Severe Weather and the Macroeconomy

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What is the paper about?

- Smooth (deterministic) transition VAR to measure the **time-varying impact of severe weather shocks** on aggregate economic activity.

    - Smart way to test for **time variation** of both the structural shocks and the endogenous response of the economy.

    - ACI available at **monthly frequency** as proxy for extreme weather.

    - Short-run identification: economy does not affect weather contemporaneously.

    - Effects of weather changed over time, they are **more severe today**.

    - This happens despite the variance of weather innovations did not change too much ⇒ the **economy did not adapt**.

- 3 questions/comments.

- Policy implication #1: **adaptation and insurance**.

- Policy implication #2: **supply or demand shock**?

Question 1: A Different Way of Reading the Results?
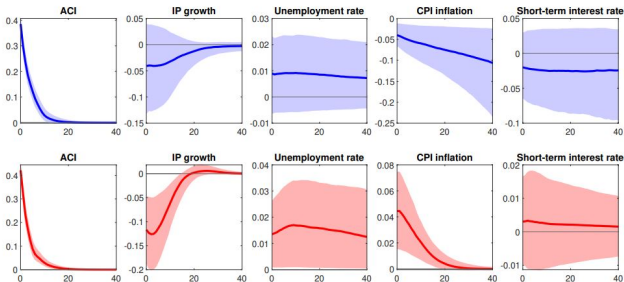
- Say I want to plot the blue world response for a size of the shock that gives the same level of IP fall from the red.

- I would need ≈ **3 std shock** in the blue world.

- Could it be that red world features **fatter tails**? Would this be a problem?

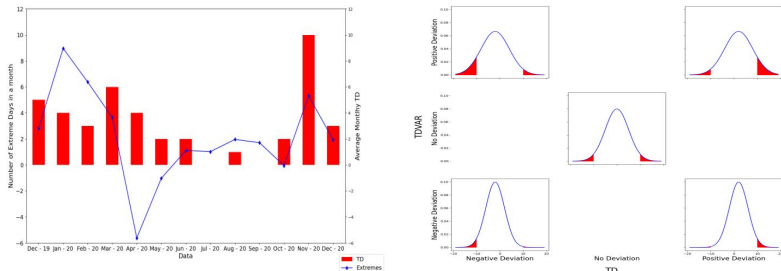# Question 2: How suitable is the ACI?

Figure: From Bortolan, Dei, and Taschini (2023).

- Bortolan et al. (2023): not only about extremes, also about **volatility & distribution shape**!

- They build index of deviation in **temp. variability from historical mean**: important driver of energy consumption & financial markets.

Policy Implication 1: Insurance...

Figure: ECB and EIOPA (2023) discussion paper on climate insurance gap.

- Heterogeneous gap & **expected to widen** due to increasing premiums.

- **Both demand side** issue (consumers not fully aware) and **supply side** issue (moral hazard + difficult risk to manage).

- Several options: PPPs, EU-wide fund,cat bonds, targeted prudential regulation...
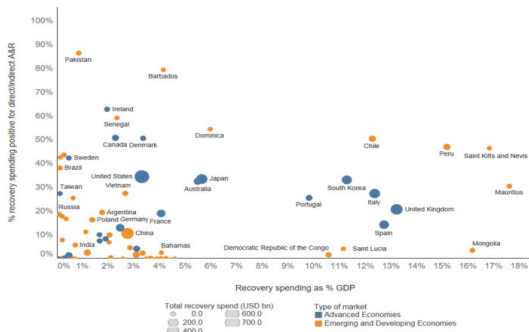
# Policy Implication 1: ...and Adaptation

Figure: Fankhauser et al. (2023) Case studies in adaptation finance.

- Effects on **adaptation and resilience** of the Global Recovery Observatory dataset: ≈ 8000 COVID related fiscal spending policies.

- We need **more and better adaptation spending**. Better ways to measure investment in adaptation at the local level.

Question 3: Heterogeneity?

- Physical risk (and weather) is **extremely heterogeneous** across space.

- Also insurance gap and adaptation spending are.

- Hiding this heterogeneity as you do may **understate the economic significance** of the effects.

- ACI is available for different regions of the US: why not a **Panel VAR**?

Policy Implication 2: Demand or Supply Shock?
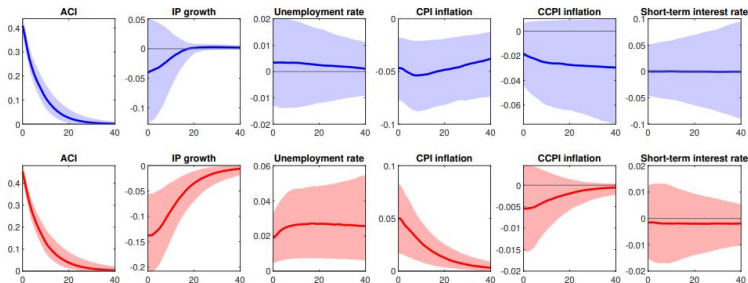
- Blue world: demand shock. Red world: supply shock.

- Guerrieri et al. (2023): in multi-sector economies supply shocks can **trigger shortfalls in demand** larger than the shocks themselves.

- Optimal policy response: **insurance to workers** and sectors affected by the original shock.

Policy Implications & Conclusion

- Guerrieri et al. (2023): in the red world, **government response is more efficient** by providing more insurance, so that it offsets the Keynesian supply shock.

- Is this efficient in the real world? Probably not, Mallucci (JIE, 2022): expected increase of **physical risk poses threats to public finance**.

- But then...**we need more insurance, we need more adaptation**.

- Hopefully, we will run again this exercise in 20 years and see that we are back in the blue world.

- Great paper, looking forward for the published version!