
# Discussion: Factoring transition risks into regulatory stress tests

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# What is the paper about?

- With **ongoing** and **potentially accelerating climate-change** the impact of this change and in particular the impact of mitigating potential policy actions on the values of financial assets becomes also a concern for quantitative risk assessment and a **concern for stress testing**.
- This paper is focused on a particular aspect of such a climate-change related stress scenario: **Late and sudden transition** to a more de-carbonized production structure.
- The paper is about a proposal of a **particular methodology** which could be used for **financial stress assessments** in this context.

# A one-slide summary of the methodology.

- **Risk Factors**: Production, carbon intensity of production, input prices, capital expenditures, operating expenditures, research and development expenditures, output prices for eight carbon intensive sectors across world regions.
- **Scenarios:** Scenarios are non-probabilistic and are constructed for each sector according to two broad approaches:
  - Define a shock year and a shock magnitude as well as the duration until a initial level is reached again.
  - Use a global carbon accounting framework.
- **Loss Evaluation:** Apply standard present value formulas for equities and bonds using profit figures simulated under the scenarios.

# Is a stress testing framework the appropriate concept to assess this problem?

- While there is no doubt that the speed and the way of adaption in production structure is an important source of financial risk, a standard stress test approach to me seems **conceptually unsuitable**.
- A stress testing framework makes sense in a situation where the portfolio is **given** and at the horizon **only risk factors can change** without behavioral response.
- Policy induced structural change in a system of production processes is clearly **not** of this kind.

# Long Time Horizons and Structural Change requires Models with Behaviroal Responses

- The concerns addressed in this paper may perhaps be more appropriately modeled by an agent based framework or any other **simulation model allowing for behavioral responses**.
- At the time horizons considered in the analysis abstracting from behavioral response seems simply **not appropriate**.

# A crucial element is missing: Sectoral Interdependence

- In a transition to a new production structure the **input output relations between the sectors and regions**, the international supply chains seem a **crucial element**, yet they seem to be ignored here and sectors and regions are analyzed in isolation.
- In section 3 it seems that equity and bond valuations are conducted sector by sector, **without regard to their interdependence**.

# Conclusions

- In my view this model of assessing the financial effects of a late an sudden transition to a de-carbonized production structure is set up using **inappropriate concepts**. In this context a conventional stress testing framework does not make very much sense.
- The abstraction from behavioral responses and the interdependence of production sectors **leaves out one key mechanism** in this problem. Even if very much simplified it must be somewhere in the model or we are missing a key aspect.
- Given these problems in the model, it is not easy to assess without other sources how **meaningful** the numbers presented in section 4 are both in absolute values or even as orders of magnitude.