Climate-related risks:
A financial stability angle for Europe

Discussant: Irene Monasterolo, Professor of Climate Finance, EDHEC and EDHEC-Risk

irene.monasterolo@edhec.edu

What the presentation does and why it matters

- Overview of (i) development of green finance, (ii) climate financial risk exposure and (iii) results of ECB's climate stress test
- Main take home messages:
  - Heterogenous green finance path by contract (green loans vs bonds vs ESG) + greenwashing risk (e.g., ESG sl. 8)
  - Heterogeneous exposure of banks to physical risks by country: data, scenarios and disaster risk assessment affect results (e.g., floods, sl. 11; GDP losses, sl. 20)
  - Transition risks not just across, but also within sectors
  - The short-term costs of climate transition policies pale in comparison to the costs of unfettered climate change in the medium to long term.
- **Risk assessment** is key for capital reallocation from high to low-carbon investments in order to achieve climate mitigation (and adaptation) targets.

Challenges and opportunities

- **Carbon risk and greenwashing** (see e.g. ESMA 2022):
  - Analysis of transition risk focused on emissions and carbon pricing:
    - Limits: utility firm can decrease its Scope 1 by expanding in trade - no decarbonization
  - Add **tech profile** to provide a comprehensive picture of firms' exposure to transition risk
  - Climate Policy Relevant Sectors (Battiston ea 2017): classification of activities by transition risk**,** translated into **Transition Exposure, Taxonomy Aligned Coefficients** (Alessi ea 2021)

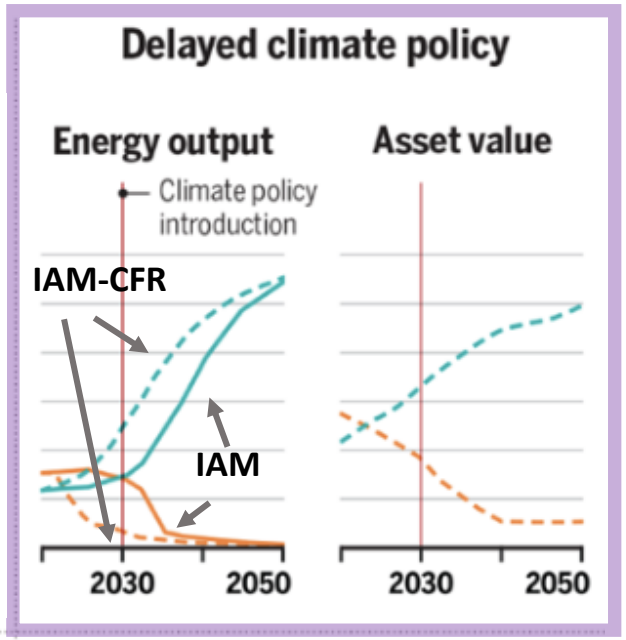
- **Scenarios for climate stress test:**
  - Current scenarios neglect the role of finance and «climate sentiments» (Dunz ea. 2021).
  - When accounting for finance, trajectories of orderly/disorderly transitions differ greatly: important implications for decision makers! (Battiston ea 2021)
  - Risk metrics highly sensitive to probability of disorderly scenarios: include broad range of scenarios to avoid underestimating risk! (Battiston & Monasterolo 2020)

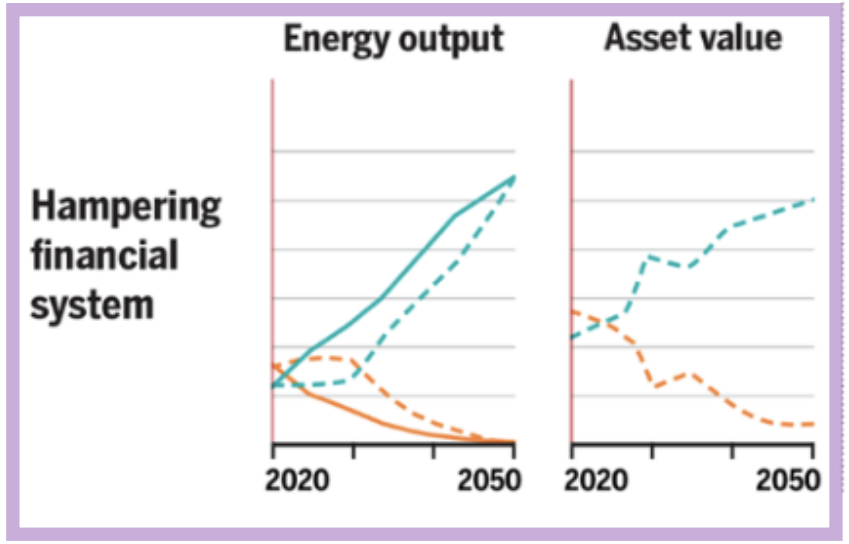
- **Data**: need accessible extrafinancial, plant based info (e.g. revenues shares) and database models to connect financial/extrafinancial info

Accounting for finance is key for climate mitigation

Policy → **Immediate climate policy**

Financial system → **Enabling financial system**





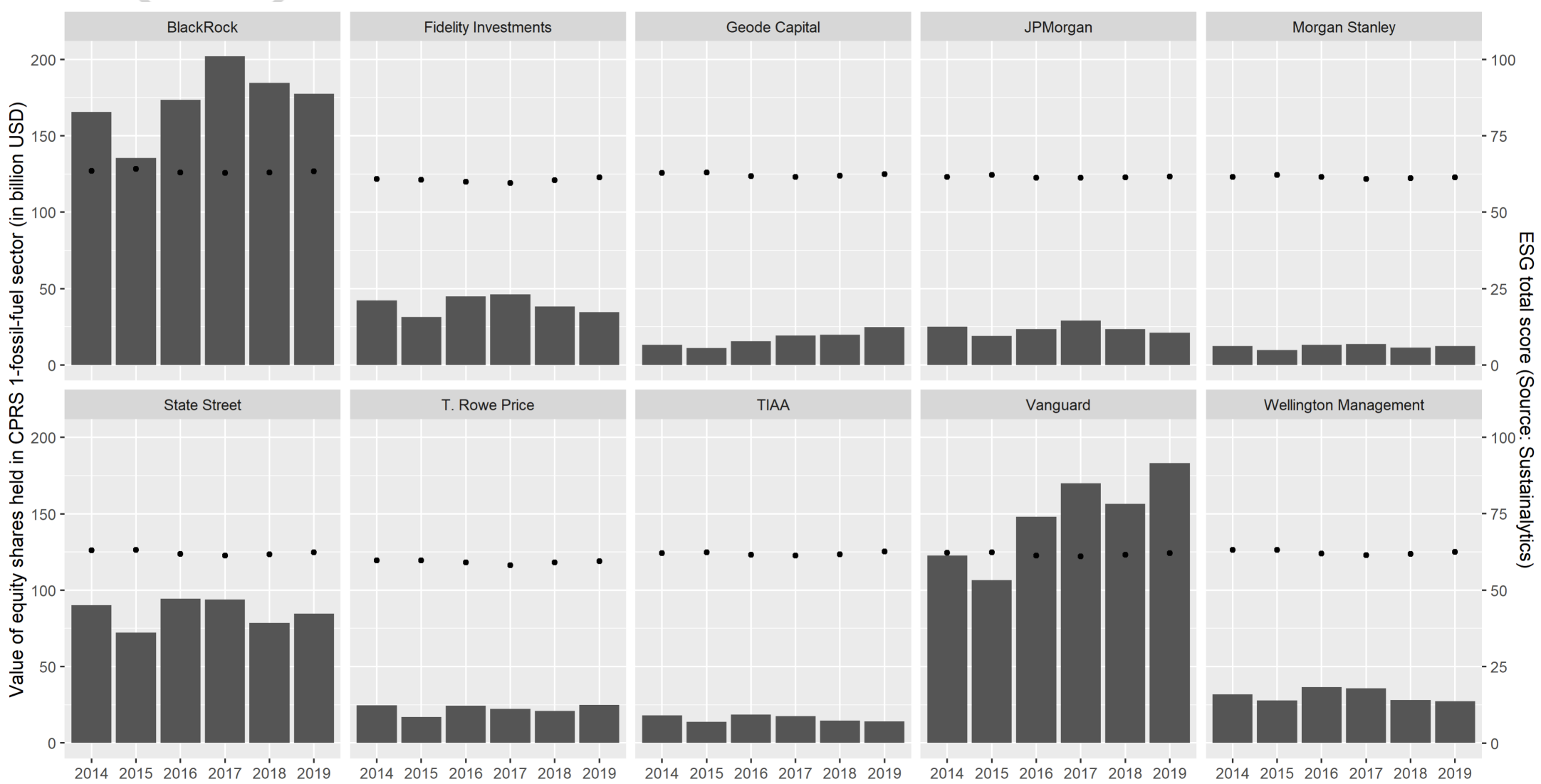
Source: Battiston ea (2021), Science

Endogenizing orderly/disorderly transition:

- An immediate transition to 2°C classified in NGFS scenarios as orderly. But in hampering case: delayed transition, large and sudden financial value adjustments as in a disorderly scenario.
- **Delayed** transition to 2°C : **disorderly**. But in enabling case gradual price adjustments more consistent with orderly
- In **hampering** role: disorderly transition could also lead to higher risk than in NGFS disorderly

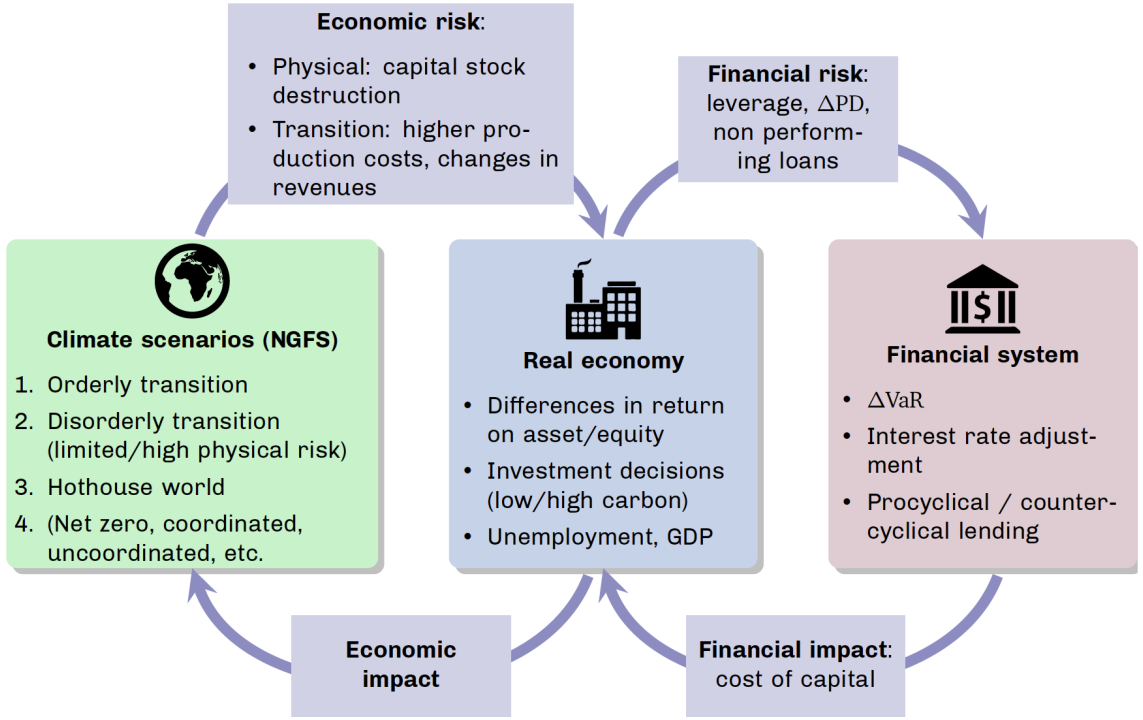
Legend:

Climate risk, (lack of) diversification, greeness confusion



Source: Giuliani ea (2022)

Double materiality of climate financial risks



Source: Gourdel ea (2021)

- Analysis of feedback from climate financial risk assessment (e.g. Δcost of capital) into investment decisions (high/low-carbon) and feasibility of climate scenarios
- Analysing this feedback, in turn, requires macroeconomic models to embed finance and investors' sentiments.
- Recent example with dynamic balance sheet adjustment in Gourdel ea (2021), forth. ECB working paper.

The importance of climate sentiments in the low-carbon transition of the Euro Area

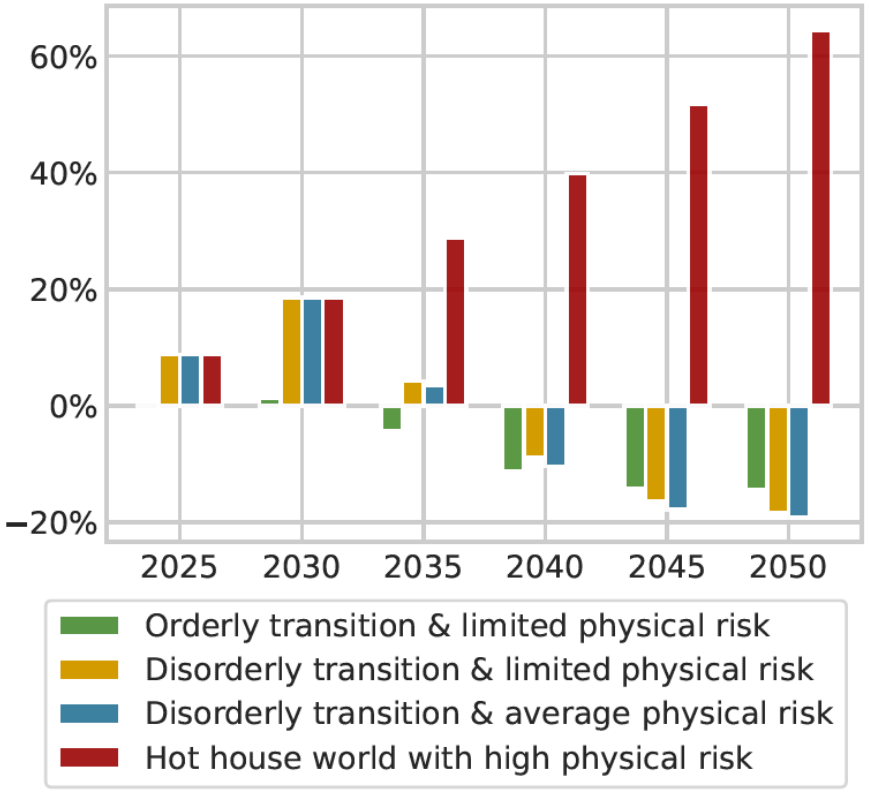


Fig a: GHG emissions across NGFS scenarios, Euro Area.

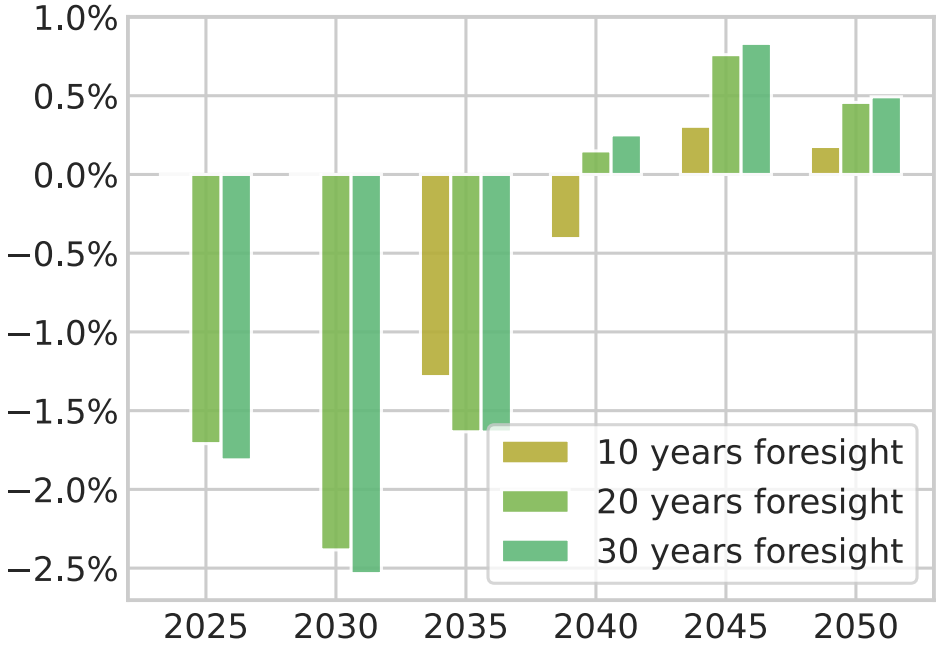


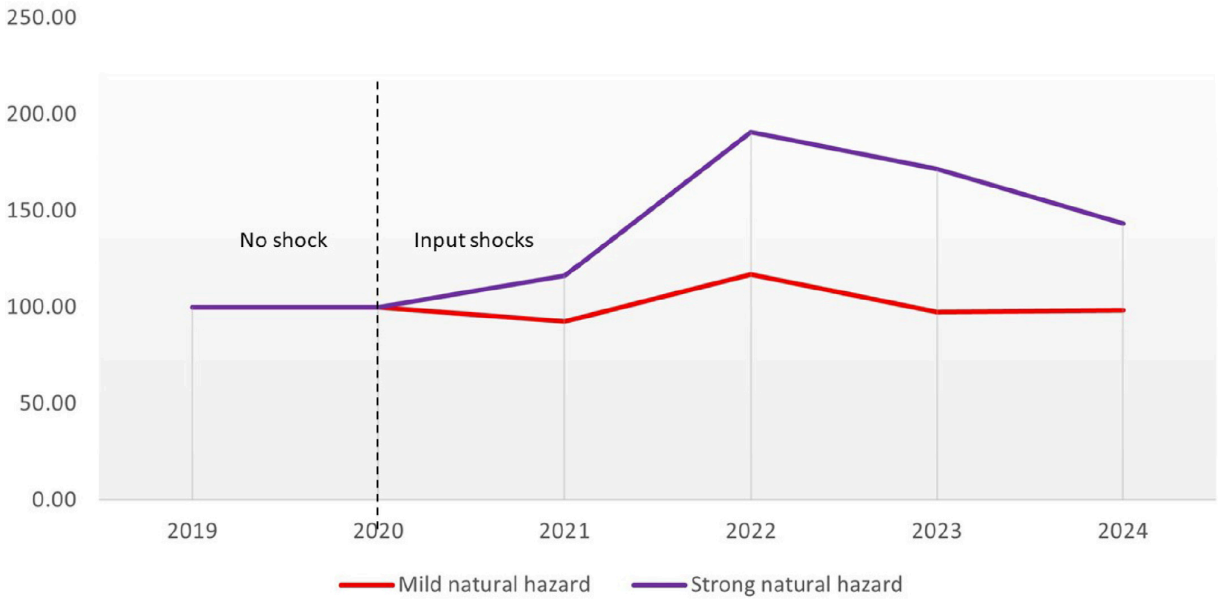
Fig b: GHG emissions reduction of orderly transition scenarios conditioned to firms' sentiments (carbon price anticipation across NGFS scenarios), Euro Area.

Source: Gourdel ea (2021)

Compound climate risks

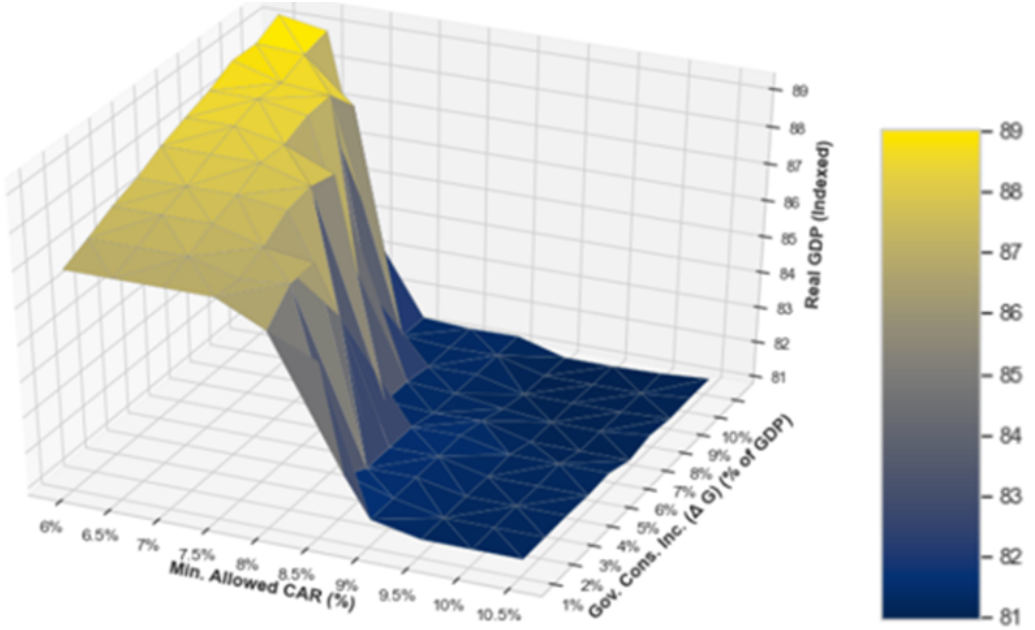
- Climate (physical, transition) risks don't happen in isolation but can compound with other shocks e.g. COVID-19 and debt crises (Dunz ea 2021, Ranger ea 2021)

- When risks compound, macroeconomic and financial shocks amplify increasing the complexity of policy response and financial risk management (Dunz ea 2021)



Compound risk indicator: *x-axis: simulation until 2024 on annual basis. y-axis: value of compound risk indicator indexed against the sum of the singular event scenarios of hurricane only and COVID-19 only, at 100. Dunz ea (2021)*

- Banks' balance sheets and ability to lend are negatively affected, making government spending less effective.



Sensitivity analysis *(5 years after the compound shock). y-axis: percentage of additional government spending (G). x-axis: min. required CAR constraining banks' lending. z-axis: impact on real GDP. Dunz ea (2021)*

Conclusion

- Doing climate financial risk exposure and climate stress test is crucial to inform decision making (investors, financial supervisors, etc). European financial supervisors moved fast to meet new challenge
- Being aware and embrace the **methodological challenges** is fundamental to **avoid the underestimation of risks and opportunties**
- This requires a throughout understanding of **issues at stake** with:
  - Data
  - Metrics of exposure
  - Use of scenarios
  - Use of macroeconomic models
  - Financial valuation models

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