

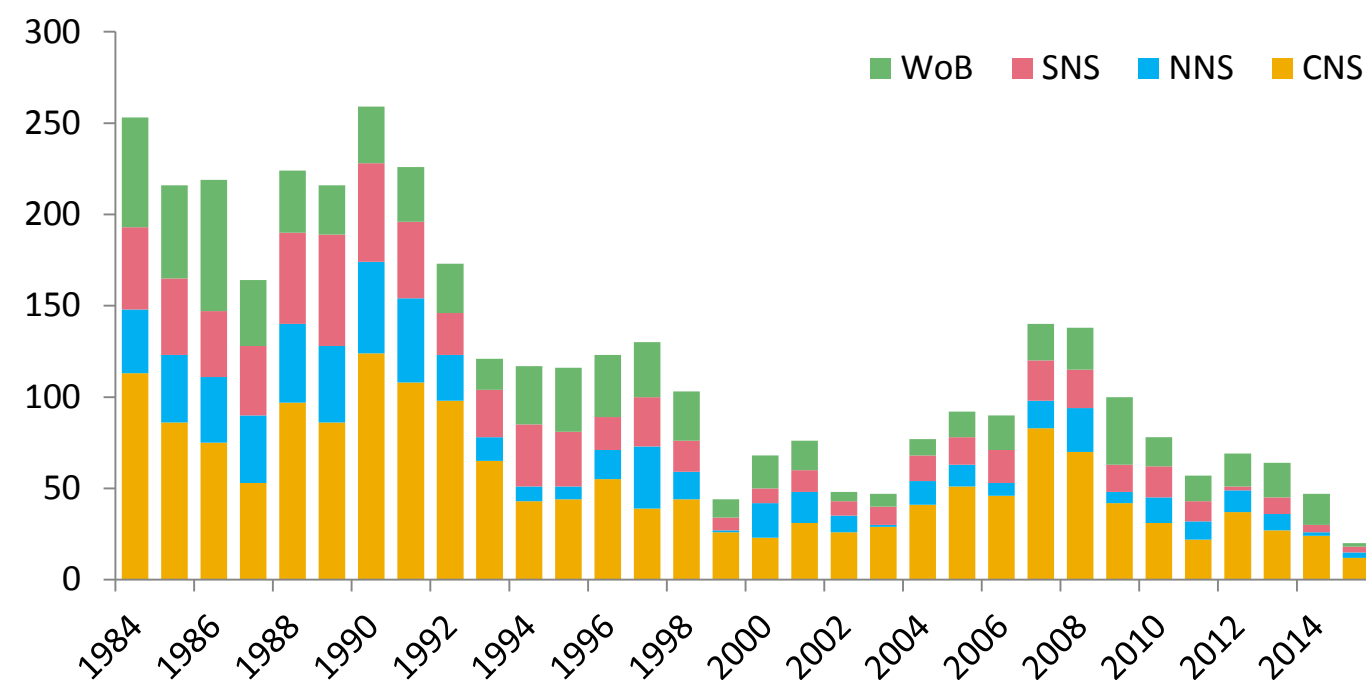
An Econometric Analysis of Regional Dynamics of Petroleum Exploration in the UK Continental Shelf

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Context

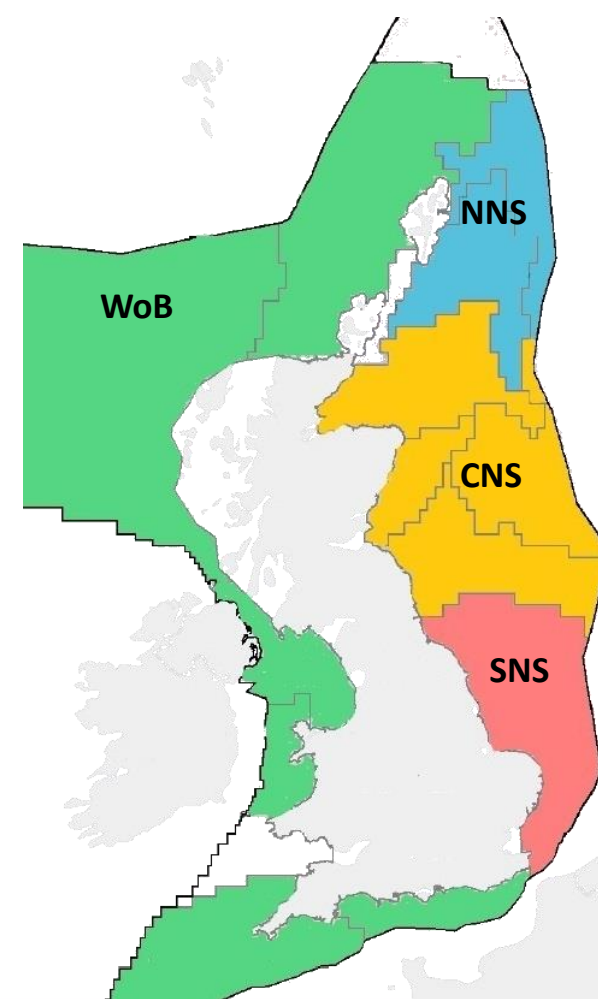
- The study investigates the key driving forces of exploration in the UKCS
- We focus on the geographical disaggregation of the hydrocarbon province and to what extent this drives the varying levels of exploratory interest in the different regions.

Exploration and Appraisal drilling by Region



Research Question

“After accounting for fundamental drivers of exploration and the effect of time, are there significant Regional specific factors, which further cause varying levels of E&A drilling across the province?”



Econometric Model

Using an unbalanced panel dataset, we estimate a Two Way Fixed Effects model, (using LSDV), which implements both, Cross sectional Fixed Effects and Period Fixed Effects

$$\tilde{Y}_{it} = \alpha + \alpha_{i-1}d_{i-1} + \beta\tilde{X}_{it} + \gamma_t + \tilde{\eta}_{it}$$

The drivers of exploration activity can be categorised as follows:

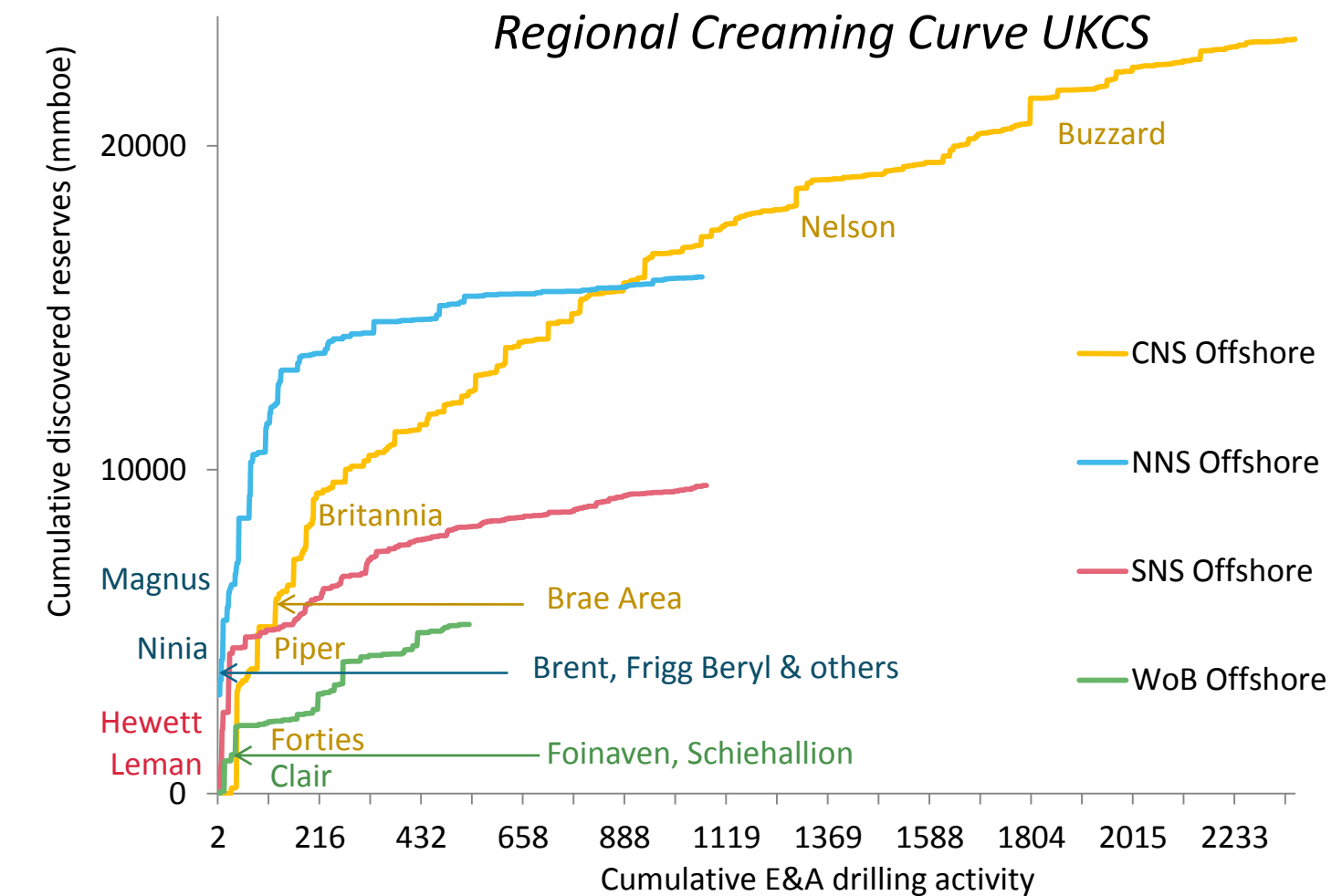
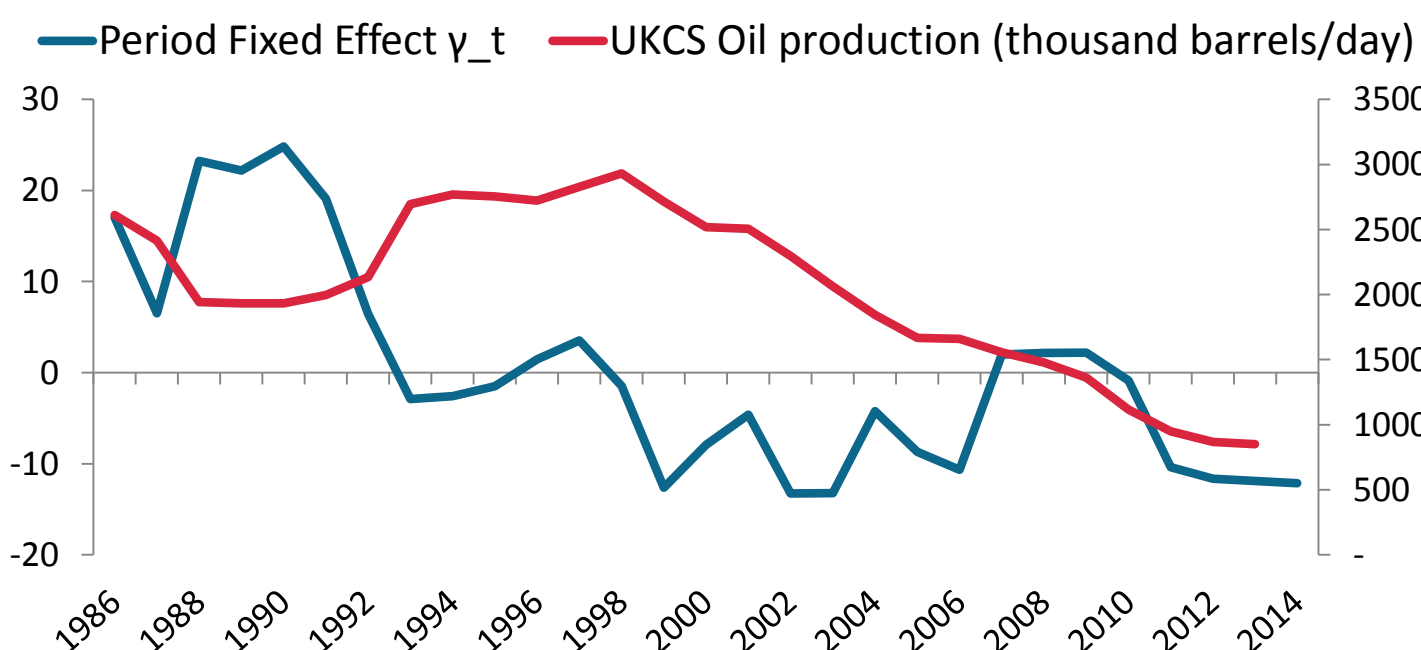
- X_{it} - Specific covariates representing commercial fundamentals such as Opex, Capex, Cash Flow, Taxes
- α_i - Regional specific factors which don't vary in the long run and differ for each region
- γ_t - Effect of time; captures the effect of factors, which vary through time but impact all regions equally

Results

- The regression estimates show statistically significant *cross sectional unobserved heterogeneity*

$$\alpha = 23.9^{***} \quad \alpha_{CNS} = 48.1^{***} \quad \alpha_{NNS} = 15.9^{***} \quad \alpha_{SNS} = 3.9^{***}$$

- Furthermore, *period unobserved heterogeneity* was shown to have a long term *negative* impact on Y_{it}



Conclusions and Policy Implications

- CNS region is by far the most attractive to explorers, while WoB possesses region specific characteristics, which cause it to be the least attractive
- Regional specific coefficient estimates may encompass the impact of physical characteristics of the basin, adverse weather conditions and access to infrastructure
- Period Fixed Effects are likely to represent the impact of technological advancements; depletion rate; oil price fluctuations and major changes in the fiscal regime
- Our findings may lay the ground for further discussions of regional exploration strategy as previously suggested by the Wood Review ('Action 15')
- The empirical evidence therefore shows that a regional approach to exploration could improve regulation, licencing and fiscal policy making