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Dynamic Revenue Analysis: Experience of the States

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Introduction

- Do tax changes affect economic activity? Do these economic changes then result in changes in state tax revenues?
- These are some of the questions that dynamic revenue analysis or “dynamic scoring” attempts to answer.

Overview

- Theory
- Tax policy and economic growth: empirical evidence from the states
- Use of dynamic modeling by the states
  - Overview
  - Case Study Results
- Conclusion

Supply-Side Links to Dynamic Revenue Analysis

- Perhaps no economist is as associated with supply-side economics and the “dynamic effects” of tax changes as Arthur Laffer…

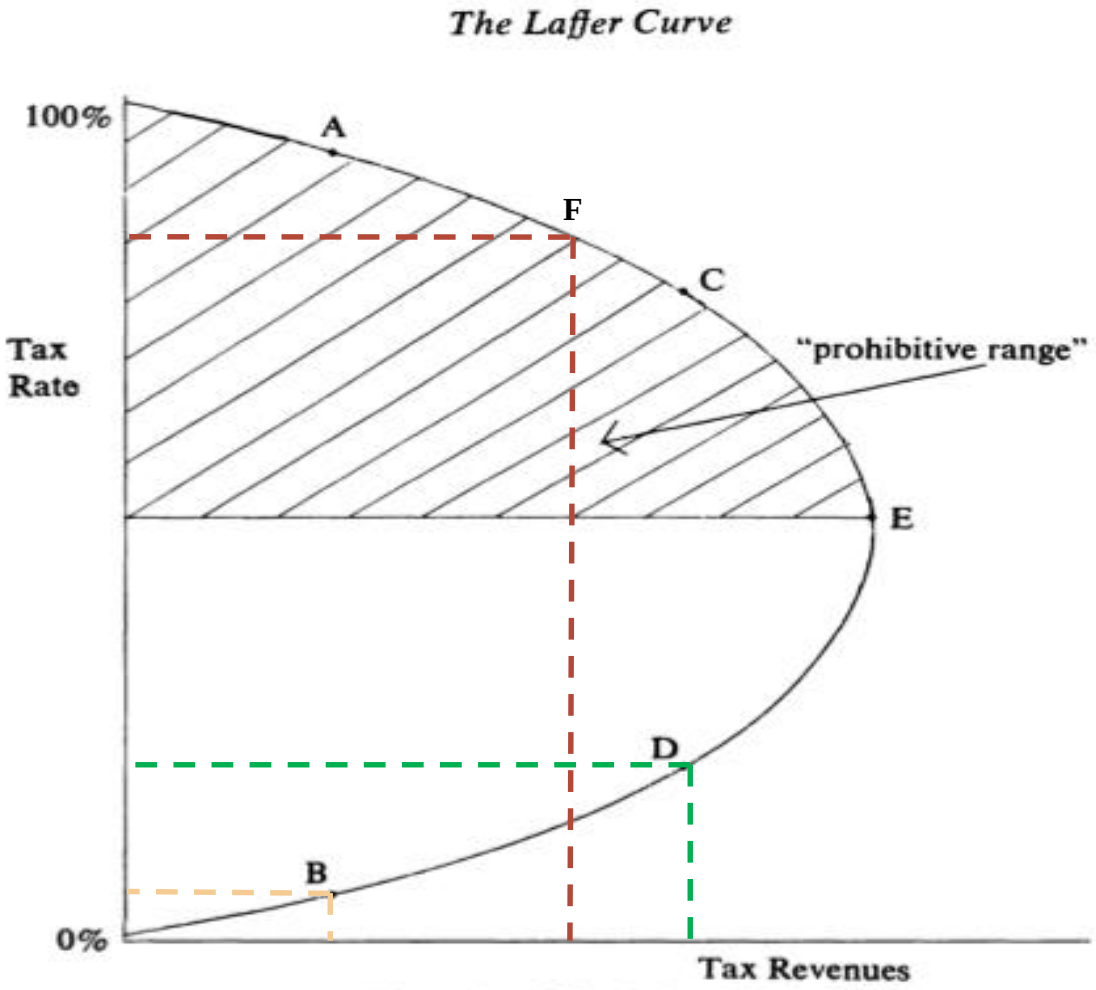
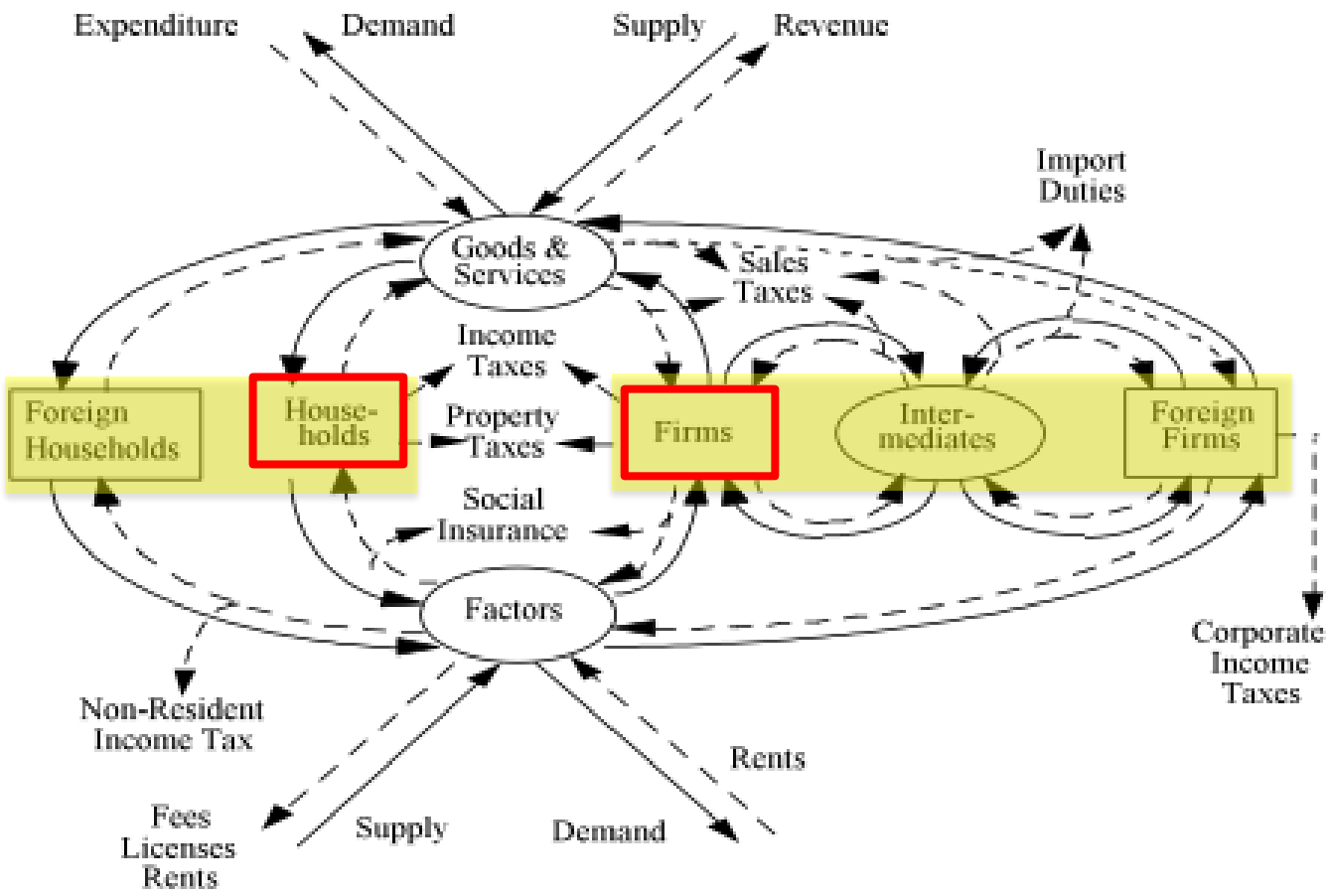


Figure 1: *The Laffer Curve*



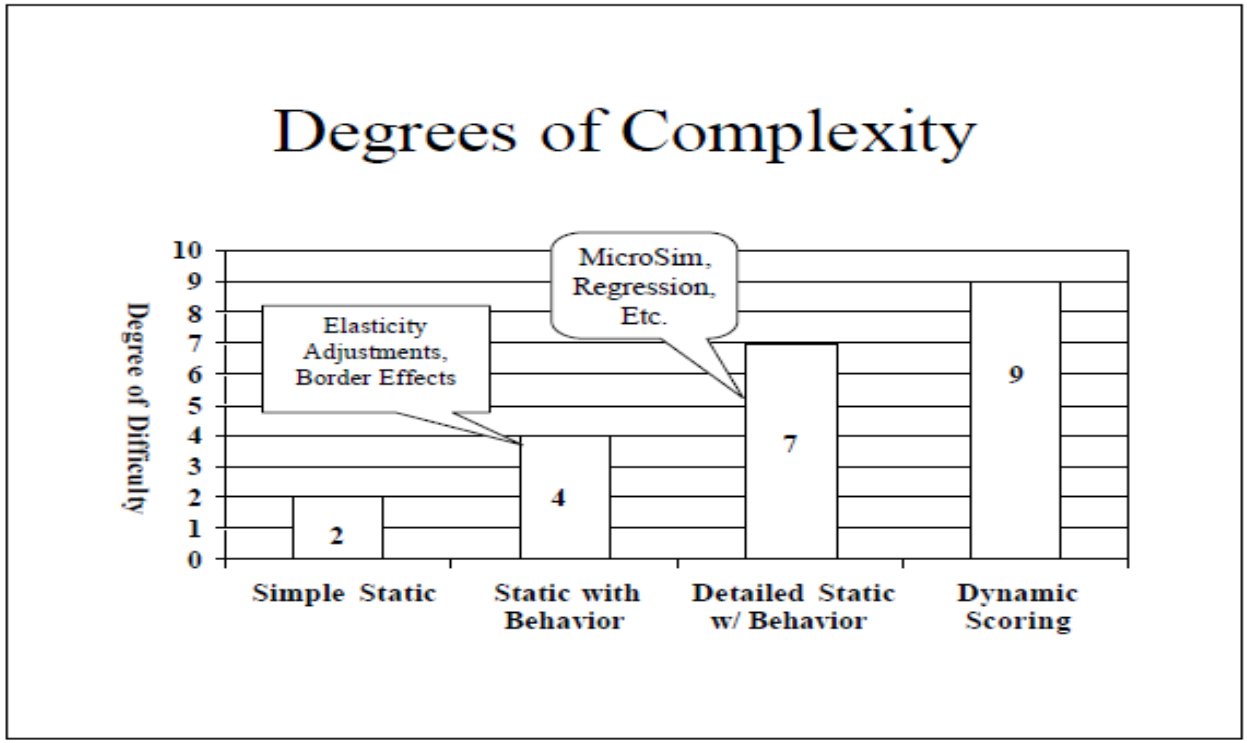
Source: Berck, Golan, and Smith (1996). "Dynamic Revenue Analysis in California: An Overview." *State Tax Notes* 11:1227-37.

Empirical Evidence: Effect of Taxes on State Economies

- Taxes generally create a drag on state economies.
- Key reviews of the early literature found:
  - Taxes had a statistically significant negative impact on state economic output—
  - The *size of the effect was potentially subject to measurement error and most likely small.*
- Recent studies find a negative effect of tax changes on economic variables, but typically the effect is small.
- Some evidence that government spending on productive services can offset the negative effects of taxes.

Experience of the States

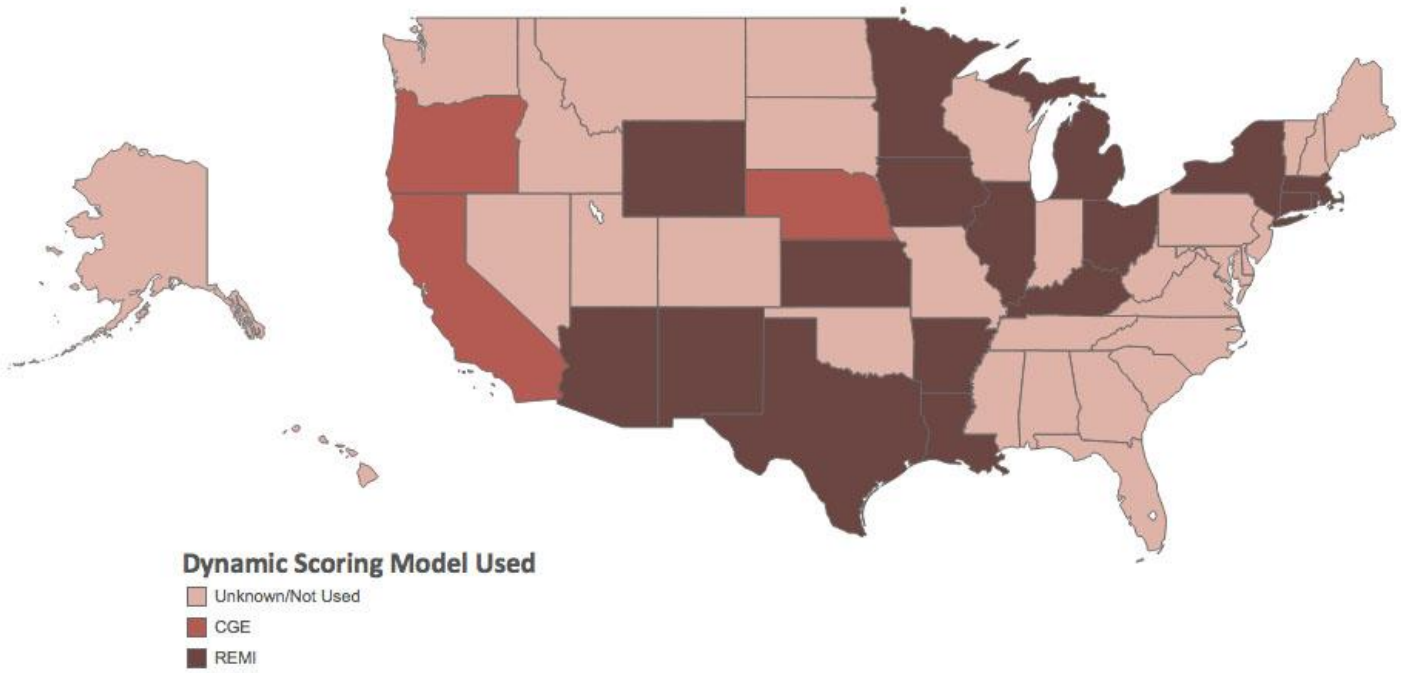
How States Currently Score Tax Legislation



Source: ***Dynamic Impacts of Tax Law Changes*** (Greg Harkenrider, Office of State Budget Director, Commonwealth of Kentucky, September 22, 2004, Presentation to Federation of Tax Administrators)

States Experimenting with Dynamic Scoring of Tax Policies

REMI v. CGE v. Unknown/Not Used



Dynamic Scoring

- Do tax cuts pay for themselves? No.
- Does the increased economic activity from tax cuts help offset some of the revenue loss? Yes – possibly.
- Assuming there is an effect, what is the estimated magnitude of effect?

California

California DRAM Model of Dynamic Effects of a $1 Billion Increase in Each Tax Type (2000 Model Estimates)	Change in Individual Income Tax	Change in Sales and Use Tax	Change in Bank and Corporation Tax
Size of Static Increase ($millions)	$1,000	$1,000	$1,000
Revenue Feedback ($millions)	($40)	($120)	($180)
% of Static Estimate	-4%	-12%	-18%
Employment Change (persons)	-18,000	-10,000	-11,000
Business Investment Change ($millions)	($83)	($109)	($479)

Note: The changes assume a balanced budget and therefore have expenditure side effects, which are modeled.

Vasche, Jon (2006). "Whatever Happened to Dynamic Revenue Analysis in California?" Proceedings at the Annual Revenue Estimation & Tax Research Conference, Federation of Tax Administrators, Portland, OR., September 17-20.

Oregon

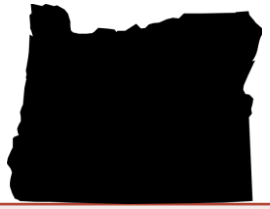


Table 2: Oregon OTIM Model of Dynamic Effects of a $100 Million Decrease in Each Tax Type

	Change in Individual Income Tax	Corporate Income Tax	Business Property Tax
Size of Static Decrease ($millions)	($100)	($100)	($100)
Revenue Feedback ($millions)[(i)]	$9.65	$15.84	$10.98
State Revenue Portion ($millions)	$6.70	$13.60	$8.10
Local Revenue Portion ($millions)	$2.80	$2.20	$3.24
% of Static Estimate	9.65%	15.84%	10.98%
Employment (% change)	0.22%	0.06%	0.08%
Wages (% change)	-0.14%	0.07%	0.03%
Personal Income (% change)	0.12%	0.20%	0.17%
Return to Capital (% change)	0.01%	0.03%	0.01%
Investment (% change)	0.14%	0.53%	0.20%

Note: The changes assume a balanced budget and therefore have expenditure side effects, which are modeled.

(i) Some state and local revenue totals numbers do not sum to the total perhaps because of rounding issues. Oregon reported state and local revenues combined as their dynamic effect, but most other states would only report the state revenue portion.

Source: The changes assume a balanced budget and therefore have expenditure side effects, which are modeled. Oregon Legislative Revenue Office, and Oregon State University (2001). "The Oregon Tax Incidence Model." Report 1-01 (March). Salem, OR: Legislative Revenue Office.

Nebraska

Table 3: Nebraska Train Model of Dynamic Effects of a $100 Million Decrease in Each Tax Type		
	Change in Individual Income Tax	Sales and Use Tax
Size of Static Decrease ($millions)	($100)	($100)
Revenue Feedback ($millions)	$6.40	$20.60
% of Static Estimate	6.40%	20.60%
Employment Change Total (persons)	1,788	2,615
Employment Change Private Sector (persons)	1,594	2,538
Personal Disposable Income ($millions)	$121.60	$181.20
Investment ($millions)	$64.80	$123.34

Note: The changes assume a balanced budget and therefore have expenditure side effects, which are modeled.

Source: Nebraska Department of Revenue Research Services (2013). "2010 Nebraska Tax Burden Study." Lincoln, NE.

New Mexico

Reduced top personal income tax rate from 8.2% to 4.9% over 5 years
50% cut in capital gains tax

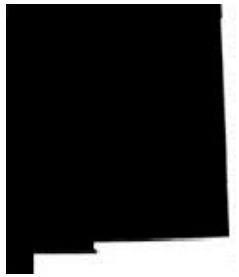


Table 5: New Mexico REMI Model of Tax Reform

	FY 2004	FY 2005	FY 2006	FY 2007	FY2008
Static Analysis ($millions)	($21.80)	($83)	($167.20)	($275.20)	($360.30)
Dynamic Analysis ($millions)	($21)	($80.80)	($163)	($268.70)	($352.20)
Difference	$0.80	$2.20	$4.20	$6.50	$8.10
% Dynamic Effect	3.70%	2.70%	2.50%	2.40%	2.20%
Employment (thousands)	-0.031	-0.086	-0.156	-0.225	-0.242
Employment: Private Nonfarm	0.311	0.846	1.601	2.417	2.95
Employment: Government	-0.342	-0.932	-1.759	-2.641	-3.191
Personal Income ($millions)	($1.50)	($5.00)	($9.00)	($11.50)	($9.50)
Disposable Personal Income ($millions)	$30.00	$84.00	$165.50	$260.00	$332.00
Output ($millions)	0.597	1.824	4.326	10.064	16.627

Source: New Mexico Legislative Finance Committee Staff (2004). "2004 Post-Session Fiscal Review." Santa Fe, NM: New Mexico Legislative Finance Committee.

Kansas

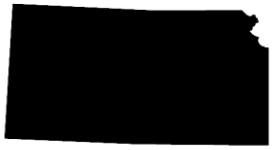


Table 6: Kansas Legislative Research Department (KLRD) Estimates of Impact of 2012 HB2117 and STAMP Dynamic Revenue Estimates

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	Cumulative FY 2013-FY 2018
KLRD Final Revenue (pre-tax changes, millions)[(i)]	$6,394	$6,231	$6,466	$6,708	$6,980	$7,259	$40,038
KLRD Final Revenue (post-tax changes, millions)	$6,163	$5,428	$5,642	$5,854	$6,087	$6,325	$35,499
KLRD Estimate of HB 2117 (2012 Tax Impact)	($231)	($803)	($824)	($854)	($893)	($934)	($4,539)
% Decline from Original General Funds Budget	-4%	-13%	-13%	-13%	-13%	-13%	-11%
STAMP Dynamic Revenue (Pass-Through)	$18	$87	$93	$101	$111	$123	$533
STAMP Dynamic Revenue (Standard)	$27	$108	$110	$115	$122	$130	$612
% Dynamic Effect (Standard)	11.72%	13.47%	13.37%	13.43%	13.70%	13.87%	13.48%
% Dynamic Effect of Post-Tax General Funds Budget	0.44%	1.99%	1.95%	1.96%	2.01%	2.05%	1.72%

Sources: Davidson, Todd, David Tuerck, Paul Bachman, and Michael Head (2012). "Tax Reform Gears Kansas for Growth: A Dynamic Analysis of Additional Revenue and Jobs Generated by Tax Reform." Wichita, KS: Kansas Policy Institute.

Kansas Legislative Research Department (2012). "Supplemental Note on Senate Substitute for House Bill 2117." Edited by Kansas Legislature. Retrieved from www.kslegislature.org.

(i) These are calculated by authors and are derived by restoring the projected HB2117 static tax revenue declines to the post HB2117 baseline.

Select State $100 million Tax Cuts and Various Assumptions on Government Spending

	Gov spend offset		No Gov spend offset		GA cut $100 million
Georgia	Sales tax	Inc. tax	Sales tax	Inc. tax	Gov spend only
Total Employment	-1,161	-1,622	1,410	1,874	-3,042
Priv. Non-Farm Emp.	409	-14	1,288	1,712	-1,310
Gov employment	-1,570	-1,608	122	162	-1,732
GSP	-$107	-$160	$168	$219	-$328
Real Disp. PI	$98	$54	$179	$221	-$125
Nebraska					
Total Employment	2,615	1,788			
Priv. Non-Farm Emp.	2,538	1,594			
Gov employment	77	194			
Real Disp. PI	$181	$122			
in millions $					

The Problem with Measuring Dynamic Effects

- Size of the effects are small
- The largest effects fall within 3.5% average error rate for state level revenue estimates
- Tax cuts do not pay for themselves
- Non-revenue neutral tax cuts lead to expenditure reductions, which have negative dynamic effects

Conclusion: Pros and Cons of Dynamic Revenue Models

- Dynamic modeling has some interesting applications:
  - Impacts of policy on jobs and wages
  - The ability to measure different economic responses to different types of tax changes
  - The ability to take a more refined look at the incidence of tax policy changes

- Where dynamic modeling falls short:
  - Problematic for budgetary decision-making or forecasting
  - Impact of effects takes time
  - Effects small compared to state revenues
  - Hard to pinpoint dynamic effects for policy makers and citizens

Conclusion: Important Questions for Policy Makers

- First, what do policymakers want to learn from dynamic revenue estimation?
  - Inform a policy debate
  - May not be appropriate for the budgetary process

- Second, states need to consider the resources required to develop, customize and then interpret the results from a dynamic model.
  - Models are costly and require annual updating
  - Models are complicated
  - Not a few states have abandoned their efforts at dynamic revenue estimation due to this cost and complexity

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Thank You

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