manipulation of underlying model parameters (defaults utilized), (c) requiring a simple calculation be applied to distinguish state and local tax receipts (the model only provides a combined result), and (d) requiring that program incentive costs be reported (the amount of credits issued by LED and the amount realized by LDR).

These reports typically contain substantial discussion of the industry in Louisiana and the U.S., and a more brief discussion of state economic and fiscal impacts. The analysis includes program participation data (project counts, spending, direct employment etc) as well as model outputs of total economy-wide employment, earnings, and value added. Direct, indirect, induced effects can be discussed, and the prior three years of activity have been analyzed. Tables are provided that summarize participation, economic effects/benefits, and governmental receipts and costs.