

# Climate Risks in Financial Assets

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# Climate risks are a source of financial risk

- Does climate-related costs already affect financial asset returns?
- What is the potential impact of future climate-related costs on financial asset prices?
- Do financial markets adequately price in these costs?

# This study...

- ... looks at empirical evidence in the academic and professional literature
- ... focuses on equity and debt instruments (stocks, bonds and bank loans)
- ... distinguishes between physical and transition risks

# Climate costs and financial asset valuation

- Climate costs impact the payoffs for equity and debt instrument issuers, as well as the value of the assets that they own
- Payoffs and asset values are key components for equity instrument valuations
- Payoffs determine debt instrument issuer's ability to serve debt (i.e. default probability)
- Asset values influence the value of debt instrument collateral (i.e. loss given default)

# From climate costs to change in asset prices

- One-off climate cost shock
- Revision in investors' expectations
- Amplification by financial market mechanisms

# Does climate-related costs already affect financial asset returns?

- Physical costs

Evidence that extreme weather events reduce firms' profits and stock returns, as well as increase non-performing loans

- Transition costs

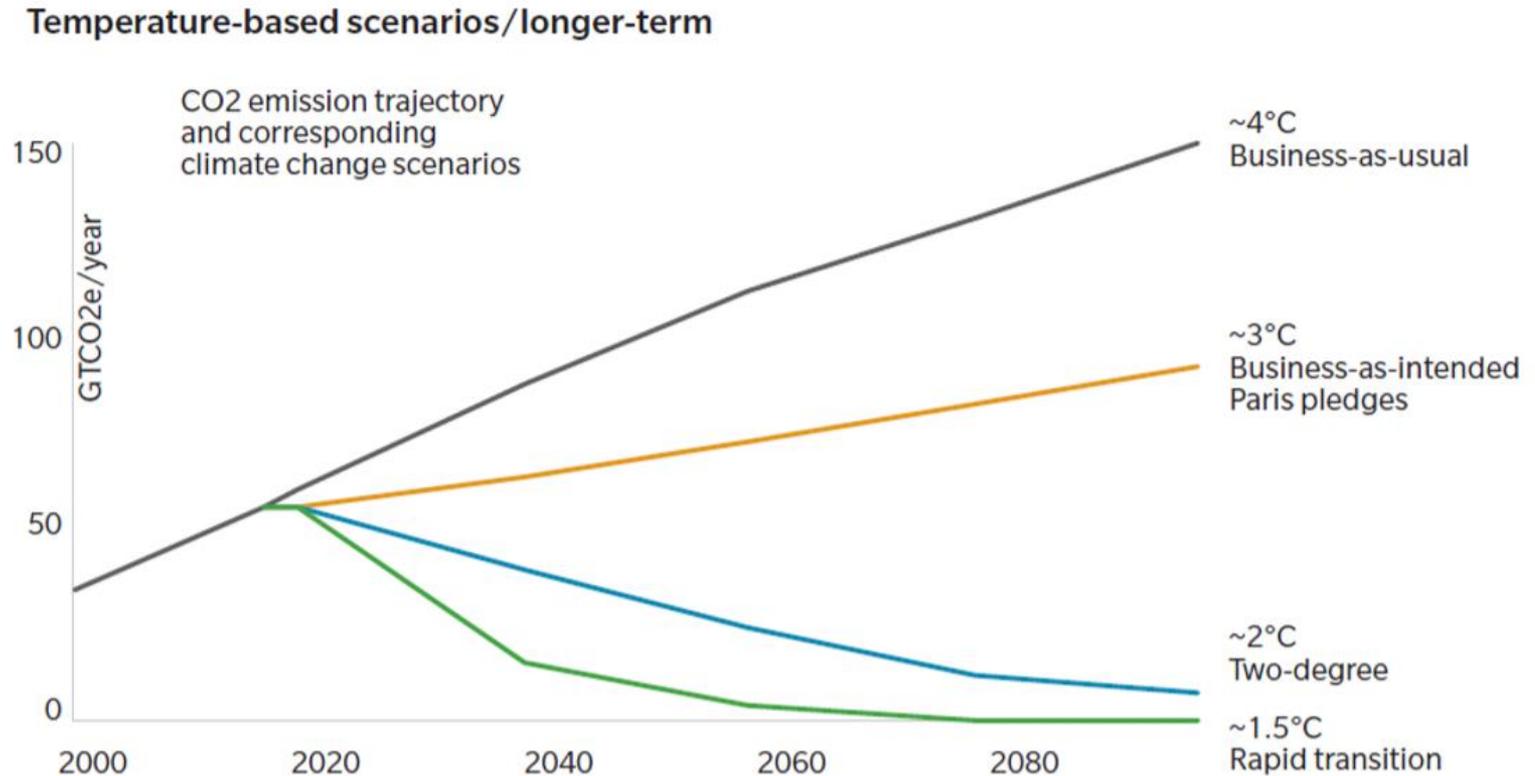
Early signs that transition costs impact profits and default rates for some firms more than for others

# What is the potential impact of future climate-related costs on financial asset prices?

- Climate stress tests are currently the most developed approach to assess climate financial risks
- Three key elements to build stress test scenarios:
  - Scope of transition
  - Shape of transition
  - Triggers of transition

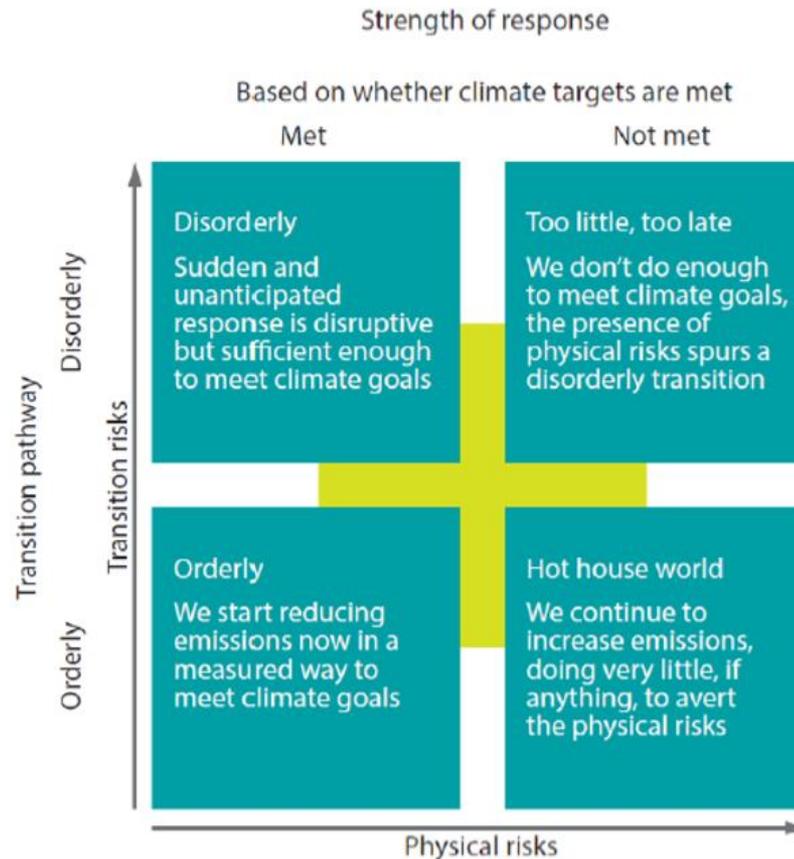
# Scope of transition

FIGURE 1: COMMON CLIMATE TRANSITION SCENARIOS

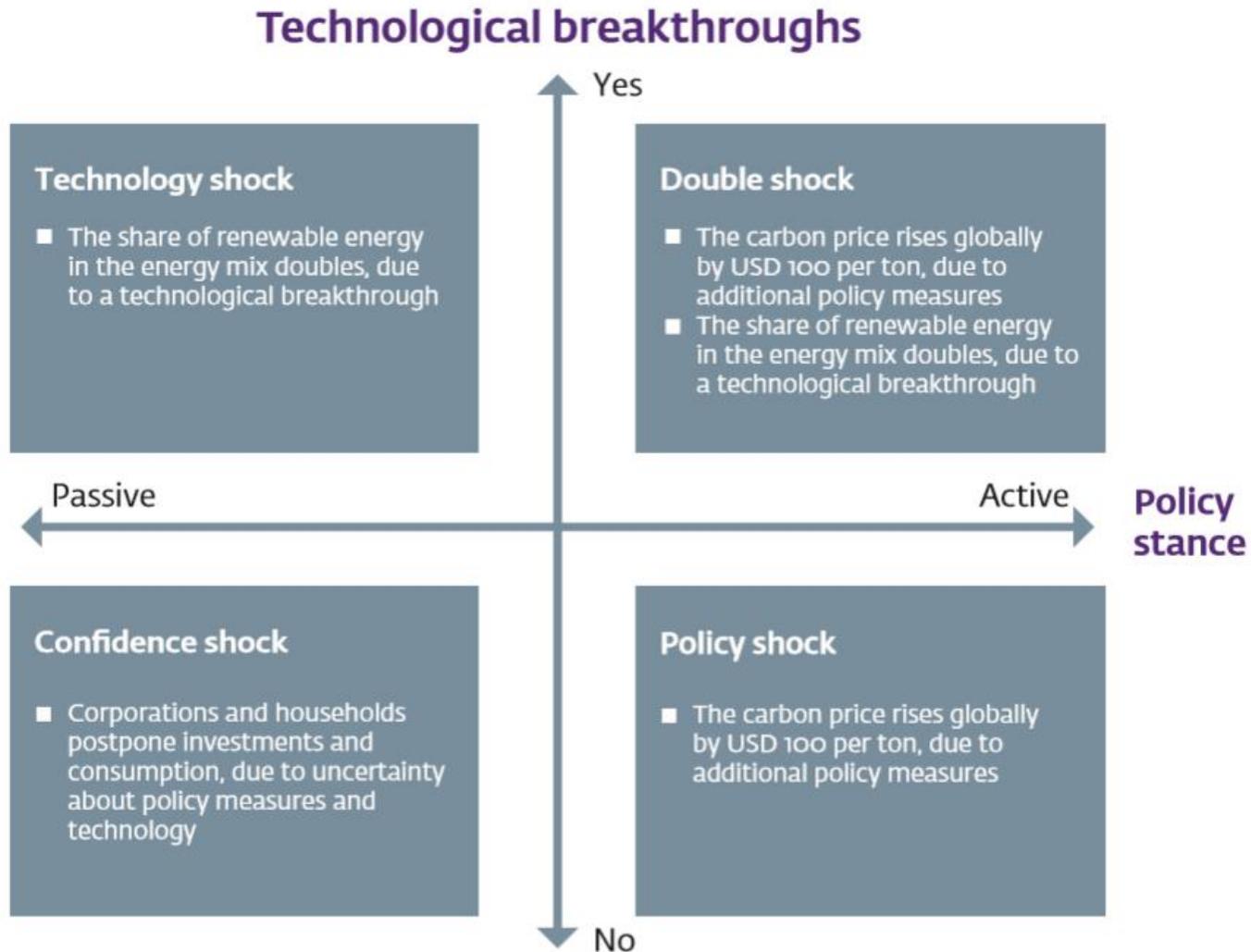


# Shape of transition

FIGURE 2: NGFS HIGH-LEVEL FRAMEWORK FOR SCENARIO ANALYSIS

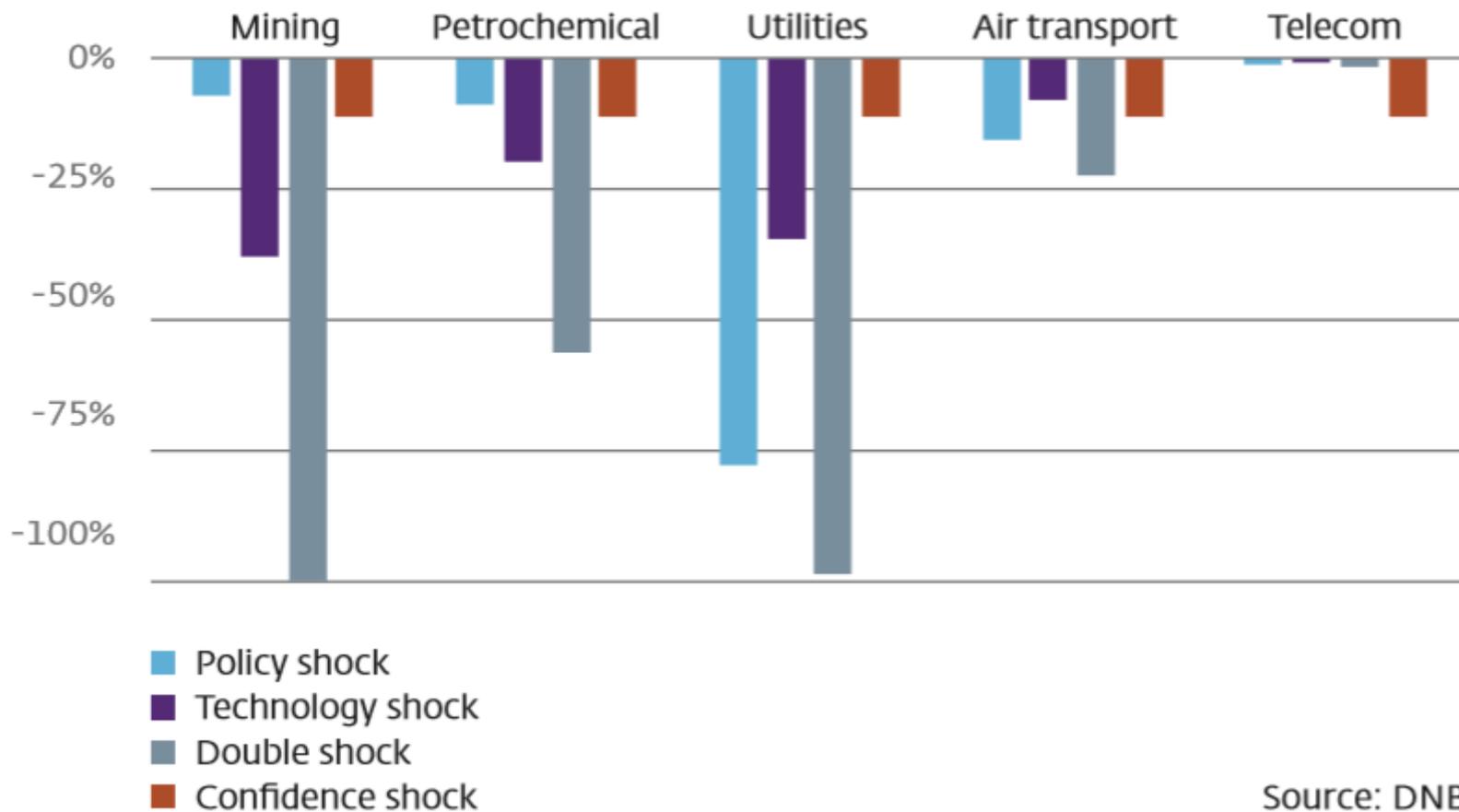


# Triggers of transition



# What is the potential impact of future transition costs on financial asset prices?

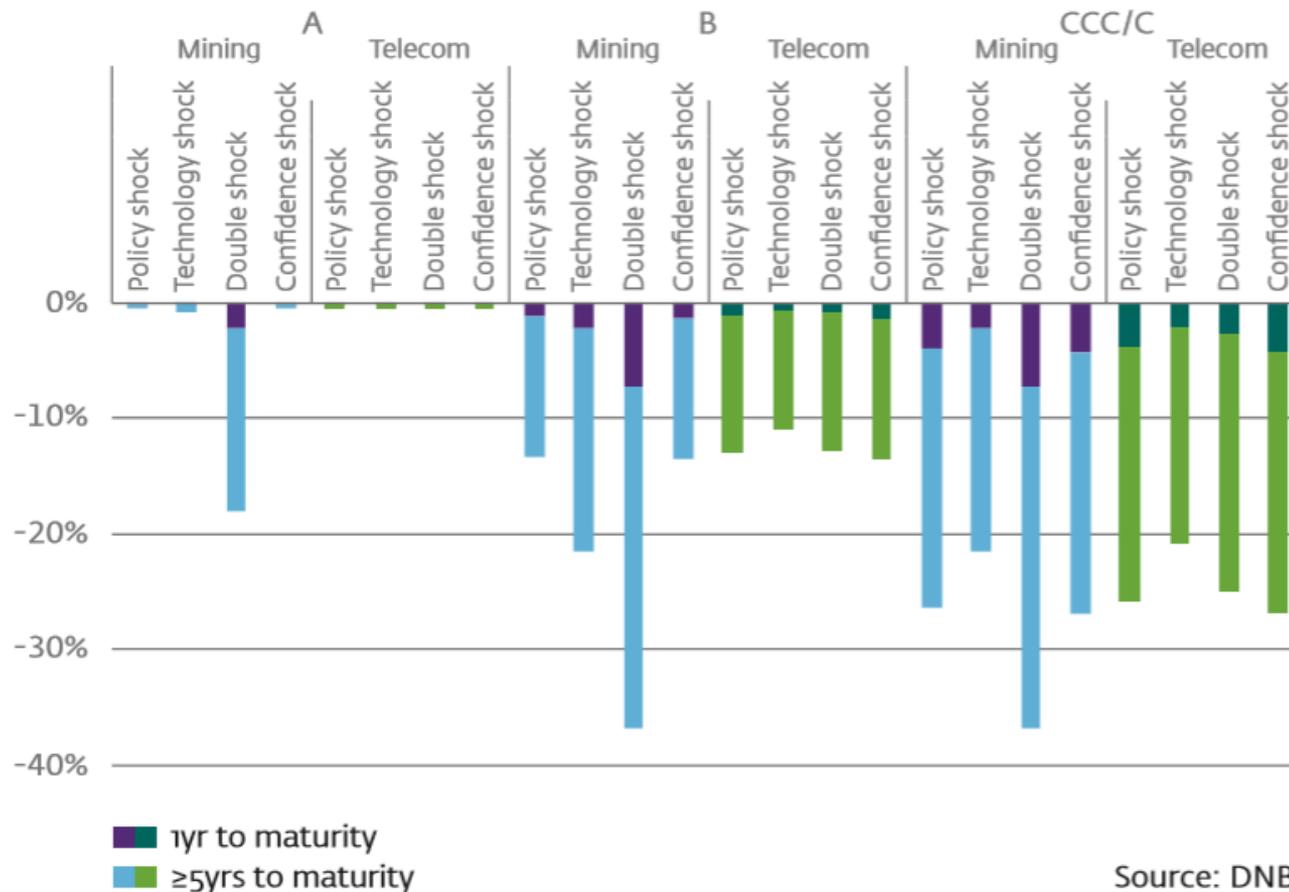
Figure 3.2 Equity price changes for selected industries



Source: DNB.

# What is the potential impact of future transition costs on financial asset prices?

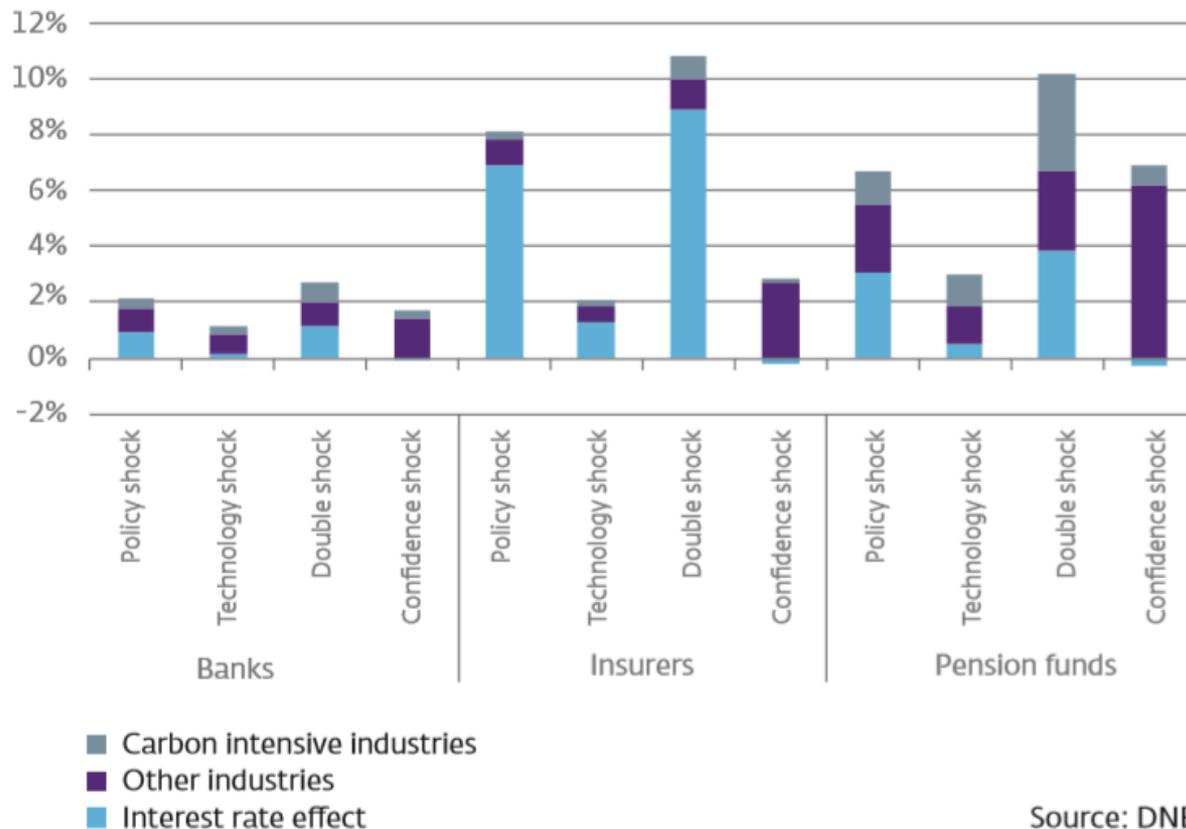
Figure 3.4 Bond price changes due to changes in the credit risk spread, by credit rating and industry



Source: DNB.

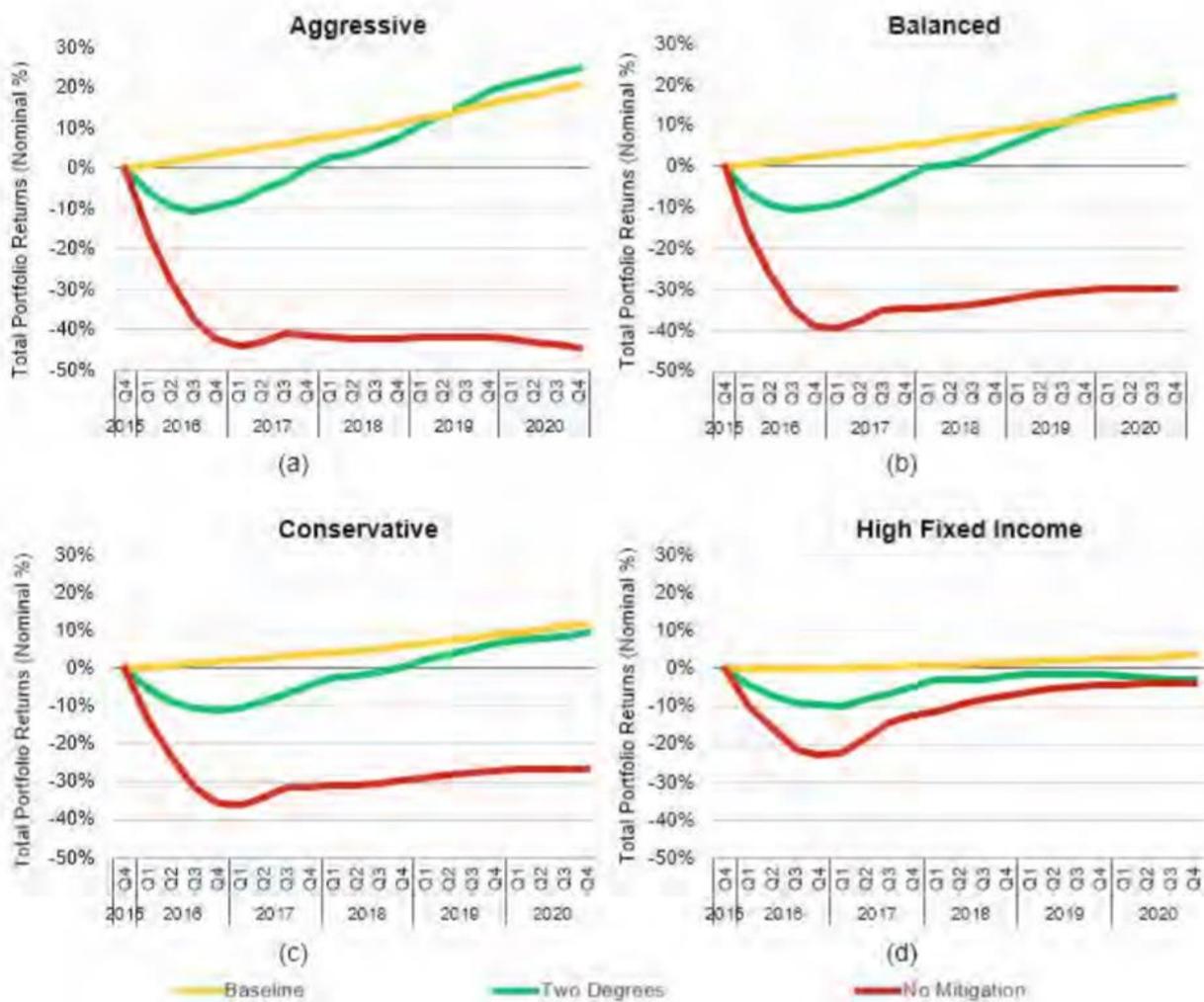
# What is the potential impact of future transition costs on financial asset prices?

Figure 4.2 Impact on assets as a percentage of total stressed assets per sector, disaggregated by risk driver



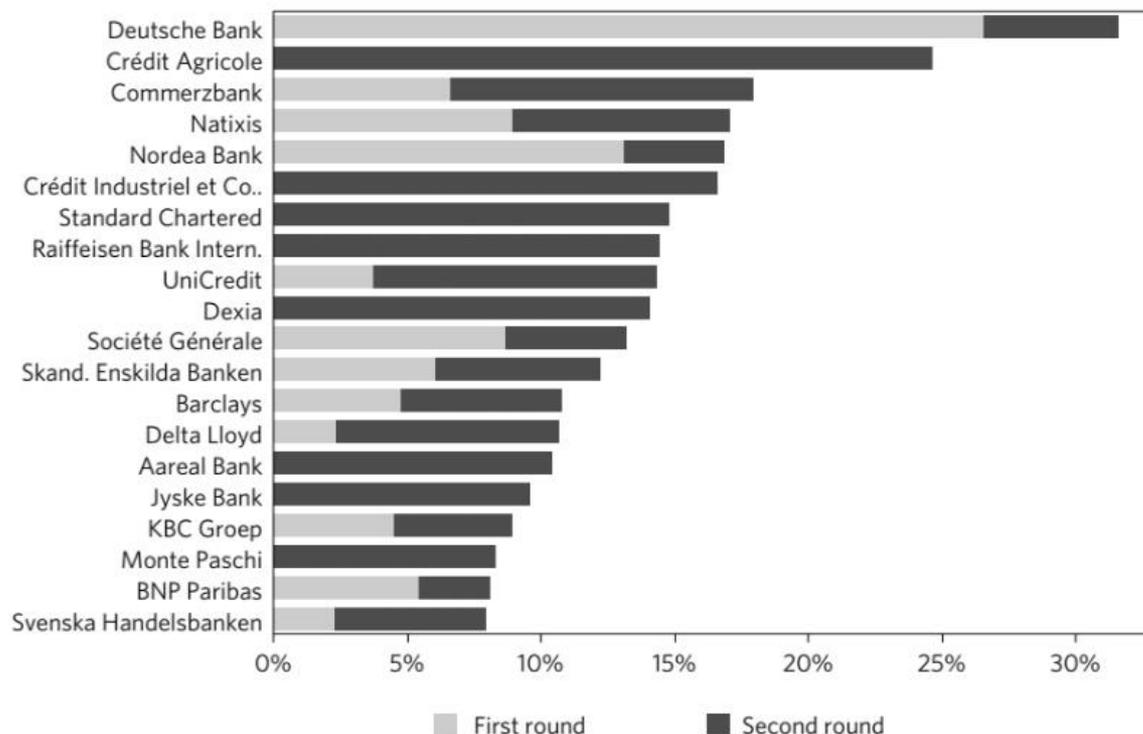
Source: DNB.

# Expectation revisions – Physical costs



Source: Cambridge Institute for Sustainability Leadership (2015)

# Financial second round effects



**Figure 3 | First- and second-round losses in banks' equity for the 20 most-severely affected EU listed banks, under the Fossil fuel + Utilities 100% shock.** Subsidiaries have not been taken into account.

Source: Battiston et al (2017)

# Do financial markets adequately price in these costs?

- Amplitude of losses crucially depends on whether climate costs are currently priced in by investors
- There is some evidence that financial markets currently do not fully reflect climate costs
- This concurs with NGFS's conclusion: "there is a strong risk that climate-related financial risks are not fully reflected in asset valuations."

# Recommendations

- Investors and financial supervisors should systematically assess climate risks
- Stress test should include swift revision of expectations and second round effects
- Disclosure initiatives are welcome but not necessarily a panacea
- More evidence is needed on the extent to which investors price in climate risks