SECOND INTERNATIONAL WORKSHOP - MOSPI PROJECT

The Treasury DYnamic Microsimulation Model (T-DYMM): structure, preliminary results and future implementations

With Financial Support from the European Union

PANEL 2

Labor Market and Wealth

Presenters: Chiara Puccioni, Elena Fabrizi, Michele Bavaro
Discussants: Giovanni Gallo, Paolo Acciari, Federico Belotti
Outline

• Aim and definitions
• Wealth data: use of administrative data (Department of Finance, DF), matching AD-SILC-SHIW (Bank of Italy, BI).
• Structure of the wealth module, based on Tedeschi et al. (2013)
• Estimates & alignments
• Focus on consumption & financial investments
• Preliminary simulation results
Aim and definitions

• One of the novelties of T-DYMM 3.0: introduction of a wealth module, that accounts for the household wealth dynamics.
• Modelling private wealth may provide a more complete picture of disposable income and households’ well-being distribution before and after retirement.
• Private pensions: additional form of wealth accumulation collected at retirement.
• We define net wealth as the sum of real and financial wealth to which we subtract liabilities.
• Property of houses is the only form of real wealth.
• Financial wealth is divided in liquidity, government bonds, corporate bonds and stocks.
Data (1) – House or real wealth

• Wealth data are collected and analysed at the household level.
• House wealth is constructed based on the administrative data provided by the DF (two data sources: Cadaster and Tax-returns)
• In the model, we divide the household real wealth in two subgroups, first house value and other houses value.
• The administrative dataset is compared with wealth macro aggregates from the BI and the DF.
• Comparison with SHIW micro data:
  – Peculiarity of the AD-SILC 3.0 dataset: the number of other houses is considerably higher than the number found in survey data.
Data (2) – Financial wealth

- Financial wealth is constructed based on the statistical matching between SHIW and SILC (following Pisano & Tedeschi, 2014).
- Donor dataset is smaller than recipient dataset. Common Z: socio-demographic characteristics. Specific X: wealth vector from SHIW. Specific Y: other variables from SILC.
- Propensity score matching (PSM): based on the definition of a distance function that evaluates the similarity among units of two samples and provides each unit of a sample with a “similar” unit from the other sample.
- Distance function: Mahalanobis distance
- Issues of under-reporting in ownership and amount of financial activities in SHIW (Brandolini et al, 2009; D’Aurizio, 2006).
The Modules of T-DYMM

- AD-SILC 2016
- Demographic Module
- Labor Market Module
- Pension Module
- Wealth Module
- Tax-Benefit Module

2016 ...
2070
The private pensions sub-module

- Choice whether to participate to II or III pension pillar.
- II pillar: «fondi negoziali», workers who participate may devolve their TFR (Trattamento di Fine Rapporto, end-of-service allowance) and voluntary contributions.
- III pillar: either «fondi aperti» or «piani individuali pensionistici». Contribution to the fund may vary yearly for each registered individual.
- The investment in II or III pillar provides a certain return that is computed using COVIP data when available (2016-19) and projections based on the portfolio composition of pension funds for the rest of the simulation (2020-50).
The wealth module: scheme

1. Private Wealth Transfers
   i. Inter vivos
   ii. Bequest

2. Update of Net Wealth
   i. Real (house) wealth
   ii. Financial wealth

3. House ownership

4. Financial investment decisions:
   i. Liquidity/Gov. bonds/Corp. bonds/Stocks

5. Household consumption rule

6. Household savings

3a) Prob. selling house
3b) Prob. buying additional dwelling

3d) House bought/sold value

3e) Financing:
   i. Down spending financial wealth
   ii. Mortgage

3c) Prob. buying 1° house

YES

NO
The wealth module: estimates and alignments

• Estimates based on SHIW micro-data (waves 2002-2016).
• Discrete choice model (logit) for discrete transitions (buying/selling houses, receive intergenerational transfers, make donations, rent the second house)
• Log-continuous regression or continuous regression for quantities (either levels or ratios of income or financial wealth)
• Alignments:
  – ISTAT for total houses bought and sold and aggregate saving rate.
  – DF for number of rented houses.
  – COVIP for participants to the private pension schemes.
  – Returns rate on financial investments follow projections by AWG, OECD and historical data from S&P.
Focus (1): Consumption

• Panel estimates of log consumption, data: SHIW 2002-16.
• FE estimator, correlation between error component and unobserved time-invariant household effect is introduced in the simulation.
• Life-cycle features: wealth, future developments (role of expectations, policies)
• Correction for income endogeneity (due to simultaneity and measurement error), IV estimation.
• Alignment: difference between micro data and macro aggregates (see Cifaldi and Neri, 2013) – saving rate equals 10.5% in 2015 according to ISTAT.
Focus (1): Consumption, panel regression estimates (SHIW 2002-16)

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<th>Variable</th>
<th>b</th>
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<td>qy=2</td>
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<td>qy=3</td>
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<td>qy=4</td>
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Focus (2): Financial investment decision

- Probability of investing in one of the four forms of financial activities.
- Current procedure: two steps estimation for ownership and ratio of the specific financial activity over the total.
- Estimates based on SHIW.
- Inclusion of financial literacy as a determinant of the investment choice.
- Next econometric improvements:
  - Heckman two-step procedure (probit in the first stage), Tobit model
  - Persistence (dynamic component)
  - SUR model, simultaneous or structural equation modeling
Preliminary simulation results (1): wealth inequality
Preliminary simulation results (2): role of capital income

Gross capital income/Total market income

Percentage of total market income

Year

2020

2030

2040

2050

0.2

0.4

0.6

0.8

1.0
Preliminary simulation results (3): inheritance
Preliminary simulation results (4): wealth by age
Preliminary simulation results (5): financial activities

Financial activities evolution by financial wealth quartile

- Liquidity
- Government bonds
- Corporate bonds
- Stocks

Legend:
- First quartile
- Second quartile
- Third quartile
- Fourth quartile
Future developments

• Correction for under-reporting of financial activities in the starting year of the simulation.

• Variability in returns to risky financial investments.

• Introduction of life-cycle components in the estimate of consumption function taking into account the permanent income hypothesis (possible behavioural changes in household savings).

• Increase the relevance of the financial literacy as a determinant for financial choices by improving individual evolution over time and alignments.
References


