



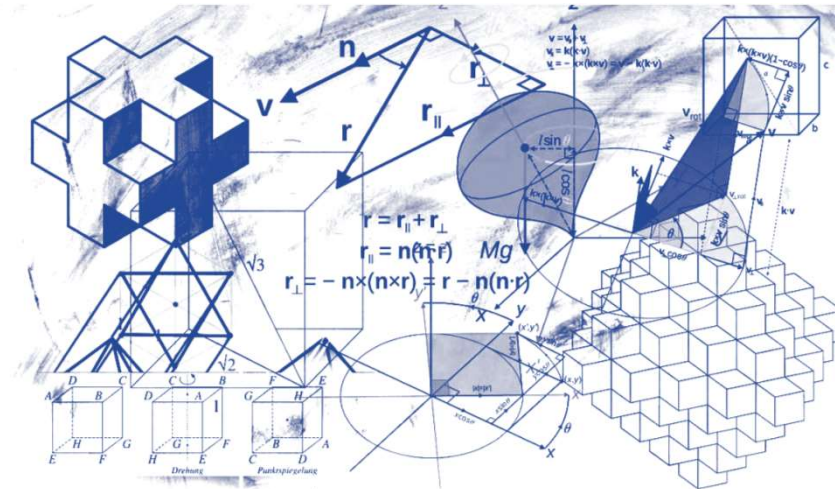
SECOND INTERNATIONAL WORKSHOP - MOSPI PROJECT

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.

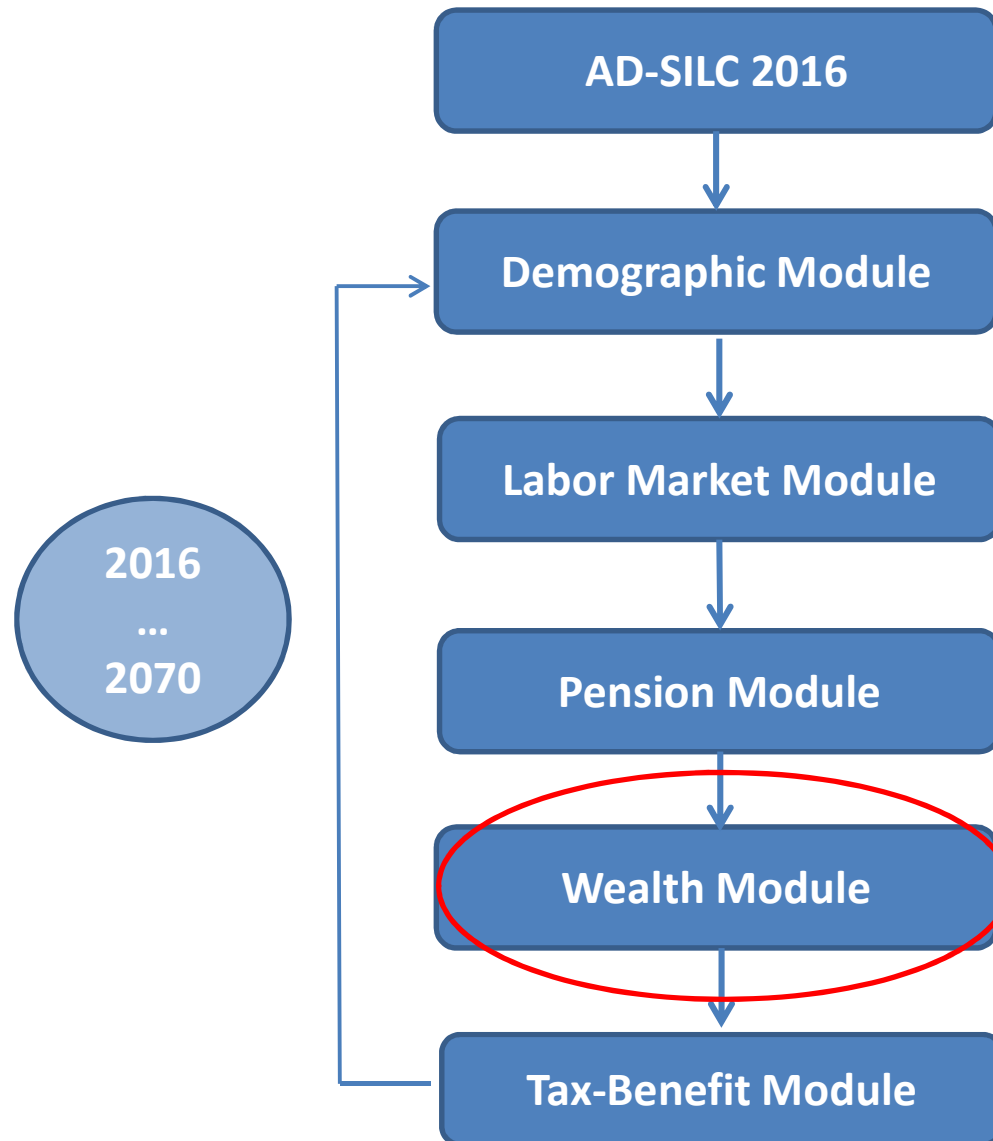
Data (1) – House or real wealth

- 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:
 - House wealth Gini index: SHIW (2016) = 0.411; AD-SILC 3.0 (2015): 0.448.
 - 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).

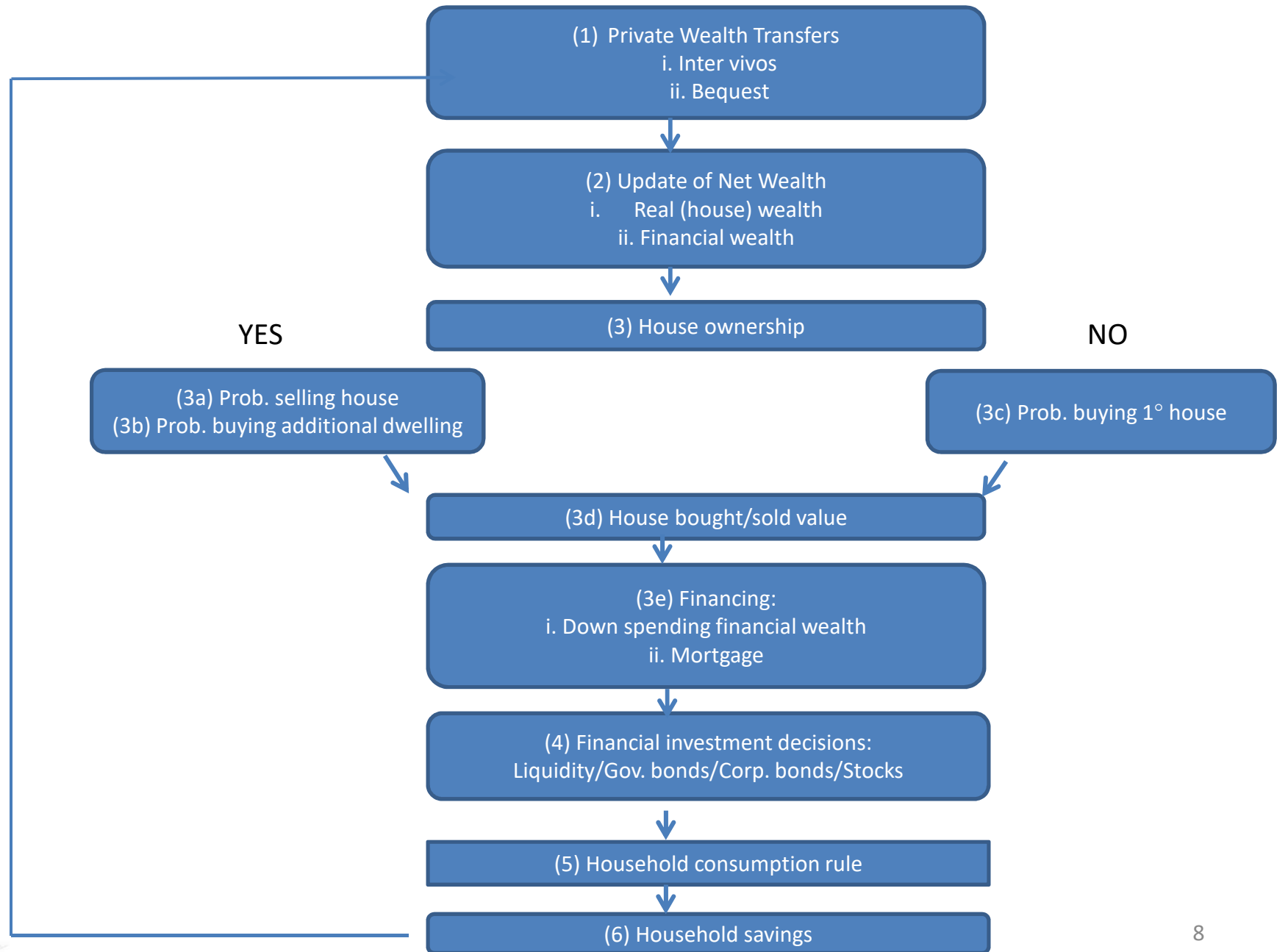
The Modules of T-DYMM



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



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.

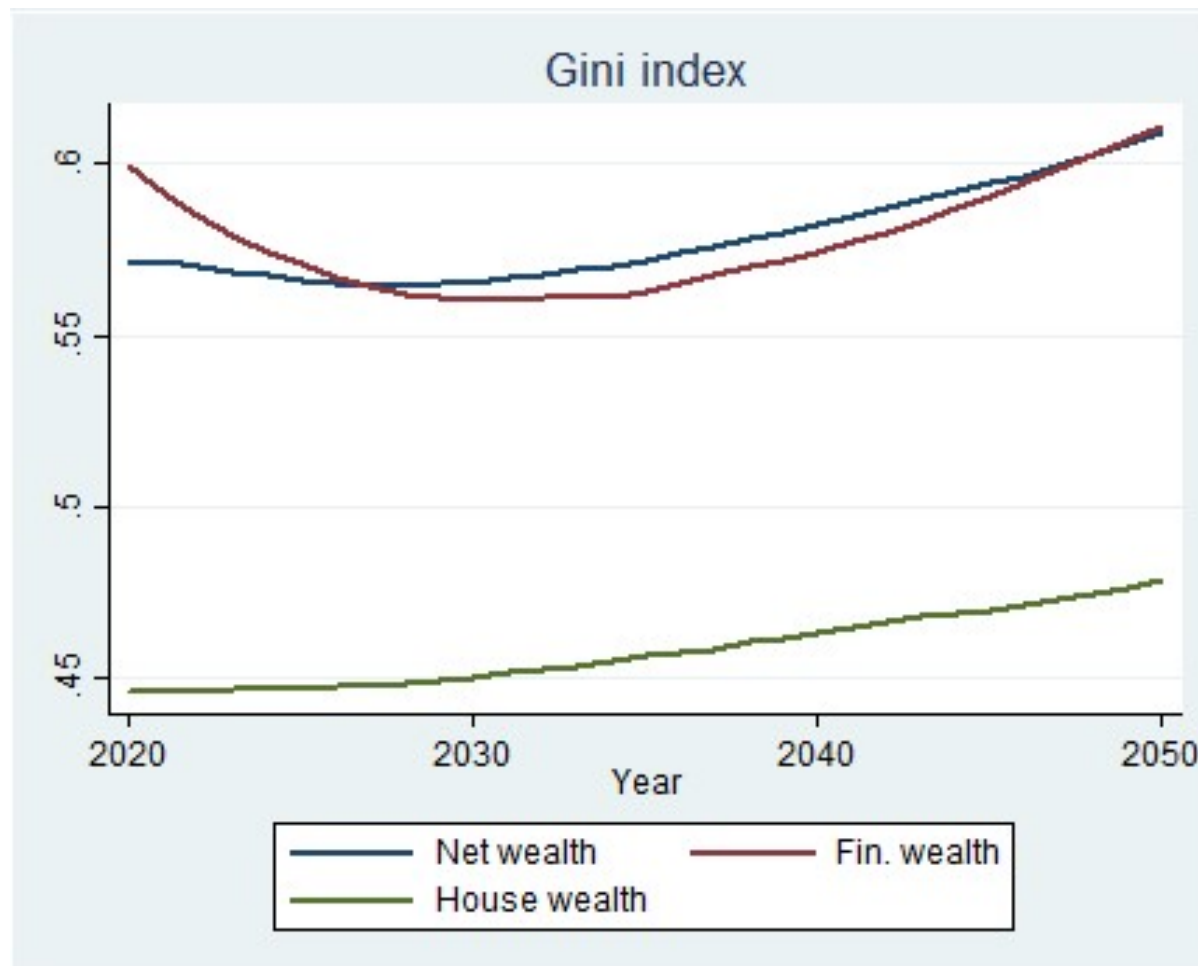
Focus (1): Consumption, panel regression estimates (SHIW 2002-16)

	log-consumption	
	b	se
age	0.011***	(0.001)
qy=2	0.212***	(0.012)
qy=3	0.304***	(0.013)
qy=4	0.376***	(0.014)
qy=5	0.450***	(0.015)
qy=6	0.520***	(0.016)
qy=7	0.580***	(0.016)
qy=8	0.661***	(0.018)
qy=9	0.700***	(0.019)
qy=10	0.791***	(0.022)
log_fin_wealth	0.008***	(0.001)
no. components	0.038***	(0.006)
retired=1	-0.065***	(0.011)
no. earners	0.033***	(0.007)
Constant	8.170***	(0.045)
σ_u	0.383	
σ_e	0.355	
ρ	0.538	
R ² -within	0.145	
R ² -between	0.460	
R ² -overall	0.381	
Nr of obs	39559	

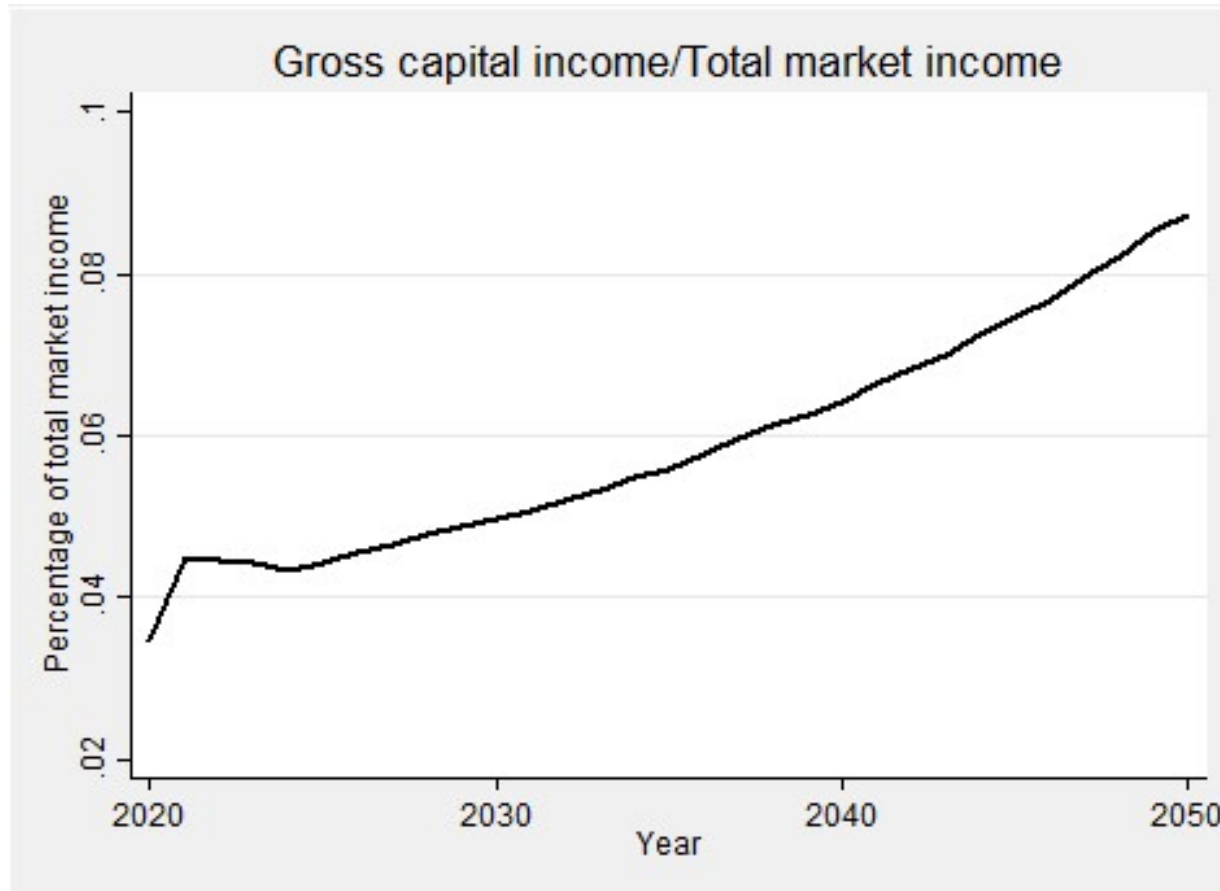
Focus (2): Financial investment decision

- 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

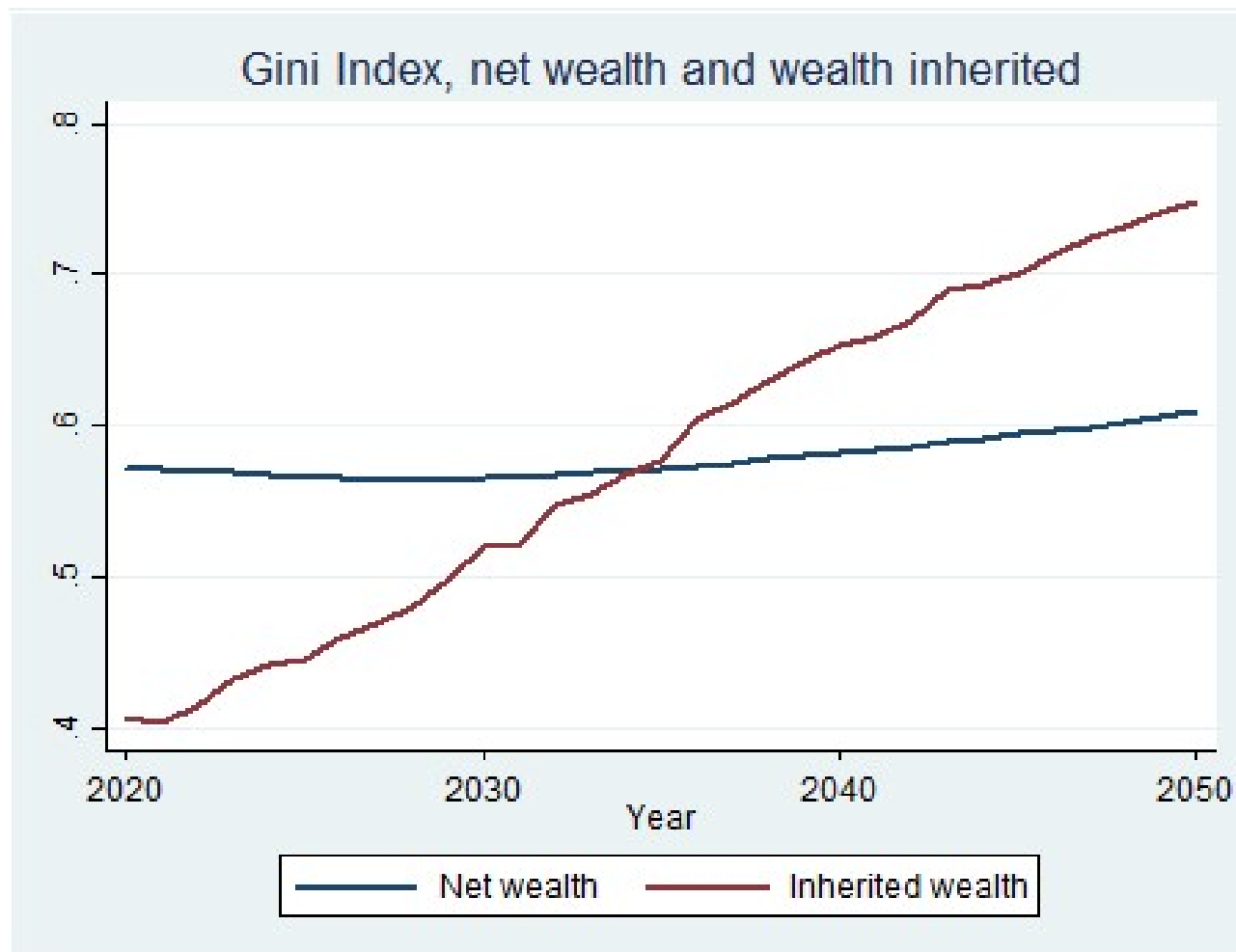
Preliminary simulation results (1): wealth inequality



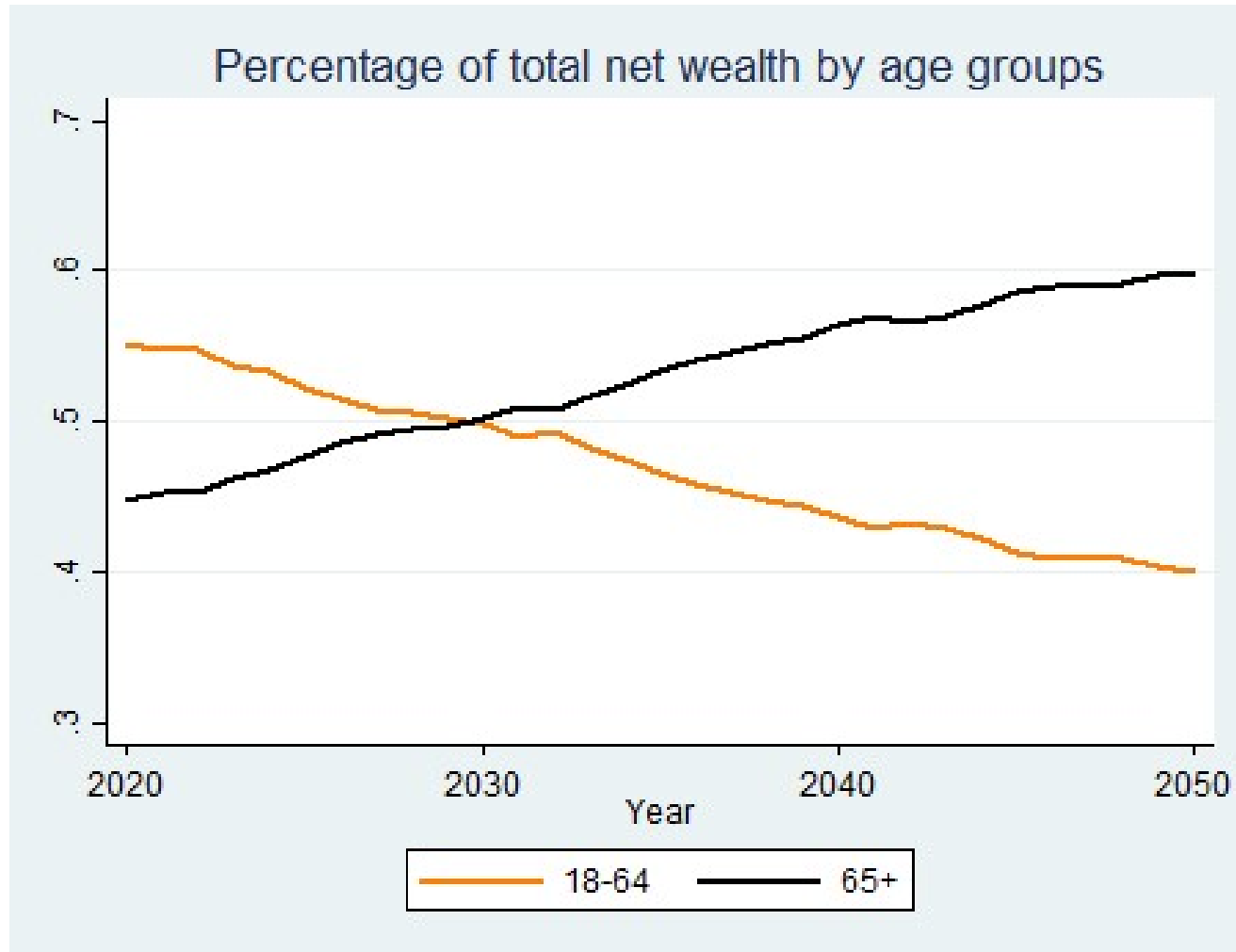
Preliminary simulation results (2): role of capital income



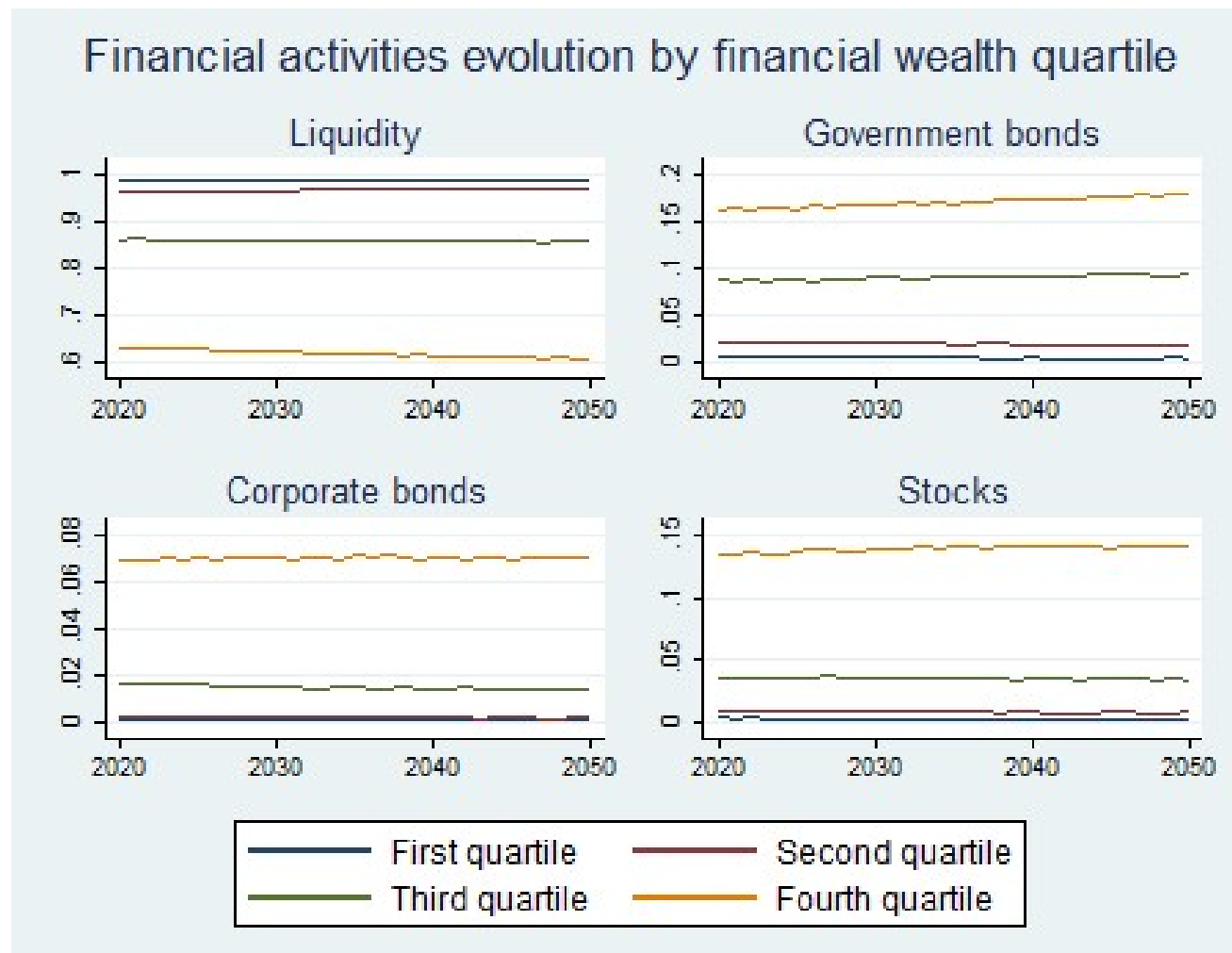
Preliminary simulation results (3): inheritance



Preliminary simulation results (4): wealth by age



Preliminary simulation results (5): financial activities



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

- Brandolini M., Giarda E., Moriconi M. and Loi M. (2009). Possibili effetti dell'under-reporting sull'analisi della ricchezza finanziaria basata sull'indagine dei bilanci delle famiglie di Banca d'Italia. Rapporto di Previsione, Prometeia: 123-131.
- Cifaldi, G., and Neri, A. (2013). Asking income and consumption questions in the same survey: what are the risks?. Bank of Italy Temi di Discussione (Working Paper) No, 908.
- D'Aurizio G., Faiella I., Iezzi S. and Neri A. (2006). L'under-reporting della ricchezza finanziaria nell'indagine sui bilanci delle famiglie. Bank of Italy, Discussion paper n. 610.
- Pisano, E. and Tedeschi S. (2014). Micro data fusion of Italian expenditures and incomes surveys. No. 164.
- Tedeschi S., Pisano E., Mazzaferro C. and Morciano M. (2013). Modelling Private Wealth Accumulation and Spend-down in the Italian Microsimulation Model CAPP_DYN: A Life-Cycle Approach. International Journal of Microsimulation, 6(2):76-122.