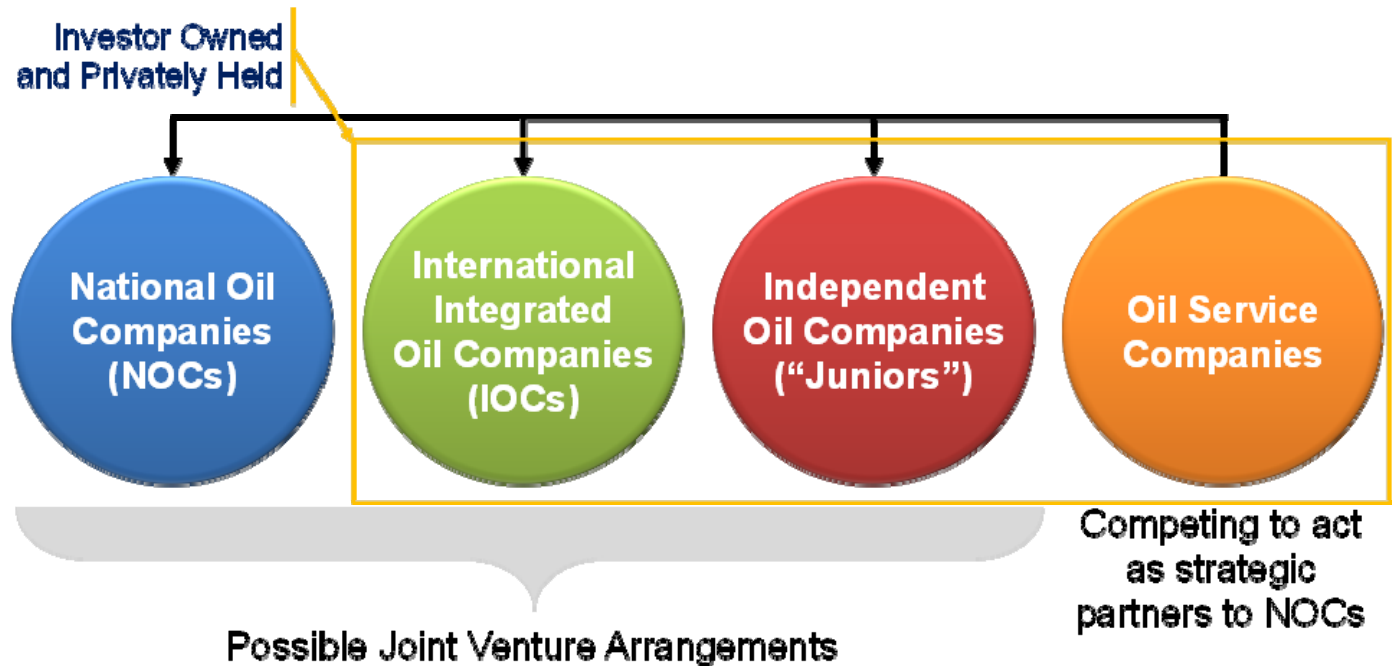


# \*NOCs and Oil Price

**Our sample represents NOCs with access to global capital markets.**

- The BEG/CEE research team has studied NOCs since 1998, including collaborations with the World Bank and other organizations.
- The NOCs covered here are a portion of the 49 NOCs (47 countries) we've analyzed.
- Our main interest is to better understand NOC performance metrics, organizational structure and other key variables that indicate NOC independence, commercialization, adaptation, technical competence and other factors.



- *NOCs often serve as the main operating companies in their countries, supplying oil, natural gas and petroleum products.*
- *They also often serve as the primary sources of government revenue and hard currency; vehicles for government policy (not least of which is workforce development); and outlets, at least initially, for external trade and geopolitical relationships.*
- ***For these reasons, oil price is important to many NOCs and their governments, and many NOCs are expensive (relative to oil price).***

# How We Look at NOCs (\$/BOE)

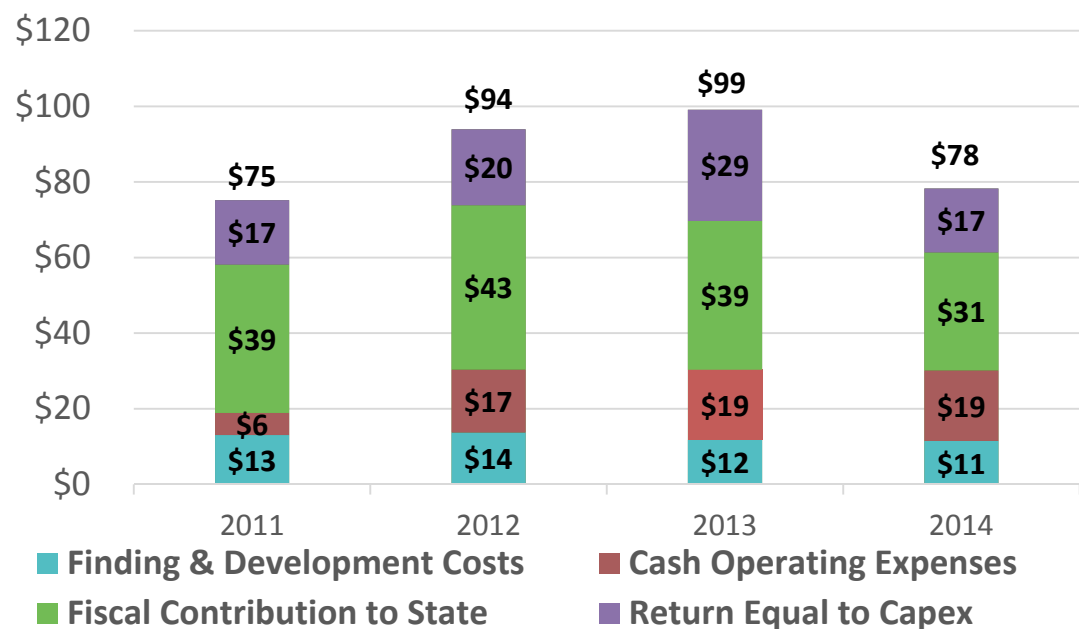
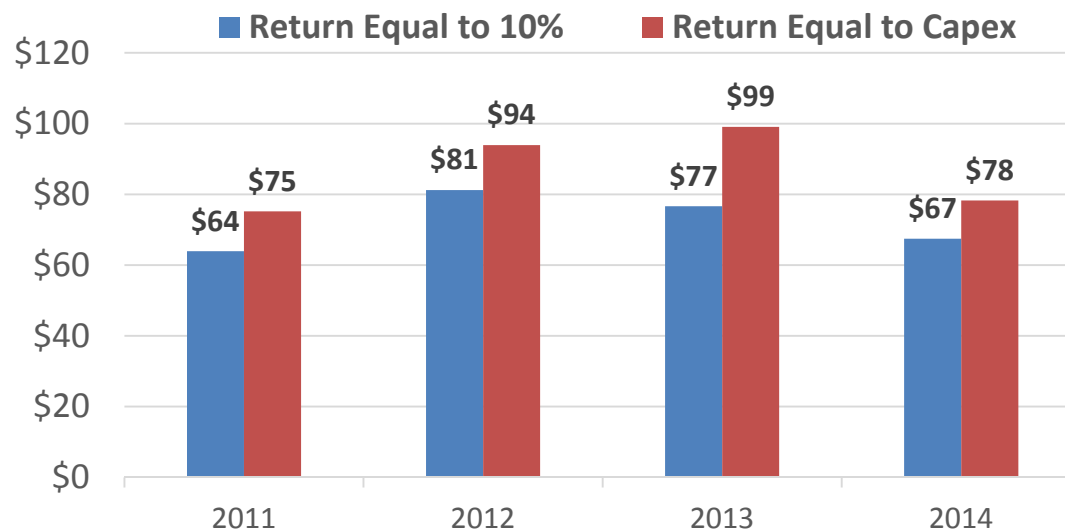
**We employ the same methodology as for U.S. producers, but FCS is a critical measure. Our sample represents about 1/5 of total world oil production 2012-2014. Oil was 72% of their total production.**

Finding & Development (FD) Costs (3 Year Rolling Average)	Annual Cash Operating Expenses	Annual Fiscal Contribution to the State (FCS)	Annual 10% ROI - OR - Annual Capital Expenditures
(Total U.S.\$ Costs Incurred for Exploration, Development and Acquisitions)/(Net Revisions, Extensions and Discoveries, Enhanced Recovery and Acquisitions)	<ul style="list-style-type: none"> <li>• Production Costs</li> <li>• G&amp;A (general and administrative) and Marketing</li> <li>• Other Operating Expenses (opex)</li> <li>• Net Financial Expense</li> </ul>	<ul style="list-style-type: none"> <li>• Production Taxes</li> <li>• Cash Income Taxes</li> <li>• Estimated Price Subsidies (refining losses and imported gas)</li> <li>• Dividends to the state (sovereign)</li> <li>• Social/economic development expenses (reported)</li> </ul>	<ul style="list-style-type: none"> <li>• (FD Costs + Cash Opex + Fiscal Contribution) * 10% - OR -</li> <li>• Total \$ Costs Incurred for Exploration, Development, Acquisition (total current year capex)</li> </ul>
<i>Exploration risk is difficult for many NOCs and some argue that as the resource gatekeepers FD results are less important (but they are).</i>	<i>Many NOCs are better "exploiters" and demonstrate good operating results (before FCS).</i>	<i>Many NOCs must carry non-core, non-commercial obligations that IOCs do not bear.</i>	<i>We include a return equal to current capex since we assume that companies at least want to recover their annual investment.</i>

**NOC costs decreased in 2014 as some governments provided fiscal relief and capex was reduced.**

- The reserve replacement ratio for our sample for 2012-2014 was 212% due to large acquisitions by CNOOC and Rosneft and inclusion of probable reserves by Petronas (151% without Rosneft)
- Exploration and production segment earnings before interest and taxes (EBIT) averaged 180% of total EBIT in 2014 vs. 105% in 2013
- **A 10% ROI represented only 31% of capital expenditures 2011-2014.**
- **FCS remains the dominant cost variable.** For NOCs to achieve meaningful cost reductions, their home governments would need to undertake substantial fiscal reforms and manage public finances much differently.

## TOTAL FOR GROUP



# How NOCs Compare

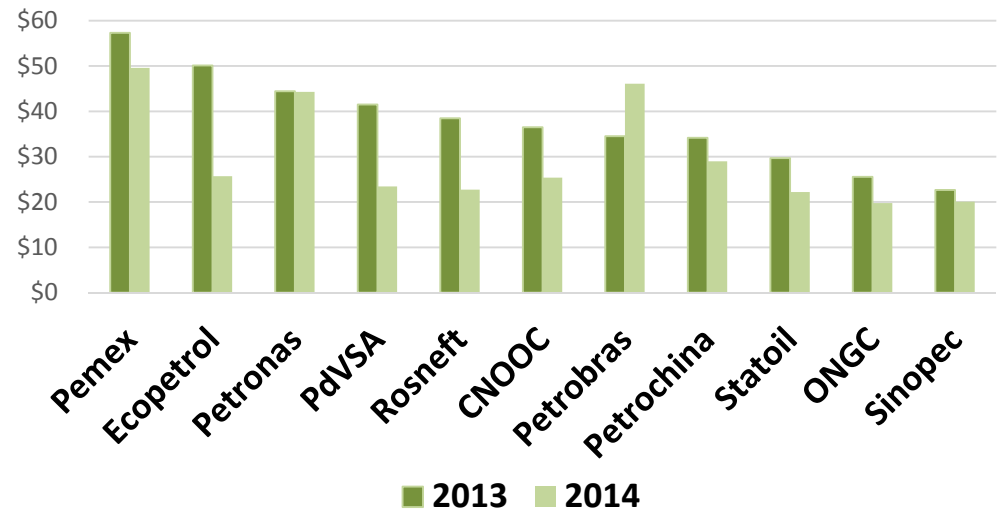
**FCS consumes much of revenue generated for most NOCs in our sample.**

- Some governments provided fiscal relief in 2014

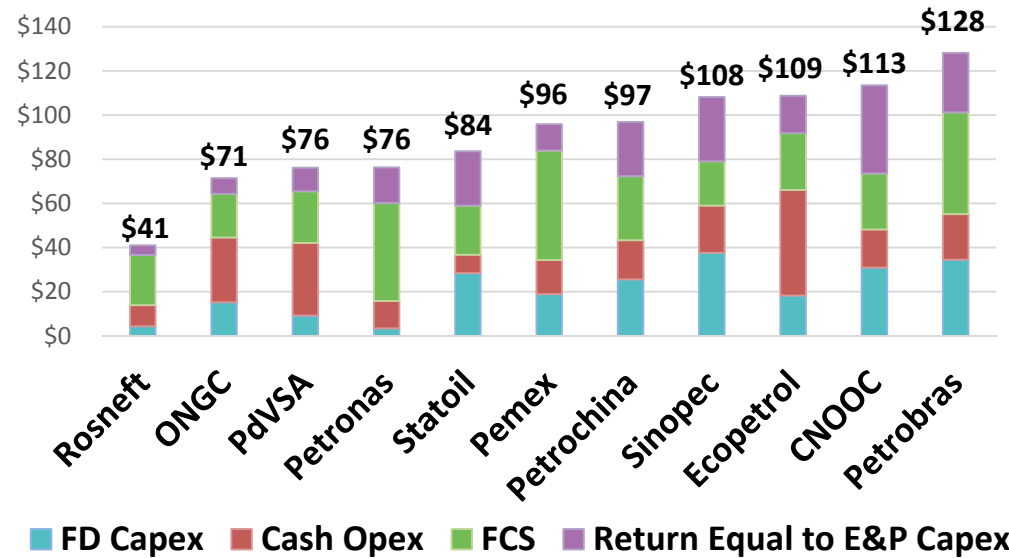
**Oil price sensitivity is greatest for the NOCs that have been the most significant investors, especially for outbound investment.**

- However capital expenditures were reduced sharply in 2014
- Rosneft's cash costs in rubles increased 19% in 2014 but unit costs in US \$ decreased due to 45% ruble depreciation
- CNOOC capital expenditures increased from \$12 billion in 2012 to \$41 billion in 2013. Rosneft cap ex increased from \$12 billion in 2012 to \$82 billion in 2013.

**Fiscal Contribution to State**



**Total Costs by Category 2014 (\$/BOE)**



# Long Term Debt/Equity %

Debt levels increasing for most companies, continuing a four-year trend.

- 10 companies' long term debt/equity averaged 46% in 2014, up from 35% in 2013. 2011 debt/equity averaged 27% and 2008 28%.
- Rosneft, PdVSA and Petrobras credit ratings are non-investment grade with negative outlooks
- All ratings are tied to sovereign ratings
- *Note: Aaa is highest rating; Ca is lowest. 1 is highest rating; 3 is lowest.*
- ***Does not include unfunded pension obligations which would increase debt for some.***

LTD/Equity %	2013	2014	Moody's Rating
CNOOC	24%	28%	Aa3-S
Ecopetrol	30%	49%	Baa2-S
Petronas	11%	9%	A1-S
ONGC	7%	27%	Baa2-S
Rosneft	53%	76%	Ba1-N
Sinopec	28%	28%	Aa3-S
Statoil	46%	54%	Aa2-S
PdVSA	53%	53%	Caa3-N
Petrobras	71%	103%	Ba2-N
Petrochina	24%	28%	Aa3-S
Pemex	Negative Equity	Negative Equity	A3-S
Simple Avg. (excl. Pemex)	35%	46%	

# ***Statoil's Experience Illustrates the Challenges of Outbound Investment***

## **“Low Profitability of International Operations is a Concern” – Moody's, July 2015**

- International exploration and production lost \$3 billion in 2014, \$5 billion of which was in the Americas.
- Statoil announced \$10.6 billion in net impairment losses 4Q 2014-1Q2015 reflecting lower expected cash flows in its international assets and reduction of goodwill related to US onshore operations.
- In 2015 reduced its interest in the Marcellus shale from 29% to 23% and received \$394 million.
- Took further impairment of \$694 million in US shale operations mid-2015 due to lack of pipeline capacity.
- Continuing to evaluate “underlying efficiency” of US onshore operations.

# Dollars Spent Domestically Go Further Than Those Spent Internationally

Statoil Capital Effectiveness By Region 2012-2014				
Region	Capital Expenditure (\$Billions)	Reserve Additions (MBOE)	F&D Costs (\$/BOE)	Comparison with Domestic F&D Cost
Norway	27.3	1,365	20	1x
Americas	18.6	274	68	3.4x
Africa	8.0	200	40	2x
Eurasia	5.7	80	72	3.6x

**International production costs about equal to Norway's - \$7.78/BOE- except for Africa at \$9.00/BOE**

**Total Capital Expenditure by Region:  
\$59.4 Billion**

