

# Parallel session B2. Climate shocks and uncertainty

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# Three papers with different approaches

1. *The impact of the weather on the UK economy* - Batten
  - Empirical paper using regressions
  - Regional climate data and industries output
2. *The distributional implications of climate policies under uncertainty* – Eydam
  - Two-agent new Keynesian model
3. Shocks to transition risk – Meinderding et al
  - Bayesian structural vector autoregression (BSVAR)
  - Long-short equity portfolios; ESG database (carbon emission and energy use)
  - News index

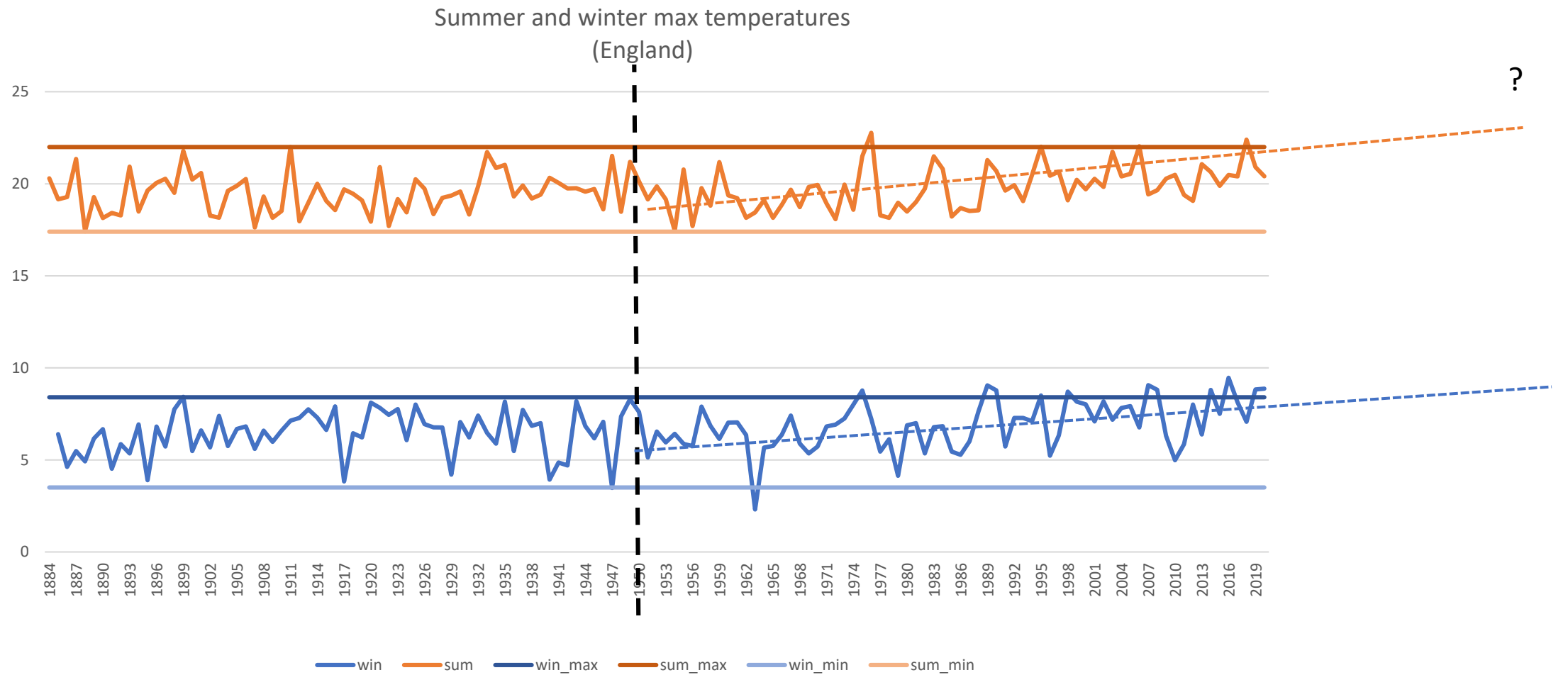
# 1. The impact of the weather on the UK economy – Sandra Batten

- What are the effects of seasonal weather (temperature and precipitation) on economic growth?
  - Per region
  - Per industry
  - Time period 1998-2020
  - Modelling strategy a la Colacito et al., (2019)
- Main finding: “it depends” (Season, Region, Industry)
  - Rainy winters & springs discourage shoppers but rainy autumns encourage them
  - Rainy summers affects construction

# Comments

- Simple and clear paper
- More descriptives

# Extent of climate change



# Comments

- Simple and clear paper!
- More descriptives
- What are the implications of your findings?
  - What does it mean for the regions? For the industries? Is there government policy needed?
  - Or are the effects so small that no action is needed?
- Discussion of future effects
  - Endogeneity of industry activities and weather (tourism)
  - Will activities move between regions?

## 2. The Distributional Implications of Climate Policies Under Uncertainty – Ulrich Eydam

- What are the (short-run) implications of emission reduction schemes on the German economy?
  - Two-agent new Keynesian model
- Four instruments
  - Constant price (tax)
  - Flexible price
  - Cap and trade system (permits)
  - Intensity target

# Main findings

- Price instruments are preferred
- Price instruments:
  - Higher aggregate welfare
  - Lead to neutral - moderately progressive distribution effects
  - Results in lower volatility in output and consumption
- Quantity instruments (cap&trade):
  - Lead to regressive distribution effect (loss for wealth poor HHs)
  - Entail large costs of adjustment in changes in climate policies



# Comments

- Two agent TANK model:
  - one agent who is completely hand to mouth and does not save and one agent who does save and in this case owns the entire capital stock.
  - The distribution of wealth is trivial, not possible to include wealth inequality
    - Eydam therefore includes income inequality?
  - Assumption both agents work the same number of hours; one wage that is determined by a union.
    - This means the change in inequality is therefore determined by changes in the marginal product of capital.
  - Empirically relevant in the case of distributions and climate policy?
- Solution method (second order perturbation):
  - Can be imprecise (applies to all perturbation techniques)
  - Uncertainty by construction will have a limited effect compared to higher order approximations

### 3. Shocks to transition risk – Meinerding et al

- Government policies, new technologies or changed household preferences related to climate change result in a process of adjustment towards an economy with lower carbon emissions.
- This will impact “green and brown” firms (by making certain industries, firms or products obsolete).
- This is labelled “transition risk”.
- (Positive) shock to transition risk: new economic news on climate change impacts the valuation of brown firms differently from green firms

# Shocks to transition risk – Meinerding et al

- Analyse the economic impact within a macro-financial BVAR framework
- Data:
  - Combine two measures by identifying months of major news that occur in tandem with extreme portfolio returns
    - Long-short equity portfolios
    - Monthly newspaper-based index

# Main findings

- Positive transition risks shocks have effects:
  - Significantly lower the economic outlook (reduced industrial production and prices)
  - Deteriorate credit conditions (EBP, NFCI)
  - Cause decline in the industrial production of climate-sensitive sectors like “energy materials” (but not in other sectors)
- Negative transition shocks have no discernable effects

# Comments

- You use the terms risk and uncertainty in the paper, without making clear what the difference is (Knight):
  - Risk: you do not know the outcome but can measure the odds
  - Uncertainty: there is not information to set the odds
- How do you avoid imposing a cause-effect relationship by:
  - Requirement that shocks are due to new information
  - Construction of database that links major news with extreme portfolio returns
- Policymakers should “constantly communicate the most likely transition path” ~ which policymakers? Rep versus Dem
- Broader set of countries: small countries feasible? Global news, multinationals (Shell)