The distributional effects of energy price caps: *Preliminary results*

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The **results** presented in this slides are **preliminary**. If you would like to cite this work, please get in contact with the authors for an updated version.

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Outline

- What we do and why
- Methodology
- Results
- (Preliminary) Conclusions

- **WORK IN PROGRESS!**

What we do and why

- **What:** Estimate the distributional impact of price cap policies introduced in 2023 for three Western European countries: AT, DE and NL
  - Assess its cost-effectiveness in containing the negative redistributive effects of the inflationary shock
  - Potential cushioning effects of inequality increasing
- **Why:**
  - To help policy makers making informed decisions about budget allocation and how to provide adequate support to households during an energy crisis.
  - To improve policy advices by assessing the cost-effectiveness of these measures.

Methodology

Our approach involves several steps:

1) **Forecast** the expected **increase in consumer prices** by goods category using information about future prices for the energy components.

2) Following a standard compensating variation welfare approach, **estimate the additional expenditures** required to maintain the same level of goods and services purchased in 2022 given the price increases.

3) Evaluate the **impact of the price caps** and alternative measures on household welfare losses and the prevalence of energy poverty

Methodology: EURO**MOD** & ITT

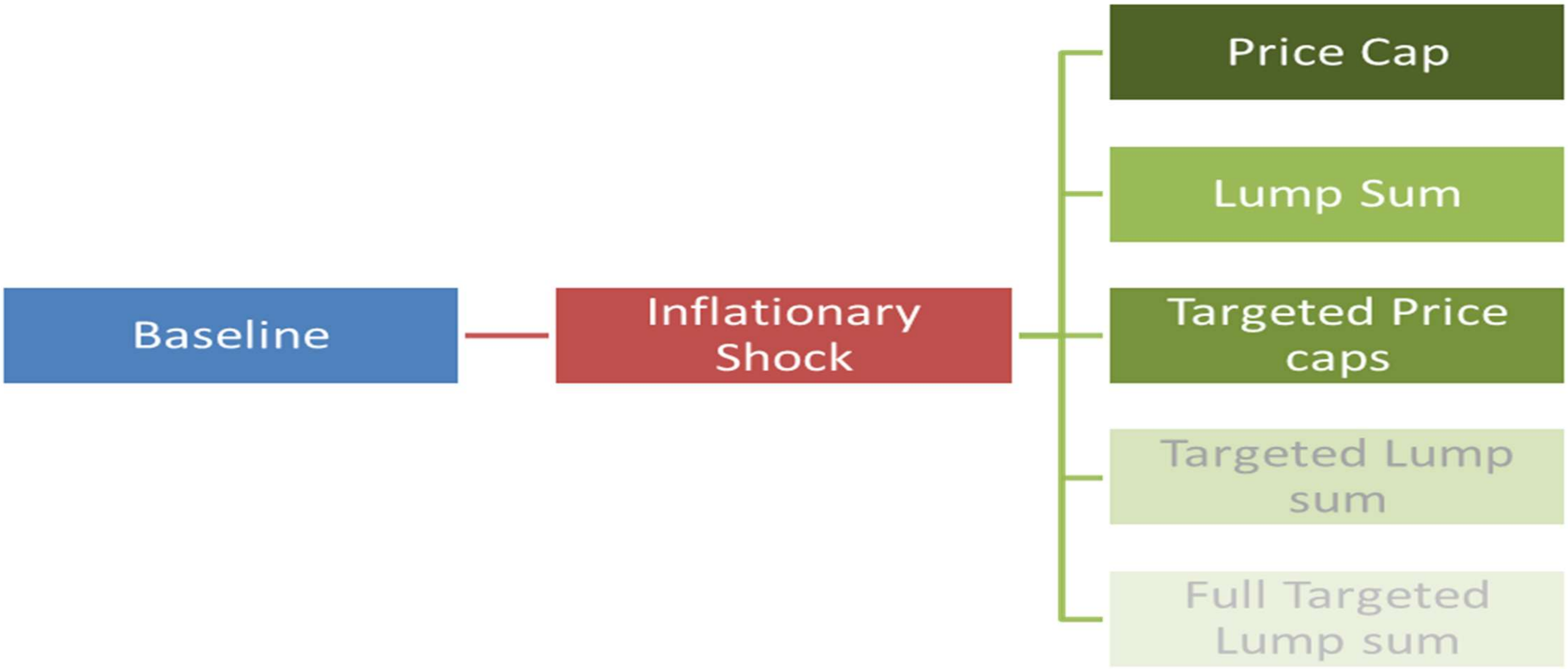
- EUROMOD: tax-benefit microsimulation model for the EU (Sutherland and Figari, 2013)
- Extended to include Indirect Tax Tool (Akoğuz et al., 2020)
- Input data: EU-SILC + EU-HBS
- Modelling assumptions:
  - Full tax compliance
  - Full pass-through
  - Constant quantities (overnight effects, no behavioral responses)

Price caps: AT, DE and NL

		Country	Austria		Germany		The Netherlands	
Component		Unit	Electricity	Gas	Electricity	Gas	Electricity	Gas
Price cap variable rate	(incl. VAT)	EUR/kWh	0.10	n/a	0.40	Gross 0.12	0.25	0.081
Volume limit	(Annual)	kWh	2900	n/a	80%*	80%*	2900	12 667.68
Energy tax	(not affected by price cap / volume limit)	EUR/kWh					0.15	0.057

(*)of projected consumption

Simulated scenarios



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Distributional analysis

$$Y_{inf} = Y_b - \Delta X_{inf} \tag{1}$$

$$Y_{final} = Y_{inf} - \Delta X_{policy} \tag{2}$$

Y_b baseline equivalised household disposable income in 2022

Y_{inf} equiv. hld income after the inflationary shock

ΔX_{inf} change in expenditures needed to keep the pre-inflation consumption basket fixed.

Y_{final} Final income after the policy (price-cap or alternative measure)

ΔX_{policy} (negative) change in expenditures due to the policy (price-cap or alternative measures).

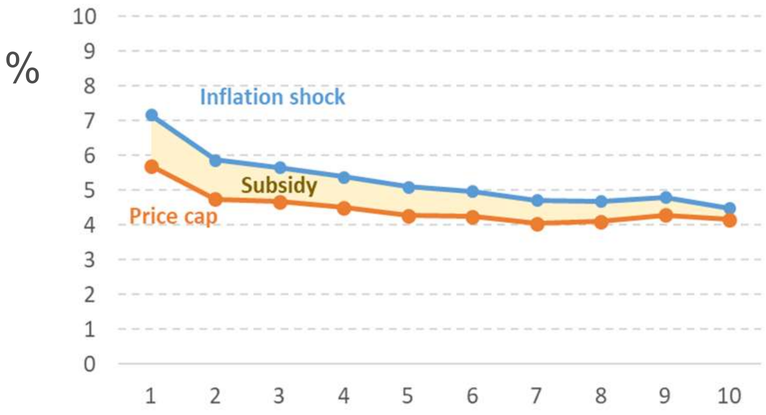
Cost-efficiency in reducing inequality measure

Define a specific measure i (EM_i) in country c as the share of the reduction in the Gini coefficient due to the specific measure ($Gini_c^{pre} - Gini_{i,c}^{post}$) over the cost of the measure i in percent of GDP. $\left(cost_{i,c}/GDP_c\right)$, to adjust for different size of the economies.

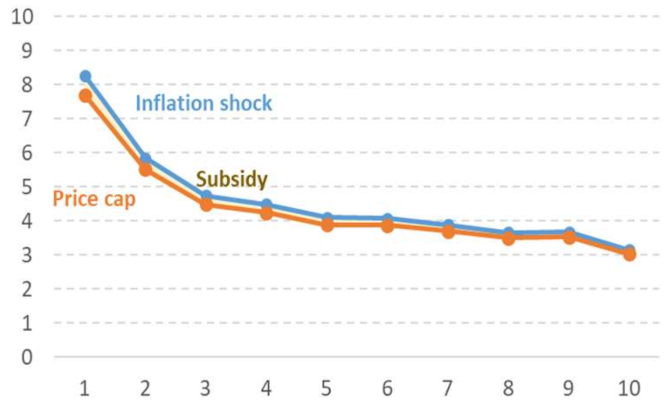
$$EM_{i,c} = \frac{\left(Gini_c\ (Y_{inf}) - Gini_{i,c}(Y_{final})\right)}{\left(\frac{cost_{i,c}}{GDP_c}\right)} \qquad (3)$$

Results – distributional analysis: welfare loss

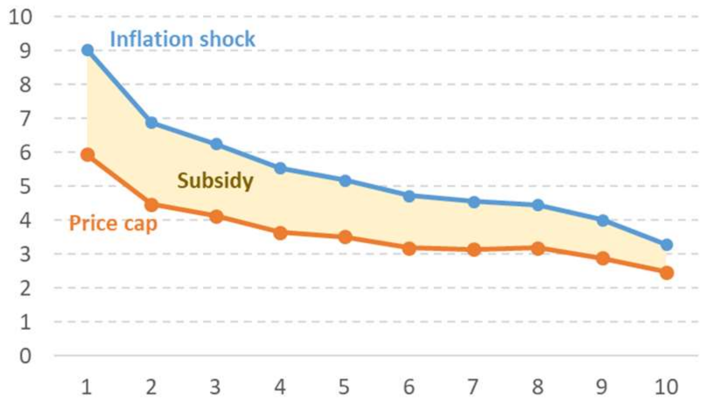
Austria



Germany



Netherlands



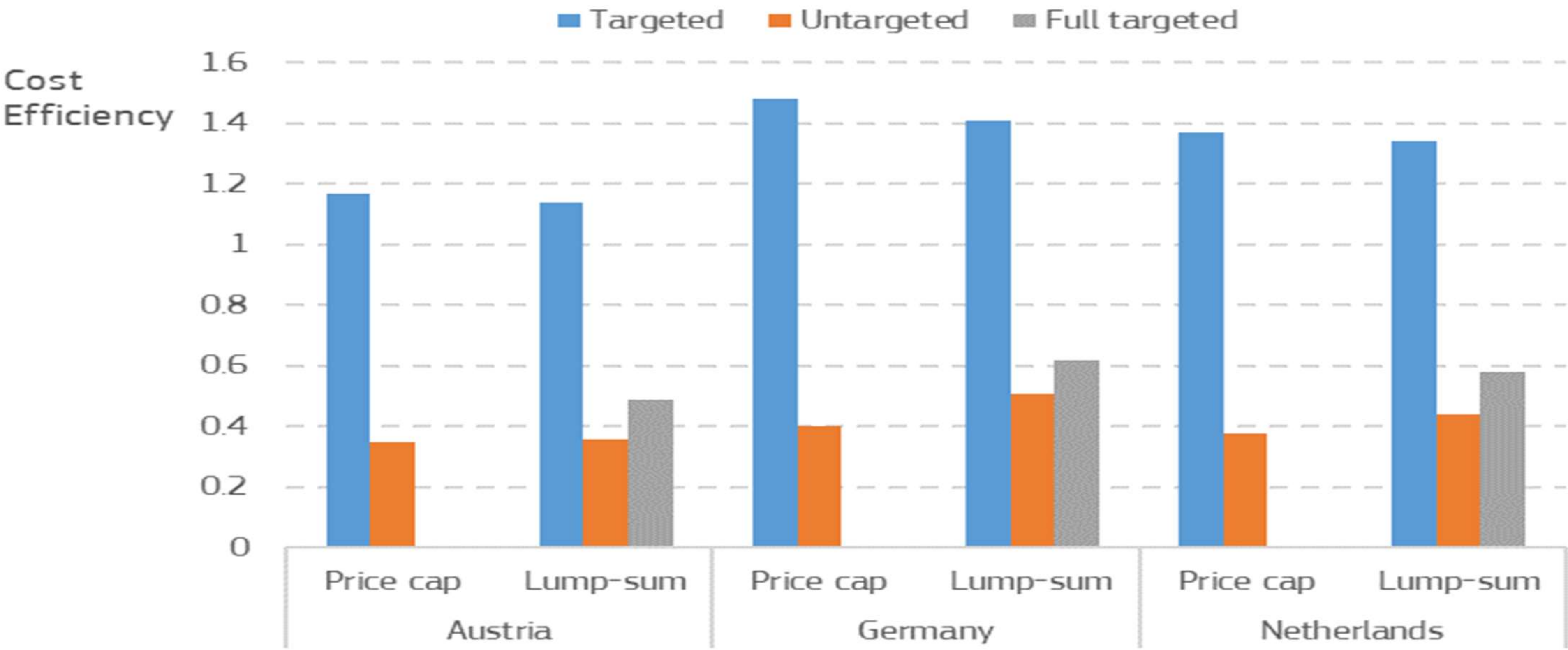
Results: Impact on inequality

Gini coefficient of equivalent income (purchasing-power) across scenarios

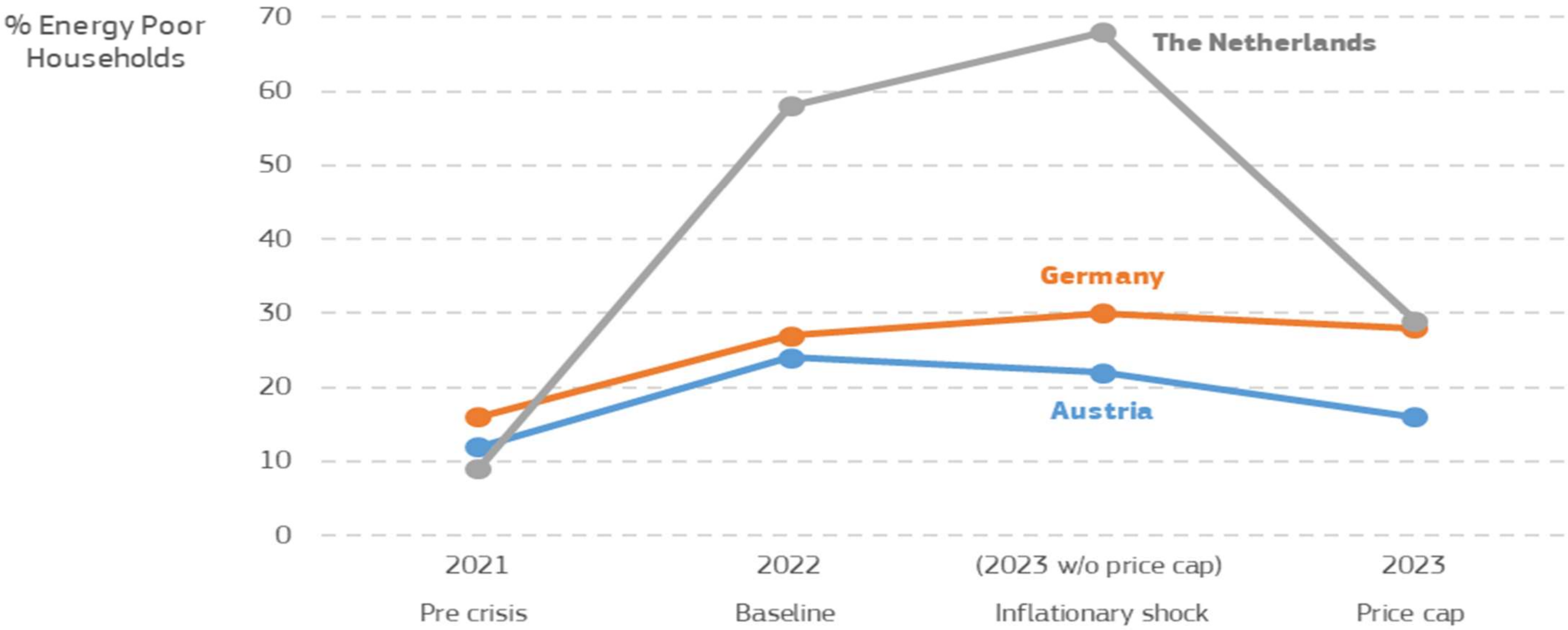
		Austria	Germany	Netherlands
1	Base	0.2384	0.2860	0.2459
2	Inflation	0.2426	0.2913	0.2549
3	Price Cap	0.2407	0.2909	0.2511
4	Lump Sum	0.2406	0.2907	0.2505
5	Targeted Price Cap	0.2399	0.2907	0.2494
6	Targeted Lump sum	0.2400	0.2907	0.2495
7	Full Targeted Lump sum	0.2399	0.2906	0.2491

Note: The Gini coefficient of the baseline (2022) refers to equivalent household disposable income from HBS-SILC matched datasets (2010) with incomes updated to 2022.

Results: cost-efficiency measures



Results: impact on energy poor households



Note: Poverty line fixed at pre-crisis level.

Conclusions (1/2)

- We assess the ex-ante distributional effect of temporal energy measures and evaluate to what extent these could counterbalance the regressivity of the inflationary shock.

- This study looks at the primary ("day after") effects. The real distributional effects of inflation and price caps might be different when accounting for **behavioural responses**. Future research could focus on analysing whether and how inflation and price caps may affect patterns of consumption.

Conclusions (2/2)

- We find that the **inflationary shock** is expected to **hit all households**, but it is more pronounced for those at the bottom of the income distribution

- **Price cap policies** partly absorbs the impact of the inflationary shock, but not all of it. Impact varies across countries depending on the severity of the shock, the design and generosity of the measure.

- Comparing with other **targeted and untargeted measures**:
  - targeted measures are more efficient in reducing inequality.
  - among untargeted measures, (simple) untargeted lump sums are more efficient than (complex) untargeted price caps.
  - Targeted lump-sums using the whole budget of the untargeted price caps currently in place are less efficient because of their huge cost.
- Price caps played an important role in **reducing the number of energy poor households** in these three EU countries. However, energy poverty rates still remain higher than pre-crisis levels.

Thank you

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