A Looming Problem

- Financing retirement consumption with
  - Populations aging
  - Limited government borrowing
  - No lump-sum taxation

- U.S. system relies heavily on taxing workers’ incomes

- Is there a better system?
Is There a Better System?

- One system being advocated:
  - Savings-for-retirement system
  - Lower distortionary taxes

- Argument against: some existing cohorts lose

- Argument for: this paper
This Paper

• What’s new?
  ○ Productive capital stock larger
  ○ Capital tax policy more detailed

• Otherwise, standard OLG framework
Productive Capital

- Typical estimates are $\approx 3$ GNPs:
  - Private fixed assets (2.2 GNPs)
  - Public fixed assets (0.6 GNPs)
  - Consumer durables (0.3 GNPs)

- But, other stocks help finance retirement:
  - Inventories (0.13 GNPs)
  - Land (0.89 GNPs)
  - Intangible capital (1.7 GNPs)

$\Rightarrow$ about 5.8 GNPs currently available
BUSINESS TANGIBLE VS. INTANGIBLE INVESTMENT

- Our estimates found indirectly via national accounts, taxes

- Corrado, Hulten, Sichel use estimates on investments:
  - Computerized information (e.g., software)
  - Innovative property (e.g., R&D)
  - Economic competencies (e.g., brands, org. capital)

- Main findings for 2000–2003:
  - Tangibles included in GDP $\approx 0.085$ GDPs
  - Intangibles included in GDP $\approx 0.024$ GDPs
  - Intangibles not included in GDP $\approx 0.093$ GDPs
Capital Tax Policy

- Typical analyses have only 1 tax on profits
- But, important to distinguish
  - Profits vs. distributions
  - Schedule C corporations vs. other business

⇒ tax reform affects capital stocks and prices
PREVIEW OF MAIN FINDINGS

• Balanced growth comparison of
  
  ◦ Continuation of current US policy
  ◦ Elimination of FICA, Medicare, SS, Capital Taxes
    ⇒ 18% welfare gain, 86% increase in net worth
  
  ◦ Additional reforms to flatten and broaden taxes
    ⇒ 25% welfare gain, 114% increase in net worth

• Taking into account transitions, all cohorts gain
PREVIOUS LITERATURE

• Underestimates welfare gains of future cohorts

• Exaggerates difficulty in finding Pareto improvements
Others Who Find Pareto-Improvement

- Needed policies with:
  - Large debt to GDP
    e.g., Birkeland-Prescott find 5 GNPs
  - Nonsmooth capital tax rate paths
    e.g. Conesa-Garriga find oscillatory rates in \([-60\%, 60\%]\)

- We restrict debt/GDP, smoothly phase in new policies
Outline

• Theory

• US national accounts and fixed assets

• Model national accounts and fixed assets

• Balanced growth comparisons

• Devising a Pareto-improving transition
Theory
Model Economy

- Discrete time, $t = 0, 1, \ldots$

- Households in OLG structure, ages $j = 1, \ldots, J$

- Businesses of two types:
  - Schedule C corporations (Sector 1)
  - All other business (Sector 2)

- Government summarized by fiscal policies
Age-\(j\) Household Problem

- Choose assets \(a'\), consumption \(c\), labor \(\ell\):

\[
v_j(a, s) = \max_{a',c,\ell} \{ u(c, \ell) + \beta \sigma_t^j v_{j+1}(a', s') \}
\]

s.t. \((1 + \tau_t^c)c + \sigma_t^j a' = (1 + i_t)a + (1 - \tau_t^\ell)w_t \ell + \psi_t^j
\]

\[s' = F(s)\]

taking as given the

- prices \(\{i_t, w_t\}\)
- tax rates and transfers \(\{\tau_t^c, \tau_t^\ell, \psi_t^j\}\)
- survival probabilities \(\{\sigma_t^j\}\)
- evolution of the aggregate state \(s\), \(F(s)\)
- age of retirement \(J_r\), i.e., \(\ell_t = 0\) if \(j > J_r\)
Technology

• Production technologies:

  - \( Y_t = Y_{1t}^{\theta_1} Y_{2t}^{\theta_2} \) = composite final good
  - \( Y_{it} = K_{iT_t}^{\theta_i} K_{iI_t}^{\theta_i} (\Omega_t L_{it})^{1-\theta_i T - \theta_i I}, i = 1, 2 \)

• Evolution of stocks and labor-augmenting technology

  - \( K_{iT,t+1} = (1 - \delta_{iT}) K_{iTt} + X_{iTt} \) (Tangible)
  - \( K_{iI,t+1} = (1 - \delta_{iI}) K_{iIt} + X_{iIt} \) (Intangible)
  - \( \Omega_{t+1} = (1 + \gamma) \Omega_t \)
Government Policy

- Public consumption $G_t = \phi_{Gt} \text{ GNP}$
- Public debt $B_t \leq \phi_{Bt} \text{ GNP}$
- Age-dependent lump-sum transfers $\{\psi^j_t\}$
- Tax rates $\tau = \{\tau^c_t, \tau^\ell_t, \tau^d_{1t}, \tau^d_{2t}, \tau^\pi_{1t}\}$, where
  - $c = \text{ consumption}$
  - $\ell = \text{ labor (or payroll)}$
  - $d = \text{ distribution}$
  - $\pi = \text{ profit}$
Government Budget Constraints

- Evolution of debt:

\[ B_{t+1} = (1 + i_t)B_t + \sum_{j} n^j_t \psi^j_t + G_t - \tau_t^c C_t \]

\[ - \tau^\ell_t w_t L_t - \tau^\pi_{1t} \Pi_{1t} - \sum_i \tau^d_{it} D_{it} \]

where profits and distributions are

- \( \Pi_{1t} = p_{1t} Y_{1t} - w_t L_{1t} - \delta_{1T} K_{1Tt} - X_{1It} \)
- \( D_{1t} = (1 - \tau^\pi_{1t}) \Pi_{1t} - K_{1T,t+1} + K_{1Tt} \)
- \( D_{2t} = \Pi_{2t} = p_{2t} Y_{2t} - w_t L_{2t} - \delta_{2T} K_{2Tt} - X_{2It} \)
**Equilibrium Conditions**

- Labor, capital, and goods markets clear at each date
- Household policy functions \( \{a'_j = f_j(s)\}_j \) imply \( s' = F(s) \).
- Which implies:
  - Aggregate output: \( Y = C + \sum_i (X_{iT} + X_{iI}) + G \)
  - Aggregate assets: \( A' = \sum_i V_i + B' \), or:
    \[
    A' = (1 - \tau_1^d)(K'_{1T} + (1 - \tau_1^\pi)K'_{1I}) + K'_{2T} + (1 - \tau_2^d)K'_{2I} + B'
    \]
STRATEGY FOR QUANTITATIVE ASSESSMENT
Steps Taken

1.

2.

3.

   a.

   b.

   c.

4.

5.
Steps Taken

1. Revise NIPA accounts to be consistent with theory

2.

3.

   a.

   b.

   c.

4.

5.
Steps Taken

1. Revise NIPA accounts to be consistent with theory

2. Choose parameters so accounts of model economy match

3.

   a.

   b.

   c.

4.

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**Steps Taken**

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2. Choose parameters so accounts of model economy match

3. Compute balanced growth paths for:
   
   a.
   
   b.
   
   c.

4. 

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**Steps Taken**

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   a. Current US policy/demographics
   b. Continuing US policy with new demographics
   c. Alternative plans with new demographics

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3. Compute balanced growth paths for:
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   c. Alternative plans with new demographics

4. Compute transition from (a) to (b) and (a) to (c)

5. Compare results to standard 1-sector, 1-capital economy
US NIPA AND FACTOR INPUTS
**Total Adjusted Income, Avg 2000–2010**

**Labor Income** \((wL)\)
- Compensation of employees \(0.531\)
- 70% of proprietors’ income \(0.053\)

**Capital Income** \((Y - wL - X_I)\)
- Corporate profits \(0.073\)
- 30% of proprietors’ income \(0.023\)
- Rental income \(0.017\)
- Surplus on govt enterprises \(0.000\)
- Net income, rest of world \(0.007\)
- Indirect business taxes \(0.072\)
- *Less:* Sales tax \(0.042\)
- Consumption of fixed capital \(0.117\)
- Consumer durable depreciation \(0.060\)
- Statistical discrepancy \(-0.004\)
- Imputed capital services \(0.037\)
**Total Adjusted Income, Avg 2000–2010**

**Labor Income** \((wL)\) \(\text{.585}\)
- Compensation of employees \(\text{.531}\)
- 70% of proprietors’ income \(\text{.053}\)

**Capital Income** \((Y - wL - X_I)\) \(\text{.415}\)
- Corporate profits \(\text{.073}\)
- 30% of proprietors’ income \(\text{.023}\)
- Rental income \(\text{.017}\)
- Surplus on govt enterprises \(\text{.000}\)
- Net income, rest of world \(\text{.007}\)
- Indirect business taxes \(\text{.072}\)

⇒ Less: Sales tax \(\text{.042}\)
- Consumption of fixed capital \(\text{.117}\)

⇒ Consumer durable depreciation \(\text{.060}\)
- Statistical discrepancy \(-\text{.004}\)

⇒ Imputed capital services \(\text{.037}\)
<table>
<thead>
<tr>
<th>Total Adjusted Product, Avg 2000–2010</th>
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**Consumption** ($C$)

<table>
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<tr>
<th>Description</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Personal consumption exp less durables</td>
<td>.574</td>
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<tr>
<td>Less: Imputed sales tax, nondur &amp; services</td>
<td>.035</td>
</tr>
<tr>
<td>Govt consumption expenditures, nondefense</td>
<td>.111</td>
</tr>
<tr>
<td>Plus: Imputed capital services</td>
<td>.037</td>
</tr>
<tr>
<td>Consumer durable depreciation</td>
<td>.060</td>
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</table>

**Tangible Investment** ($X_T$)

<table>
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<th>Weight</th>
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<tbody>
<tr>
<td>Gross private domestic investment</td>
<td>.145</td>
</tr>
<tr>
<td>Schedule C corporations ($X_{1T}$)</td>
<td>.069</td>
</tr>
<tr>
<td>Other private business</td>
<td>.076</td>
</tr>
<tr>
<td>Consumer durable goods</td>
<td>.081</td>
</tr>
<tr>
<td>Less: Imputed sales tax, durables</td>
<td>.005</td>
</tr>
<tr>
<td>Govt gross investment, nondefense</td>
<td>.025</td>
</tr>
<tr>
<td>Net exports of goods and services</td>
<td>−.042</td>
</tr>
<tr>
<td>Net income, rest of world</td>
<td>.007</td>
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</table>

**Defense Spending** ($G$)

<table>
<thead>
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<th>Description</th>
<th>Weight</th>
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<tbody>
<tr>
<td></td>
<td>.044</td>
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</table>
## Factor Inputs, Avg 2000–2010

<table>
<thead>
<tr>
<th>Labor Input ($L$)</th>
<th>0.277</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital Stock ($K'$)</strong></td>
<td>5.835</td>
</tr>
<tr>
<td>Tangible capital ($K'_T$)</td>
<td>4.117</td>
</tr>
<tr>
<td>Private fixed assets</td>
<td>2.193</td>
</tr>
<tr>
<td>Public fixed assets</td>
<td>0.602</td>
</tr>
<tr>
<td>Consumer durables</td>
<td>0.304</td>
</tr>
<tr>
<td>Inventories</td>
<td>0.134</td>
</tr>
<tr>
<td>Land</td>
<td>0.885</td>
</tr>
</tbody>
</table>

| Intangible capital ($K'_I$) | 1.718 |

Note: IRS returns used to estimate $K'_{1T} = 0.885$, $K'_{2T} = 3.232$
MODEL PARAMETERIZATION CONSISTENT WITH US DATA
Growth and Demographic Parameters

- Technology growth: 2%
- Population growth: 1%
- Survival probabilities: 2010 Life tables
- Number of workers per retiree: 3.4

⇒ work life of 43 years
Preference and Technology Parameters

- Preference parameters $u(c, \ell) = \log c + \alpha \log(1 - \ell)$
  - Disutility of leisure $\alpha = 1.1$
  - Discount factor $\beta = .987$

- Technology Parameters
  - Tangible capital shares: $\theta_{1T} = .19$, $\theta_{2T} = .5$
  - Tangible depreciation rates: $\delta_{1T} = .05$, $\delta_{2T} = .015$

$\Rightarrow$ chosen to match $L, wL, K_{iT}, X_{iT}, i = 1, 2$
Preference and Technology Parameters

- Somewhat arbitrarily chosen are:
  - Schedule C income share $\theta_1 = .5$
  - Intangible shares and depreciation rates $\rightarrow K_I' = 1.72$

- But sensitivity analysis shows results are robust
**Policy Parameters**

- Spending and debt shares based on NIPA/FOF
  - Defense spending $\phi_G = 0.044$
  - Government debt $\phi_B = 0.533$

- % Tax rates based on IRS/NIPA
  - Profits, sector 1, $\tau_1^\pi = 33$
  - Distributions, sector 1, $\tau_1^d = 14.4$
  - Distributions, sector 2, $\tau_2^d = 38.2$
  - Labor $\tau^\ell = 38.2$
  - Consumption $\tau^c = 10$

- Transfer-GNP ratio = 36.9% (more on this later)
EQUILIBRIUM OUTCOMES
# Government Revenues and Deficit, 2000–2010

<table>
<thead>
<tr>
<th>Tax Type</th>
<th>Description</th>
<th>% of GNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\tau^L wL$</td>
<td>Labor taxes</td>
<td>22.3</td>
</tr>
<tr>
<td>$\tau_1^{\pi} \Pi_1$</td>
<td>Schedule C profits taxes</td>
<td>2.6</td>
</tr>
<tr>
<td>$\tau_1^d D_1$</td>
<td>Schedule C distribution taxes</td>
<td>0.4</td>
</tr>
<tr>
<td>$\tau_2^d D_2$</td>
<td>Other distribution taxes</td>
<td>9.4</td>
</tr>
<tr>
<td>$\tau^c C$</td>
<td>Consumption taxes (residual)</td>
<td>7.5</td>
</tr>
<tr>
<td>$B' - B$</td>
<td>Deficit</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Total: 43.8
## Government Expenditures, 2000–2010

<table>
<thead>
<tr>
<th>Description</th>
<th>% GNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>$G$ = Defense spending</td>
<td>4.4</td>
</tr>
<tr>
<td>$iB$ = Interest on debt</td>
<td>2.5</td>
</tr>
<tr>
<td>$\Psi$ = Transfers</td>
<td>36.9</td>
</tr>
<tr>
<td>= Medicare + Social Security</td>
<td>6.6</td>
</tr>
<tr>
<td>+ Other transfers &amp; nondefense</td>
<td>19.6</td>
</tr>
<tr>
<td>+ <em>Implicit transfers</em> not in NIPA</td>
<td>10.7</td>
</tr>
<tr>
<td></td>
<td><strong>43.8</strong></td>
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Government Expenditures, 2000–2010

\[
\begin{align*}
G & \quad = \text{Defense spending} & 4.4 \\
iB & \quad = \text{Interest on debt} & 2.5 \\
\Psi & \quad = \text{Transfers} & 36.9 \\
& \quad = \text{Medicare+Social Security} & 6.6 \\
& \quad + \text{Other transfers & nondefense} & 19.6 \\
& \quad + \text{Implicit transfers not in NIPA} & 10.7 \\
\uparrow & & 43.8 \\
\end{align*}
\]

Equal to revenues if all income taxed at marginal rates
Sources of Implicit Transfers

- Untaxed income (e.g., fringe benefits)
- Marginal rates exceed average rates
Sources of Implicit Transfers

- Untaxed income (e.g., fringe benefits)
- Marginal rates exceed average rates

Example 1: fringe $f$ is deducted from wages

\[
\text{Model income} = \underbrace{(1 - \tau^\ell)wL}_{\text{Wages after tax}} + \underbrace{\tau^\ell f}_{\text{Implicit transfers}}
\]
Sources of Implicit Transfers

- Untaxed income (e.g., fringe benefits)
- Marginal rates exceed average rates

Example 2: $\tau^{\text{marg}} > \tau^{\text{avg}}$

Model income = $(1 - \tau^{\text{marg}})wL + (\tau^{\text{marg}} - \tau^{\text{avg}})wL$

- Wages after tax
- Implicit transfers
ACCOUNTS AND FACTOR INPUTS ALIGNED
## Accounts and Factor Inputs, Avg 2000–2010

**Total Income** \( (Y - X_I) \)

- Labor Income \( (wL) \)  \( 0.585 \)  \( 0.585 \)
- Capital Income \( (Y - wL - X_I) \)  \( 0.415 \)  \( 0.415 \)

**Total Product** \( (C + G + X_T) \)  \( 1.000 \)  \( 1.000 \)

- Consumption \( (C) \)  \( 0.745 \)  \( 0.745 \)
- Tangible investment \( (X_T) \)  \( 0.211 \)  \( 0.211 \)
  - C-corporations \( (X_{1T}) \)  \( 0.069 \)  \( 0.069 \)
  - Other business \( (X_{2T}) \)  \( 0.142 \)  \( 0.142 \)
- Defense spending \( (G) \)  \( 0.044 \)  \( 0.044 \)

**Labor Input** \( (L) \)  \( 0.277 \)  \( 0.277 \)

**Capital Stock** \( (K') \)  \( 5.835 \)  \( 5.835 \)

- Tangible capital \( (K'_T) \)  \( 4.117 \)  \( 4.117 \)
  - C-corporations \( (K'_{1T}) \)  \( 0.885 \)  \( 0.885 \)
  - Other business \( (K'_{2T}) \)  \( 3.232 \)  \( 3.232 \)
- Intangible capital \( (K'_I) \)  \( 1.718 \)  \( 1.718 \)
Comparison of Balanced Growth Paths
CHANGING DEMOGRAPHICS

• Current demographics
  ○ 1% population growth
  ○ 3.4 workers per retiree

• New demographics
  ○ 1% to 0% population growth in 50 years
  ○ 2 workers per retiree on new balanced growth path
CHANGING POLICY

• Start with current US policy and demographics

• Then, continuation of policy with new demographics

• Then, alternative saving-for-retirement policies:
  ○ FICA taxes and old-age transfers eliminated
  ○ Capital taxes eliminated
  ○ Implicit transfers eliminated
# Tax Rates and Transfers

<table>
<thead>
<tr>
<th>Current US</th>
<th>Future Policy &amp; New Demographics</th>
<th>Eliminate FICA Taxes and</th>
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<tbody>
<tr>
<td></td>
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<td>Continue Medicare &amp; Social Policy + Cut Capital Implicit Security Taxes Transfers</td>
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## Tax Rates and Transfers

| Tax rates       | Current US | Future Policy & New Demographics |  |  |  |
|                |            | Continue US Policy | Medicare & Social Security | US Policy | Capital Taxes | Implicit Transfers |
| C Profits       | 33          | 33                   | 33                           | 33         | 33            |                  |
| C Dist          | 14          | 14                   | 14                           | 14         | 14            |                  |
| Other Dist      | 38          | 38                   | 38                           | 38         | 38            |                  |
| Labor           | 38          | 38                   | 38                           | 38         | 28            |                  |
| Consumption     | 10          | 14                   | 14                           | 14         | 10            |                  |
| Transfers/GNP   | 37          | 40                   |                              | 30         |               |                  |
# Tax Rates and Transfers

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Devising a Pareto-Improving Transition Path
Transitions

- Initial assets from baseline economy

- Hold as constant fraction of GNP:
  - Defense spending ($G$)
  - Nondefense spending
    + Transfers other than Medicare, SS ($\Psi_{\text{other}}$)

- In steps, consider:
  A. Continuing current policy with new demographics
  B. Eliminating FICA taxes, Medicare, and SS
  C. Policy B plus eliminating capital taxes
  D. Policy C plus eliminating implicit transfers
TRANSITIONS
CONTINUING CURRENT US POLICY

• Increase taxes to finance more retirees
  ○ Tried $\tau^\ell$ first but too distortionary
  ○ Used $\tau^c$ instead

• Increase retiree transfers at rate of population growth

Note: We refer to this as the Baseline
**Paths for Transfers to GNP**

![Graph showing paths for transfers to GNP](image)

- **Worker Transfers/GNP (Fixed per capita share)**
- **Retiree Transfers/GNP (Increased per capita share)**

The graph illustrates the projected paths for transfers to GNP from 2010 to 2110, with separate lines for worker and retiree transfers. The y-axis represents the percentage of GNP, ranging from 0% to 25%, while the x-axis shows the years from 2010 to 2110.
Implied Path for Consumption Tax

Tax Rate on Consumption

2010 2030 2050 2070 2090 2110
COMPARE BASELINE TO SAVING-FOR-RETIREMENT PLANS
Eliminate FICA taxes, Medicare, SS

• Do this in steps:

  1. Gradually lower FICA taxes and old-age transfers
     ○ Result: Workers worse off
     ○ Intuition: Have high $\tau^\ell$, low old-age transfers
Paths for Tax Rate and Transfers

- **Tax Rate on Labor (FICA tax eliminated)**
- **Retiree Transfers/GNP (Medicare & SS eliminated)**
Welfare Gains/Losses by Birth Cohort

[Graph showing welfare gains/losses by birth cohort with categories: Retirees, Current Workers, Future Workers, and a line indicating changes over time.]
Indifferent because consumption taxes and old-age transfers changed gradually.
Welfare Gains/Losses by Birth Cohort

Retirees: Indifferent because consumption taxes and old-age transfers changed gradually.

Workers: Worse off because tax on labor high when working, transfers lower when retired.

Birth-Cohort:

-10 -5 0 5 10 15 20 25
Eliminate FICA taxes, Medicare, SS

- Do this in steps:

  1. Gradually lower FICA taxes and old-age transfers
  2. Immediately lower FICA taxes with same transfers
     - Result: Retirees worse off
     - Intuition: $\tau^c$ makes up revenue shortfall
WELFARE GAINS/LOSSES BY BIRTH COHORT

Immediately lowering the FICA tax improves welfare for young and new cohorts.

Worse off because tax on labor high when working, transfers lower when retired.
Welfare Gains/Losses by Birth Cohort

Immediately lowering the FICA tax improves welfare for young and new cohorts. But retirees worse off if tax on consumption makes up revenue.
Eliminate FICA taxes, Medicare, SS

• Do this in steps:

  1. Gradually lower FICA taxes and old-age transfers
  2. Immediately lower FICA taxes with same transfers
  3. Temporarily reduce workers’ *implicit* transfers
     ○ Result: Everyone better off
     ○ Intuition: $\tau^c, \tau^\ell$ both low enough
Welfare Gains/Losses by Birth Cohort

Lowering workers’ implicit transfers implies lower tax distortions for all.

Worse off because tax on labor high when working, transfers lower when retired.
Temporary reductions in implicit transfers could vary
Eliminate FICA taxes, Medicare, SS

- Do this in steps:
  1. Gradually lower FICA taxes and old-age transfers
  2. Immediately lower FICA taxes with same transfers
  3. Temporarily reduce workers’ *implicit* transfers
     - Result: Everyone better off
     - Intuition: $\tau^c, \tau^\ell$ both low enough

- Same algorithm works with further reforms
**Capital Tax Reforms**

- Eliminating capital taxes:
  - Increases productive capital stocks ($K_T, K_I$)
  - Increases household net worth ($V_1 + V_2$)

- What happens with gradual elimination?
Welfare Gains/Losses by Birth Cohort

Additionally, capital taxes eliminated

FICA Tax, Medicare, and SS eliminated
Flattening and Broadening

- Flattening: lower marginal rates to average
- Broadening: tax fringe benefits and other untaxed income
- What happens with gradual change in taxes and transfers?
Welfare Gains/Losses by Birth Cohort

Additionally, capital taxes and implicit transfers eliminated

FICA Tax, Medicare, and SS eliminated

Birth-Cohort
Are the results sensitive to...

- Varying age-dependent productivities?
- Including annuity markets?
- Lowering the labor elasticity?
- Assuming final profits taxes are positive?
- Having two sectors, two types of capital?
Are the results sensitive to...

- Varying age-dependent productivities? No
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- Having two sectors, two types of capital? Yes
The “Standard” Analysis

- One production sector \((\theta_1 = 1)\)
- One capital stock \((\theta_{1I} = 0)\)
- Capital-output ratio of 3 \((\theta_{1T} = 1/3, \beta = .99, \delta = .06)\)
- No taxes on distributions \((\tau_{1}^{d} = 0)\)
- Transfers to retirees as in baseline
**Welfare Relative to Current Policy**

<table>
<thead>
<tr>
<th>Eliminate FICA, Medicare, SS</th>
<th>Our Model</th>
<th>“Standard” Model</th>
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<tr>
<td>Eliminate capital taxes</td>
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In *both* models, can find pareto-improving transitions
### Welfare Relative to Current Policy

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In *both* models, can find pareto-improving transitions

- Previous analyses have
  - Exaggerated difficulty of finding pareto improvements
  - Underestimated gains of saving-for-retirement systems
CONCLUSIONS

• Current policy in face of an aging population:
  ◦ Higher taxes necessary to finance
  ◦ Larger entitlement programs for retirees

• We find welfare improved for all cohorts with
  ◦ FICA and capital taxes eliminated and
  ◦ No entitlement programs for retirees