Welcome and Introduction

Expert workshop on rebound effects

Institute for Ecological Economy Research, 21.02.2019, Berlin

Dr Florian Kern

Introductions

ReCap
Makro-Rebounds
begrenzen

The ReCap project and aims of the workshop

Dr Florian Kern

Introduction to the ReCap project (I)

ReCap: *Analysing the role of energy and resource efficiency in promoting economic growth and developing policy instruments to reduce macro-economic rebound effects*

Aims:

(1) Analyse the relationship between macro-economic rebound effects (and other drivers of growth) for the aggregate use of energy and resources and

(2) Develop and asses a set of policies to mitigate macro-economic rebound effects and reduce absolute use of energy and resources

(3) Scrutinise the political feasibility of the proposed measures with relevant stakeholders

Introduction to the ReCap project (II)

3 year research project funded by the German research and education ministry (BMBF), as part of a portfolio of 9 projects on rebound effects; one of the only projects to focus on macro rebounds

Collaboration between three partners: IÖW (lead), Institute of Economic Structures Research (GWS) and University Göttingen (chair of statistics)

Transdisciplinary research: advisory group, stakeholder workshops, focus groups, etc

Introduction to the ReCap project (III)

WP 1 (lead: IÖW): **Explaining rebounds:** review of the state of the art, systematising rebound effects and other drivers of growth, statistical analysis of rebounds. Output: discussion paper; to be discussed in workshop

WP2 (lead: GWS): **Policies for mitigating rebounds**: review of the state of the art, development of sets of policies (stakeholder workshop), PANTA RHEI adjustments, assessing sets of policies.

WP3 (lead: IÖW): **Policy Innovation Lab**: identifying relevant policies, ascertaining political feasibility of sets of policies through advisory board, 2 case study sectors: stakeholder workshops, focus groups, interviews; proposals for overcoming barriers

WP4 (lead: IÖW): **Project management**

Aims of the workshop

1. Bring together well-known researchers on rebound effects to present their latest research in order to help the project team situate ReCap within the most up to date academic discussions and jointly reflect on the state of the art.

2. Get feedback on the proposed research approach of ReCap.

Programme for the day

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8.45 – 9.00 Arrival with coffee and tea

9.00 – 9.30 **The ReCap Project and goals of the workshop**
Florian Kern, IÖW

Types and mechanisms of rebounds

9.30 – 10.15 **ReCap – Types of rebounds and rebound-mitigating policies**
20 min presentation, 25 min discussion
Steffen Lange & Jan Peuckert, IÖW

10.15 – 11.00 **Energy Sufficiency and Rebound Effects**
30 min presentation, 15 min discussion
Steve Sorrell, SPRU

11.00 – 11.30 Coffee Break

11.30 – 13.00 **Estimating rebound effects**

11.30 – 12.15 **(Re-)Capturing rebounds empirically at the meso and macro level**
20 min presentation, 25 min discussion
Anne Berner & Alexander Silbersdorff, Uni Göttingen

12.15 – 13.00 **The Underestimated Role of Energy for Growth**
30 min presentation, 15 min discussion
Dietmar Lindenberger, Uni Köln

13.00 – 14.00 Lunch Break

Modelling rebound effects

14.00 – 14.45 **Modelling rebounds and polices at the meso and macro level**
20 min presentation, 25 min discussion
Maximilian Banning & Christian Lutz, GWS

14.45 – 15.30 **Rebound Representation in Energy and Climate Models**
30 min presentation, 15 min discussion
Reinhard Madlener, RHTW Aachen

15.30 -16.15 **Feedback by the experts on the Discussion Papers**

16.15 -16.30 **Wrap-up and farewell**
Florian Kern, IÖW

Types and mechanisms of rebounds

9.30-11.00

Economy-wide rebounds: Bottom up and top down approaches in a new taxonomy

Dr Steffen Lange

Bottom up and top down approaches

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- **Bottom up: capture a wide range of mechanisms**
  - **Advantage:**
    - **allows to indicate a variety of rebounds and policy measures to limit them**
  - **Disadvantages:**
    - **never possible to cover all relevant mechanisms**
    - **Many effects difficult to measure**
- **Top down: Investigate the economy-wide rebound effect at the macro level**
  - **Advantage:**
    - **Cover the entire economy-wide rebound effect**
  - **Disadvantage:**
    - **Many effects combined, unclear which mechanisms responsible and how to tackle them**

Existing taxonomies

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- Direct vs. indirect
  - Sorrell, Steven (2007). *The Rebound Effect: an assessment of the evidence for economy-wide energy savings from improved energy efficiency*. London: UK Energy Research Centre London.
- Micro vs. Macro
  - Madlener, R., & Alcott, B. (2009). Energy rebound and economic growth: A review of the main issues and research needs. *Energy*, *34*(3), 370–376.
  - Madlener, R., & Turner, K. (2016). After 35 Years of Rebound Research in Economics: Where Do We Stand? In T. Santarius, H. J. Walnum, & C. Aall (Eds.), *Rethinking Climate and Energy Policies* (pp. 17–36). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-38807-6_2
- + Meso
  - Santarius, T. (2016b). Investigating meso-economic rebound effects: production-side effects and feedback loops between the micro and macro level. Journal of Cleaner Production, 134, 406–413. https://doi.org/10.1016/j.jclepro.2015.09.055

Rebound Taxonomy on Micro, Meso and Macro Effects and Levels

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- **Major goals**
  1. **Show relation bottom up and top down**
  2. **Prevent double counting**
  3. **Facilitate an analysis which rebound mechanisms are addressed by specific policies**
- **Method to meet such goals**
  - **Differentiate between micro-, meso- and macroeconomic rebound effects -> goals 1 and 3**
  - **Differentiate between rebound effects and levels (micro, meso, macro) -> goals 1 and 2**

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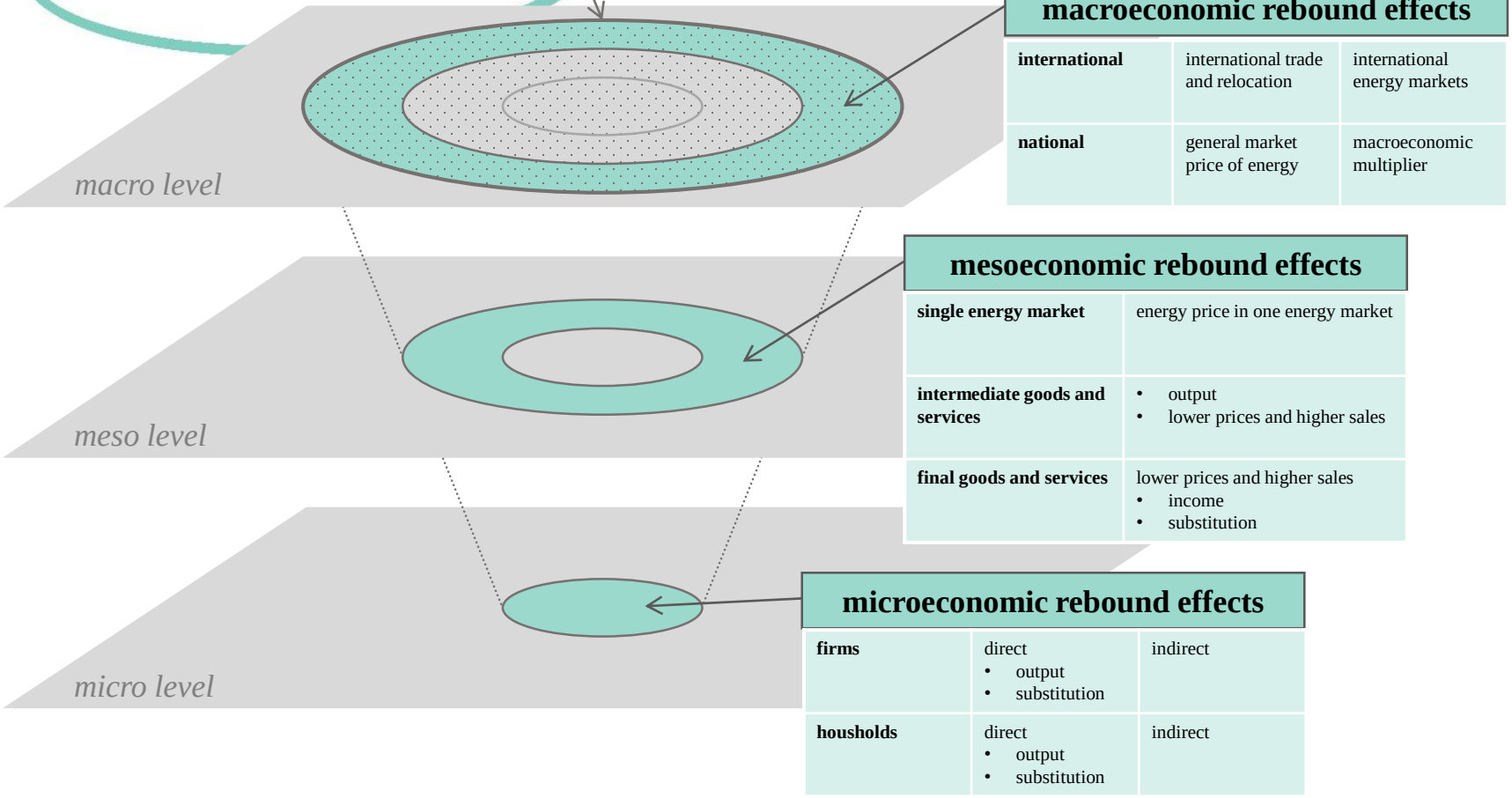
economy-wide rebound effect



macroeconomic rebound effects

international	international trade and relocation	international energy markets
national	general market price of energy	macroeconomic multiplier

mesoeconomic rebound effects

single energy market	energy price in one energy market
intermediate goods and services	• output • lower prices and higher sales
final goods and services	lower prices and higher sales • income • substitution

microeconomic rebound effects

firms	direct • output • substitution	indirect
housholds	direct • output • substitution	indirect

i|ö|w INSTITUT FÜR ÖKOLOGISCHE WIRTSCHAFTSFORSCHUNG
GWS SPECIALISTS IN EMPIRICAL ECONOMIC RESEARCH
GEFÖRDERT VOM Bundesministerium für Bildung und Forschung
FONA ReCap Makro-Rebounds begrenzen

Policies for Rebound Mitigation

Dr Jan Peuckert

Policy-orientated Rebound Literature

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- ReCap: practice- and policy-oriented approach
  - developing different sets of policy measures that are at the same time politically feasible and rebound-proof
- 1st step: Screening of rebound literature with regard to policy recommendations
  - Policy implications often not addressed by rebound assessment studies
  - Recommendations often go not beyond demanding the consideration of rebound in policy making or calling for carbon/energy pricing
  - Focus on a few policy-oriented studies:
    - Addressing the Rebound Effect (Maxwell et al. 2011)
    - Energy conservation more effective with rebound policy (Van den Bergh 2011)
    - Rebound-Effekte: Wie können sie effektiv begrenzt werden? (Semmling et al. 2016)
    - How to deal with the rebound effect? (Vivanco et al. 2016)
    - Lessons Learned for Comprehensive Climate and Energy Policies (Santarius et al. 2018)

Policy Recommendations

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- Importance of recognising rebounds in policy making
  - difficulty of defining and measuring rebounds
  - lack of shared definitions
- Additional policies complementing energy efficiency measures
  - otherwise a significant proportion of energy savings could be lost to rebounds
  - complementary policies for technology and relative prices
- Appropriate policy design and policy mix
  - simultaneously address efficiency, structure and overall level of consumption
  - psychological and financial factors

► **No single, specific instrument to tackle rebound effects, but careful design (and the combination) of standard energy policy instruments**

Well-designed Instruments

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- Regulatory measures
  - absolute and economy-wide carbon caps
  - contingent and dynamic energy efficiency standards
- Market-based mechanisms
  - globally implemented cap and trade schemes
  - smart and flexible energy taxation and other pricing instruments
- Soft instruments
  - promotion of sustainable lifestyles
  - sector-specific voluntary agreements
  - sustainability communication, consumer information und persuasion

Balancing Effectiveness and Social Costs

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	Microlevel	Mesolevel	Macrolevel
Regulatory instruments	Efficiency standards	Sector-specific carbon caps	Economy-wide carbon caps
Market-based instruments	Rebates and subsidies Product-specific taxes	Tradeable permits Taxes and fees RD&I support	Economy-wide cap and trade Energy pricing / taxation
Soft instruments	Sustainability communication Nudging Moral suasion	Voluntary agreements	

- Goal: Find appropriate sets of policy instruments
  - Combination of targeted instruments
  - Using complementarities

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Thank you!

www.macro-rebounds.org

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