

# Economic Policy Analysis with Overlapping Generations Models MACS 40000

**Dr. Richard W. Evans**

Intro Slides

# Standard Ramsey Infinite Horizon Model

$$\max_{\{c_t\}_{t=1}^{\infty}} E \left[ \sum_{t=1}^{\infty} \beta^{t-1} u(c_t) \right]$$

- Subject to budget constraint
- Firms optimize
- Markets clear

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We solve recursively using VFI or PFI

$$V(x_t) = \max_{c_t} u(c_t) + E[V(x_{t+1})]$$

# OG model has finite lives

$$\max_{\{c_{s,t}\}_{s=1}^S} E \left[ \sum_{s=1}^S \beta^{s-1} u(c_{s,s}) \right]$$

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## Agents finitely lived, but economy infinite

$$V_s(x_t) = \max_{c_t} u(c_t) + E[V_{s+1}(x_{t+1})]$$

- This equation has a specific end
- One life doesn't determine path of  $w_t, r_t$

# A Visual Description of the OG Model

Birthday	Period					
	...	$t$	$t + 1$	$t + 2$	$t + 3$	...
born $t - 1$	...	$c_{2,t}$				
born $t$		$c_{1,t}$	$c_{2,t+1}$			
born $t + 1$			$c_{1,t+1}$	$c_{2,t+2}$		
born $t + 2$				$c_{1,t+2}$	$c_{2,t+3}$	
					$\vdots$	...

## Some History of the OG framework

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  - Diamond (1965): optimal public debt
  - Shell (1971): theoretical results
  - Ball and Mankiw (2007): optimal policies



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- Other key papers in the history:
  - Diamond (1965): optimal public debt
  - Shell (1971): theoretical results
  - Ball and Mankiw (2007): optimal policies
- Solow (2006) and Weil (2008) nice surveys

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  - Weil (2008) story sketch of proof
  - PS1
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  - Good for questions of inequality, demographics, and age heterogeneity
  - Macro questions?
  - Tractability?
  - Behavior of 20- or 40-year-old?

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- When is overlapping finite lives a better model?
  - Good for questions of inequality, demographics, and age heterogeneity
  - Macro questions?
  - Tractability?
  - Behavior of 20- or 40-year-old?
- Finite lives certainly realistic
  - 70-year-old behaves differently than 20-year-old

# Cool Current: Nishiyama and Smetters (2007)

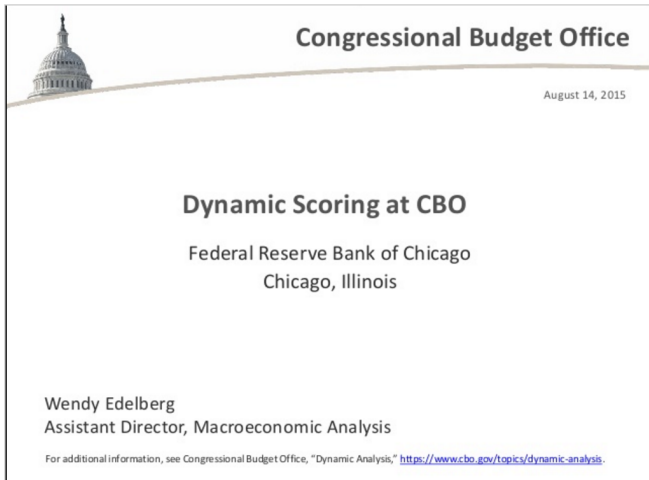
## DOES SOCIAL SECURITY PRIVATIZATION PRODUCE EFFICIENCY GAINS?\*

SHINICHI NISHIYAMA AND KENT SMETTERS

While privatizing social security can improve labor supply incentives, it can also reduce risk sharing. We analyze a 50% privatization using an overlapping-generations model where heterogeneous agents with elastic labor supply face idiosyncratic earnings shocks and longevity uncertainty. When wage shocks are insurable, privatization produces about \$18,100 of extra resources for each future household after all transitional losses have been compensated for with lump-sum taxes. When wages are not insurable, privatization *reduces* efficiency by about \$2,400 per future household. We check the robustness of these results to different model specifications as well as policy reforms and arrive at several surprising conclusions. First, privatization performs better in a closed economy, where interest rates decline with capital accumulation, than in an open economy. Second, privatization also performs better when an actuarially fair private annuity market does *not* exist. Third, government matching of private contributions on a progressive basis is not very effective at restoring efficiency and can actually cause harm.

# Cool Current: Dynamic Scoring at CBO

<https://www.cbo.gov/publication/50730>



The image shows the front cover of a report from the Congressional Budget Office. At the top left is a small illustration of the U.S. Capitol dome. To its right, the text 'Congressional Budget Office' is printed in a bold, sans-serif font. A thin, curved line separates the header from the main content. On the right side of this line, the date 'August 14, 2015' is printed. In the center of the page, the title 'Dynamic Scoring at CBO' is displayed in a large, bold, sans-serif font. Below the title, the text 'Federal Reserve Bank of Chicago' and 'Chicago, Illinois' are printed in a smaller, regular font. At the bottom left, the author's name 'Wendy Edelberg' and her title 'Assistant Director, Macroeconomic Analysis' are listed. At the bottom center, a line of text provides additional information: 'For additional information, see Congressional Budget Office, "Dynamic Analysis," <https://www.cbo.gov/topics/dynamic-analysis>.'

Congressional Budget Office

August 14, 2015

**Dynamic Scoring at CBO**

Federal Reserve Bank of Chicago  
Chicago, Illinois

Wendy Edelberg  
Assistant Director, Macroeconomic Analysis

For additional information, see Congressional Budget Office, "Dynamic Analysis," <https://www.cbo.gov/topics/dynamic-analysis>.

# Cool Current: Dynamic Scoring at JCT

file:///Users/rwe/Downloads/x-3-15.pdf


## **MACROECONOMIC ANALYSIS AT THE JOINT COMMITTEE ON TAXATION AND THE MECHANICS OF ITS IMPLEMENTATION**


### **OUTLINE OF PRESENTATION OF THE JOINT COMMITTEE STAFF AT THE BROOKINGS INSTITUTION PROGRAM “DYNAMIC SCORING: NOW WHAT?”**

Prepared by the Staff  
of the  
JOINT COMMITTEE ON TAXATION

# Cool Current: Tax Brain by OSPC

<http://www.ospc.org/taxbrain/>





A platform for accessing open-source tax models.

Start Exploring

What is TaxBrain?

Start Year: 2016

[Get Started](#)

[Payroll Taxes](#)

[Social Security Taxability](#)

[Adjustments](#)

## What is TaxBrain?

TaxBrain is an interface to [open source economic models](#) for tax policy analysis. [The code](#) for the TaxBrain webapp interface is itself open source.

- **Step 1.** Create a policy reform by modifying tax law parameters such as rates and deductions, adjust the economic baseline, and request the static result.
- **Step 2.** Review your static output carefully. Ask questions.



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# Outline of the course and syllabus

[https://github.com/rickecon/OGcourse\\_F17](https://github.com/rickecon/OGcourse_F17)

rickecon / OGcourse\_F17

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Economic Policy Analysis with Overlapping Generations Models (Autumn 2017) Edit

9 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

Commit	Files	Time
rickecon Added PS1	ProblemSets/PS1	16 minutes ago
	Tutorials	3 days ago
	.gitignore	4 days ago
	README.md	3 days ago

README.md

## MACS 40000: Economic Policy Analysis with Overlapping Generations Models (Autumn 2017)

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