# Going Downstream – An Economical Option for Oil and Gas Exporting Countries?

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# Gas Exporting Countries Forum (GECF)

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## MEMBERS

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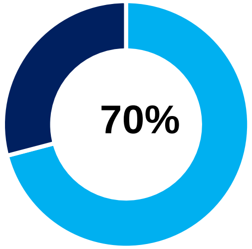
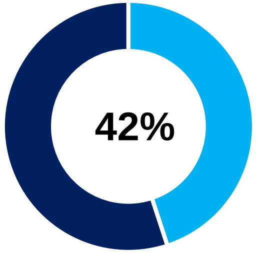
- Algeria
- Bolivia
- Egypt
- Equatorial Guinea
- Iran
- Libya
- Nigeria
- Qatar
- Russia
- Trinidad and Tobago
- Venezuela

### Proven Natural Gas Reserves



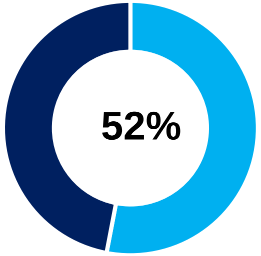

**GECF: 144 tcm**
World: 205 tcm

### Marketed Gas Production



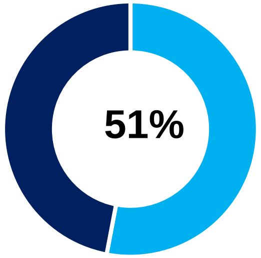

**GECF: 1678 bcm**
World: 3960 bcm

### Pipeline Gas Exports




**GECF: 427 bcm**
World: 825 bcm

### LNG Exports




**GECF: 246 bcm**
World: 481 bcm

## OBSERVERS

8

- Angola
- Azerbaijan
- Iraq
- Kazakhstan
- Malaysia
- Norway
- Peru
- United Arab Emirates



***Source of data: GECF Annual Statistical Bulletin 2020***

# Introduction of the study

- Objective: Why resource exporting countries may and do go downstream?

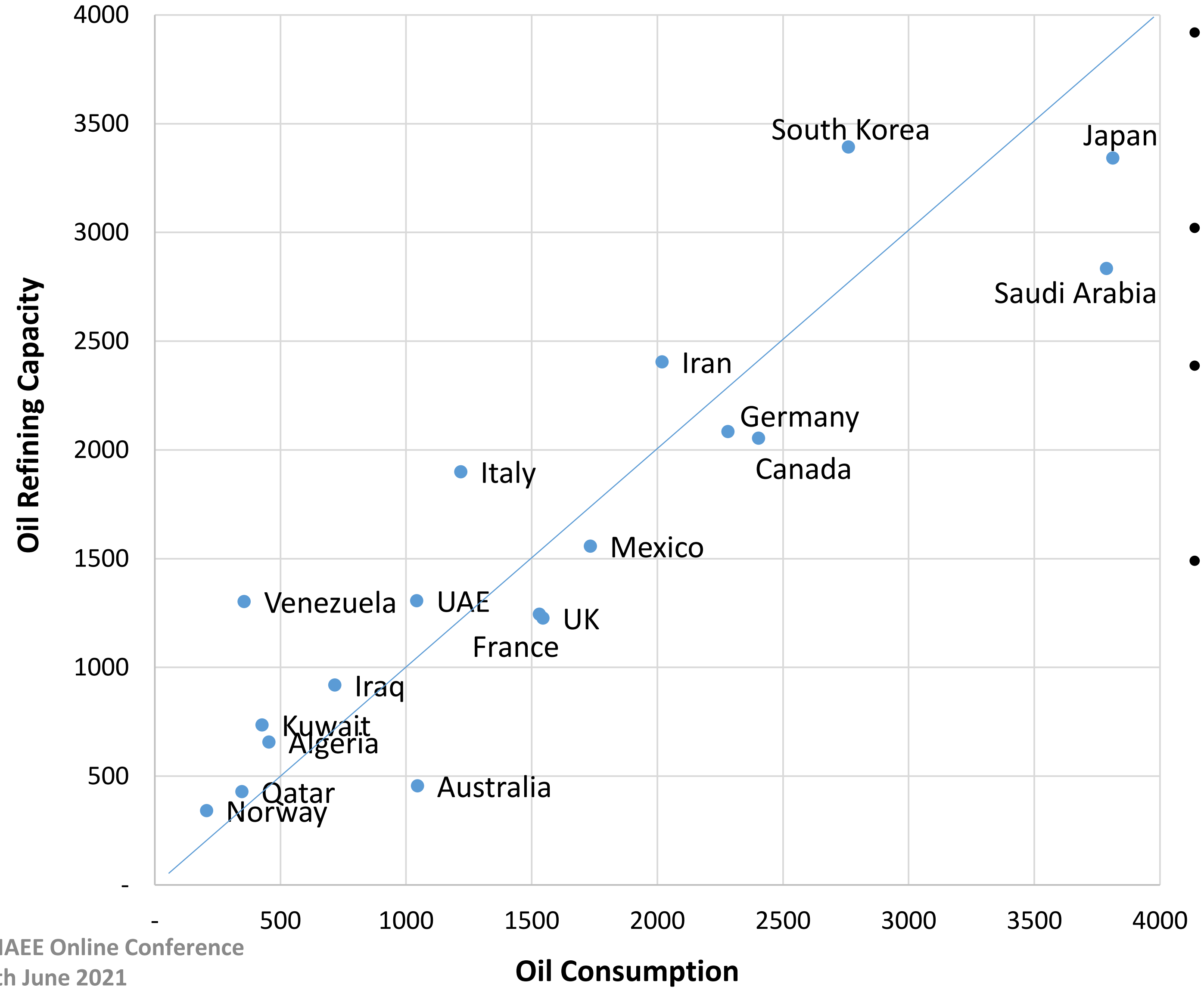
- The potential justifications:
  - ✓To offer the resource to the local population at preferential terms, for consumption and local production
  - ✓Vertical integration
  - ✓Comparative advantage due to locational advantages
  - ✓The potential to provide economy wide spillovers
  - ✓Hedge against the price volatility
  - ✓Security of supply

# Review of literature

| Author | Result |
|---|---|
| Bhattacharyya and Hodler (2010) | Examine the relationship between natural resources, corruption, and the quality of institutions. |
| Van der Ploeg and Venables (2011) | Consider various options for efficiently managing resource revenues. Downstream investment and the diversification of the expert portfolio by adding some processed commodity might be a potential strategy to reduce export revenue volatility. |
| Merener and Steglich (2017) | Examine the performance of diversified resource-rich economies and conclude diversified economies face lower revenue volatility than economies specializing in one commodity. |
| Herzer and Nowak-Lehnmann (2006), Bertinelli et al (2009), Borensztein et al (2013) | Quantify the welfare gains of following an optimal export portfolio and hedging commodity price risks and find a major positive role for export diversification. If the downstream investment (e.g., refinery or airline industries) mitigate export revenue volatility, the demand for precautionary saving in the economy will be reduced. Investment in the downstream sector acts as a substitute for precautionary saving. |
| Norton (1993) | Studies the impact of vertical integration on the systematic risks for refinery companies and finds a significant impact from vertical integration. |
| Al-Obaidan and Scully (1992), Wolf (2009), Hartley and Medlock(2013), Levin (1981) and Barrera-Rey (1995) | Focus on the performance of commercial and national oil companies. No significant impact from vertical integration on the profitability of oil companies, but do find a small effect on risk reduction. |

# Stylized facts

Refining Capacity vs. oil consumption in 2019 (Thousand barrels/day)




- The threat of peak oil demand and a shift to refined products is driving refiners to the petrochemical sector
- Growing demand for downstream products, is offering additional business opportunities
- There is still excess refining capacity globally, and domestic capacities exceed demand in many countries
- The export markets for refined products are contested and refiners in industrialized countries are efficient

**As of 2019** *(thousand barrels daily)*:
**Total world refining capacity: 101,340**
**Total world oil consumption: 98,272**

*Source: BP Statistical Review of World Energy 2020*

# Economic reasons (Normative arguments)

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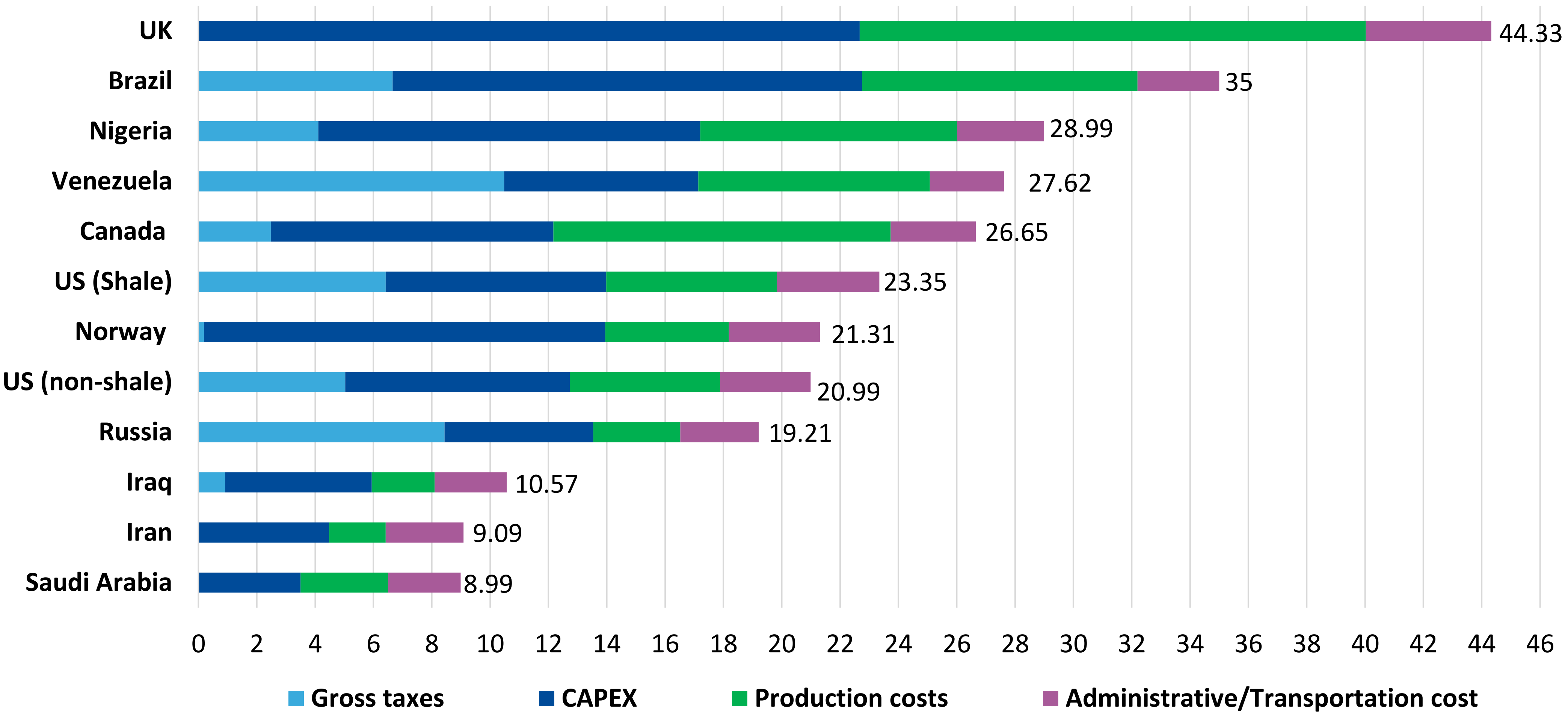
- Industrial organization:
  - ✓ Vertical integration can offer substantial gain
  - ✓ Integration can avoid the double marginalization caused by non-competitive firm's up-and downstream
  - ✓ The realm of determining the optimal boundaries of a firm:
    - ➢ The Theory of Transaction Cost: originated from Coase (1938) but was further developed by Oliver Williamson (1996), who received the Nobel Prize in 2009
    - ➢ The Theory of Property Rights: attributed to Alchian and Demsetz and more recently to Grossman and Hart (1986), Hart and Moore (1990).
- Comparative advantage, Development and Spillovers:
  - ✓ Transport costs can be crucial
  - ✓ Export revenues can be used to foster domestic development
  - ✓ An opportunity to invest into the education system, leading to spillovers
- Hedging:
  - ✓ Going downstream can serve as a hedge against vagaries in the country's upstream profits
- Climate change:
  - ✓ The future of Carbon Capture and Storage
  - ✓ 'Win-Win' policies are available for resource exporting countries and the environment

Average cash cost to produce a barrel of oil or gas equivalent (Real 2016$)




*Source: Rystad Energy UCube, 2016*

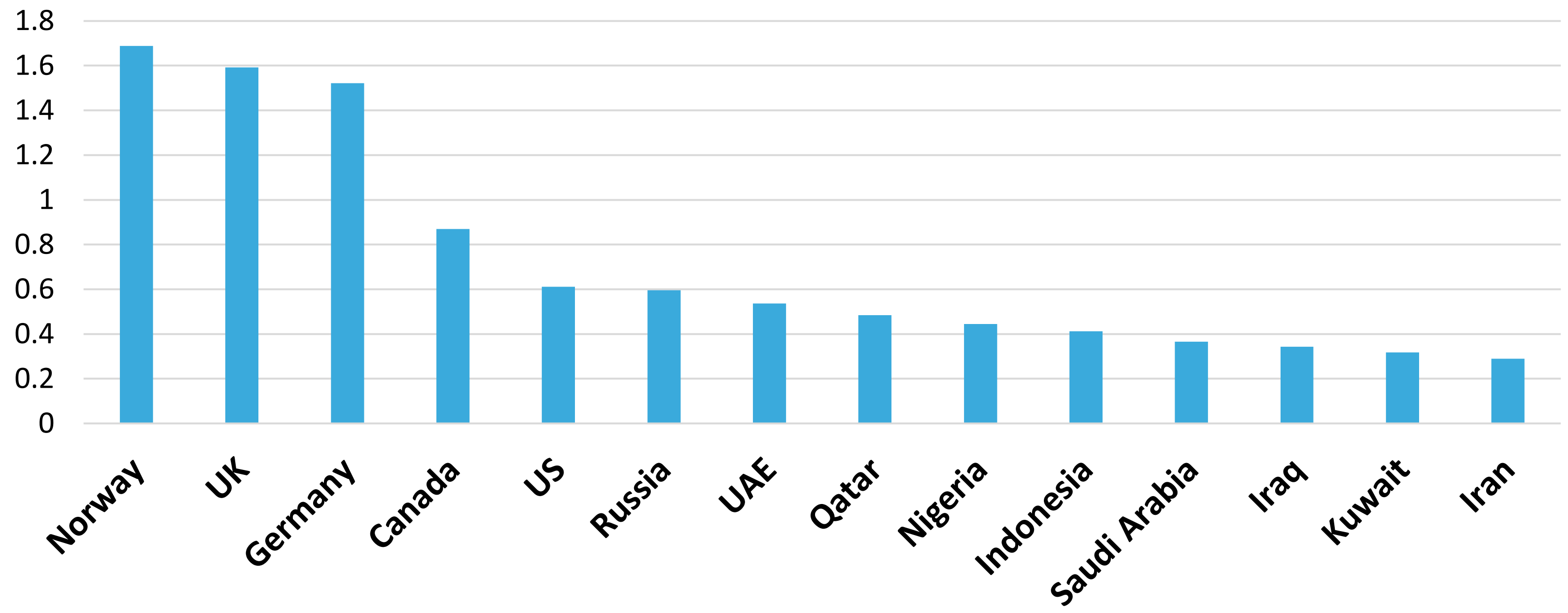
# Political economy

- Security of supply:
  - ✓ Can counter unfavourable political circumstances or other threats
- Elites
  - ✓ Governments and elites use subsidized prices to buy the support of local populations
- Power, empire building and corruption
  - ✓ managers are interested in the three big Ps:
    - ➢ Power: To choose highly paid managers
    - ➢ Pay: Large-scale investments into the local export industry
    - ➢ Prestige: The building of huge infrastructure projects will always be connected to the individual who initiated the project

# Explanatory power of the different explanations for vertical integration

- Domestic subsidies:
  - ✓ Large fuel subsidies are not only economically questionable but also politically risky
  - ✓ Slowing unsustainable energy demand growth will require large price jumps

Gasoline retail prices in 2019 (Real 2019$ per litre)




*Source: GECF Secretariat based on data from the GECF GGM 2020*

# Explanatory power of the different explanations for vertical integration

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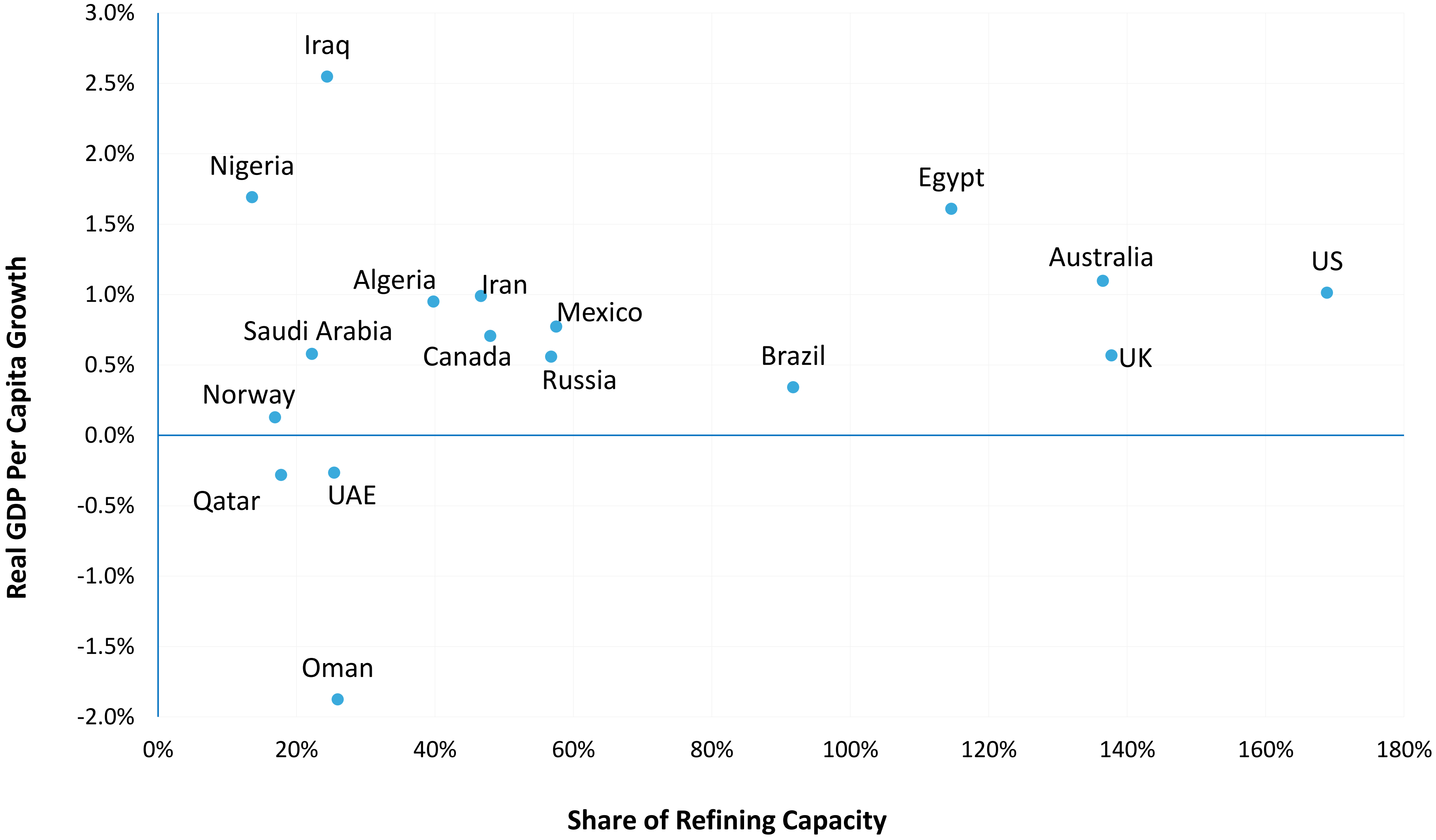
- Domestic subsidies
  - ✓ Large fuel subsidies are not only economically questionable but also politically risky
  - ✓ Slowing unsustainable energy demand growth will require large price jumps
- Comparative advantage, Development, and Spillovers
  - ✓ Resource availability does not seem to stimulate local downstream activities in the UK, Australia,…
  - ✓ Refining coupled with oil extraction delivers spillovers that foster development is questionable
- Climate change:
  - ✓ High carbon price could offer financial incentives for climate mitigation policies and CCS
- Politico-economic explanations:
  - ✓ The political objective to ensure the security of domestic supply against the uncertainties of politics

## Real GDP per capita growth vs. share of downstream activities
(an average of 2009-2018)




Source: GECF Secretariat based on data from the GECF GGM 2019, BP Statistical Review of World Energy 2019

# Conclusion and policy implications

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- Economic efficiency can only provide a very partial justification for the downstream activities
- The arguments from the industrial organization fail, unless integrating downstream activities serves local or regional markets
- Going downstream makes economic sense if it ensure an efficient operational scale
- The arguments of development and spillovers are not convincing if looking at the activities that countries pursue
- It is also hard to establish a comparative advantage of a local refining industry for overseas exports after accounting for the costs
- Subsidies on refined products is dangerous from a long-term perspective, because energy demand is very sluggish
- The normative explanations provide little justification (sanctions can justify a local refining industry)

# Thank you for your kind attention !

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