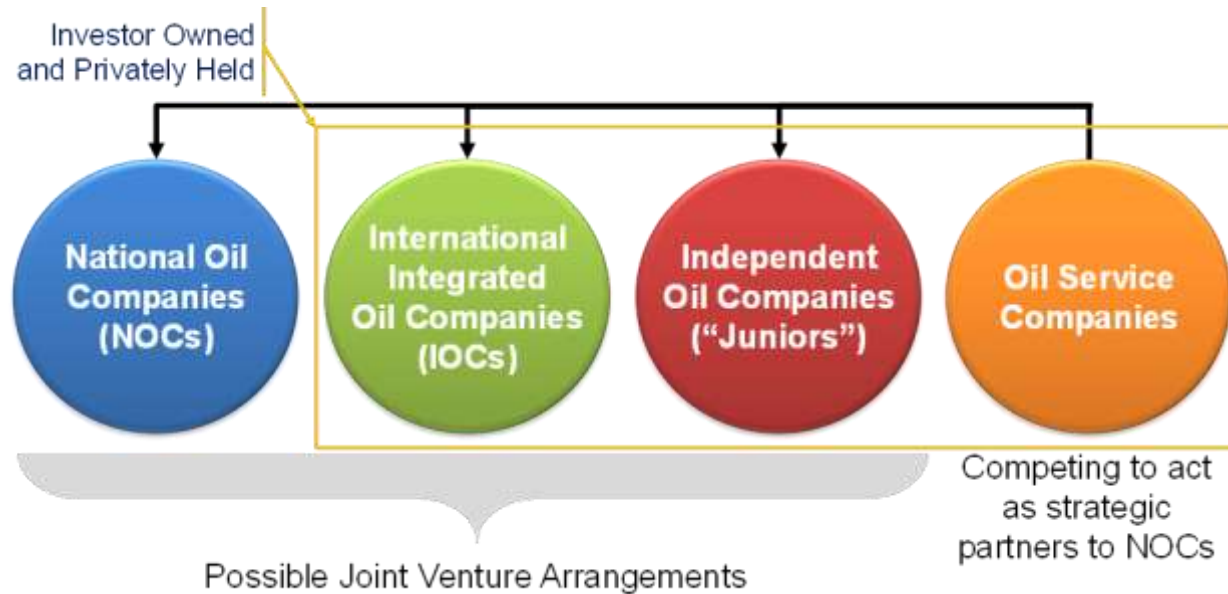


Upstream Matters! *NOCs and Oil Price

National oil companies (NOCs) are the gatekeepers to some of the highest quality resource endowments worldwide.

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 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.
- **The global oil and gas industry is complicated.** Participants both compete and cooperate to deliver the **more than 110 million** barrels of oil and gas equivalent supply that the world uses daily.
- **In summer 2015 we will update our previous analysis (*) first published when oil prices fell in 2009.**



- *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).***

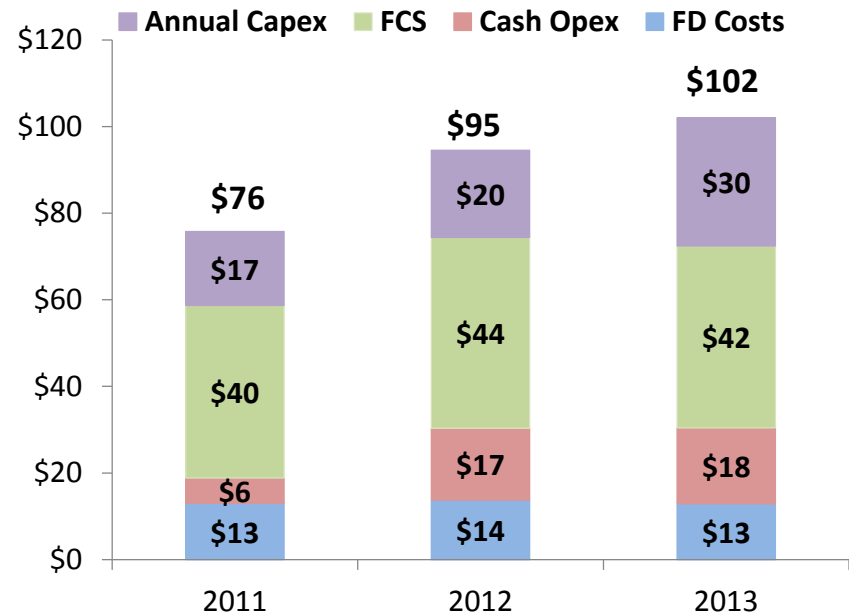
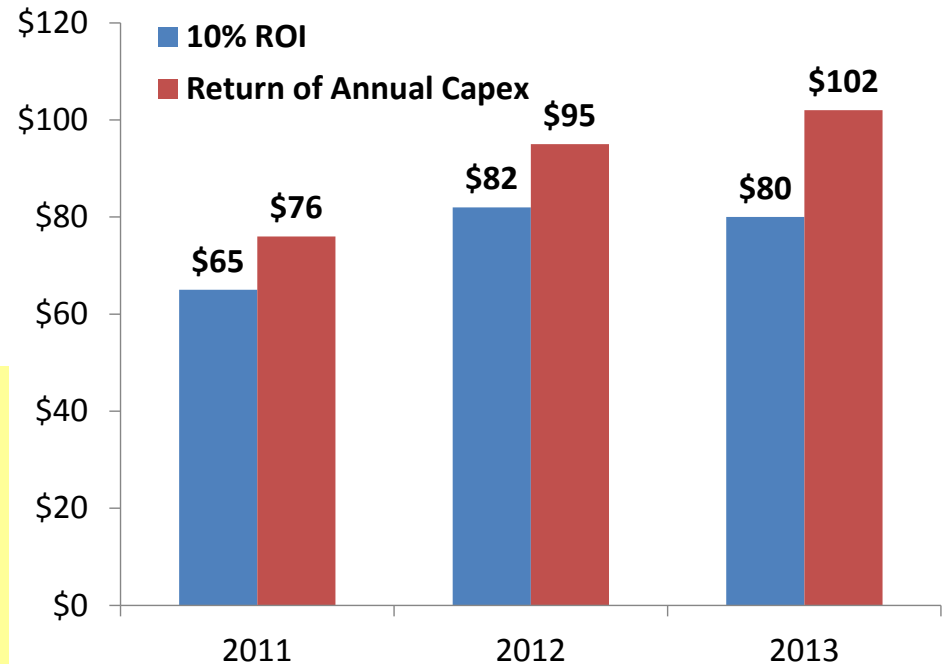
How We Look at NOCs (\$/BOE)

We deploy the same methodology as for U.S. producers, but FCS is a critical measure. Our sample represents about 1/4 of total world oil production 2011-2013. Oil was 2/3 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"> • Production Costs • G&A (general and administrative) and Marketing • Other Operating Expenses (opex) • Net Financial Expense | <ul style="list-style-type: none"> • Production Taxes • Cash Income Taxes • Estimated Price Subsidies (refining losses and imported gas) • Dividends to the state (sovereign) • Social/economic development expenses (reported) | <ul style="list-style-type: none"> • (FD Costs + Cash Opex + Fiscal Contribution) * 10% - OR - • Total \$ Costs Incurred for Exploration, Development, Acquisition (total current year capex) |
| <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 increased as some made expensive acquisitions

- The reserve replacement ratio for our sample for 2011-2013 was 192% due to large acquisitions by CNOOC, Petronas and Rosneft.
- Exploration and production segment earnings before interest and taxes (EBIT) averaged 105% of total EBIT in 2013.
- **A 10% ROI represented only 30% of capital expenditures 2011-2013.**
- **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.



How NOCs Compare

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

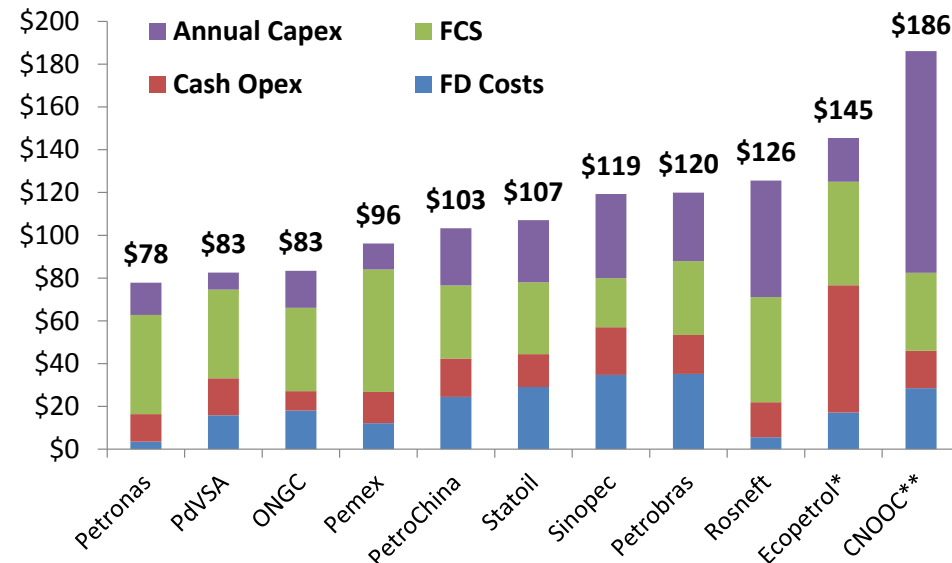
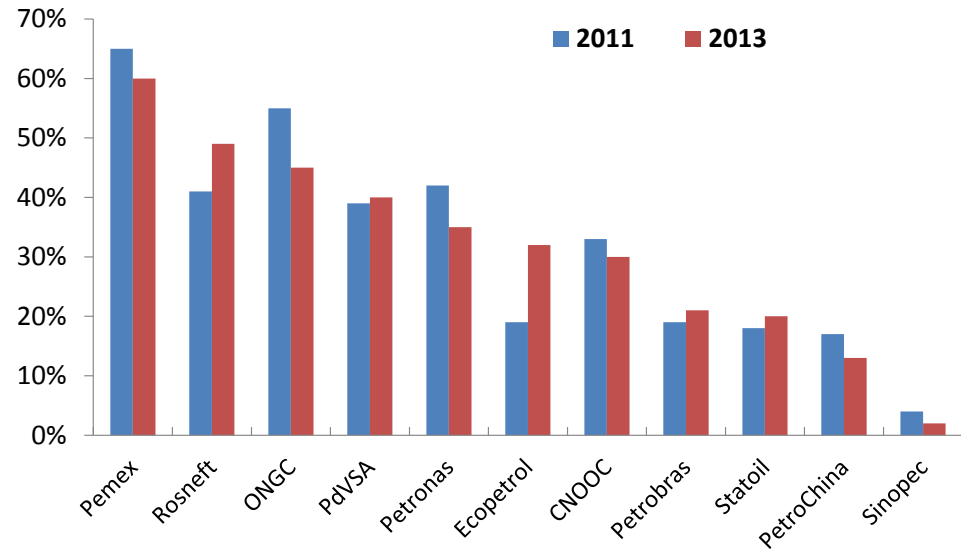
- For non-publicly traded (fully sovereign owned and controlled NOCs) the percentage is typically even higher as those NOCs constitute nearly all of the export earnings for those governments.

Notes to chart: Sample Total Weighted Average for 2011-23%; 2013-23%. (Pemex 2011 is 65% and Sinopec 2013 is 2%.)

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

- Many NOCs are on the vanguard of significant programs by their governments to increase or accelerate oil production at home and/or abroad.

*Notes to chart: *Ecopetrol production taxes included in production costs. **CNOOC capital expenditures increased from \$12 billion in 2012 to \$41 billion.*



Long Term Debt/Equity %

Debt levels increasing for most companies.

- 10 companies' long term debt/equity averaged 35% in 2013, up from 27% in 2011.
- Pemex had negative equity 2011-2013.
- Petrobras ratio was 71% in 2013.
- ***Analysis does not include unfunded pension obligations.***

| LTD/Equity % | 2011 | 2012 | 2013 |
|---------------------------|-----------------|-----------------|-----------------|
| CNOOC | 14% | 9% | 24% |
| Ecopetrol | 16% | 18% | 30% |
| Petronas | 16% | 13% | 11% |
| ONGC | 5% | 5% | 7% |
| Rosneft | 28% | 36% | 53% |
| Sinopec | 46% | 34% | 28% |
| Statoil | 39% | 32% | 46% |
| PdVSA | 47% | 53% | 53% |
| Petrobras | 41% | 52% | 71% |
| Petrochina | 17% | 25% | 24% |
| Pemex | Negative Equity | Negative Equity | Negative Equity |
| Simple Avg. (excl. Pemex) | 27% | 28% | 35% |

Watch for our 2015 report and update based on 2014 reporting, forthcoming this summer.