



# Regional and Macro Implications of the Global Energy Transition



# Providing trusted insights and integrated analytics leveraging our deep domain and risk expertise



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- Credit Ratings & Research
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- ESG Classification
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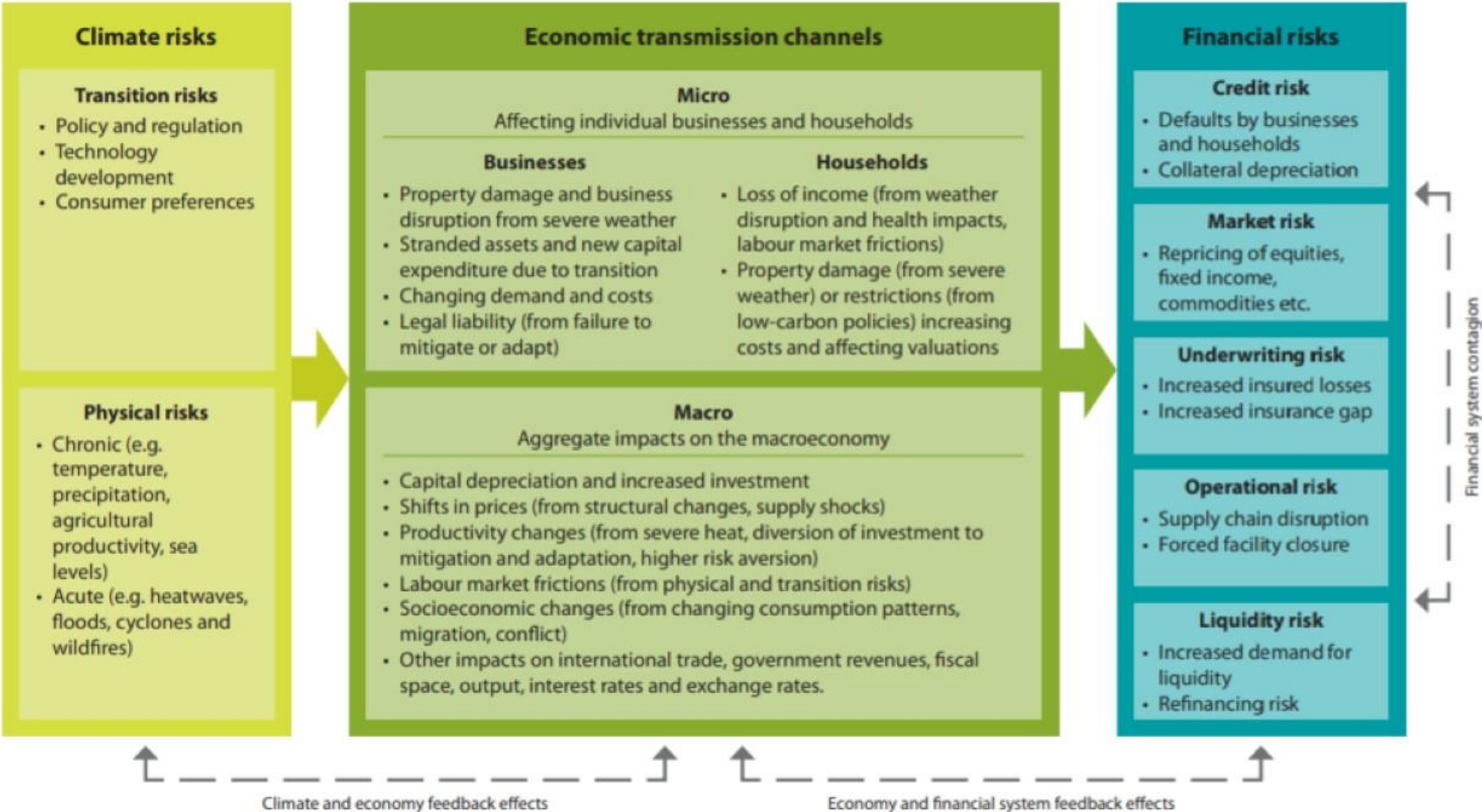
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- Climate Solutions
- Index Solutions
- SME Solutions
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# Climate Risk and Financial Systemic Risk

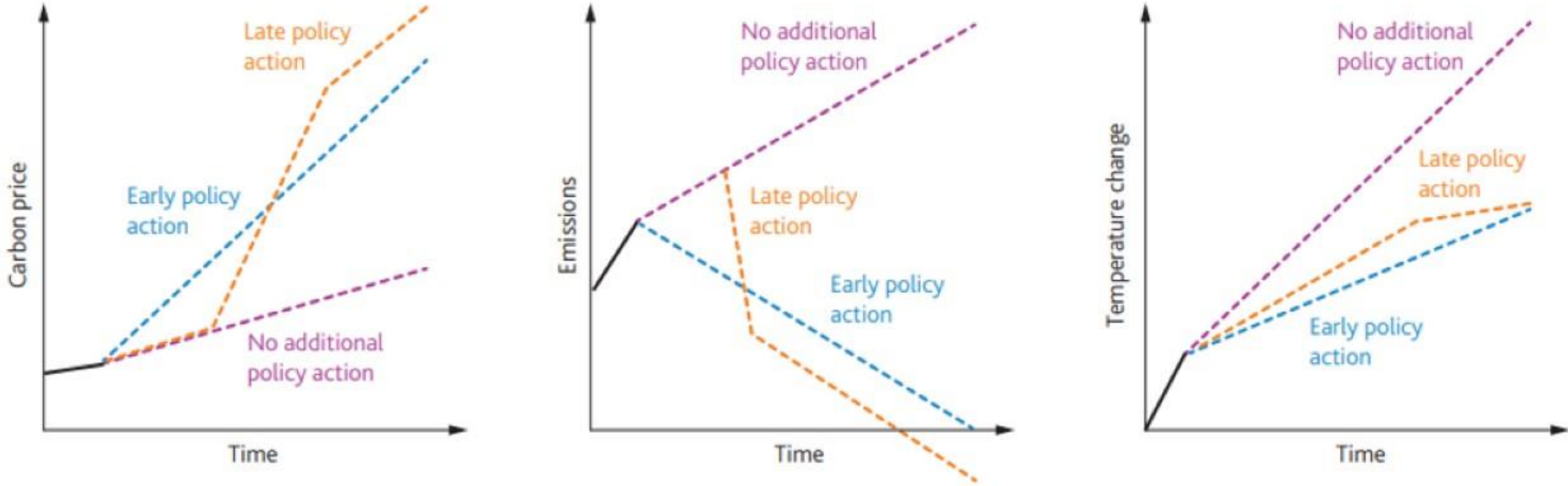




# Which Climate Scenarios to Analyze?

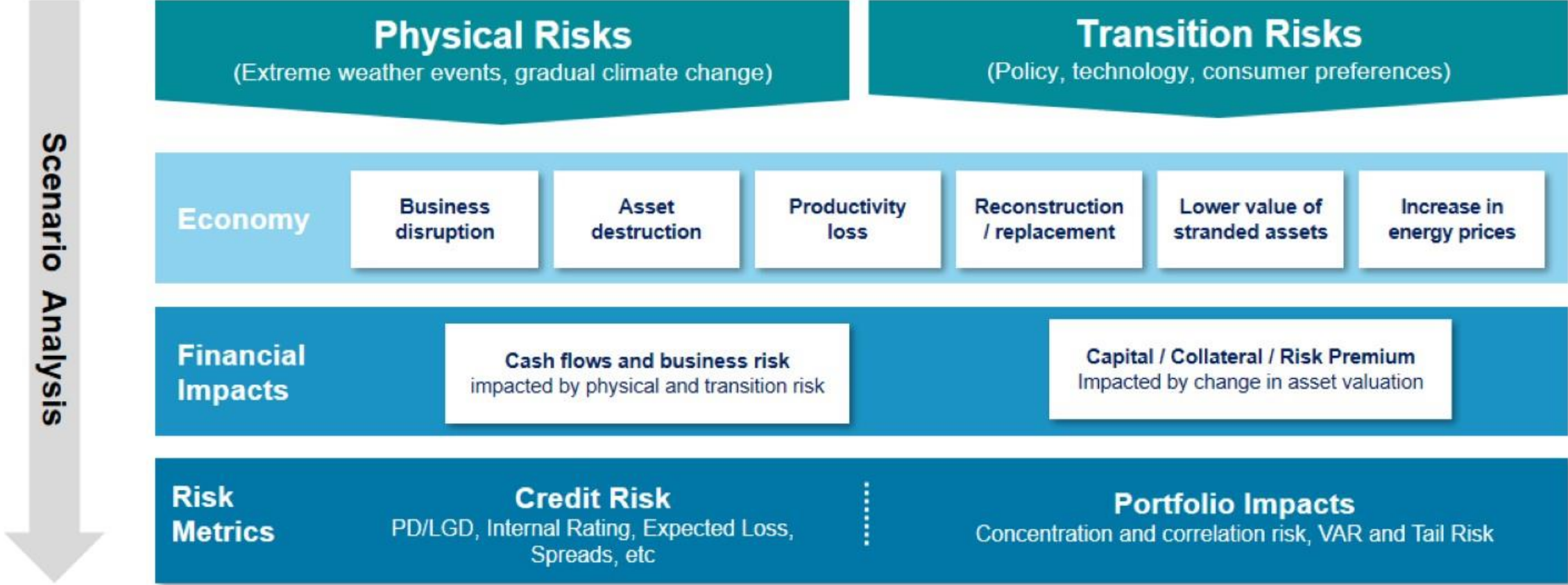
- » One important set of climate scenarios are the NGFS scenarios, which underpin the 2021 Bank of England's Climate Biennial Exploratory Scenario (CBES) exercise:

Figure 3.1 Illustrative variable pathways in each scenario



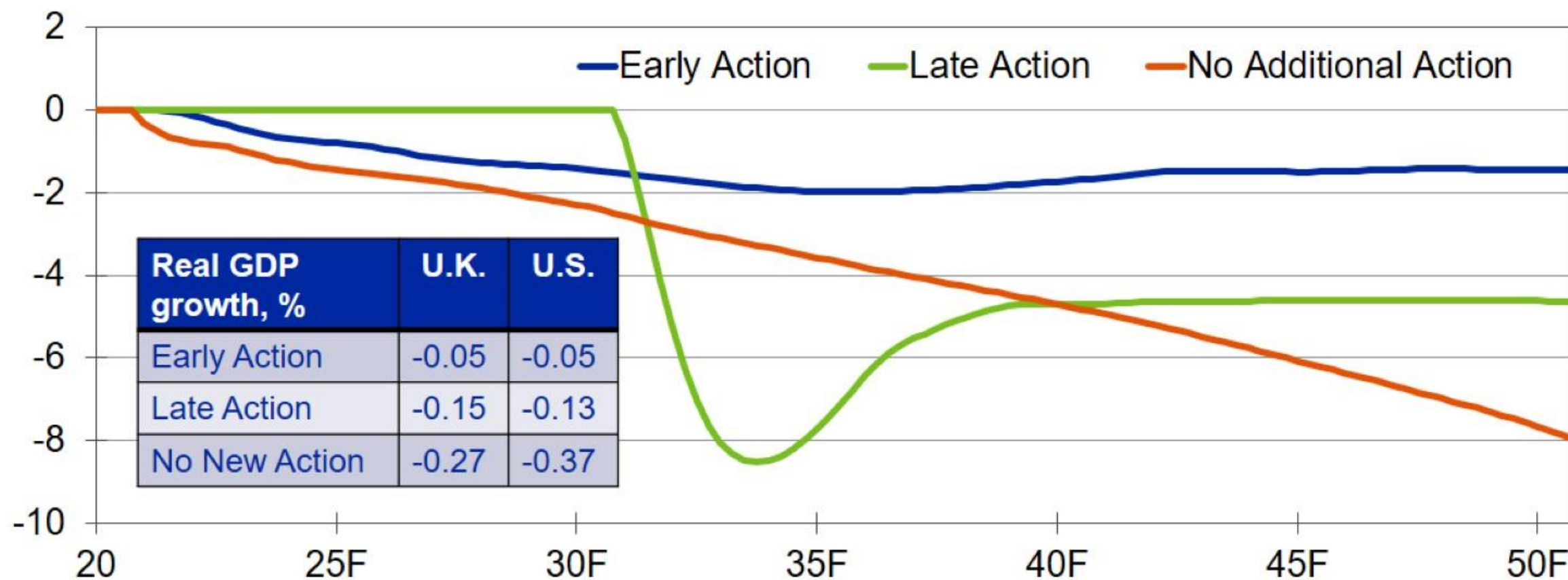
# Economic and Financial Impacts of Climate Change

## Moody's conceptual framework



# The Bank of England Provided GDP for CBES

U.K. GDP, cumulative decline from counterfactual scenario, %

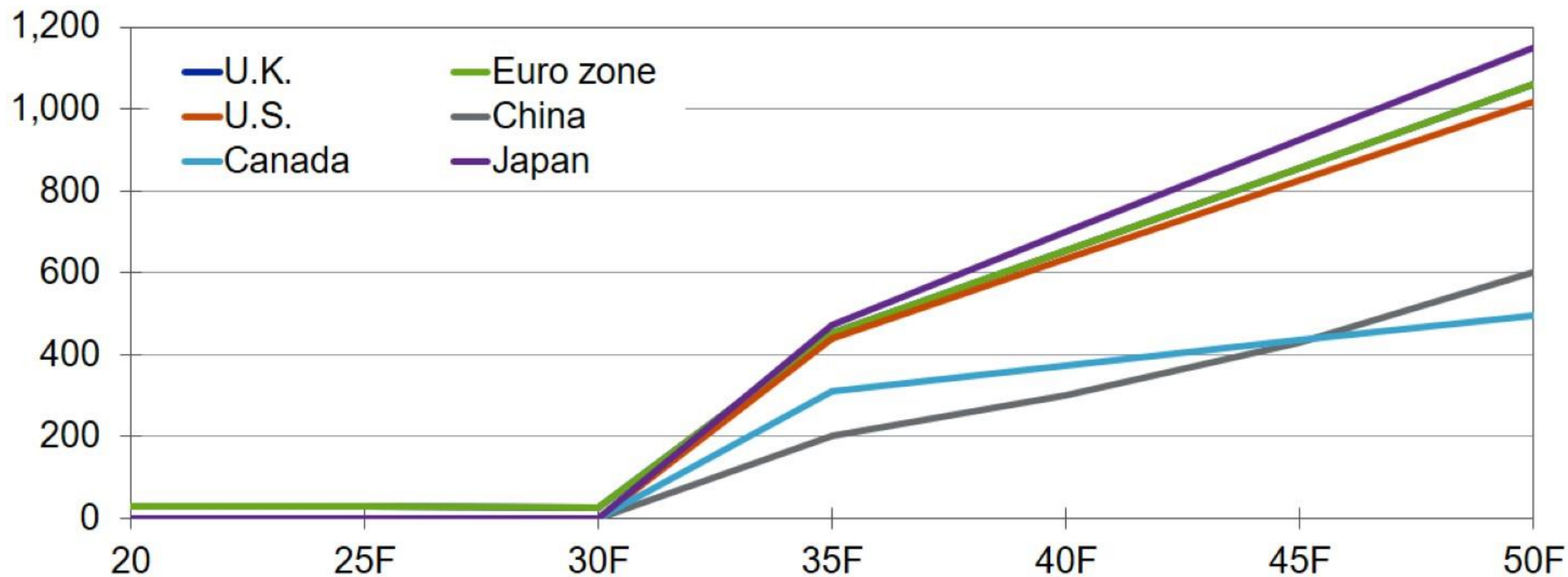


Sources: CBES, Moody's Analytics



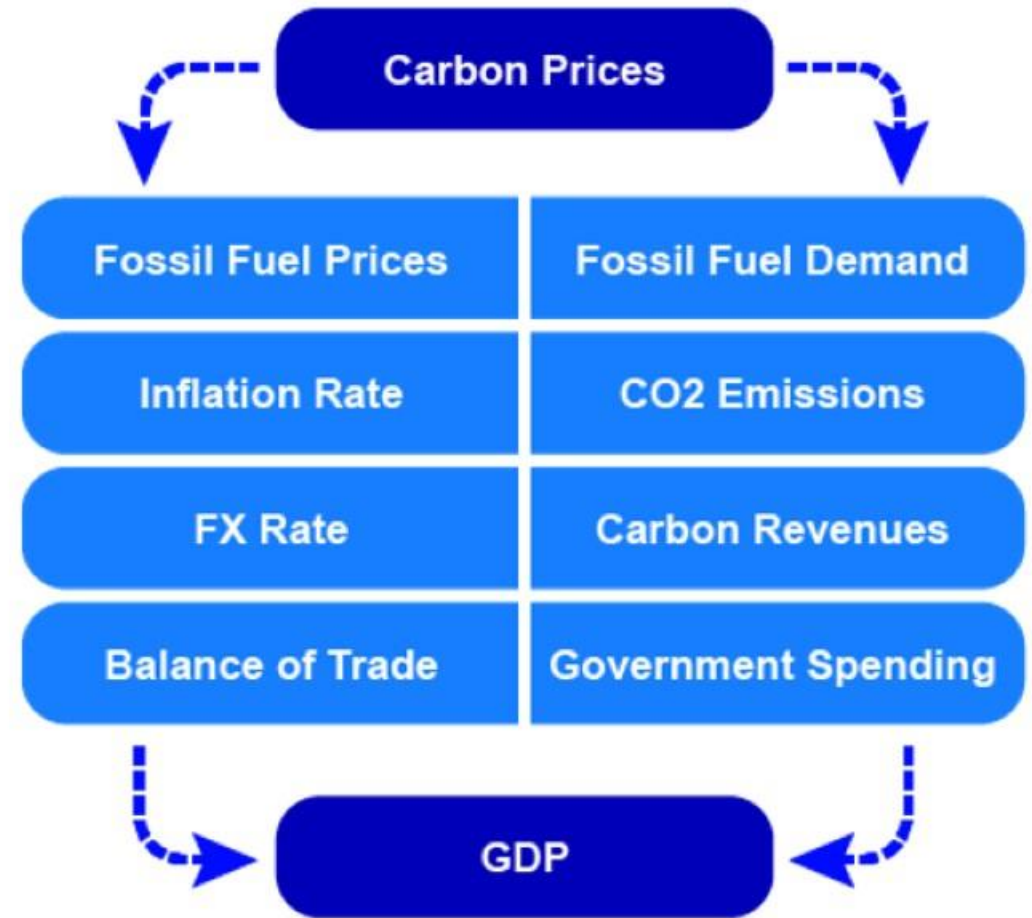
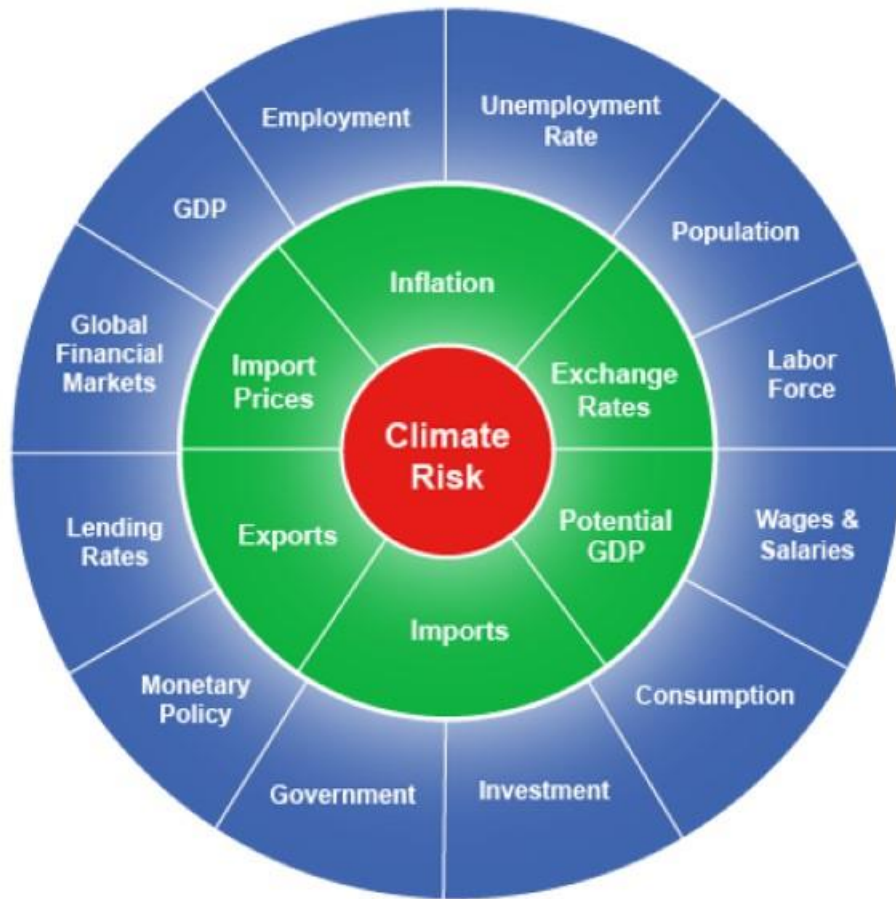
## ...As Well as Carbon Prices

Carbon price, 2010 \$ per metric ton



Sources: BoE, Moody's Analytics

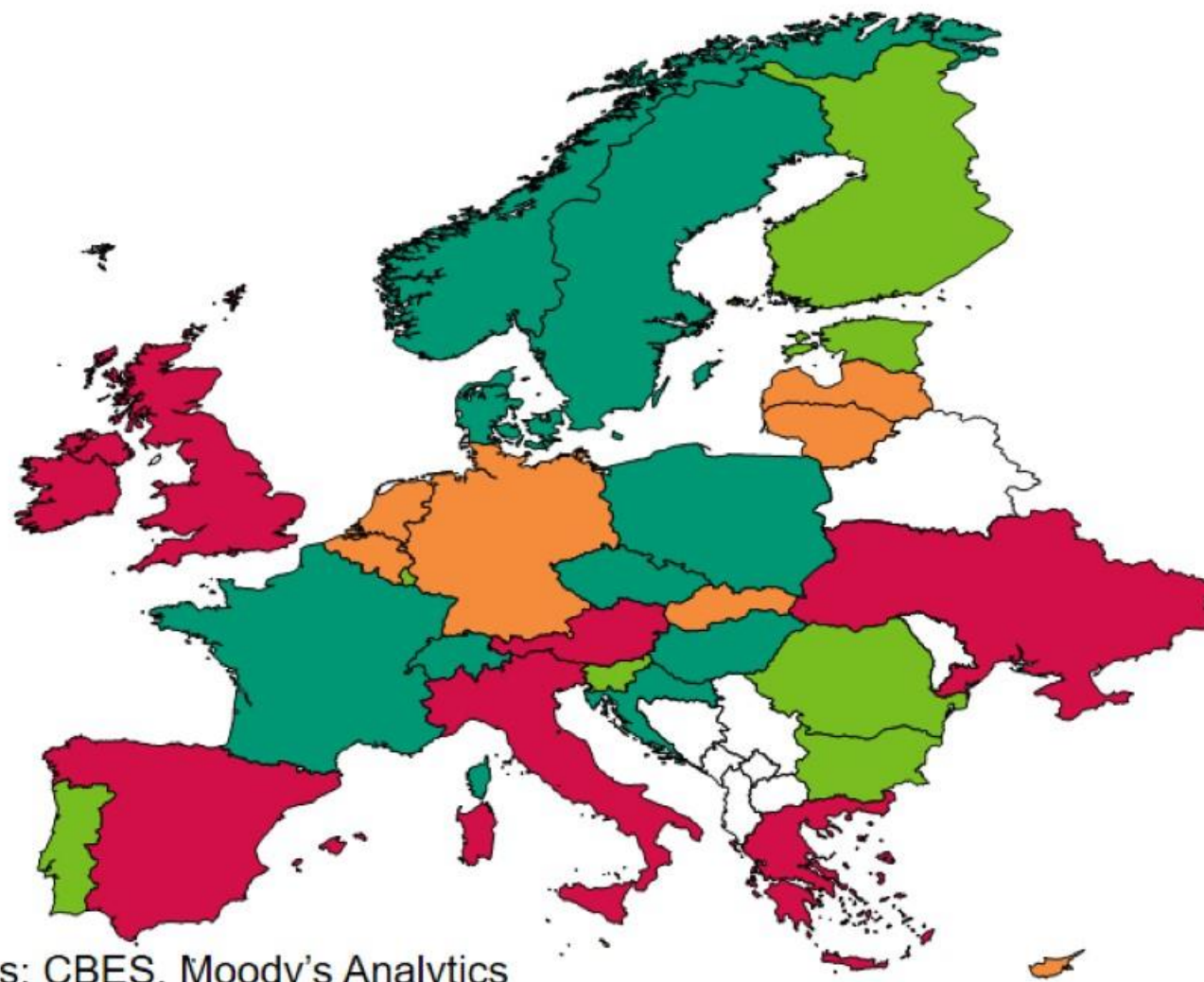
# Moody's Analytics Enhanced Global Macroeconomic Model





# Real GDP Impact of BOE CBES Scenario

% Decline, No Additional Action Scenario, 2050



US = -17.4

Europe = -17.1

■ > -13.7

■ > -17.1 to -13.7

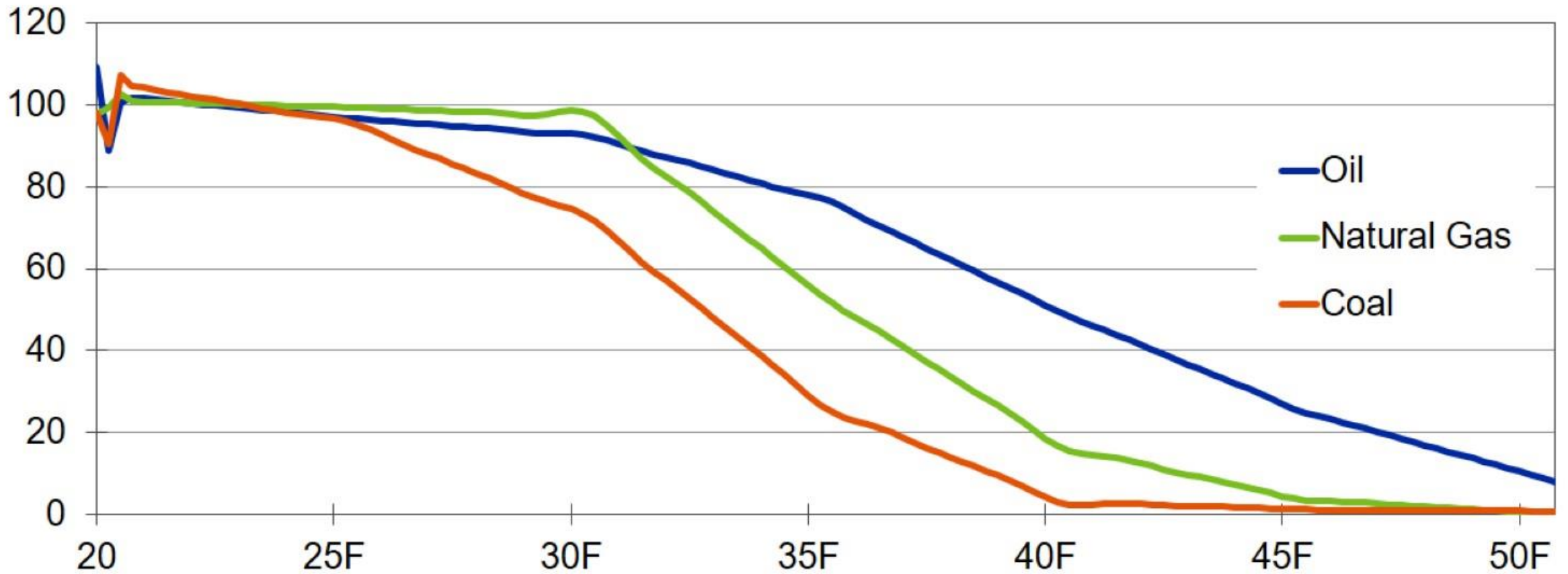
■ -18.5 to -17.1

■ < -18.5

Sources: CBES, Moody's Analytics

# ...Including Energy Consumption Paths

U.S. energy consumption, 2020=100, late policy action scenario

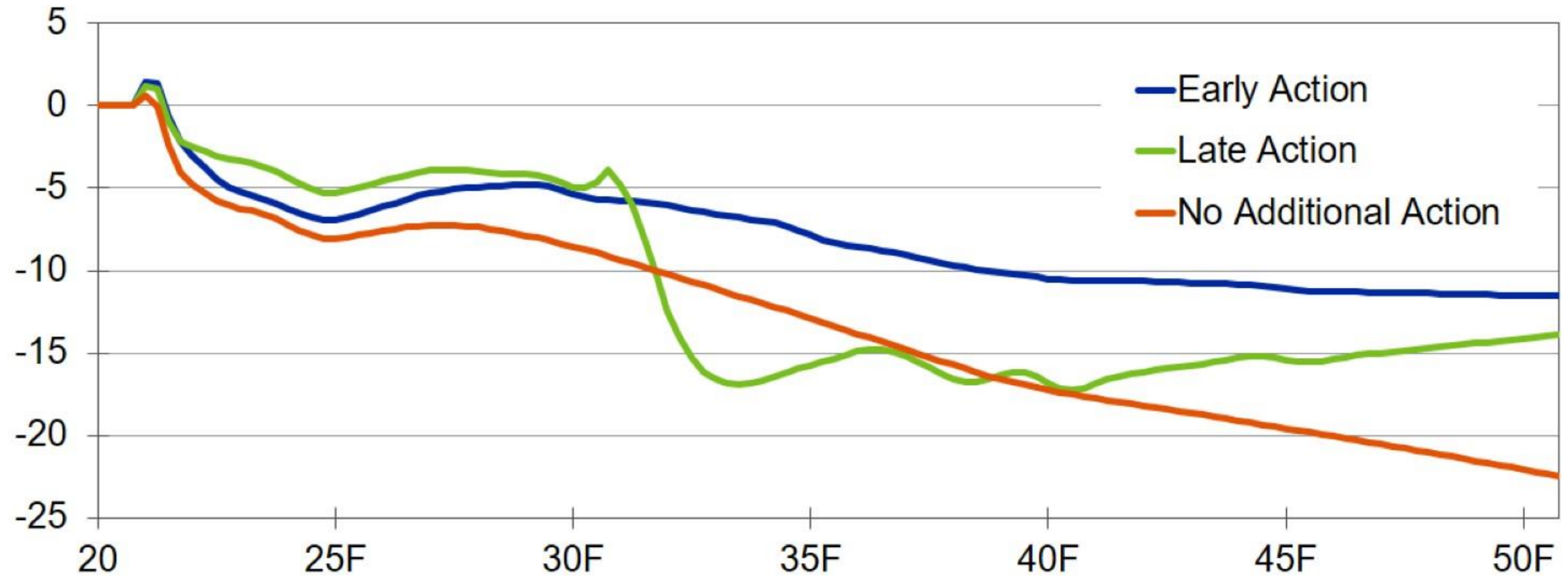


Sources: CBES, NGFS, Moody's Analytics



# Early Action Limits Manufacturing Losses

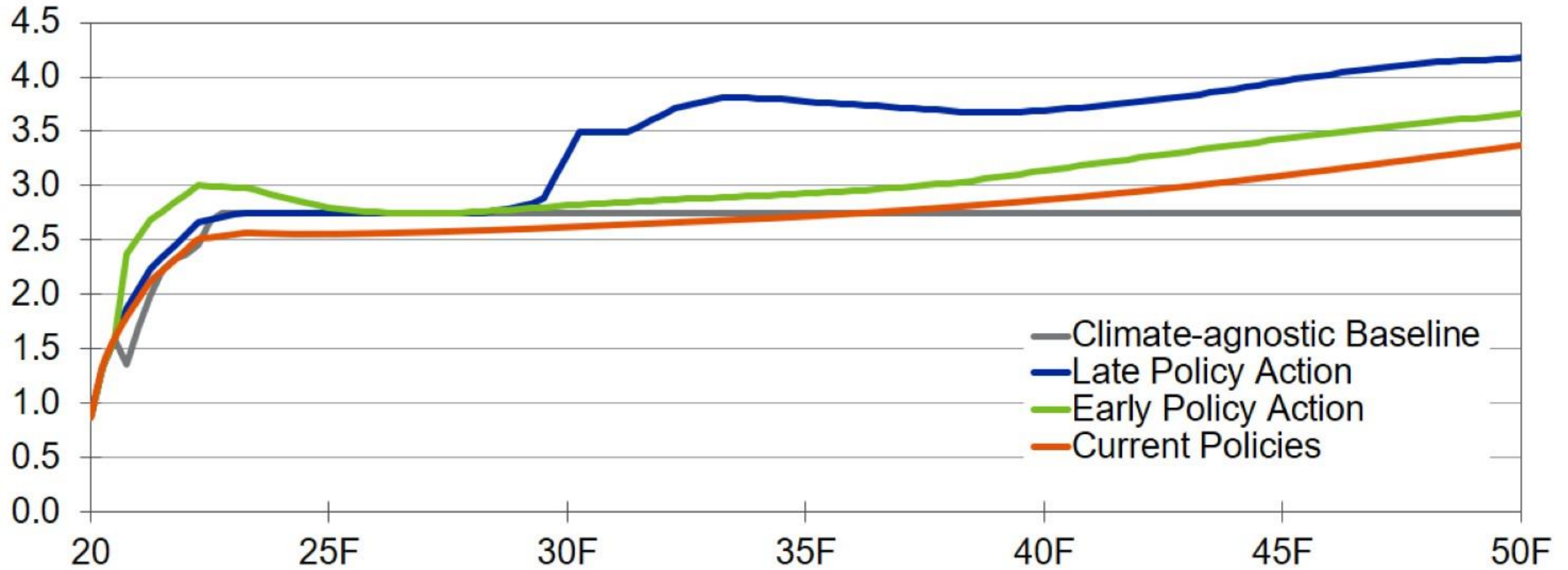
Germany, GVA in manufacturing, cumulative decline from counterfactual scenario, %



Sources: CBES, Moody's Analytics

# Inaction Maximizes Financial Stress

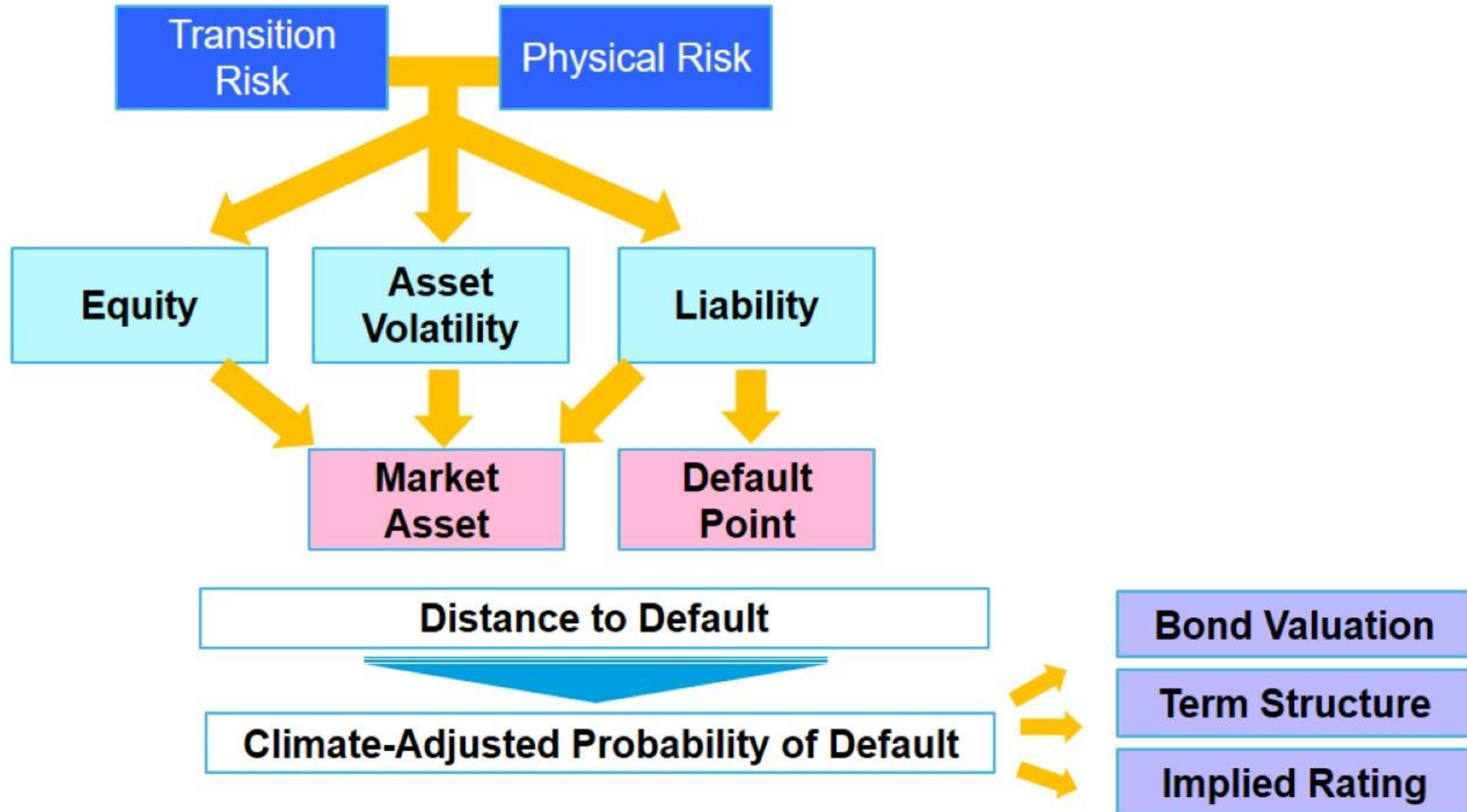
U.S., 10-yr Treasury yield, %



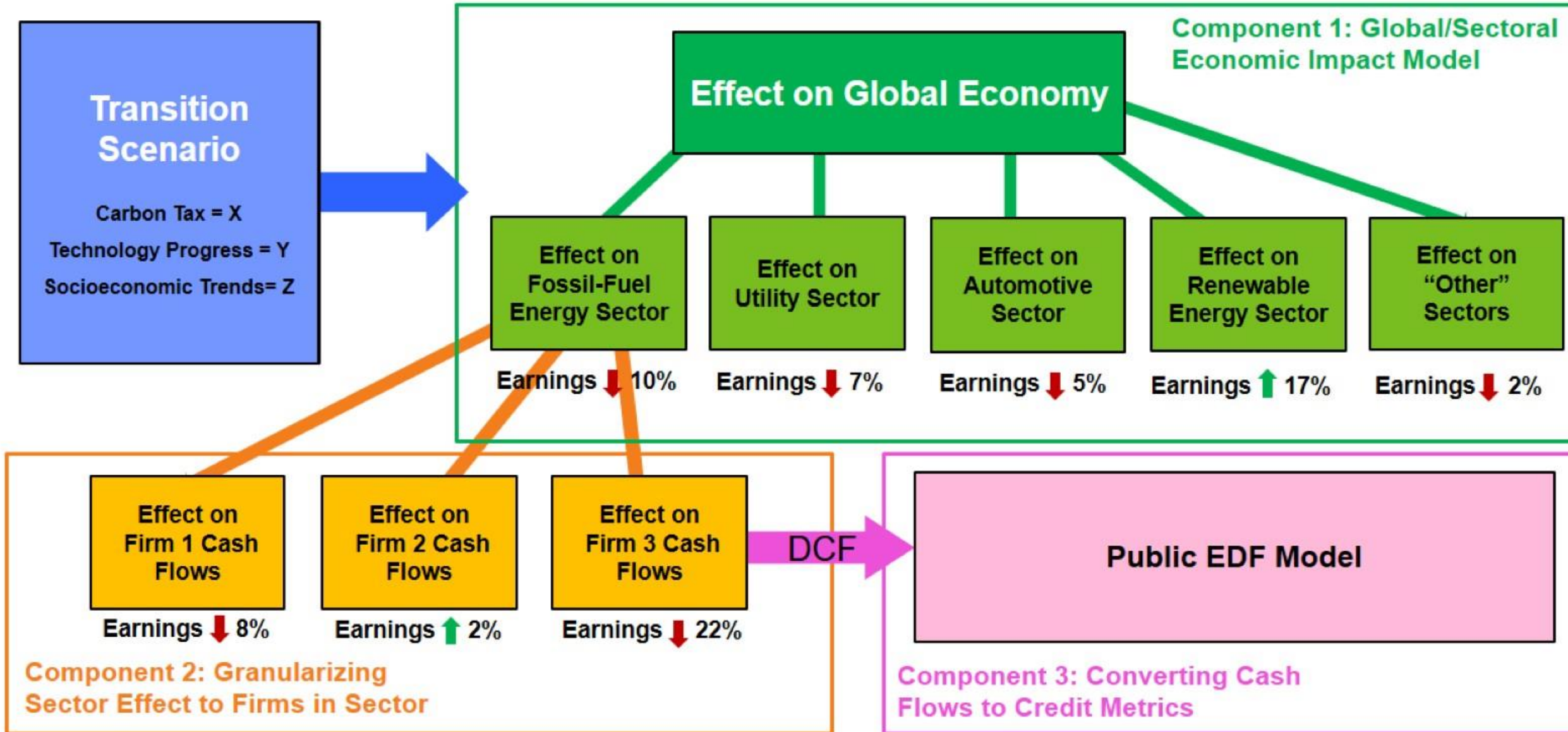
Source: Moody's Analytics



# Climate Risk Affects the Drivers of Creditworthiness



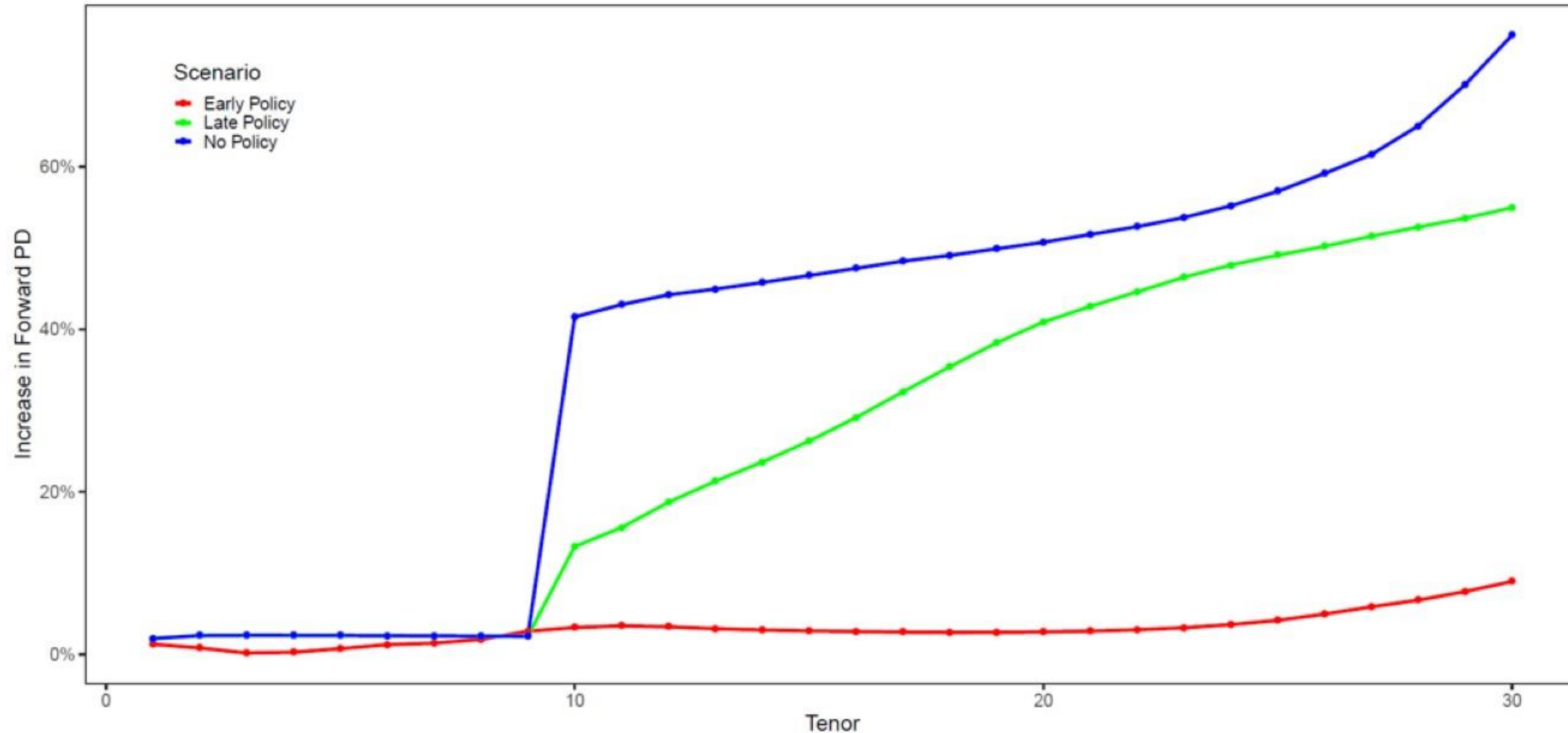
# Transition Risk: Quantifying Scenario-Conditional Cash Flows





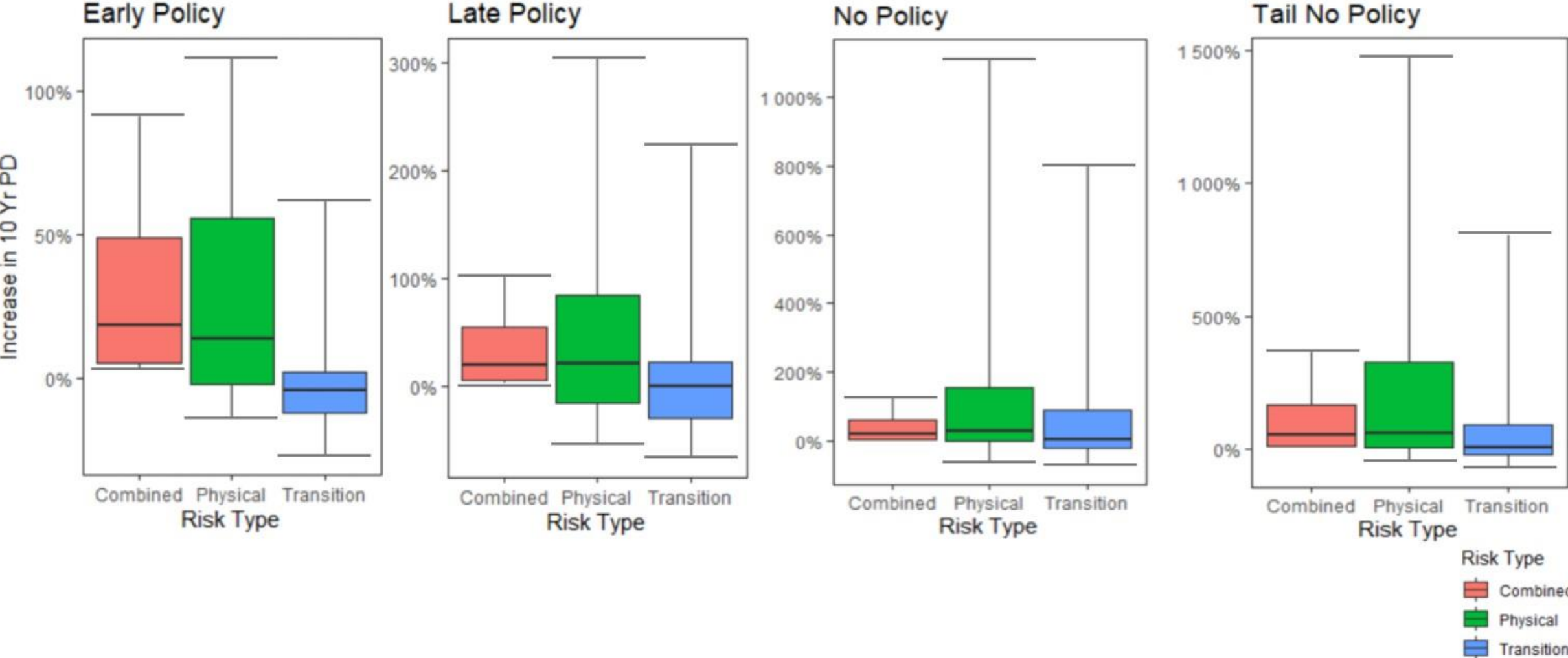
# Average Transition-Adjusted EDF Term Structures

Transition Risk: Mean Portfolio Increase in PD by Tenor



**Investor Expectations Assumption:** Perfect scenario foresight occurs when announced

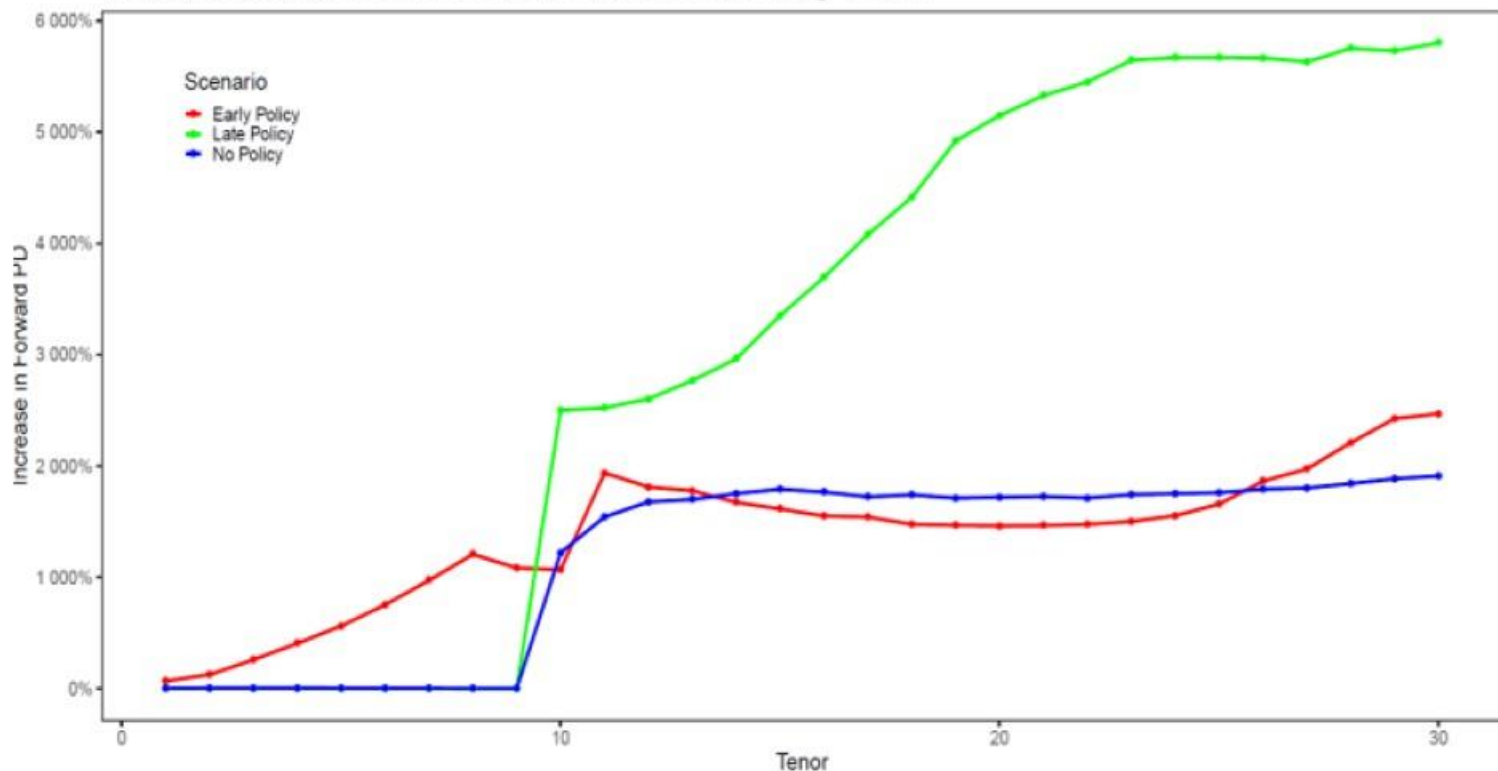
# Relative Risk Varies Widely within each Scenario



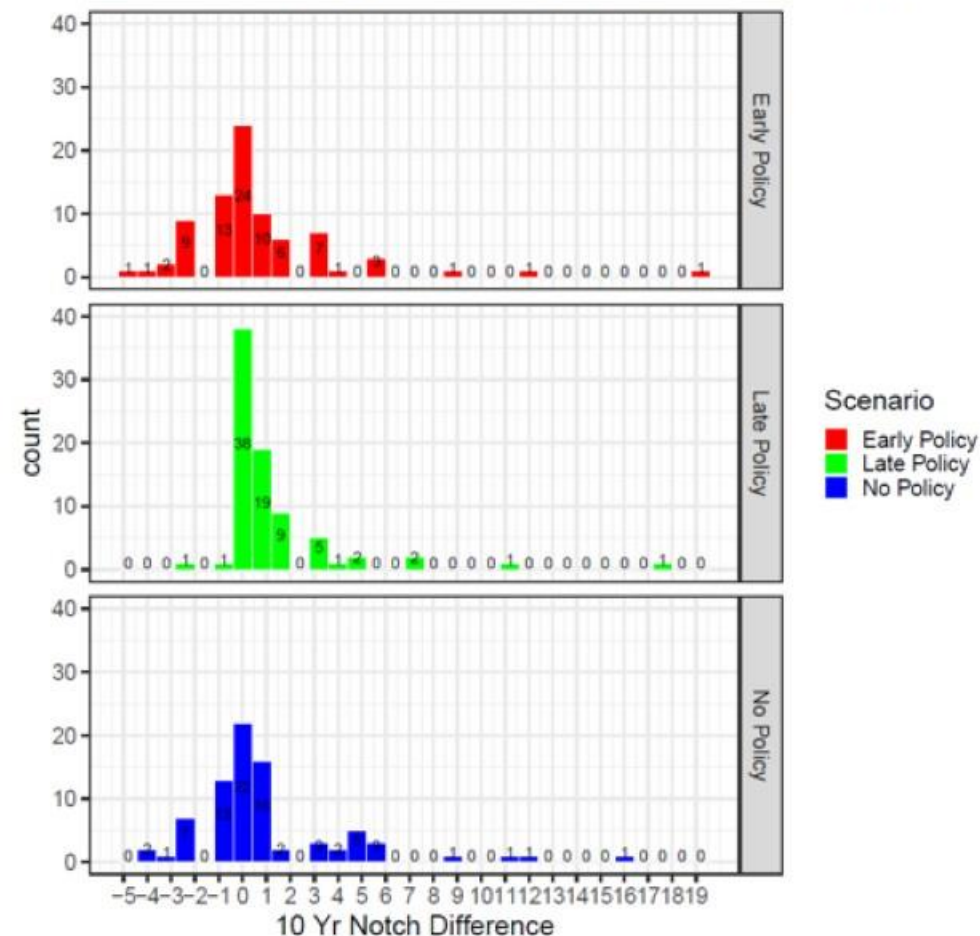


# Average Transition-Adjusted EDF – High Exposure Sector Portfolio

Transition Risk: Mean Portfolio Increase in PD by Tenor

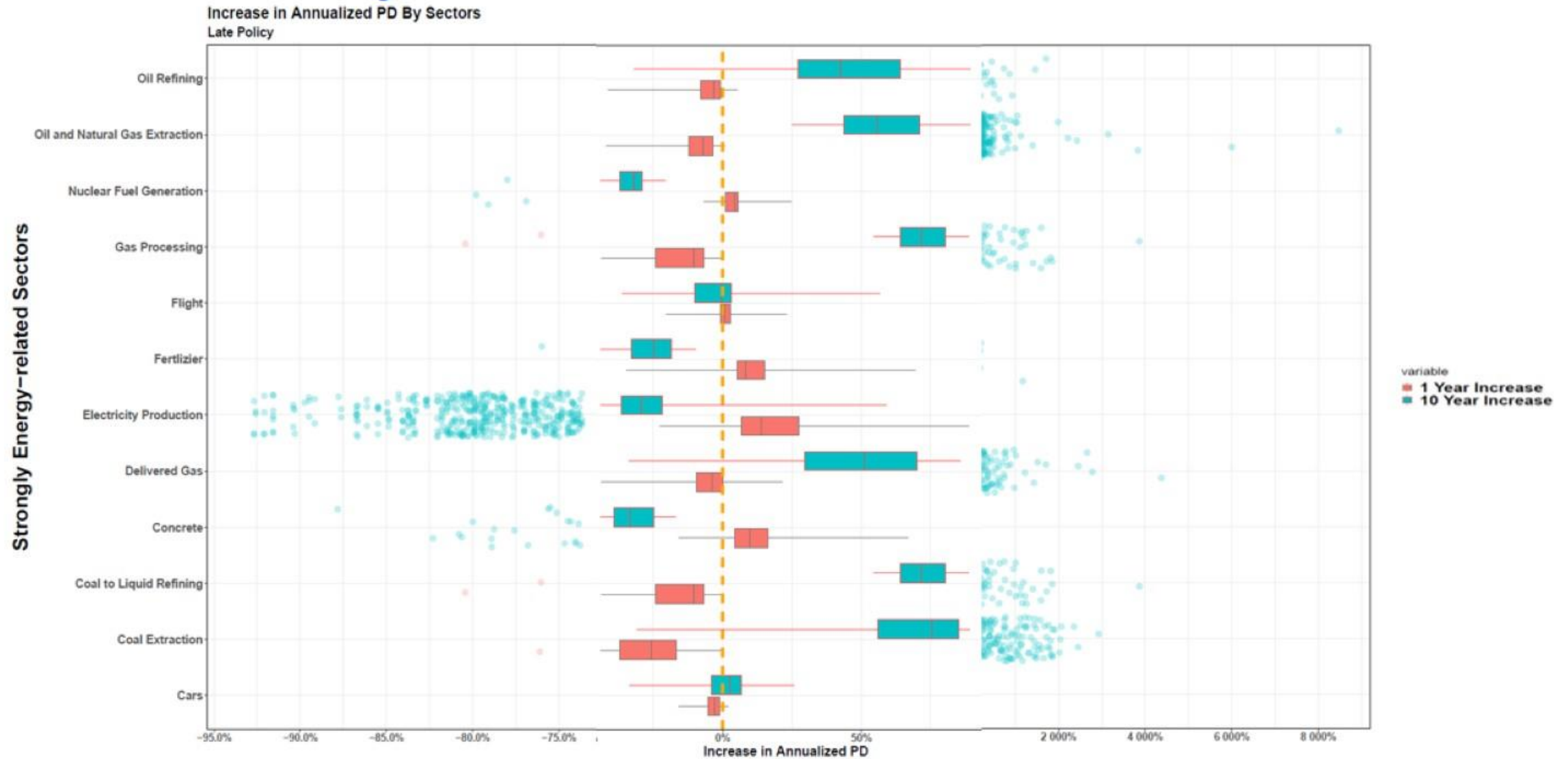


Transition Risk: 10 Yr Notch Difference Over Portfolio



**Investor Expectations Assumption:** Perfect scenario foresight occurs when announced

# Results Vary Within Sectors





# Looking Ahead: A Paradigm Shift



## Regulatory Requirements

- » Fast emerging requirements to perform climate stress tests
- » Investor (and regulatory) pressure to disclose exposure and management response to climate risk
- » Directional but imperfect alignment between regulatory requirements across jurisdictions



## Uncertainty

- » AI, geospatial & satellite imagery, vision learning are revolutionizing how we look at and into corporations
- » Cost of meeting climate change targets could be dramatically affected by technology developments
- » Policy environment shifting but still fraught with lack of credible commitment



## Climate Change


- » Hard reality of the energy transition and of extreme weather events and chronic climate change on the economy
- » Social equity implications of transition (Just Transition) rising on the agenda domestically and internationally
- » Investing in adaptation, risk management, resilience: an imperative





MOODY'S | ESG Solutions

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