

# Climate financial bubbles: How market sentiments shape the transition to low-carbon capital

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# Motivation

- ▶ Context: Debate on 'stranded assets' resulting from the transition to a low-carbon economy
- ▶ Physical assets to be written off from balance sheets of companies:
  - ▶ Fossil fuel reserves left in the ground
  - ▶ 'Stranded' capital stock and infrastructure
- ▶ Stranded physical assets might lead to stranded financial assets:
  - ▶ Drop in the value of financial assets - e.g equities and bonds - issued by fossil-intensive companies
  - ▶ Wealth effect for investors holding high-carbon financial assets
  - ▶ Potential systemic ramifications and cascade effects throughout the whole financial network

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- ▶ Macroeconomic modelling linking natural, physical and financial assets
  - ▶ 'Green Macro' project part of Mistra Financial Systems (MFS) programme

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  - ▶ If so, high-carbon financial assets might currently be overpriced and not fully reflect climate-related risks
- ▶ How would this bias in expectations affect the transition to a low-carbon capital stock?

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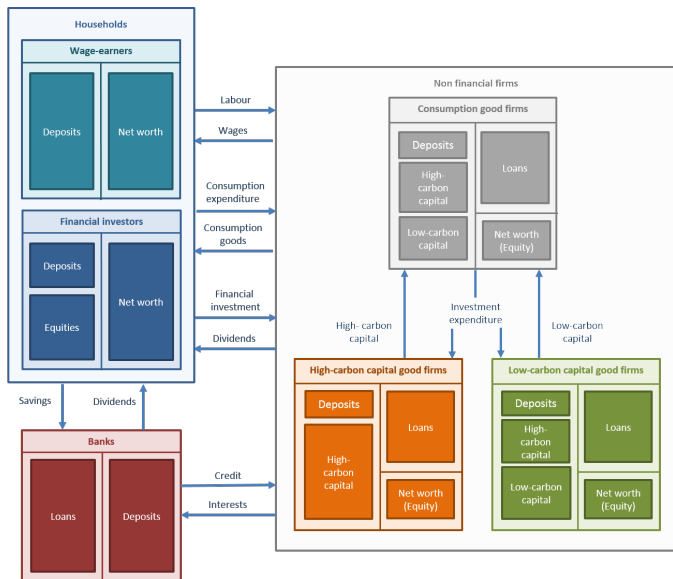
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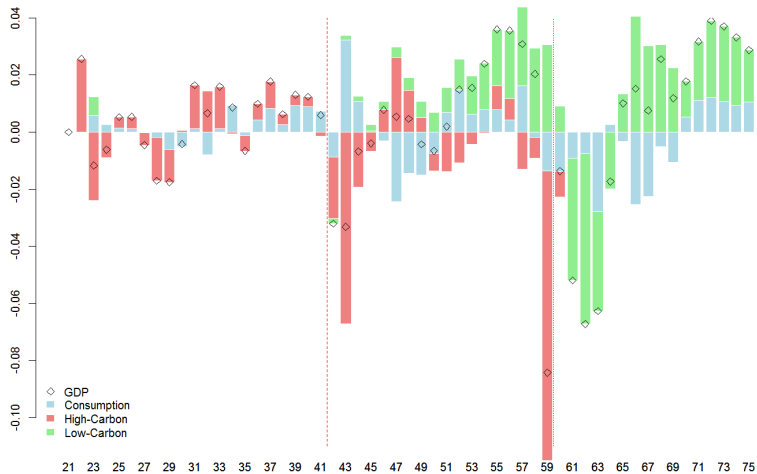
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- ▶ Investors allocate their wealth according to:
  - ▶ A long-run term depends on the expected share of physical capital of each sector; in the long-term the allocation of wealth reflects the relative sectoral shares
  - ▶ A short-run term that depends on sectoral relative returns and creates fluctuations

# The structure of the model



# Baseline scenario with unbiased adaptive expectations

## ► Change in sectoral output



# Playing with market sentiments

- ▶ *Climate financial apathy*:  $\theta \in [0, 1]$ 
  - ▶ The larger is  $\theta$  the more will financial investors divert expected capital growth from the low-carbon to the high-carbon capital sector.

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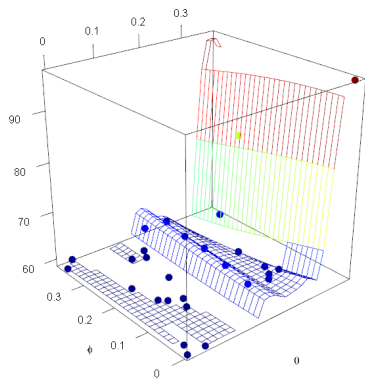
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    - ▶ Slower transitions
    - ▶ Higher output volatility
    - ▶ Higher stranded physical assets
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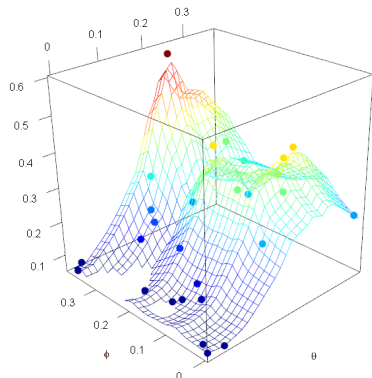
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  - ▶ However, strong non linear effects of  $\theta$

# The effect of $\theta$ and $\phi$ on the low-carbon transition (I)

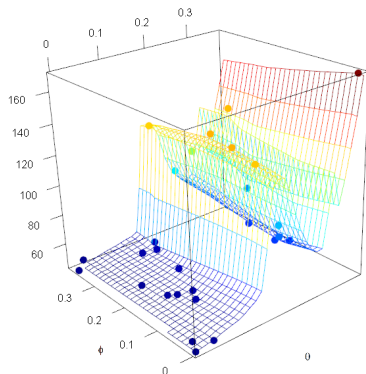


High-carbon sector exit period

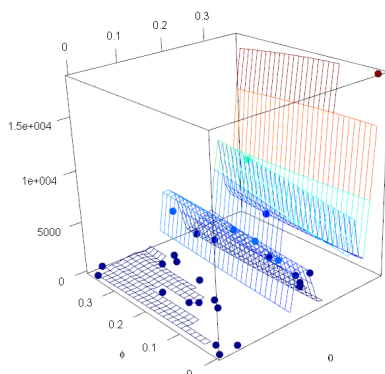


Output volatility index

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Physical stranded assets



Financial stranded assets

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  - ▶ Emergence of a new, innovative, carbon-free capital produces large macroeconomic and financial effects, especially when high-carbon capital sector is driven out of business
- ▶ We then investigate how apathetic expectations and limited information might affect the transition dynamics.
  - ▶ Higher levels of climate apathy extend the length of the transition period and increase the amount of physical and financial stranded assets.
  - ▶ Relevance of feedbacks and non-linear effects

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  - ▶ Higher levels of climate apathy extend the length of the transition period and increase the amount of physical and financial stranded assets.
  - ▶ Relevance of feedbacks and non-linear effects
- ▶ Policy implications
  - ▶ Increase information circulation (Task-Force on Climate-Related Financial Disclosure)
  - ▶ Support climate-friendly financial instruments (green bonds)
  - ▶ Stronger research from central banks and financial regulators on (climate stress testing)



*Thank you!*

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