

DYNAMIC OVERLAPPING GENERATIONS MODEL OF THE AUSTRALIAN ECONOMY(DOLGA)

(DOLGA v0: June 2023)

We develop a multi-period, overlapping generations (OLG) model in the spirit of Auerbach and Kotlikoff (1987) for fiscal policy analysis in Australia. Our baseline model is based on the model in Kudrna and Tran (2018), consisting of the following features:

- Discrete-time, year periods
- Households with differences in labor productivity over the life cycle, profit maximizing firms and incomplete markets
- Small and open economy
- Australian fiscal policy settings

Demographics

- Population data from ABS
- Born into model at age 20
- Age-dependent survival probability
- Live up to age 100
- Retirement age is exogenous and cohort-specific

Households

- Maximize discounted lifetime utility from consumption and leisure
- State: age, asset, education level and labor productivity
- Savings portfolio: stock, private bond and government debt
- Various skill levels with differences in labor productivity
- Labor force participation and house are endogenous
- Retirement with zero labor supply after 65.

Taxes

- Personal income tax
- Business/corporate income tax
- Payroll tax
- GST/ consumption tax

Transfers

- Means-tested pension for retirees
- Targeted social transfers for workers

Firms

- Single-firm Cobb-Douglas production
- Capital adjustment costs, other expenses
- Time-varying cost of capital

- Corporate finance structure

Market structure/Openness

- Small open or partially open economies.
- Exogenous time-varying take-up of government debt by foreigners.
- Exogenous time-varying foreign investment in capital
- Foreigners pay tax on capital returns

Government

- Expenditures:
 - Endogenous pension and transfer payments
 - Remainder is exogenous
- Revenues:
 - Endogenous from household, business, foreigners
 - Remainder is exogenous
- Budget balancing rule:
 - Fix debt/GDP
 - Adjustments in discretionary spending or consumption tax

Extensions (Under development)

- Module 1: Multiple production sectors (see Warwick and Wilconxen, 1999)
- Module 2: Corporate finance and taxes (see Tran and Wende, 2022)
- Module 3: Superannuation and population aging (e.g., Kudrna, Tran and Woodland, 2023)
- Module 4: Education sector

References

- Auerbach A.J. and L. J. Kotlikoff 1987. *Dynamic Fiscal Policy*. Cambridge University Press.
- Kudrna and Tran 2018. *Comparing Budget Repair Measures in a Small Open Economy with Growing Debt*. **Journal of Macroeconomics**, Vol. 55
- Kudrna, Tran and Woodland 2022. *Sustainable and Equitable Pensions with Means Testing in Aging Economies*. **European Economic Review**, Vol 141
- McKibbin, Warwick and P.J. Wilconxen 1999. *The Theoretical and Empirical Structure of the G-Cubed Model*. **Economic Modelling**, Vol. 16, 123-148.
- Tran and Wende 2022. *Dividend Imputation, Investment and Capital Accumulation in Open Economies*. **ANU Working Paper**