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Unconventional trade-offs? National oil companies, foreign investment and oil and gas development in Argentina and Brazil

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ABSTRACT

These are turbulent and uncertain times for the global oil and gas industry. This paper examines the industry's emerging new political economy in terms of competition (or a trade-off) both between and within International Oil Companies (IOCs) for rival oil and gas prospects. A qualitative cross-case analysis of Argentinian shale and Brazilian deep-water finds that unconventional and deep-water projects are complementary rather than competing assets of an IOC's portfolio. Further, despite the technical challenges IOCs face in developing these reserves, it is the non-technical risks and uncertainties that are more pressing for these companies and are the greater inhibitors to investment.

1. Introduction

The global oil and gas industry is currently experiencing a period of significant uncertainty and disruption. The emergence of shale gas and tight oil in North America has been transformative to the industry and has played a major role in the recent decline in global oil and gas prices. At the same time, international oil companies (IOCs) are seeing the decline of access to 'easy oil' (i.e. conventional and cheap to produce), which is leading them to explore and potentially develop conventional reserves in extreme environments (e.g. Brazilian pre-salt, Arctic oil). In turn, lower oil and gas prices challenge the economic viability of such ventures, and all oil companies are operating under capital constraints. An estimated US$620 billion in projects have been cancelled or deferred through to 2020 (England, 2017).

In this new market environment, IOCs are increasingly cost conscious, and the days of investing in oil ventures regardless of energy prices (given their cyclical nature) are gone (Crooks and Adams, 2015; England and Slaughter, 2016). For reserve-holding states, the combination of the IOCs' circumspection and the growing urgency for climate change mitigation raises the spectre of 'stranded assets'. Oil-rich countries have seen their bargaining power with the IOCs eroded in an increasingly competitive market as rival oil and gas ventures, such as shale, have become viable. The rules of the game have changed, the net result of which is a new political economy that is altering the dynamic between the IOCs and the reserve-holdings states (Raszewski, 2018).

Under this scenario of constrained capital and a 'lower for longer' oil price, this paper addresses the competition for capital that may or may not exist between two prospective developments (and, more broadly, between deep-water offshore and onshore tight oil and shale gas): Brazilian deep-water 'pre-salt' resources (which reside offshore under a thick layer of salt); and shale resources in Argentina, focussed in the Vaca Muerta (Dead Cow) formation. The need for capital investment is clear in both cases. In 2010, soon after the pre-salt discovery, Brazil's national development bank (BNDES) estimated that investments of between US$150 billion and US$430 billion would be required in the Brazilian oil sector before 2027 (Almeida and Accurso, 2013). Industry experts believe between US$140 billion and US$200 billion will be required to realise the large-scale development of the Vaca Muerta (The Economist, 2014). This paper examines the interrelationships between the technical and non-technical characteristics of these resources with regards to what might deter or encourage foreign investment. The analysis also offers insight into the differences between the two countries' policies towards resource governance.

A qualitative cross-case analysis examines these sectors across several dimensions and draws on semi-structured interviews conducted in Buenos Aires, Sao Paulo and Rio de Janeiro over two weeks in November 2016. A semi-structured format for the interviews was adopted as this provided a coherence to the discussions, whilst also offering the interview subject flexibility in their response and supports and the gathering of detailed contextual information. Interviewees were selected through 'non-probability sampling', whereby subjects are "deliberately selected to reflect particular features of, or groups within,

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Table 1
Overview of interview subjects.

	Argentina	Brazil
Government	Ministry of Energy and Mining (MEyM)	National Petroleum Agency (ANP); Ministry of Mining and Energy (MME)
Oil companies	'Operator-1'; 'Operator-2'; 'Operator-3'; 'Operator-4'; 'Operator-5' This includes two IOCs, one NOC and two national/regional operators.	'Operator-2'
Industry Bodies	Argentinian Institute of Oil & Gas (IAPG); Argentinian Group of Suppliers for the Oil and Gas Industry (GAPP)	Brazilian Institute of Petroleum (IBP)
Academic Experts		Rio de Janeiro State University (UERJ); University of São Paulo (USP); Federal University of Rio de Janeiro (UFRJ)

the sampled population" (Ritchie et al., 2003), and were identified primarily through documentary research. Four groups of actors were targeted: governmental actors, oil companies (IOCs, national oil companies (NOCs) and smaller national/regional operators), industry bodies and academic experts. Documentary analysis provided more detail around the areas of discussion. Once the interviews were transcribed, template analysis was used as the primary method of organising the data, which involves iteratively identifying a set of emergent 'themes' in the data, from which a narrative can be formed. It is noted for its effectiveness in examining the "perspectives of different groups within an organisational context" (King, 2004).

A total of sixteen interviews were conducted. An overview of the organisations at which these were held is presented in the table below. A final follow-up interview was conducted in the UK in January 2017 with the Deepwater Portfolio Manager of 'Operator-2' (anonymised hereafter as 'Interviewee-B'). All interviewees and their organisations have been anonymised where this was requested (Table 1).

The paper explores three research questions:

1. What are the supporting and inhibiting mechanisms (both technical and non-technical) to foreign investment by the IOCs?
2. To what extent does competition for investment exist between conventional and unconventional resources in the portfolios of IOCs?
3. What are the policy lessons that can be gleaned from the case study countries' approaches to resource management, including the role of NOCs in national energy strategy?

2. Literature review

This review draws on two areas of academic research to provide the necessary context ahead of the paper's analysis: (i) the challenge for resource holding states, including avoidance of the resource curse, establishment of NOCs and development local content requirements; and (ii) the recent changes in the global energy system and the challenges these pose for IOCs with regards to strategy and international business.

2.1. The resource curse, local content and NOCs

It is paradoxical, but nevertheless undeniable, that, on average, resource-rich nations perform worse in terms of economic progress than resource-poor nations (Auty, 2001; Rosser, 2006). This effect is known as the 'resource-curse' (Auty, 1993), and typically refers to fossil fuel and mineral resources, with a more specific 'oil curse' attributed to countries heavily reliant on the production of oil (Ross, 2012). The poorer economic performance of oil-rich nations is surprising, given the large windfall gains that can be reaped from the extraction of oil. However, there are many examples of countries that have suffered from the resource curse, such as the Netherlands (which gave rise to the term 'Dutch Disease'; Corden, 1984), Venezuela (Hammond, 2011) and Nigeria (Sala-i-Martin and Subramanian, 2013). The curse is not so much a product of an abundance of resources but rather the dependence on them (Badeeb et al., 2017).

There is compelling evidence that the resource curse can be attributed to the failure of state leaders to effectively manage a resource abundance through appropriate policies and governing institutions (Khanna, 2017). Each country possesses a unique institutional context (North, 2009); institutions being the formal and informal 'rules of the game' (North, 1992) that govern the interactions between individuals and groups. There is a strong argument in the literature that it is the quality of institutions that makes the difference when it comes to achieving economic progress through the exploitation of natural resources. Countries with strong institutions before and during the development of the resource - political stability, low corruption and political risk, effective bureaucracy, strong rule of law - tend to benefit from their resource abundance; whilst those with weak institutions are more likely to submit to the curse (Mehlum et al., 2006; Robinson et al., 2006).

The resource curse is not inevitable, and there are several cases of oil-rich nations that have avoided it. Most prominent of these is Norway, with its strong institutional framework and effective public policy and resource management approach regarded as key features of its success (Badeeb et al., 2017). Norway, and other resource-rich nations, have addressed the threat of the resource curse though policies and strategies that are focused on extending the benefits of resource extraction to other sectors of the economy. Pursuing 'local content' is a common policy response in such situations. Local content can refer to the sourcing of domestically produced materials, personnel, goods and services, and can be enforced/encouraged through contractual requirements, regulation, taxation, or incentives (such as tax breaks). It emerged in the North Sea development in the 1970s, where it was successful in creating opportunities for employment, sectoral growth and technology transfer. However, historical cases - particularly those in the developing world - illustrate several barriers to the effectiveness of local content policies, such as the availability of sufficient pools of competitive local suppliers and qualified personnel, and the technology level of the domestic industry. Further, and related to the maturity of the local supply sector, local content can raise costs, impair quality and create delays in projects (Warner, 2017).

Oil-rich nations will often further increase state participation through the establishment of an NOC. There are over one hundred NOCs globally, and they are found in almost all oil exporting and many oil importing developing countries (McPherson, 2003). They control an estimated 90 per cent of global oil reserves, 75 per cent of global production, and an estimated 60 per cent of the world's undiscovered resources are in countries in which NOCs operate with privileged access (World Energy Council, 2013).

It is commonplace for NOCs to be used to address a broad agenda of economic, social and political objectives beyond those of the sector. In fact, the ways in which NOCs are "tied to the national purpose" (Khan, 1987: 188) is a distinguishing characteristic in comparison with private enterprises in the industry. In comparison to their privately-owned counterparts, NOCs have been observed to exhibit several shortcomings. Some of these stem from their remit of both commercial and non-commercial objectives, which Stevens (2003) found can often be in conflict. For example, NOCs have been observed to prioritise employment policies over considerations of profitability (Gochenour, 1992), both over-employing and overpaying their personnel (Eller et al.,