Exploring climate change risk

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ADDRESSEE, PURPOSE & AUDIT TRAIL

METHODOLOGY AND INPUTS

DECISION MAKING FRAMEWORK

RESULTS

EXPLORING CLIMATE CHANGE RISK

CONCLUSIONS AND NEXT STEPS

APPENDICES

Climate change risk

Exploring the impact of climate change risk

Climate change is too uncertain to "build in" to our model directly like we do with e.g. inflation risk.

Instead we see how the results change if we stress the model in three different scenarios.

Given it is a stress test, all three scenarios are "bad". Therefore need to consider all three scenarios to understand the strategy's resilience

Purpose is to test resilience, not re-run all the previous analysis.

Climate scenarios give us extra information to help make our decision, they don't replace existing modelling results

Testing "resilience" (TCFD requirement)

What could this mean?

- Does the chosen strategy still meet the chosen targets under all scenarios?
- Does it miss them by an acceptable margin (they are stress tests after all)?
- Does it satisfy other risk measures (e.g. short term downside risk)?
- Is it still the 'best' option even when compared against other options under the climate scenarios?

Judgement required when deciding how to test resilience

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Our scenarios are based on the speed and strength of the response to climate change

Green revolution

Concerted policy action starting now e.g. carbon pricing, green subsidies

Public and private spending on "green solutions"

Improved disclosures encourage market prices to shift quickly

Transition risks in the short term, but less physical risk in the long term

High expectation of achieving <2°C

Delayed transition

No significant action in the short-term, meaning response must be stronger when it does happen

Shorter and sharper period of transition

Greater (but delayed) transition risks but similar physical risks in the long term

High expectation of achieving <2°C
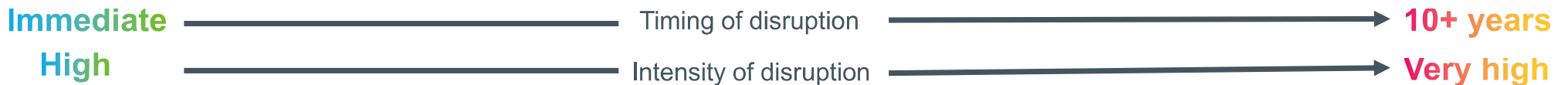
Head in the sand

No or little policy action for many years

Growing fears over ultimate consequences leads to market uncertainty and price adjustments

Ineffective and piecemeal action increases uncertainty

Transition risks exceeded by physical risks

Low/no expectation of achieving <2°C

| **Immediate** | Timing of disruption | **10+ years** |
| **High** | Intensity of disruption | **Very high** |

All three scenarios are difficult – they are not "good, medium and bad" options

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In each scenario we assume a disruptive period of high volatility

Our scenarios assume that

- There will be a period of disruption linked either to the response to climate risk (transition risks) or the effects of it (physical risks)

- This disruption will lead to high volatility in financial markets

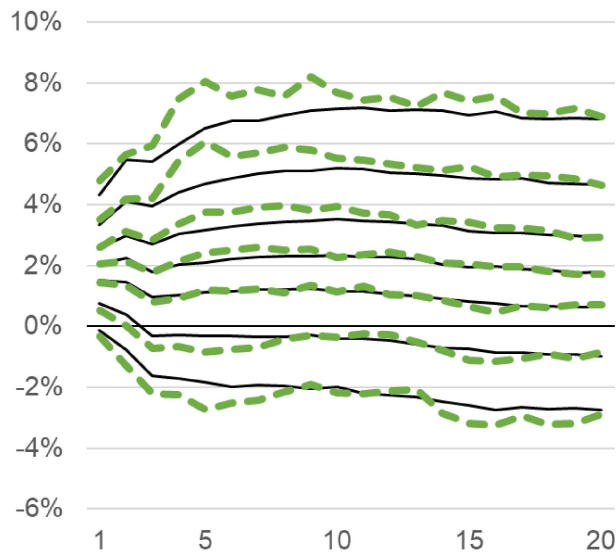- The later the period of disruption, the more pronounced it will be

Scenario	Volatility criteria*			
	Years 1-5	Years 6-10	Years 11-15	Years 16-20
Green revolution	Very high	Moderate	Moderate	
Delayed transition		Very high	High	
Head in the sand			High	Very high

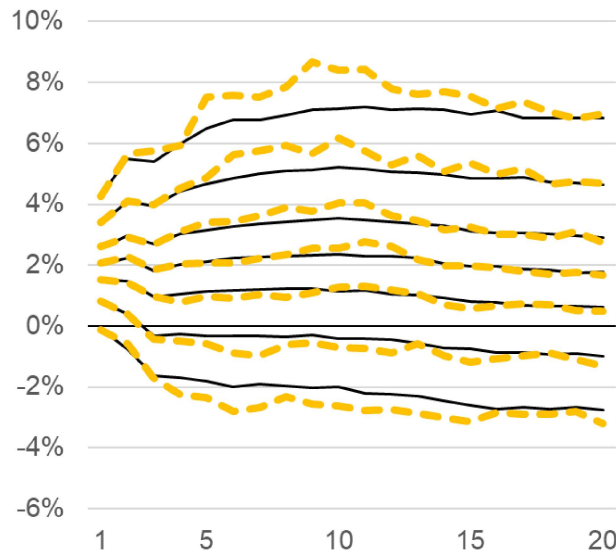*Volatility criteria: Moderate = 60th percentile, High = 75th percentile, Very high = 85th percentile

We use volatility criteria to "tilt" the modelling results towards simulations with higher volatility in the periods in question

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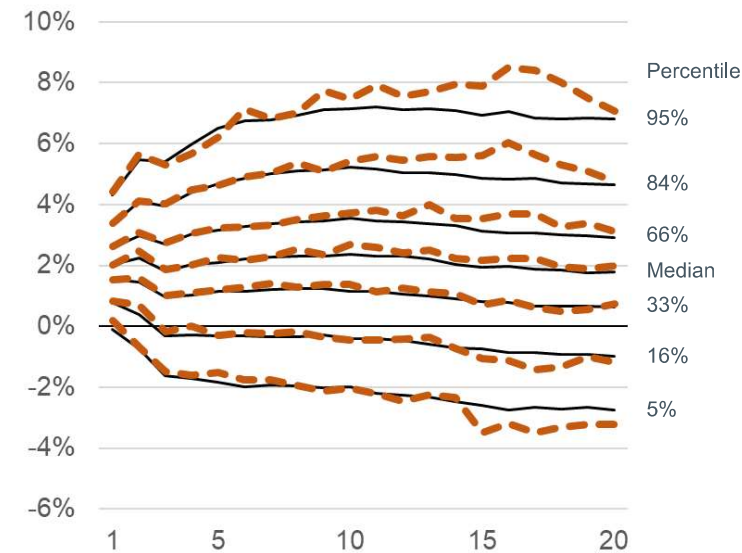
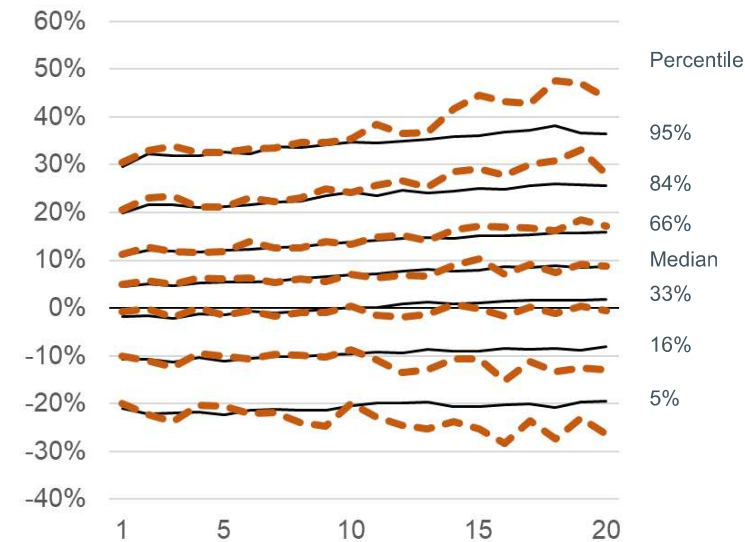# Example of scenario impact: CPI inflation

Green revolution

Delayed transition

Head in the sand

Scenario views widen the distribution of key variables in different time periods

Solid black lines are the unweighted base case

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Example of scenario impact: Global equity returns

Green revolution
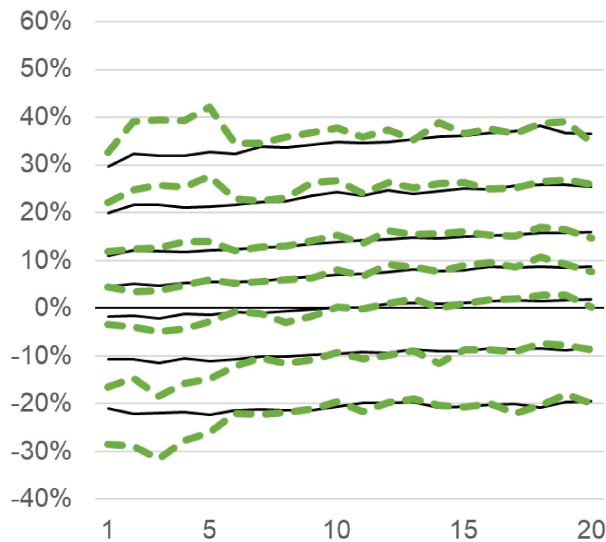
Delayed transition

Head in the sand

Scenario views widen the distribution of key variables in different time periods

27   Solid black lines are the unweighted base case

Example of scenario impact: equity shock
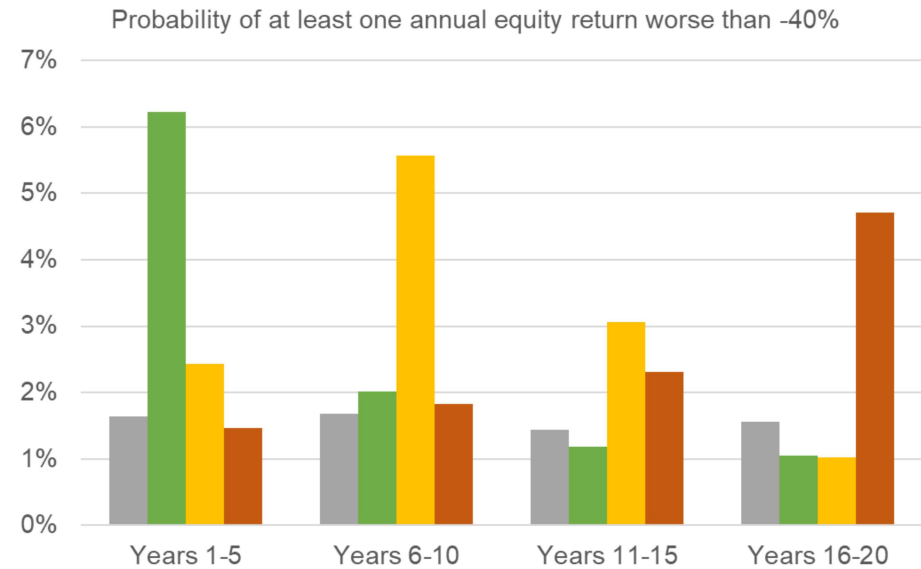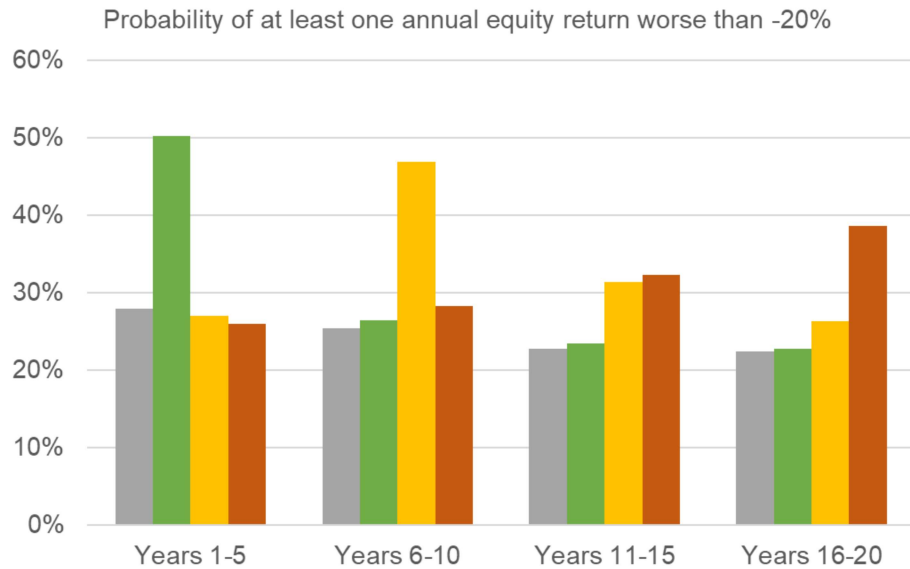
Bars from left to right: Unweighted base case (grey), Green revolution, Delayed transition, Head in the sand

Increased volatility gives a much higher chance of significant equity shocks

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Climate stress test results

- The LoS and downside risk are 3-5% worse in two of the climate scenarios compared to the unweighted base results

- These changes aren't negligible but the results are still strong enough to support a contribution freeze or reduction

- The impact on the results for other contribution patterns are similar

- These results are reassuring – they tell us that the core model does not appear to be significantly underestimating climate risk
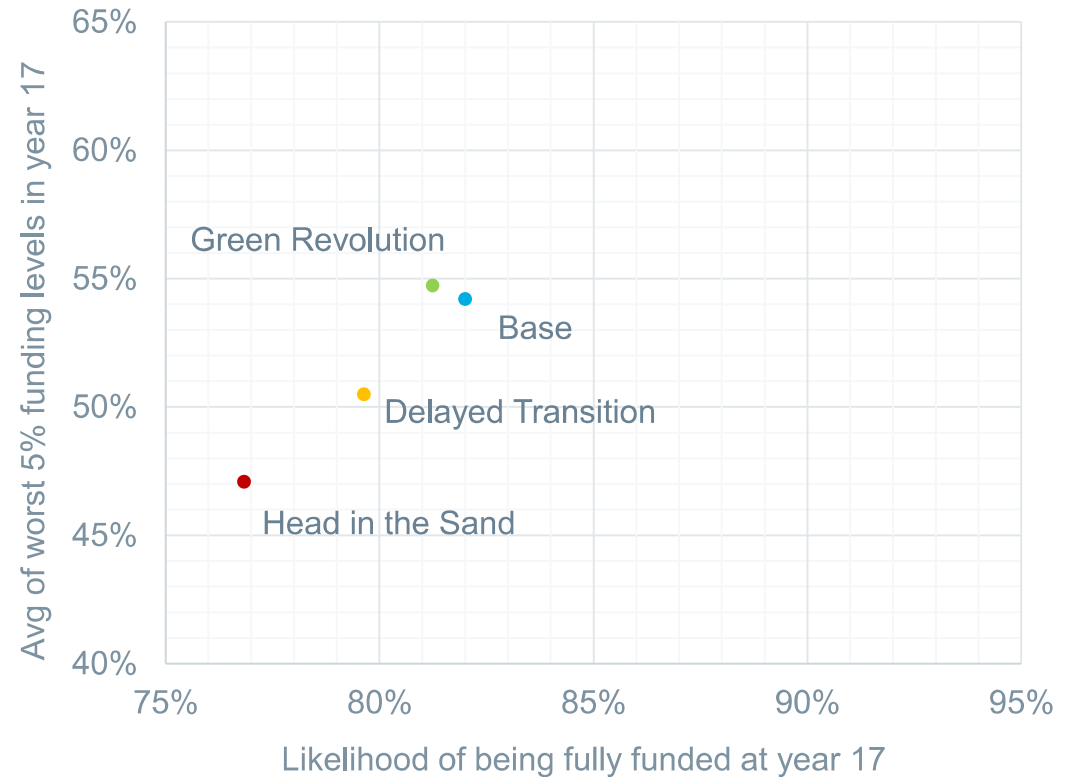

Chart based on long term investment strategy and freezing contributions for 3 years

The stress test results suggest that the modelled strategies are resilient to climate risk

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