The Redistributive Benefits of Progressive Labor and Capital Income Taxation, Or:

How to Most Efficiently Screw the Top 1%

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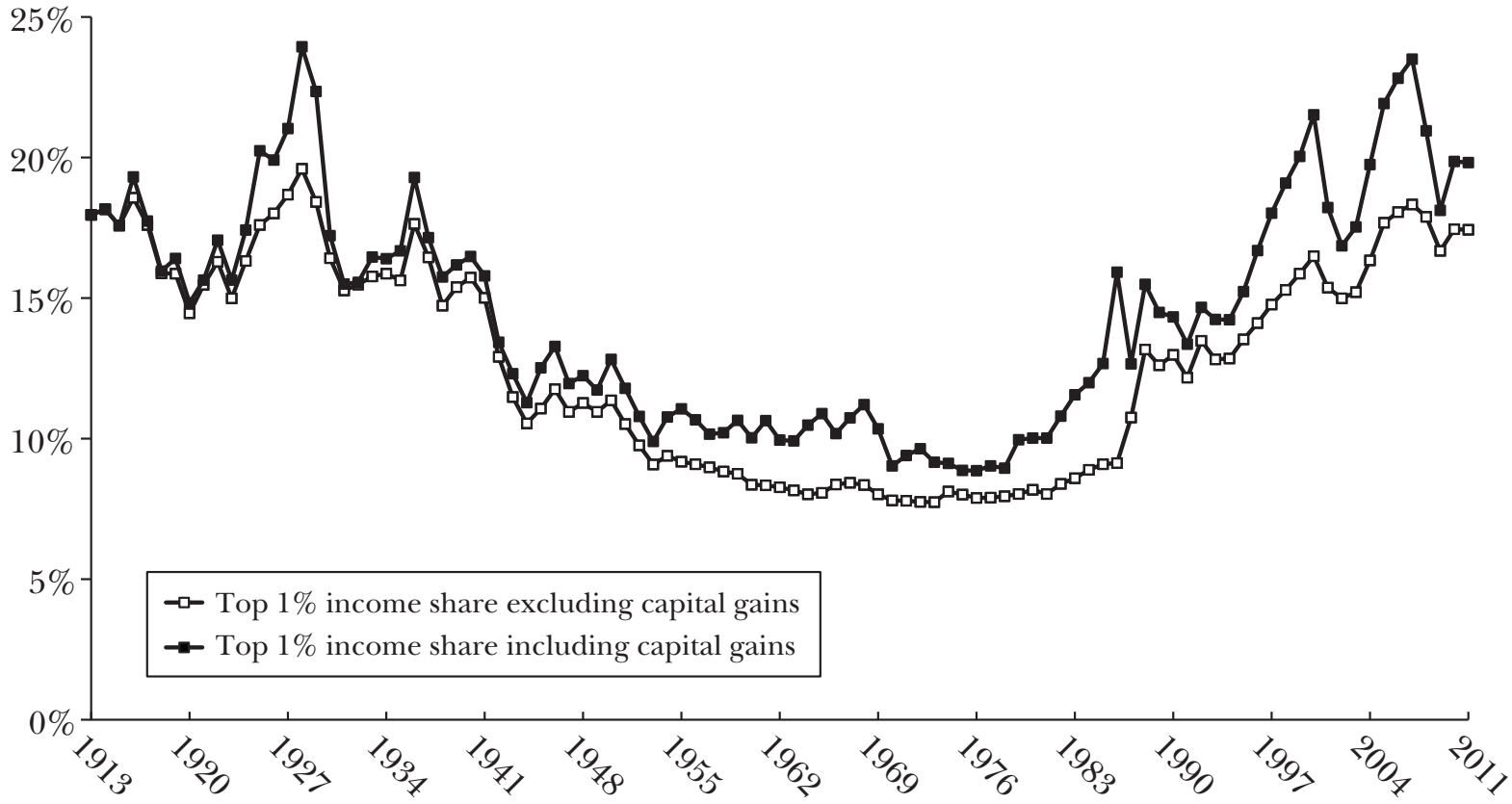
4th SEEK conference
May 2014

Motivation

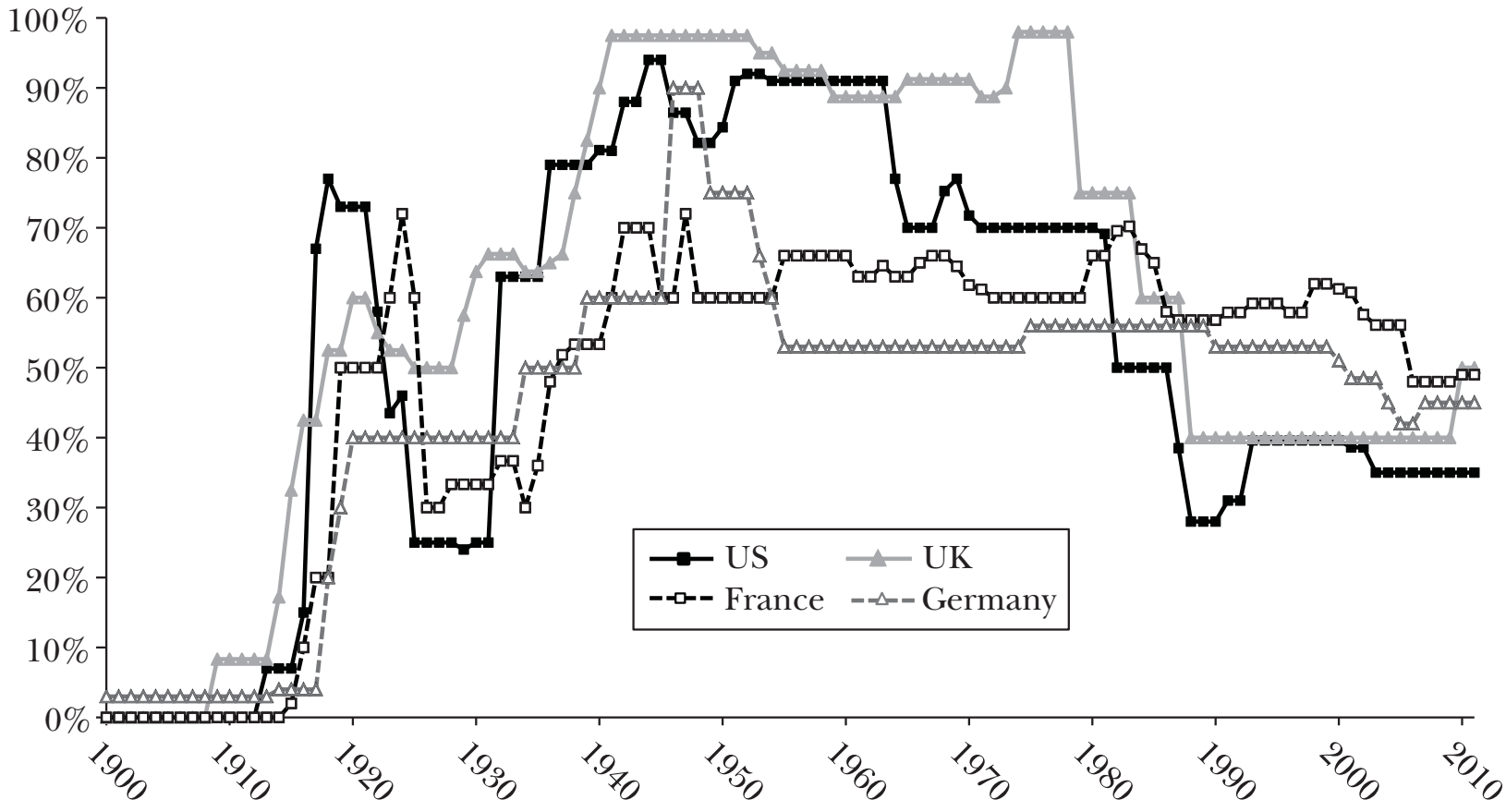
Top 1 Percent Income Share in the United States



Source: Source is Piketty and Saez (2003) and the World Top Incomes Database.

Motivation

Top Marginal Income Tax Rates, 1900–2011



Source: Piketty and Saez (2013, figure 1).

Motivation

Insights from Diamond and Saez JEP 2011

- Optimal marginal tax rate at the top: Saez (2001)

$$\tau_h = \frac{1}{1 + a * e}$$

- Empirical estimates: $a = 1.5$ and $e = 0.25$ yields $\tau_h = 0.73$
- Also argue for positive capital income tax
- Assumptions:
  - Static optimal tax model
  - Earnings distribution Pareto
  - Elasticity of earnings roughly invariant to policy

Aim of this project

- Take Diamond, Piketty and Saez seriously
- Incorporate their key model elements in a dynamic incomplete markets general equilibrium model
- Derive optimal marginal tax rate on earnings at the top
- Key challange: realistic earnings and wealth distribution

  $\rightarrow$ We use labor productivity to generate this
- Preliminary finding: Diamond, Piketty and Saez are right...

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  ... but probably for the wrong reason

The Model

Overview

- Large-scale overlapping generations model in the spirit of Auerbach and Kotlikoff
- Endogenous consumption-savings and labor supply decisions
- Idiosyncratic labor productivity risk
- Benevolent government that implements progressive labor earnings and flat capital income tax code (and can fully commit to time path of policies)

The Model

Households: Decision making

- At each point in time households choose
  - consumption c
  - labor supply n
  - savings in the risk free asset a with tight borrowing constraint
- Preferences

$$U(c,n) = \frac{c^{1-\gamma}}{1-\gamma} - \lambda \frac{n^{1+\chi}}{1+\chi}$$

The Model

Households: Labor productivity

- Households are ex-ante and ex-post heterogeneous w.r.t. labor productivity
- Wage is given by $w \cdot e(j, s, \alpha, \eta)$:
  - Wage rate of the economy w
  - Deterministic eduction level $s \in \{n, c\}$ determined at birth
  - Deterministic age component $\epsilon_{j,s}$
  - Fixed effect α following $\phi_s(\alpha)$ determined at birth
  - Stochastic component η following education specific Markov chain with states $\eta \in \mathcal{E}_s$ and transition matrix $\pi_s(\eta, \eta')$.

The Model

Government

- Revenue from
  - consumption taxes τ_c
  - flat capital income tax τ_k
  - progressive labor earnings tax $T(\cdot)$
- Expenditure stream G exogenous
- Interest payments on debt B
- Runs a PAYG progressive social security system

Calibration of initial equilibrium

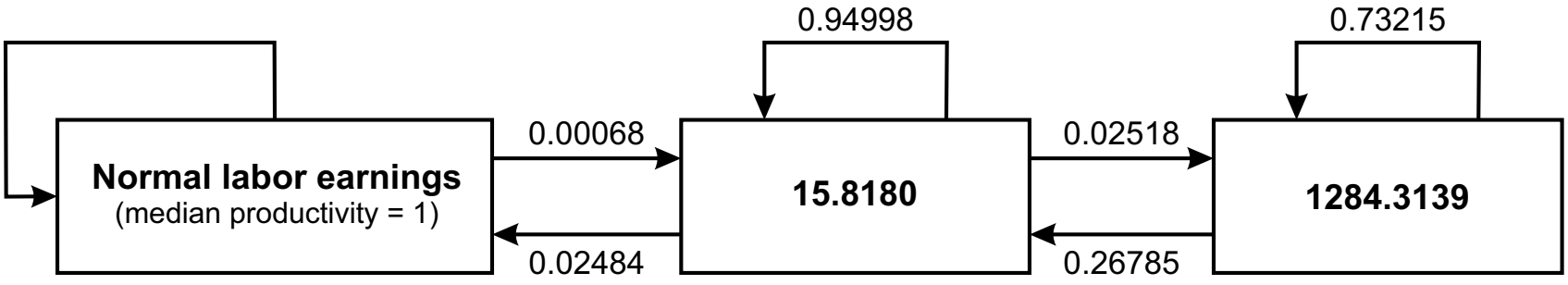
Overview

- Standard calibration for household demographics, preferences and technology
- One exception: calibration of labor productivity process
- Goal: realistic earnings and wealth distribution
- Procedure to determine $w \cdot e(j, s, \alpha, \eta)$
  - Normalize $w = 1$
  - Use $\epsilon_{j,s}$ and α estimates from PSID
  - Estimate baseline Markov chain $\{\eta_{s,1}, \ldots, \eta_{s,5}\}$ from PSID
    $\rightarrow$ normal labor earnings (roughly bottom 95-97%)
  - Augment with very high earnings realizations $\{\eta_{s,6}, \eta_{s,7}\}$
    $\rightarrow$ follows Castaneda/Diaz-Jimenez/Rios-Rull (JPE, 2003)

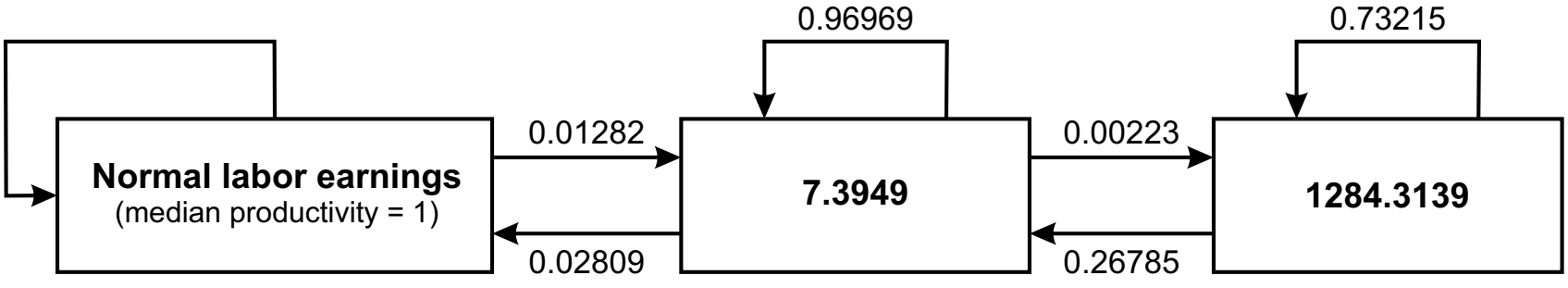
Calibration

Stochastic Productivity Process

No college education



College education



Earnings and Wealth Distribution

Model and Data

The Labor Earnings Distribution

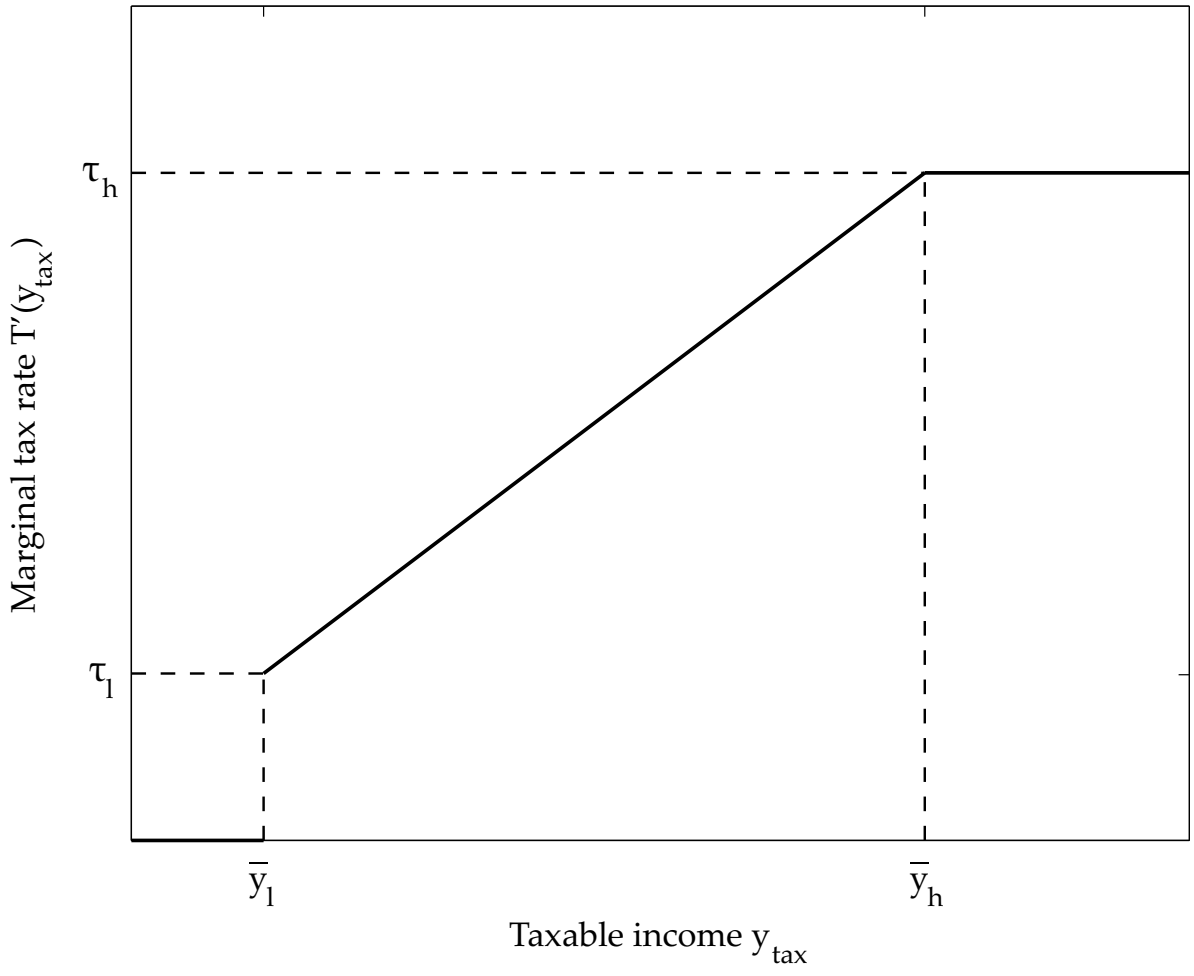
	Quintiles					Top (%)			Gini
	1st	2nd	3rd	4th	5th	90-95	95-99	99-100	
	Share of total sample (in %)								
Model	0.0	5.8	11.0	17.6	65.6	11.7	18.9	21.4	0.642
US Data	-0.1	4.2	11.7	20.8	63.5	11.7	16.6	18.7	0.636

The Wealth Distribution

	Quintiles					Top (%)			Gini
	1st	2nd	3rd	4th	5th	90-95	95-99	99-100	
	Share of total sample (in %)								
Model	0.0	0.8	4.1	11.6	83.6	14.6	23.3	31.8	0.810
US Data	-0.2	1.1	4.5	11.2	83.4	11.1	26.7	33.6	0.816

The thought experiment

Income tax schedule



Initial equilibrium: $\bar{y}_l = 0.35 \cdot y^{\text{med}}, \quad \tau_l = 12.2\%$

$\bar{y}_h = 4.0 \cdot y^{\text{aver}}, \quad \tau_h = 39.6\%$

The thought experiment

Policy induced transition paths

- Start from initial steady state with current US tax system and earnings and wealth distribution
- Unannounced one time change in tax policy
  - Set $\bar{y}_h$ to the top 1% labor earnings threshold
  - Change in top marginal tax rate τ_h
  - Change in capital income tax rate τ_k
- Reform (τ_h, τ_k) induces transition path to new long-run equilibrium
- Government budget balance:
  - Set τ_l to balance intertemporal budget
  - Sequence of government debt balances sequential budget

The thought experiment

Measuring Social Welfare

- Measure the present discounted value of transfers necessary to make all current and future generations indifferent between status quo and policy induced transition
- Current generations:

$$v_1\big(i, j, \alpha, \eta, a - \Psi_1(j, s, \alpha, \eta, a)\big) = v_0\big(j, s, \alpha, \eta, a\big)$$

- Future generations

$$Ev_t\big(1, s, \alpha, \bar{\eta}, -\Psi_t\big) = Ev_0\big(1, s, \alpha, \bar{\eta}, 0\big)$$

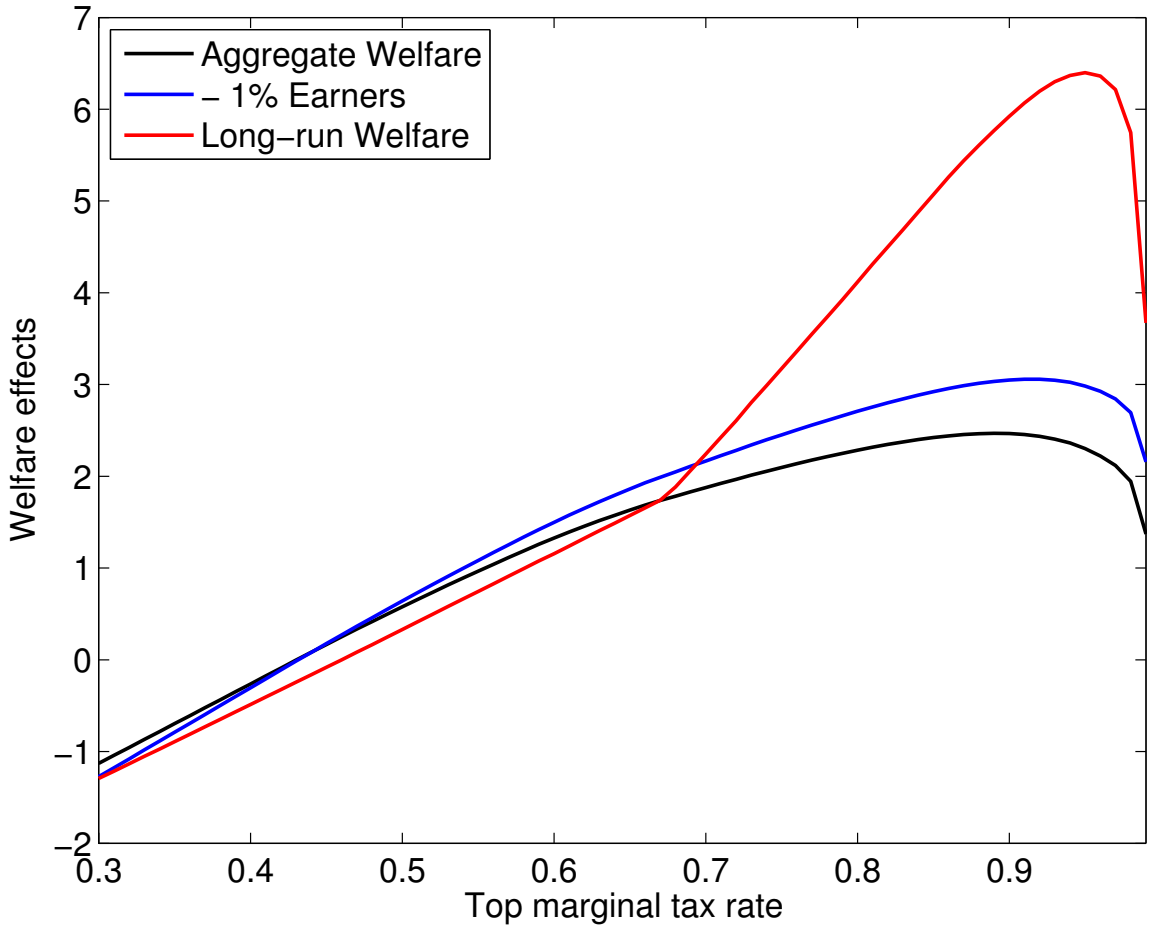
- Total transfers

$$W = \int \Psi_1(j, s, \alpha, \eta, a)\ d\Phi_1 + \mu_1 \sum_{t=1}^{\infty} \left(\frac{1+n}{1+r_0}\right)^t \Psi_t$$

- Optimal tax system maximizes W

Results

Social Welfare

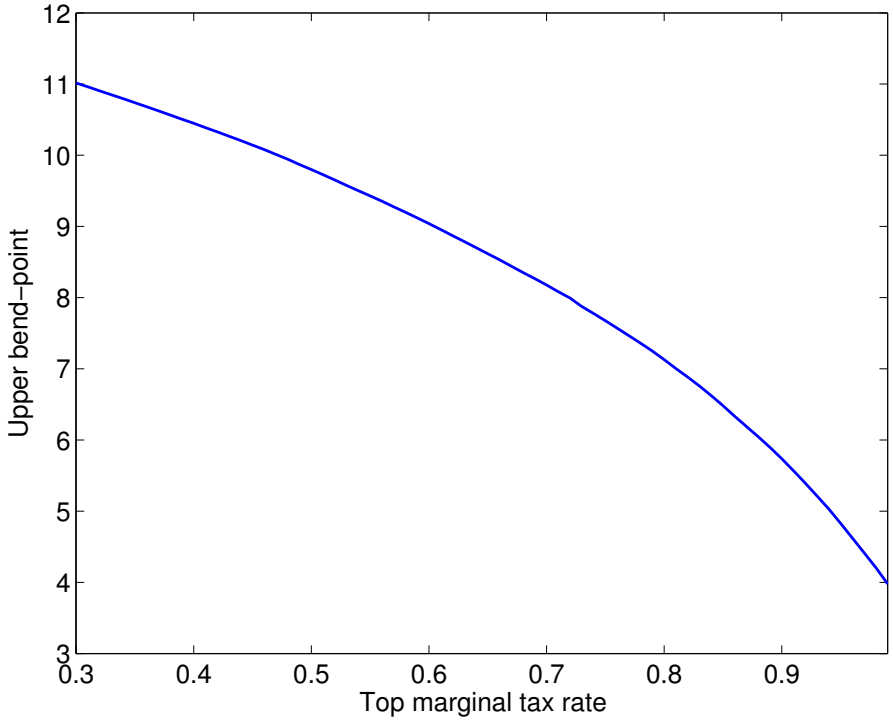


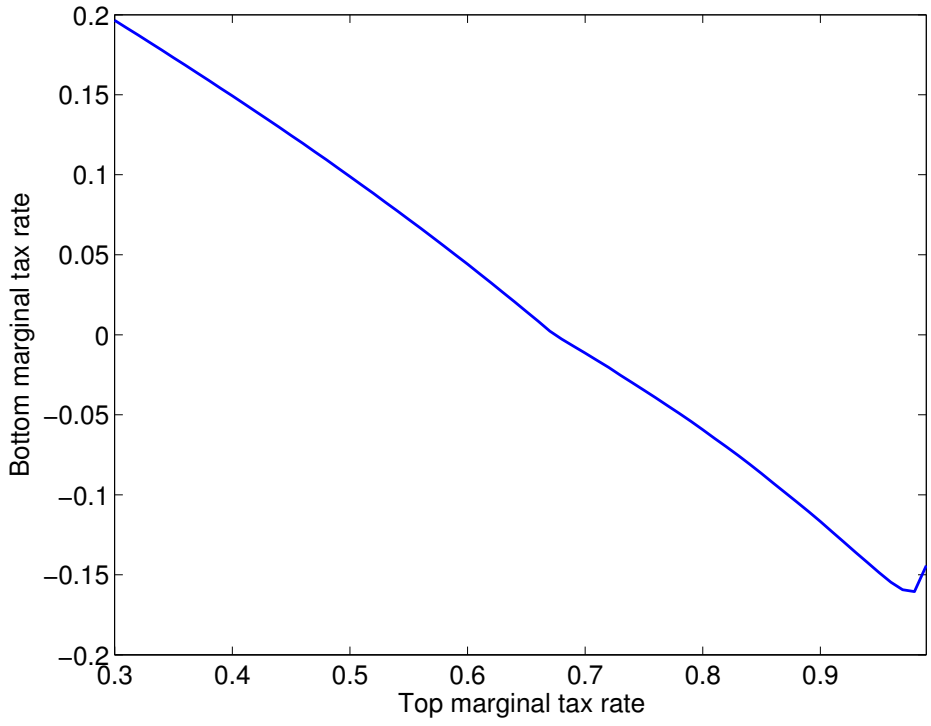
Optimal top marginal tax rate: $\tau_h = 0.89$ (total welfare W)

$\tau_h = 0.95$ (long run welfare only)

Results

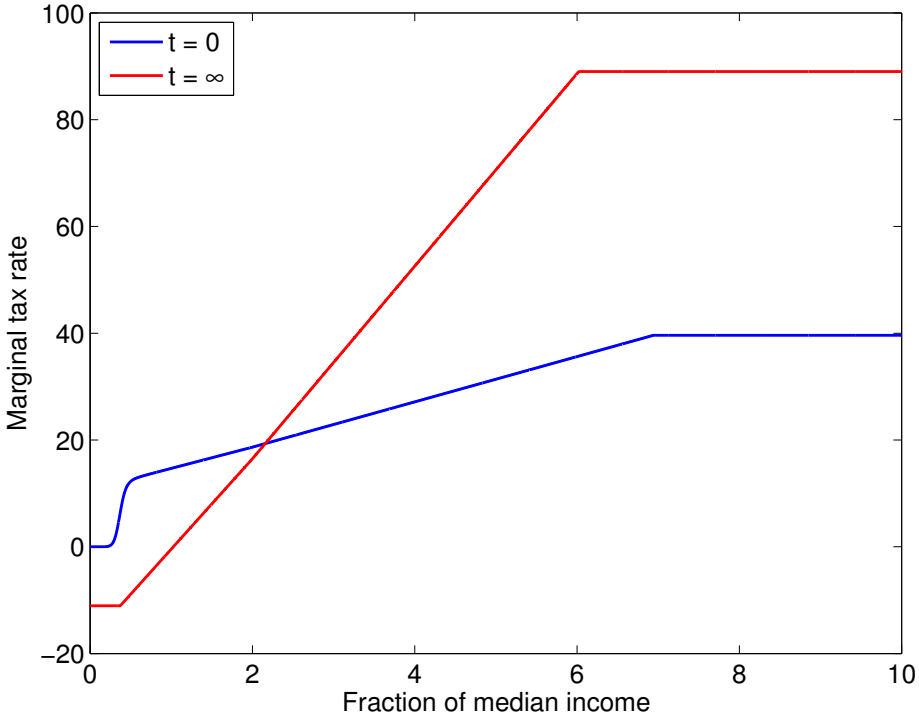
Upper bend point and lower tax rate

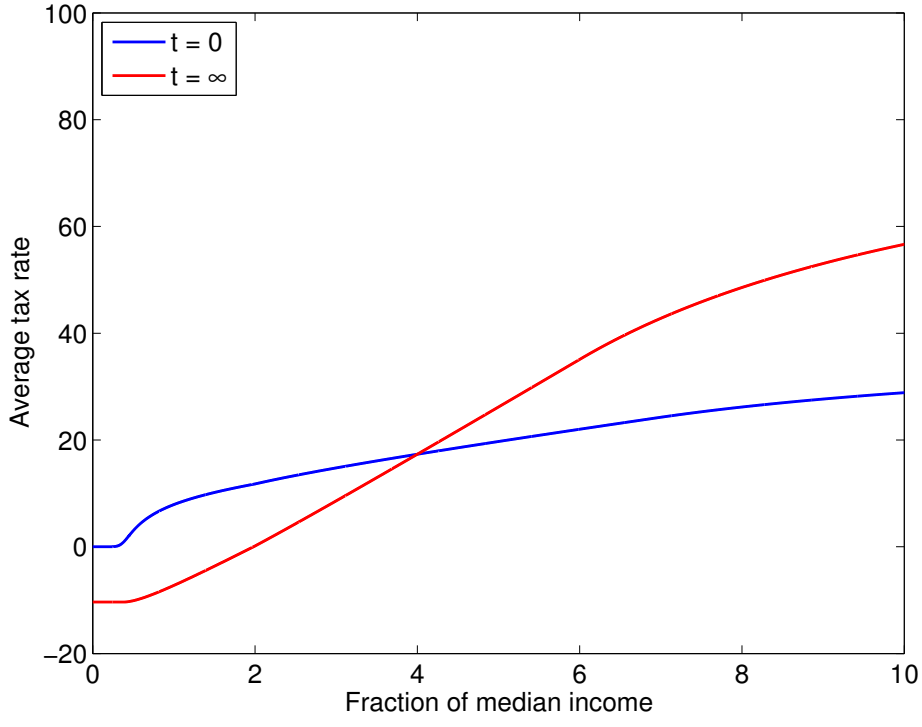




Results

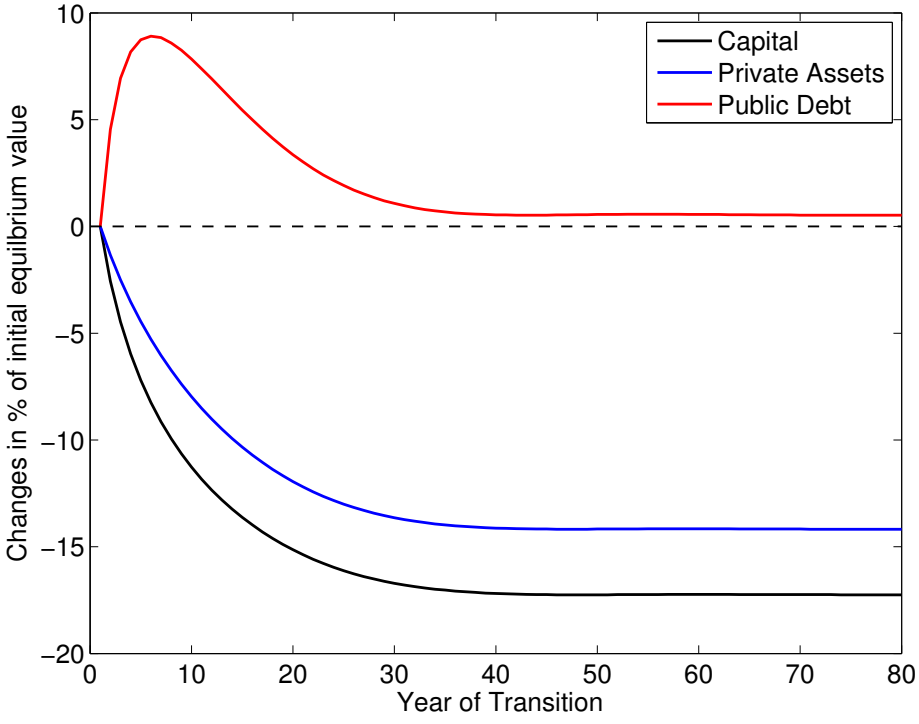
Marginal and average tax schedule before and after

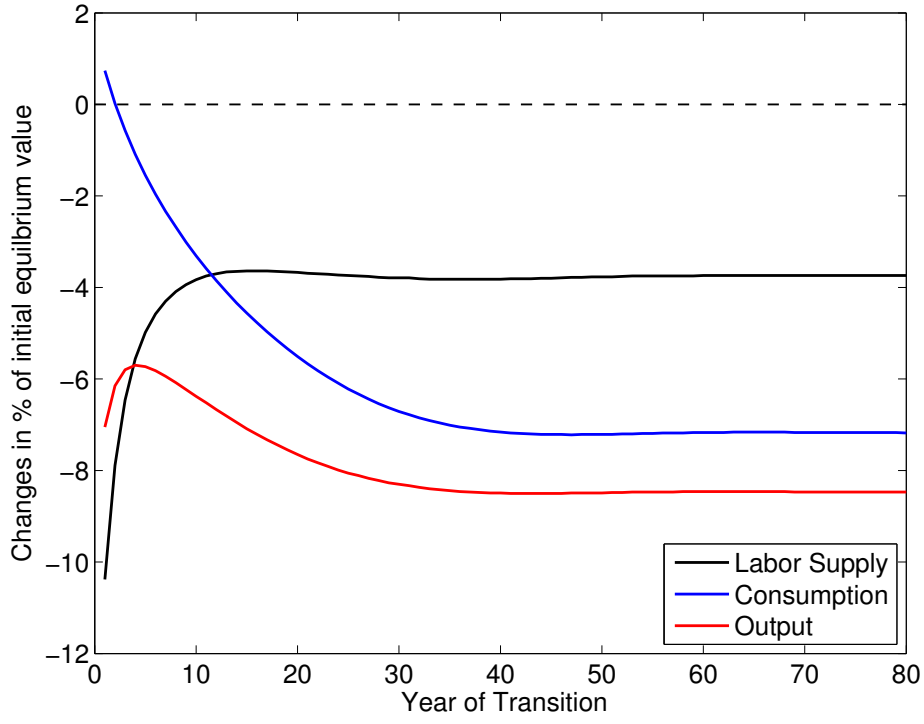




Results

Transitional Dynamics





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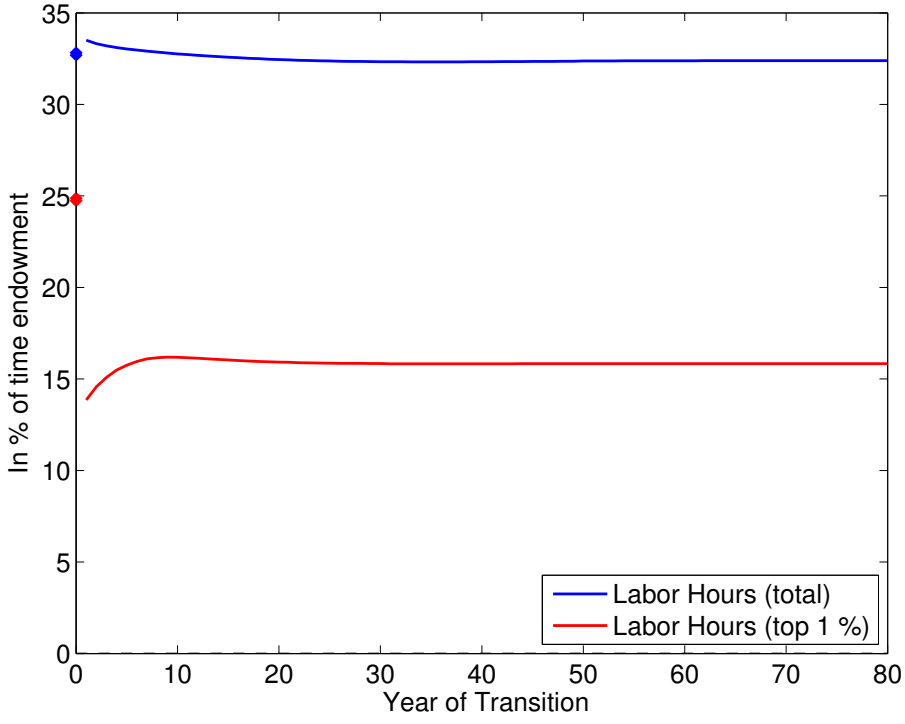
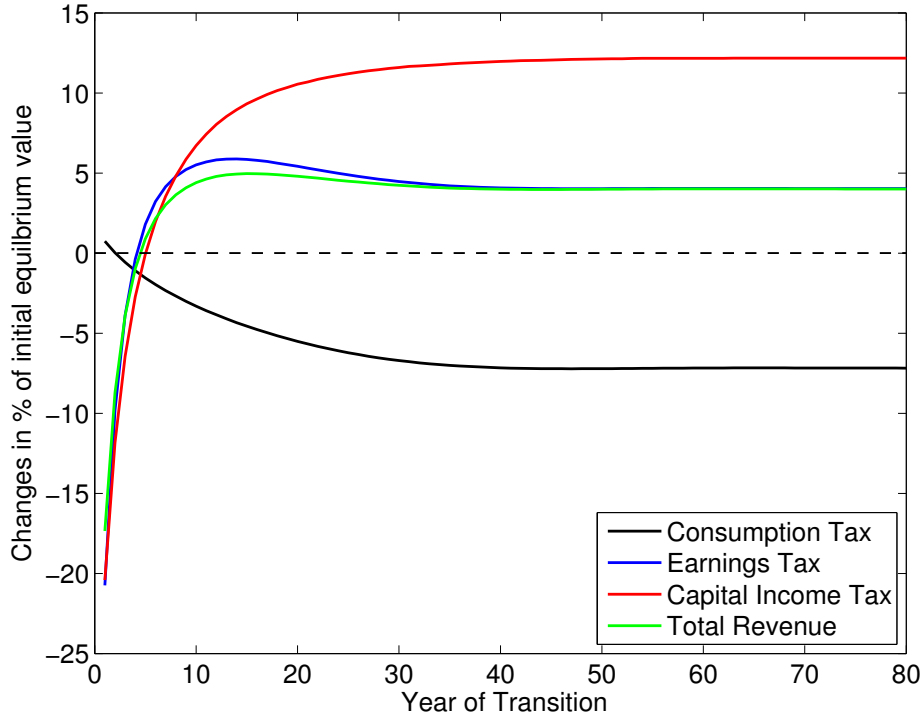
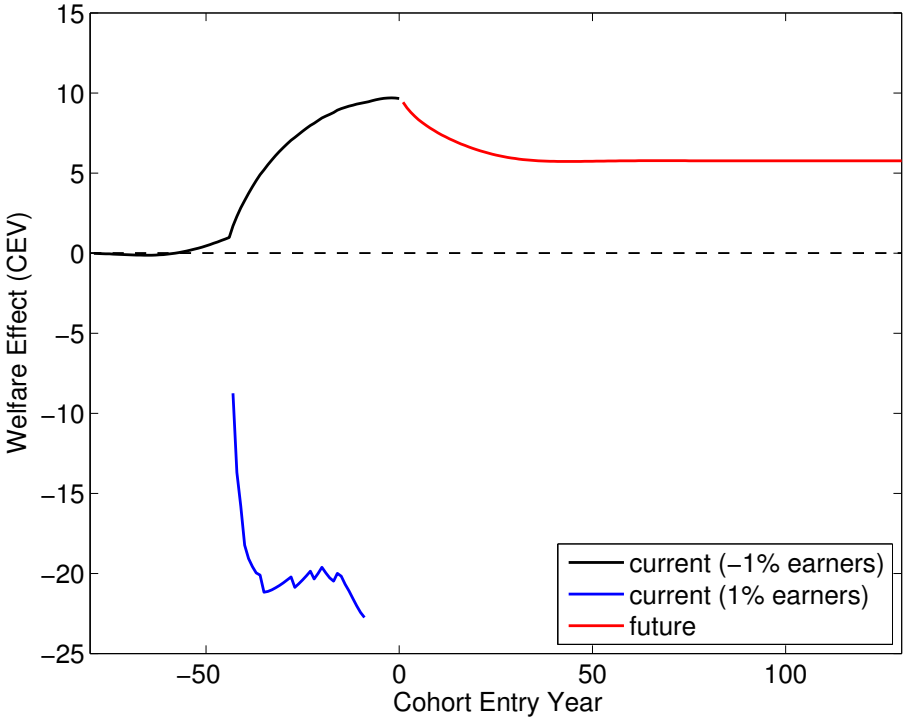
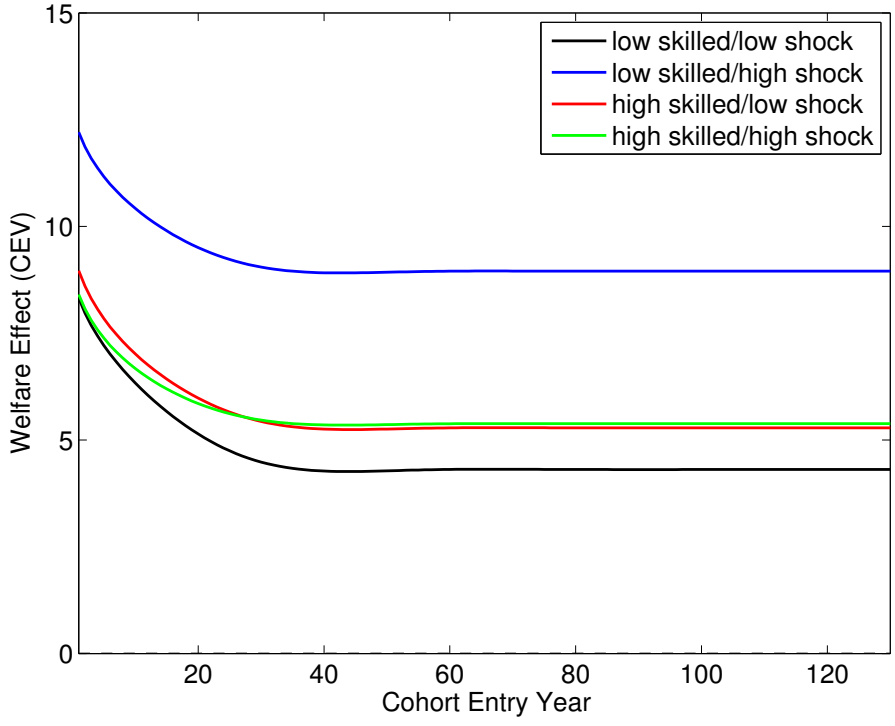




Results

Where do welfare gains come from?





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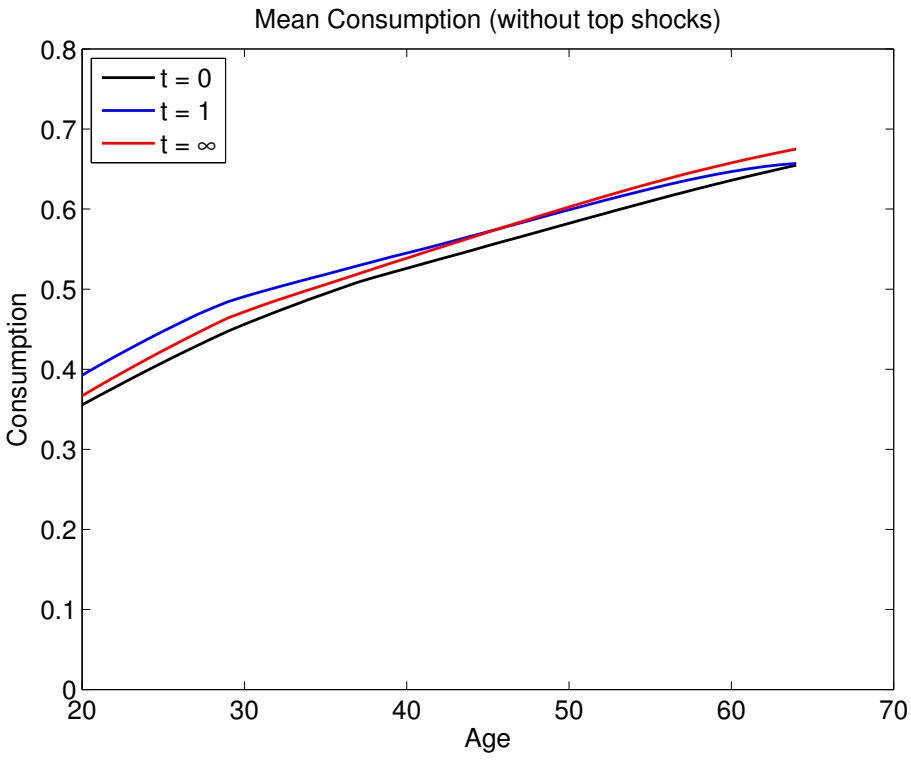

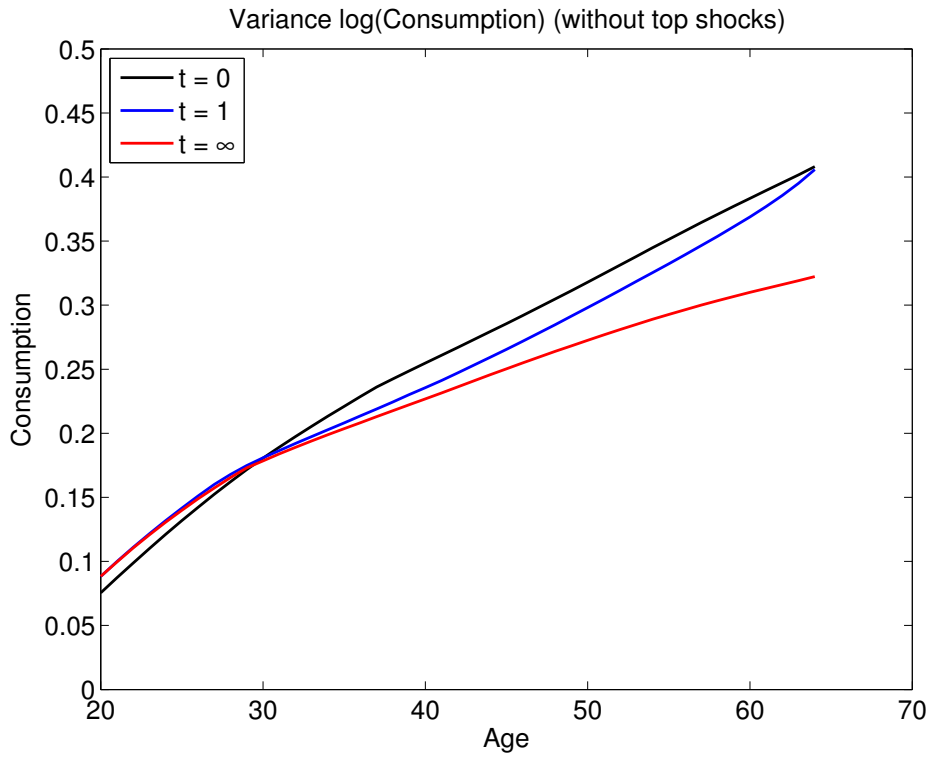

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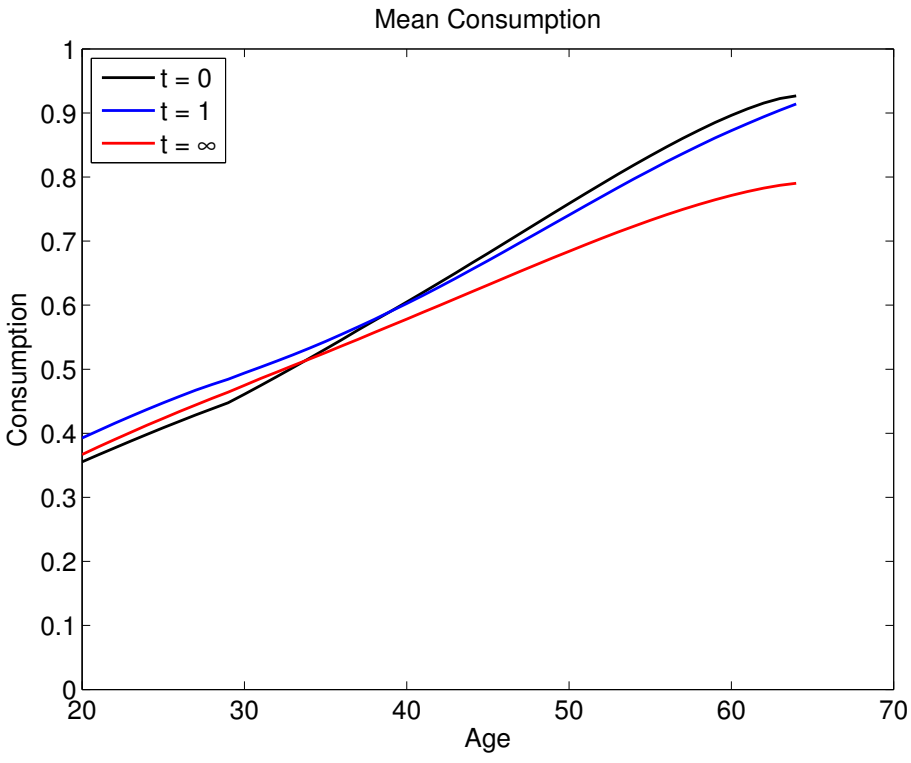
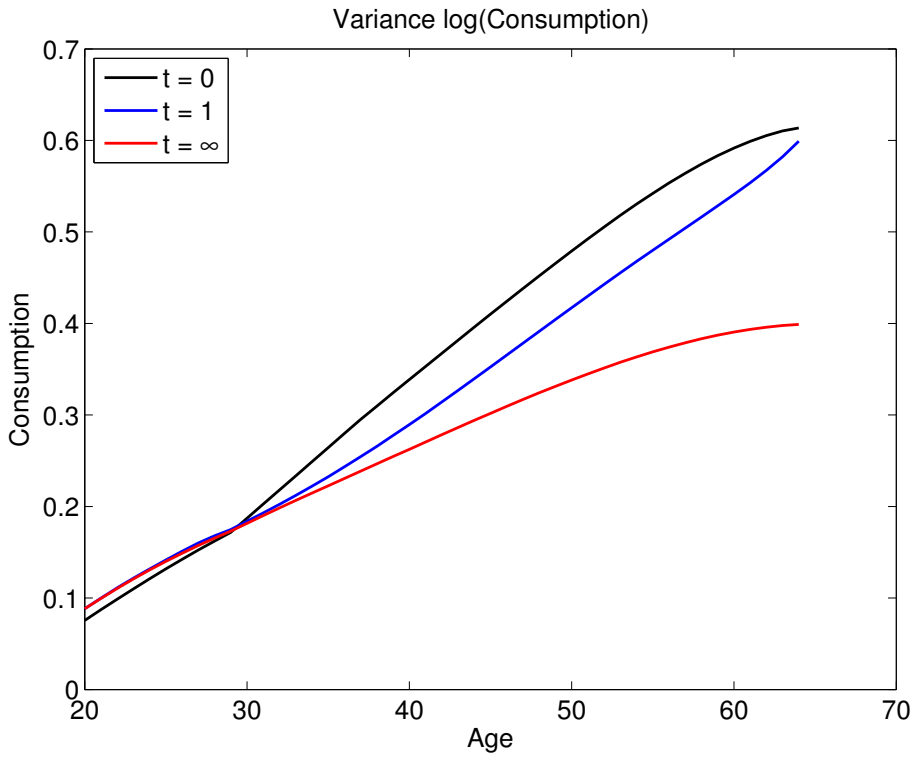
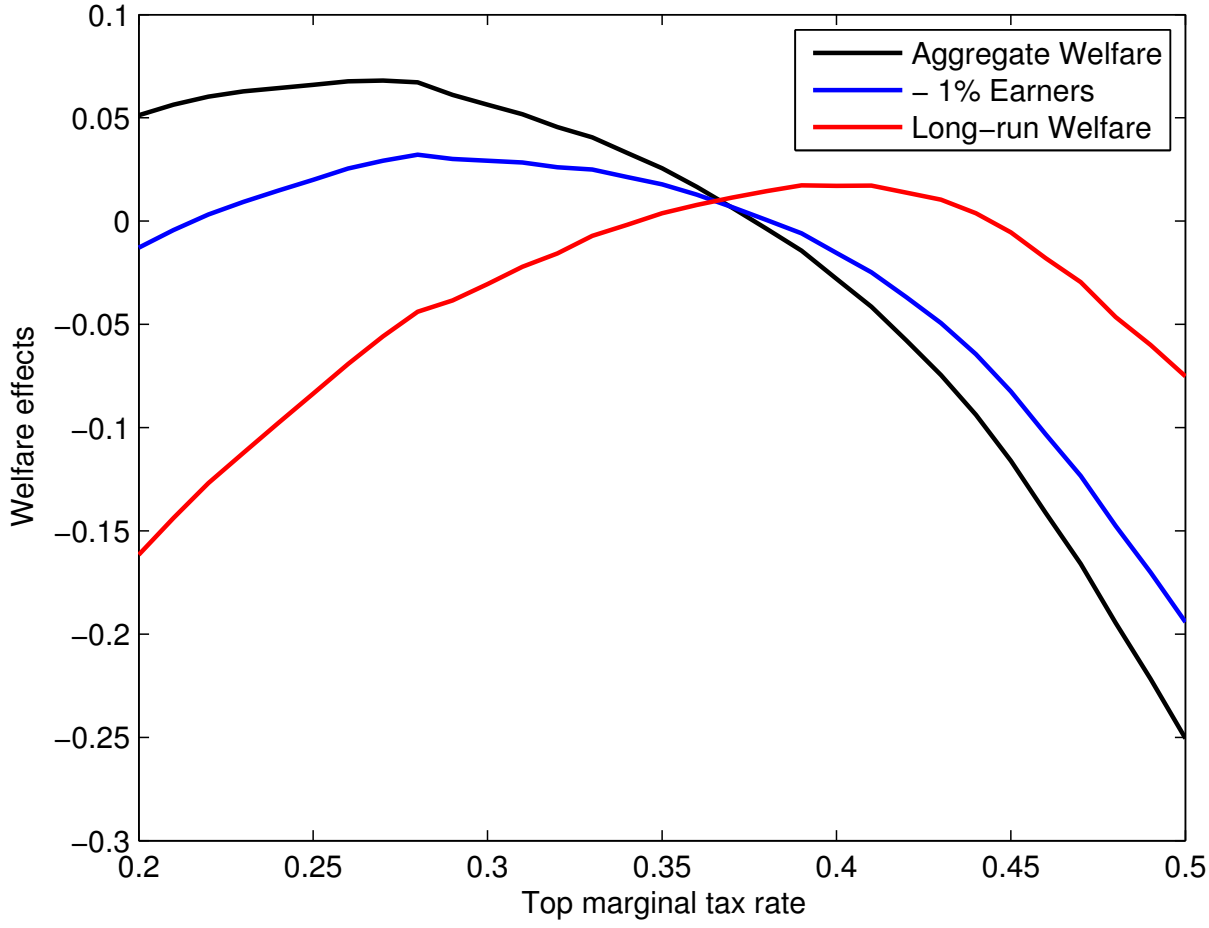




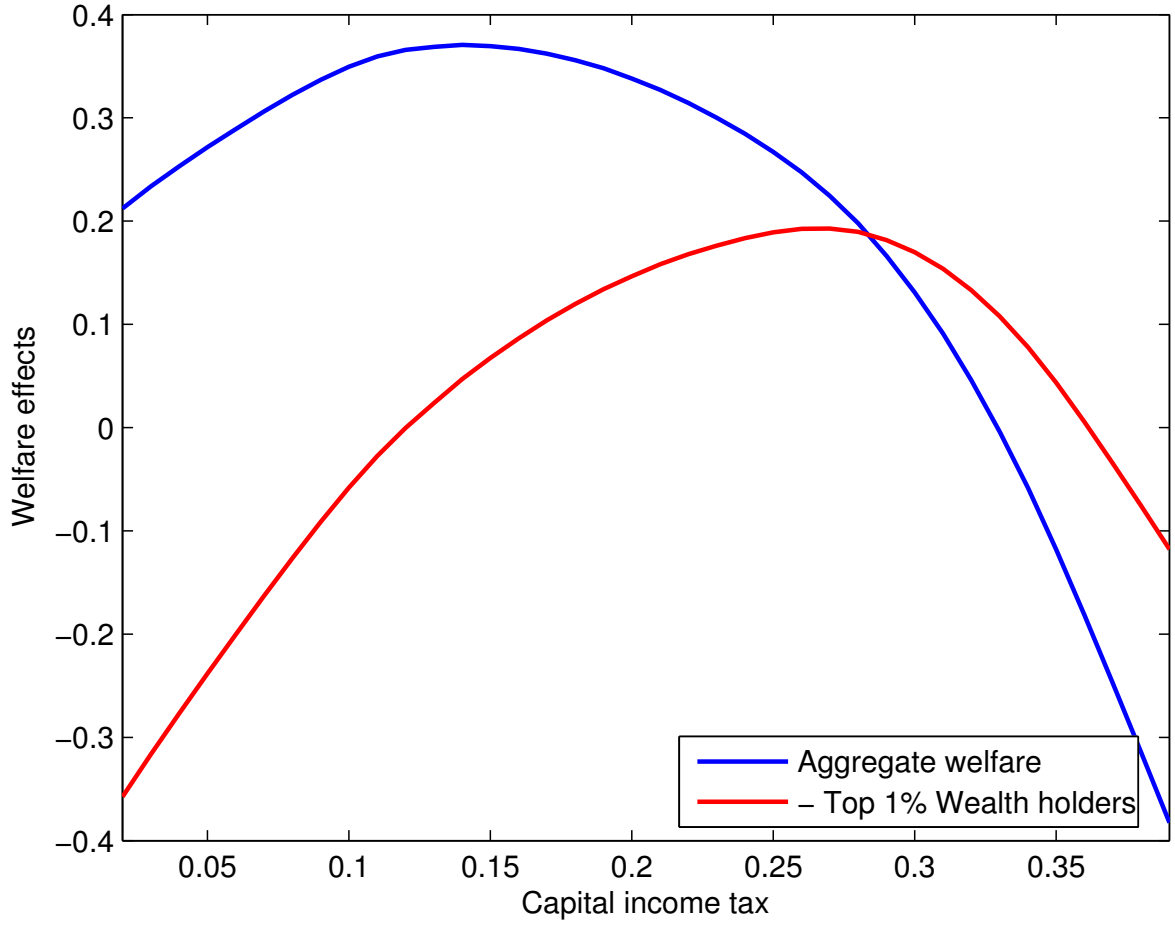
Sensitivity Analysis

High Earnings Dispersion is Key for Optimal Tax Result



Sensitivity Analysis

Optimal Capital Income Tax is Positive



Conclusion

- Life Cycle general equilibrium model with realistic earnings and wealth inequality
- Very high optimal marginal tax rate on top 1% labor earnings is optimal
- Efficiency gains come from ex post consumption insurance, not from ex ante redistribution like in Diamond/Saez/Piketty
- Potential problematic assumption:
  labor productivity invariant to tax system
  - human capital accumulation (Badel/Huggett 2014)
  - entrepreneurial activity (Cagetti/de Nardi, 2007)