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Estimation and other considerations

Dimension compendium and a glance at
project analysis

Outlook

- Validating data and model
- Time lag of micro databases
- Aging data
- Other use for model output
- The thing in common

Recap of sampling

- Creating a Sample
- Macro Modeling
- Micro Modeling

Validating data and model

- Data:
 - Variance tests cannot realistically be done on every variables
 - Imputation will be needed to help clean the data
 - Simple tests such as : Min, Max, comparison of aggregate values over time, etc.
- Model:
 - Compare results on similar or dissimilar **dimensions**
 - Example: Create average tax rates of small and large firms (assuming a different statutory tax rate)

Validating data and model

Example:

- One good way to clean the data is to sort the database on the variable analysed.

CORP_NAME	WEIGHT	INDUSTRY	ASSET
GFS Corporation Inc	8.3	02. Manufacturing	999,962,344,024
QCP Corporation Inc	8.3	12. Oil, Gas	59,084,834
IKB Corporation Inc	8.3	10. Other Finance	51,473,460
GLE Corporation Inc	8.3	12. Oil, Gas	50,652,449
JXM Corporation Inc	8.3	13. Mining	46,333,786

Time lag of micro databases

- How to deal with the time lag that (inevitably) occurs when dealing with micro data?
 - Best alternative is to find ways to shorten the capture process
 - Updating data with current information (receipts)
 - If analysis is specific enough, get information from the industry or your revenue agency.
 - Sectoral updates give better results. Appropriate **dimensions** need to be available.
 - **Do post adjustments of simulation results**

Aging micro data

- Micro data can be aged prior to simulation
 - Inflation adjusted
 - GDP adjusted
 - Other
- Ideally, use disaggregated data if available from forecasting group (use of **dimensions** is key)
- Important to validate results on macro variables

Aging micro data

- Can use a mix of indexes to age data
 - GDP Economic activity
 - Price index on specific types of investment or sectors (again, **dimensions** are key)
- Aging micro data can be tricky and difficult, especially if many variables of many types are involved
 - Level, price, income, stock, etc

Forecasting tax changes

- Aging results using macro variables
Doing post adjustments
 - Easier to do and understand (and thus explain)
 - Bias are easier to identify
 - Turnover time is short
 - **Dimensions** will help improve results

Other use for model output

- Evaluating Average Effective Tax Rates (AETR)
 - Impact of tax changes on AETRs
 - Profitable corporations (**Dimensions**)
 - Comparing domestic AETRs with another country (removing data bias - simulation on same database of different tax systems)
- Costing Tax incentives

Other use for model output

- Help identify input errors in database
 - Doing a simulation of current system on current data should help identify major errors
- Micro modelling allows doing more detailed modelling on identified sectors of the economy (e.g. Banks) - **Dimensions**

The thing in common

- **DIMENSIONS**

- When creating a dataset, it is crucial to seriously look at the dimensions you will need to:

- Validate your data
- Validate your model
- Compare with other source of information (e.g. OECD)
- Do forecasting

Project analysis

- Industry
 - Evaluate rate of return on investment
- Policy makers
 - Analyse impact of fiscal parameters on specific projects
 - Measure attractiveness of national fiscal position for specific investments (international comparison)

Project analysis

- Most project analysis are done in a spreadsheet environment
- Can involve complex interactions
- Risks
 - Variability of parameters over time (such as prices)
 - Opaque coding language

Project analysis

- Minimizing spreadsheet risks
 - Documentation
 - Monte-Carlo Simulation
- Monte-Carlo Simulation
 - INPUT: Distribution pattern of uncertain parameters
 - PROCESS: Multiple runs (iterations)
 - OUTPUT: Mean and distribution profile