

TRAINING: MODELING IN TAX-PI

Modeling in Tax-PI: Overview



- Budget calibration
 - Economic drivers of revenue, expenditures
 - Interaction between the budget and the economy
 - Balanced budget
 - Unbalanced budget
- Modeling in Tax-PI
 - Analysis of incentives
 - Budget forecasting
 - Dynamic fiscal notes

Budget Calibration



Untitled.rwb - Tax-PI v2.0

Budget Calibration - CT OFA FY16-17 Backup

Options

Start of Fiscal Year: July
 Units: Nominal \$ (000s)

Expenditures Determined By: Revenues Demand

Budget Data

Enter actual or forecasted budget data. The budget will be projected forward using the last year of entered data and an indicator that is selected from the model results.

Revenues

Display Years: 2014 to 2017

Revenues | Expenditures

Revenue Name	FY2014	FY2015	FY2016	FY2017
Personal Income Taxes	9456142	9748600	9834400	10357200
Sales & Use Tax	4123470	4251000	4121065	4084665
Corporation Tax	608481	627300	902200	910700
Public Service Tax	298760	308000	308000	316500
Inheritance & Estate Tax	172078	177400	173400	174700
Insurance Companies Tax	230084	237200	243800	24600
Cigarettes Tax	326599	336700	361200	363300
Real Estate Conveyance Tax	188859	194700	194700	200800
Oil Companies Tax	0	0	0	0
Alcoholic Beverages Tax	59364	61200	61700	62100
Admissions & Dues Tax	37539	38700	38300	39600
Health Provider Tax	465503	479900	676900	683900
Misc. Tax	20273	20900	20800	21300
Other Revenues	1108904	1143200	1174313	1183475
Special Transportation Fund (\$	1381335.29	1424057	1468100	1596900
Mashantucket Pequot and Moh	58147.62	59946	61800	61800
Regional Market Operating Fur	1034.99	1067	1100	1100
Banking Fund	28227	29100	30000	30200
Insurance Fund	75224.955	77551.5	79950	81400

Revenue Details

Indicator: Policy Variable | Rate Info

Corporation Tax

Economic Indicator: Value-Added

Time Series Include All

Details	Units	All Years
Forestry and logging; Fishing, hunting, ar	Percent	100
Agriculture and forestry support activities	Percent	100
Oil and gas extraction	Percent	100
Mining (except oil and gas)	Percent	100
Support activities for mining	Percent	100
Utilities	Percent	100
Construction	Percent	100
Wood product manufacturing	Percent	100
Nonmetallic mineral product manufacturin	Percent	100
Primary metal manufacturing	Percent	100
Fabricated metal product manufacturing	Percent	100
Machinery manufacturing	Percent	100
Computer and electronic product manufac	Percent	100
Electrical equipment and appliance manuf.	Percent	100
Motor vehicles, bodies and trailers, and p	Percent	100

Add Revenue

OK Cancel

Budget Calibration: Economic Drivers



Budget Calibration - CT OFA FY16-17 Backup

Options
Start of Fiscal Year: July
Units: Nominal \$ (000s)
Expenditures Determined By: Revenues Demand

Revenues
Display Years: 2014 to 2017

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Revenue Details
Corporation Tax

Economic Indicator: Value-Added

Time Series Include All

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Agriculture and forestry support activities	Percent	100
Oil and gas extraction	Percent	100

Revenue Details
Corporation Tax

Economic Indicator: Value-Added

Time Series Include All

Details	Units	All Years
Forestry and logging; Fishing, hunting, ar	Percent	100
Agriculture and forestry support activities	Percent	100
Oil and gas extraction	Percent	100

Expenditures and revenues get driven by logical indicators

Budget Calibration: Associated Policy Variables



Budget Calibration - CT OFA FY16-17 Backup

Options
Start of Fiscal Year: July
Units: Nominal \$ (000s)
Expenditures Determined By: Revenues (selected), Demand
Settings... (two buttons)

Revenues
Display Years: 2014 to 2017

Revenue Name	FY2014	FY2015	FY2016	FY2017
Personal Income Taxes	9456142	9748600	9834400	10357200
Sales & Use Tax	4123470	4251000	4121065	4084665
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Policy Variable
Select a policy variable to associate with the budget item. When a policy variable change is made to this budget item, the associated model variable will automatically be changed. Select a variable that best represents how this budget category works. For example, sales tax on consumer goods could be well represented by the Consumer Price Index.

Revenue Details
Corporation Tax
Policy Variable: Production Cost
 Time Series Include All

Details	Units	All Years
Forestry and logging; Fishing, hunting, ar	Percent	100
Agriculture and forestry support activities	Percent	100
Oil and gas extraction	Percent	100
Mining (except oil and gas)	Percent	100
Support activities for mining	Percent	100
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Construction	Percent	100
Wood product manufacturing	Percent	100
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Machinery manufacturing	Percent	100
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Electrical equipment and appliance manuf.	Percent	100
Motor vehicles, bodies and trailers, and p	Percent	100

- Budget changes will be reflected by policy variable changes in the model

Indicator | **Policy Variable** | **Rate Info**

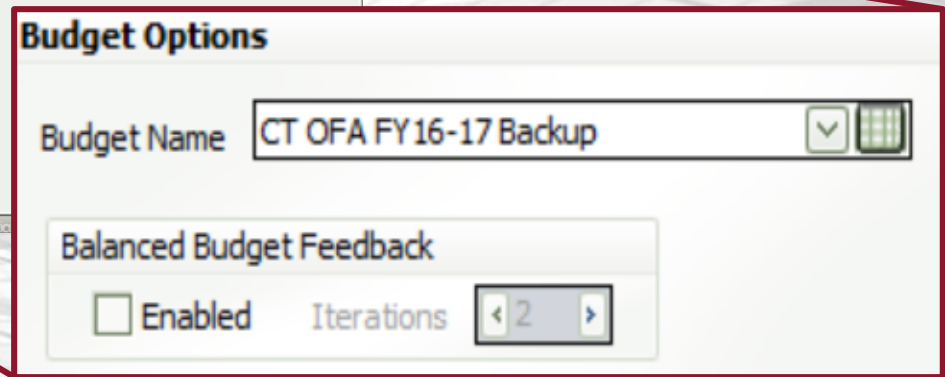
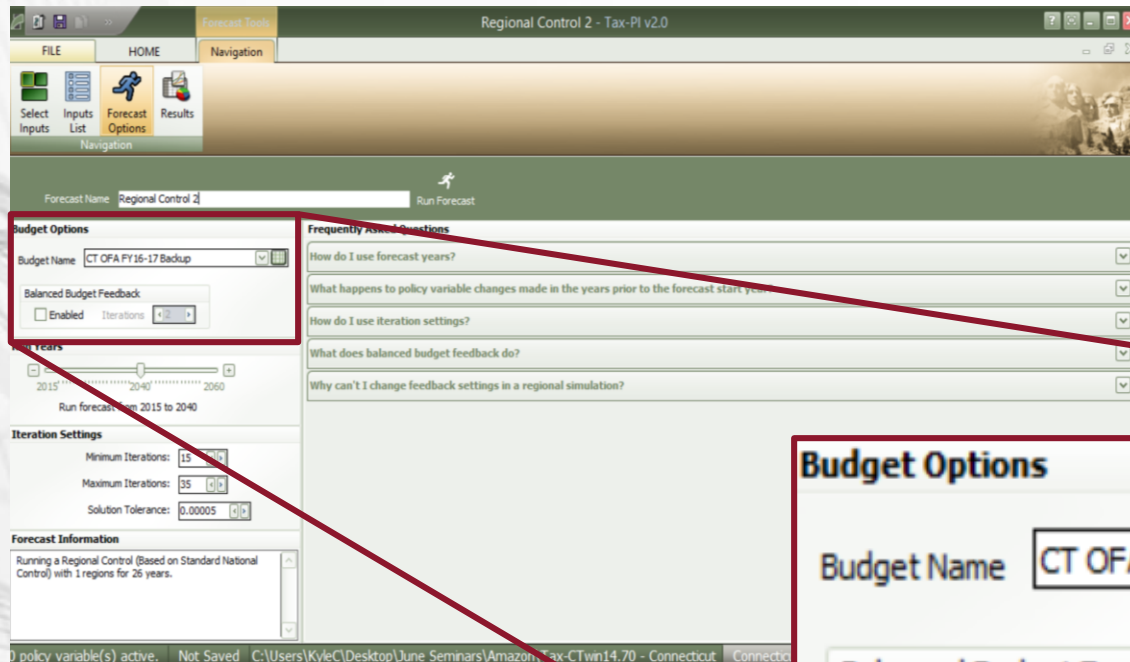
Revenue Details
Corporation Tax

Policy Variable: Production Cost

Time Series Include All

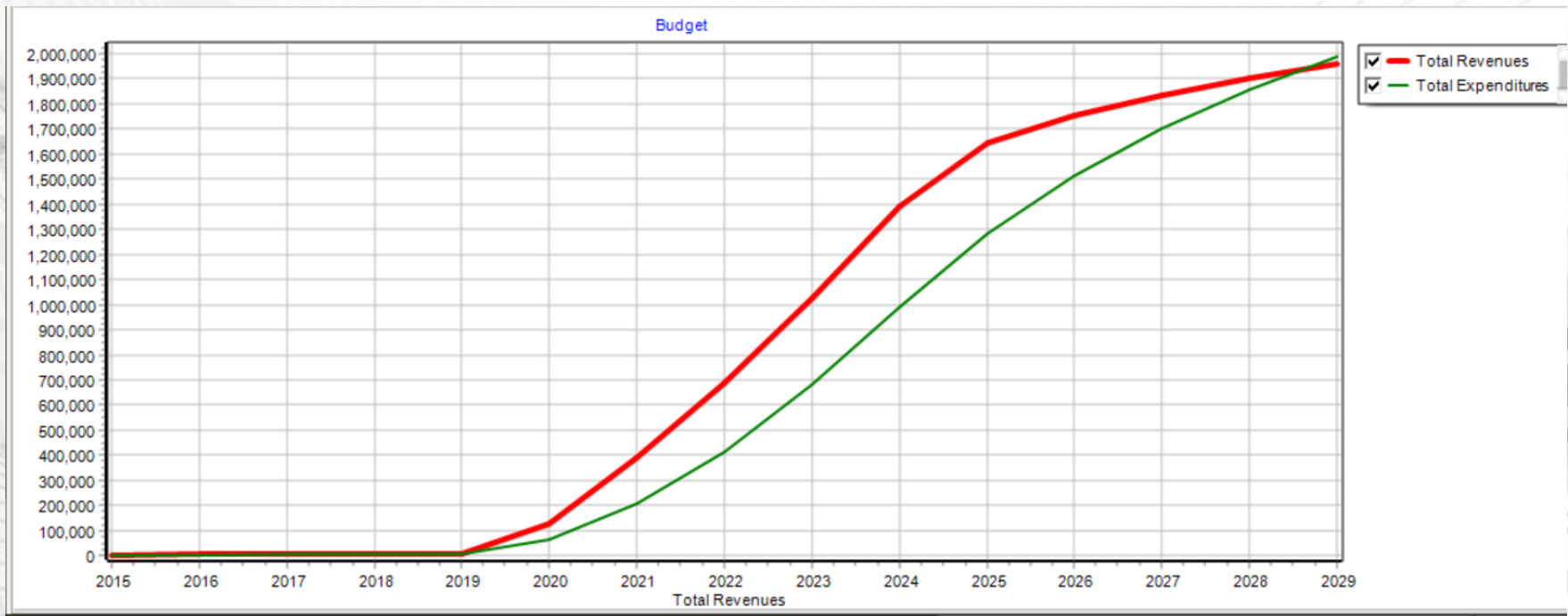
Details	Units	All Years
Forestry and logging; Fishing, hunting, ar	Percent	100
Agriculture and forestry support activities	Percent	100
Oil and gas extraction	Percent	100

Budget Calibration: Expenditures Determined by Demand



- Without a balanced budget
 - Expenditures determined by demand shows forecasted expenditure needs

Budget Calibration: Expenditures Determined by Demand



Modeling in Tax-PI



- Analysis of Incentives
 - Big River Steel
- Budget Forecasting
 - Amazon HQ2 example
- Dynamic Fiscal Notes
 - Utah Manufacturing Equipment Sales Tax Exemption

Modeling in Tax-PI: Analysis of Incentives



- Big River Steel
 - Modeling project
 - Estimating incentive amount
 - Economic impact
 - Fiscal impact
 - Economic “return on investment”

MODELING THE BIG RIVER STEEL PROJECT IN REMI

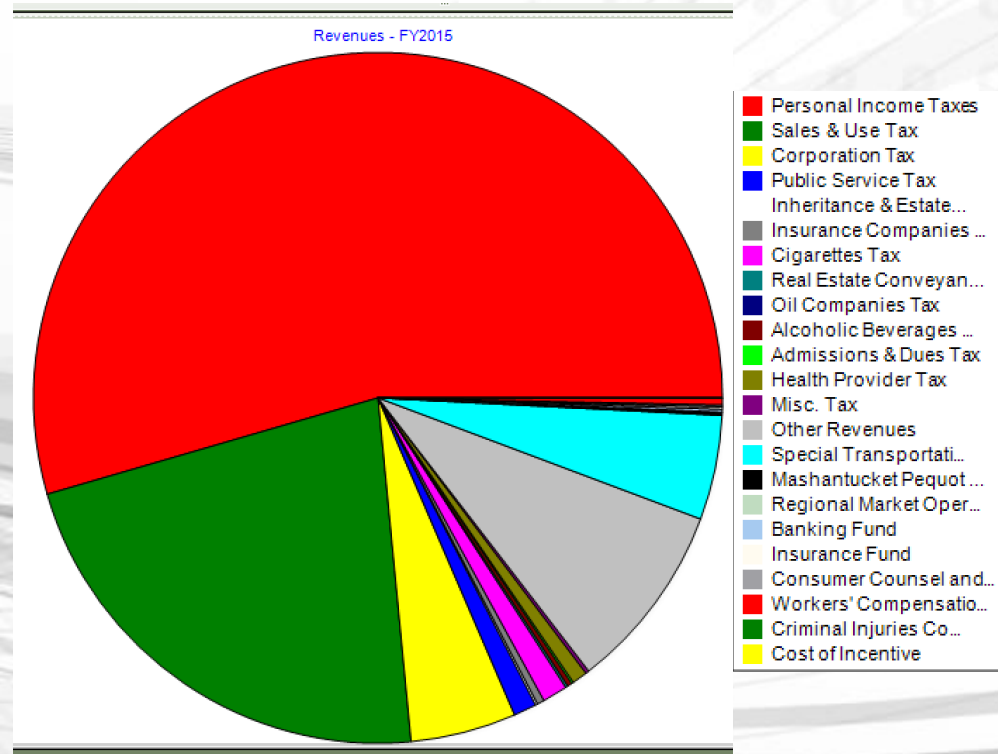
Inputting the information about this project into Tax-PI requires four main sets of variables. Those are the initial construction and capital investment to build the plant, its long-term operations over its project lifecycle, the cost of the state to pay back its bonds, and the offset of the incentives offered the direct project. Each of these goes into the model in their own way and has their own influence over the eventual net economic and fiscal impact. This table describes how each of them went into the model before generating results:

Category	Specific Item	Policy Variables
Construction	<ul style="list-style-type: none"> • 2,000 construction jobs for 20 months • \$1.1 billion total capital investment 	<ul style="list-style-type: none"> • Annualized industry employment in construction • Upward adjustment of the baseline productivity
Operations	<ul style="list-style-type: none"> • 525 fulltime jobs at operation • \$75,000 average annual wages 	<ul style="list-style-type: none"> • 525 fulltime jobs in primary metal product manufacturing • Adjusted average wages to match the \$75,000 required • Adjusted productivity to keep real output of the plant constant
Bond Repayment	<ul style="list-style-type: none"> • Bond repayment schedule for the state of Arkansas for the \$125 million 	<ul style="list-style-type: none"> • Negative government spending to adjust for bond repayment
Incentives	<ul style="list-style-type: none"> • Education and training programs • Arkansas Advantage Program exempting direct taxes on the project for creating net new payroll in the state • PILOT program to lower regular <i>ad valorem</i> assessment to 35% of the normal amount • Tax exemptions on purchases made for construction materials, machinery, and equipment for operations • Exempted sales tax revenue from the purchase of natural gas and electricity • Recycling equipment tax credit to reduce net tax burden on Big River 	<ul style="list-style-type: none"> • Demand for education and training services in Arkansas • Less corporate income to the state for the exemption • Reduced tax revenue in <i>ad valorem</i> categories for the state • Reduced tax revenue for the state over capital investments • Reduced revenue to the state for less fuel/energy tax income • Opportunity cost of the lost revenue to tax credits

Modeling in Tax-PI: Budget Forecasting



- Amazon HQ2 example: what to expect from a new development
 - ▣ Jobs and consumption increase revenues
 - ▣ Increased population necessitates larger expenditures



Modeling in Tax-PI: Dynamic Fiscal Notes



- Static Fiscal Note
 - ▣ Direct revenue and expenditure impacts

- Dynamic Fiscal Note
 - ▣ Effect of economic response on budget
 - ▣ Budget feedback effect on economy

FISCAL NOTE				No Bill Number		2013 Interim	
SHORT TITLE: Sales Tax Exemption for Manufacturing Equipment Purchases, LT 3 Year Life							
SPONSOR: No Sponsor				Note: Subject to change during the normal fiscal noting process			
CURRENT PRACTICE STATE GOVERNMENT STATIC IMPACT (UCA 36-12-13(2)(b))							
Enactment of this bill reduces sales tax revenue to the General Fund by \$17,293,000 in FY 2015 and by \$18,158,000 in FY 2016. The bill also reduces Restricted Revenue (earmarks) by \$12,707,000 in FY 2015 and \$13,342,000 in FY 2016.							
Revenues		FY 2014	FY 2015	FY 2016			
General Fund, static			\$ (18,158,000)	\$ (18,158,000)			
General Fund, One-time, static			\$ 865,000				
Restricted Revenue, static			\$ (12,707,000)	\$ (13,342,000)			
Total			<u>(30,000,000)</u>	<u>(31,500,000)</u>			
Appropriations		FY 2013	FY 2014	FY 2015			
Total		\$0	\$0	\$0			
		\$0	\$0	\$0			
NET STATE GOVERNMENT STATIC IMPACT							
STATIC		FY 2014	FY 2015	FY 2016			
Net All Funds (Rev -Approp.) (static)		0	<u>(30,000,000)</u>	<u>(31,500,000)</u>			
Net General & Education Funds (Rev.-Approp.) (static)		0	<u>(17,293,000)</u>	<u>(18,158,000)</u>			

DYNAMIC FISCAL NOTE							No Bill Number		2013 Interim	
SHORT TITLE: Sales Tax Exemption for Manufacturing Equipment Purchases, LT 3 Year Life										
SPONSOR: No Sponsor					Note: Subject to change during the normal fiscal noting process					
SCENARIO 4 - COMPETITIVE EFFECTS WITH BEHAVIORAL RESPONSE & SCENARIO 3							SCENARIO 4			
Revenue Dynamic Impact		FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019			
General Fund/Education Fund, Static		(\$30,000,000)	(\$31,500,000)	(\$33,075,000)	(\$34,729,000)	(\$36,465,000)	(\$38,285,000)			
General Fund/Education Fund, Dynamic		\$ (22,935,000)	\$ (20,834,000)	\$ (18,508,000)	\$ (15,685,000)	\$ (14,018,000)				
Jobs		1,437	2,059	2,664	3,287	3,681				
Wages		\$78,500,000	\$121,000,000	\$166,500,000	\$217,500,000	\$258,500,000				
Gross Domestic Product (GDP) (millions)		\$177,500,000	\$268,000,000	\$366,000,000	\$478,500,000	\$564,000,000				

Modeling in Tax-PI



- Important Considerations
 - What assumptions are made about both the budget and about the components of a simulation
 - The way the unique characteristics of a state budget affect growth
 - The way the budget dynamically interacts with the economy