

# The cost of raising an additional dollar of revenue.



Sebastian Wende

Research School of Economics, Australian National University

*sebastianwende@anu.edu.au*

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|                                    | CIT    | ITC    | PIT    | GST    |
|------------------------------------|--------|--------|--------|--------|
| Static CGE model (IECGE, Treasury) | \$0.50 |        | \$0.16 | \$0.19 |
| OLG model                          | \$0.83 | \$1.30 | \$0.34 | \$0.24 |

Table: Excess welfare loss per \$1 of additional net revenue.

|                           | CIT     | ITC     | PIT     | GST     |
|---------------------------|---------|---------|---------|---------|
| Static CGE model (IECGE)  | \$0.50  |         | \$0.16  | \$0.19  |
| OLG Aggregate             | \$0.83  | \$1.30  | \$0.34  | \$0.24  |
| OLG Old: 65+              | \$1.32  | -\$1.86 | -\$0.64 | \$0.01  |
| OLG Young: 20 to 64       | \$0.54  | -\$1.28 | \$0.09  | \$0.23  |
| OLG Future: -100          | \$0.96  | \$2.19  | \$0.44  | \$0.25  |
| OLG Type 1: low income    | -\$0.02 | \$0.23  | -\$0.32 | -\$0.16 |
| OLG Type 2: medium income | \$0.73  | \$1.18  | \$0.27  | \$0.18  |
| OLG Type 3: high income   | \$1.75  | \$2.46  | \$1.04  | \$0.70  |

**Table:** Excess welfare loss per \$1 of additional net revenue.

- What is an OLG model.
- How does it compare to other models.
- Results.
  - Company income tax.
  - Personal income tax.
  - Consumption tax.
  - Investment tax credit.
  - Depreciation deductions.

- Small open economy Auerbach-Kotlikoff style overlapping generations model.

- Households aged 20 to 100 and of three education types.
  - Households choose consumption, leisure and saving to maximise utility.
  - Households save for retirement.
  - The model captures the distortion of taxation to both the savings and labour supply decisions.

Household equations on slide ??.

- Representative firm that produces output, owns capital, hires labour and pays returns to debt and equity holders.
  - Invests to optimise its value.
- Foreigners are the marginal investors and invest up to the point that the expected return equals the international interest rate.

Firm equations on slide ??.

- The government collects company income tax (CIT), personal income tax (PIT), and a consumption tax and spends revenue on transfers and government consumption.



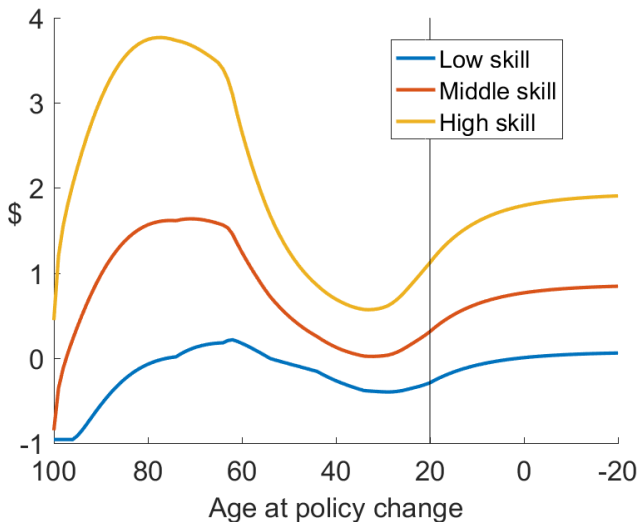
- Captures responses of households of firms.
  - Consumption, leisure and saving responding to taxes and macro-economic conditions.
  - Investment and capital respond to taxes and labour supply.
- Life cycling model capture household heterogeneity of responses.
- General equilibrium.
- Dynamic.
  - Transition paths and heterogeneous welfare impacts.
- Calibrated to Australian tax and transfer system and macroeconomic data.

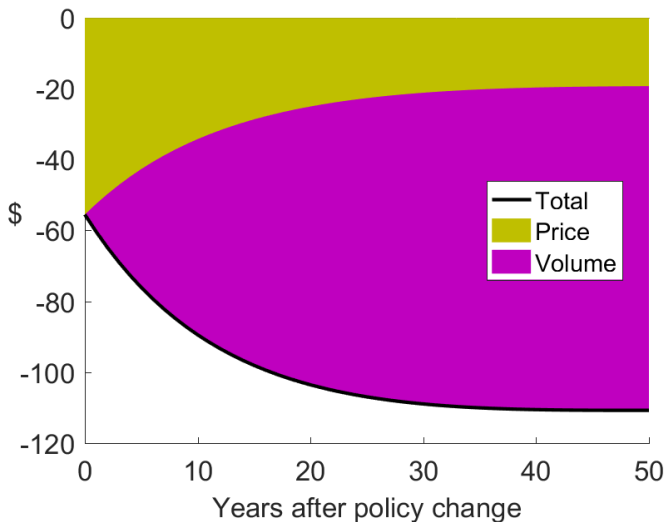
- Advantages of static comparative model.
  - Simple.
- Disadvantages of static comparative model.
  - No dynamics.
  - No distributional impacts.
  - No inter-temporal optimisation.

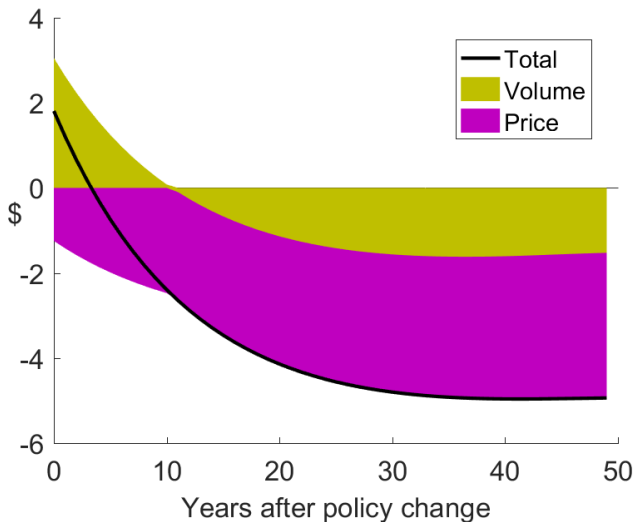
- Advantages
  - Industry detail.
  - Trade detail.
- Disadvantages
  - Not forward looking.
  - No household detail.

- The results show the impacts of a tax increase that raises net revenue by the equivalent of 1 dollar in each future period in NPV terms.
- Additional revenue is returned to households uniformly.
  - Unit population in the model: revenue increases by \$1 per person, transfers increase by \$1 per person.
- Results:
  - Normalised for population and productivity growth.

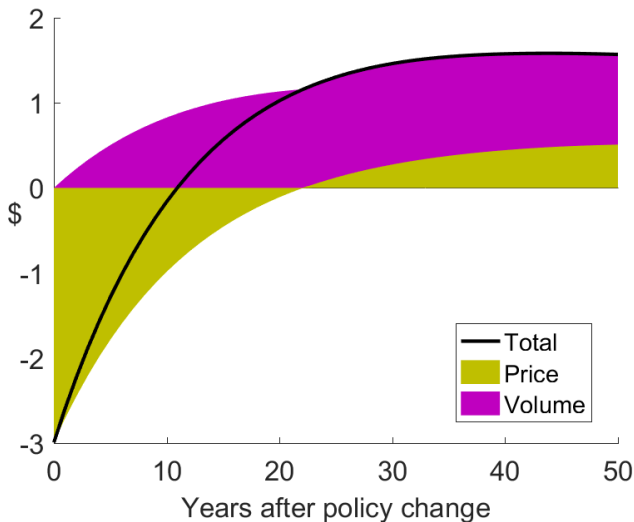
## Company Income Tax increase.

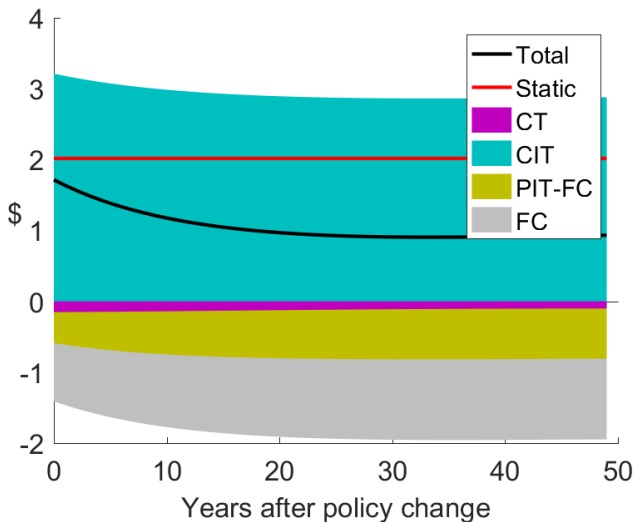




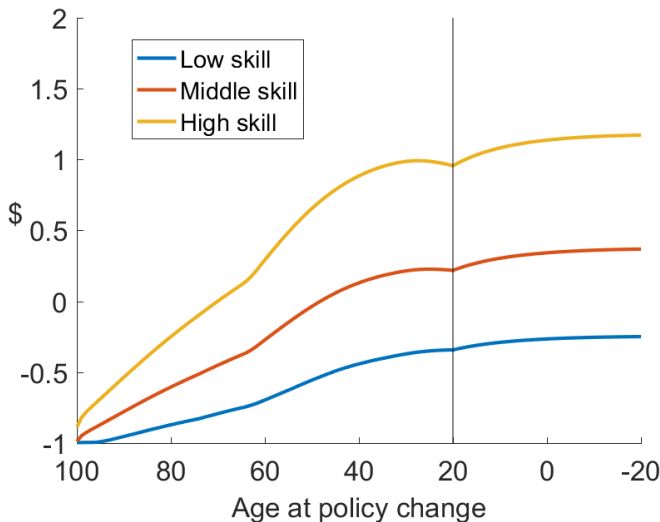


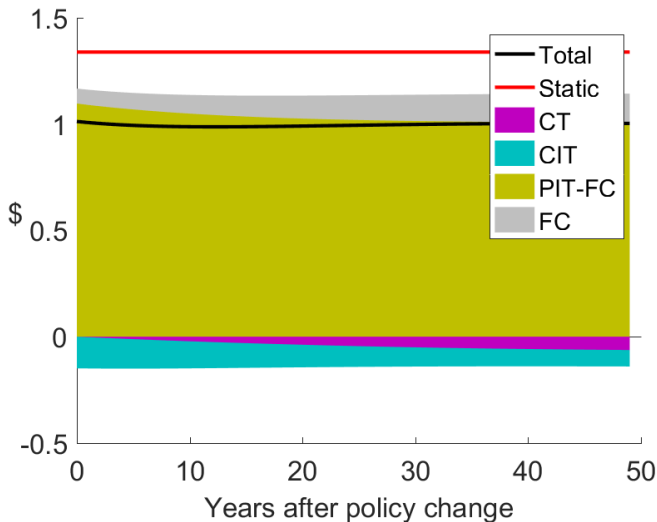




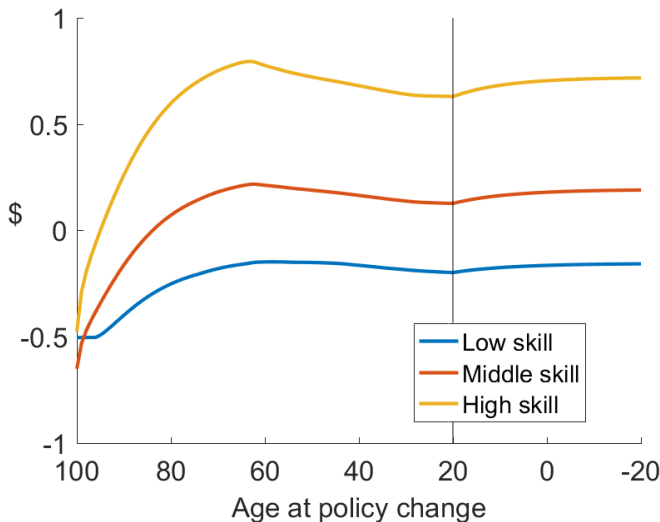


## Personal Income Tax increase.





## Consumption Tax increase.

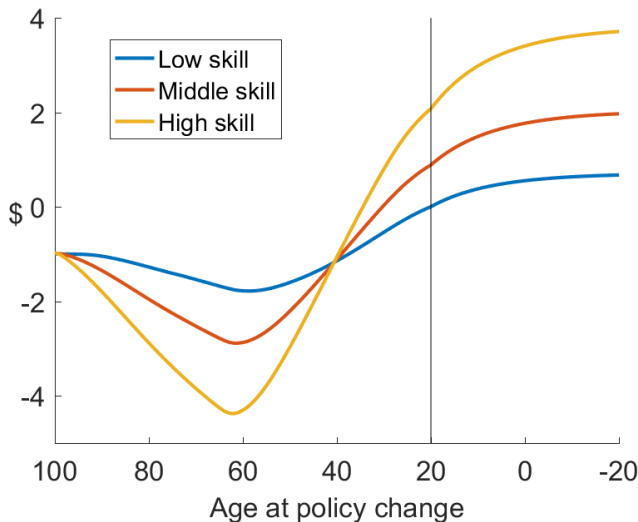


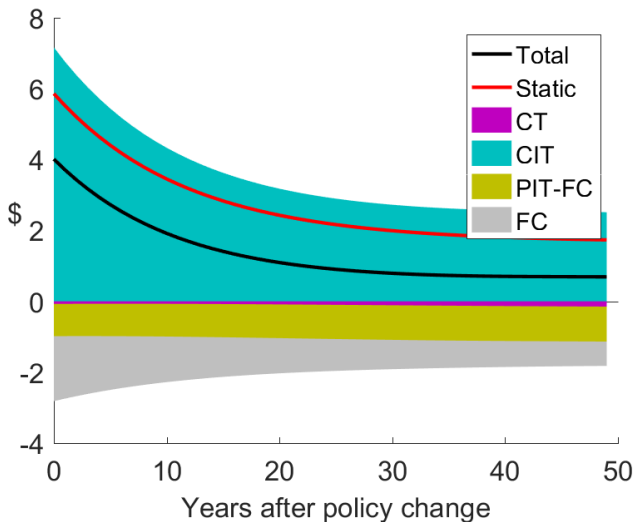
|                       | CIT     | PIT     | GST     |
|-----------------------|---------|---------|---------|
| Aggregate             | \$0.83  | \$0.34  | \$0.24  |
| Old: 65+              | \$1.32  | -\$0.64 | \$0.01  |
| Young: 20 to 64       | \$0.54  | \$0.09  | \$0.23  |
| Future: -100          | \$0.96  | \$0.44  | \$0.25  |
| Type 1: low income    | -\$0.02 | -\$0.32 | -\$0.16 |
| Type 2: medium income | \$0.73  | \$0.27  | \$0.18  |
| Type 3: high income   | \$1.75  | \$1.04  | \$0.70  |

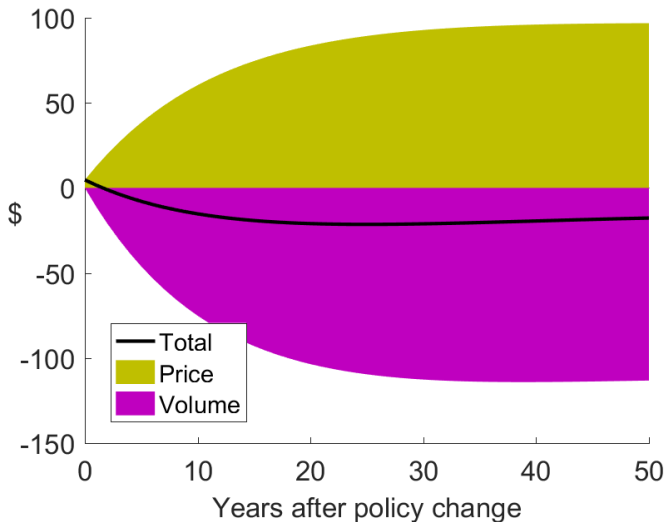
**Table:** Excess welfare loss per \$1 of additional net revenue.



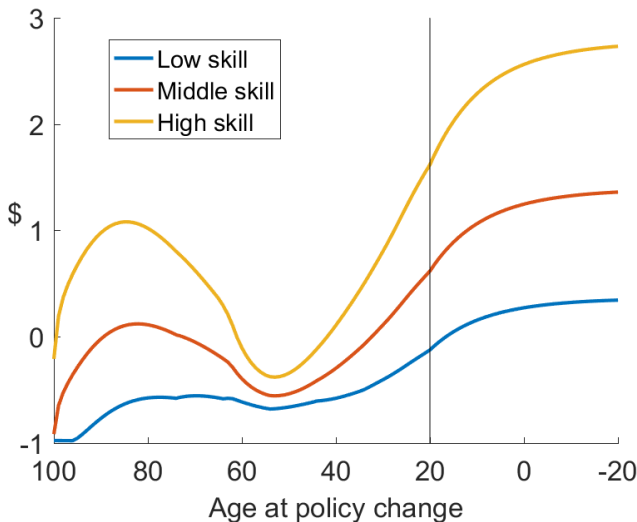
# Investment tax credit decrease.

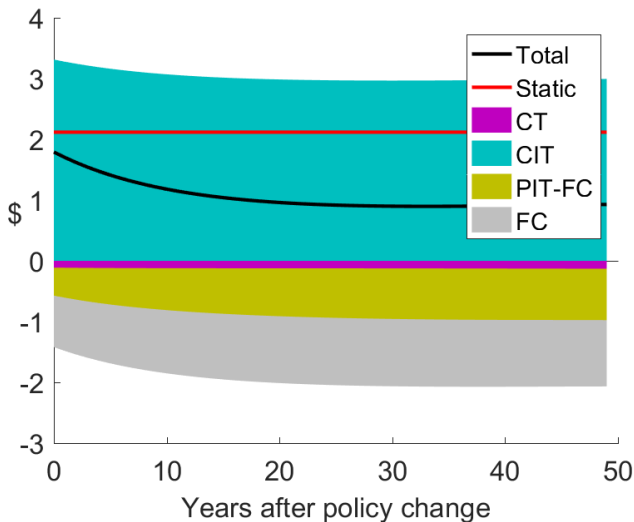


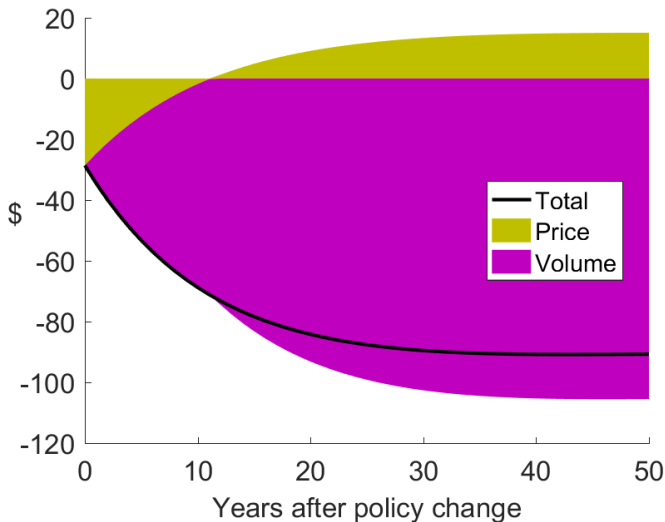




Depreciation deductions decrease.









|           | Firm           |                |                | Household      |                |                |                |
|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|           | CIT            | ITC            | Dep            | PIT            | DAT            | LIT            | GST            |
| Aggregate | \$0.83         | <b>\$1.30</b>  | \$1.08         | \$0.34         | \$0.48         | \$0.30         | <b>\$0.24</b>  |
| Old       | <b>\$1.32</b>  | <b>-\$1.86</b> | \$0.00         | <b>-\$0.64</b> | <b>-\$0.13</b> | <b>-\$0.79</b> | <b>\$0.01</b>  |
| Young     | \$0.54         | <b>-\$1.28</b> | <b>-\$0.13</b> | \$0.09         | <b>\$0.77</b>  | <b>-\$0.11</b> | \$0.23         |
| Future    | \$0.96         | <b>\$2.19</b>  | \$1.51         | \$0.44         | \$0.45         | \$0.45         | <b>\$0.25</b>  |
| Type 1    | <b>-\$0.02</b> | <b>\$0.23</b>  | \$0.12         | <b>-\$0.32</b> | <b>-\$0.29</b> | <b>-\$0.32</b> | <b>-\$0.16</b> |
| Type 2    | \$0.73         | <b>\$1.18</b>  | \$0.97         | \$0.27         | \$0.41         | \$0.24         | <b>\$0.18</b>  |
| Type 3    | \$1.75         | <b>\$2.46</b>  | \$2.13         | \$1.04         | \$1.29         | \$0.97         | <b>\$0.70</b>  |

Table: Welfare loss for \$1 increase in tax.