PESD Research
National Oil Companies

Thomas C. Heller
Stanford University
April 20, 2007

http://pesd.stanford.edu/
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## Rankings Based on Financial and Other Measures of Size

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Definitions: Current rankings based on latest 2005 data. Ties are indicated by equal ranks, with the companies listed in alphabetical order. Liquid includes crude oil, natural gas liquids and condensates; natural gas is net or marketable output. Reserves, output and refining capacity have been adjusted to exclude equity shares owned by others. Revenue, net income figures, and total assets were converted to US at average 2005 exchange rates. Financial figures are not always comparable due to differing accounting practices and definitions.
Changes in oil sector context and organization

• Higher political risk for IOCs after period of concession and safe oil
• Higher commercial risk with harder oil and more gas, especially LNG
Oil and Gas Production Profile

Established Democracy

Transitional/Uncertain

Authoritarian

MOEBD
Tapping the World’s “Infinite” Gas Resources

White: where the lights are on, satellite imagery
Blue → Red: Gas resources, with increasing size (USGS)

Source: Baker Institute (Rice) and PESD (Stanford) Joint Study on the Geopolitics of Gas (CUP)
Changes in oil sector context and organization

• More complex organization with multiple forms of investment and contracting for energy services
  – From hierarchy and administration to markets and law
  – The thinning of integrated organizations

• Two shifts in global income
  – Chinese/Indian growth
  – Resource rents increase

• Governance shifts in patronage states with higher rents
  – From roving toward stable bandits
  – From transactional to transformational patronage
Story line

- World’s reserves (and winning bids) in the hands of NOCs
- Questions
  - Implications for energy security?
  - Implications for IOC business prospects?
  - Implications for democratic and market development?
    - In oil states; international regimes (EITI; IMF)
- NOCs were established for political and economic reasons
  - If these economic and political reasons disappear in a later period, do we expect that NOCs to disappear or be transformed into purely commercial IOCs in a competitive environment, for the sake of efficient production?
  - If they persist as political entities, what does this imply for questions above?
  - Why is there wide and emerging variation among NOCs?
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<td>191.5</td>
<td>221</td>
<td>52,244</td>
</tr>
<tr>
<td>Sonatrach</td>
<td>Algeria</td>
<td>37.3</td>
<td>1,729</td>
<td>7,807</td>
</tr>
<tr>
<td>CNPC*</td>
<td>China</td>
<td>18.4</td>
<td>2,120</td>
<td>2,407</td>
</tr>
<tr>
<td>Petrobras</td>
<td>Brazil</td>
<td>11.1</td>
<td>1,701</td>
<td>2,010</td>
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<tr>
<td>Petronas</td>
<td>Malaysia</td>
<td>24.9</td>
<td>731</td>
<td>4,172</td>
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<tr>
<td>ONGC</td>
<td>India</td>
<td>6.6</td>
<td>557</td>
<td>2,486</td>
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<tr>
<td>Sonangol</td>
<td>Angola</td>
<td>2.2</td>
<td>332</td>
<td>6</td>
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<tr>
<td>Statoil</td>
<td>Norway</td>
<td>4.3</td>
<td>740</td>
<td>1,921</td>
</tr>
</tbody>
</table>
Dependent Variables

- Variation in financial and commercial performance
- Variation in strategy
  - Industrial organization
    - Physical resource type and quality
    - Location (domestic; international)
    - Value added (upstream, mid-stream, downstream)
      - Gas to power? Biofuels? Zero carbon power (refining)
  - Roles
    - Finance and capital supply as passive investor (bank)
    - Operators
    - Service contract outsourcing (engineering services coordination)
  - Patterns of investment in recent years
Independent Variables

• State-firm relationships
• Internal corporate organization
• Geological resource history
• System characteristics (context)
State-Firm Relationships

• Regulation
• Fiscal Regime
• Competition
• Missions
Regulation

• Policies
  – Natural resource management (depletion)
  – Investment
  – Health, safety, environment
  – Procurement (contracting)
  – Ownership
    • Concession, joint venture, production sharing contracts, service contracts (buy backs)
  – SOE supervision

• Institutions
  – Parliament, ministry, petroleum council, independent regulator
  – NOC internal processes
Fiscal Regimes

- Royalties
- Upstream taxation
  - Cost recovery rates and limits
  - Progressive and windfall oil taxes
  - Corporate taxes
  - Auditing
- Production sharing agreements
  - Cost oil splits and timing
- Crude deliveries
- Dividends and special levies on profits
- Bonus payments
- Fund contributions (Nigerian Delta Development)
- Subsidies
- Service payments
Competition

• Domestic competition policies
  – By fuel type
  – By value added function
  – With IOCs or other NOCs
    • domestic or foreign
• International markets generally competitive
  – Political bidding or contracting
Missions

- Quasi-fiscal activities (social payments)
- Domestic product and fuel pricing
- Non-oil service delivery (infrastructure; development)
- Extra-budgetary finance
- Employment
- Local Content
- Local Ownership (equity investment)
Internal Organization

• Corporate Governance
• Financing
• Vertical Integration Management
• Organizational Culture
Corporate Governance

• Ownership by state and private investors
• Board of Directors composition
• Accounting
• Transparency
• Remedies
Financing

• Sources
  – Retained earnings
  – Budgetary Allocations
  – International Financial Markets
    • Bank loans
    • Debt securities
    • Equity
    • Guarantees and sovereign credit
  – National Financial Markets
• Scale and autonomy
• Geopolitical allocation (subsidy)
System context

• Indicators
  – Polity IV
  – World Bank Institute Governance indicators
  – Transparency International
  – Global Competitiveness Report

• Statistical Measures
  – Rents per capita
  – Budgetary dependency on oil and gas revenues
  – Export dependency on oil and gas
  – Share of national economy is state sector
Periodic snapshots: 1975

• National security initial monopoly
  – Amazonian resources in Brazil

• Nationalizations of IOC concessions
  – Mexico, Iran, 1970s wave
  – Resource nationalism and SOEs
    • NIEO and state centered economies
    • Local content and local use of resources
  – Cartelization (OPEC compliance)
  – Principal-agent problems in monitoring, regulating and taxing IOCs
    • Lack of regulatory and taxation capacity in general
    • Lack of experience in state agencies to manage oil complexity
    • Economic share of rents increased in expropriation, delayed JV loans, PSC
Periodic snapshots: 1975

- Easy Oil (low risk) for nationalizations
- Governance role
  - State led development
  - Patronage regimes transformed state bureaus, including NOCs, into distributional agencies
    - Rising prices and rents encouraged patronage distribution
  - Missions for state assigned to NOC
    - If short term horizon, NOC used as a vehicle of corruption
    - If longer-term horizon, it became a sub-state or super-agency with professional competence to manage development tasks
Periodic snapshots: 1995

- Non-oil SOEs widely privatized and corporatized
- Principal-agent issues:
  - Regulatory and tax capacities of state increased
  - NOCs developed autonomous interests as principals
    - Professionalization of elite organizational culture or
    - Internal corruption and diversion of (extra) budgetary resources
- Depletion of easy oil raised questions of NOC technical and financial capacity to maintain reserves
- Low oil prices produced financial crises of patronage states with inflated general budgets
  - Wide wave of democratization and legislative strengthening
  - Reduced investment capacity of NOCs starved of allocations or retained capita
  - Tension from NOC resistance to failure to invest
Periodic snapshots: 1995

- Privatization (partial) to qualify for capital market financing
  - Similar to electric power markets to create bankable balance sheets
  - China multiple corporatizations and listings
  - Russian full privatizations
- Liberal view of golden triangle as element of Washington consensus
  - Commercial oil companies
  - Competitive access to markets
  - Legislature (ministry) sets fundamental policy
  - Independent regulators of technical and environmental issues
  - Anti-corruption transparency and accountability
Periodic Snapshots: 2005

• Rising prices from increased global demand, reduced spare capacity, unstable new sources
• Higher risk, higher cost oil and gas
• Increased specialization and risk management
• Third party contacts increase (oil services)
• Resource nationalism as national power
  – Energy security
  – Anti-market revival (reaction to Washington consensus)
• Rising tax, PSC shares in fiscal regimes
Periodic Snapshots: 2005

• Inertia of NOCs, with higher tolerance for inefficiencies with higher prices/rents

• Hybridization and international expansion
  – Expertise, capital, politics

• Patronage state transformation and extra-Constitutionalism
  – Patronage restored with shifted missions
  – In tension with ongoing (formal?) democratization trend

• Multi-modal or residual forms of NOCs from various periods yields variation in performance and strategy
  – cross-ties emerging in state-state (South-South) support
Variation among NOCs

• Petrobras: continued path of liberalization
• Pemex: residual constrained entity caught by and in democratic stalemate
• Petroleos de Venezuela: transformational patronage agent after professionalization purge
• China National Petroleum Company: expansive acquisition and operations (hybrid firms)
• Saudi Aramco: classical patronage with adequate rents to population ratio and professional operational capacity
• Nigeria National Petroleum Company: classic corrupt bank in short term patronage horizon
Goals: Industrial Organization of Oil Sector

• Revenue maximization for state
  – Maximum production x appropriable rents
• Optimal time path of depletion
• Non-oil institutional preferences
• Explanations for I.O. choice
  – Logic of expropriation
    • History (popular expectations)
  – Comparative principal-agent management
    • economics
  – Strategies of governance (patronage)
    • politics (tied to appropriable rents per capita)
Logic of expropriation

• Asymmetry of information creates regulatory uncertainty
  – Weak institutional capacity to monitor and tax relative to external specialized agent with joint functions across multi-jurisdiction portfolio
  – Price (cartel) and production (depletion) also beyond regulation
• Rising investment with expected front-loaded returns as a response to regulatory uncertainty implies completion of cycle (rising state share) to yield fair return on capital
• Rising taxes, royalties, bonuses, cost caps, profit shares increase regulatory uncertainty across investment cycle, with (lagged) production and revenue declines increasing pressure to nationalize
  – Institutional incredibility contributes to dynamics
Logic of expropriation

• Popular perception of external (foreign) agent overcompensation fanned by political mobilization of oppositions

• General statist ideology and resource nationalism
  – Selective distribution of revenues away from national periphery with recent resource base produces internal conflict and defensive core area nationalism vs. NOC

• Low cost of expropriation, especially in face of rising opportunity cost of contracts with rising commodity prices
  – Low damages legally (national/international)
  – Low non-legal costs (economic boycott) of punishment
  – Sunk costs vs. new opportunity costs balance leads to low next investment round sanctions, particularly with regime change
Logic of expropriation

• Given the risk dynamics of incredible regulation, will only an NOC invest optimally? (Adelman)
  – Does NOC have better capacity to manage regulatory uncertainty?
  – Can regulatory uncertainty be removed from external agent to break dynamics of expropriation?
    • Regulatory capacity improvements to reduce asymmetries?
    • Legal regimes to provide greater certainty against creeping expropriations and nationalization?
  – Will NOC be a better agent in fact?
    • Does NOC reduce information asymmetries?
    • Is there less reason to believe they will be exploited?
    • Are there compensating disabilities of NOCs as agents?
Industrial Organization of Oil Sector

• Alternative ways to achieve state (resource owner) goals (maximize returnable state value)
  – Tax and regulate external agent
  – Own and direct internal agent
    • Internal agent can either manage resources or contracts

• Principal-agent issues either way, but vary between NOCs and external agents
  – How explain fact of variation in principal’s choice?
  – Agent or principal character
Why not NOC?

• Internal management problems
• Internal lack of technical capacity, experience
• Restricted portfolio of national assets impedes risk diversification
• Lack of competition reduces incentives for efficient production
• Which of these disabilities are curable by outsourcing or national policy to admit internal competitions or send the NOC offshore?
  – Why are these alternatives not deployed?
State (owner) supervision of NOC

• External (independent) regulation of NOC is difficult, rendering it an imperfect agent
  – Does internalization of firm ownership to state reduce principal-agent problems?
    • Remove conflict of economic interest between shareholders and tax authority over rent distribution (true in fact?)
    • Management less self-interested?
    • Less professional culture?
  – Monitoring performance reduced (scarce technical capacity concentrated in NOC)
    • Managerial autonomy of NOC from split of regulatory and management functions
  – Theft is more difficult to detect (scarce state audit capacity)
    • Is policing (auditing) outsourceable?
State (owner) supervision of NOC

- Internal corporate governance effects of identity of (state) owner and tax authority
  - Consider capital budget decisions with respect to future oil investments relative to other uses of profits
  - Most tax systems do not allow the deduction of new capex (new investments are post-tax)
  - This implies that all rents should be collected by the state and returned (where productive) in overall capital budget allocations
  - However, this puts investment decisions about post-tax resources (retained earnings) in the hands of the shareholder, whereas in most firms they lie in the hands of management
    - Dividends and rents taxation are identical with state owner-taxer
    - Fiscal pressure or time preferences of political authorities?
    - Better corporate governance or inefficient investment with shareholder (political) assumption of investment function
      - Remedy with less than full rent taxation?
    - Unless restrained, management can restore its discretion over investment through borrowing with interest payments (pre-tax) and amortization deductible, but this alters leverage compared to IOCs
Efficient Political Diversion of Rents?

- Rents to labor with crowding or political selection of work force
- Rents to capital (local content), unproductive management recruitment, inefficient contracting (procurement) or project choice
- Rents to inefficient non-oil investment projects
- Rents to inefficient subsidies (products)
- Conglommeration (dispersion of activities) impedes optimal specialization
NOCs and patronage state strategies

• Why is NOC the agent of non-oil (spending) decisions?
  – Lack of transparency makes NOC a better agent for patronage state than other state agencies?
  – Level of control and trust is higher than other state agencies
  – NOC concentrates capacity among state agencies with distributive functions and low administrative capacity?
  • Less dangerous and more capable than army?
Varieties of Patronage States

• Transformational patronage or extra-constitutional governance
• Eliminate politics and law as constraining forces
• Empty powers of constitutional state, leaving only formal shell of governance structures
• Build parallel institutions to govern
  – Iranian street committees, foundations
• Rents distributed through mobilized civil society as consumption, rather than (wasteful) investment projects
• Electoral support through populist distribution and direct mobilization
• NOC as distributional and mobilization agency (missions); no longer professional culture
• Professional oil expertise and investment imported through professionalized and internationalized NOCs in state-state relations
## Principal-Agent Comparison?

<table>
<thead>
<tr>
<th></th>
<th>State as principal</th>
<th>External agent (IOC)</th>
<th>NOC</th>
<th>NOC + energy services contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value of resource extracted (net of real cost)</strong></td>
<td>Strong</td>
<td>Less strong</td>
<td></td>
<td>Strong where services available</td>
</tr>
<tr>
<td><strong>Rents appropriable</strong></td>
<td>Weak? (costs + other information asymmetries)</td>
<td>Better? (agency costs; regulatory or CG capacity)</td>
<td>Less strong (NOC contract capacity; NOC agency costs?)</td>
<td></td>
</tr>
<tr>
<td><strong>Depletion rates (investment/extraction)</strong></td>
<td>Rapid? (risk in regulatory dynamics)</td>
<td>Slower? (target revenues (PxQ); investment capital? returns?; project managem.</td>
<td>Same as NOC (except tech. capacity)</td>
<td></td>
</tr>
</tbody>
</table>
### Variation Among Patronage States

<table>
<thead>
<tr>
<th>PATRONAGE STATES</th>
<th>Long term horizon (capture)</th>
<th>Short term horizon (theft)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OIL STRATEGIES</strong></td>
<td><strong>Quantity</strong></td>
<td><strong>Price</strong></td>
</tr>
<tr>
<td>Low depletion NOC low cost agent</td>
<td>Cartel (OPEC) NOC consistent agent</td>
<td>High depletion IOC or rentier NOC + IOCs</td>
</tr>
</tbody>
</table>

**Notes**
- **Cartel (OPEC)** NOC consistent agent
- **Price**
- **Quantity**
- **Short term horizon (theft)**
- **Long term horizon (capture)**
- **High depletion IOC or rentier NOC + IOCs**
- **Low depletion NOC low cost agent**
Gazprom Strategy?

• **Long term state capture strategy**
  – Keep prices high
    • Internal price rise toward market
    • Don’t allow power (coal) reference external price to de-link oil and gas
    • Cartel (reduce supply)
  – Depletion slow
    • State budget demand curve for revenues
  – NOC as agent of political reproduction
    • Eliminate internal rivals (consolidate oil & gas after 90s)
    • Consolidate civil society (after 90s)
  – Flagship projects downstream
Political Economy: Appropriable rents per capita

<table>
<thead>
<tr>
<th>Prices (geology, costs; fiscal system)</th>
<th>High rents/per capita</th>
<th>Low rents/per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal democracy established</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before 1960</td>
<td>DEMOCRACY with quasi-commercial NOC*</td>
<td>DEMOCRACY with IOCs</td>
</tr>
<tr>
<td></td>
<td>*Botswana mines</td>
<td></td>
</tr>
<tr>
<td>After 1960</td>
<td>PATRONAGE with Long term horizon</td>
<td>Uncertain outcome: Patronage with short term horizon or democratic transition</td>
</tr>
</tbody>
</table>
## Varieties of State-NOC relations

<table>
<thead>
<tr>
<th></th>
<th>Good Agent</th>
<th>Poor agent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Acts, with limited capacity costs, in constitutional or patronage interest of state owner)</td>
<td>(Self-interest; incapacity [technical, managerial, financial])</td>
</tr>
</tbody>
</table>

### Constitutional State
- **Statoil**
- **PDVsa (1990s)**
- **Pemex (post-2000)**

### Extra-Constitutional Mechanisms
- **PDVsa (2002?)**
- **Pemex (to 1990?)**
- **Gazprom (2000s?)**
- **NIOC (1979-2000?)**
- **Gazprom (1990s)**
- **NIOC (2000s?)**
- **IOC or quasi-IOC?**
# Agency and governance relations

<table>
<thead>
<tr>
<th></th>
<th>Democratic State</th>
<th>Patronage State</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Good agent</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiscal dependence</td>
<td>Commercial NOC</td>
<td>Operational NOC</td>
</tr>
<tr>
<td>Fiscal independence</td>
<td>IOCs in open markets</td>
<td></td>
</tr>
<tr>
<td><strong>Poor agent</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IOCs in competitive markets</td>
<td>IOCs (markets) with rentier NOC</td>
</tr>
</tbody>
</table>
A Theory of Hybrid Democracy

- The Political Economy of Rents
- Patronage as Rent Distribution
- Formalism and Democracy
- Theories of Transition
Law and the Modern Economy: Theory of the State

- Constitutional agency
  - perfect agent of sovereign principal
- Private domain that functions smoothly to maximize social wealth
- Elections that are determined by a large winning coalition (median voter)
- General or broad-based taxes as revenue source
  - In a market-competitive economy (low monopoly), taxes must be general or broad-based or else they will produce defection
  - leisure-income tradeoff limits predatory taxes
- Budgeting public goods (merit/citizenship) where market failures expectable
  - If you spend (limited) revenues on private benefits, you will be voted out of office
Law and the Modern Economy: Theory of Law

• Institutions raise size of winning coalition and lower private returns from state
• Electoral and budget institutions essential
• Rule of law
  – Law as Constitution or limits on political allocation of power (voice)
    • Create a constrained and defined agent
  – Law as a framework of market (or out-migration) in non-political domain (exit)
    • Competition law to limit private power and wealth
Law and the Modern Economy: Theory and practice

• Modernity as a theory has rendered markets, democracy and the rule of law as into a normative condition that is almost a natural state (default) or universal norm

• All else is abnormal and in need of particular explanation/remedy (barriers)

• Once we examine more closely the state of markets/democracy/rule of law, the status of exceptionality is drawn into question
  – Performance in advanced democracies?
  – Formal democracies (hybrids) post-transition?
Strategies of the State as Firm

- Create private wealth by minimizing the costs of a winning coalition
- Create mix of private (including selective [quasi-] publicly distributed) goods and public goods
- Understand and manage vote/power control blocs that ensure reproduction (entrepreneurial)
- Undermine credibility of challengers to assure reward to defectors relative to their historical experience with ruling elite
- Undercut political emergence of credible challengers by blocking private wealth accumulation
- Institutions endogenous to minimize size of winning coalition to maximize potential for reproduction with private goods
Strategies of the State as Firm: Median voter theory

• Small coalition institutions increase ability of private goods distribution to ensure political survival
  – As W rises, shift to public goods as revenues cannot cover large W private market without killing tax capacity
  – Small W consistent with bad policy and high incumbency through effective loyalty

• Ineffective and informal voting reduces size of coalition and public goods incentives
  – Equal (formal) voting vs. (effective) weighting by wealth (arms, mass)
  – Lumpy or highly correlated affinity groups and bloc leaders
Strategies of the State as Firm: Median voter theory

• If you combine substantial monopoly revenue sources and informal reproduction, you can govern with private goods selectively distributed
  – Patronage and formal (emptied) institutions
  – Rule of law as formal courts with limited functions
    • debt collection and family/local dispute resolution escaping from customary system
Strategies of the State as Firm: Taxes as Revenues

- Excessive focus on taxation rather than rents generalizes the scale of the winning coalition that is needed for reproduction
- The capacity of the coalition supportable through private goods is a function of rents available to a leadership group
- With rents the trade-off is not with leisure but with the inefficiency of the economy
  - State monopoly production; regulation and protection; crime, ODA; resource rents
  - Resource rents best potential source to reduce inefficiency and minimize external interference (legal ownership)
- Successful patronage strategy stresses scale/scope of rents to produce private/quasi-public goods over taxation/median voter theory
  - High rents allow low taxes, and foster expanded small coalition, more loyalty, greater incumbency advantages
Strategies of the State as Firm: Formal (Hybrid) Democracy

• Formal democracy: small winning coalition effectively dominates a constitutional large winning coalition
  – Limit focus on median voter elections to define selectorate
  – Limit focus on taxation over rents for public finance and winning public goods strategy

• Private goods winning strategy emphasizes quasi-public or structural (primary labor market) or protection and procurement as distributional (patronage) mechanisms
  – Relative domains of exit and voice (tax/median vote) shrink compared to loyalty
  – Key issue for state leaders is time horizon for survival

• Overestimation of the empirical regularity of large coalition assembly and thereby good policy; rule of law institutions as endogenous choice of winning strategy
Patronage and corruption

• The modern internal structure of patronage is dualism and formalism with a distributive bureaucracy and ineffective rule of law
  – Entrepreneurial skill in coalition formation and management
  – Competence concentrated in a sub-state as trusted (social capital) and scarce mechanisms of monitoring/control
  – National oil companies; party apparatus

• Western views of corruption combine and confuse:
  – Theft (bribery and embezzlement)
  – Guanxi (gifts and local network organization)
    • Not dependent on acquisition of state power
  – State patronage (capture)
  – Redistribution from center in transitional states
Patronage and Corruption

• Bribery and embezzlement (theft) are breakdowns of either gift or patronage relationships
  – Corruption as theft an attribute of the large order
  – Marketization of non-market relationships
    • Foundation for case of efficient corruption as introduction of (potentially) competitive behavior

• Corruption in these senses, when hard to control, contradicts an effective patronage state and is the object of bureaucratic legal controls
  – Theft undercuts stable patronage structures
Varieties of Patronage States

• Roving bandit with short term horizon
• Inability either to consolidate regime or pact to democracy with rivals, all of whom believe that no pact will hold and that rivals have a greater potential to consolidate than he has
  – Lack of consolidation may be associated with low rents per capita and inability to form a winning coalition with private goods payoffs
• Dispersed corruption (theft) from weak bureaucratic capacity
• Low investment and sporadic public service delivery
• NOC as bank with passive investor status
• Classic failed state or resource curse pattern
Varieties of Patronage States

- Consolidated patronage state as stable bandit
- Institutions transformed to distributional channels
  - Public jobs, waste projects (infrastructure), selective delivery of public goods and services
  - Politicians retained as coalition allies and distribution agents
- Move from theft to state capture (but not state emptying)
- Civil society mobilization with adequate rents and resource nationalism
- NOC as budget source, especially in periods of low prices
- NOC may be professionalized as tight and controlled super-agency with concentrated technical (non-political) capacity
  - Minimal and controlled technocracy or military as competent state agents
  - Examples of Iran under Shah & PRI Mexico with focused and controlled technical capacity (Mexico in Pemex)
  - Potential instability between NOC technical capacity and distributional role