Monetary Policy

Part 3: Monetary Policy at the Zero Lower Bound on Nominal Interest Rate

Exercise 10: Climate Change and Monetary Policy

Dominik Hecker
University of Würzburg

Task 1(a):

Through which channels does climate change affect monetary policy?

Task 1(a):

Three main channels:

1.) Impair or affect the transmission of monetary policy (see next slide)

2.) Indirect effects on monetary policy via affecting drivers of r^*

3.) Identification of shocks further complicated

Task 1(a): on impairing the transmission channel

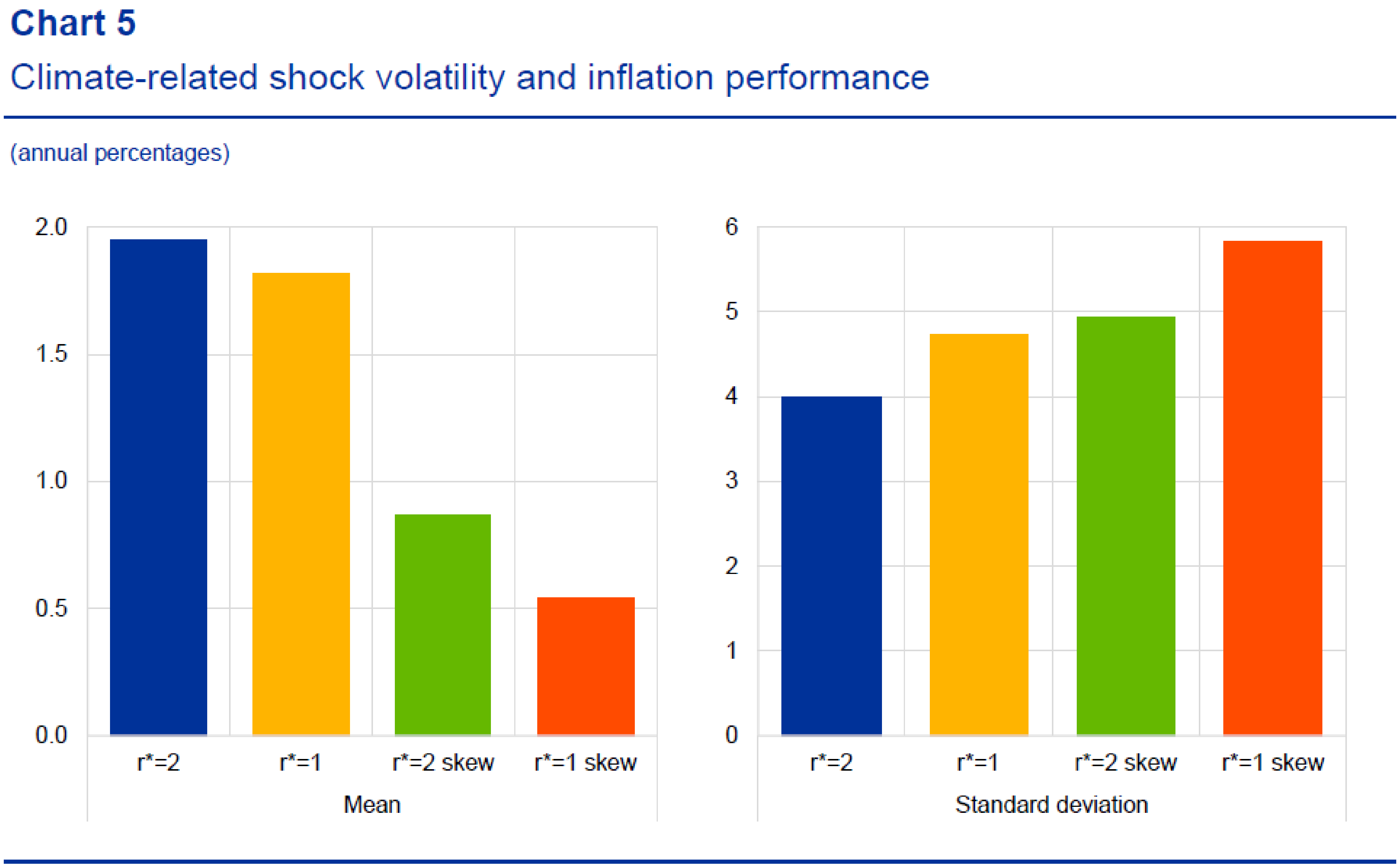
Table 2

Monetary policy transmission: effects of climate change

	Physical risk from more common extreme weather events and persistent warming	**Transition risk** from carbon pricing and reducing emissions
Interest rate channel	Non-interest cost factors become more relevant, lowering investment and saving response to interest rate changes.	Uncertainty about timing and speed of policy response raises risk premia and volatility. Natural rate of interest affected.
Credit channel	Financial losses reduce borrower net worth, bank collateral and profitability. Non-performing loans constrain credit supply. Uncertainty reduces market funding of banks.	Financial losses reduce borrower net worth, bank collateral and profitability. Non-performing loans constrain credit supply. Uncertainty reduces market funding of banks.
Asset price channel	Physical risks destroy capital and residential property. Financial losses lower firm valuations.	Demand shifts across sectors and regions. Stranded assets.
Exchange rate channel	Devaluation incentive for short-term competitiveness gain. Higher volatility.	Carbon border adjustment may disrupt trade routes and global value chains.
Expectations channel	Monetary policy less predictable since shock persistence uncertain, blurring supply/demand.	Time-inconsistent transition policies reduce monetary policy credibility and effectiveness of forward guidance.

Source: ECB Workstream on Climate Change, Occasional Paper Series No. 271, p. 12.

Task 1(a): on r^*-driven effects



Source: ECB Workstream on Climate Change, Occasional Paper Series No. 271, p. 14.

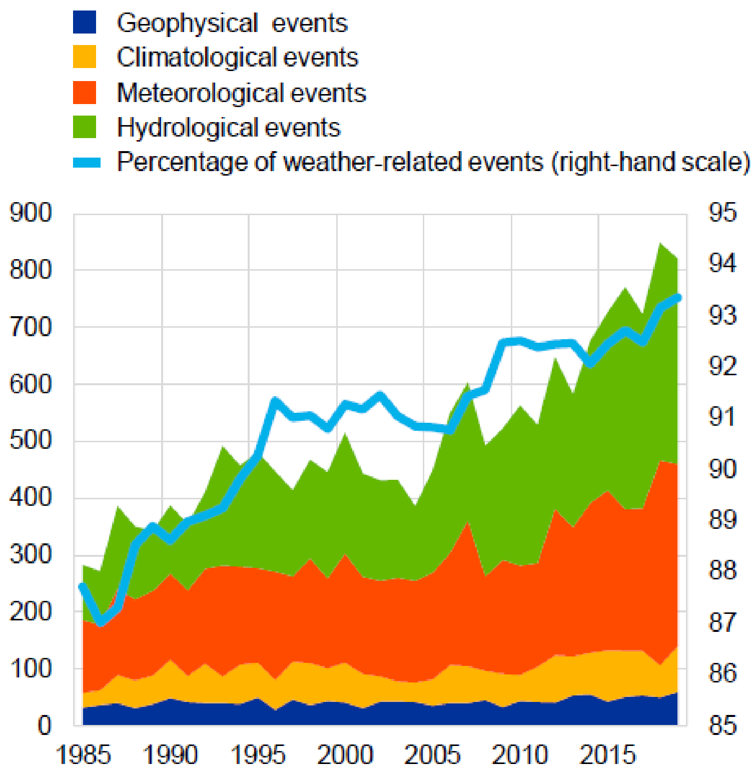
Task 1(a): on the identification of shocks

Chart 8

Extreme weather events and their probability

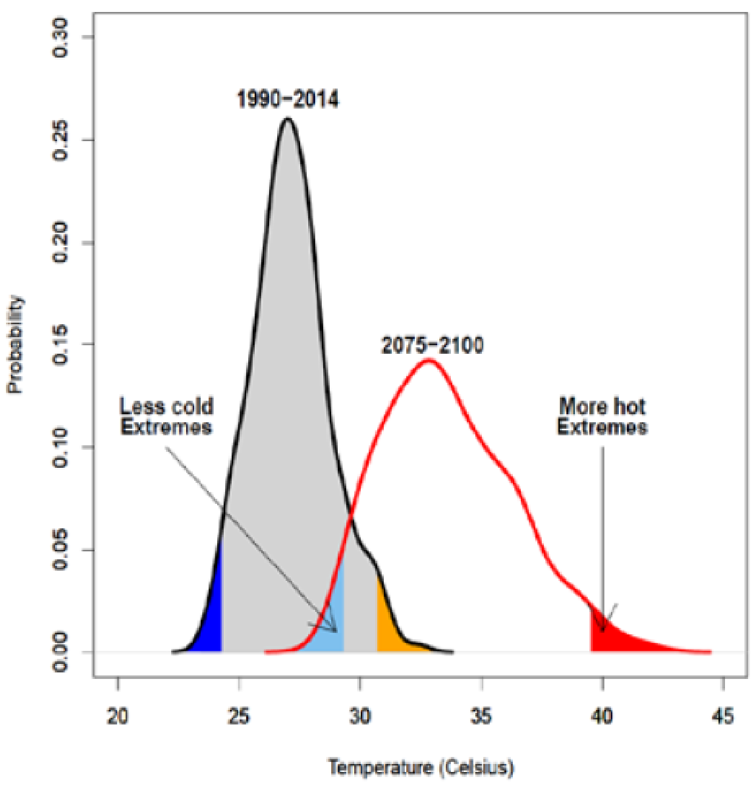
a) Extreme natural events, 1985-2019

(number and percentage of total events)



b) Probability of extreme weather events

(probability distribution)



Source: ECB Workstream on Climate Change, Occasional Paper Series No. 271, p. 27.

Task 1(b):

What strategy is the ECB pursuing to integrate climate change into its actions?

Task 1(b):

ECB's press release (8 July 2021):

"The ECB's Governing Council is strongly committed:

- to further incorporating climate change considerations into its monetary policy framework;
- to expanding its analytical capacity in macroeconomic modelling, statistics and monetary policy with regard to climate change;
- to including climate change considerations in monetary policy operations in the areas of disclosure, risk assessment, collateral framework and corporate sector asset purchases;
- to implementing the action plan in line with progress on the EU policies and initiatives in the field of environmental sustainability disclosure and reporting."

Task 1(b):

ECB’s strategy:

1.) Understanding the impact of climate change for monetary policy: macroeconomic modelling, statistical data for climate change risk analyses

2.) Incorporate climate change criteria when acting on secondary market: purchase of green bonds, disclosure requirements

3.) Stress-test balance sheets: account for risk exposure to climate change, collateral save against these risks?