



THE ECONOMIC AND ENVIRONMENTAL IMPACTS OF THE COVID-19 CRISIS

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Introduction

- COVID-19
- Energy prices
 - *Macro economic impacts*
 - *Impacts across sectors*
 - *Impacts across households*
 - *Impacts on emissions*
 - *Impacts of the initial government stimulus*
- High level of uncertainty

Methodology: I3E model

- <https://www.esri.ie/current-research/the-i3e-model>
- Computable General Equilibrium model
- Features
 - *Detailed representation of production sectors (32 sectors)*
 - *Detailed representation of consumption goods and services (39 commodities)*
 - *Inclusion of explicit carbon commodities*
 - *Emissions from combustion*
 - *Detailed modelling of government sector*
 - *Households specification with 10 representative household groups (5 urban, 5 rural)*
 - *3 labour types: low, medium and high skilled*

COVID-19 SHOCK

- Energy prices
- Production decreases in certain sectors due to lock down
- Consumption patterns change
- Restrictions on labour
- Trade impacts
- Net Factor Income shock
- Initial government stimulus

Energy prices

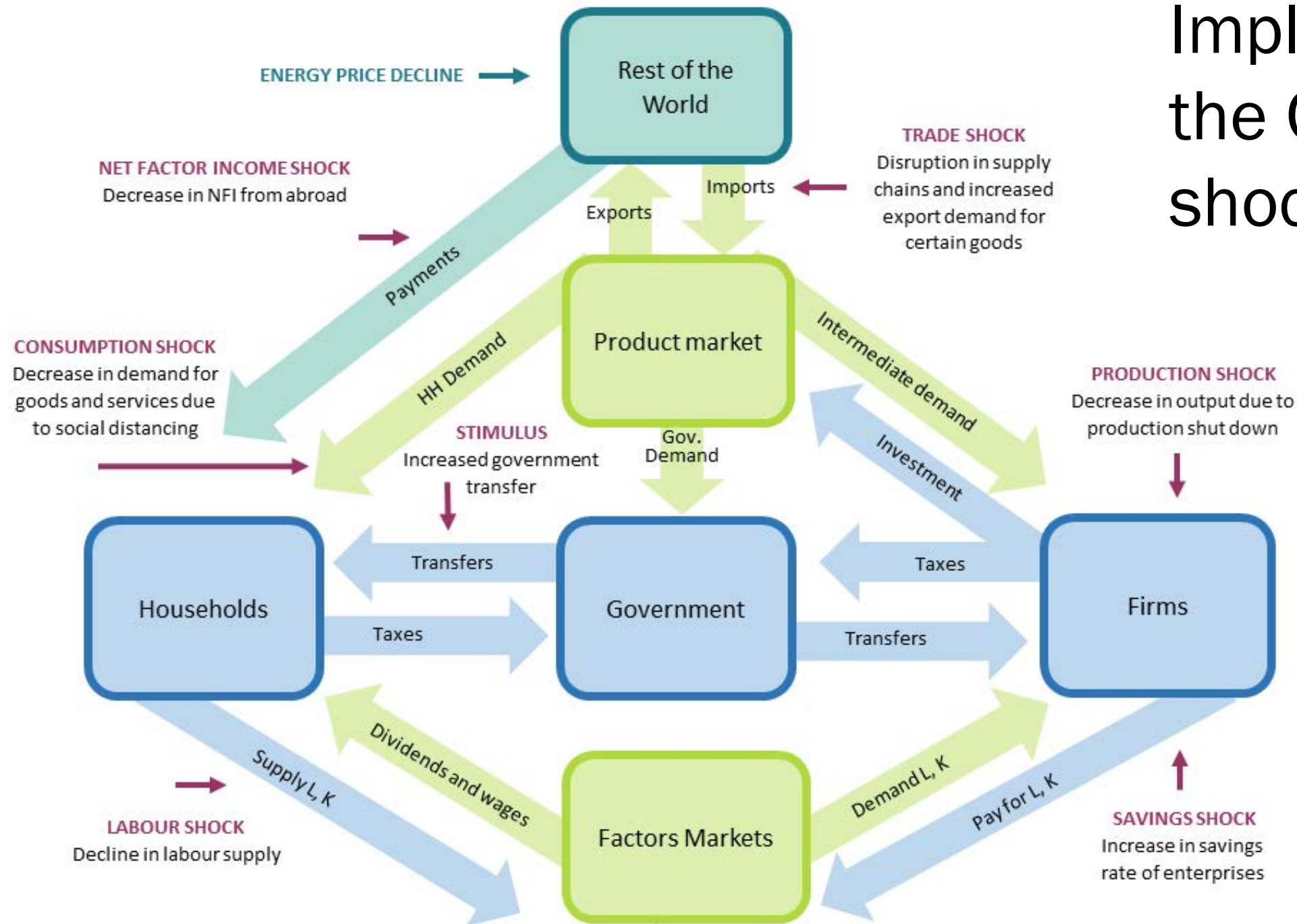
US oil prices turn negative

Price per barrel of WTI



Source: Bloomberg, 20 April 2020, 20:15 GMT

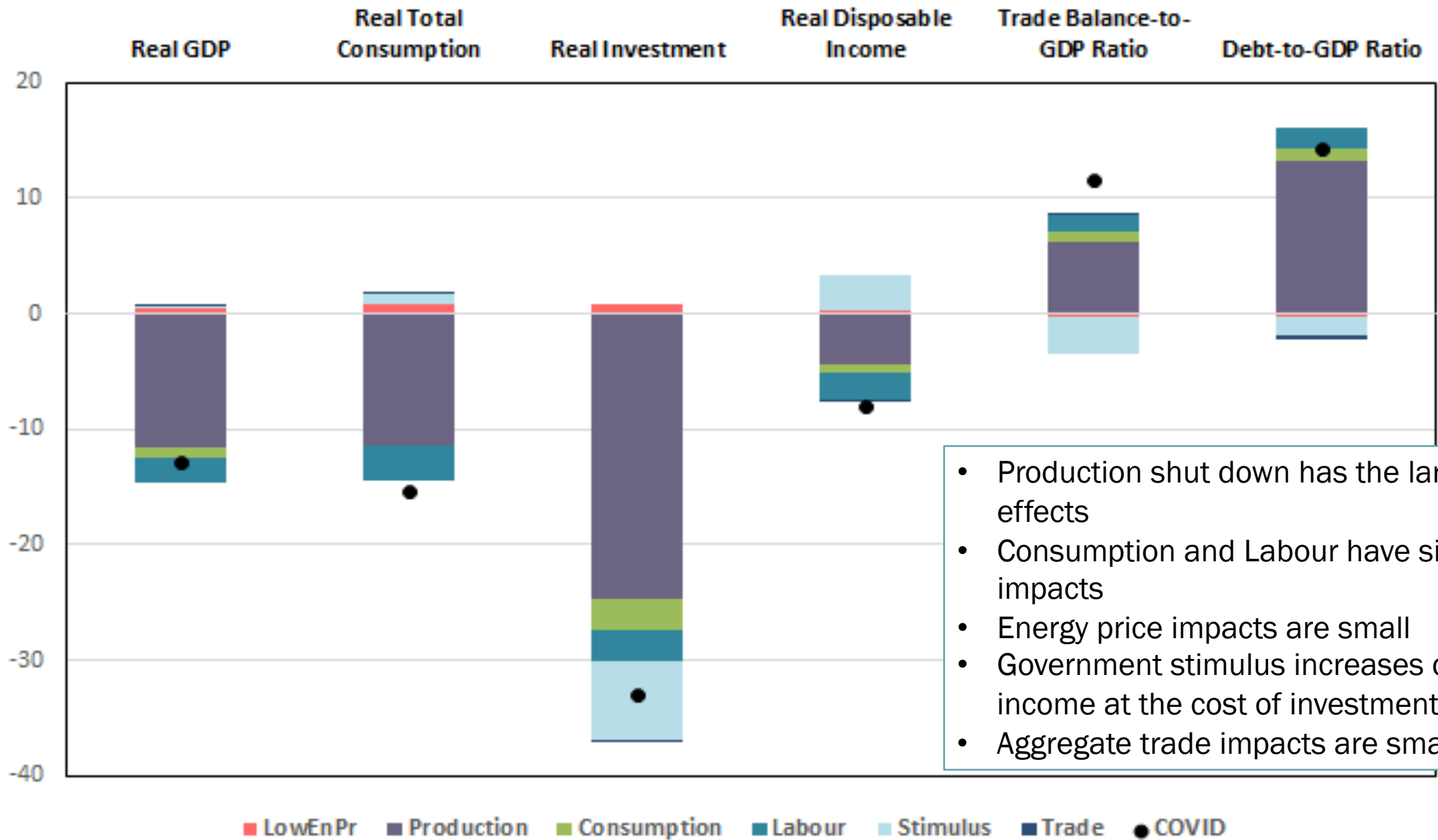
Implementing the COVID shock



Macro impacts

- Strong impacts in 2020
- Decreased investments lead to long term impacts
- Government balance impacts are long lasting due to decreased tax revenues and increasing expenditures

% change compared to BaU	2020	2030
Real GDP	-13.0	-0.3
Private Consumption	-15.5	-1.0
Investment	-33.0	-0.1
Imports	-20.5	0.0
Exports	-16.4	-0.3
Trade Balance	5.3	1.4
Government Expenditures	10.5	-0.5
General Government Balance	-12.4	-6.6
Debt Stock	14.2	8.1



- Production shut down has the largest effects
- Consumption and Labour have significant impacts
- Energy price impacts are small
- Government stimulus increases disposable income at the cost of investment
- Aggregate trade impacts are small

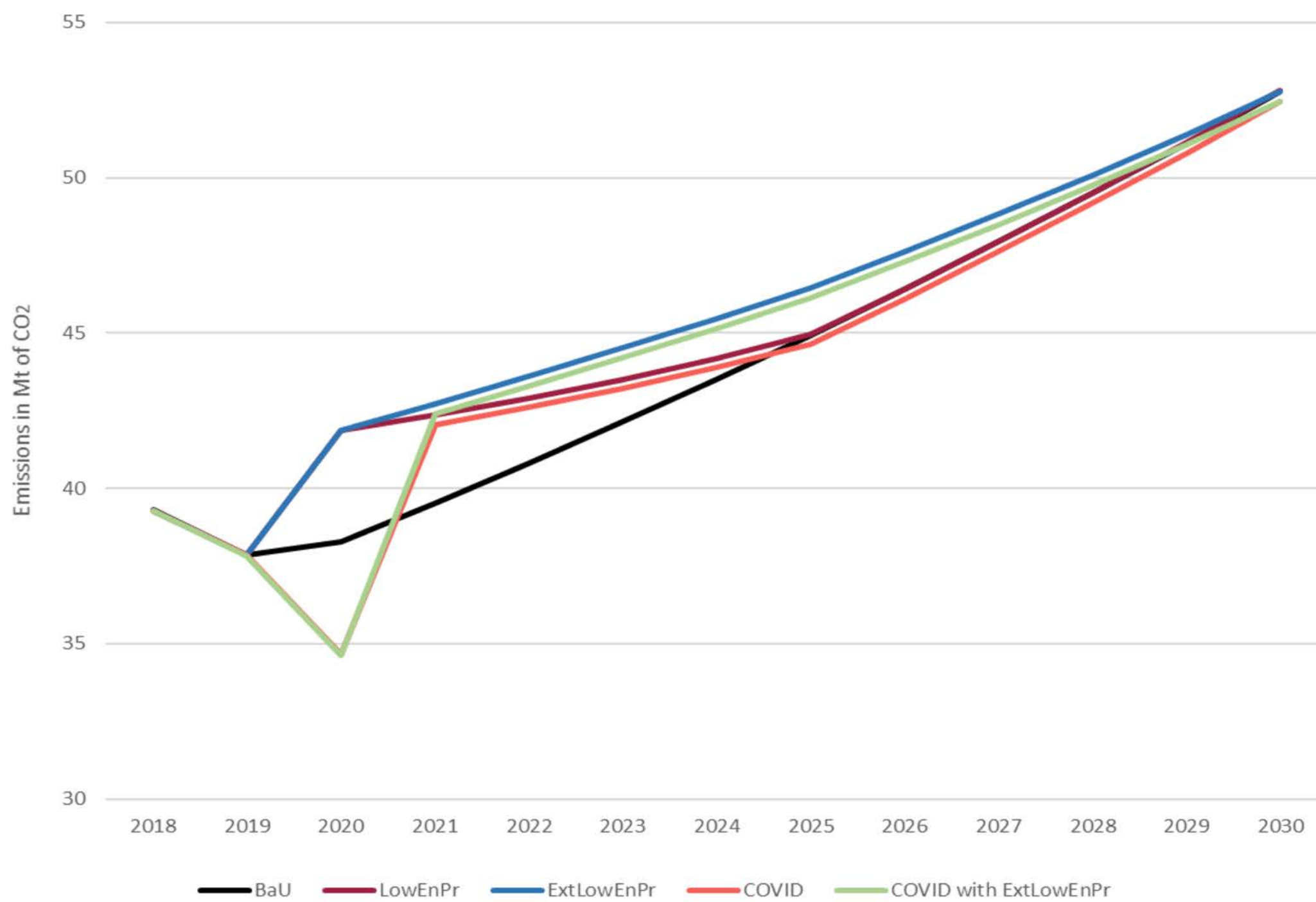
Impacts across sectors

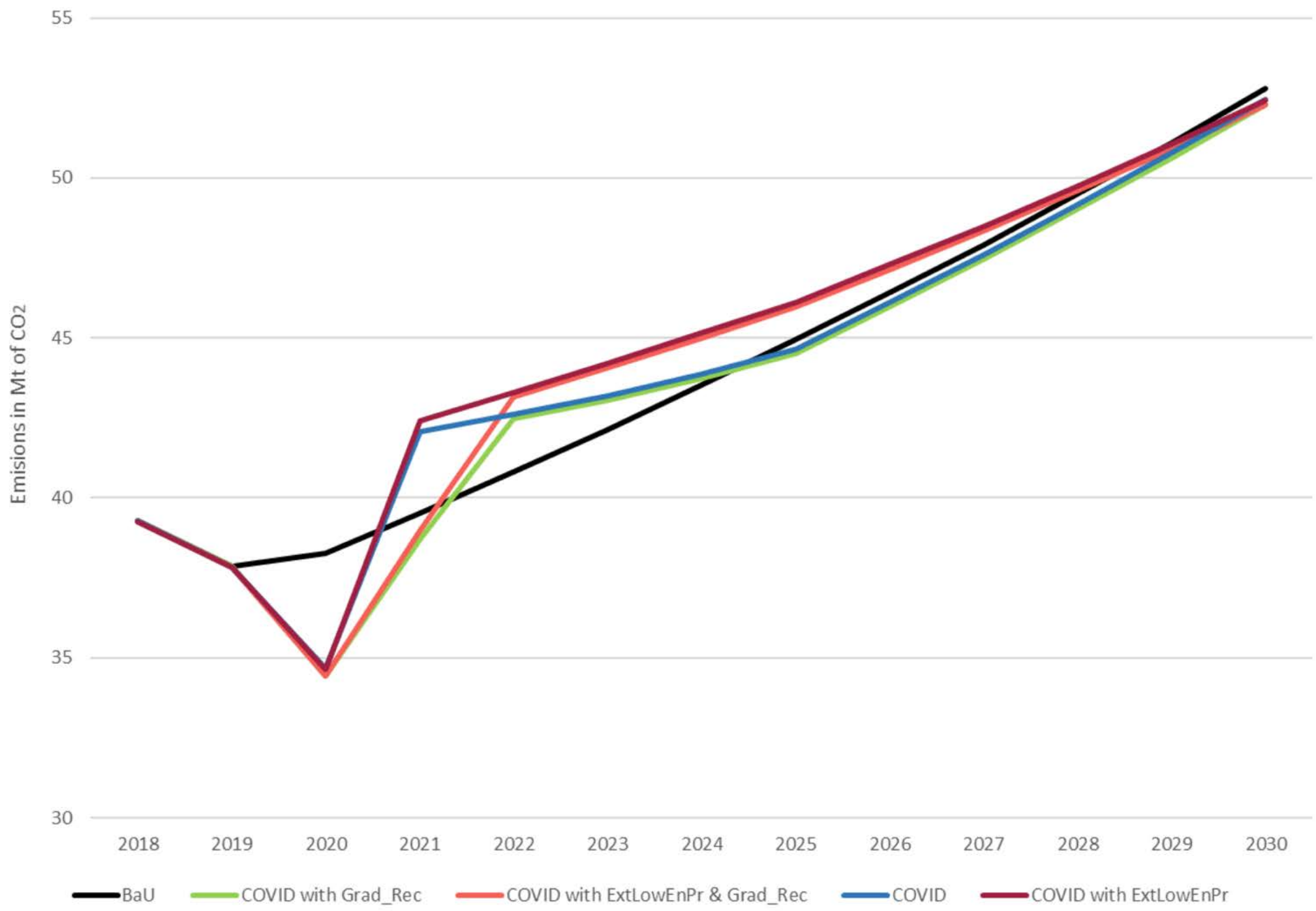
% change compared to BaU

Sector	2020	2030
Accommodation and Hotel Services	-23.6	-0.8
Agriculture	5.3	0.1
Construction	-19.9	-0.2
Electricity Production	-3.6	-0.5
Financial services	-2.9	-0.2
Manufacturing	-3.9	0.0
Mining	-8.3	-0.5
Other Services	-5.9	-0.3
Public Services	4.7	-0.5
Trade	-9.2	-0.3
Transportation	-24.5	-0.7

Emissions Impacts

- Low energy prices put upward pressure on emissions
- Economic downturn puts downward pressure
- Both highly uncertain
- Sensitivity Analysis
 - *Extended low energy prices*
 - *Gradual COVID recovery*



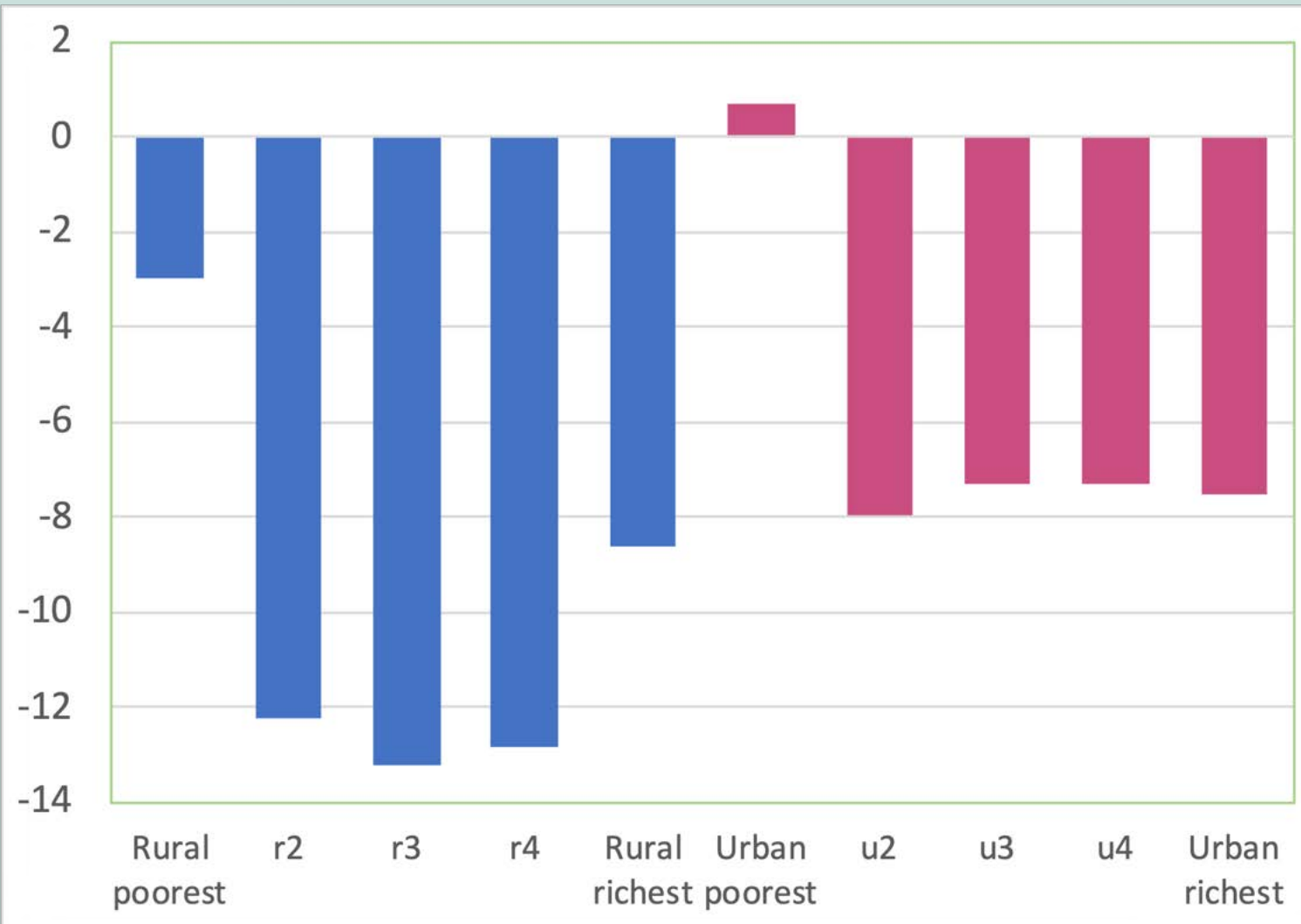


Household impacts

- 10 Household groups
 - *5 rural based on income*
 - *5 urban based on income*
- Disposable income
 - *Net of tax wage income*
 - *Net of tax capital income*
 - *Welfare transfers from government*
 - *Pension income*

Household real disposable income

■ % change compared to BaU in 2020

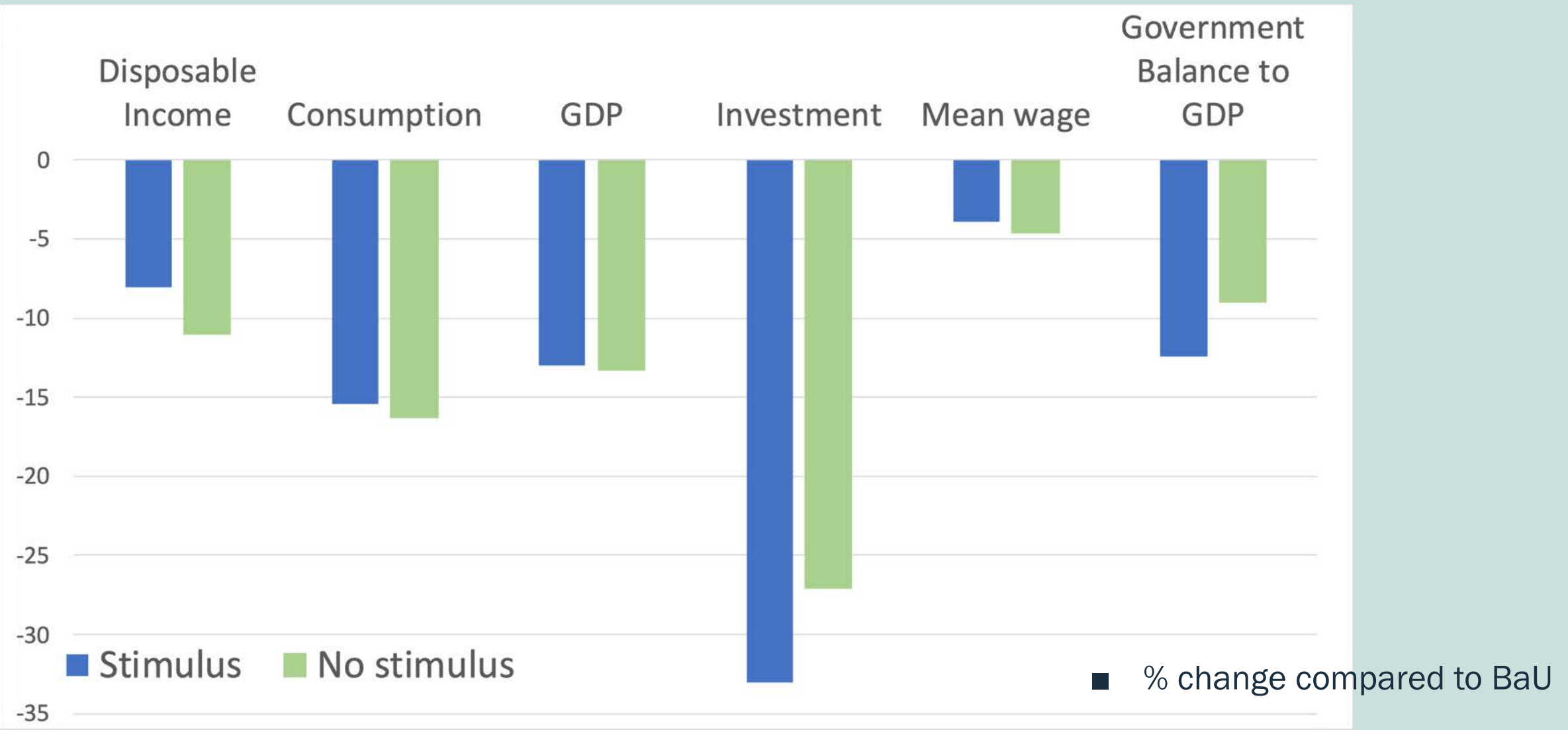


- Rural households are impacted more
- High skilled labour impacted the least

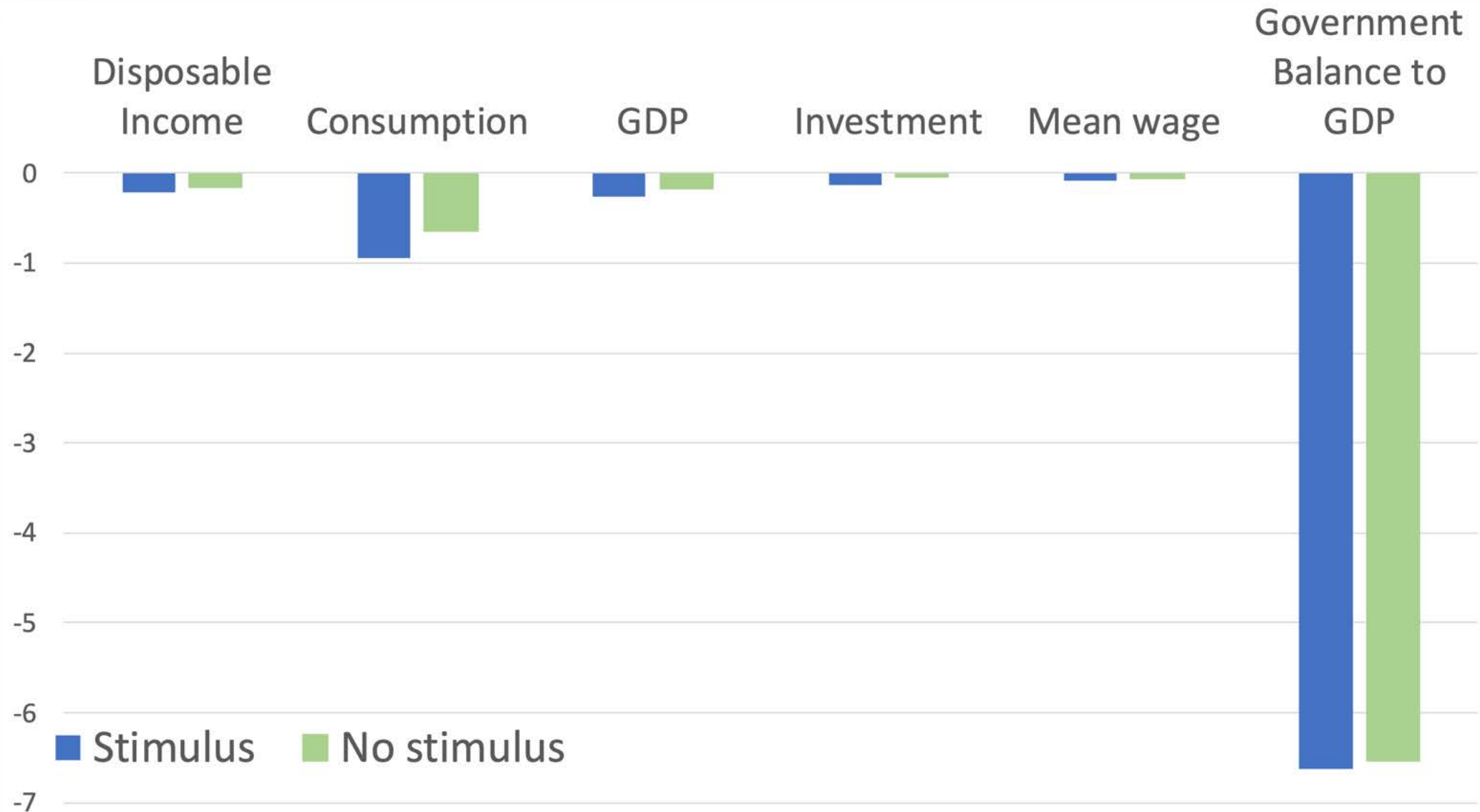
Initial government stimulus

- COVID-19 Pandemic Unemployment Payment (PUP)
- Temporary Wage subsidy scheme (TWSS)
- Increased fuel allowances

Macro Impacts of Stimulus in 2020



Macro Impacts of Stimulus in 2030



Household impacts COVID and stimulus

■ % change compared to BaU in 2020

	Stimulus	No Stimulus
Per Capita Consumption	-15.4	-16.3
Per Capita Real GDP	-12.9	-13.2
Income distribution within Rural % change (richest income/poorest income)	-5.8	4.7
Income distribution within Urban % change (richest income/poorest income)	-8.2	7.5
Income distribution between Rural and Urban % change (urban income/rural income)	3.9	2.9

Conclusion

- Covid crisis will have strong short term macro economic impacts
- Emissions reductions are limited due to low energy prices
- Households and sectors are affected very differently
- Government stimulus has been effective in compensating households most impacted
- Climate policy and efforts to reach emissions goals should remain on the policy agenda
- Work is needed to formulate a medium term stimulus that would stimulate the economy and assist the most affected sectors while ensuring a transition to a low-carbon economy