Funded by the Horizon 2020 Framework Programme of the European Union

cambridge econometrics
clarity from complexity

Technequality

Understanding the relation between technological innovations and social inequality

Modelling assessment of income schemes

Cornelia Suta, Eva Alexandri, Luca Barbieri, Phil Summerton (Cambridge Econometrics)
Ruud Muffels (Tilburg University)

Modelling assessment of income schemes

Outline

- Introduction
- Research questions
- Scenario design
- Baseline
- Minimum wage – main results
- Social assistance scheme – preliminary work

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Modelling assessment of income schemes

Introduction

- Use the labour market forecasting scenarios for automation risks from WP1
- Use E3ME model to model the different income schemes
- Three scenarios:
  1. EU – implementation of minimum wage directive
  2. (in progress) NL – 30% increase in minimum wage
  3. (in progress) NL – unconstraint social assistance

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Modelling assessment of income schemes

Research questions

What are the macroeconomic outcomes (measured by GDP and employment) of

- the increase in minimum wage
- unconditional welfare income for those on social assistance

in the context of automation?

Modelling assessment of income schemes

Baseline

- The E3ME model baseline includes preliminary COVID impacts (2020 only) based on official projections from DG ECFIN.
- The GDP growth forecast is based on published Covid-19 short term forecasts (e.g. Ameco May 2021), while the long-term GDP growth forecast is based on ECFIN Ageing report 2021.
- For the labour market, the E3ME baseline will include the displacement of workers by automation based on the WP1.4 results for the scenario assuming low automation risk, full adoption by 2035, and employment protection.
  - This would lead to a 18% reduction in employment by 2030 due to automation.
  - GDP and decrease in population also is expected to lead to a decline in employment

Modelling assessment of income schemes

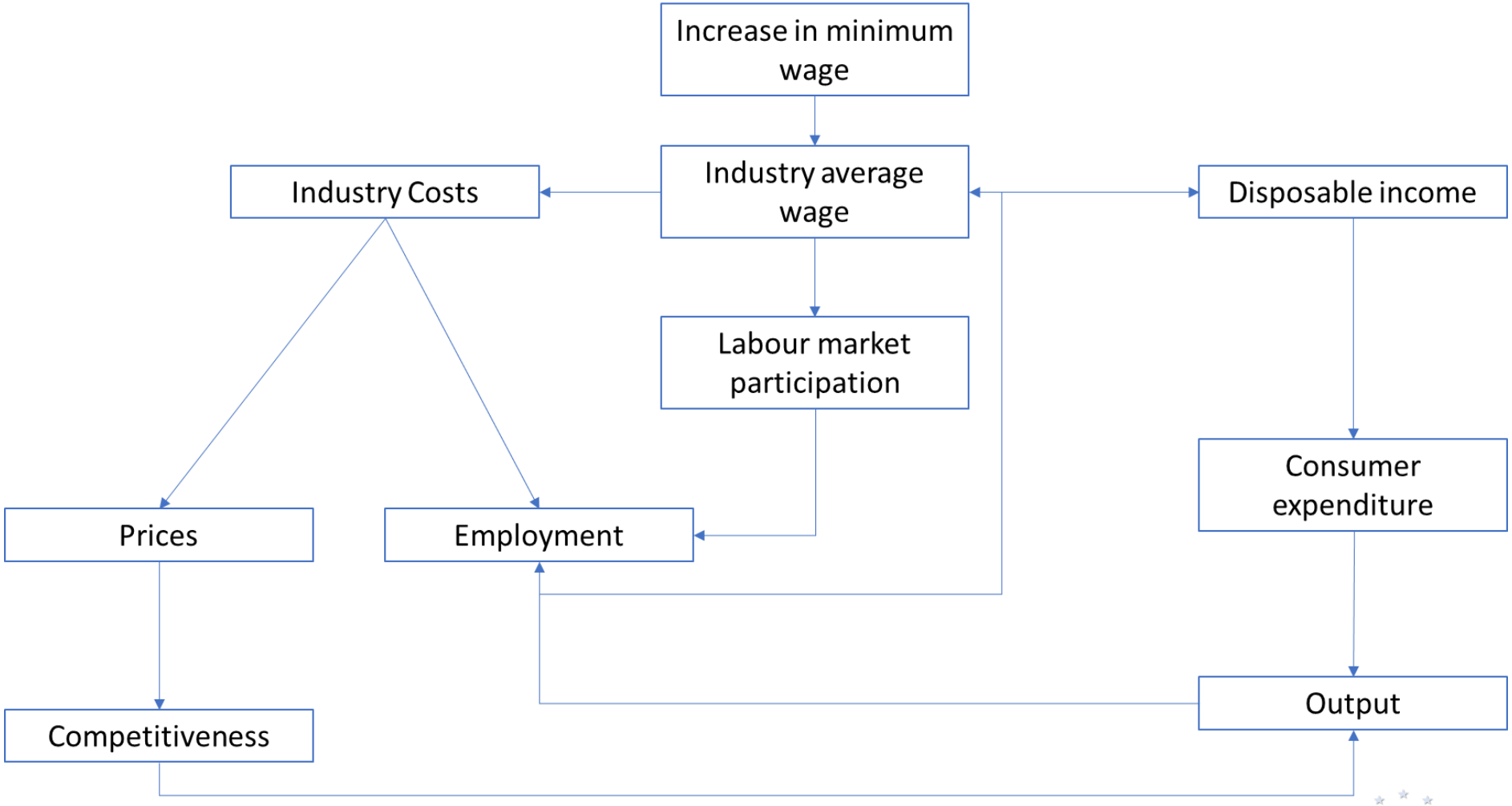
Increase minimum wage - Scenario assumptions

Based on the proposal for a Directive on adequate minimum wages adopted by the European Commission on 28 October 2020, the Member States will be required to ensure an adequate minimum wage, i.e. 50% of the average wage and 60% of the median wage

- taking the 'in-work-poverty wage' threshold of 60 % of the national full-time gross median wage as the reference to assess the adequacy of minimum wages
- Share of minimum wage workers in each sector

Funded by the Horizon 2020 Framework Programme of the European Union

Modelling assessment of income schemes

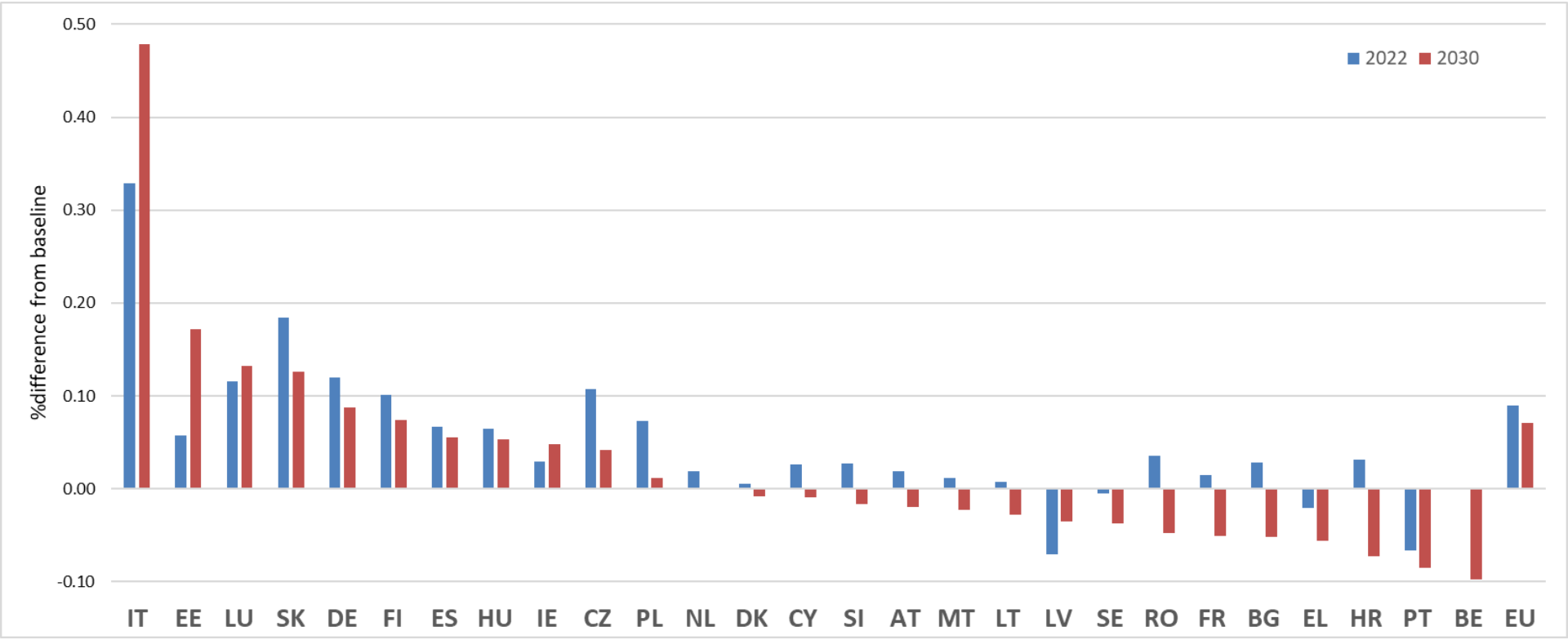


Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Modelling assessment of income schemes

Minimum wage scenario results – GDP by Member State



Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Modelling assessment of income schemes

Minimum wage scenario results – MS Employment

Overall, less than 0.5% difference from baseline reduction in employment. The greater the current difference to adequate wage, the higher the impact on employment.

Member State	2022, %diff from baseline	2030, %diff from baseline	Diff 60% median - minimum wage (ths €)
AT	0.02	0.03	0.00
BE	-0.01	-0.03	0.29
BG	0.00	0.01	0.00
CY	-0.04	-0.15	0.05
CZ	-0.02	-0.07	0.16
DE	0.02	0.01	0.24
DK	0.00	0.03	0.01
EL	0.00	-0.01	0.00
EE	-0.11	-0.08	0.17
ES	-0.08	-0.14	0.17
FI	-0.03	-0.23	0.31
FR	0.01	0.03	-0.08
HR	0.00	-0.02	0.14
HU	-0.01	0.02	0.04
IE	-0.07	-0.07	0.20
IT	-0.16	-0.19	0.38
LT	-0.07	-0.07	0.09
LV	-0.08	-0.16	0.11
LU	0.00	0.06	0.20
MT	-0.03	-0.05	0.23
NL	0.00	-0.01	0.07
PL	-0.02	-0.02	0.03
PT	-0.01	-0.04	-0.12
RO	0.00	-0.04	0.01
SI	0.03	0.04	0.02
SK	-0.02	-0.04	0.11
SE	0.00	0.00	-0.01

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

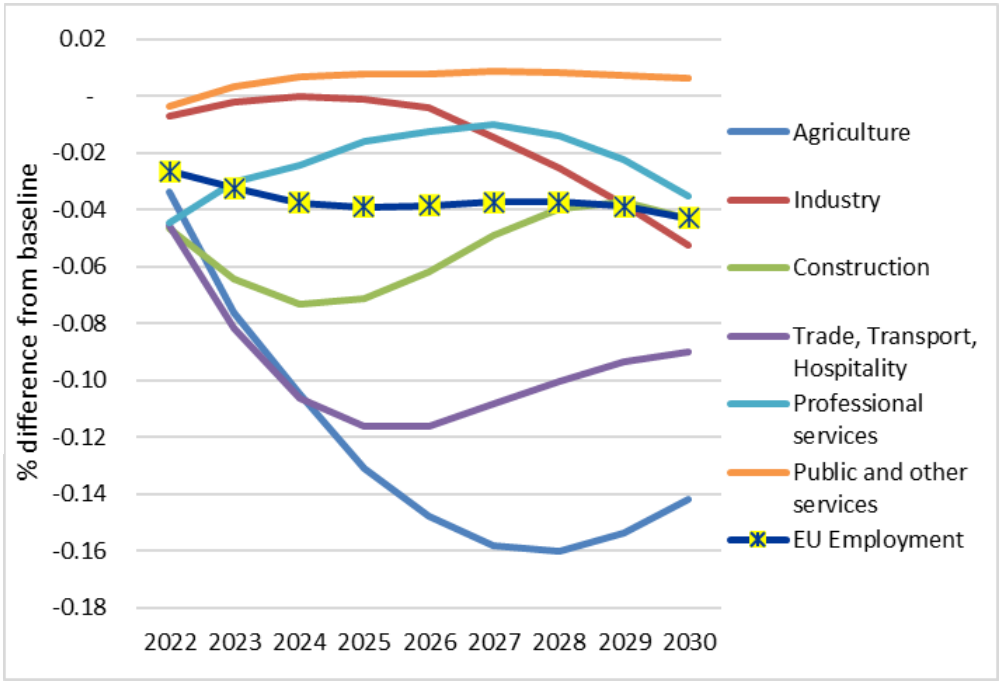
Modelling assessment of income schemes

Minimum wage scenario results – EU employment by broad sectors

Graph A7.7: The share of minimum wage earners by sector, 2017

(a) By broad sectors of the economy

Note: For the Member States with a statutory national minimum wage, workers with wages between 80% and 105% of the minimum wage were considered. For the other Member States, low-wage workers (less than 67% of the median wage) were considered.
Source: European Commission calculations based on EU-SILC 2017.



Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Modelling assessment of income schemes

Minimum wage scenario results: EU employment by occupation (% difference from baseline):

Occupation	2022	2026	2030
Managers	-0.02	-0.05	-0.05
Professionals	-0.02	0.00	-0.01
Technicians & associate	-0.02	-0.02	-0.03
Clerical support workers	-0.04	-0.04	-0.06
Service & sales workers	-0.03	-0.08	-0.05
Skilled agricultural workers	-0.03	-0.11	-0.09
Craft and related trades	-0.03	-0.05	-0.07
Plant, machine operators	-0.03	-0.03	-0.06
Elementary occupations	-0.03	-0.05	-0.05
Total EU employment	**-0.03**	**-0.04**	**-0.04**

The occupation level results are driven by the sectoral employment results.

Funded by the Horizon 2020 Framework Programme of the European Union

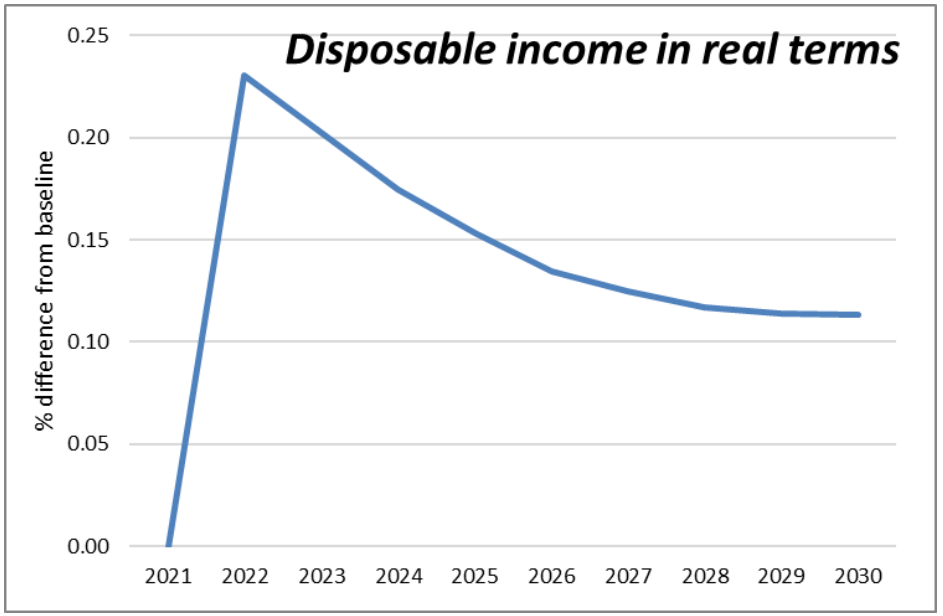
Technequality

Modelling assessment of income schemes

Minimum wage scenario results:

Average wage per person by sector (% difference from baseline)

Broad sector	2022	2026	2030
Agriculture	3.2	3.1	3.1
Industry	0.4	0.4	0.4
Construction	0.6	0.6	0.5
Trade, Transport, Hospitality	0.7	0.7	0.7
Professional services	0.4	0.4	0.4
Public and other services	0.5	0.5	0.5
Total EU	**0.5**	**0.5**	**0.5**



Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Modelling assessment of income schemes

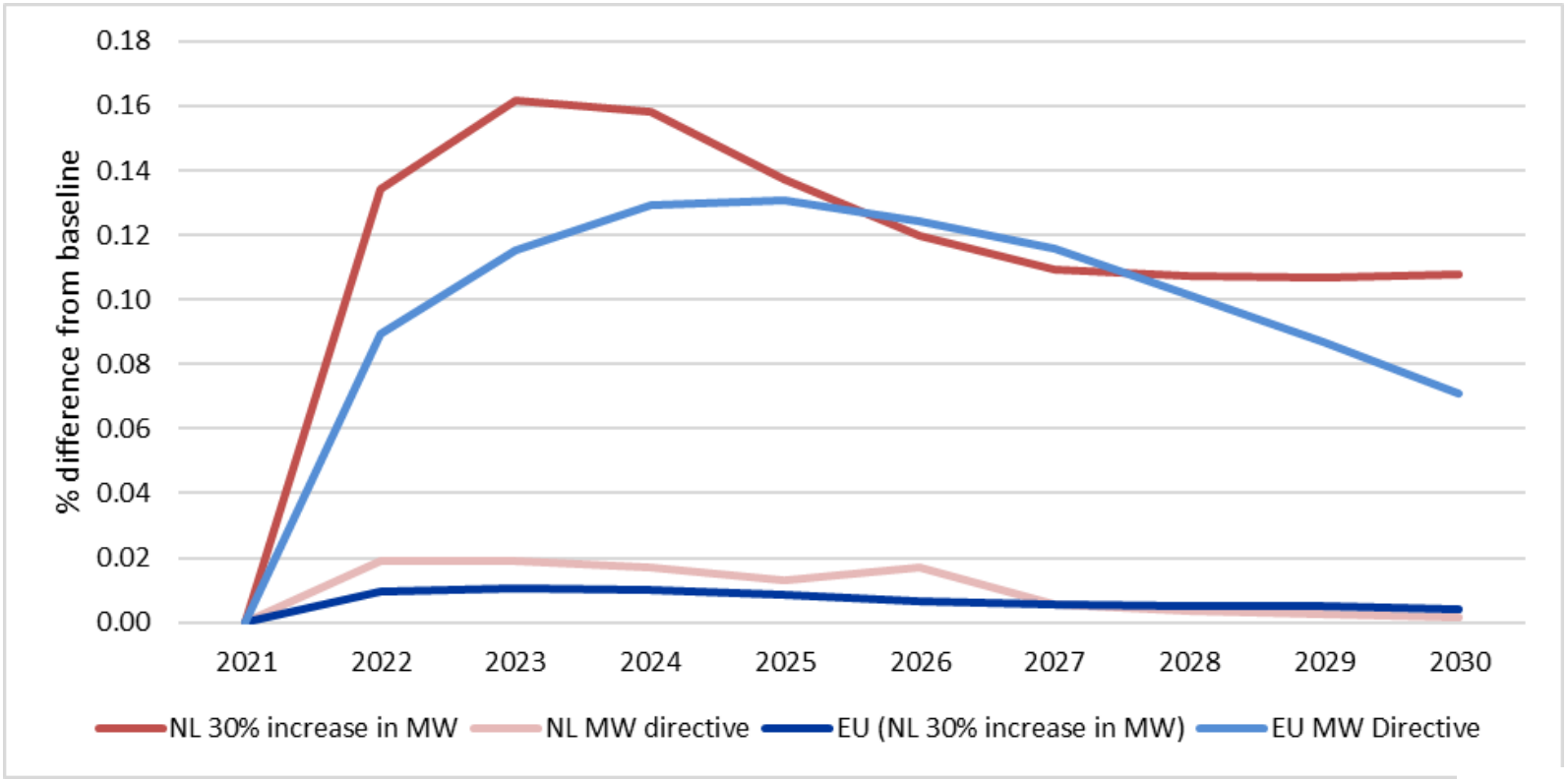
Minimum wage scenario - conclusions

- Modest economic impact at EU level, with differences among Member States
- EU Employment further declines in the scenario, in addition to the decline brought by automation and population reduction
- The higher the gap to close to reach adequate wage, the more negative the impact on employment.
- The higher the share of workers on minimum wage in the sector, the higher the negative impact on employment in that sector.

Funded by the Horizon 2020 Framework Programme of the European Union

Modelling assessment of income schemes

Minimum wage scenario – NL 30% increase: GDP results

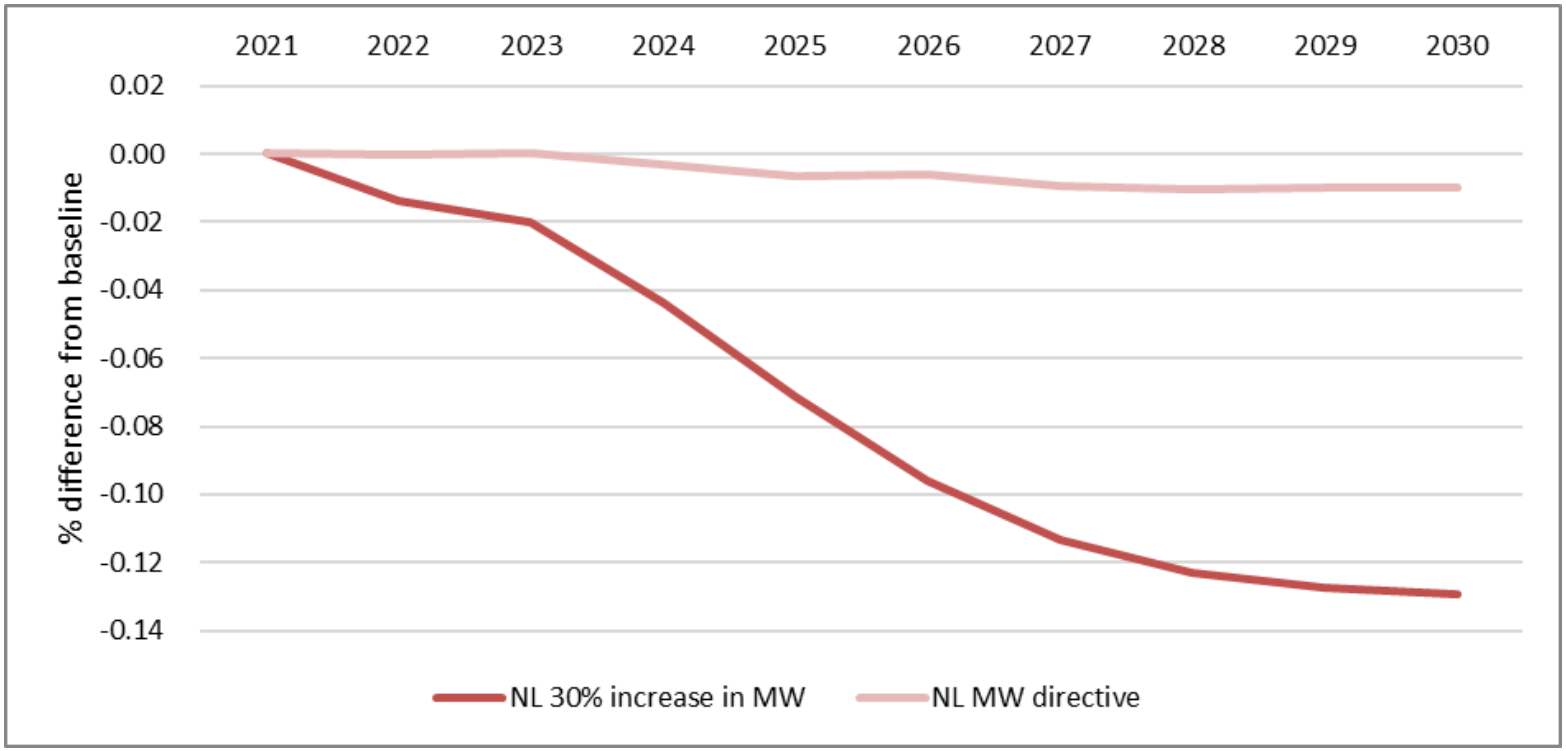


Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Modelling assessment of income schemes

Minimum wage scenario – NL 30% increase: Employment results



Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Modelling assessment of income schemes

NL Social assistance [in progress] - Scenario assumption

- In the baseline: automation job destruction in NL is 16% (2021-2030)
- We assume that:
  - Those that are over 65 go into (early) retirement
  - 14% re-enter the employment [Abeliansky et all, 2020 - The Future of Work: Challenges for Job Creation Due to Global Demographic Change and Automation]
  - The rest will enter the social assistance
    - They increase the number people on social assistance
      - 15% of those on social assistance have some form of part-time employment

Modelling assessment of income schemes

Thank you!

For any questions, please contact us

Cornelia Suta[1], Eva Alexandri[2], Luca Barbieri[3], Philip Summerton[4]

[1]*Principal Consultant, Cambridge Econometrics, Belgium*

[2]*Technical Manager, Cambridge Econometrics, United Kingdom*

[3]*Senior Economist, Cambridge Econometrics, Belgium*

[4]*Chief Executive Officer, Cambridge Econometrics, United Kingdom*

cs@camecon.com, ea@camecon.com, lb@camecon.com, ps@camecon.com

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality