Brief Description of the BYU-AEI Dynamic Macro Scoring Model

This model is still in development, so some of the details are not pinned down exactly and/or may be subject to change as we proceed.

The BYU-AEI model is similar to the Zodrow-Diamond (ZD) model in being a computable CGE-OLG model. We solve as ZD do using the Auerbach-Kolikoff time-path iteration method.

Demographics

* Households live for a maximum of 100 years. (ZD use 55-year-lived agents)
* They become economically active at age 20, retire at age 65, and die by age 100.
* We explicitly consider mortality risk in our model. (ZD have no mortality risk)
* The law of large numbers guarantees that the number of households in each cohort is perfectly predictable.
* We control for new births and immigration. (ZD use a fixed population growth rate)
* We include both accidental and intended bequests

Households

* *N* different ability levels which are fixed at birth. (ZD use 12 ability levels)
* Different ability types have different age profiles for their labor productivity. (Same as ZD)
* Unintentional bequest are distributed to other agents of the same ability type at the beginning of the next period. (ZD have no mortality risk and thus no unintentional bequests)
* Households that live to the final age will leave an intentional bequest which is modelled as an additional term in their utility function. (Same as ZD)
* Households optimally choose their labor supply, consumption, and savings each period.
  + We will likely allow for consumption of 12 goods (DZ have 4 goods), including health care, energy, and housing, which have special treatment in the tax code.
* They are subject to:
  + an income tax
  + a payroll tax on wage income only which funds a social security benefit for retired households
  + a consumption tax
  + potentially a wealth tax
* Household statutory marginal income tax rates are based on current income (ZD base tax rates on life-time income)

Firms

* Maximize the discounted present value of all future profit streams.
  + Firm value and thus investment incentives are affected by tax policy.
* Firms acquire capital via investment and hire labor.
* Firms finance investment with retained earnings, debt, and new equity issuance.
* Likely more about 12 different sectors (a sector is represented by an industry-business entity type (corp/non-corp) combination) (ZD have four sectors)
  + *Will include corporate and non-corporate sectors*
  + *Will include a multinational sector. These will be corporate businesses and will probably separately model the manufacturing and services industries.*
  + *Industries not yet determined, but likely to include manufacturing, services (ex health care), health care, energy, housing industries*
  + *Likely have with corporate and non-corporate sectors in each industry.*

Government

* For 10 years the government collects whatever tax revenue is implied by the chosen tax structure.
* After 10 years spending cuts are imposed so that the debt to GDP ratio stabilizes in the long run.

Market Clearing

* Markets are perfectly competitive. (Same as ZD)
* The economy is closed to the rest of the world (same as ZD’s simple model).
  + The exception to this are multinational businesses, who can use the rest of the world to shift profits overseas.