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Mining fiscal systems and resource rents: evidence from oil and gas producing countries (Draft)

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Economic values & negative impacts of oil & gas

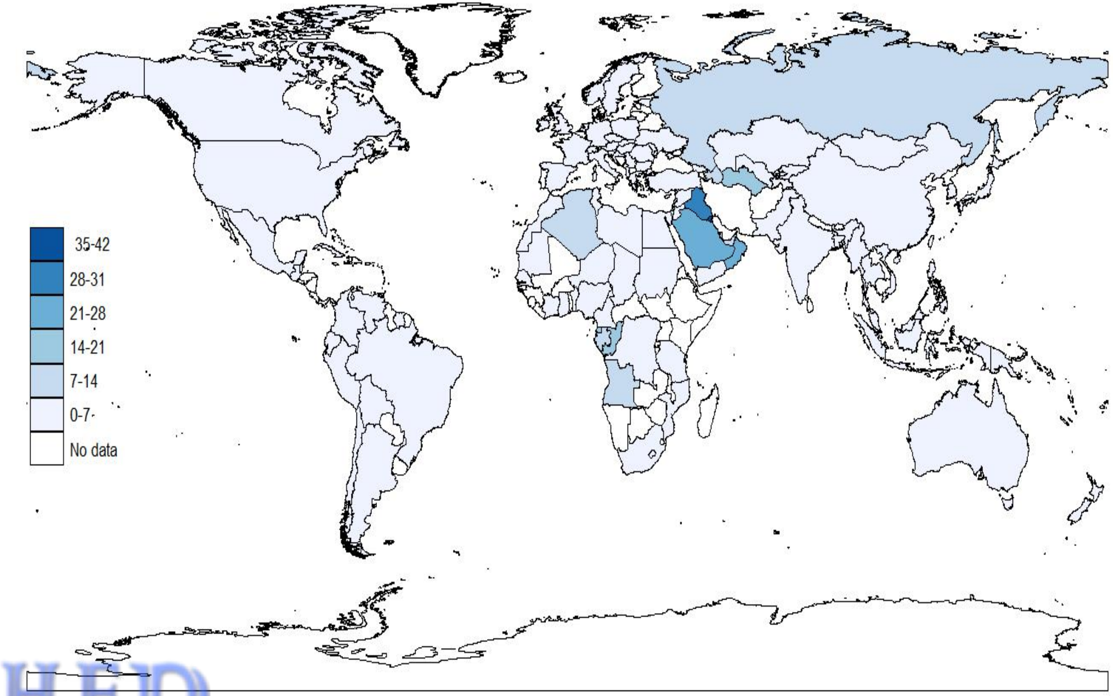
Economic values

- ✓ Government revenue
- ✓ Energy supply
- ✓ Raw material for other industries

Negative impacts

- ✓ Environment degradation
- ✓ Carbon emission

Oil and Gas Rents (% GDP) in 2015 – created based on World Bank data



Oil and gas Legal systems

Concession system

Contractual systems

Production Sharing Contract

Service Contract

Mining fiscal systems

Non profit based tax - Gross Royalty Tax (GRT) -- Payment based on either output or value of output:

- ✓ Concession regime with royalty payments based on production or value of production (Argentina, UAE, Austria, USA);
- ✓ Concession regime with royalty payments based on R-factor which is calculated based on production or value of production (Peru);
- ✓ Contractual regime with production sharing based on production or value of production (Peru; Trinidad & Tobago);

Profit based tax - Resource Rent Tax (RRT) -- Payment based on profit:

- ✓ Contractual regime based on profit sharing (Indonesia, Azerbaijan, Nigeria).
- ✓ Concession regime which applied special tax based on profit (Australia; Norway; Netherland; Thailand).
- ✓ Concession/contractual regime based on Ṝ-factor - value of production divided by costs (Ireland, Israel, Cameroon, Mozambique)
- ✓ Hybrid fiscal regimes (Canada, New Zealand, Angola, Russian Federation)

Benefits & drawbacks of mining fiscal systems

Gross Royalty Tax (GRT)	(+) Easy to calculate and to collect (+) Can ensure government receipts as soon as production start (-) Regressive and may distort investment and production decision (-) May increase uncertainty and risks of oil & gas extraction project
Resource Rent Tax (RRT)	(+) Progressive and relatively neutral to investment decision (+) More flexible in responding to the changing of variable factors; (-) More complicated administration system (-) Overstatement of costs, gold plating and transfer pricing

Garnaut and Clunies-Ross (1975); Palmer (1980); Nakhle (2004); Baunsgaard 2001; Johnston and Johnston (2015)

Identification strategy: *study design*

Most countries initially used GRT since it was the only system known in the early period of oil and gas mining.

In 1970s, pioneered by Garnaut and Clunies-Ross (1975), economists started to discuss the RRT as an alternative fiscal system for mineral resource extraction, including oil and gas

During 1970-2015
23 countries used GRT; and 12 countries applied RRT
47 countries changed their oil and gas mining fiscal systems from GRT to RRT or hybrid system

In 2015: 23 countries used GRT system & 59 countries applied RRT/Hybrid system

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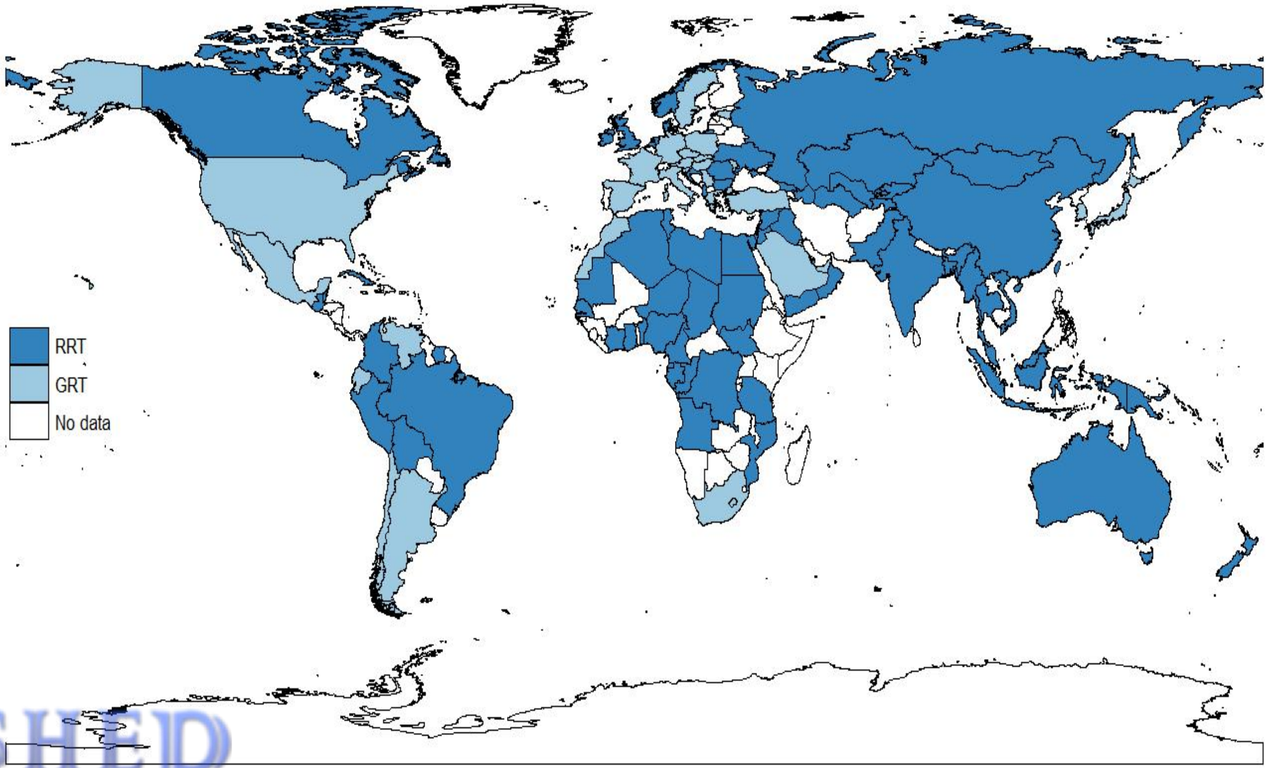

Based on author's analysis

Findings

Applying RRT system has better impact than using GRT on generating oil and gas rents in more democratic countries and in countries with greater level of freedom;

Applying the RRT system has also better impact than using GRT on generating oil and gas rents in developing countries;

The number of oil and gas exploration wells drilled and oil and gas production are the important channels in the relationship between fiscal systems and resource rents.