Long-term development of the Polish economy – putting scenarios together

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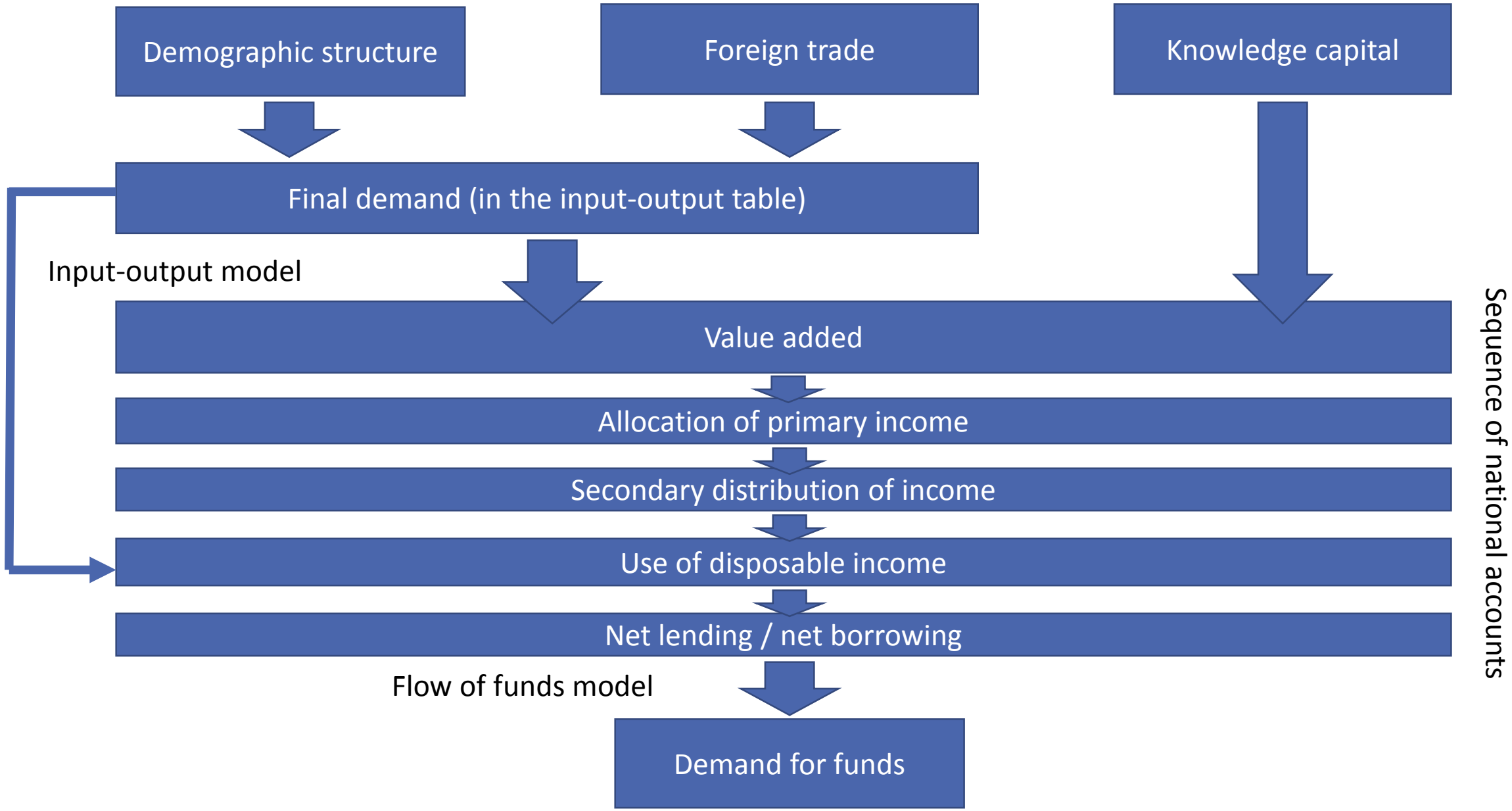
Outline

1. Aims: simulation of the various scenarios showing the changes in the revenues of institutional sectors
2. Scheme of the model
3. Assumptions of particular scenarios
4. Results of the simulations:
   - Value added
   - Primary income
   - Current tansfers between institutional sectors
   - Disposable income
   - Net lending / net borrowing
   - Labour market vs pension system

Scheme of the model



Simulation assumptions

1) Assumptions concerning demographic structure

- Consumption of households results from the changes in the number of population of different age groups (the proportion of the retired and non-retired persons); number of population change according to forecasts of the Polish Central Statistical Office;
- Consumption per capita of various age groups is constant;
- Propensity to consume, income and other consumption factors don’t change;
- Other elements of final demand (consumption of general government and non-profit institutions, accumulation, exports) remain constant.

Simulation assumptions (cont.)

2) Assumptions concerning foreign trade

- changes of imports result from import intensity coefficients which are projected by log-logistic trend;
- exports increase (due to observed trends for various products) by significantly higher growth rate than imports which causes the increase of external balance of goods and services.

Simulation assumptions (cont.)

3) Assumptions concerning domestic resources of knowledge

- value added (*Y*) transformed into labour productivity is the function of capital-labour ratio (*K/L*) and total factor productivity (TFP):

$$\frac{Y}{L} = f\left(\frac{K}{L}, TFP\right)$$

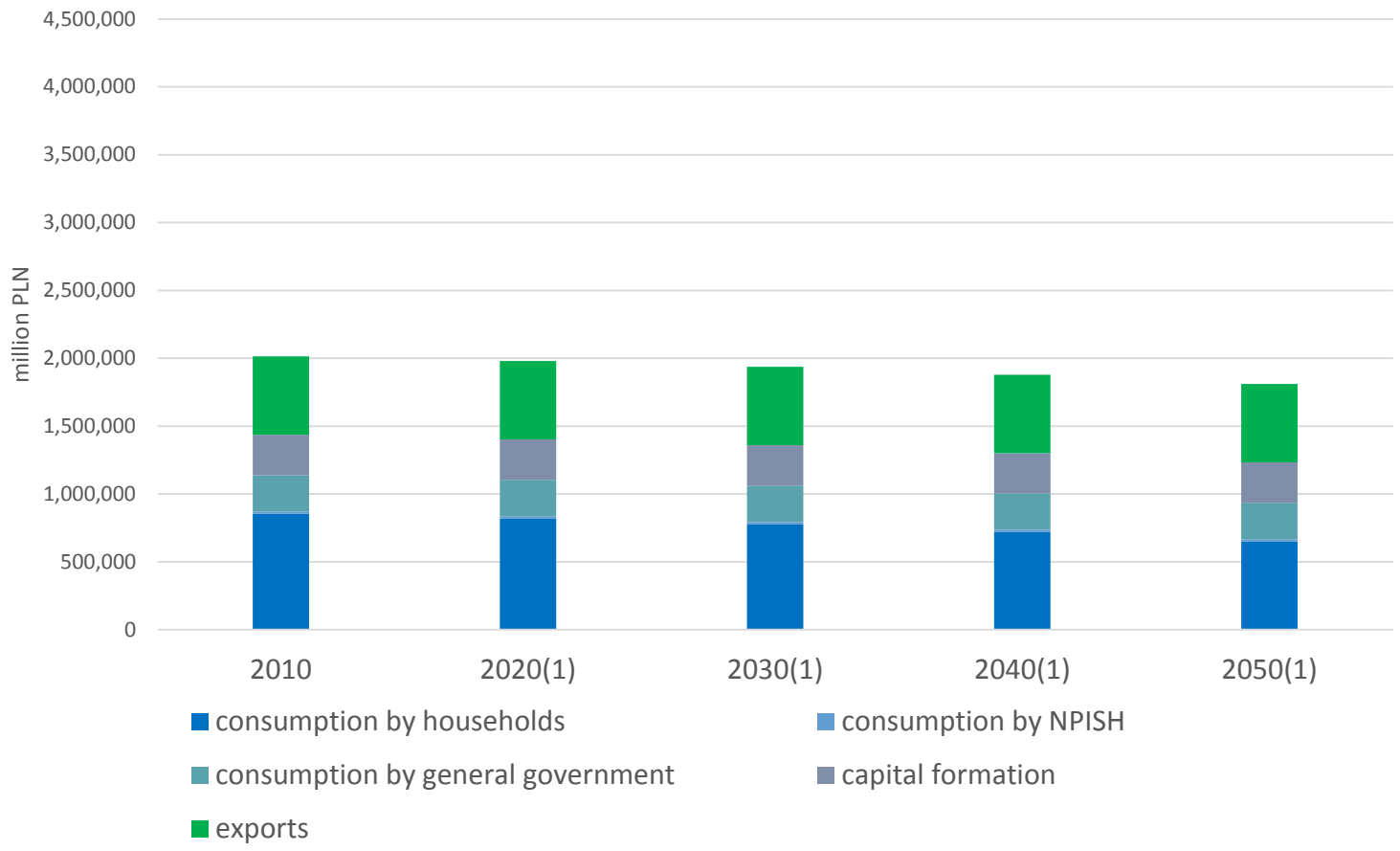
- TFP is determined by domestic and foreign innovation activity measured by cumulated R&D expenditures financed by enterprises;
- the share of R&D expenditure in GDP is projected to increase to 1,7% in 2020, 3% in 2030, 4% in 2040 and 5% in 2050;
- labour resources change according to forecasts of the Polish Central Statistical Office;

$$Y = L \cdot \frac{Y}{L}$$

Final demand – simulation assumptions

Scenarios: 1 - demographic structure; 2 - foreign trade; 3 - domestic resources of knowledge;

4 - scenarios 1, 2, 3 put together



-10,1%

Final demand – simulation assumptions

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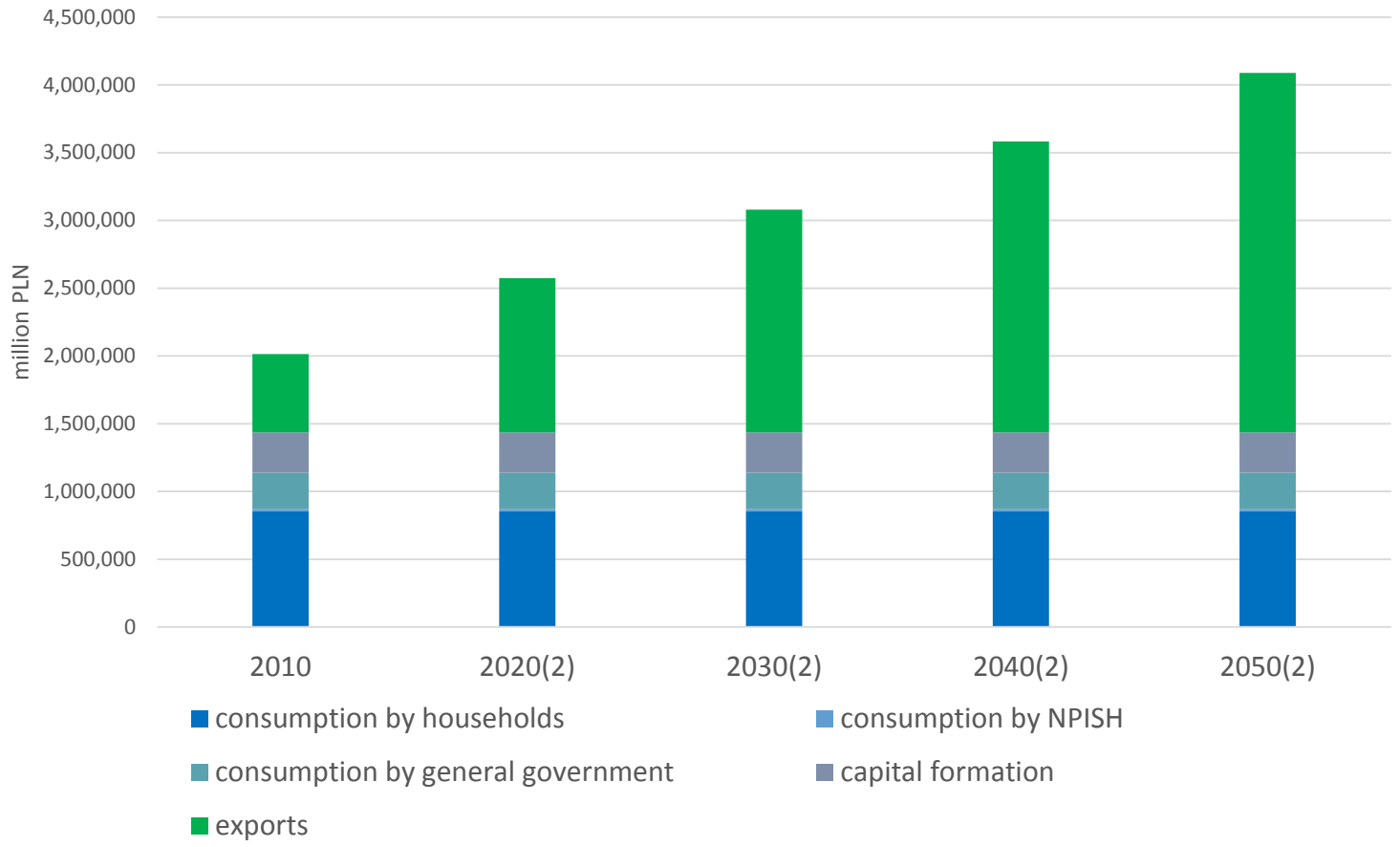

+103%

Final demand – simulation assumptions

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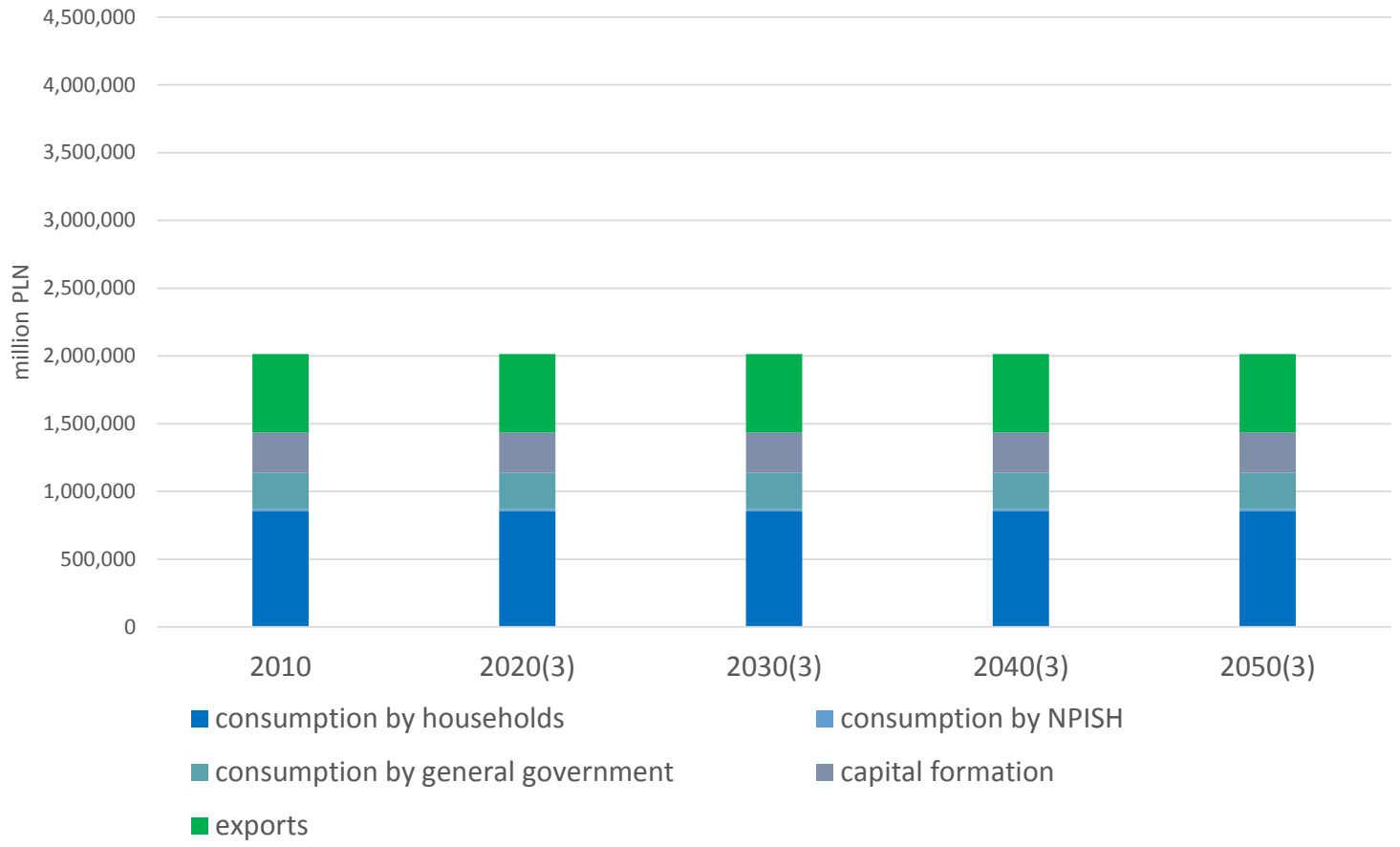

Final demand – simulation assumptions

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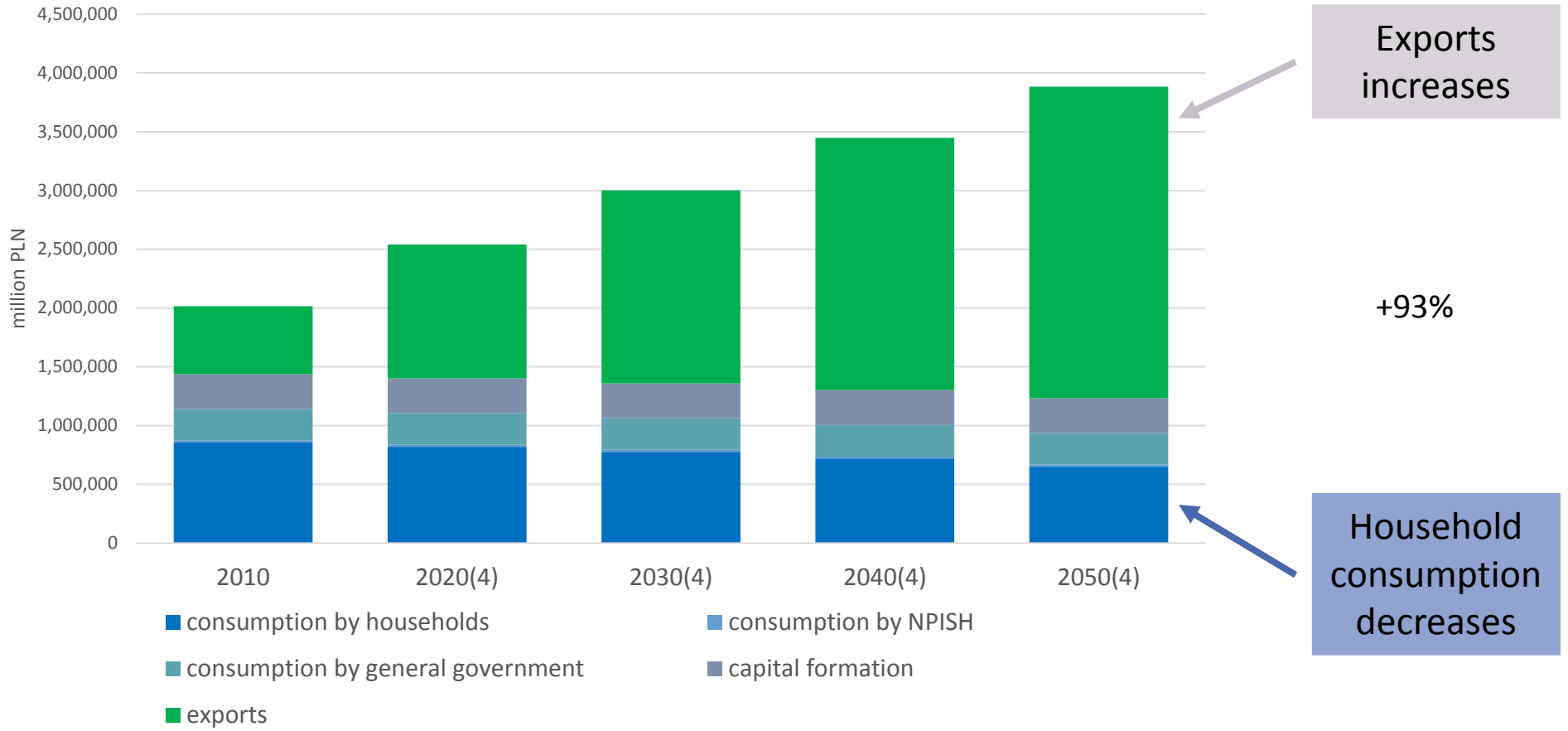

Results of the simulations

➢Value added

Scenarios: 1 - demographic structure; 2 - foreign trade; 3 - domestic resources of knowledge;

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-9,7%

Results of the simulations

➢Value added

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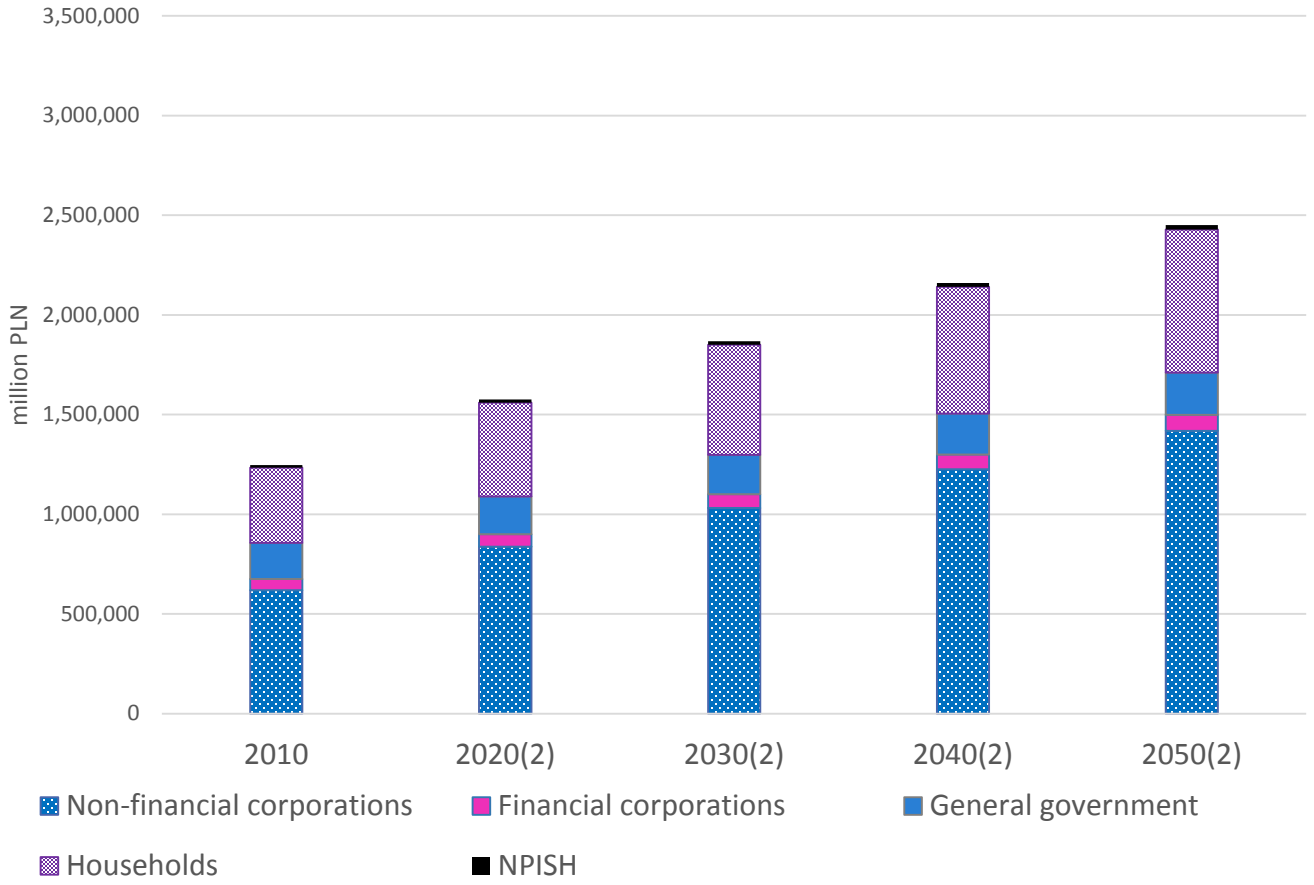

+96%

Results of the simulations

➢Value added

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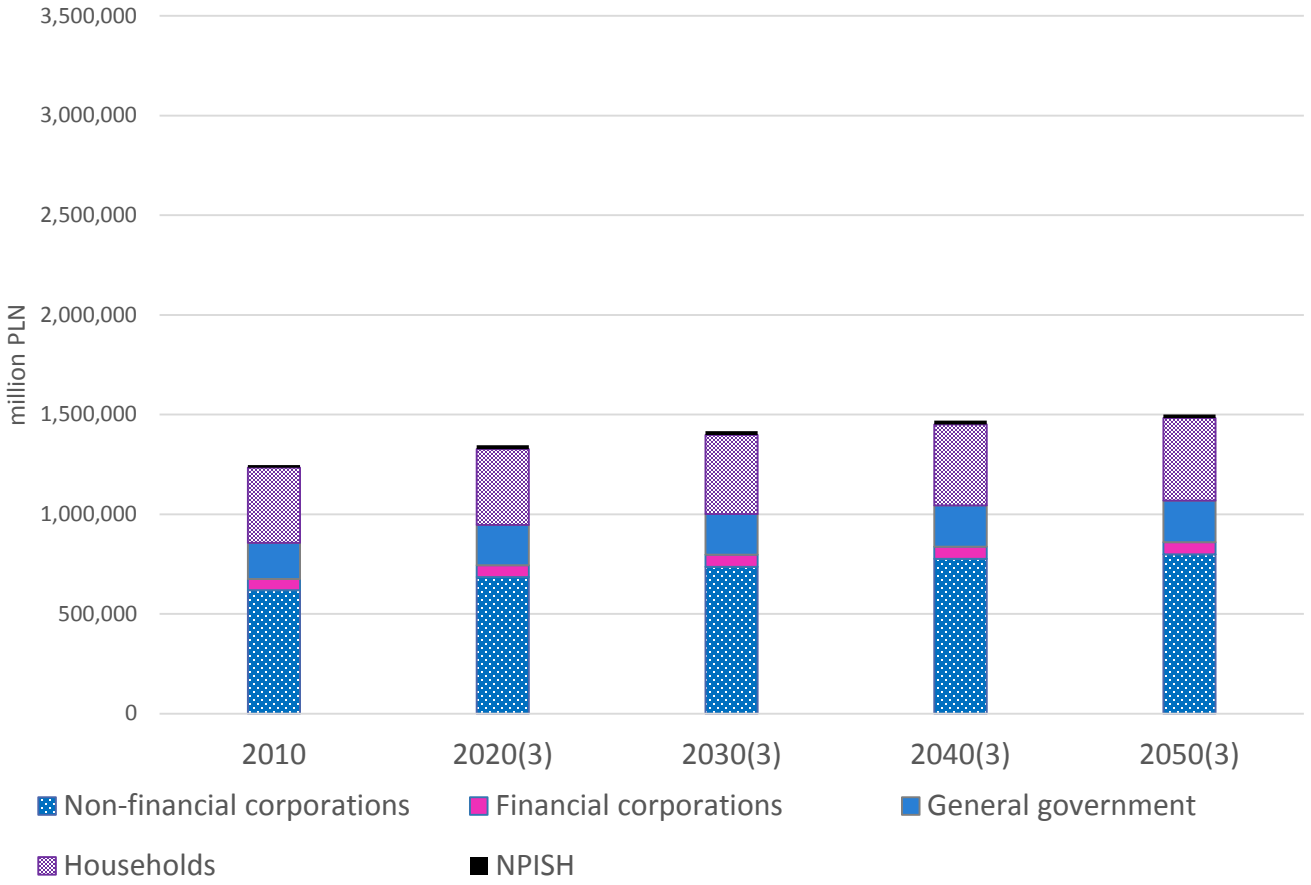

+20%

Results of the simulations

➢Value added

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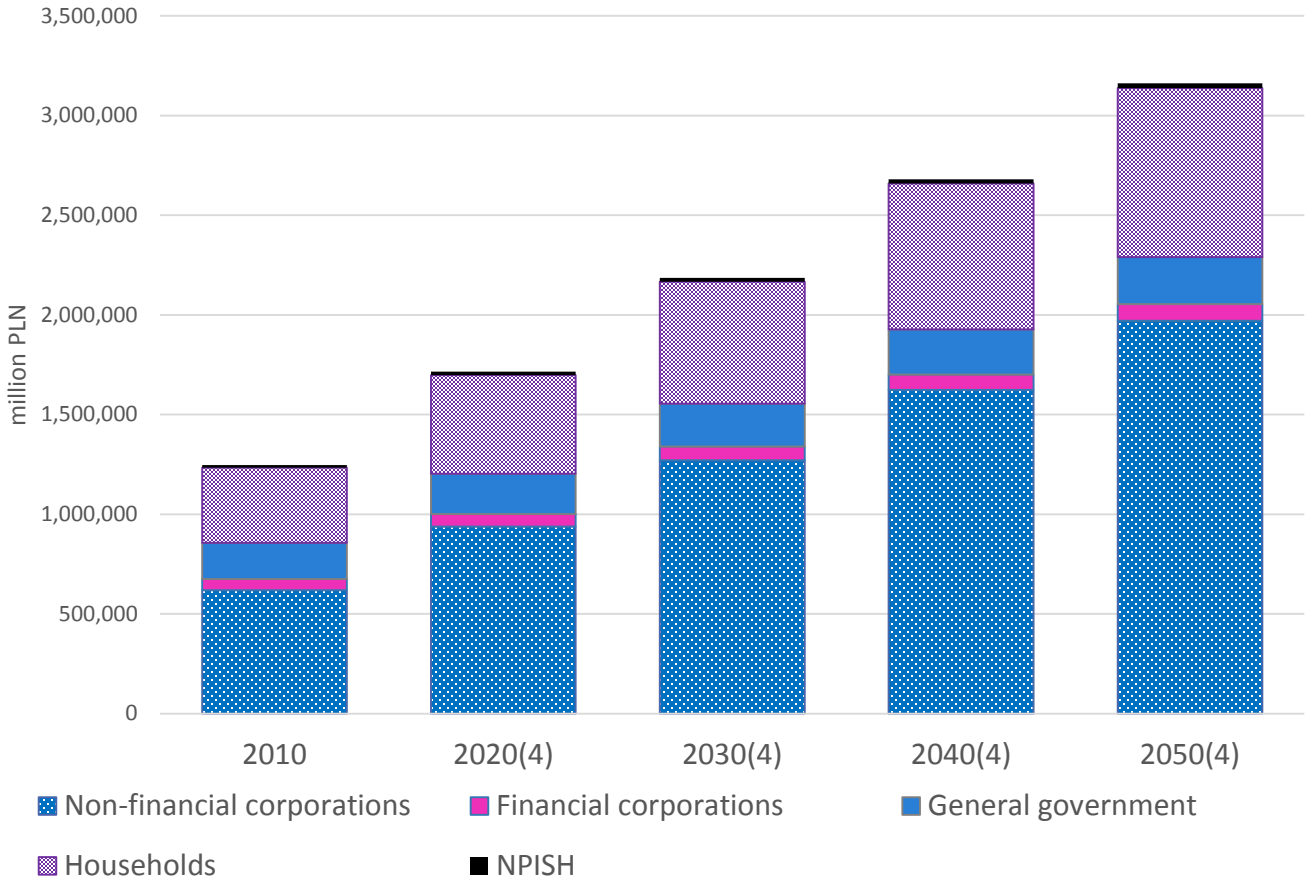

+153%

Results of the simulations

➢Value added

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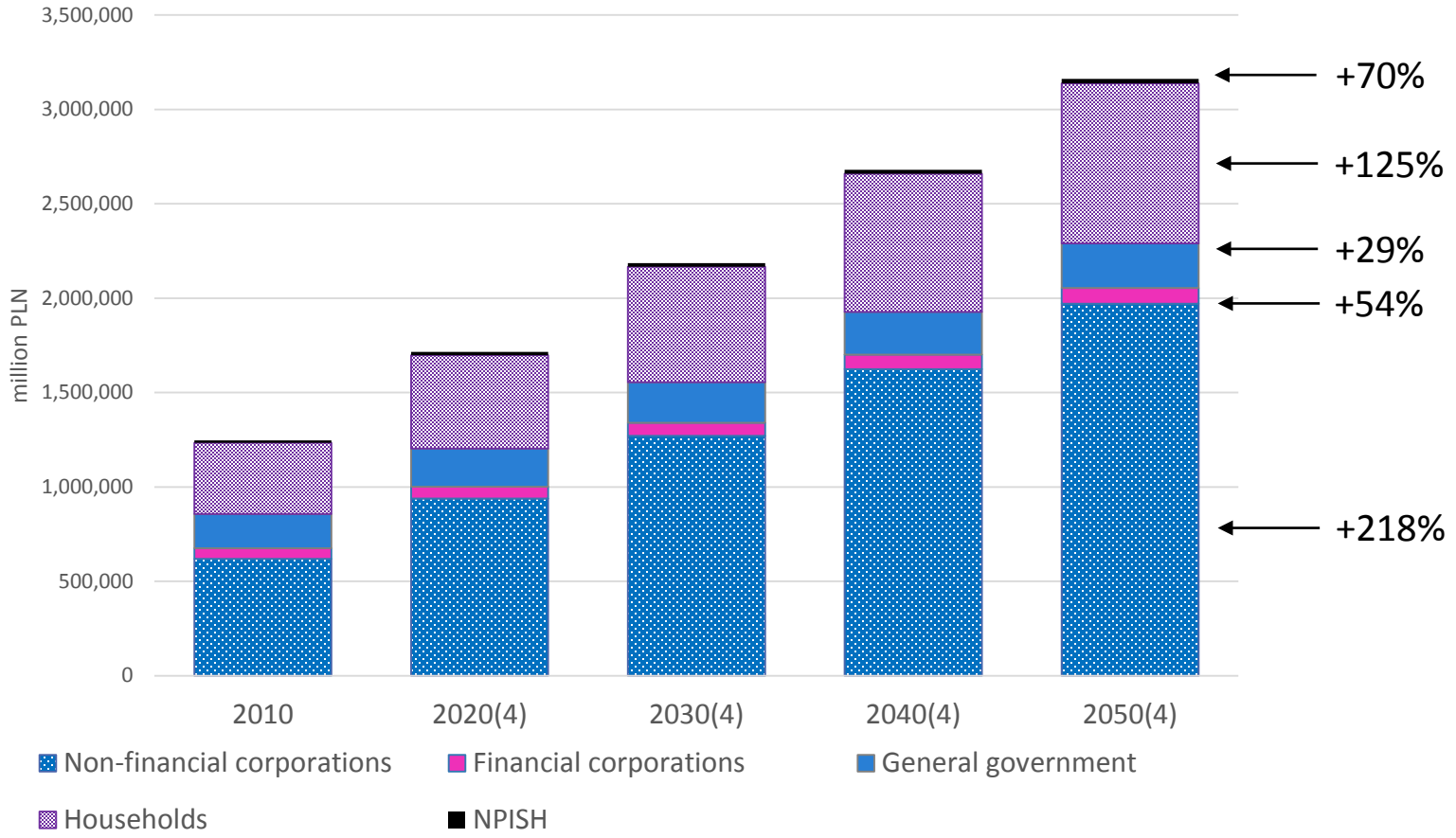
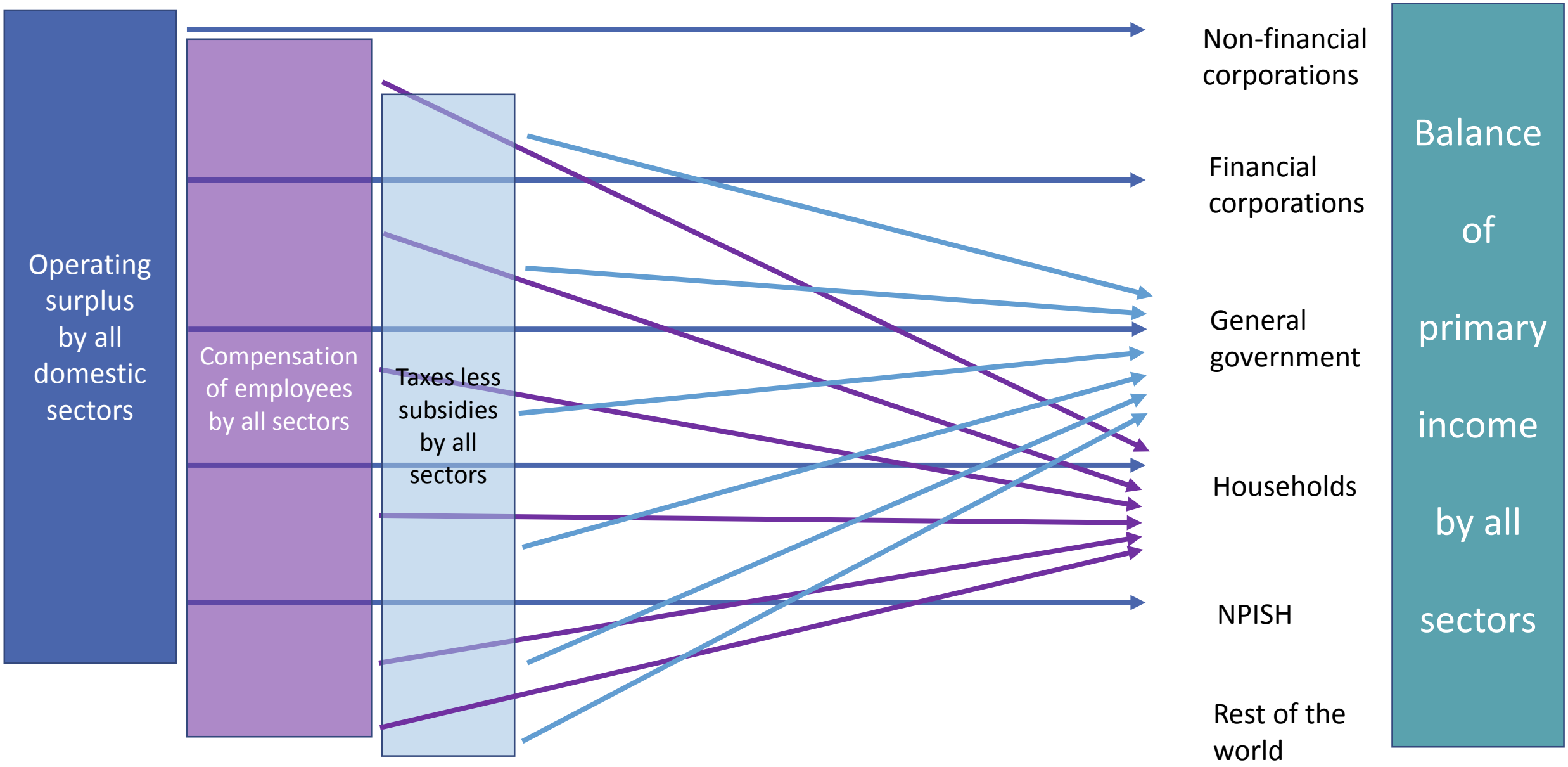


Generation of income and allocation of primary income



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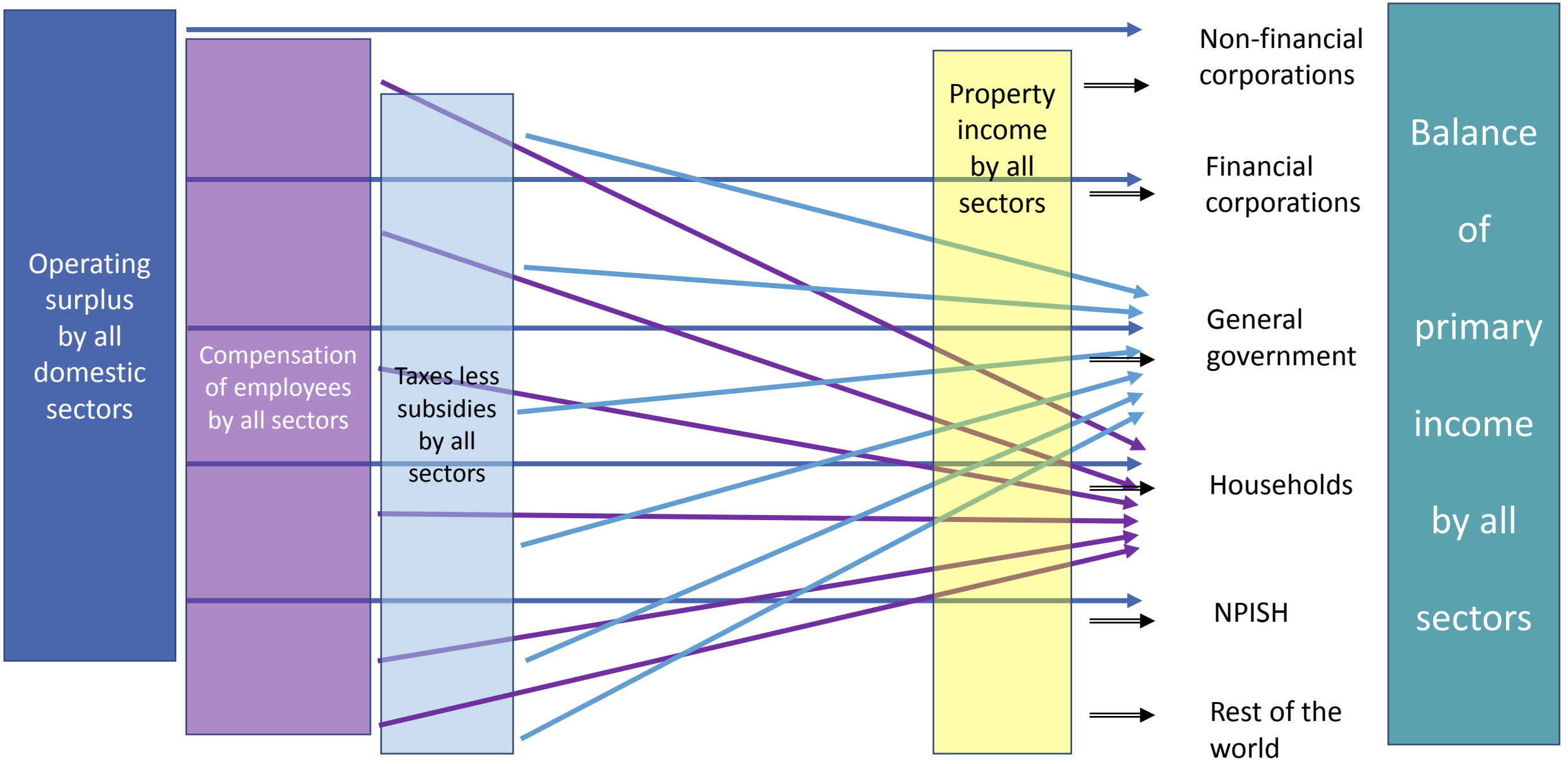

Results of the simulations

➢Primary income

Scenarios: 1 - demographic structure; 2 - foreign trade; 3 - domestic resources of knowledge;

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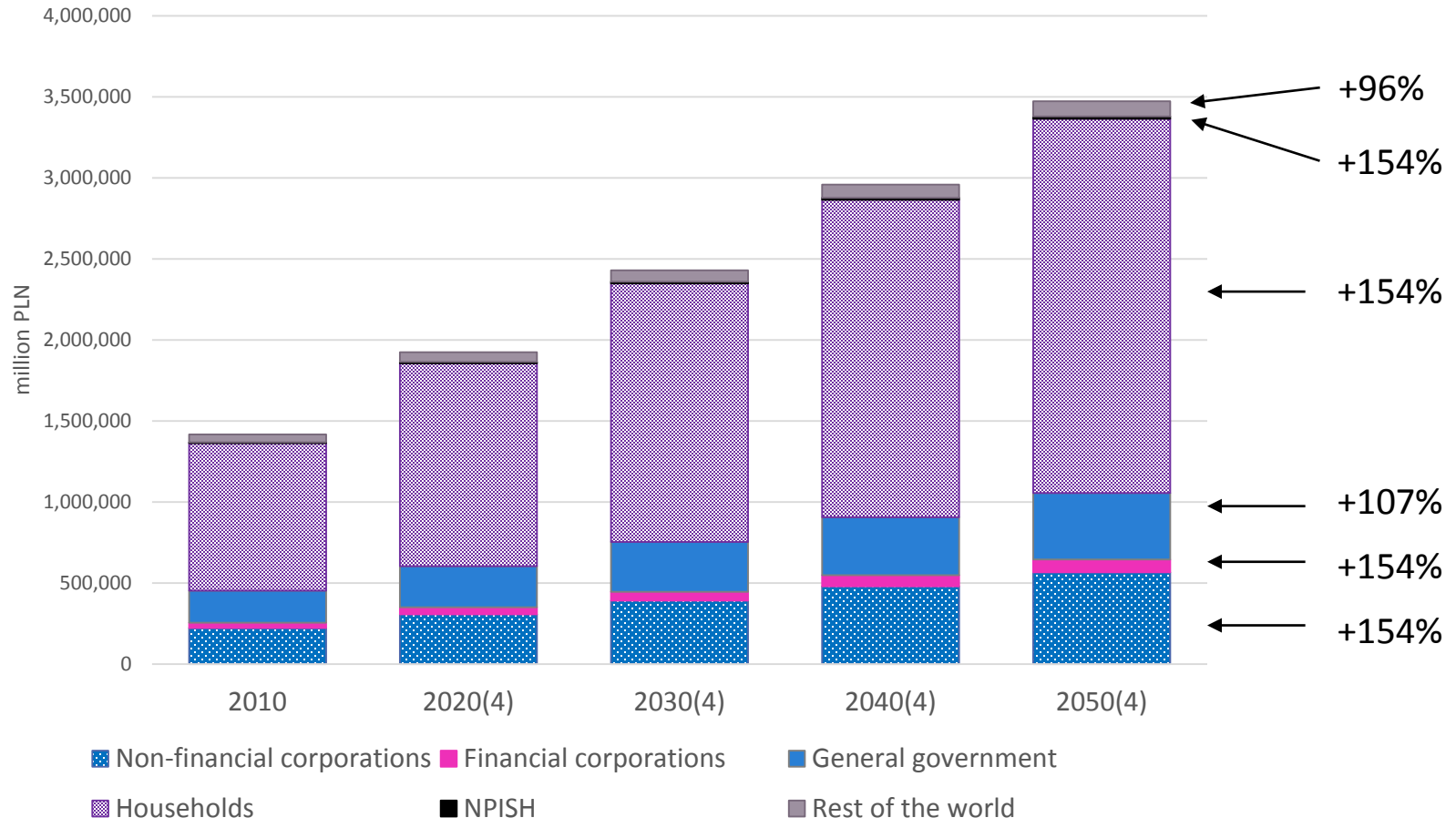
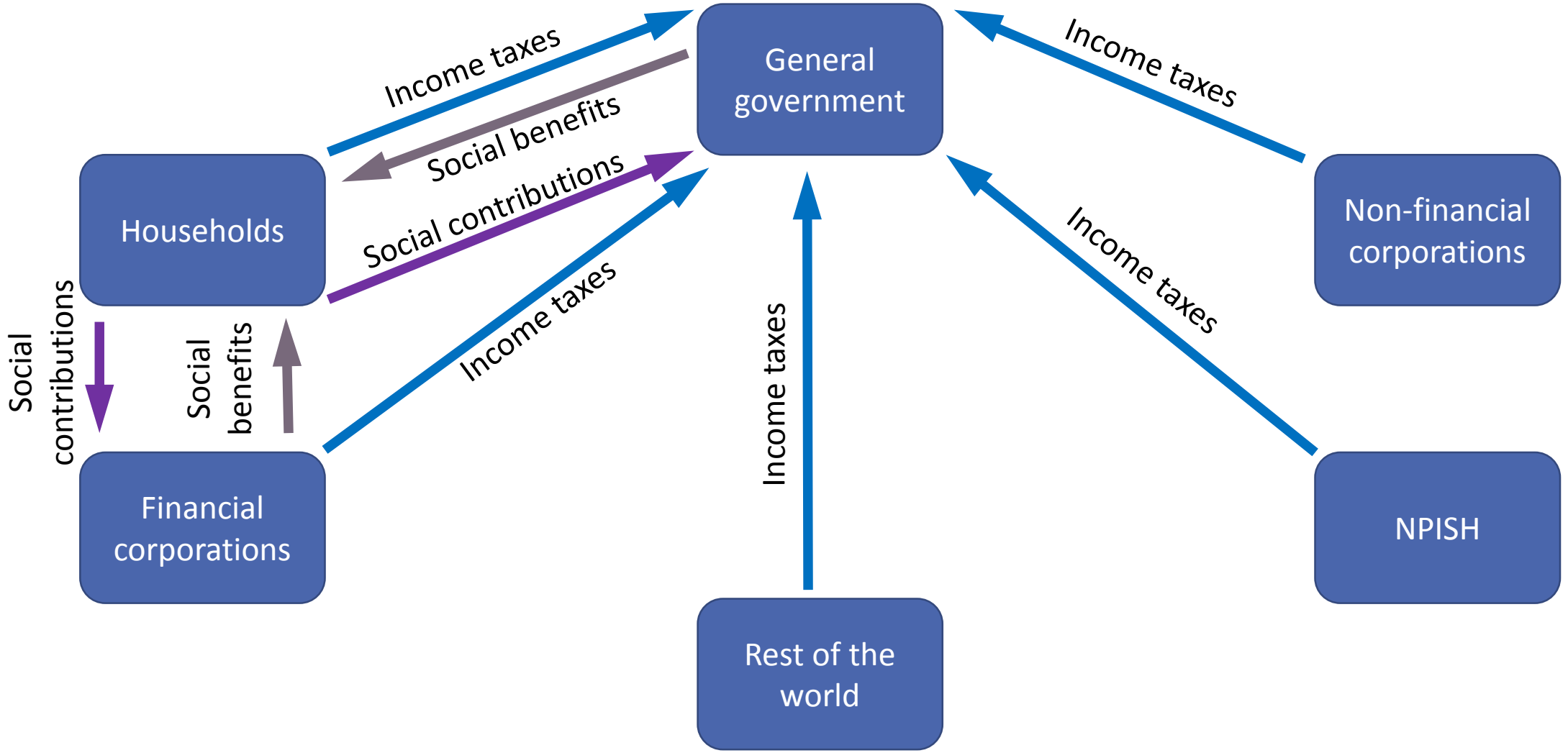


Current transfers between institutional sectors – selected transactions



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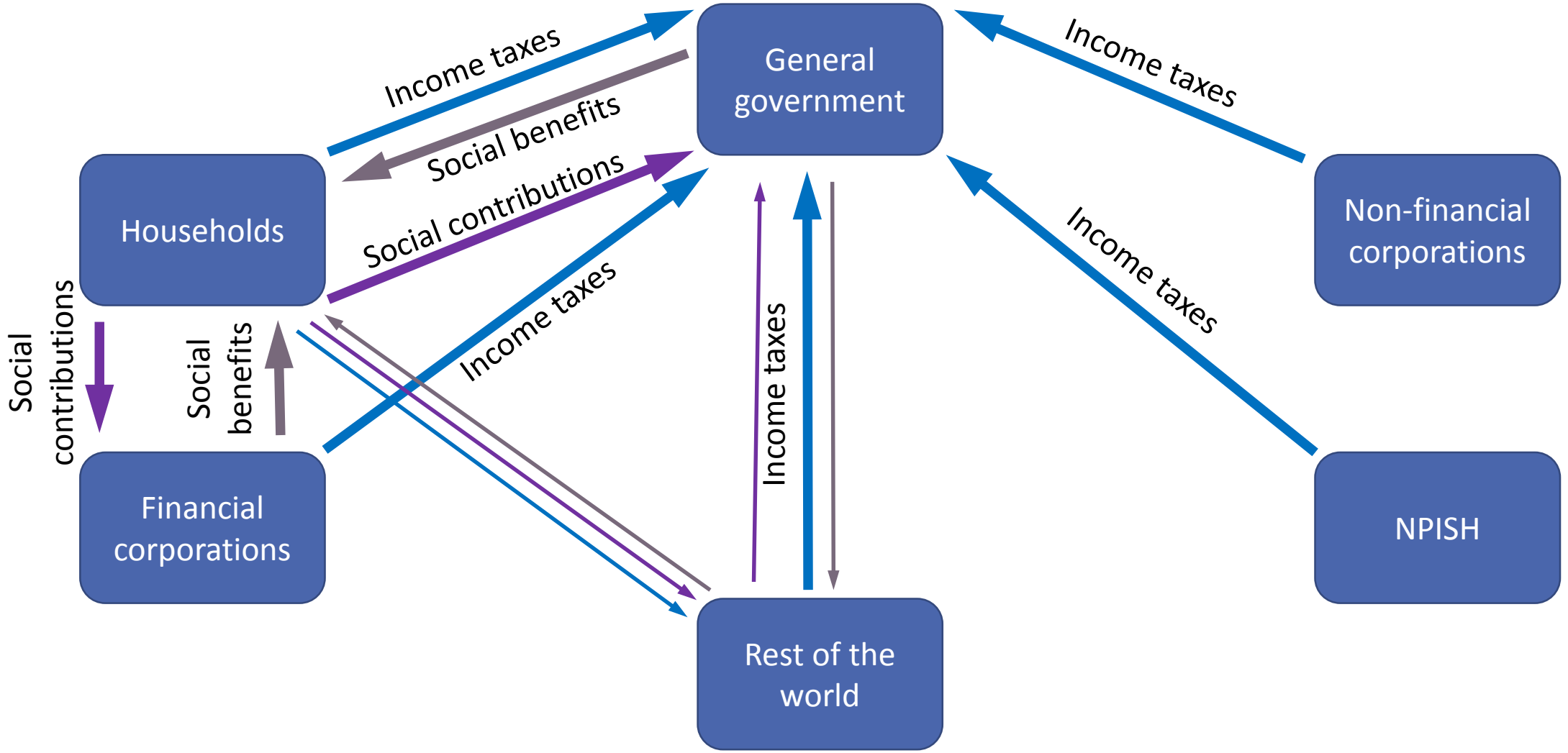

Results of the simulations

➢Selected current transfers

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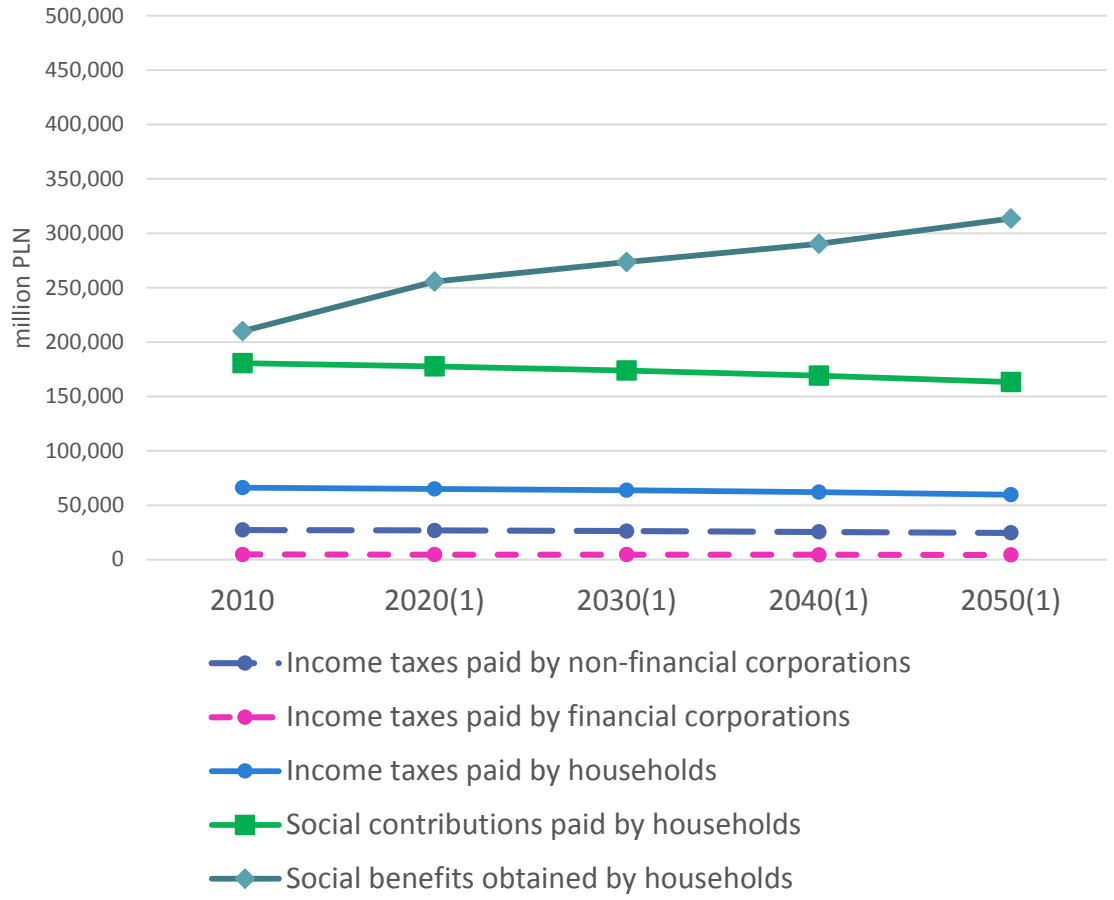

Results of the simulations

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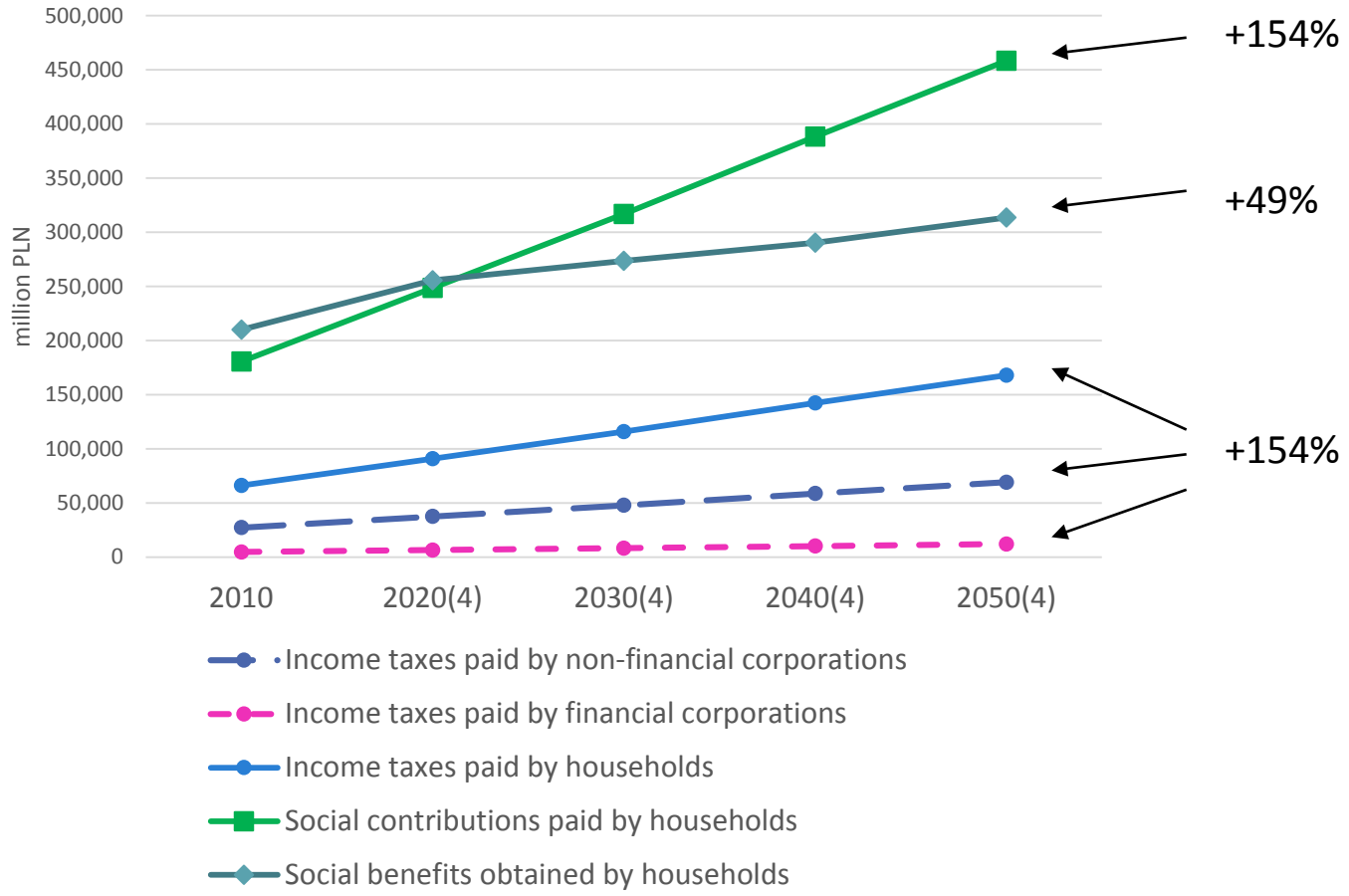
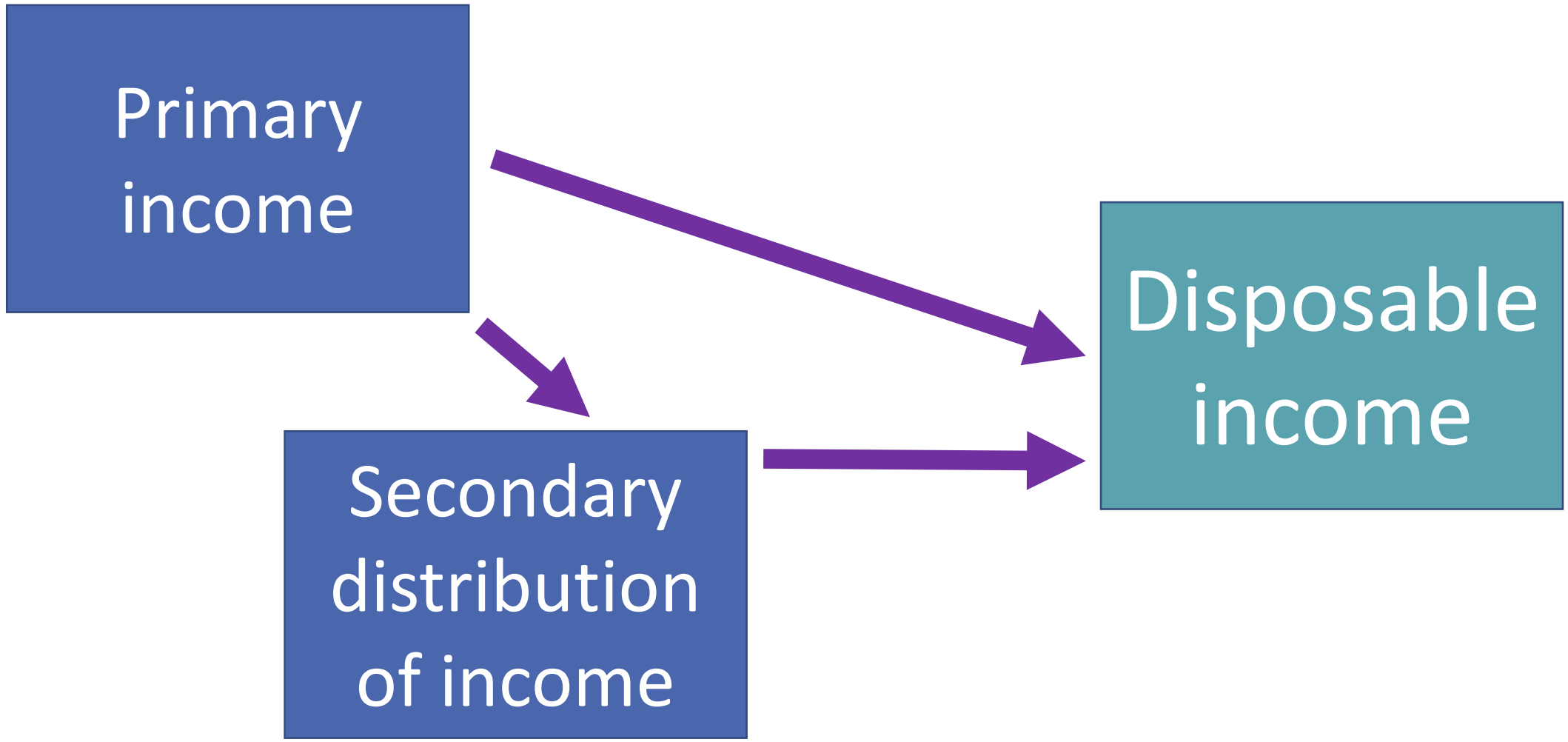


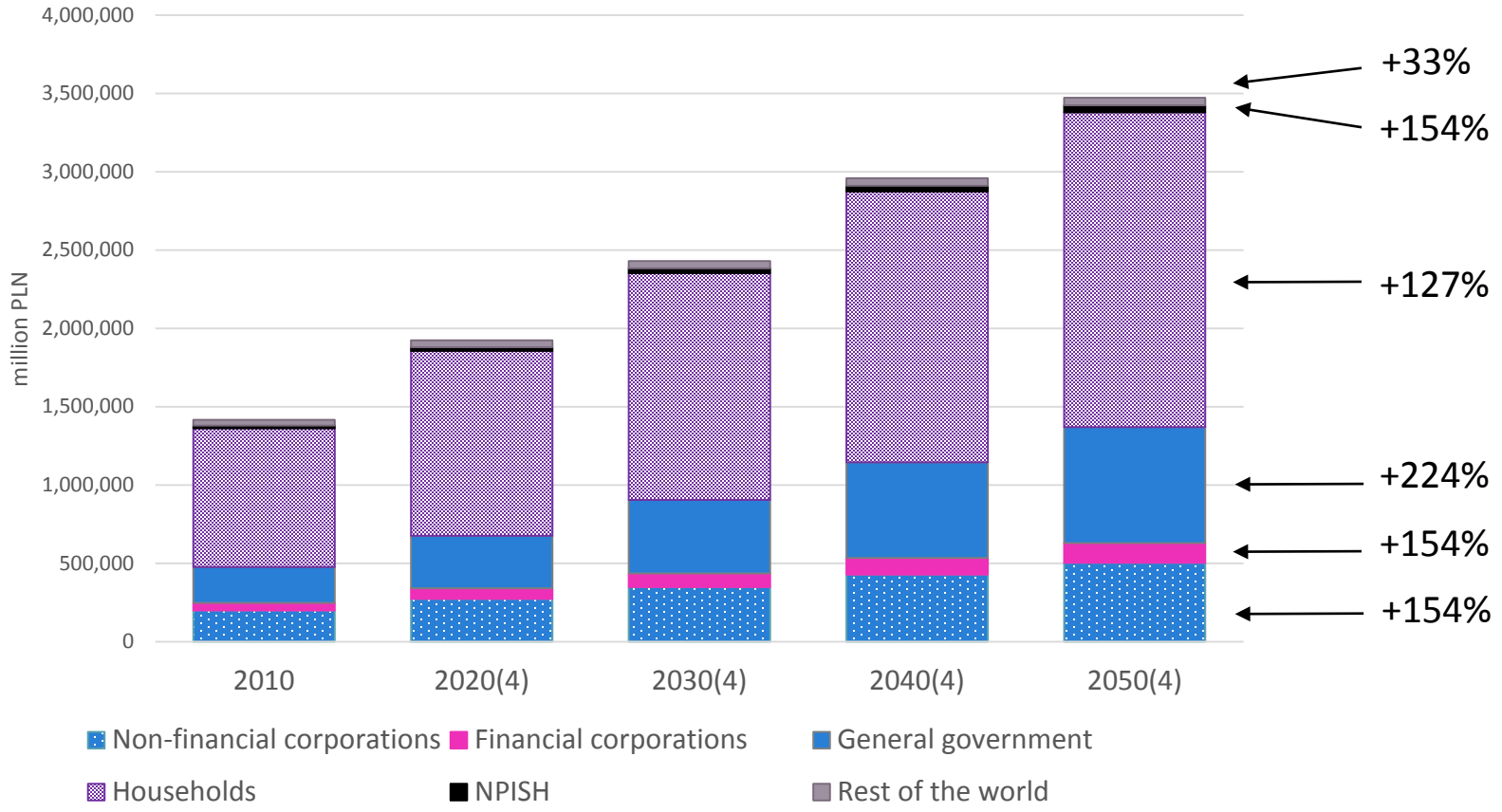

Primary income
Secondary distribution of income
Disposable income

Results of the simulations

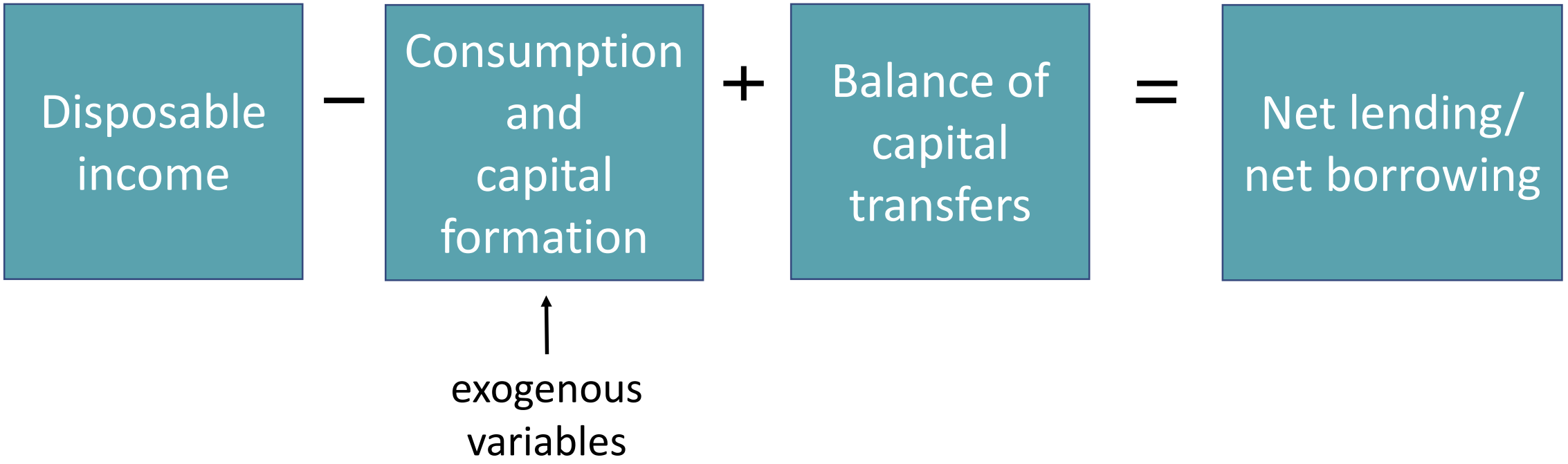
➢Disposable income

Scenarios: 1 - demographic structure; 2 - foreign trade; 3 - domestic resources of knowledge;

4 - scenarios 1, 2, 3 put together



Net lending(+)/net borrowing(-) – balancing item of non-financial accounts



Results of the simulations

➢Net lending / net borrowing

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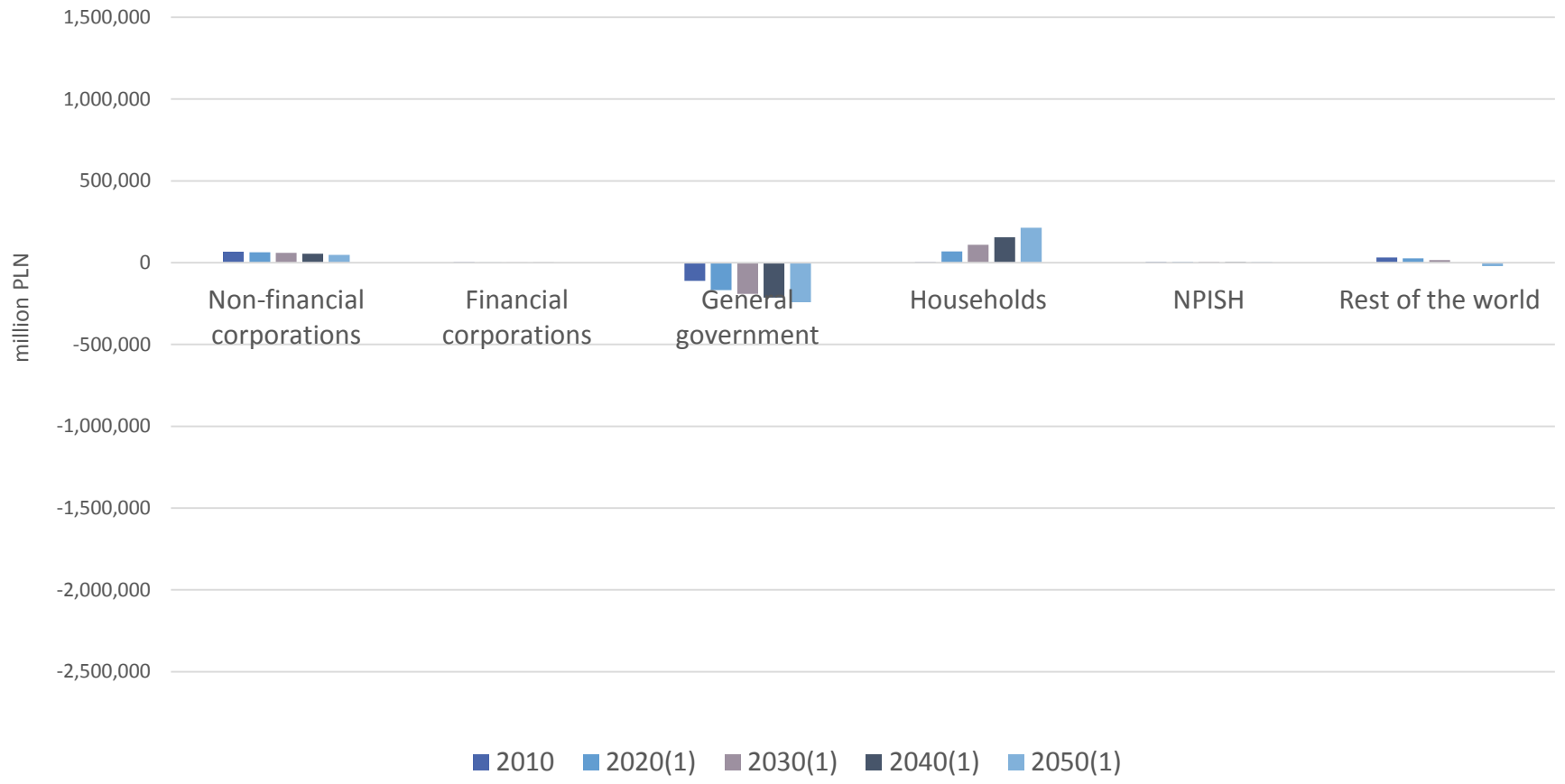

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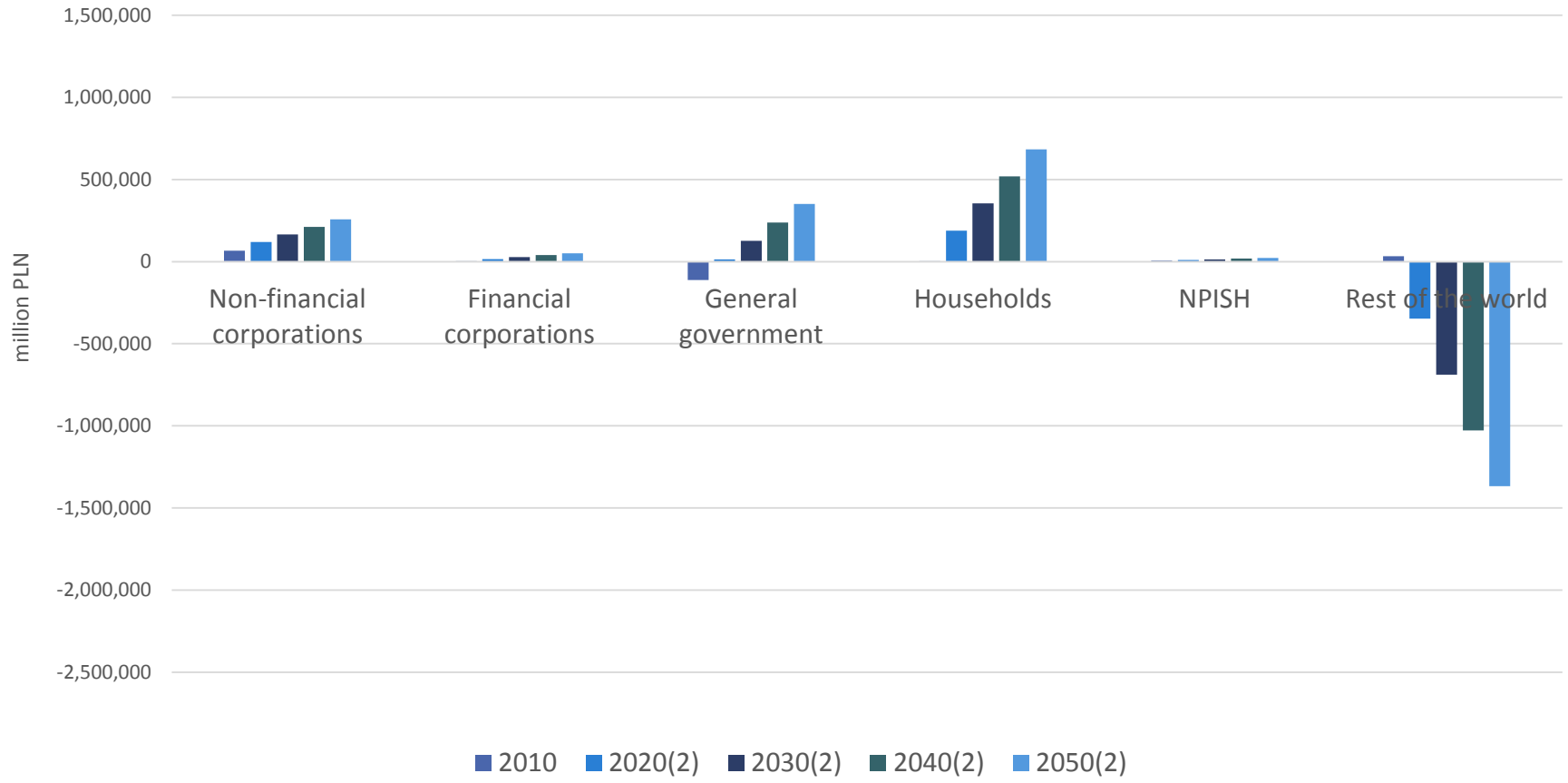

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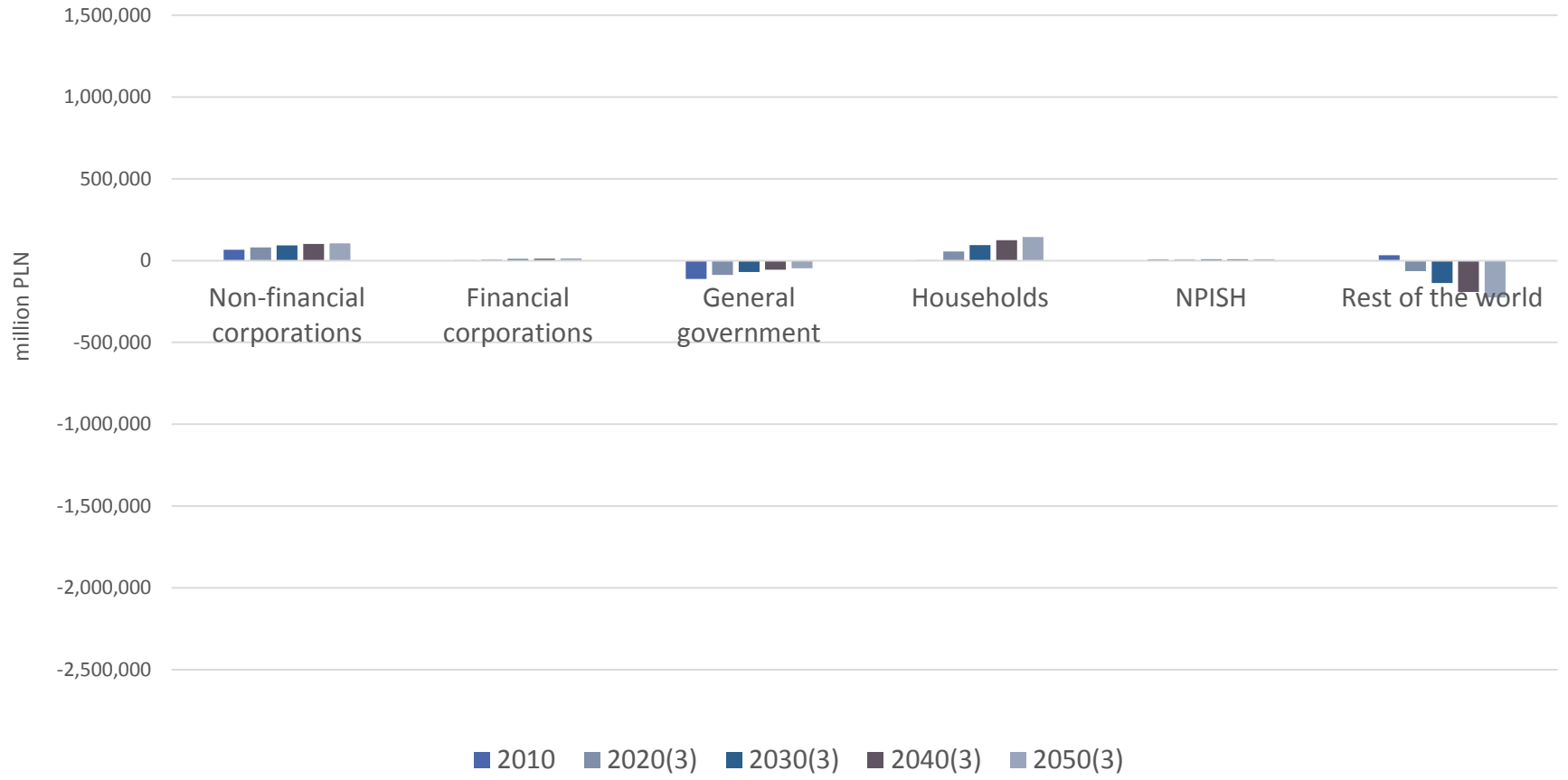

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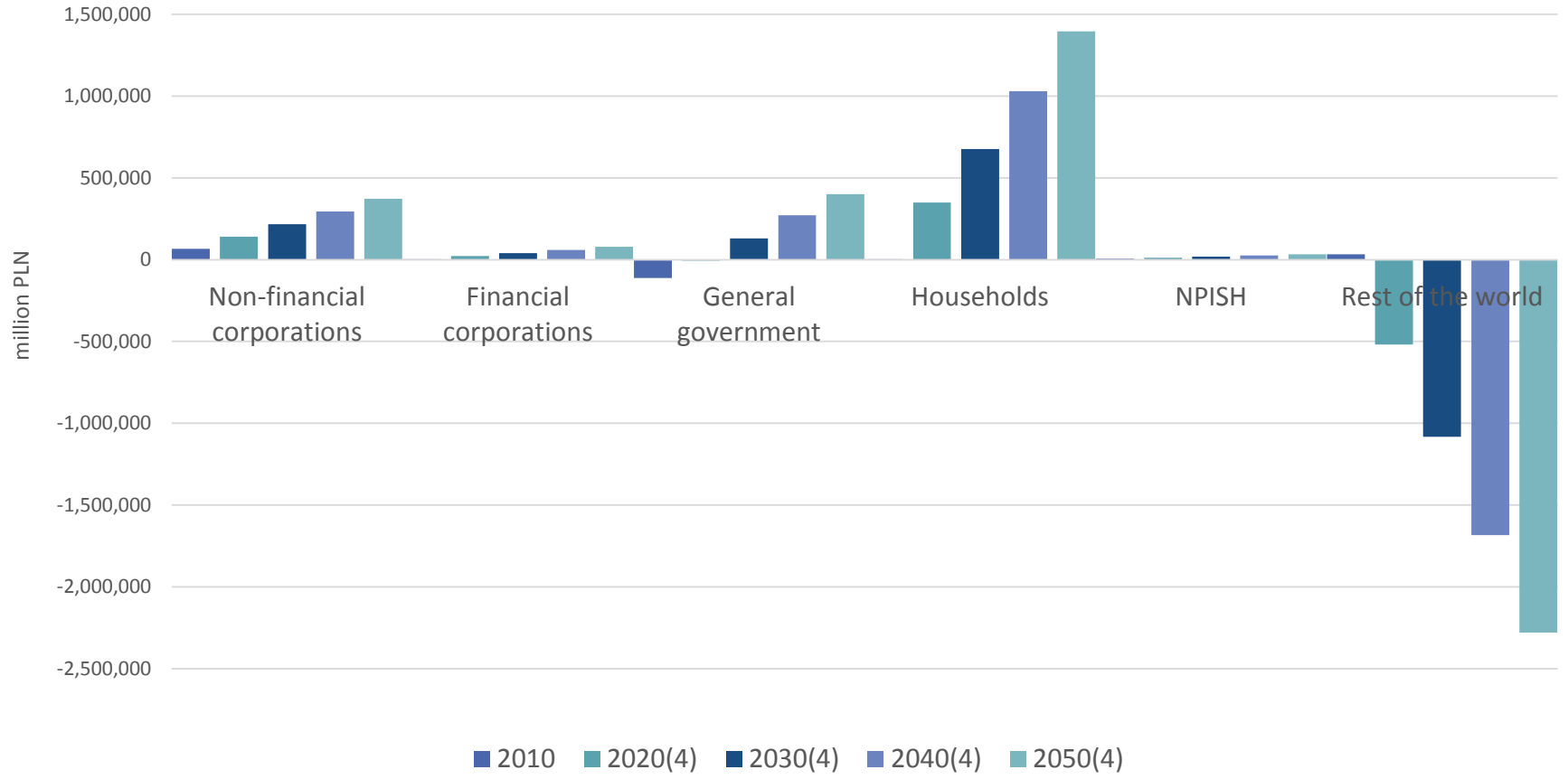

Final remarks for labour market and pension system

- Achieving production that meets the assumed final demand would require an average increase of labour productivity by 2.4% per year (with constant employment).
- Maintaining constant employment would require an increase in the employment rate to 90% in 2050 against the projection of the decline in the working age population by 39% (or the inflow of foreign labour).
- The assumption of constant average pension would mean a nearly 2.5-fold decrease in the replacement rate at retirement (which is close to EC-EPC projections).