Evaluating the welfare costs of the COVID-19 - pandemic in Finland with an AGE model of with Intergenerational Accounting

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Background

- Finland responded to the pandemic with extensive restrictions on the economy
- Mortality in 2020 – 2021 was remarkably low
- The aggregate effects of these measures on the economy were largely temporary
- However, government debt as share of GDP rose by 10+ percentage points, leading to debate on cost cuts
- Here, we focus on the effects on inter-generational income distribution
- The effects of the pandemic are modelled with an AGE model (the FINAGE model)

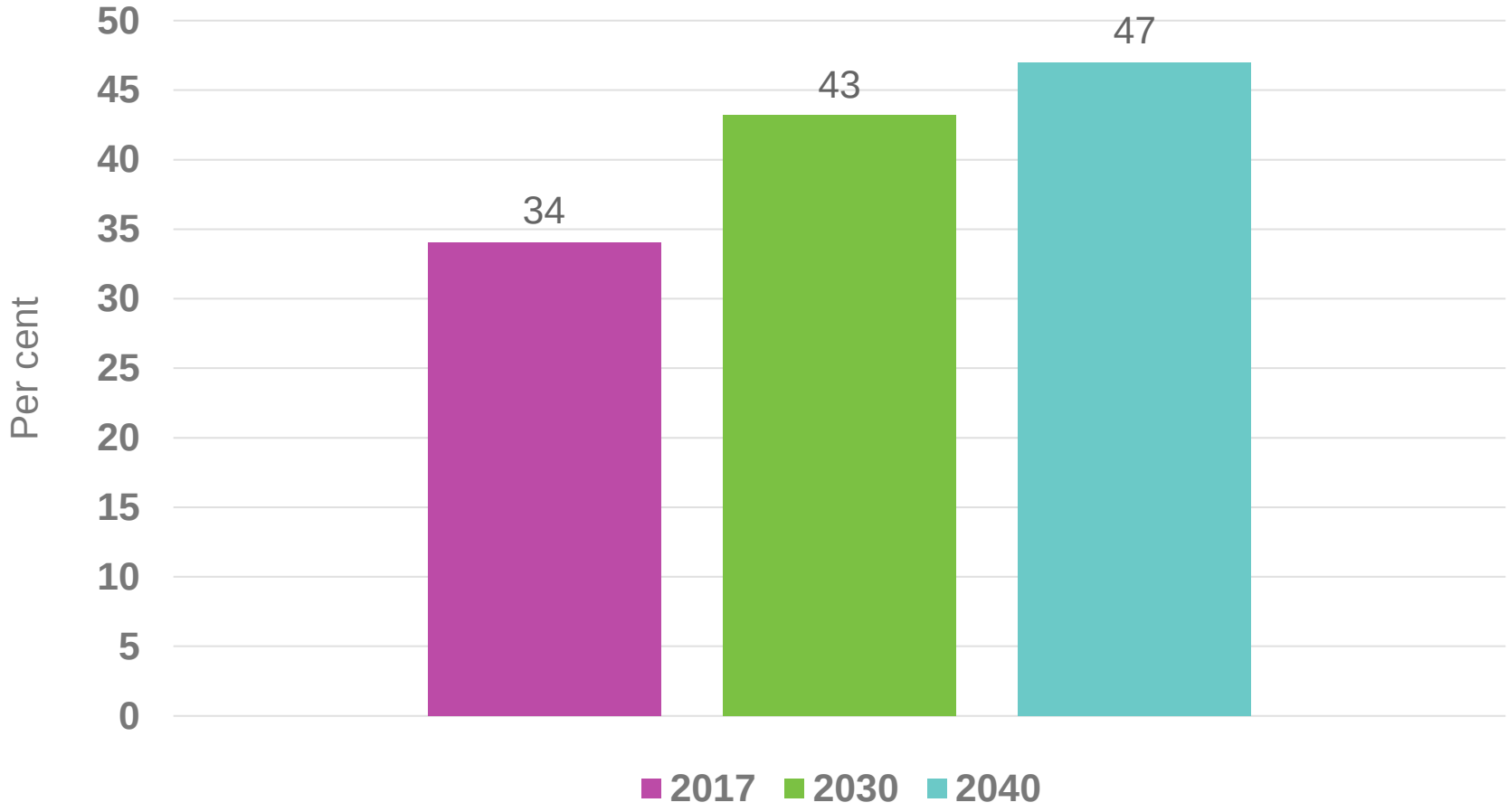
Background

- Finnish health, social care expenditures are almost entirely publicly funded.
- Income transfers and national pensions also covered from public coffers (but work-related pensions covered from pension funds)
- Assessing the welfare effects of publicly provided health and social care services and income transfers necessitates the use of register data
- Data for care sector cost and employment forecast bases on registers kept by National Institute for Health and Welfare
- Income transfers covered by National Transfer Accounts

What is driving increasing public health expenditure in Finland

1. High unit costs per person for older people
2. The ageing of the population

Old Age Dependency Ratio (65+/15-64)



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Total public health expenditures in Finland (based on NIHW HILMO register data)

$$TCOST(r,t) = \sum_{c,a,s} UC(c,r,a,s,t) * N(r,a,s,t) * V(c,r,a,s,t)$$

where

UC = unit cost of treatment in 2015 prices

N = population

V = number of treatments per unit of population

c= class of treatment (social, basic, specialist)

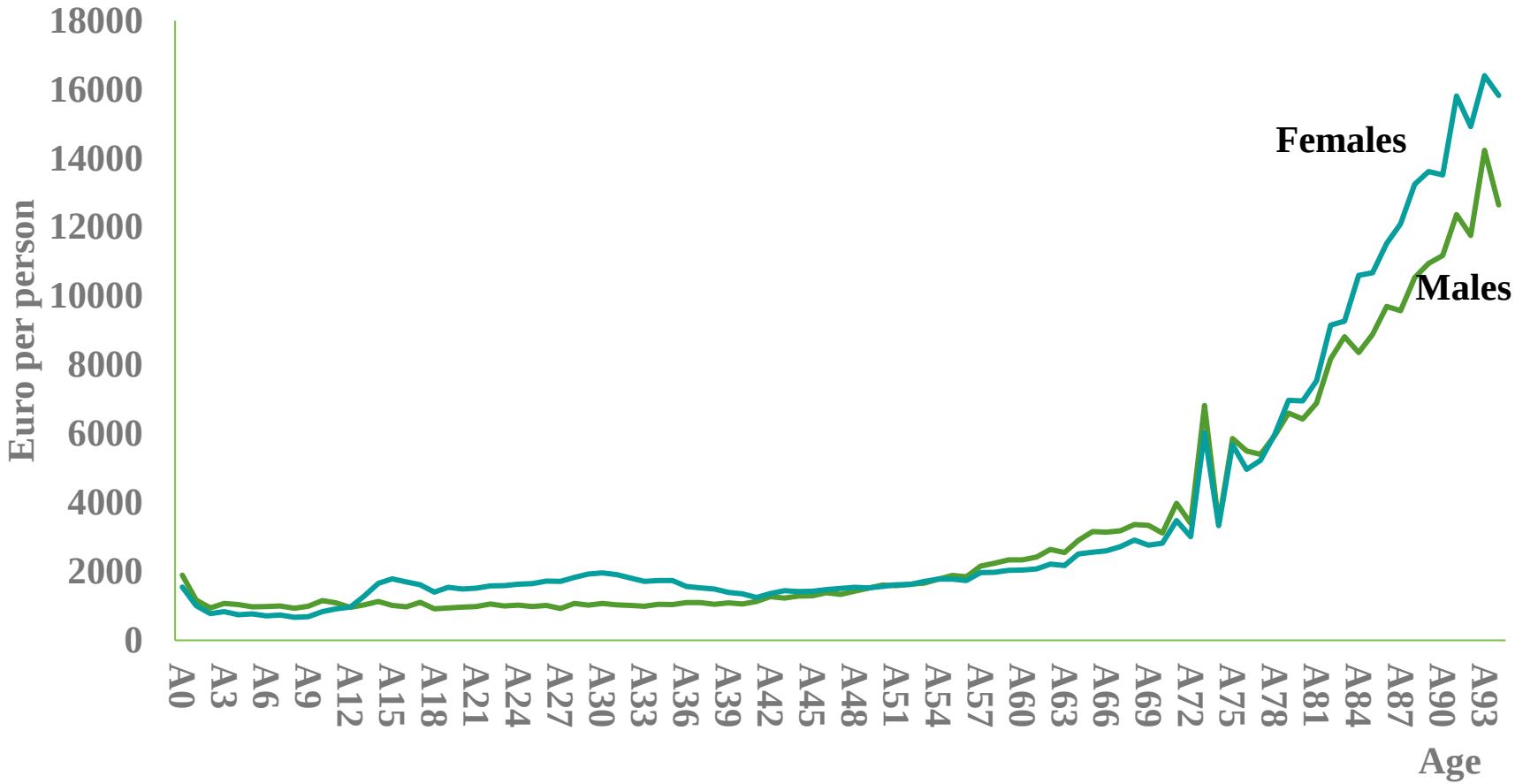
r = region: 19 counties

a = age: 0, 1, 2, …, 93, 94+

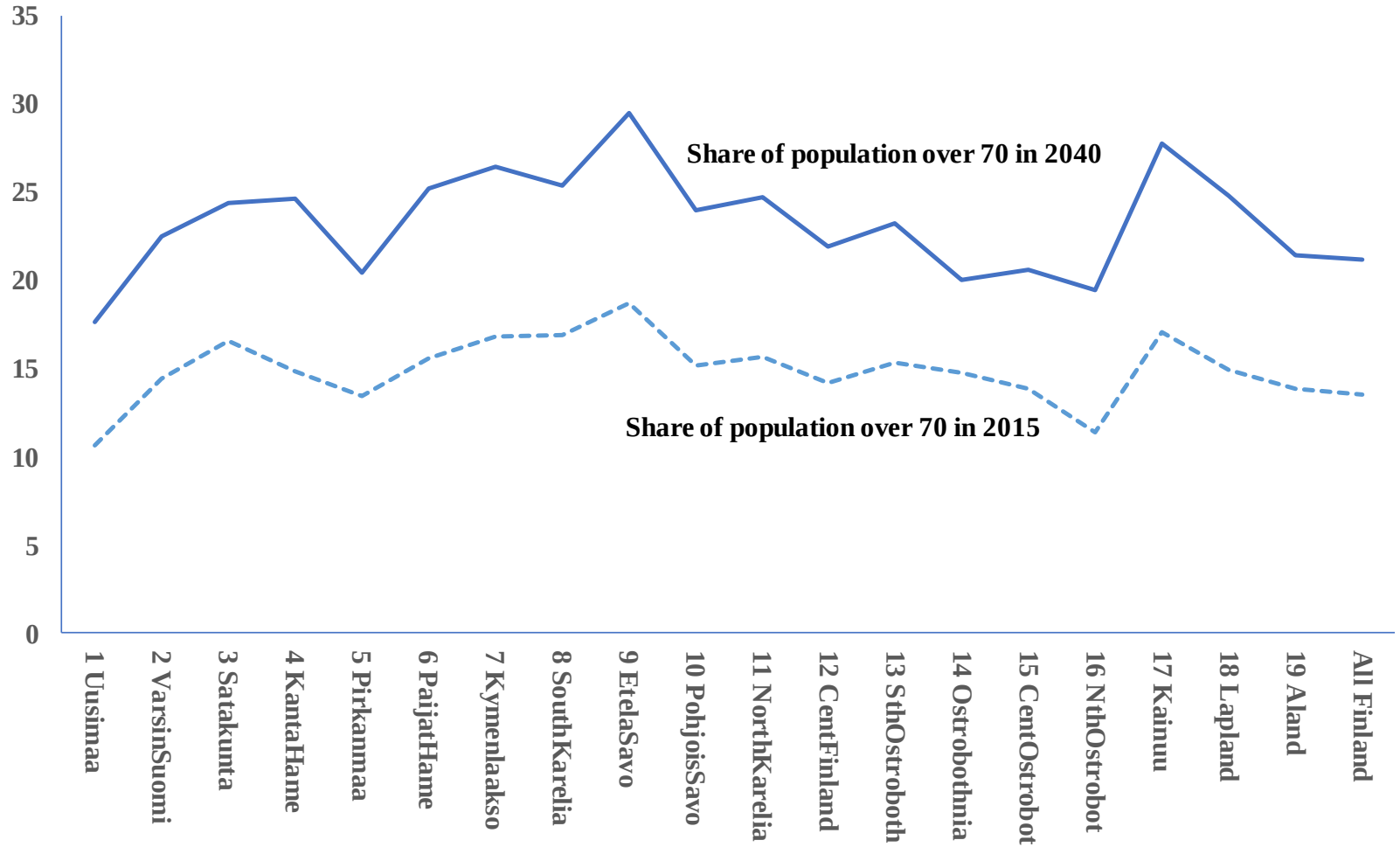
s = gender

t = year: 2015, 2016, …, 2040

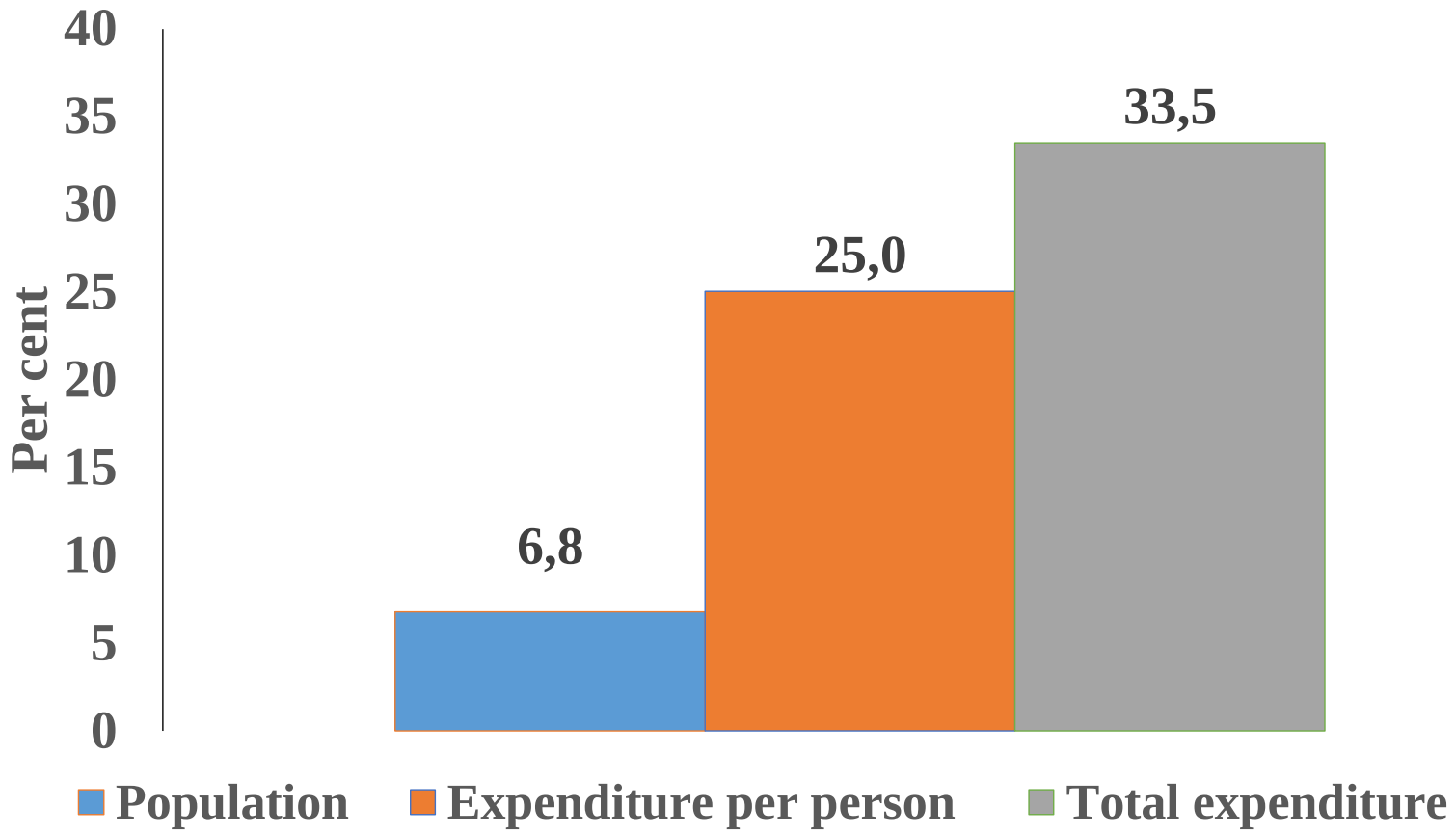
Unit Costs of Health Care by Age



Ageing of the Finnish population

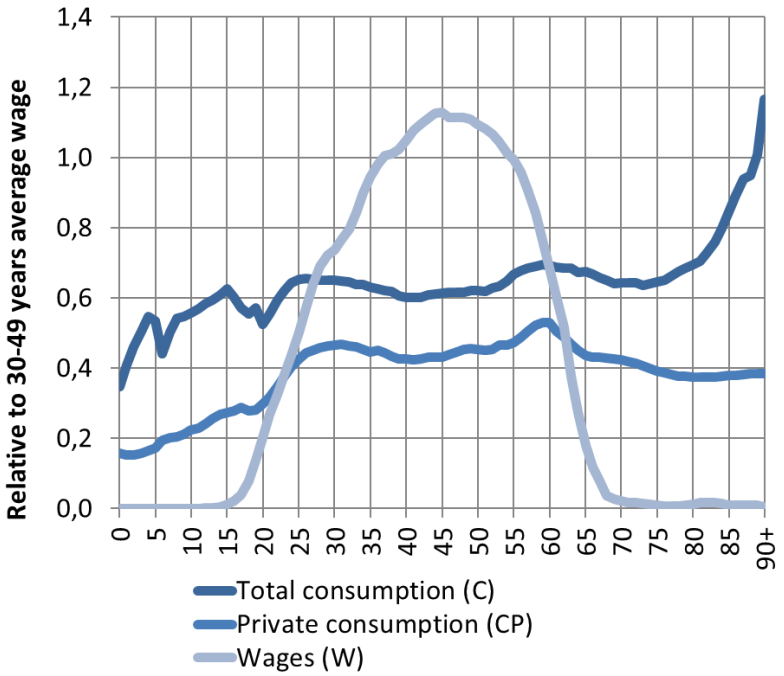


Decomposition of Growth in Health Expenditure Between 2015 and 2040



National Transfers Accounts (NTA): Finland 2017

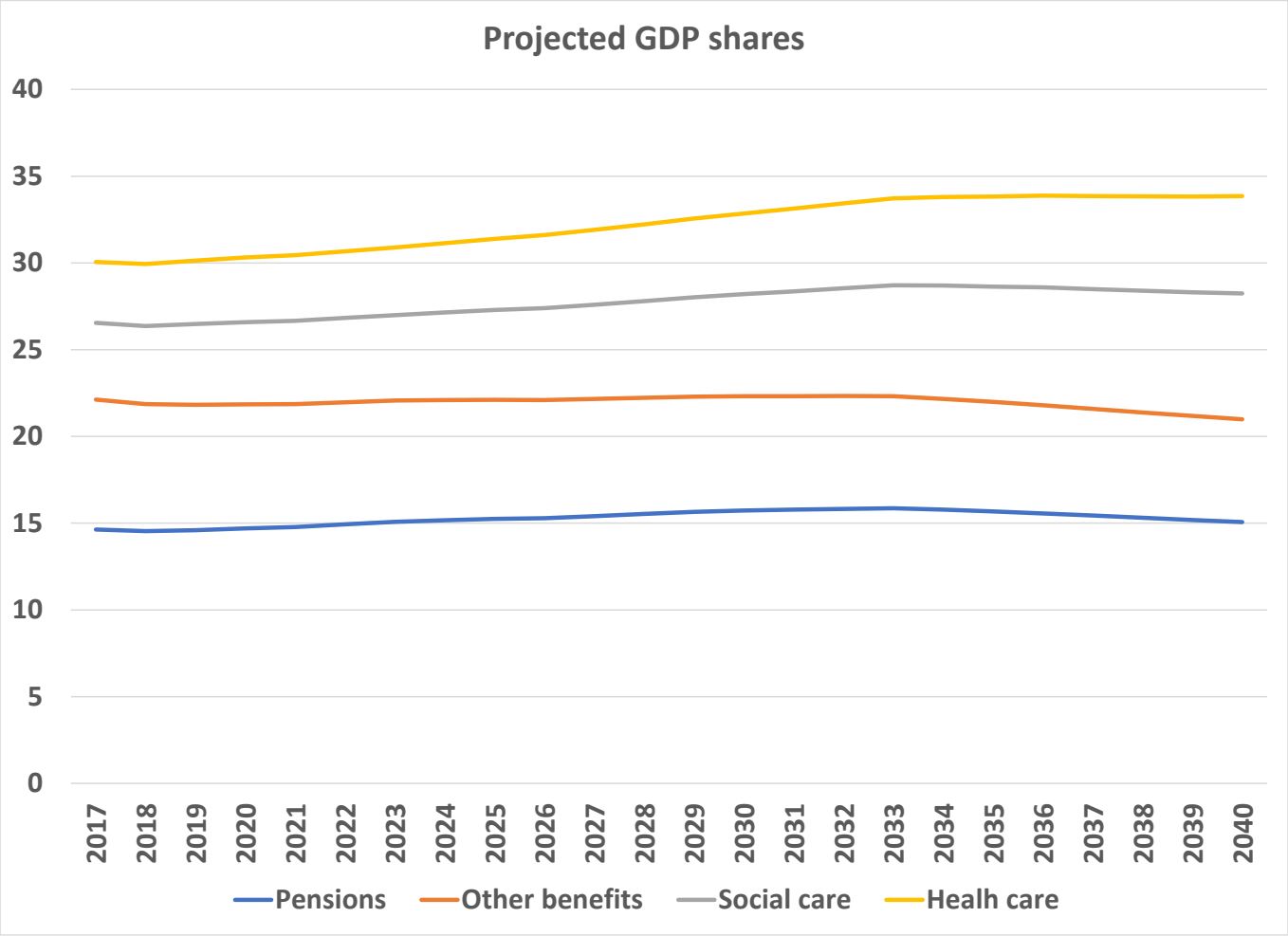
Consumption and Wages by Age



NTA methodology

- NTA goes beyond national accounts in two important new ways.
  - breaks down national accounts by age.
  - estimates transfers within families and households, between households, and through the public sector.
- Based on existing surveys on private consumption, wages and administrative data on public consumption
- National Transfer Accounts Manual: Measuring and Analysing the Generational Economy, UN Population Division, 2013

GDP-share of welfare services and transfers is projected to increase – is it sustainable?



Integrating expenditure projections for health in a computable general equilibrium model

- FINAGE/REFINAGE – dynamic, AGE model for Finland
- Aggregation for CPA 12 level of comodities and 11 Industries
- Public demand and income transfers at existing tiers:
  - Central govt, municipalities, counties
  - Pension and social security funds
- Population by age, each cohort a neoclassical utility maximizer
- Current goal: calibration to AWG and NIHW projections
- Outcomes: links to macroeconomy, fiscal sustainability, intergenerational economic welfare measures -> policy analyses

FINAGE-HEALTH extension

1) Reallocation of free public services from govt final consumption to households

2) households' problem: in each region hhold chooses health & non-health consumption to maximize utility subject to budget constraint.

Maximize $U\left(\frac{X_H}{A_H}, X_{NH}\right)$

subject to $X_H = CES\left(X_{PrivH}, X_{GovH}\right)$

and $Y = P_{PrivH}X_{PrivH} + P_{GovH}X_{GovH} + P_{NH}X_{NH} - GovOutlayH + Refund$

where

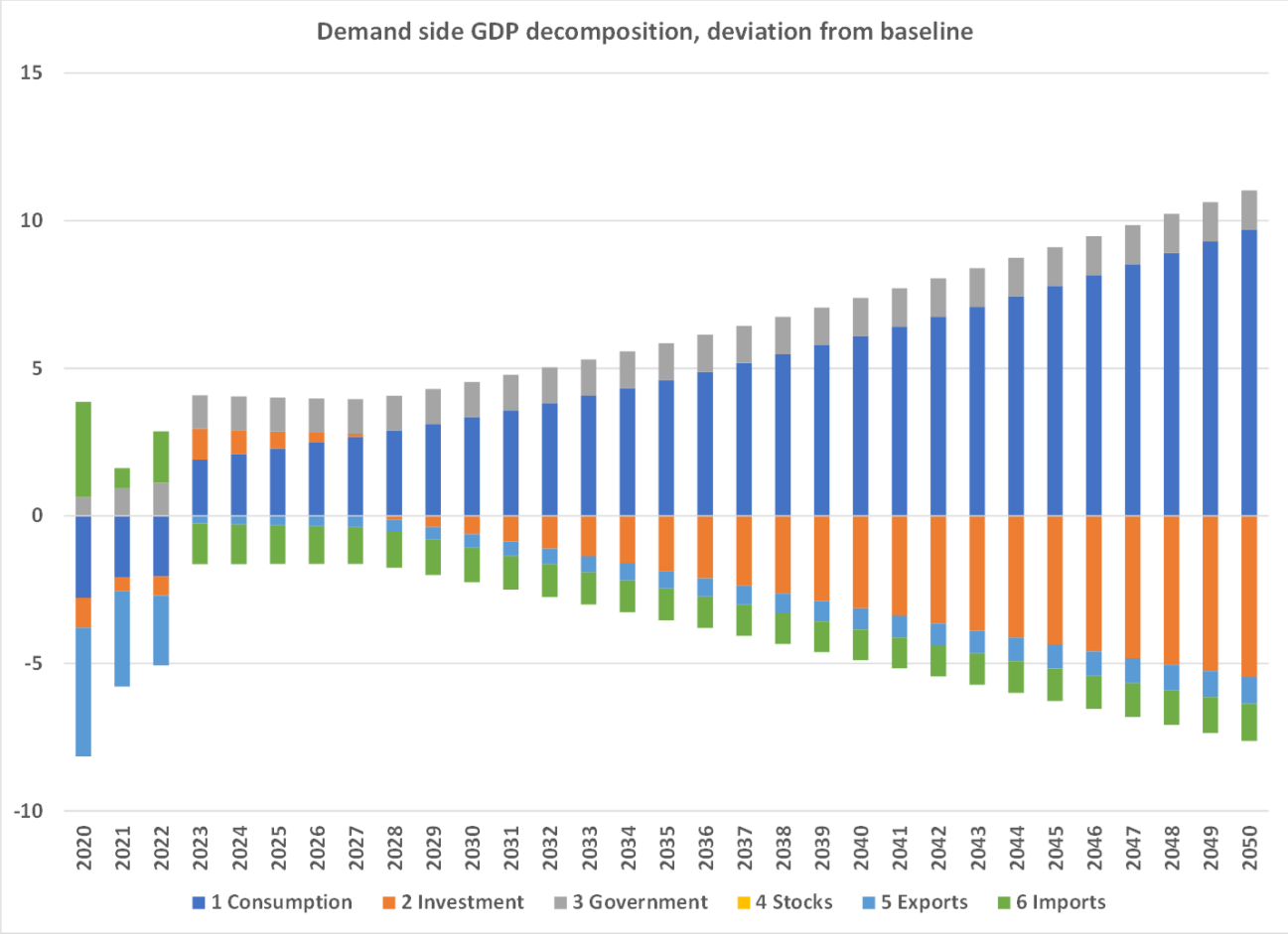
$P_{PrivH} = P_H,$ $\quad GovOutlayH = P_H X_{GovH}$

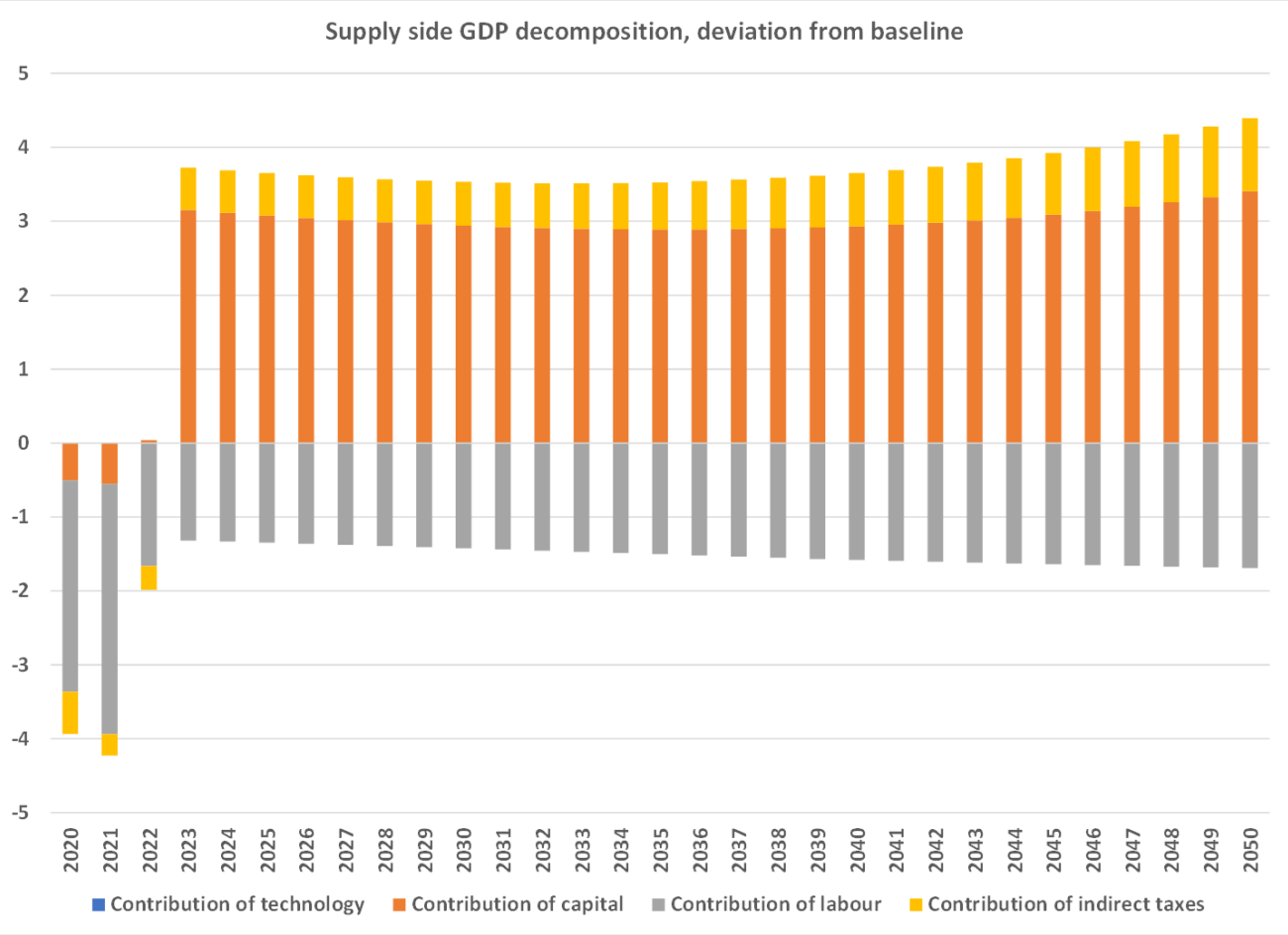
$P_{GovH} = P_H * T_{GovH}$ $\quad Refund = P_{GovH}X_{GovH}$

Modelling the pandemic and after

- Domestic restrictions on the economy accounted for about half the effects on the economy, affecting especially service sectors and trade
- The other half stemmed from a fall in exports, affecting mainly export industries
- We modelled the impacts as temporary shocks that did not immediately affect capacity
- The approach picks up the effect that recovery was rapid (until the war), but govt debt is becoming an issue
- Private consumption was not much affected because of govt policies - but there were distributional effects due to impact on labour markets
- If spending cuts after 2023, more distributional effects to be expected – how do they accrue (1 billion a year)?

Effects of the pandemic




Supply side GDP decomposition, deviation from baseline
5
4
3
2
1
0
-1
-2
-3
-4
-5
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
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2047
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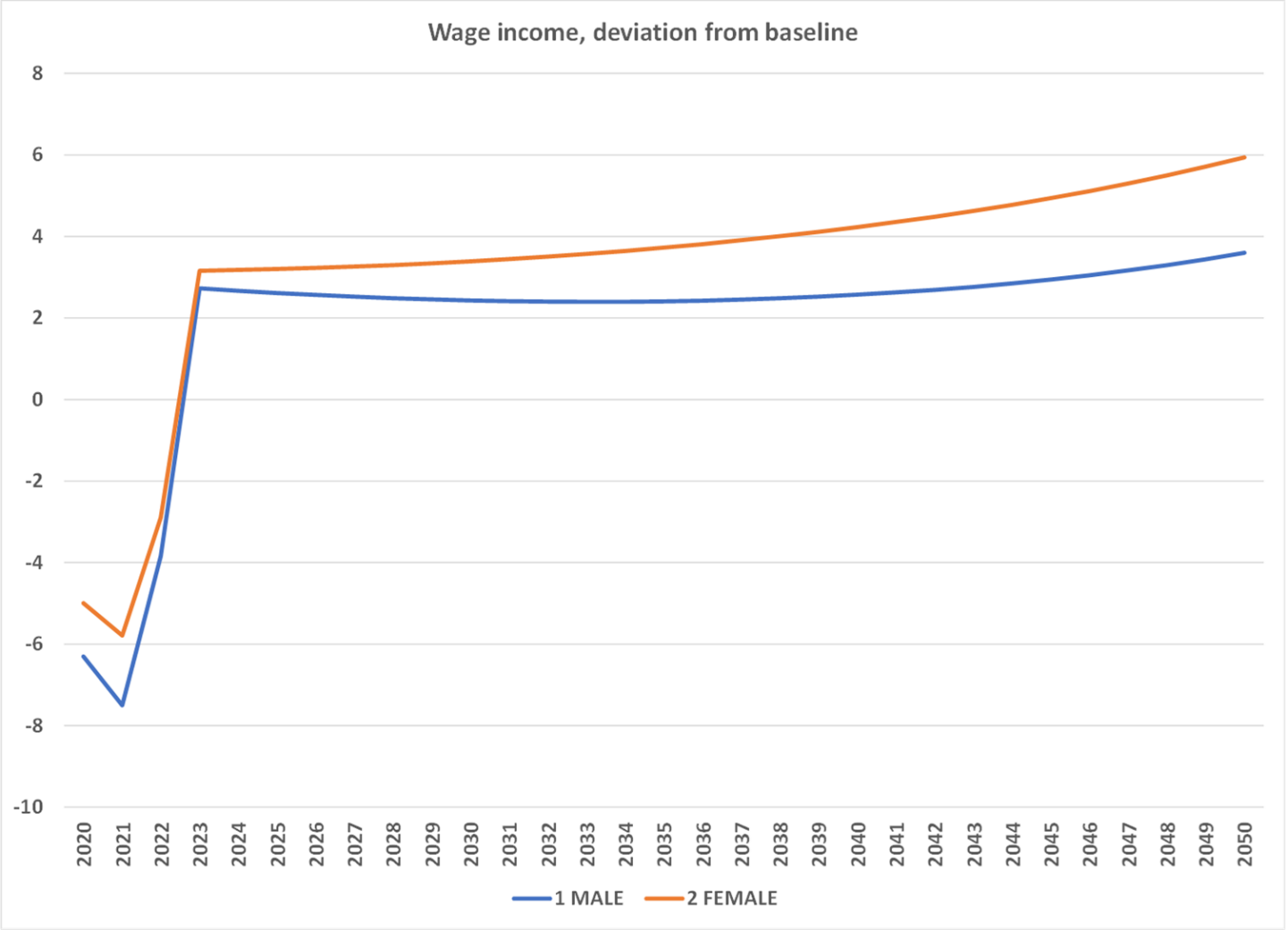
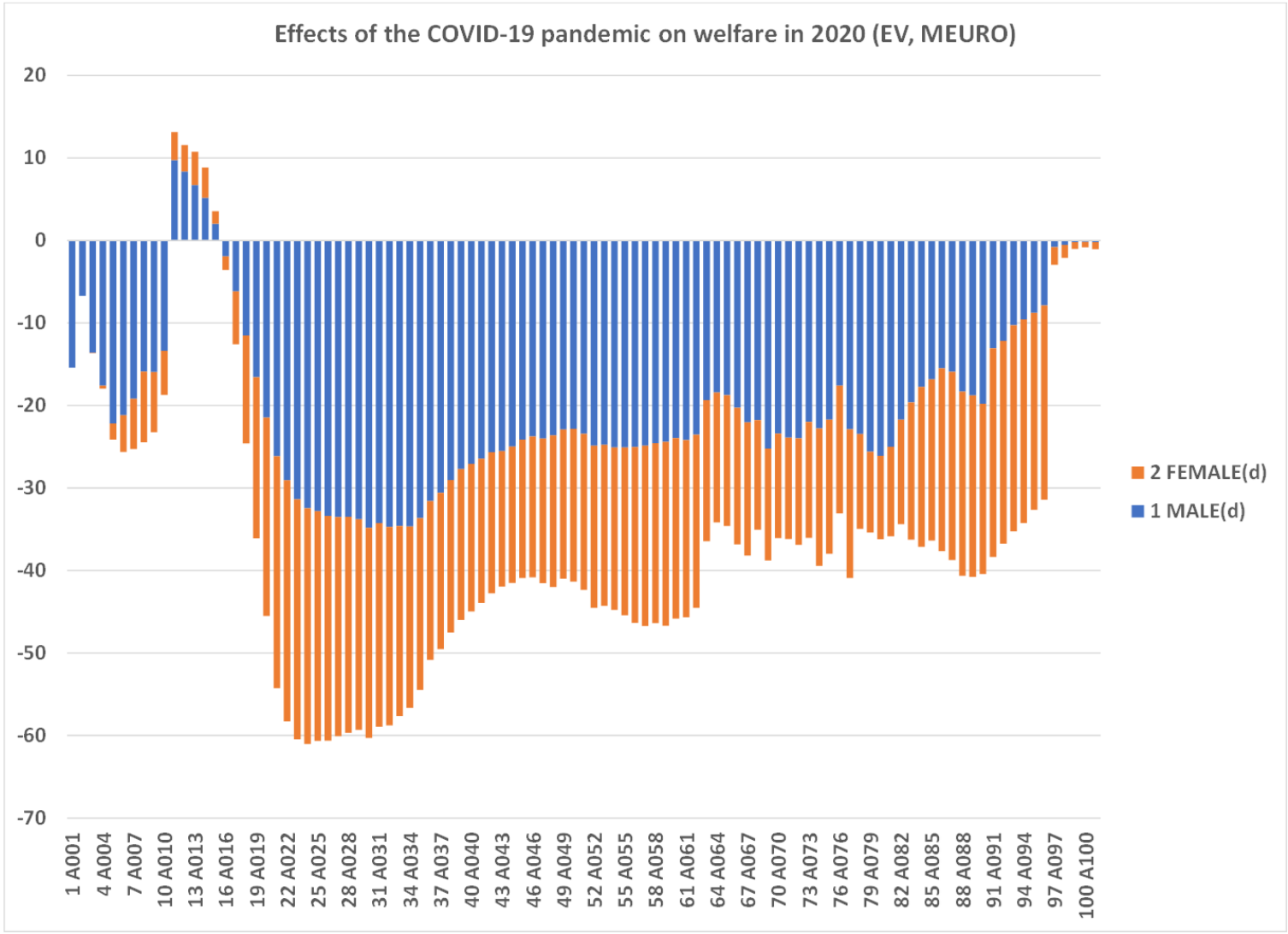
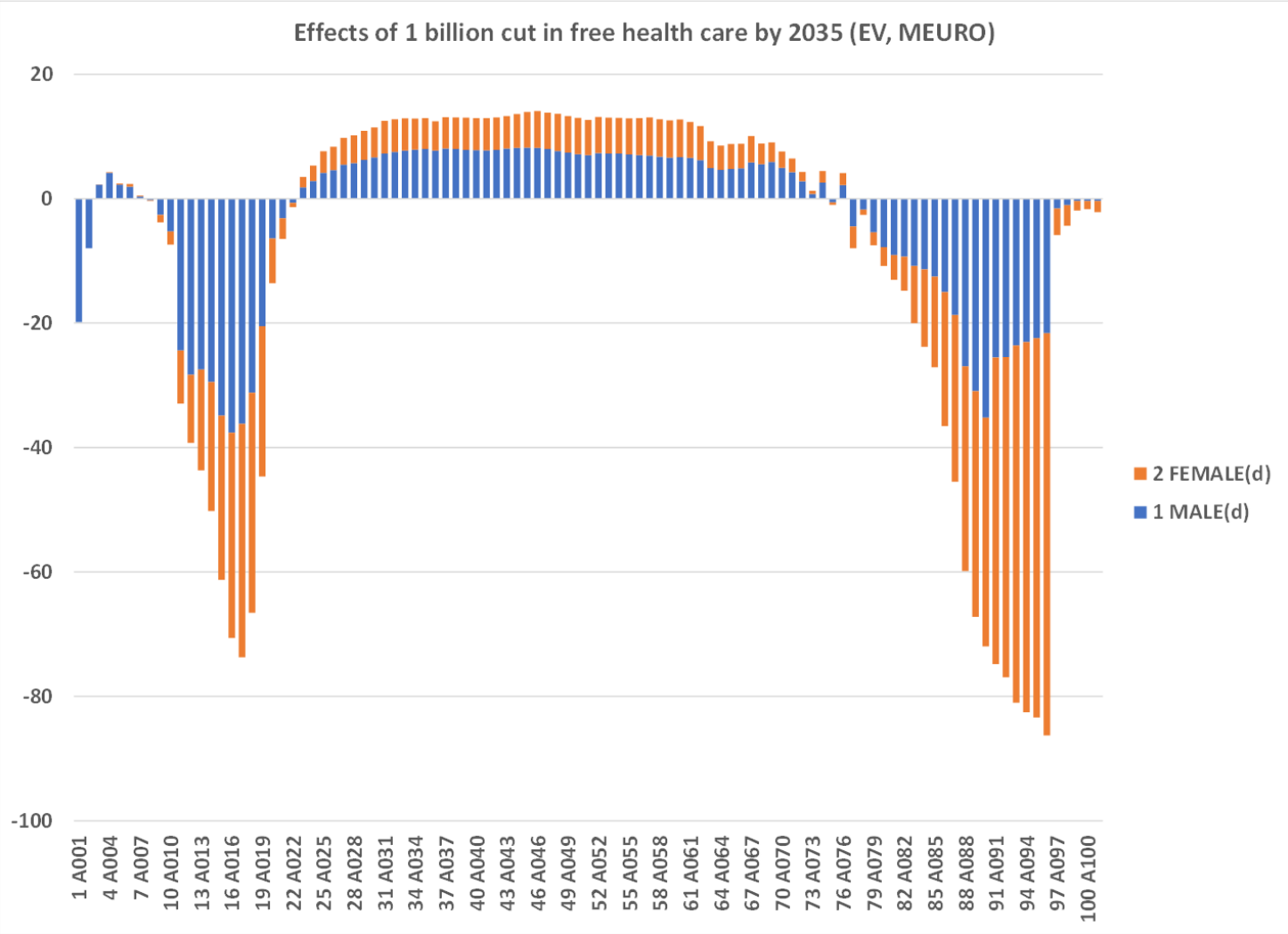
2050
Contribution of technology
Contribution of capital
Contribution of labour
Contribution of indirect taxes

Effects of the pandemic by gender




Effects of the COVID-19 pandemic on welfare in 2020 (EV, MEURO)
20
10
0
-10
-20
-30
-40
-50
-60
-70
1 A001
4 A004
7 A007
10 A010
13 A013
16 A016
19 A019
22 A022
25 A025
28 A028
31 A031
34 A034
37 A037
40 A040
43 A043
46 A046
49 A049
52 A052
55 A055
58 A058
61 A061
64 A064
67 A067
70 A070
73 A073
76 A076
79 A079
82 A082
85 A085
88 A088
91 A091
94 A094
97 A097
100 A100
2 FEMALE(d)
1 MALE(d)


Effects of 1 billion cut in free health care by 2035 (EV, MEURO)
20
0
-20
-40
-60
-80
-100
1 A001
4 A004
7 A007
10 A010
13 A013
16 A016
19 A019
22 A022
25 A025
28 A028
31 A031
34 A034
37 A037
40 A040
43 A043
46 A046
49 A049
52 A052
55 A055
58 A058
61 A061
64 A064
67 A067
70 A070
73 A073
76 A076
79 A079
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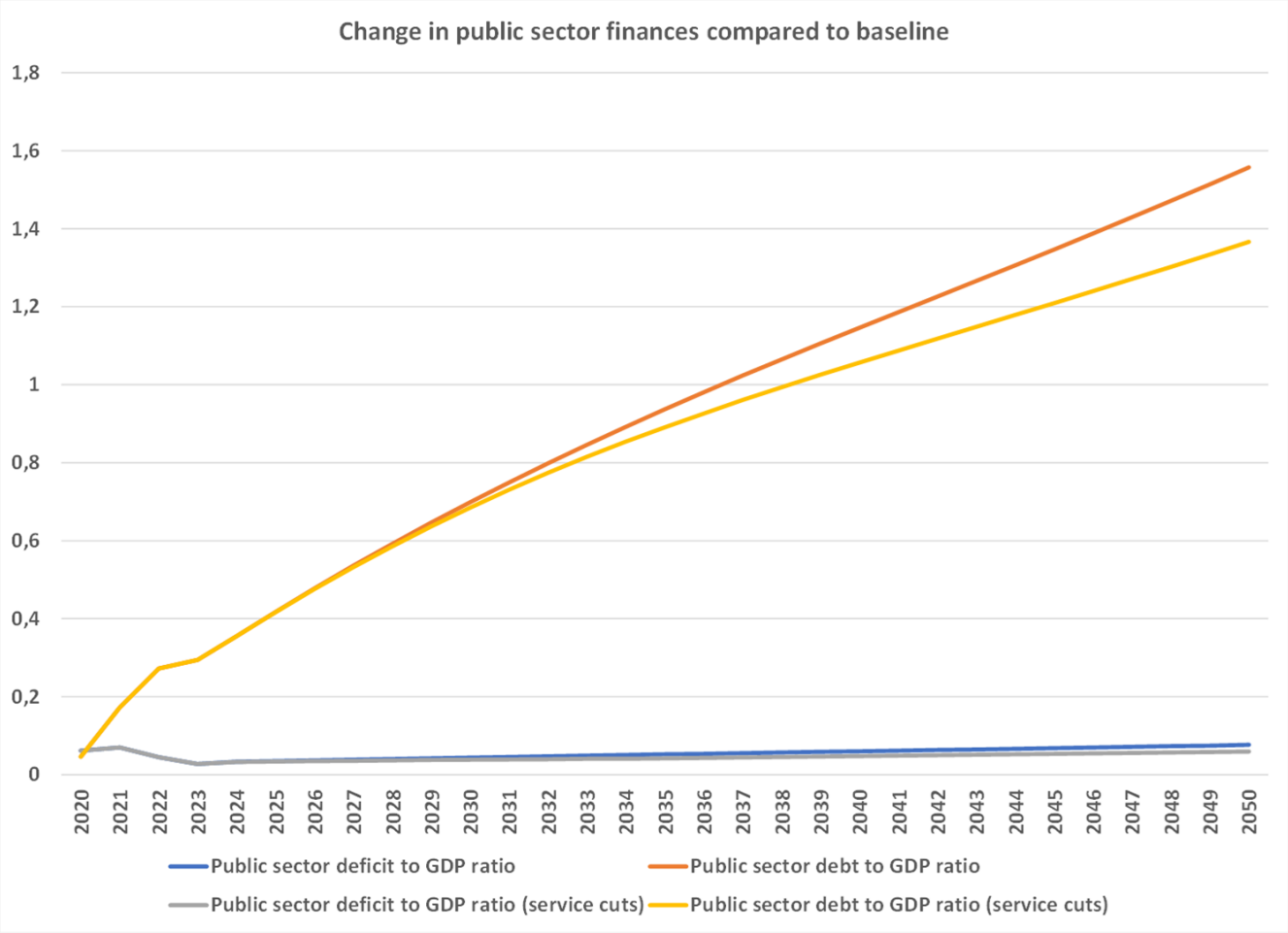
85 A085
88 A088
91 A091
94 A094
97 A097
100 A100
2 FEMALE(d)
1 MALE(d)


Change in public sector finances compared to baseline
1,8
1,6
1,4
1,2
1
0,8
0,6
0,4
0,2
0
2020
2021
2022
2023
2024
2025
2026
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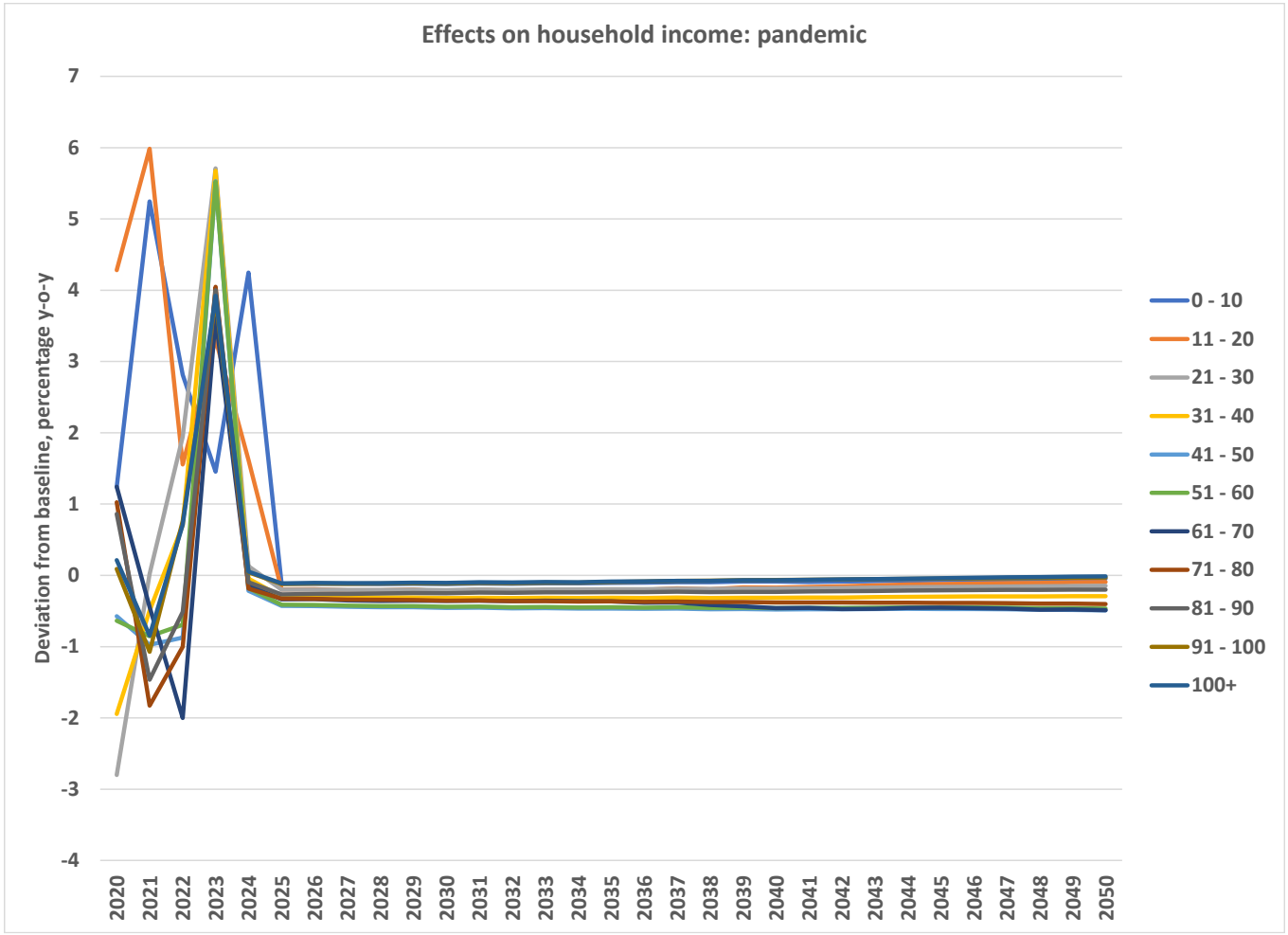
2050
Public sector deficit to GDP ratio
Public sector debt to GDP ratio
Public sector deficit to GDP ratio (service cuts)
Public sector debt to GDP ratio (service cuts)

Effects of the pandemic on income distribution compared to baseline



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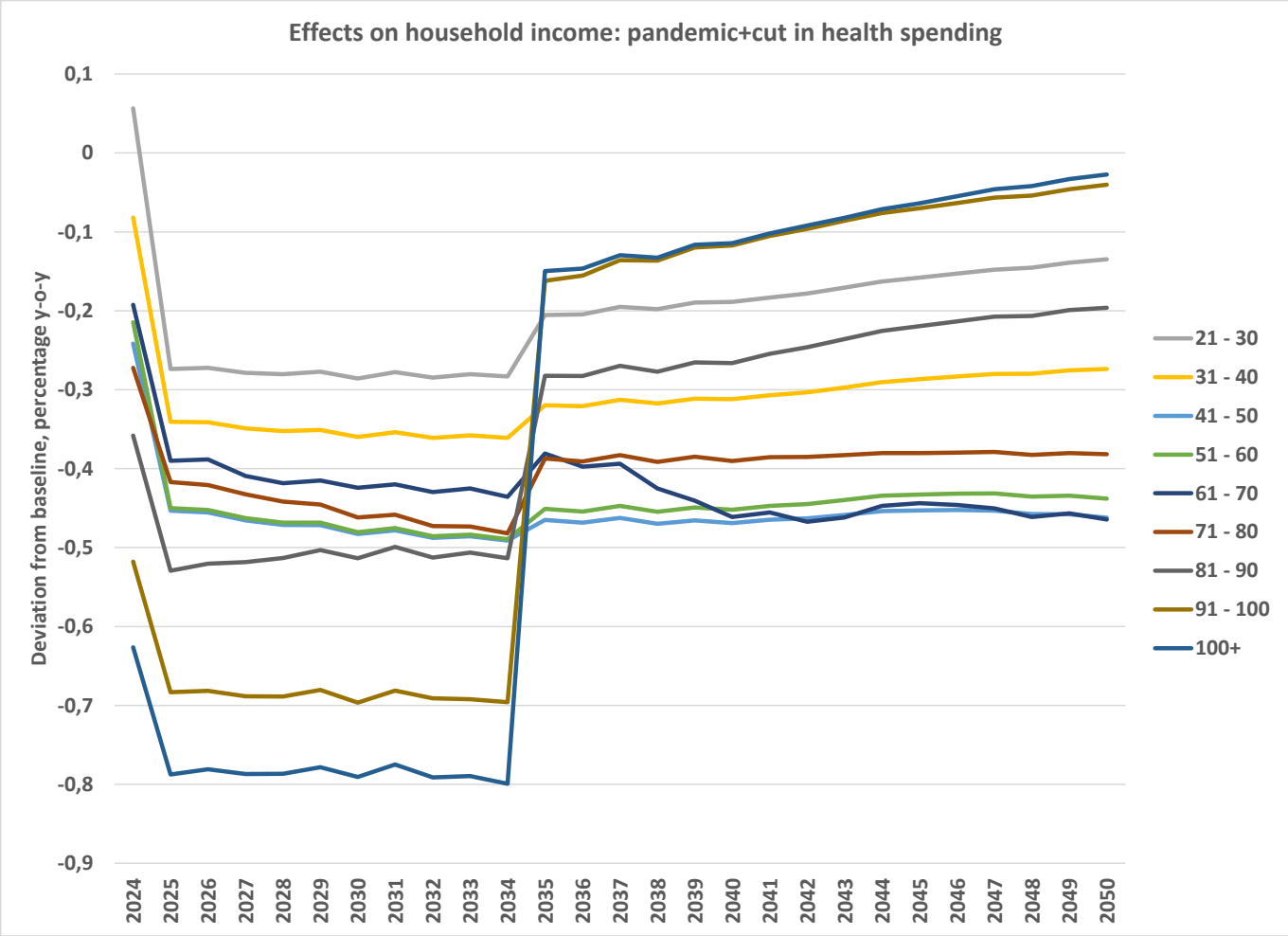
Effects of the pandemic on income distribution compared to baseline



Conclusions

- The pandemic had many effects that can only be analysed with the help of micro data and also NTA
- Finland weathered the pandemic quite well economically
- Effects on households were also rather small, because of govt intervention – but at the cost of increasing debt
- There were diffirences btw effects on men and women, stemming from differences in labour force structure btw sectors
- At the time of writing (2022), it was already clear that future governments would try to tackle the debt problem
- We also addressed the distributional effects of spending cuts in health care: the youngest and oldest cohorts lose while working-age cohorts gain on impact