A General Equilibrium Analysis of the Australian Means-Tested Age Pension

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Australia’s age pension represents a safety net pension pillar that is means tested.

Advantages of means testing - (i) targeting payments to those in need and (ii) lower government costs on age-related pension payments.

Disadvantages of means testing - (i) complexity; (ii) administratively expensive, (iii) disincentives to work and save due to high effective marginal tax rates (Dunsford and Rise (2004) and Nielson, 2005).
Age pension is subject to both income and assets tests.

- Only the binding test applies; the test resulting in lower age pension.
Focus of the paper

We develop a general equilibrium OLG model to simulate the following three hypothetical pension policy changes to the existing means test:

1. Complete abolition of the means test (shift to the universal age pension proposed by the Institute of Actuaries of Australia [IAA], 1994);
2. Reduction of the income taper rate from 40 to 20 percent (Ingles, 2001);
3. Removal of the labour earnings from the income test of the age pension (Dunsford and Rice, 2004).
Key features of the model

- Small open economy version of Auerbach and Kotlikoff’s (1987) OLG model that consists of household, pension, production, government and foreign sectors.
- Household behaviour follows the life-cycle theory (Modigliani and Brumberg, 1954) with endogenous labour supply and retirement.
- The model features main aspects of Australia’s means tested age pension and mandatory superannuation.
- Production sector contains one firm that, using capital and labour, produces a single output good and capital formation is subject to adjustment costs.
- Government collects taxes from household income, consumption and superannuation and pays for its consumption and age pension expenditures.
Household sector

- 70 overlapping generations of heterogeneous households aged from 21 to 90 years ($a = 21, \ldots, 90$) that face life uncertainty.
- Each generation consists of three income groups $i$ - low-income, middle-income and high-income households.
- A newborn generation solves the following maximisation problem:

$$\max E(U^i) = \frac{1}{1 - \frac{1}{\gamma}} \sum_{a=21}^{90} \left( \prod_{j=21}^{a} s_{j-1} \right) (1 + \beta^i)^{21-a} u(c_a^i, l_a^i)^{1-\frac{1}{\gamma}}$$

s.t. $A_a^i = (1 + r)A_{a-1}^i + we_a^i(h - l_a^i) + AP_a^i + SA_{60}^i + SP_a^i + B - T_a^i - (1 + \tau_c) c_a^i$,

$l_a^i \leq h$,

$c_a^i, l_a^i, A_a^1 \geq 0$ and $A_{20}^i = A_{90}^i = 0$. 

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We start with solving for the benchmark steady state (SS) that approximately corresponds with the key Australian data in June 2005.

To solve for the steady state, values has to be assign to model parameters; some parameter values are taken from related literature (utility function parameters), some are calibrated to the calibration targets (most of the production parameters) and some exactly match their values in 2005 (pension sector parameters).

The model is solved in the GAMS software using Gauss-Seidel iteration technique described in Auerbach and Kotlikoff (1987).
<table>
<thead>
<tr>
<th>Variable</th>
<th>Benchmark</th>
<th>Australia</th>
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<tbody>
<tr>
<td></td>
<td>SS</td>
<td>2004-05</td>
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<tr>
<td>Expenditures on GDP (in % of GDP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Private consumption</td>
<td>53.35</td>
<td>58.04</td>
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<tr>
<td>- Investment</td>
<td>25.82</td>
<td>25.82</td>
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<tr>
<td>- Government consumption</td>
<td>18.75</td>
<td>18.10</td>
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<tr>
<td>- Trade balance</td>
<td>2.08</td>
<td>-2.52</td>
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<tr>
<td>Government indicators (in % of GDP)</td>
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<td></td>
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<tr>
<td>- Age pension expenditures</td>
<td>3.62</td>
<td>2.89</td>
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<td>- Government surplus</td>
<td>0.00</td>
<td>1.50</td>
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<tr>
<td>- Personal income tax</td>
<td>15.36</td>
<td>12.10</td>
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<td>- Corporation tax</td>
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<td>4.97</td>
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<tr>
<td>- Consumption tax (GST)</td>
<td>5.33</td>
<td>4.12</td>
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<tr>
<td>- Superannuation taxes</td>
<td>1.68</td>
<td>0.71</td>
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Benchmark SS solutions
Model-generated and HILDA age pension profiles

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The behavioural, welfare and macroeconomic implications of the following three hypothetical age pension policy changes are simulated:

1. Means test removal;
2. Income taper rate reduction;

The consumption tax rate is assumed to balance the government budget.
Behavioural implications - labour supply

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Welfare implications - equivalent variations

Means test removal

Taper rate reduction

Labour earnings removal

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Macroeconomic implications

Labour supply

Change relative to 2005 (in %)

Means tested age pension
Taper rate reduction
Labour earnings removal

Consumption

Change relative to 2005 (in %)

Means tested removal
Taper rate reduction
Labour earnings removal

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Fiscal implications

**Age pension expenditures**

- **Means test removal**
- **Taper rate reduction**
- **Labour earnings removal**

**Consumption tax rate**

- **Means test removal**
- **Taper rate reduction**
- **Labour earnings removal**

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The model indicates that the existing means tested age pension represents a disincentive for some older households to work.

The most effective of the three simulated pension policy changes to increase labour supply and postpone retirement is the removal of labour earning from the income test.

The means test abolition generates larger welfare gains, especially for the older high- and middle-income households.

The costs of the means test abolition to the government are substantially greater.