Forecasting spot price in the UK natural gas market

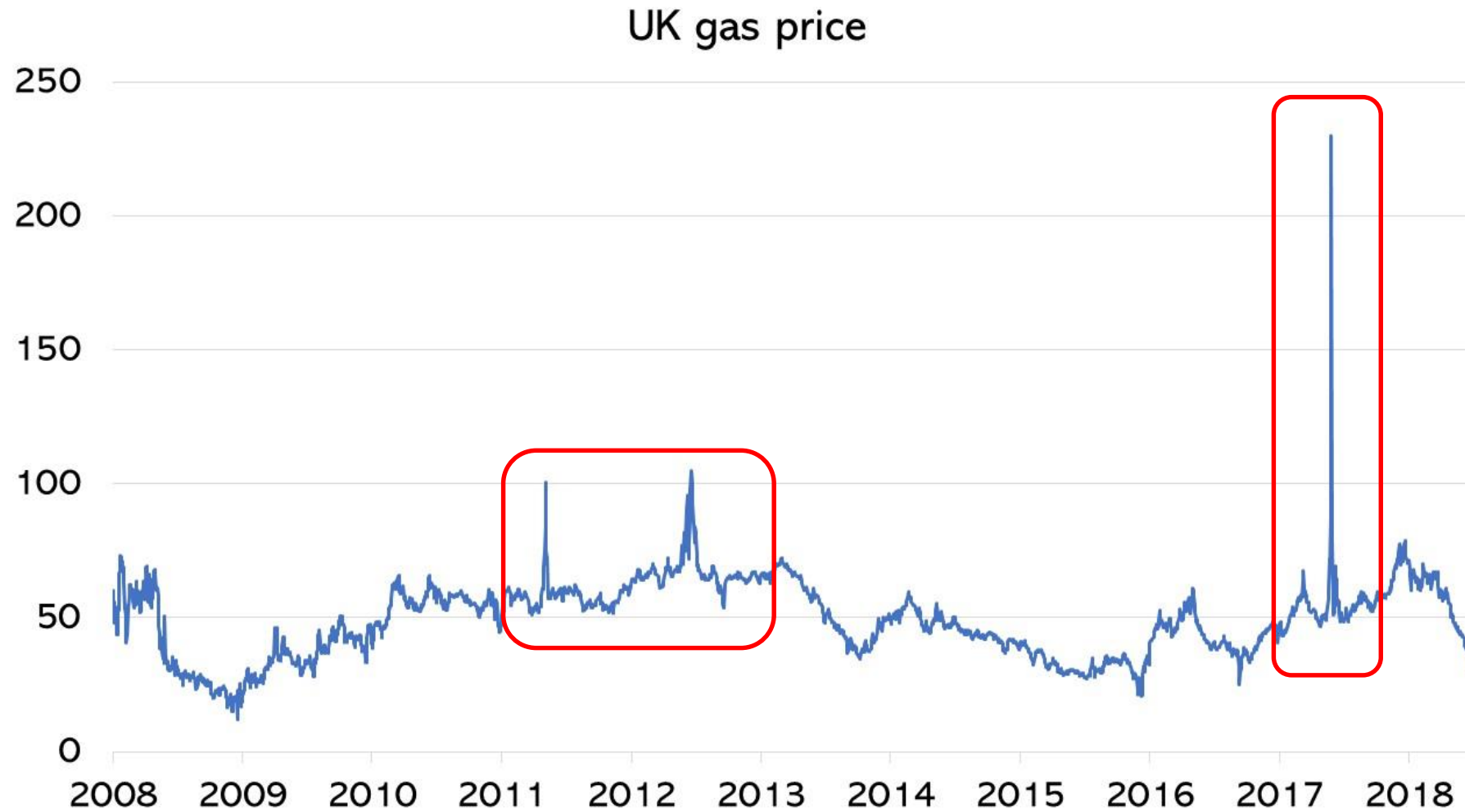Presenter: Chih-Yueh Huang

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Introduction

- Employs different forecasting models to predict spot gas price (monthly)

- Utilises spot forecasts to reduce energy procurement costs

UK spot gas price (daily)

UK gas price

Predicting models

- Predictive regression
  - Brent, Carbon, Coal
  - Stock indexes, Exchange rate
  - Interest rates, Bond yields
  - Other predictors

- Forecast combination

- Stepwise regression (bi-directional)

- Penalised regression (selecting relevant predictors)

- Principal components regression (reducing dimension)

Forecasting performance

- Sample: Oct 2001 – May 2018 (200 months)
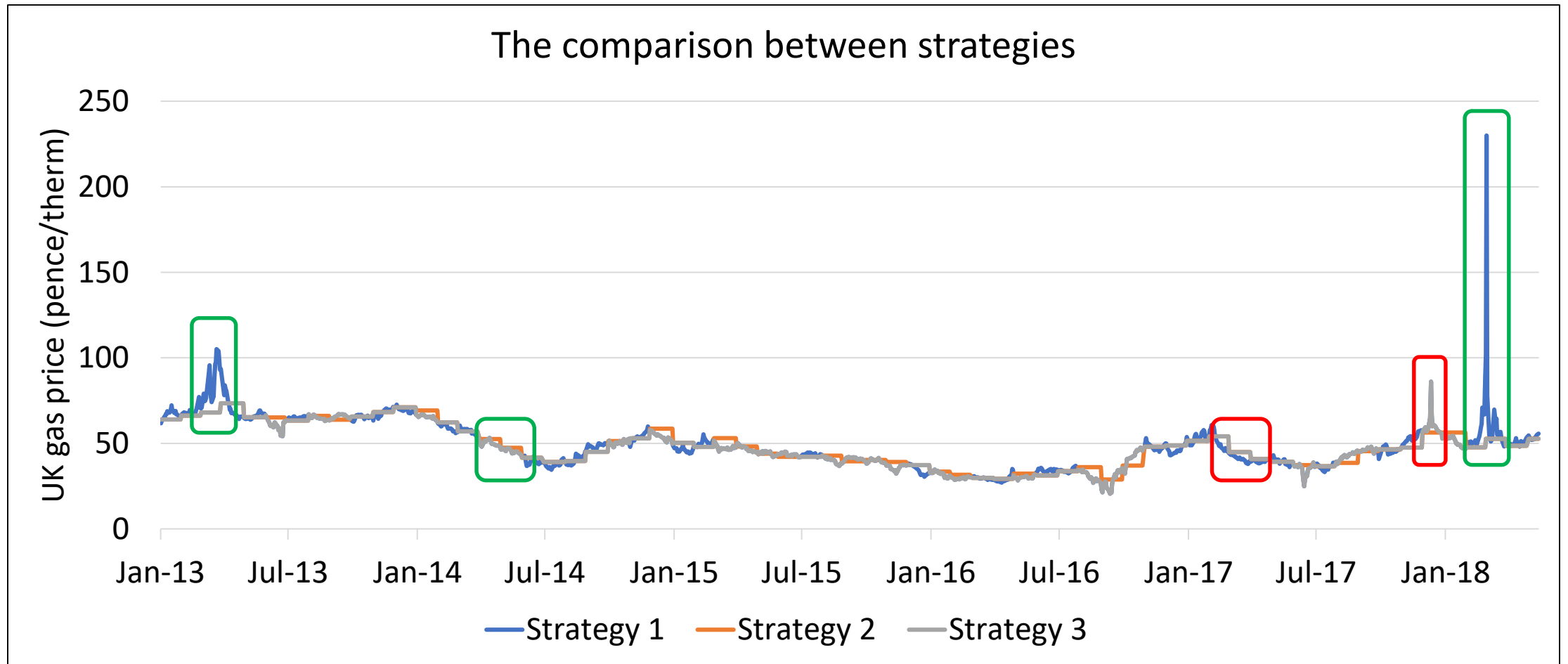- In-sample: 60; Validation sample: 35; Evaluation sample: 105

Models	Success ratio	MSE ratio
Predictive regression	**57.14%**	**87.70%**
Forecast Combination (Equally weighted)	53.33%	91.27%
Penalised regression (Elastic Net)	55.24%	97.97%
Stepwise regression (BIC)	53.33%	106.53%
Principal components regression	51.43%	101.69%
Partial least square	52.38%	110.62%

Application: energy procurement

- Strategies:
  - Strat1: spot only
  - Strat2: futures only
  - Strat3: mixing by comparing spot forecast and futures price
- Sample: Jan 2013 – May 2018
- Forecasts Selected by MSE ratio
- Performance:

Year	Strategy 1	Strategy 2	Save (%)	Strategy 3	Save (%)
Full	48.65	48.56	-0.18%	48.03	-1.27%***

Comparison between strategies

The comparison between strategies

Thanks for your attention!