

Global liquidity and the profitability of energy firms

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Motivation

- Understanding the determinants of companies' profitability is of utmost importance for both, academics and corporate managers.
- Different empirical and theoretical studies show that profitability depends on external conditions, industry scope and specific firms' characteristics (wieczorek-Kosmala et al., 2021)



External determinants vs. Internal determinants

Profitability...

... is defined as the ability to take advantage of resources to generate profits, therefore, as an indicator of effective management.

Idiosyncratic characteristics vs. Common forces

Identifying the determinants of profitability and anticipating its fluctuations guarantees timely and informed decision-making that maximizes value for the company's stakeholders.

Internal determinants

- Firms' age
- Size
- Financial leverage
- etc.

External determinants

- Fuel prices
- Interest rates
- Exchange rates
- Economic activity
- etc.

Here...

... we analyze the external determinants of the profitability of energy firms, and specifically, the effect of global liquidity on the profitability of companies belonging to different energy sub-sectors

- » Our working hypothesis is that changes of global interest rates (and hence of funding liquidity) have important effects on the financial operation of large energy firms.

Energy profitability literature

All companies are exposed to changes in global liquidity.

Interest rates are associated with prices of raw materials, which affect both operating costs and sales (Gupta and Krishnamurti, 2018).

Oil firms, Coal firms, Gas Firms

Authors

* Ratti and Vespiagnani (2016)

* Hammoudeh et al. (2015)

* Díez-Esteban et al. (2017)

>>> Topic: Commodity prices (oil, coal, gas), Economic activity, oil prices

Renewables energy

Authors

* Sutherland (2019)

* Schmidt et al. (2019)

>>> Topic: Government subsidies, economic stimulus

Beyond the energy field

Authors

* Asimakopoulos et al. (2009)

* Claver et al. (2002)

>>> Topic: Size, sales growth and investment

Methodology

1 Global liquidity → World Interest Rate (WIR) We extract the first principal component of the interest rates in developed markets.

2 We estimate Common factor of profitability of a sample the energy companies worldwide using FPCA (Functional Principals Components Analyses) according to their energy subsector:

- Coal
- Oil & Gas
- Oil & Gas Related Equipment and Services
- Renewable Energy
- Uranium

3 We measure The effect of global liquidity on profitability using DLNM (Distributed Lag Nonlinear Model).

Distributed lag nonlinear model (DLNM)

We propose to use the FPC regarding energy firm's profitability as the response variable in our model and our global liquidity indicator as to the explanatory variable. This relationship is given by:

$$g(\mu_t) = \alpha + \sum_{j=1}^J s_j(WIR_{tj}; \beta_j) + \sum_{k=1}^K \gamma_k u_{tk} \quad (1)$$

where $\mu \equiv E(\hat{\xi})$, g is a monotonic link function. The function s_j represents the smoothed relationship between the variables WIR_j and the linear predictor that is represented by the vector of parameters β_j . The variables u_k include other predictors with linear effects specified by the related coefficients γ_k (Gasparrini, 2011).

Profitability information

Global liquidity information

Energy firms by country

- » Profitability information of energy companies was retrieved from the Refinitiv EIKON database.
- » We use ROA (Return on Assets)

Sample of firms according to profitability indicator ROA and energy sub-sector.

The period: 2000Q1 to 2021Q2

Sub-sectors	n = 536	(%)
Coal	15	2.7
Oil & Gas	278	51.8
Oil & Gas (Equipment and Services)	177	32.8
Renewable Energy	58	10.7
Uranium	11	2.0

Note: We use Refinitiv Business Classification (TRBC) to assign subsectors to each energy firm in our sample.

Profitability information

Global liquidity information

Energy firms by country

- » We use interest rate information from developed markets.
- » Short-term and long-term interest rates were extracted from the OECD database

Developed economies

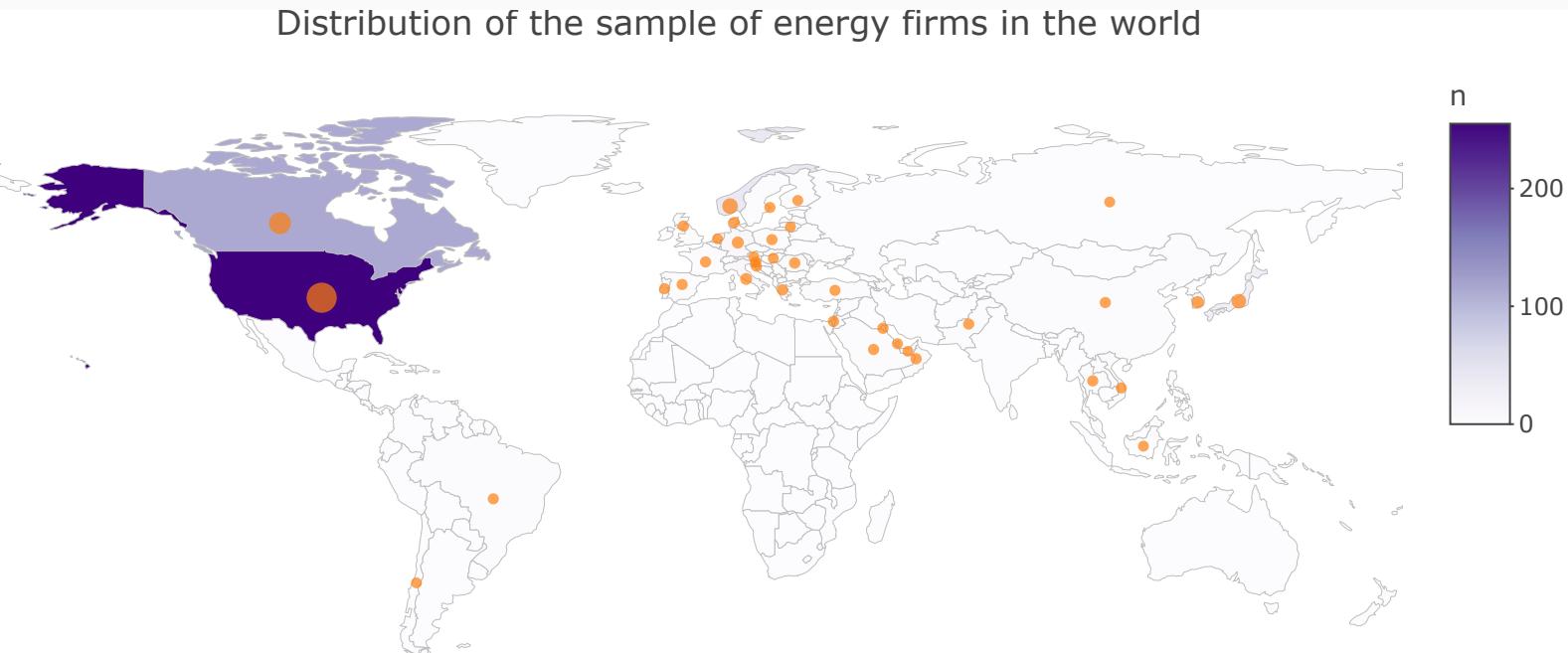
The period: 2000Q1 to 2021Q2

Australia	Finland	Italy	Portugal	United States
Austria	France	Japan	Spain	
Belgium	Germany	Netherlands	Sweden	
Canada	Ireland	New Zealand	Switzerland	
Denmark	Israel	Norway	United Kingdom	

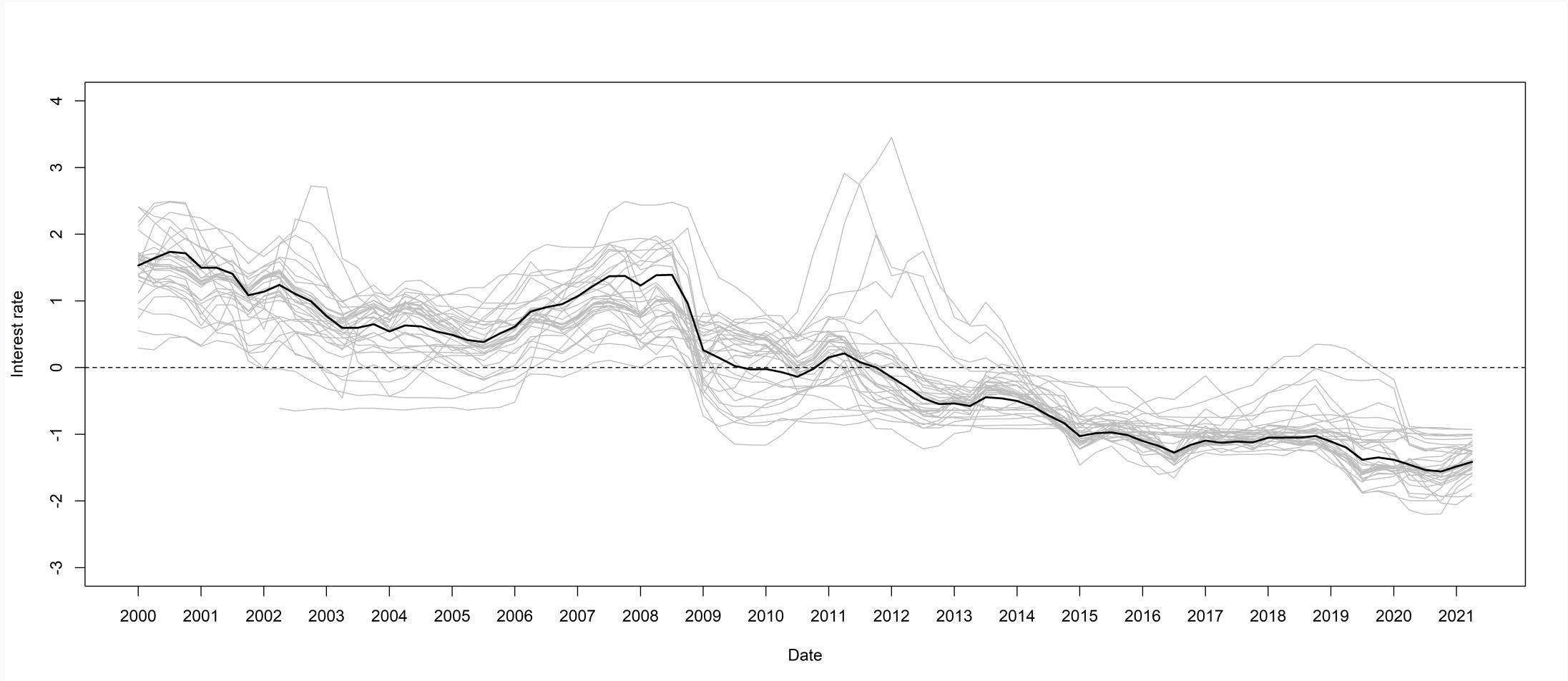
Profitability information

Global liquidity information

Energy firms by country



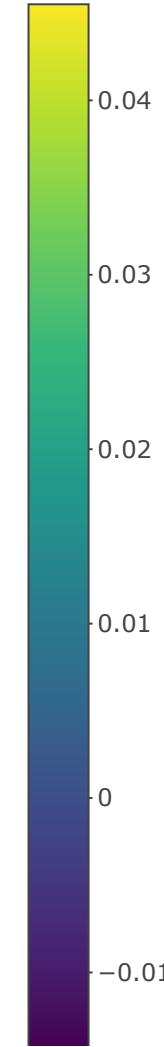
World Interest Rate



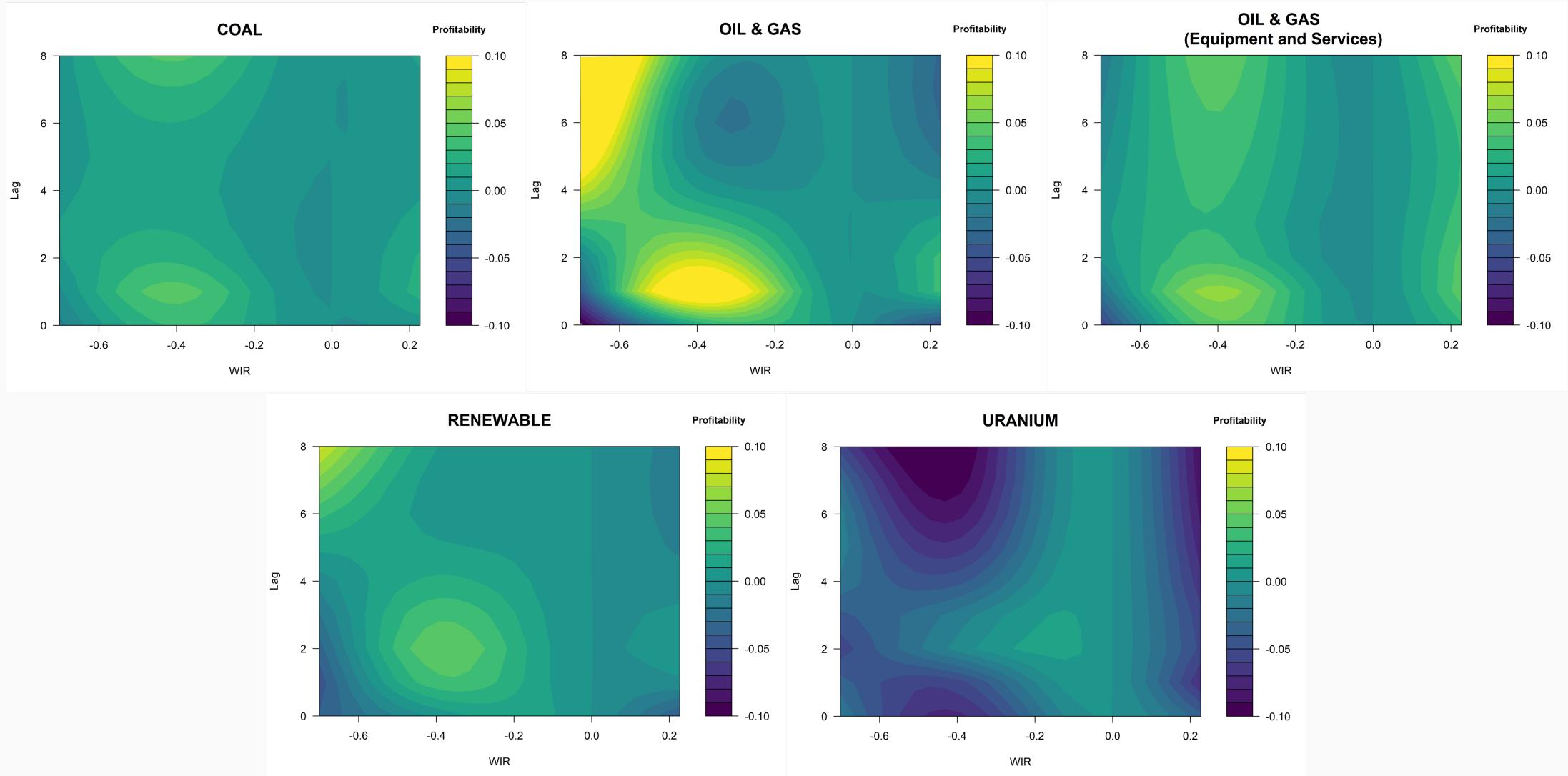
Response surface

The effect of global liquidity on the profitability of coal firms

Profitability



Effect global liquidity on profitability



Conclusion

1. The effect of global liquidity on the profitability of energy companies is asymmetric.

2. The profitability of energy companies is affected differently depending on their sub-sector relative to global liquidity.

Conclusion

3. Increases in global liquidity, i.e., negative WIR, present stronger effects on profitability, but these are not persistent over time.

4. Uranium companies show strong positive effects on profitability given changes in global liquidity (ie negative WIR).

Conclusion

5.

We show that the decrease in interest rates by the different monetary authorities boosts liquidity and, in turn, the profitability of energy companies. This supports economic growth and restores financial stability.

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Thanks !!!



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