

# Rare Earth Criticality in a production network model

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## Introduction

- Rare Earth Metals (RE) have become increasingly important.
- China has established a globally domineering position in its production
- Dependence increasingly worries politicians in the west:
  - How large is the potential **damage from a cut-off?**
  - Is a **cut-off** even **optimal** for China?

→ What determines Output/Welfare-effects?

## Methods

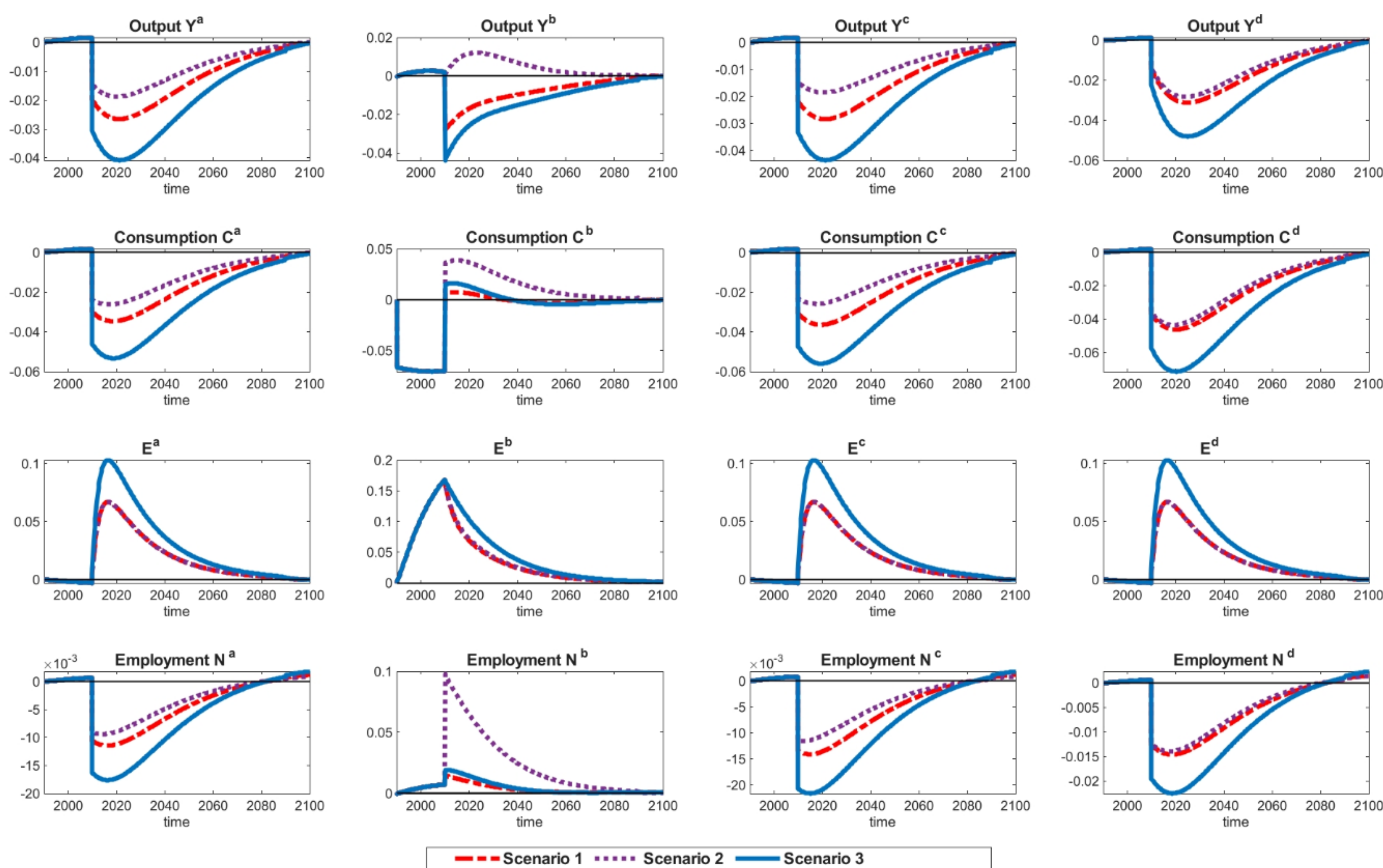
- Extend the Bundesbank's EMuSe-framework to account for:
  - Market concentration.
  - RE-production and consumption as an intermediate input.

## Simulations:

- **Phase 1:** China pays a subsidy to its RE-sector, decreasing markups and increasing production.
- **Phase 2:** China stops subsidies and introduces a tax on RE-exports, tax income can be redistributed:
  - **Scenario 1:** Lump-sum transfer to consumers.
  - **Scenario 2:** Labor-tax reduction.
  - **Scenario 3:** RE-subsidy for domestic RE-consumers.

## Results

- China can **increase domestic welfare by introducing taxes**, however:
  - If REs are **important**, **damages** abroad are **high**, but demand **spillovers** are also **high**.
  - If tax-income is redistributed **lump-sum**, benefits are **small**, **labor-tax reduction increases welfare** the most.



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China can exploit its domineering position in RE production by levying export taxes.

Elasticity of substitution determines how large damages in the west are.

Spillovers and tariff-recycling determine welfare effects in China.

