



Citation for published version:

Cooper, S, Norman, J, Gailani, A, Allen, S, Owen, A & Taylor, P 2022, 'Sharing out the cost of decarbonising UK industry', UKERC conference: "Putting Net Zero into Action: addressing the implementation gap", 13/06/22 - 14/06/22.

Publication date:
2022

Document Version
Publisher's PDF, also known as Version of record

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Sharing out the cost of decarbonising UK industry

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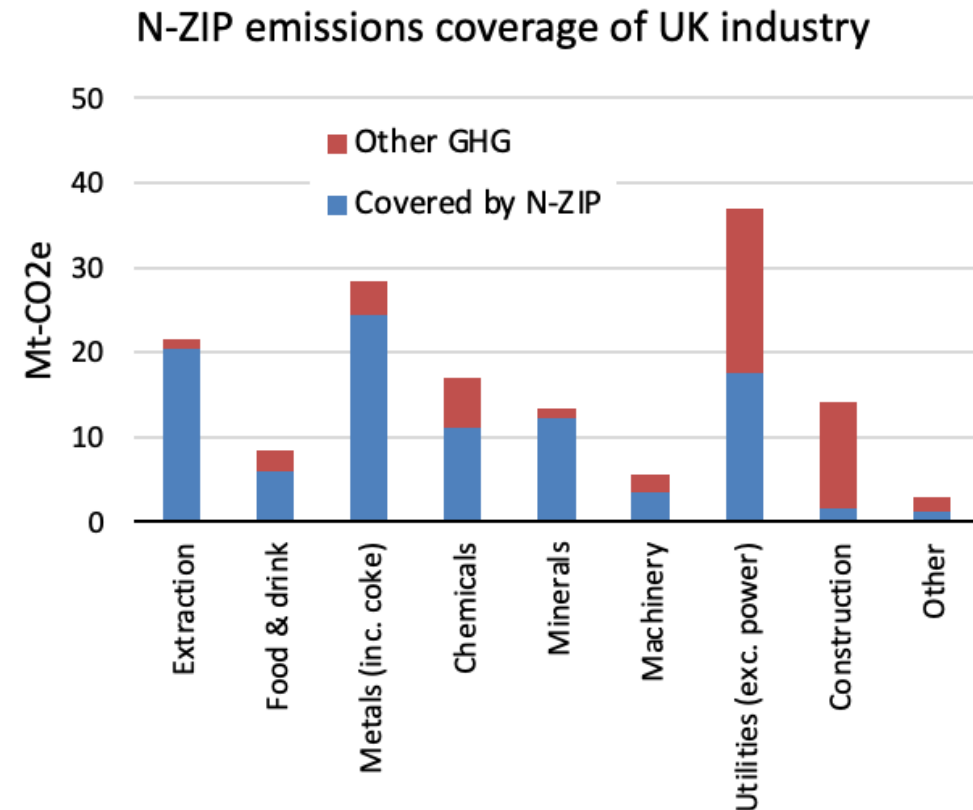
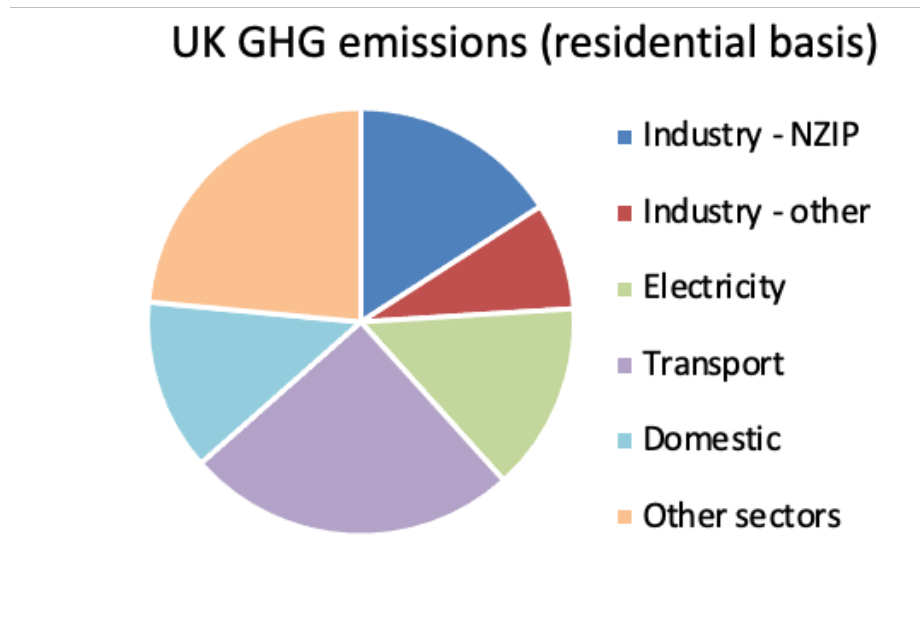
Three idealised options for distributing costs:

1. “Take the hit”. Emitting industry absorbs costs as a reduction in profit.
2. “Pass it on”. Costs are perfectly passed on to final consumers (via supply chain).
3. “Spread it out”. Costs are partially passed on and spread across whole supply chain (proportionate reduction in profit).

Net-Zero Industrial Pathways (N-ZIP) model

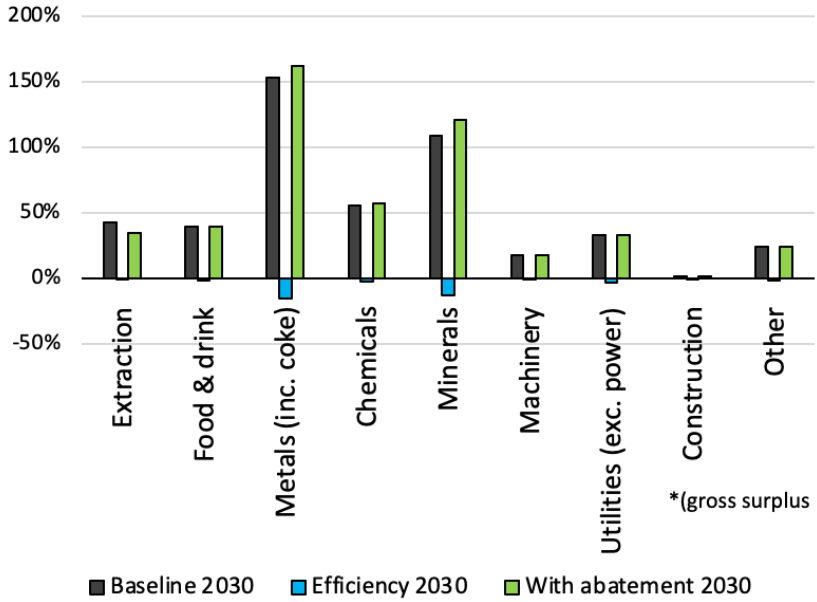
- Bottom-up, technology-based model of industrial decarbonisation options.
- Created by Element Energy to support CCC sixth carbon budget.

N-ZIP Coverage: ~100 MtCO₂e

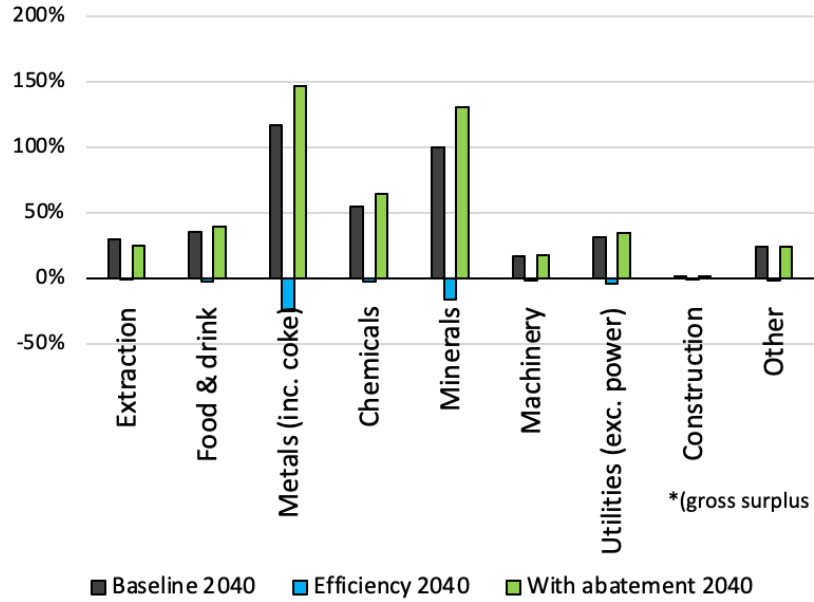


1. Take the hit.

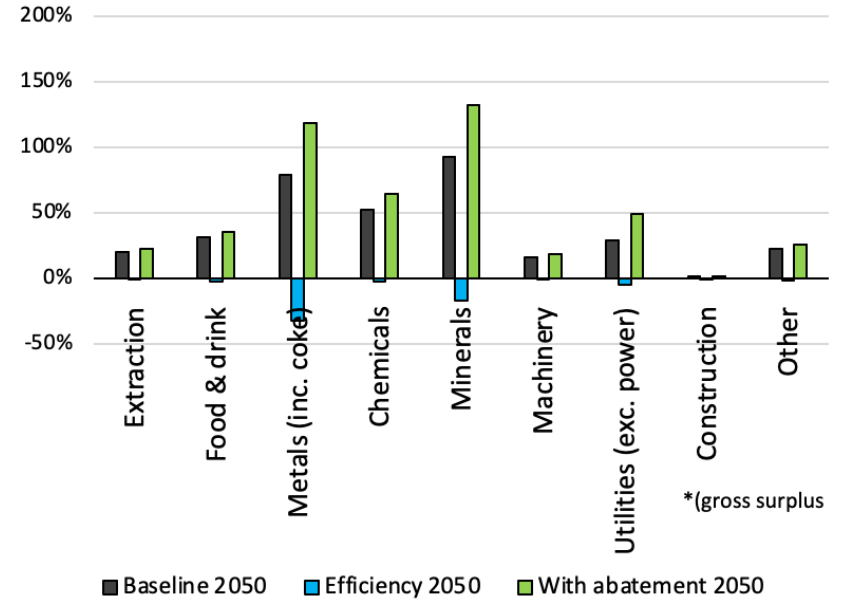
2030 Cost of processes - normalised to profit*



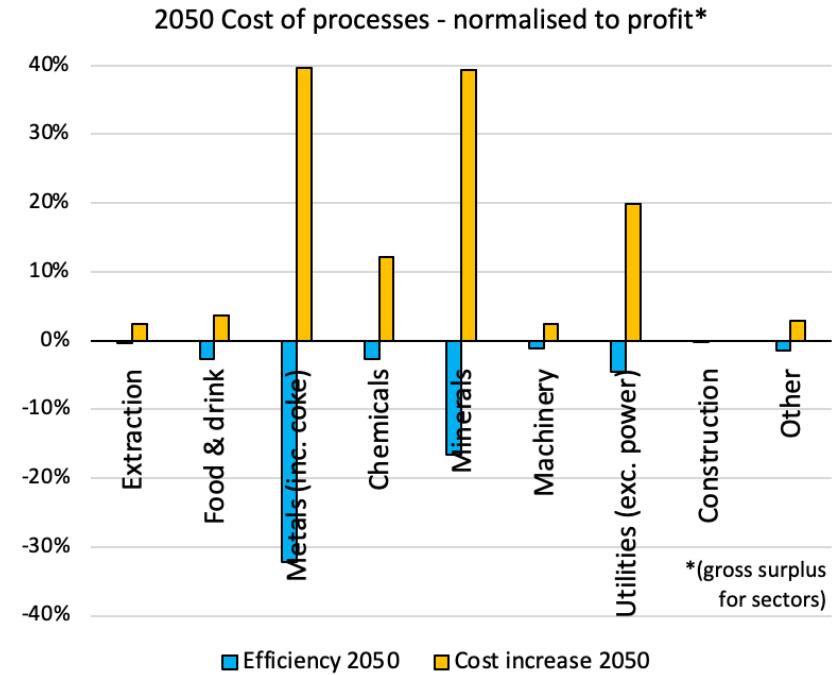
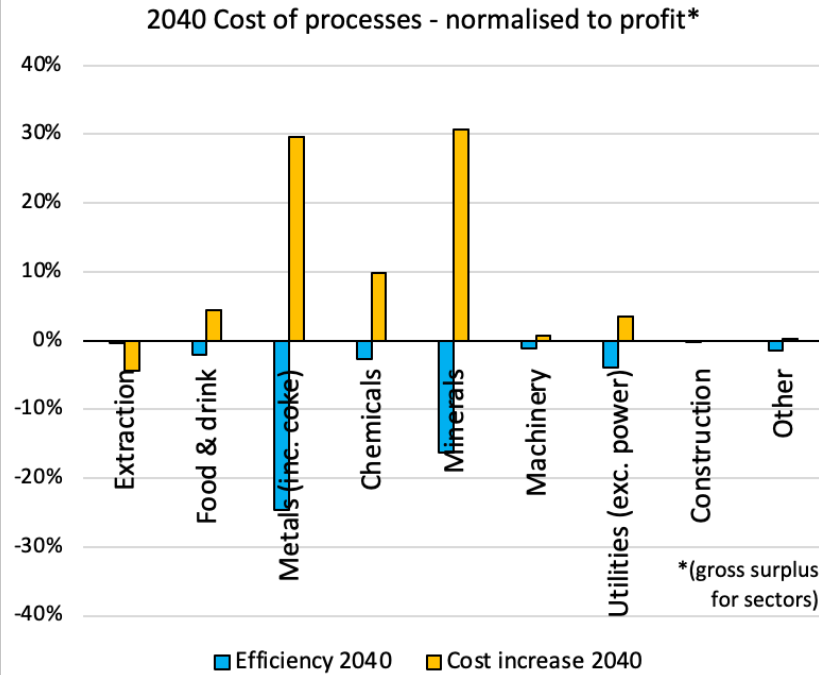
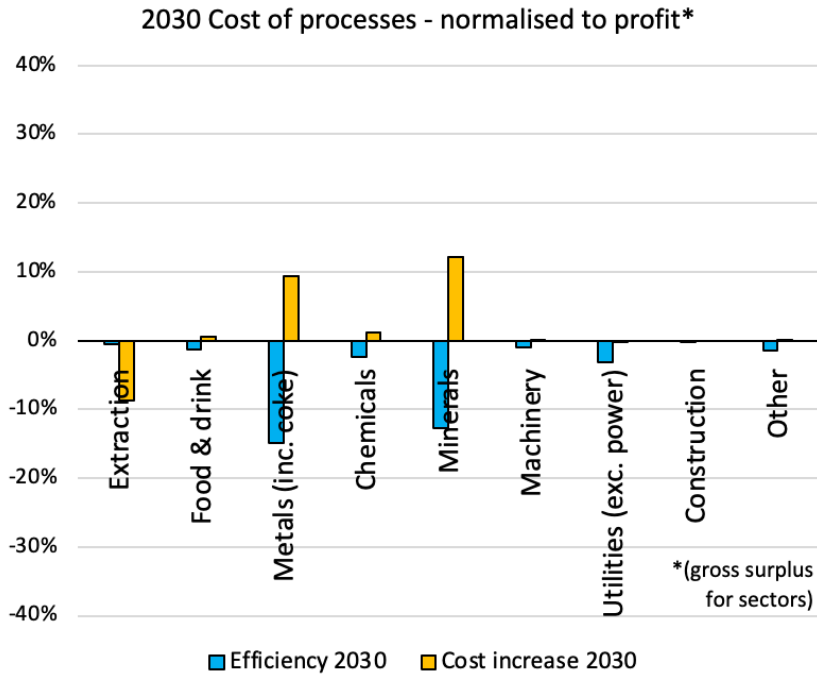
2040 Cost of processes - normalised to profit*



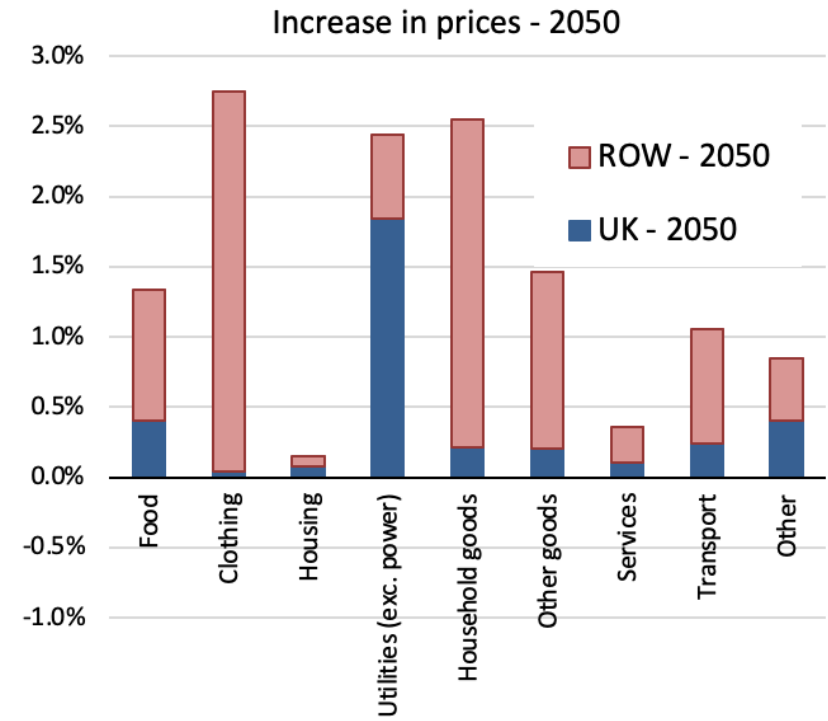
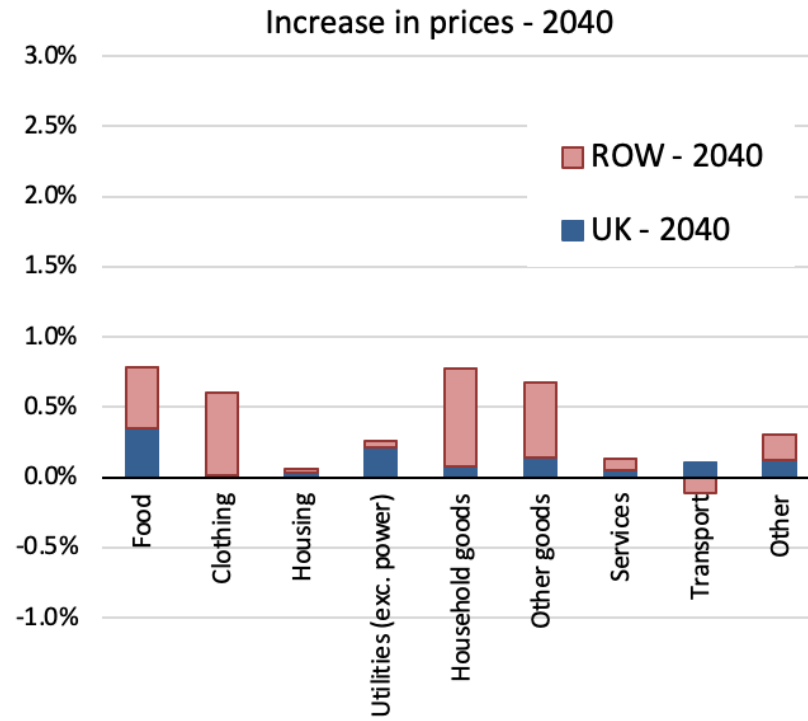
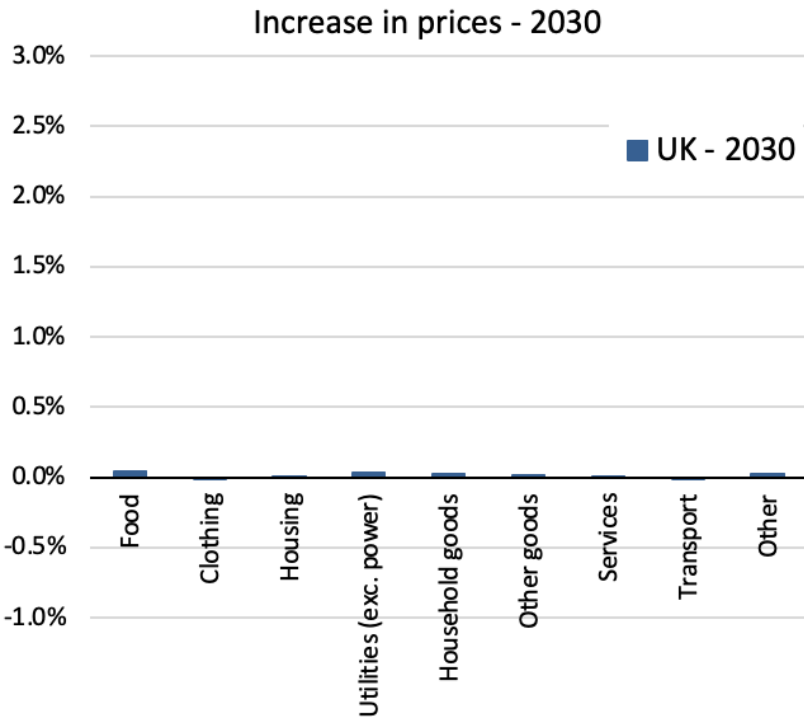
2050 Cost of processes - normalised to profit*



1. Take the hit.



2. Pass it on.

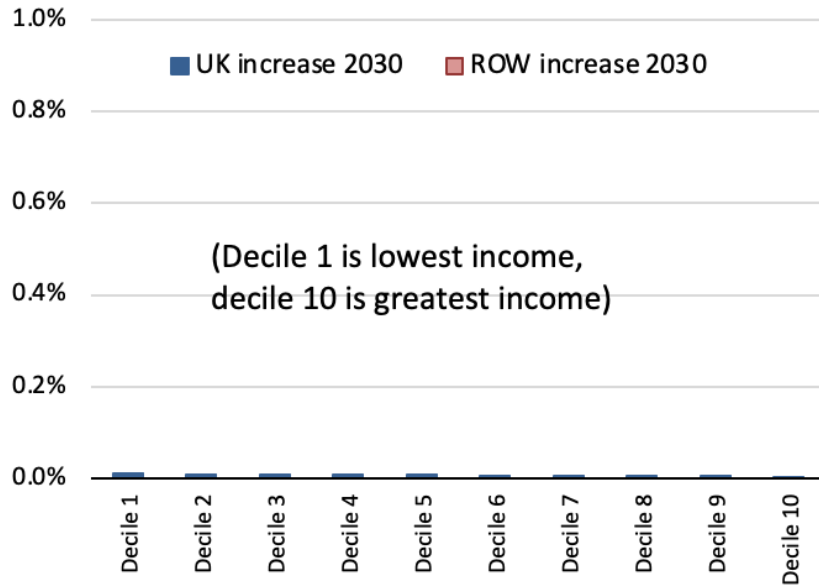


- Comparable to effect of energy price increases
- Less confidence in estimates of price increases due to abatement in rest of world.

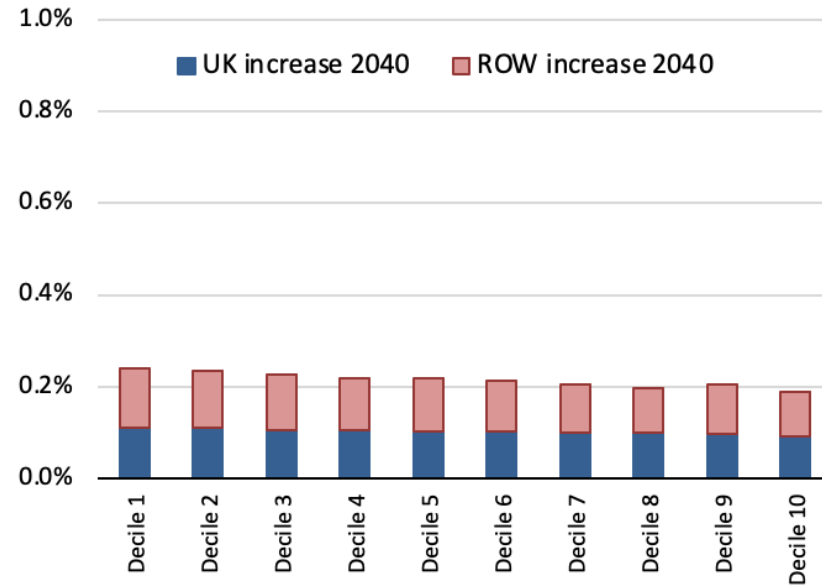
2. Pass it on.

Averaged over expenditure patterns:

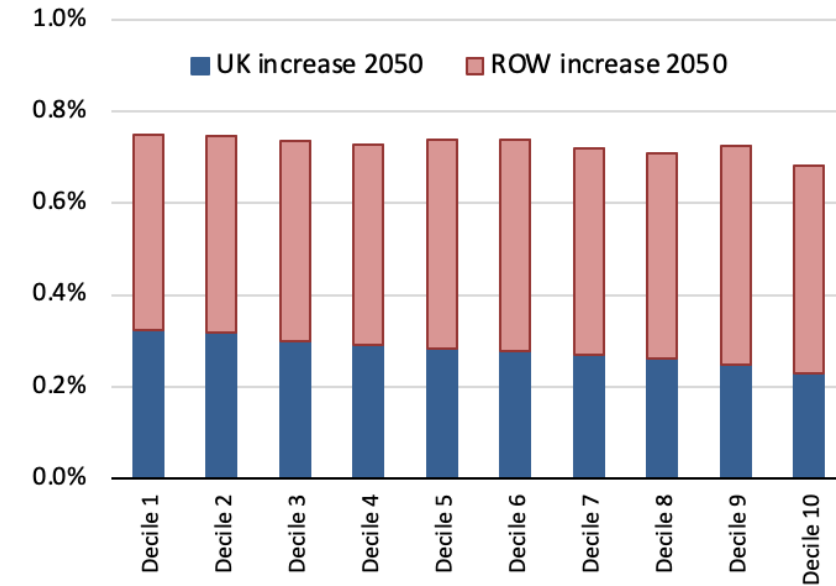
Price increase for expenditure patterns - 2030



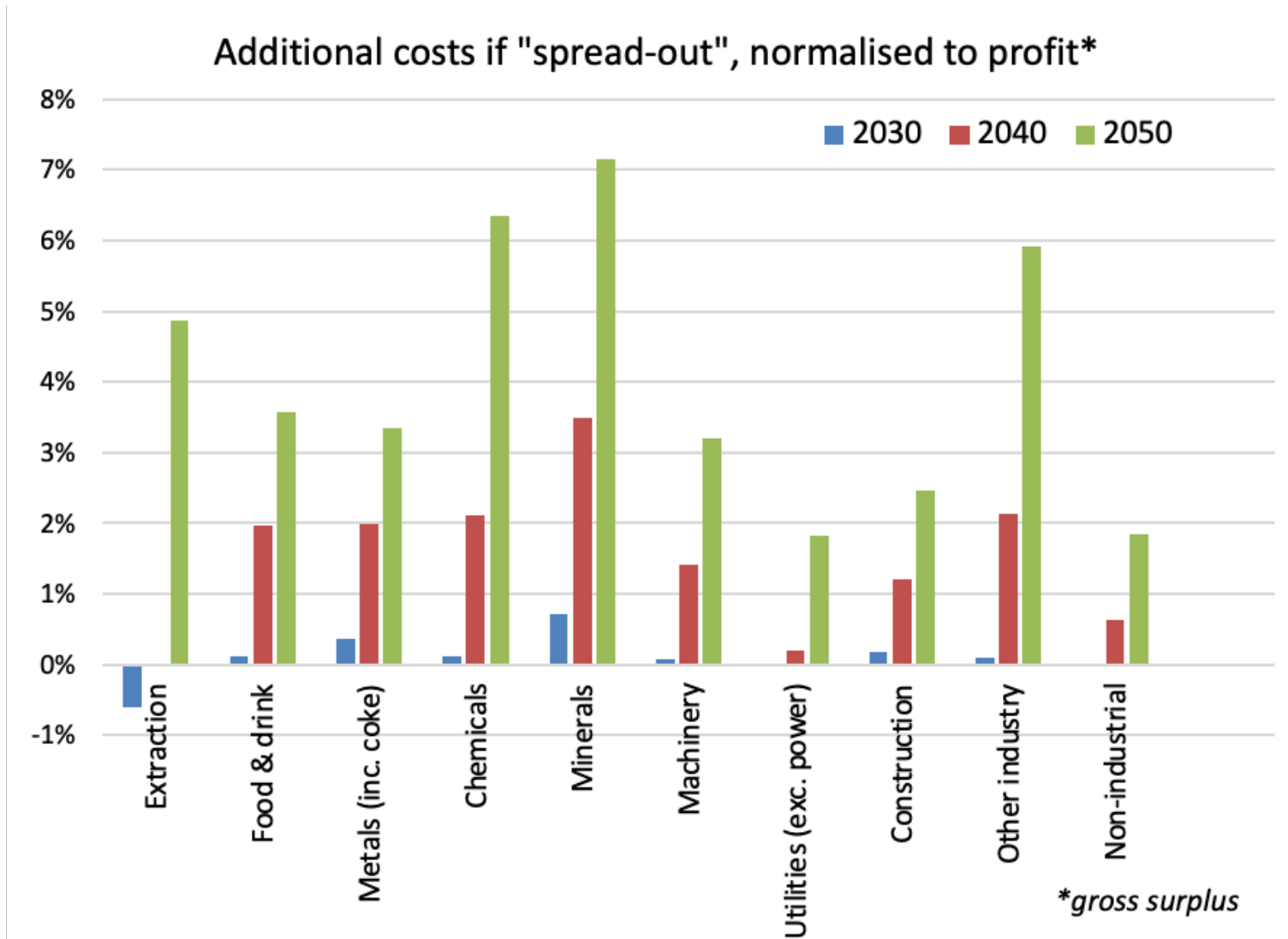
Price increase for expenditure patterns - 2040



Price increase for expenditure patterns - 2050



3. Spread it out.



Conclusions

- Aggregate costs manageable
 - But (even at sector-level) may mask some vulnerabilities
- Some sectors may need help
 - e.g. Carbon border adjustment may be appropriate
- Policy needs to ensure transfer equitable
- Resource- and Energy- efficiency mitigate some costs

Any thoughts? Please get in touch: sjgcooper@bath.edu

Study limitations

- N-ZIP scope: the results relate to costs for industrial decarbonisation, not electricity, heating or transport.
- The costs are expressed relative to current expenditure levels and patterns. The relative costs would decrease if we either have greater income, and/or adjust what we buy.
- No elasticity / substitution effect modelled.
- Efficiency savings might be implemented separate to deeper carbon abatement.
- Figures relate to UK industry, extrapolated to intermediate product imports.
- Technology definitions may be refined.
- Aggregate might mask some vulnerabilities.