REMI TAX-PI: DYNAMIC FISCAL ANALYSIS OF STATE POLICIES

FTA REVENUE ESTIMATING CONFERENCE 2019

SOLUTION SERIES

what does REMI say? sm

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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 Tax-PI

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

General Equilibrium

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

Econometrics

Advanced statistical analyses underpinning the model

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

ILLINOIS REVENUE

BND Bank of North Dakota

Kansas Department of Revenue

Iowa Department of REVENUE

Wyoming Department of Administration & Information

LOUISIANA DEPARTMENT of REVENUE

NEW YORK STATE OF OPPORTUNITY
Division of the Budget

FLORIDA DEPARTMENT OF REVENUE

About Tax-PI

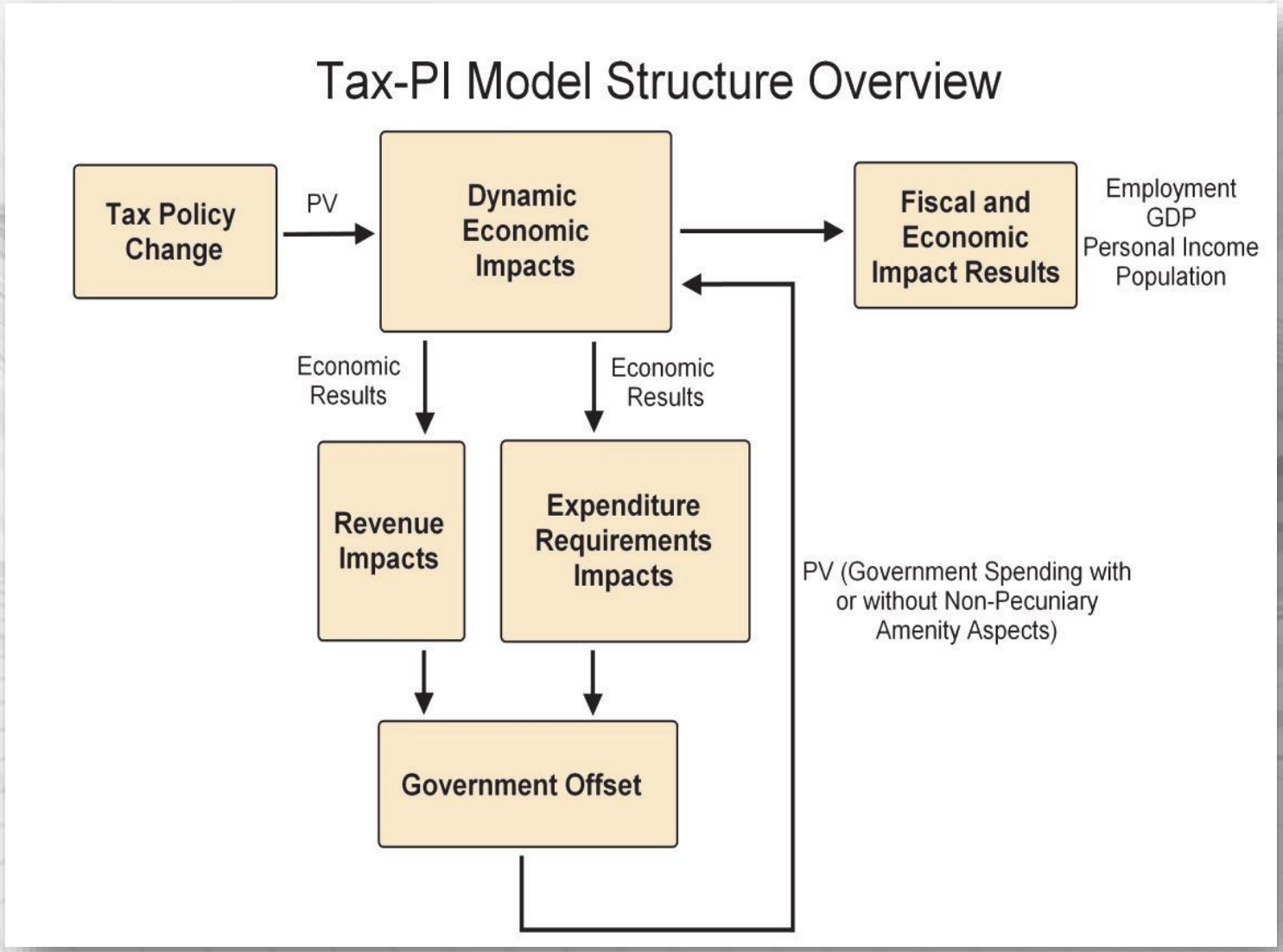
Tax-PI is the only commercially available dynamic macroeconomic and fiscal impact analysis tool.

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

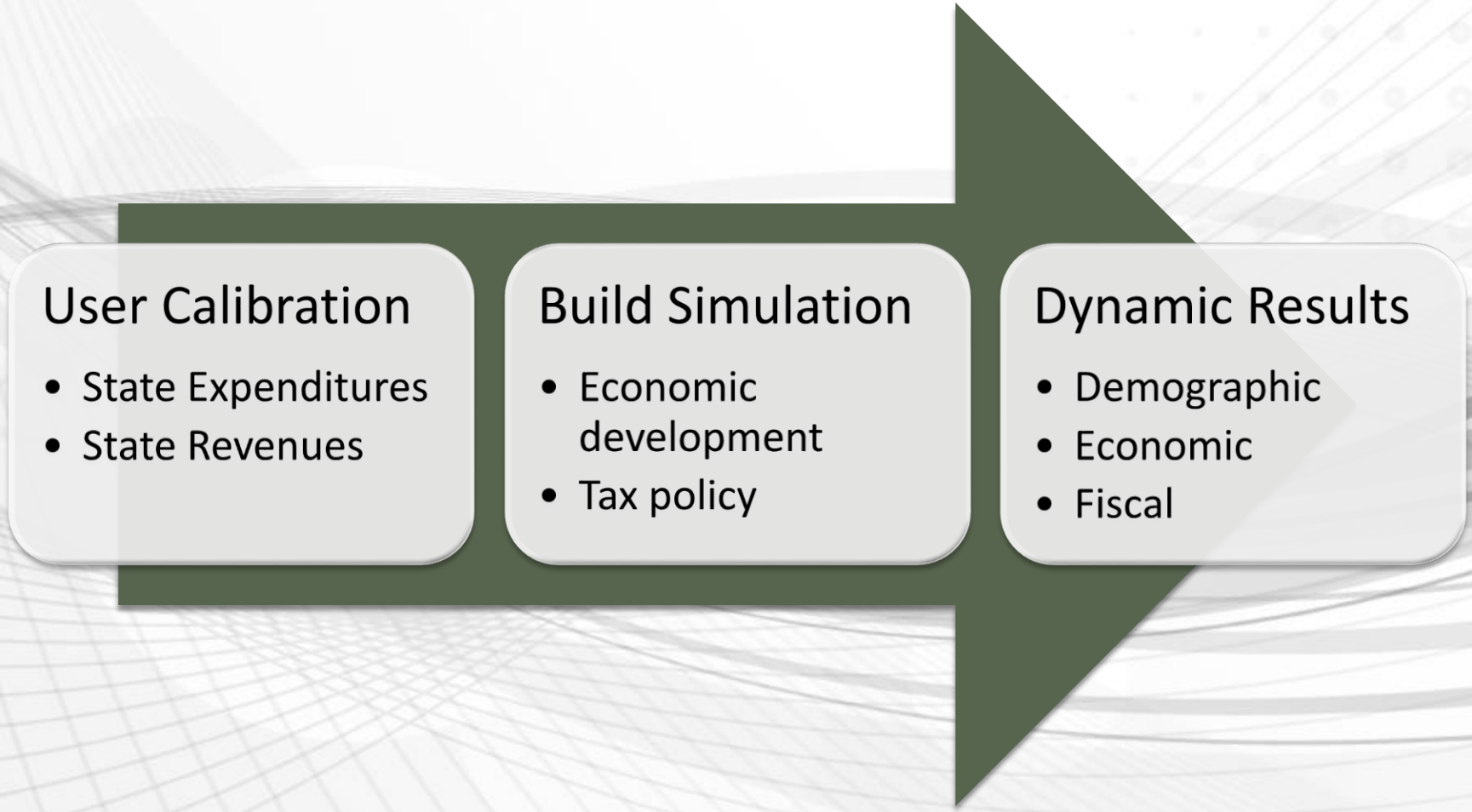
Tax-PI is uniquely customizable to your state

- 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
Tax Policy Change
PV
Dynamic Economic Impacts
Fiscal and Economic Impact Results
Employment
GDP
Personal Income
Population
Economic Results
Economic Results
Revenue Impacts
Expenditure Requirements Impacts
PV (Government Spending with or without Non-Pecuniary Amenity Aspects)
Government Offset

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

REMI Tax-PI

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

Fiscal Resiliency

- 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

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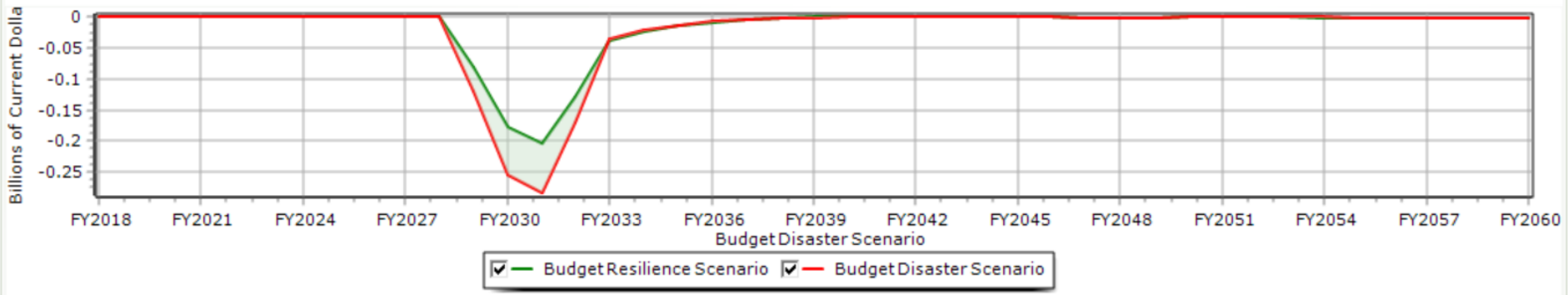
Resilience Analysis

Total Revenues

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



Total Maximum Loss Potential	Actual Loss in Resilience Scenario	Avoided Loss Due to Resilience Measures	Resilience Loss Reduction Potential
$0.912 Billion	$0.680 Billion	$0.232 Billion	25.41%