

Special Chapter: **Climate policy and financial stability**

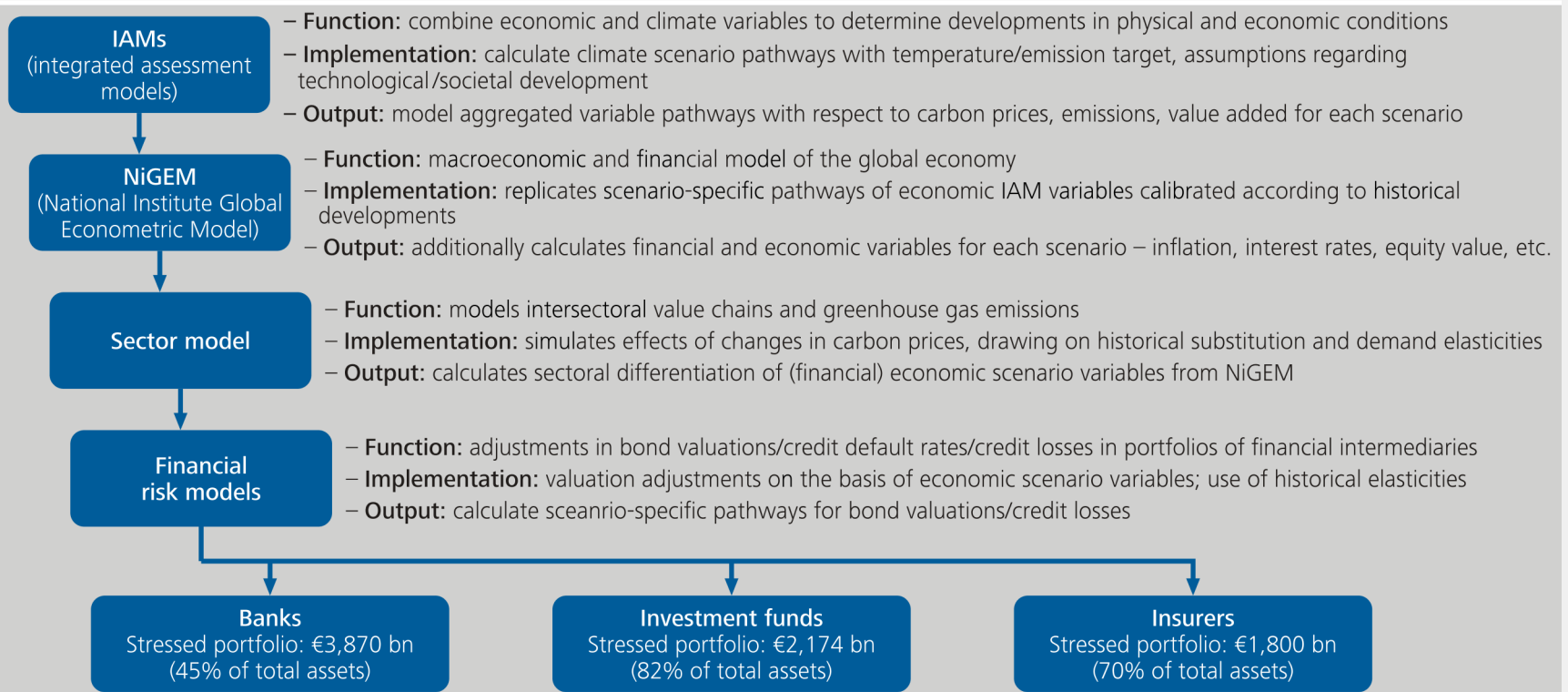
Financial Stability Review 2021

What is the effect of climate policy on Germany's financial stability?

- **What is modelled?**
 - Macroeconomic, enterprise-specific and financial sector-specific effects of climate change and policy scenarios
 - Transition risks: rise in carbon prices over the next ten years
 - Transmission channels: lower economic growth, reduced market value of assets with high carbon intensity, potential credit losses
- **What are the key findings?**
 - The financial system can tolerate a steep increase in carbon prices.
 - The German financial system is heterogeneous and therefore has varying exposure to transition risks.
 - Uncertainty and abrupt or significant changes in carbon price pathways amplify losses in the financial sector.
 - Delayed implementation of climate policy will greatly increase the costs of climate change to the financial system.

Model chain to analyse climate risk: from climate scenarios to real economic effects on the financial system

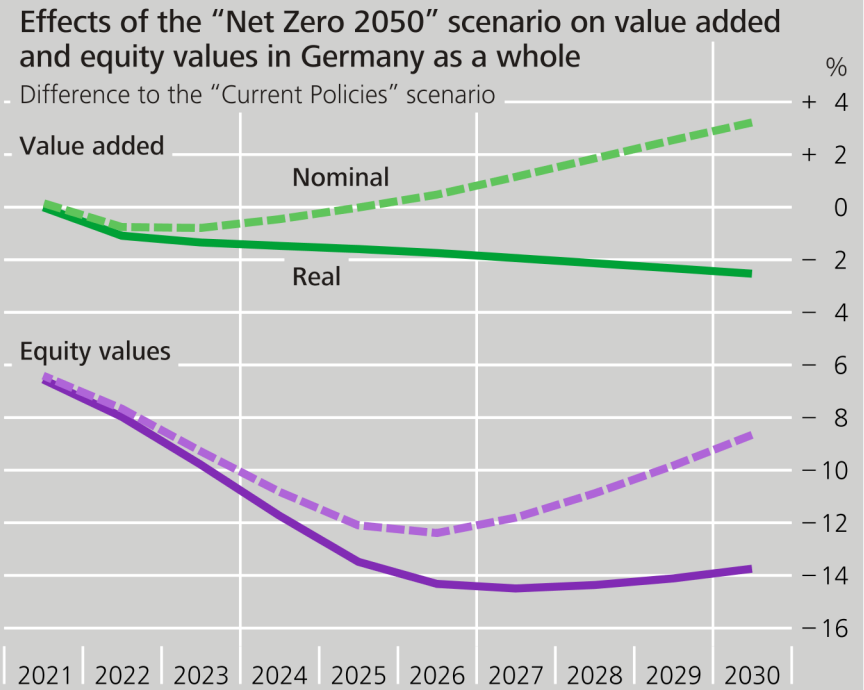
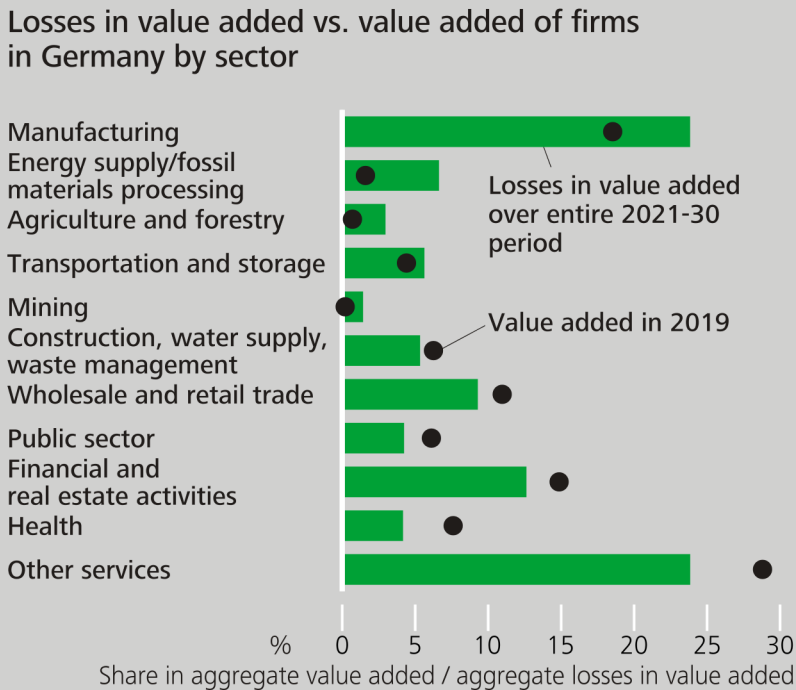
Model chain: effects of climate scenarios on the financial system



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Moderate losses in value added and equity value, which are concentrated in a few sectors, emerge in the real economy.

Losses in value added from a rise in carbon prices*

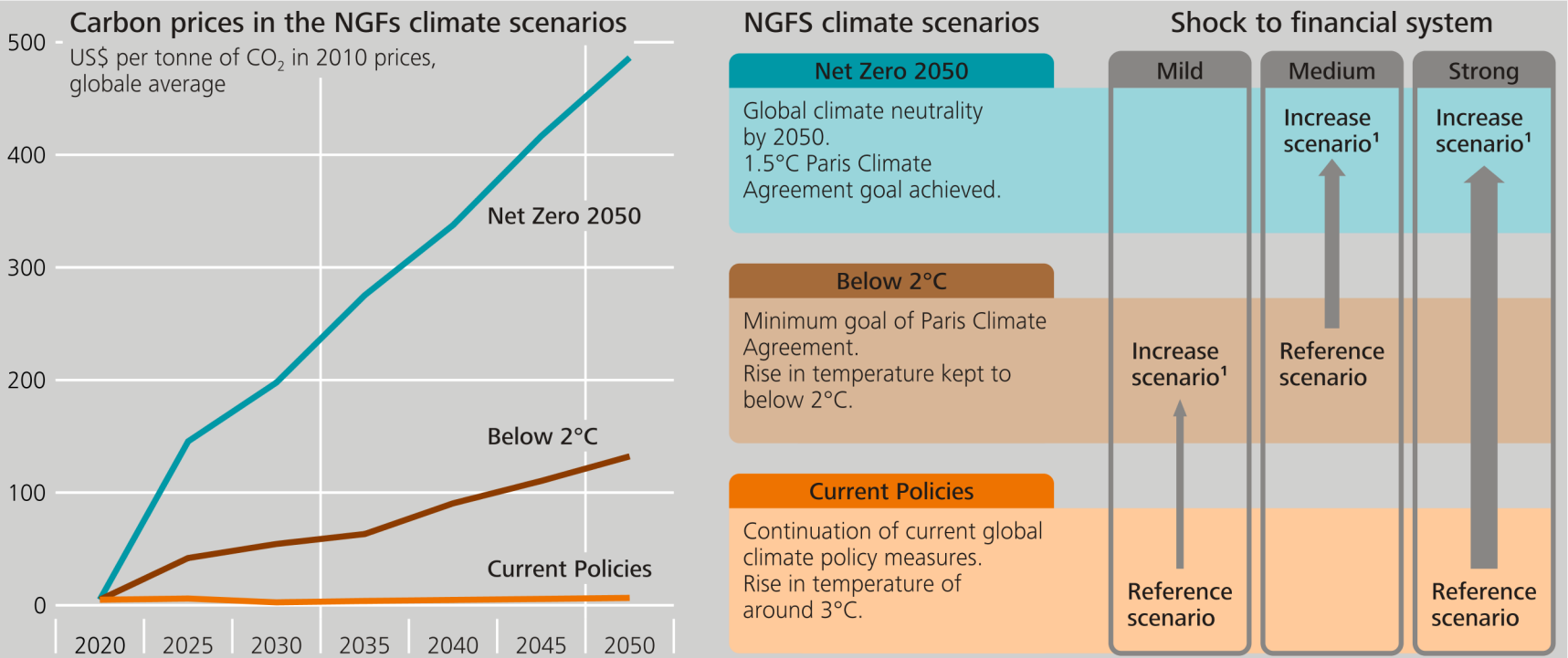


Sources: Federal Statistical Office, World Input-Output Database, I. Frankovic (2021), The Impact of Carbon Pricing in a Multi-Region Production Network Model and an Application to Climate Scenarios, Deutsche Bundesbank Discussion Paper, forthcoming and Bundesbank calculations. * Potential losses in value added from an increase in carbon prices from the "Current Policies" scenario to the "Net Zero 2050" scenario.

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Unexpected steep rises in carbon prices constitute a shock to the financial system.

NGFS climate scenarios and potential shocks to the financial system



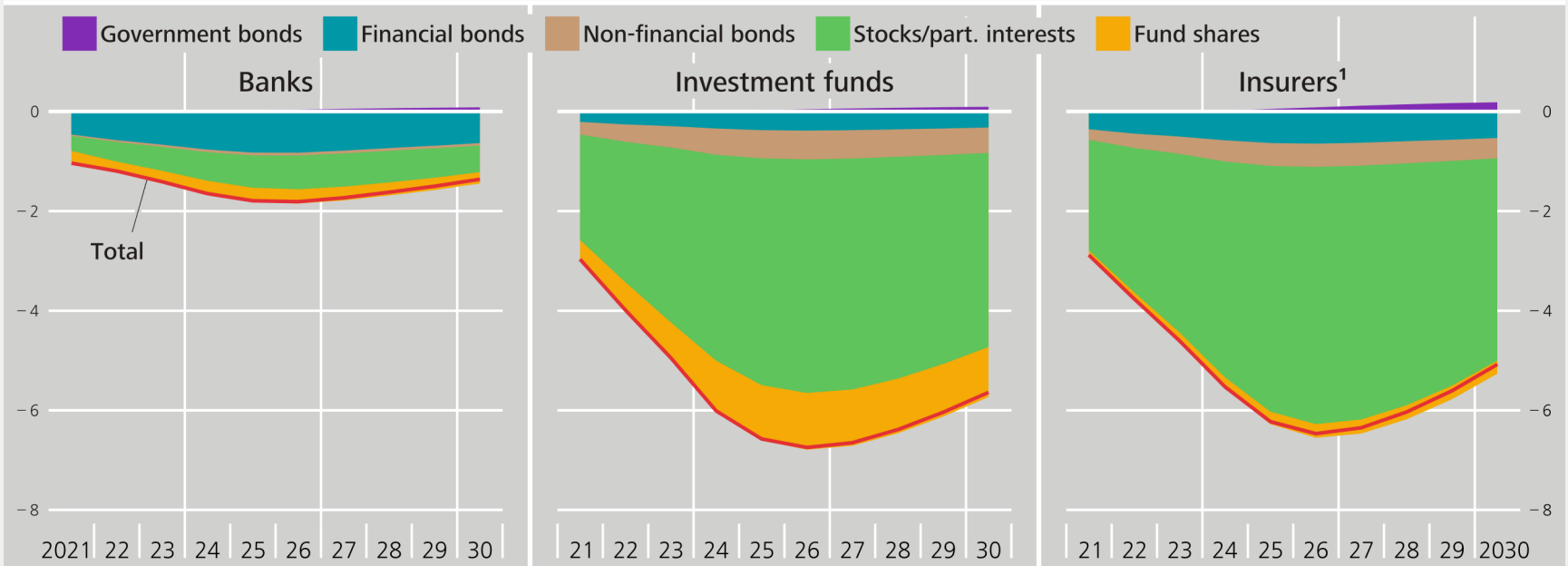
Source: Climate scenarios of the Network for Greening the Financial System (NGFS); for carbon prices, NGFS Scenario Explorer, MESSAGE model. ¹ Scenario positing a stronger rise in carbon prices than in the respective reference scenario.

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However, potential losses are manageable and are concentrated amongst insurers and investment funds.

Vulnerabilities of German financial intermediaries to climate-related transition risks: market risk by asset class in a scenario of a strong shock to the financial system*

Cumulated changes in value as a percentage of the stressed securities portfolios



Sources: Bundesbank statistics and Bundesbank calculations based on the scenarios of the Network for Greening the Financial System (NGFS). * Potential effects of scenario-dependent market price changes in the "Net Zero 2050" increase scenario compared to the "Current Policies" reference scenario. ¹ Insurers' holdings of German investment fund shares are assigned to the asset class of the securities held by the funds. The fund shares category itself only includes the portion for which this is not possible (e.g. foreign investment fund shares).

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Should carbon prices stay the same, higher costs can be expected on account of physical risk in the financial sector.

Comparison of Bundesbank and European Central Bank approaches to climate risk analyses

Analytical components	Bundesbank	ECB
Analytical focus	Vulnerabilities of German financial sector (banks, insurers, investment funds)	Vulnerabilities of euro area banks
Risks considered	Transition risks	Transition and physical risks
Time horizon	2030 (losses over 2021-30 period)	2050 (losses in 2050)
Scenarios considered	NGFS Phase II - No transition: "Current Policies" - Orderly transition: "Below 2°C" and "Net Zero 2050" - Disorderly transition: not considered	NGFS Phase I - No transition: "Current Policies" - Orderly transition: 1.5°C - Disorderly transition: 2°C (delayed implementation of climate action measures)
Level of analysis of real economic effects	Sector-specific	Firm-specific
Analysis of country-sector interactions and adaptation of sectoral value chains	Yes	No
Outcome/conclusion	- Moderate losses from transition - "Net Zero 2050" scenario leads to highest losses up to 2030 among scenarios considered	- Transition reduces overall costs of climate change and climate policy - "Current Policies" scenario leads to high losses in 2050
Drivers of outcome	At aggregate level, low losses in value added, low portfolio share of transition-sensitive economic sectors and limited remaining terms to maturity	High physical losses in 2050 in "Current Policies" scenario, mainly in southern Europe

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