

**REMI TAX-PI:
DYNAMIC FISCAL ANALYSIS
OF STATE POLICIES
FTA REVENUE ESTIMATING CONFERENCE 2019
SOLUTION SERIES**

Agenda



- State Policy Objectives
- About REMI
- About Tax-PI
- Uses in State Policy Analysis
- Model Demonstration

State Policy Objectives



- State and local governments have a dual objective:
 - Well-being of residents
 - Management of the budget and fiscal considerations
- Thus, policy decisions need to take into account both socioeconomic and fiscal effects

About REMI



REMI's 39-year history of rigorous academic research and software development has led to the development of the the industry standard in macroeconomic research methodology:

Input-Output

Close analysis of inter-industry relationships

Econometrics

Advanced statistical analyses underpinning the model

General Equilibrium

Estimate of long-run stability of the economy allows for analysis of policy decisions

Economic Geography

Effects of geographic concentration of labor and industry



Integrated REMI economic modeling approach



DECD

State of Connecticut
Department of Economic and
Community Development



Iowa Department of
REVENUE



LOUISIANA
DEPARTMENT of REVENUE



Division of
the Budget



About Tax-PI



Tax-PI is the only commercially available dynamic macroeconomic and fiscal impact analysis tool.

Tax-PI allows users to understand the deep linkages and relationship between a budget and its economic foundation.

Tax-PI is uniquely customizable to your state

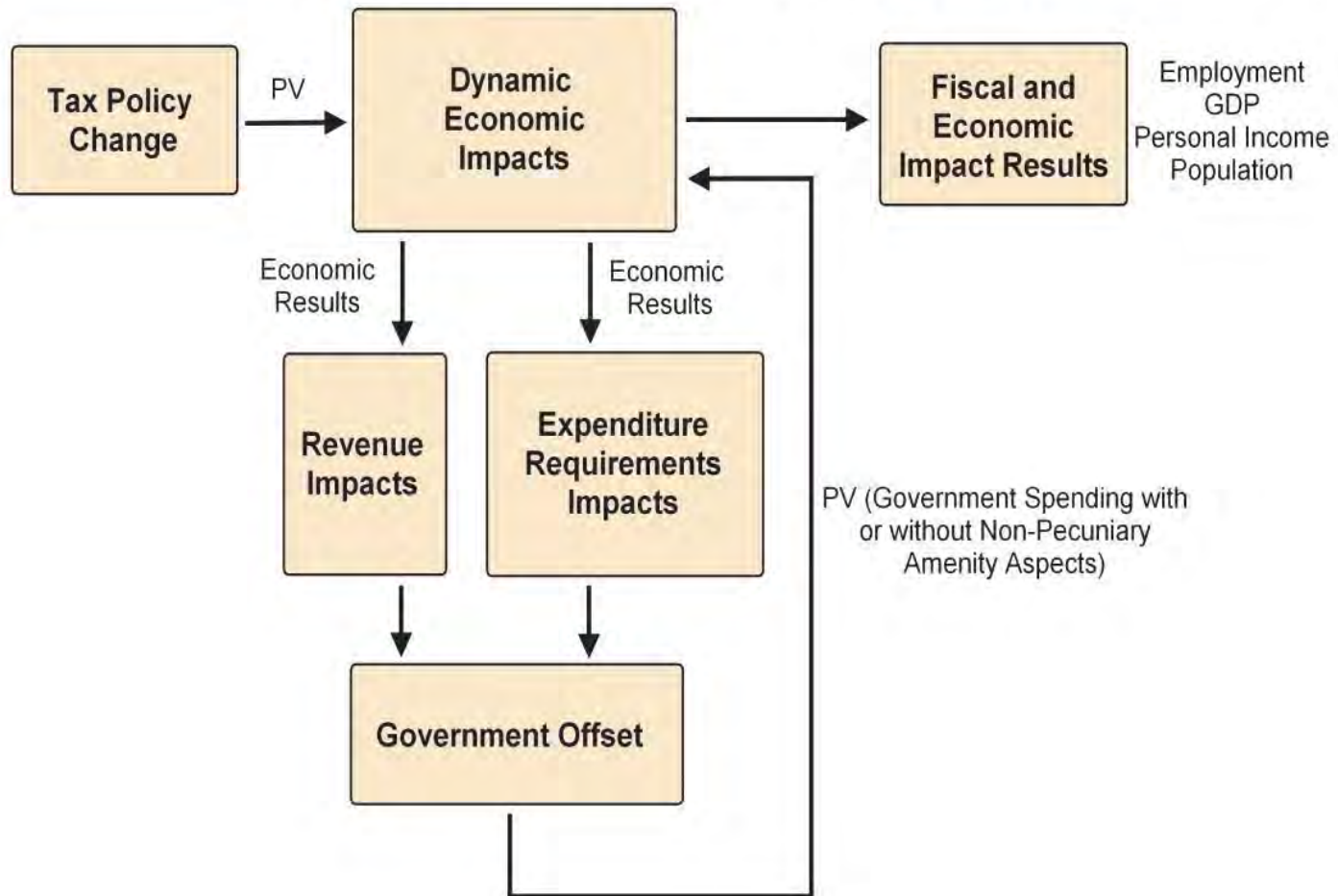
User-defined revenue and expenditure categories

Automatic budget-balancer: demand- or revenue-driven

Accommodates state's economic, demographic, fiscal projections

About Tax-PI

Tax-PI Model Structure Overview



About Tax-PI



User Calibration

- State Expenditures
- State Revenues

Build Simulation

- Economic development
- Tax policy

Dynamic Results

- Demographic
- Economic
- Fiscal

Uses in State Policy Analysis



- Dynamic tax analysis
 - Arkansas fiscal notes
- Fiscal impacts of non-tax policy
 - Amazon HQ2
- Fiscal resiliency
 - Wyoming tax structure

Dynamic Tax Analysis



Dynamic Scoring Analysis of Tax Proposals

- Arkansas Bureau of Legislative Research
- Several different tax proposals analyzed
- Tax proposals with largest static impact were income tax rate reductions

Proposal & Methodology



- Personal Income Tax Proposal
 - Reduce top marginal rate from 6.9% to 6%
 - Static fiscal impact of \$180 million

- Methodology
 - Modeled as changes to disposable income
 - Modeled as changes to business production costs
 - Businesses can lower labor costs without hurting employees' disposable income

Disposable Income Results



Category	Units	2019	2020	2021	2022	2023	Average
Population	Individuals	1,108	1,972	2,637	3,107	3,417	2,448
Total Employment	Individuals	1,440	1,671	1,713	1,631	1,507	1,593
Gross State Product (Value-Added)	Nominal Millions	\$103.8	\$124.4	\$131.9	\$130.5	\$125.0	\$123.1
Output (Industry Sales)	Nominal Millions	\$172.1	\$205.6	\$217.0	\$213.6	\$203.5	\$202.4
Disposable Personal Income	Nominal Millions	\$250.4	\$273.9	\$288.0	\$294.9	\$296.4	\$280.7
Government Revenue	Nominal Millions	-\$171.6	-\$170.3	-\$169.4	-\$169.0	-\$168.8	-\$169.8
Government Expenditure	Nominal Millions	\$2.1	\$3.8	\$5.2	\$6.3	\$7.0	\$4.9

Production Cost Results



Category	Units	2019	2020	2021	2022	2023	Average
Population	Individuals	727	1,456	2,145	2,755	3,266	2,070
Total Employment	Individuals	1,364	1,919	2,279	2,480	2,580	2,124
Gross State Product (Value-Added)	Nominal Millions	\$91.2	\$134.8	\$166.9	\$189.6	\$205.1	\$157.5
Output (Industry Sales)	Nominal Millions	\$158.0	\$234.6	\$290.7	\$330.0	\$356.8	\$274.0
Disposable Personal Income	Nominal Millions	\$58.0	\$91.8	\$119.8	\$142.4	\$159.4	\$114.3
Government Revenue	Nominal Millions	-\$175.5	-\$173.5	-\$171.8	-\$170.5	-\$169.4	-\$172.2
Government Expenditure	Nominal Millions	\$1.5	\$3.1	\$4.7	\$6.2	\$7.6	\$4.6

Fiscal Impact Analysis



- Fiscal impacts of non-tax policy
 - E.g., economic development incentives
- Contracted with Empire State Development to analyze economic, fiscal impacts of Amazon HQ2 in NYS
 - Impacts quoted by NYS Gov. Cuomo, NYC Mayor de Blasio in press release
- Used data on anticipated construction spending, employment, compensation, incentives

Results



Category	Units	2019	2023	2027	2031	2043
Total Employment	Individuals (Jobs)	2,766	38,526	66,658	88,499	107,183
Total Tax Revenues	Millions of 2019 Dollars	10.8	194.6	408.3	599.9	969.6
Total Incentives + Grants	Millions of 2019 Dollars	45.8	141.6	185.5	33.7	0

Fiscal Resiliency



The reduction of potential budget deficits in the face of an unforeseen event

- Resilient to:
 - National Recessions
 - Reductions in output and stock market declines may alter regional positions
 - E.G. DC housing prices fell less than CA during the national recession.
 - Specific Revenue Shocks
 - Industry: Vulnerable to industry shifts
 - E.g. Houston is dependent on oil production/refining
 - Customer: Vulnerable to change in outlays
 - E.g. D.C. metro is reliant on federal contracting
 - Specific Tax
 - E.g. California is reliant on capital gains tax

Fiscal Resiliency

- Common methods to prepare for shocks:
 - Leverage periods of economic growth by building budgetary reserves
 - Decrease reliance on volatile revenue sources

- Decrease Reliance on Volatile Revenue Sources
 - Severance Taxes on Oil and Mineral Resources along with Corporate Taxes are the most volatile sources of state revenue
 - State budget volatility varies greatly (Pew Trusts)
 - Highest Volatility – Alaska, Wyoming, and North Dakota
 - Lowest Volatility – South Dakota, Kentucky, and Maryland

What happens in Wyoming if there is a negative production shock to oil prices?

Fiscal Resiliency



- Diversifying tax revenue via the introduction of a Personal Income Tax*

- Methodology
 - \$334M increased revenue from new PIT
 - Levied on Personal Income minus transfer payments
 - \$334M decreased revenue from severance taxes
 - Oil & gas extraction

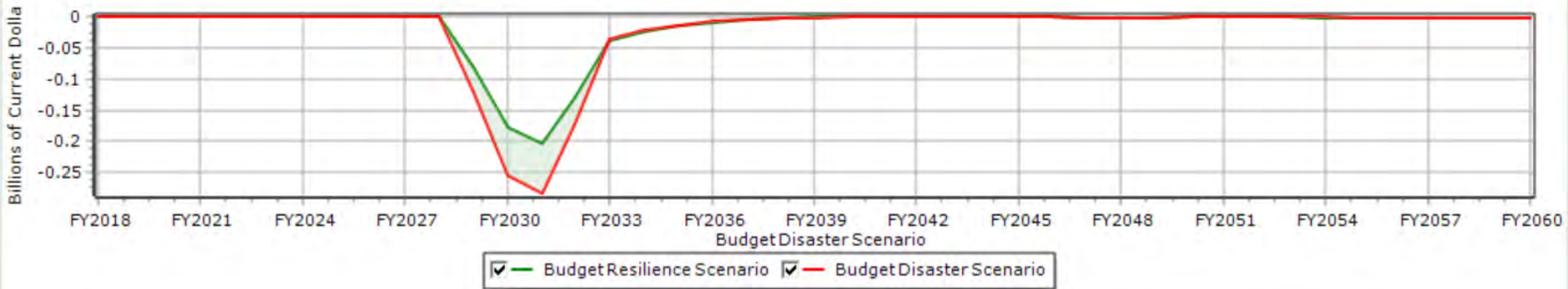
Fiscal Resiliency



Resilience Analysis

Total Revenues

Category	Revenues	Comparison Type	Comparison Forecast
Total Revenues	Total	Differences	<Underlying Forecast>



**Total Maximum
Loss Potential**

\$0.912 Billion

**Actual Loss in
Resilience Scenario**

\$0.680 Billion

**Avoided Loss Due to
Resilience Measures**

\$0.232 Billion

**Resilience Loss
Reduction Potential**

25.41%