The Limits of Institutional Design in Oil Sector Governance: Exporting the "Norwegian Model"

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ABSTRACT

Norway has made a point of administering its petroleum resources using three distinct government bodies: a national oil company (NOC) engaged in commercial hydrocarbon operations; a government ministry to help set policy; and a regulatory body to provide oversight and technical expertise. In Norway's case, this institutional design has provided useful checks and balances, helped minimize conflicts of interest, and allowed the NOC, Statoil, to focus on commercial activities while other government agencies regulate oil operators including Statoil itself. Norway's relative success in managing its hydrocarbon resources has prompted development institutions to consider whether this "Norwegian Model" of separated government functions should be recommended to other oil-producing countries, particularly those whose oil sectors have underperformed. Seeking insight into this question, we study eight countries with different political and institutional characteristics, some of which have attempted to separate functions in oil in the manner of Norway and some of which have not. We conclude that while the Norwegian Model may be a "best practice" of sorts, it is not the best prescription for every ailing oil sector. The separation of functions approach is most useful and feasible in cases where political competition exists and institutional capacity is relatively strong. Unchallenged leaders, on the other hand, are often able to adequately discharge commercial and policy/regulatory functions in the oil sector using the same entity, although this approach may not be robust against political changes (nor do we address in this paper any possible development or human welfare implications of this arrangement). When technical and regulatory talent is particularly lacking in a country, better outcomes may result from consolidating commercial, policy, and regulatory functions in a single body until institutional capacity has further developed. Countries like Nigeria with vibrant political competition but limited institutional capacity pose the most significant challenge for oil sector reform: unitary control over the sector is impossible but separation of functions is often impossible to implement. In such cases reformers are wise to focus on incremental but sustainable improvements in technical and institutional capacity.

Introduction

Since 1972, Norway has separated policy, regulatory, and commercial functions in the government's administration of petroleum development. This approach has inspired admiration and imitation as the canonical model of good bureaucratic design for a hydrocarbons sector. Development institutions have explored whether oil-rich countries should adopt this so-called "Norwegian Model" as a route to both better performance and enhanced transparency in their hydrocarbon activities (Al-Kasim 2006b; Nore 2009).[1]

One oil-rich country currently considering adoption of the Norwegian template is Nigeria. The reform plan devised by Nigeria's Oil and Gas Reform Implementation Committee (OGIC) and now embodied (in modified form) in the Petroleum Industry Bill before the country's National Assembly envisions creating a separation of institutional roles strikingly parallel to that of Norway. Nigeria's current national oil company (NOC), NNPC, would be re-fashioned into a commercially-oriented and financially autonomous entity analogous to Norway's NOC, Statoil. The proposed National Petroleum Directorate in Nigeria would set policy in the same way as Norway's Ministry of Petroleum and Energy. The new Nigerian Petroleum Inspectorate would serve as a quasi-autonomous regulator in the mold of the Norwegian Petroleum Directorate (NPD).

In this paper we assess the potential of the separation of functions model as a tool for reforming oil governance in other countries, particularly those with NOCs. Several others have explored aspects of this question. Farouk Al-Kasim drew on his own deep involvement in Norway's oil sector to list the detailed elements that contributed to that country's positive experience and consider their applicability in a developing country context (Al-Kasim 2006a; Al-Kasim 2006b). Ramón Espinasa studied six Latin American countries with NOCs, three of which put in place government bodies to administer hydrocarbon resources and three of which did not (Espinasa 2008). He observed in his sample that the creation of government agencies with regulatory and policy authority generally had a positive effect on a country's hydrocarbon

[1] In this paper, we consider Norway's approach to petroleum development, not to management of petroleum revenues (which is sometimes also referred to as the "Norwegian model"). See Velculescu (2009) for discussion of the latter topic.

performance. Boscheck (2007) draws upon institutional economics to develop a framework for NOC governance, including governance of the Norwegian and Nigerian NOCs. Without prescribing which functions should or should not belong to an NOC, Lahn et al (2007) define general principles of good governance in the petroleum sector, which include "clarity of goals, roles and responsibilities" among government bodies. One of the strongest explicit endorsements of separating commercial and regulatory responsibilities is made by the *Natural Resource Charter* (2009),[2] a collective effort by a respected group of academics and practitioners to help countries wisely manage their natural resource endowments.

Our current approach to assessing the Norwegian Model is distinguished by the use of a diverse sample of cases and the application and extension of political economy theory in the context of oil sector reform. We draw insights from a broader study of NOCs (Victor, Hults, and Thurber 2010)—focusing in particular on the divergent experiences of Norway, Nigeria, and Angola but also pulling in other illustrative cases—to weigh the empirical support for the separation of functions model as an instrument of policy reform. We seek to explain why such a model has worked in some countries and failed (or failed to take root) in others, and why countries like Angola and Malaysia seem able to run their oil sectors reasonably successfully without it. We argue that the Norwegian Model may indeed represent an ideal for oil governance, but that blindly applying the model to countries that lack certain kinds of institutional capacity can be harmful. Anchoring our work in the political economy of reform, we use a typology of regime types from Mick Moore and James Putzel (1999) and Merilee Grindle (2007) as a way to begin thinking about which countries might benefit from a concerted effort to separate commercial, policy, and regulatory functions in oil, and which are better served by alternative approaches to reform. Following the theory of "second-best institutions" articulated by Dani Rodrik (2008), we assert that countries with limited capacity may be best served by concentrating resources in one institution and/or building incremental technical skill rather than investing in the creation or empowerment of multiple institutions.

[2] Precept 5 of the *Natural Resource Charter* states that "*National resource companies* should be competitive and commercial operations. They should avoid conducting regulatory functions or other activities." (*Natural Resource Charter* 2009 p12)

Description of the Norwegian Model and Its Potential Benefits

Norway is known for an administrative system in which it assigns oil sector functions to three state-controlled institutions, each with its own distinct role. First, there is the commercial entity, NOC Statoil, which today carries out extensive oil operations both in Norway and abroad. Second, there is the policy-making body, the Ministry of Petroleum and Energy. The Ministry works with (and has at various points guided) the country's political leadership in setting goals for the sector, plans for achieving these goals, and oversees the crucial licensing process. Third, there is the regulatory and technical advisory agency, the Norwegian Petroleum Directorate (NPD), which compiles data on all hydrocarbon activities on the Norwegian Continental Shelf (NCS[3]), collects fees from oil operators, sets hydrocarbon regulations within its areas of responsibility, and advises the Ministry on technical matters. This separation of roles and responsibilities between commercial, policy, and regulatory bodies became known as the "Norwegian Model" of oil sector governance (Al-Kasim 2006a p242). For the purposes of this paper, we define the separation of functions model fairly expansively, to include cases in which policy and regulatory functions are rigidly separated as well as ones in which they are combined in one agency; in our view the most salient separation is between distinct bodies performing commercial and policy/regulatory functions of government.[4]

Compared with a regime in which the national oil company also has some degree of responsibility for regulating the industry or determining national policy, a separation of functions model can have various benefits in theory, as summarized in Table 1. First, the NOC may be able to (and perhaps be forced to) focus more exclusively on its commercial competitiveness, enhancing its operational performance and increasing the (short- or long-term) financial return to the state. Second, by establishing a focused and independent regulator, the government may be able to enforce better performance, both by the NOC (through establishing a more level playing field and improving benchmarking) and by other actors in the sector, including private

[3] The Norwegian Continental Shelf (NCS) constitutes the entire offshore region over which Norway has resource sovereignty. It includes parts of the North Sea, Norwegian Sea, and Barents Sea.

[4] The reality is that even in Norway itself, the formal separation between policy and regulatory functions has actually been somewhat fluid. For example, the technical/regulatory body, the Norwegian Petroleum Directorate (NPD), reports directly to the Ministry of Petroleum and Energy; originally the NPD had a separate board but this was deemed unnecessary and abolished in 1991. In addition, the distinction between policy and regulation in oil governance can be a fuzzy (and often purely semantic) one. It could be argued that one of the strongest regulatory functions in a country's oil sector, for example, is to set the ground rules for and then to award exploration and production licenses; in Norway, this critical role is the domain of the Ministry of Petroleum and Energy.

companies. Third, conflicts of interest—in which, for example, the NOC could use its regulatory or policy powers to privilege itself against competitors, or to privilege its (or its partners') commercial interests over the revenue-generation goals of the state—are potentially reduced. Fourth, the state's assertion of independent control over hydrocarbon policy and regulations may put it in a stronger position to prevent an NOC from capturing other state institutions (including political ones) and thus prevent it from becoming a distorting and destabilizing "state within a state" (Stevens 2008). Fifth, in accordance with democratic theories about the value of pluralistic debate, the empowerment of two separate bodies with core responsibilities for the development of the sector may foster innovation and the filtering out of bad approaches in a way not possible when all decisions are concentrated within one organization.

In the following section, we consider whether application of the separation of functions model appears to explain overall performance of the hydrocarbon sector in several different countries. Because governments have diverse goals, performance of a country's oil sector is naturally subjective and difficult to quantify. Our own judgments in this paper of country performance in oil administration are based on the following principal metrics: 1) to what extent is a country's revenue collection in the short- and long-term optimized in accordance with government objectives (usually meaning as high a government take as possible without unduly deterring investment, except in cases where a government intentionally limits production for specific reasons[5]); 2) how effectively has the country generated positive linkages from oil to the broader economy (and minimized negative effects of oil on the economy), for example by generating broad-based industrial growth through development of technological capability; and 3) how well has the government maintained effective political control over the hydrocarbon sector (avoiding especially the phenomenon of an NOC as a "state within a state"). The separate question of whether a government uses its revenue in a way that effectively contributes to the country's overall development is clearly important (and represents an additional reason that some advocate for checks and balances, even at the possible expense of sectoral efficiency), but we consider it to be beyond the scope of this paper.

[5] These reasons might include the desire to contain the impact of oil revenues on the country's broader economy and industrial structure, to cartelize the oil industry, or to preserve oil supply as part of a "depletion strategy" within the country.

Table 1. Summary of separation of functions model, its ideal operation and benefits, and overall performance metrics for a hydrocarbon sector. This paper considers under what conditions the separation of functions model in column 1 can be implemented as envisioned in column 2, achieve the benefits noted in column 3, and ultimately contribute to the sector performance metrics of column 4.

<table>
<tr><th>1) Separation of Functions Model</th><th>2) Ideal Operation of Model</th><th>3) Possible Resulting Benefit</th><th>4) Overall Sectoral Performance Metrics</th></tr>
<tr><td rowspan="5">• Independent policy and/or regulatory bodies
• Commercially-oriented NOC
• Arm's length relationship between entities</td><td>NOC can focus on commercial capabilities</td><td>Better NOC performance</td><td rowspan="5">• Optimal government revenue collection
• Positive linkages from oil to broader economy (and minimal negative effects of oil on economy)
• Effective political control over oil sector</td></tr>
<tr><td>Improved ability to monitor and benchmark</td><td>Better performance by NOC and other companies</td></tr>
<tr><td>Reduced conflicts of interest within government</td><td>Public interests take precedence over private ones</td></tr>
<tr><td>Government can check power of NOC</td><td>Avoids distortion and instability from too-powerful NOC</td></tr>
<tr><td>Increased debate, scrutiny about sectoral decisions</td><td>Innovation and effective strategic decision-making</td></tr>
</table>

Assessment of the Separation of Functions Approach in Different Countries

To evaluate the role of the separation of functions institutional design on oil sector performance, we consider a sample of eight principal countries with significant domestic hydrocarbons production and majority-state-owned oil companies. (Of this sample, we treat Norway, Nigeria, and Angola in greatest depth.) Of the 15 case studies covered by the larger Stanford NOCs research project (Victor, Hults, and Thurber 2010), these eight provide good variation in the administrative systems currently or previously in place for governing the oil sector. As shown in Table 2, four of the eight countries (Norway, Brazil, Nigeria, and Algeria) have at some point attempted to empower an autonomous body or bodies within government with responsibility for policy and regulation; the other four (Angola, Malaysia, Mexico, and Venezuela) have either made no such attempt or have vested would-be policy or regulatory bodies with so little actual power that the NOC retains practical control over all important

decisions. (Mexico's energy reform in late 2008 did attempt to increase regulatory oversight, including through the creation of a technical regulator, the National Hydrocarbons Commission, but it is still too early to fully assess the results.) Nigeria and Algeria have tried but been unable thus far to create true separation of functions; as previously mentioned, Nigeria's current reforms represent another attempt to achieve this goal. Angola and Malaysia have in our judgment been able to build high-performing hydrocarbon sectors (by the criteria described above) without separation of functions, whereas Mexico and Venezuela[6] have been poor performers in recent years. We will spend the remainder of this section examining the experiences of some of these countries in more detail before attempting in the following section to draw broader inferences from their divergent experiences with the Norwegian Model.

Table 2 Experiences of different countries with respect to separation of functions

Country	Tried Splitting Commercial from Policy/Regulatory Functions?	Effective Separation of Functions Currently In Place?	High-Performing Sector Currently (by criteria in Table 1)?
Norway	✓	✓	✓
Brazil	✓	✓	✓
Nigeria	✓		
Algeria	✓		
Angola			✓
Malaysia			✓
Mexico[7]			
Venezuela			

Norway separated policy, regulatory, and commercial functions from the time of NOC Statoil's formation in 1972,[8] and it realized all of the objectives in columns 2 and 3 of Table 1 to a greater or lesser degree. Through the Ministry of Industry (which later became the Ministry of Petroleum and Energy), Norway's strong and competent bureaucracy first asserted control over

[6] Note, however, that Venezuela had a highly successful hydrocarbons sector before 2002. See Hults (2010a) for further discussion.
[7] As discussed in the text, Mexico's energy reform in late 2008 attempted to improve regulatory separation, but this is still very much a work in progress, and one that is hindered by PEMEX's monopoly position in the country.
[8] It should be noted that Norway's particular sensitivity to separating the government's commercial ventures from its policy and regulatory functions stemmed in part from a 1962 mining accident on the Arctic island of Spitsbergen that killed 21 employees of a state-owned mining company.

hydrocarbon policy and licensing on the Norwegian Continental Shelf (NCS) as soon as the possibility of substantial oil resources became evident in the mid-1960s.[9] Majority private firms, mostly foreign, controlled all exploration and production activities until Statoil was formed in 1972 as the government's commercial arm in petroleum. The Norwegian Petroleum Directorate (NPD) was created concurrently with Statoil to concentrate government competence in technical and regulatory matters, thus forming the third leg of the "Norwegian Model." Partly as a result of these administrative arrangements, Statoil was able to focus on developing its commercial capabilities to a greater extent than many NOCs. The Ministry was careful to involve international oil companies as well as Statoil's domestic competitors like Norsk Hydro (whose state ownership was bumped up to 51% at the time of Statoil's founding in 1972) in license groups to facilitate benchmarking of and leverage over Statoil's performance.[10] And when Statoil inevitably did try to leverage its growing political clout for commercial advantage, the Ministry and NPD were able to play at least a partial counterbalancing role.

On the whole, Norway's story of petroleum development has been a positive one: the country developed its oil successfully and at a pace that was set at least somewhat deliberately by government; Statoil developed technological capabilities that helped kick start a broader domestic oil services industry; the government mostly kept Statoil's power in check; and the state collected and continues to collect significant revenues which were prudently deposited in a fund for both savings and stabilization purposes. Norway's success stemmed from many factors, but the separation of functions approach was certainly one element of the country's positive experience.

Latin America offers several examples of oil sectors in which government agencies were created as stewards of the nation's petroleum resources after NOCs had already been in place for some time. As described in detail by Espinasa (2008), Brazil, Colombia, and Peru all created government policy and/or regulatory agencies in recent years. While acknowledging the many factors in play and the various differences between these countries, Espinasa suggests that the creation of such agencies generally had a salutary effect by creating a more level playing field and allowing or forcing each NOC to become more commercial in its approach. Brazil saw

[9] This paragraph draws in part from Thurber and Istad (2010).
[10] Involvement of carefully-selected IOCs was also intended to facilitate efficient resource development as well as opportunities for Norwegian players to learn from the strongest international operators.

production, wells, and reserves all increase appreciably following the creation of the *Agência Nacional do Petróleo, Gás Natural e Biocombustíveis* (ANP) in 1997 (Espinasa 2008); already strong NOC Petrobras was partially privatized in 2000 and has become an even more efficient player since (de Oliveira 2010). It is difficult to conclusively link the creation of the ANP to the further improvement in the performance metrics of Petrobras, but at the very least the company has continued to develop and prosper under the more formalized checks and balances of recent years. Petrobras first came into its own as a competitive and technologically-advanced player under military rule between 1965 and 1985 (de Oliveira 2010), a situation in which there were no formalized checks and balances in oil governance.

The other two Latin American countries in our sample, Mexico and Venezuela, rely on monopolistic NOCs that directly execute petroleum policy on behalf of the state (Espinasa 2008; Stojanovski 2010; Hults 2010a). Both Mexico and Venezuela have struggled in recent years with falling production and underutilization of available resources due to insufficient NOC technical capability and effort in exploration and development; however, Mexico's PEMEX was capable through at least the 1970s and Venezuela's PDVSA in the 1990s was considered to be among the highest-performing NOCs in the world (Stojanovski 2010; Hults 2010a). (The causes of their declines are complex. In the case of PDVSA, President Hugo Chávez sacked 30-40% of its workforce after the company launched strikes against him in 2002 and 2003. The strikes against Chávez reflected PDVSA's status as a "state within a state" of sorts, a situation which has reversed itself as the weakened company now passively acquiesces to direction from the president (Hults 2010a).)

Several of the countries we consider tried to separate regulatory and commercial functions in oil but were unable to robustly establish such a separation in anything other than a strictly formal sense. Nigeria, for example, started its oil industry with formal organizational relationships surprisingly similar to, and in fact pre-dating, those of Norway. Prior to Nigerian government direct participation in oil, the Ministry of Mines and Power had the task of managing the concessions given to foreign operators to extract the country's oil. In 1970, those working on hydrocarbons within the Ministry were split off as the Department of Petroleum Resources (DPR) to handle the growing regulatory demands (Nwokeji 2007). With the creation in 1971 of Nigeria's original NOC, the Nigerian National Oil Company (NNOC), the Ministry, DPR, and

NNOC formed a triumvirate quite similar in formal relationship to what Norway would create a year later with the Ministry of Industry, NPD, and Statoil.

Whereas in the Norwegian case all three government bodies were able to hold their own and balance the others (although the NPD took some time to establish its niche), Nigeria's triad rapidly deteriorated in the face of a domineering permanent secretary at the Ministry who was able to subdue and eviscerate both NNOC and the civil servants at DPR.[11] Responding to the disastrous management of Nigeria's oil sector under this tripartite arrangement in the 1970s, and with the logic that it would be better to consolidate Nigeria's limited human talent in petroleum, NNOC and DPR were combined to form the Nigerian National Petroleum Corporation (NNPC) in 1977. Formal regulatory independence was re-established in the 1980s, eliminated in 1998, and re-established again in 1999. However, even in periods of formal regulatory oversight (including the present one), the regulator has been unable to procure sufficient resources to effectively oversee and control the oil industry. The principal reason is that Nigeria's political system is built on a patronage network fueled by oil revenue, and those in power have been disinclined to support the development of a truly autonomous regulator that could constrain their ability to distribute spoils to kin and associates (Thurber, Emelife, and Heller 2010). The reform bill currently in the Nigerian legislature once again attempts to construct a strong regulatory agency; it also seeks to turn NNPC into a more commercial company by removing its regulatory functions and giving it control over its own cash flow.[12]

Algeria, another country with little traditional separation between the government's commercial and policy functions in oil (Marcel 2005 p77-78), attempted a similar reform. Algeria's 2005 Hydrocarbons Law aimed to transfer regulatory responsibility from NOC Sonatrach to new government regulatory agencies, with the idea that this would create a level playing field for competition and in the process help the NOC to sharpen its commercial capabilities (Entelis 2010). The 2005 law did lead to the creation of two new formal agencies with policy and regulatory functions: the *Agence Nationale pour la Valorisation des Resources*

[11] See Nwokeji (2007) for discussion of the Nigerian experience.

[12] Formal parliamentary debate on the Petroleum Industry Bill was not yet underway at the time of the drafting of this paper, and though the leadership of the Nigerian executive is pressing for its passage, the divisions within the Nigerian government, the active nature of the legislature, and heavy lobbying by interest groups ranging from international oil companies to civil society groups make it far from certain that the reforms will become law. The confusion surrounding the bill is exacerbated by the fact that at least two versions of it have been widely circulated, with significant variation in some important provisions.

en Hydrocarbures (ALNAFT), charged with collecting taxes and royalties, granting exploration contracts, and approving development plans; and the *Autorité de Régulation des Hydrocarbures* (ARH), designated as the regulator of midstream and downstream activities (Entelis 2010). However, as in the Nigerian case, political actors benefiting from oil patronage (including, as in Nigeria, a formerly supportive president[13]) have acted forcefully to head off real change; amendments to the hydrocarbons law in 2006 restored Sonatrach's highly preferential position in licensing, with continued closeness among the heads of government agencies and Sonatrach executives casting further doubt on the genuineness of regulatory and commercial separation (Entelis 2010).

The same patronage dynamic that has undermined efforts to create true regulatory and policy bodies in Nigeria and Algeria also causes oil sector performance more generally to fall short of potential in both of these countries. Inefficiencies in revenue collection arise as officials channel resources to associates. Short time horizons of competing elites lead to policies geared more at creating niches for middlemen than establishing a favorable long-term investment climate. (In both countries, incentives for foreign investment tend to be put in place on an ad hoc basis in response to crises in revenue generation, due for example to declines in oil price.) This generally short-term outlook is also not compatible with the sustained focus on institutional and human capacity development that would support development of local technological capability.

Another group of countries is composed of those which have never seriously attempted to separate commercial from regulatory and policy functions and yet whose oil sectors run reasonably well. In Angola, there is no independent regulatory institution, and while the law does formally vest certain oversight powers in the Ministry of Petroleum, in practice the national oil company Sonangol is sector manager, regulator, and operator all rolled into one.[14] Flying in the face of the canonical Norwegian Model, the country has managed to build a highly

[13] The trajectories of Algeria's 2005 reform effort and Nigeria's current one have been astonishingly similar in many ways, including in the following respects: 1) thrusts of the attempted reform effort include giving the NOC control over its revenues and creating an independent regulator; 2) the NOC's central function as a tool of patronage causes entrenched interests to block reform; and 3) reform was led by a highly-competent, former high-level OPEC official (Rilwanu Lukman for Nigeria, Chakib Khelil for Algeria) who was at least partially betrayed in the effort by a President (Obasanjo in Nigeria, Bouteflika in Algeria) who seemed interested in reform in theory but did not want it to negatively affect his own ability to deliver spoils and stay in power. (In the Nigerian case, the Oil and Gas Reform Implementation Committee (OGIC) recommendations that were ignored by President Obasanjo did go on to become the core of the Petroleum Industry Bill (PIB) under his successor Umaru Yar'Adua, although as mentioned the fate of the PIB remains highly uncertain at the time of this writing.)

[14] This paragraph's discussion of Angola draws from a more extensive analysis in Heller (2010).

productive petroleum sector by means of this single multipurpose agent, achieving steady growth in production and reserves over the last several decades. Although corruption is rife in larger society and much of the population remains in severe poverty, the oil sector itself runs reasonably efficiently and provides reliable revenue to the government. The government managed to maintain a stable environment for foreign investment in the oil sector even in the face of a civil war that ran from 1975 through 2002. Foreign oil companies still perform almost all of the work of oil extraction, but the government in recent years has been able to build up Angolan know-how, both in tough regulation of foreign companies and in oil operations and related activities. The company and its subsidiaries are playing an ever-growing role in the operations of the sector and the Angolan economy generally.

Angola's historical lack of political competition helps to explain the fundamentally different dynamics of its oil sector compared with Nigeria or Algeria. (Obviously, there was direct military competition between different groups during the civil war, but the Popular Movement for the Liberation of Angola, or MPLA, maintained control over the machinery of government and the oil industry throughout.) In contrast to fractious Nigeria or Algeria, members of the ruling MPLA in Angola all came from a small and homogeneous elite group, which was made even more tight-knit and pragmatic by the need to fund a protracted civil war. The government became a unitary entity, or "principal,"[15] ensconced in power for decades. Partly because of this dynamic, the Angolan government gave coherent, long-run direction to a single agent, Sonangol, whose leaders were closely tied to those of the country (Heller 2010). Angola thus succeeded in the absence of the checks and balances that would be provided by distinct commercial, regulatory, and policy institutions. It will be interesting to observe how the Angolan model evolves as the civil war fades further into the past—in particular whether it proves robust against either a significant drop in oil price or the advent of more political contestation. The Angolan government has made recent public statements that it is considering ceding some of Sonangol's regulatory responsibilities back to a government agency, perhaps the Ministry of Petroleum (Heller 2010).

[15] A *principal* refers to an entity that directs another entity, an *agent*, to do its bidding. Principal-agent relationships arise in politics, employment, and a wide range of other contexts. Some states have multiple principals exercising independent control over government *generally* but few such principals in the oil sector specifically, because of institutional agreements delegating autonomy to that sector. For more of principal-agent theory in the NOC context, see Hults (2010b). For general discussion of the principal-agent relationship, see Spence and Zeckhauser (1971); Ross (1973); and Jensen (1983).

Malaysia also established a multipurpose NOC, Petronas, with very close links to the country's leader, especially during the 1981-2003 government of Prime Minister Mahathir bin Mohamad. Mahathir consolidated power and brooked little opposition; as in the cases of Angola since 1975 or Brazil under military rule from 1965-1985, the country's leadership was centralized, and the NOC was effective even as it played commercial, policy, and regulatory roles. Petronas has leveraged its regulatory role in particular both to increase the government's take of oil revenues and to gain commercial advantage for itself, for example by mandating a high participation share for itself in production sharing contracts with IOCs (Lopez 2010). These partnerships have given it expanded cash flow (unlike many NOCs, Petronas retains its earnings, paying royalties and taxes like international companies) and enhanced opportunities for technology learning. The robustness of Malaysia's multifunctional NOC model in the face of a less unitary government is being put to the test now. Mahathir's successor, Abdullah Admah Badawi (2003-09), largely left the company alone, but fissures have emerged between new Prime Minister Najib Razak and company management (Lopez 2010), possibly contributing to the recently announced departure of Petronas CEO Hassan Marican, who had been at the helm of the company since 1995.

Observations on the Effectiveness of the Separation of Functions Model

The above case studies present a complex and nuanced picture of the optimal role for separation of functions in oil administration. Some countries can perform well in the absence of separated functions (Angola and Malaysia), and other countries that have tried separation of functions as a reform strategy have found it not to be implementable (Nigeria and Algeria). At the same time, two countries that many consider to have among the most mature, robust, and effective nationalized sectors, Norway and Brazil, have indeed implemented separation of functions. Our sample of eight countries suggests the following general observations about the value and applicability of the separation of functions model.

First, a country's ability to implement separation of functions in a meaningful way is heavily dependent on its state of human capital and institutional development at a particular juncture. Norway and Nigeria both created tripartite divisions of commercial, policy, and

regulatory functions in the formal sense at the time they established NOCs. Norway's more competent and established bureaucracy, however, enabled its policy and regulatory bodies to grow into informed, moderating forces in the sector. Norway's bureaucracy was quite well developed by the time oil was discovered in the North Sea in the late 1960s; it had experience regulating other resource sectors like mining and water, and it embarked on a highly focused training program for its employees to learn about petroleum (Thurber and Istad 2010). The country also had appreciable industrial experience (especially in shipbuilding and civil engineering) that proved transferable to oil. Nigeria's indigenous civil service, by contrast, had only come into existence a decade earlier when the country gained its independence. Nigeria had no significant industrial base at the time of oil's discovery in 1956, and its bureaucracy never had the advantage of sufficient institutional stability and training to develop capability amid the political turmoil of the newly independent republic in the 1960s (Thurber, Emelife, and Heller 2010). Perhaps partly as a result, Nigerian oil sector regulators acted as either pernicious micromanagers (as with the Nigerian Ministry of Mines and Power in the early 1970s) or passive rubber stamps (as with the Nigerian Department of Petroleum Resources today) or both.[16]

Brazil was able to build human and institutional capacity in oil first and then successfully implement a separation-of-functions model once these prerequisites were in place. By the time the ANP was established as the government steward of petroleum resources in 1997, the NOC was already a strong performer, and the country's governing institutions had matured to the point where competent independent bureaucratic oversight was both possible and salutary for the company's performance.

Second, countries lacking deep human and institutional capacity (both in oil institutions and in government more generally) early in the development of their oil sectors may benefit from *not* establishing the separation of functions model initially. Like Nigeria, Angola lacked an established civil service at the onset of oil development (and in fact its bureaucracy may have been in an even worse position because of the debilitating effects of civil war). Unlike Nigeria, however, Angola chose to consolidate domestic talent in the oil sector, consciously investing training resources, policy-making power, and regulation in one entity. This decision enabled

[16] A common feature of Nigerian oil administration today is that bureaucratic procedures and micromanagement are rife, and yet government bodies exert no truly effective authority over the activities of the international companies that extract the country's oil (Thurber, Emelife, and Heller 2010).

Angola's unitary government to act with one voice in its management of the sector and minimize the number of bureaucratic points of engagement (and potential corruption) that foreign operators had to face. This facilitated government efforts both to ensure fluid functioning of oil operations and to capture a strong share of revenues. Over time, as the company has developed a class of skilled technocrats and managers, its ability to manage both its regulatory and commercial functions has grown. Over the past three decades, Sonangol has developed as an expanding island of competence in the midst of (or, potentially, at the expense of) massive shortcomings in the rest of the Angolan bureaucracy and private sector. The solitary focus on the development of Sonangol as the steward of Angola's most valuable resource may have negatively impacted other aspects of the country's institutional development. But it has certainly helped the government achieve its goals in the oil sector, and it may serve as a stable launching pad for broader commercial and administrative development.

Brazil and Malaysia also seemed to benefit from not separating functions of oil administration early in the development of their national oil sectors. In Brazil, the monopolistic position of Petrobras and its insulation from an independent regulatory check and public oversight during the long period of military rule from 1965 to 1985 allowed it to make decisions that were initially unpopular politically but ultimately successful—for example to gain operational experience overseas, and, most importantly, to explore offshore in Brazil (de Oliveira 2010). The relative insulation from politics of Malaysia's NOC Petronas under Mahathir also seemed conducive to its development and to that of the country's oil sector (Lopez 2010).

Third, while oil industries can function well both with and without separation of functions, the existence of a robust system of checks and balances may provide crucial stability and resilience against political or economic shocks (though our conclusions in this respect are highly provisional). To the extent that this conclusion is borne out by further study, it suggests that countries with the requisite human and institutional capacity would be wise to build the checks and balances that separation of functions provides. Though cause and effect is difficult to establish, changes in political alignment in several countries lacking such institutional checks and balances have had particularly damaging effects on oil sector governance. For all the talent of Venezuela's PDVSA in the 1990s, its political confrontation with Chávez proved disastrous for the company and for the Venezuelan oil sector. The difficulties in government-NOC

relations in post-Mathir Malaysia and the fractures that emerged in Abu Dhabi after visionary Sheik Zayed died and left the leadership of the emirate to his feuding sons also illustrate this risk. Angola may ultimately prove to be particularly susceptible if the political status quo that has dominated the country's leadership for decades should shift, combining a deterioration of the informal control that has driven Sonangol for decades with the continuing absence of formal institutional oversight.

Fourth, attempts to implement separation of functions in countries where institutional prerequisites are absent can be highly counterproductive. Nigeria has repeatedly seen efforts to create an independent regulator fall short on substance, and Algeria's 2005 reform drive ran aground in the face of similar pushback from entrenched interests. In some cases, such reforms can be worse than useless and actually do harm, for example in the following ways. First, overly sweeping and unworkable reform initiatives may crowd out more incremental reform efforts that could actually be substantive and sustainable, implicitly serving the interests of those who benefit from the status quo. Second, reform efforts focused on creating new government bodies can further diffuse limited financial and human resources, as Nigeria's early experience demonstrates. Third, such approaches potentially increase the points of engagement and thus corruption, decreasing efficiency and reducing the overall public take. (Sonangol provides a good example of how concentration of government functions can help sidestep or at least centralize corruption problems in a country rife with them.) Fourth, repeated failed efforts to reshuffle the deck chairs via a proliferation of institutions create cynicism and built-in excuses for people not to believe in the possibility of reform, which can actively impede positive developments.

Factors Determining the Applicability of the Separation of Functions Model

Although the separation of functions model is, as suggested by the *Natural Resource Charter* (2009), a "best practice" of sorts, it is probably not the right prescription for every ailing oil sector around the world. As Dani Rodrik argues in a more general sense about institution building, countries lacking conditions supportive of best practices are better off pursuing

"second-best institutions" (Rodrik 2008). Reformers in oil need context-specific guidance as to when the Norwegian Model is or is not a good idea.

From the above examination of different countries, it appears that two factors are particularly important in determining the applicability of the separation of functions model: 1) the degree of political competition existing in a country, and 2) the level of institutional capability in the country. Mick Moore and James Putzel (1999) offer a stylized typology, further elaborated by Grindle (2007), that captures these dimensions and is useful in thinking about where certain kinds of oil reforms may be useful. They categorize states as follows:

1) **Collapsed states**: "No effective central government."
2) **Personal rule**: "Rule through personalities and personal connections. If political parties exist, they are based on personalities."
3) **Minimally institutionalized states**: "An unstable mixture of personal and impersonal rule, with varying degrees of legitimacy. Parties are based partly on personalities."
4) **Institutionalized[17] non-competitive states**: "Rule through stable and legitimate organizations and procedures; no open competition for power. Political parties serve the regime or are hindered and controlled by it."
5) **Institutionalized competitive states:** "Rule through stable and legitimate organizations and procedures; open competition for power through programmatic parties."

Source: Moore and Putzel 1999

Figure 1 provides a complementary framework for thinking about which strategies for administering the oil sector may be effective in states with different degrees of political competition and different institutional capacity. We discuss some specific cases below.

[17] Compare institutionalization to the degree of rule of law within a country (Hults 2010b).

Figure 1 Suggested approaches for oil administration in different types of states

	Low Political Competition	**High Political Competition**
Low Institutional Capacity	Suggest: - Consolidate functions Examples: ANGOLA	Suggest: - Develop technical and institutional capacity Examples: NIGERIA
High Institutional Capacity	Suggest: - Consolidate functions - Separate functions as politics becomes more pluralistic Examples: MALAYSIA (under Mahathir)	Suggest: - Separate functions Examples: NORWAY, BRAZIL, MEXICO

In regimes in which power is not meaningfully contested—for example in institutionalized non-competitive states (e.g., Malaysia, Brazil under military rule) or cases of personal or group rule (e.g., Angola, Abu Dhabi, Saudi Arabia)—time horizons are long and one institution can successfully fulfill many functions on behalf of a country's leadership. A positive outcome will still depend on farsighted decisions by a country's leaders, in particular in appointing skillful leaders of their NOCs and then leaving them alone; Malaysia, Angola, and Brazil under military rule all did this to a large extent. Where the human capacity in a country is limited, it may be particularly effective to create one all-purpose administrative tool rather than to invite the infighting that can result from creating multiple bodies.[18] The decision to consolidate regulatory and commercial powers when forming NNPC in Nigeria in 1977 followed at least in part from this logic. Reformers faced with conditions of low human capacity should

[18] Although an NOC was the tool of choice for the countries in our sample, it may be that creating a strong regulator/policymaker can be a better choice in some cases, with commercial elements incorporated later or not at all. In a sense this was the administrative path Norway followed between the first realization among the civil service of oil potential in the early 1960s and the establishment of Statoil in 1972.

be very wary of proposing a separation of functions model until institutions and talent appear to be in place to support it.

In countries with strong institutional capacity and competitive political systems—what Moore and Putzel term institutionalized competitive states—the Norwegian model of separating policy and regulatory functions from commercial ones may indeed be best practice. Norway and Brazil are the outstanding cases in which this approach has been used successfully. As another country with political competition and relatively well-developed institutions, Mexico is also a plausible candidate for separation-of-functions reform; indeed, the country's reform law at the end of 2008 created a new technical regulator, the National Hydrocarbons Commission, and also attempted to strengthen the existing Energy Regulatory Commission.[19] (However, resistance in Mexico to foreign participation in the oil sector may limit the effectiveness of such separation-of-functions reform by preventing the emergence of any real competitors to PEMEX.) Countries with well-developed institutional capacity that are in transition from unitary to more pluralistic government might also benefit from moves to separate functions in the oil sector.

Minimally-institutionalized states like Nigeria—both politically contested and lacking in durable and effective institutions to provide continuity and a moderating influence—present the most nettlesome challenges to reformers. Suggesting that a leader consolidate personal power as a route to better performance in oil is usually unrealistic, not to mention anathema to supporters of democracy and human rights. For example, Nigeria's extreme diversity and free-wheeling political system will probably prevent the country from ever becoming an Angola. (General Sani Abacha's brutal but ultimately unsustainable tenure as Nigeria's ruler from 1993 to 1998 showed both the likely futility of trying to decisively consolidate power in the country and the damage that could be inflicted on Nigerians in the attempt.)

At the same time, the pursuit of the Norwegian Model is also likely to be fruitless in a country of low institutional capability and vigorous competition for the spoils of oil. Any policy or regulatory bodies that are created will promptly be either neutered or captured by powerful interests who do not want to see their own control over oil revenues challenged. The unsatisfying conclusion (as previously remarked upon by Moore and Putzel (1999), Grindle

[19] The National Hydrocarbons Commission has arguably shown some initial value by offering a much-needed second opinion on PEMEX's controversial plan to invest heavily in the Chicontepec field (Olsen 2010).

(2007), Rodrik (2008), and others) is that ambitious institutional reforms are more likely to work in settings in which basic institutional capacity already exists. Where they do not, more narrow and targeted reforms focusing on technical and institutional capability may offer the best chance of yielding concrete, though more limited, results.

Concluding Thoughts: What Reforms Are Possible in Minimimally Institutionalized States?

What can be done to improve oil management in states like Nigeria in which political competition is fierce and institutions are rudimentary? Broadly, we embrace Grindle's concept of "Good Enough Governance" (Grindle 2004)—the idea that reformers need to pursue improvements in governance that are feasible in a country-specific context rather than trying to duplicate the forms of the best-functioning example of oil sector management. This may entail creative pursuit of incremental reforms that do not challenge entrenched interests all at once but rather assemble key building blocks and constituencies for change over time. There exists a larger debate on the merits of such a gradual approach to improvement relative to a "grand bargain" strategy that re-configures many institutional interactions at once. The latter approach, for example, might allow better coordination of reforms and associated political horse-trading, and might also provide more rapid payoffs to provide credibility and sustain the momentum of reform (see, for example, Feltenstein and Nsouli 1998). However, this kind of grand bargain is complicated in the absence of durable institutions that can credibly negotiate and commit to political tradeoffs. In countries like Nigeria and Algeria, such credible institutions simply do not exist, irrespective of any organizational definitions on paper.

As an example, what might suitable incremental reforms look like in Nigeria? First, reformers should emphasize the continued disclosure of credible information on the oil sector, and the work of civil society groups, including those focused on transparency in the oil sector, should be supported and strengthened. From the perspective of someone expecting an overnight transformation of the Nigerian oil sector or even a big "gotcha" moment that would catch major officials with their hands in the till, the efforts to date of the Nigerian Extractive Industries Transparency Initiative (NEITI) have been a disappointment. Taking the broader view, though,

NEITI has brought to light significantly more extensive data on hydrocarbon activities in Nigeria than had ever previously entered into the public view. Going forward, it is critical that this basic data gathering function be sustained even in the face of flagging political support and grumbling from affected parties. (It should be noted that one of the important success factors of Norwegian oil administration has always been its focus on collection and dissemination of data on oil operations on the Norwegian Continental Shelf.)

Second, the country's indigenous capacity—both technical and institutional—needs to be strengthened. Such efforts may confront entrenched interests at times—for example, officials who control the imports of refined products for domestic use might find their advantageous position threatened if Nigeria were to improve its domestic refining capability—but need not do so in any systematic way. Narrowly-targeted, strategic local content preferences in oil may have some positive effect, as long they are accompanied by rigorous efforts to foster the capacity of the would-be employees or service providers (and as long as those who profit purely from being middlemen can be mostly weeded out). Ultimately, more "islands of competence" need to be created in the form of private Nigerian companies[20] both inside and outside of oil that profit from productive activity more than from government connections. By the same token, islands of competence must be nurtured in regulatory areas like auditing of costs and tax collection.[21]

Third, reforms to existing institutions in oil should focus on changes that are concrete and sustainable as opposed to comprehensive. For example, rather than pushing to give NNPC control over its earnings all at once, which is enormously threatening to those in government who currently control the purse strings (and thus unlikely to happen any time soon), it would be more effective to carve out smaller niches within the organization's portfolio of activities that could begin to develop financial autonomy. Selected new joint ventures with international oil companies could be incorporated and given more autonomy, with the majority of current joint ventures left in their current configuration for the moment. Less capital-intensive ventures will probably serve as better starting points for reform, as these attract less interest from the machinery of patronage than do the more obviously lucrative projects.

[20] Some Nigerian talent is groomed within international oil companies as well, but ultimately private Nigerian enterprises will be needed as part of a constituency for institutional change in the country.
[21] One of the recommendations of the NEITI audits was that the Nigerian agencies charged with collection of taxes and royalties (the Federal Inland Revenue Service and Department of Petroleum Resources, respectively) increase their ability to collect, analyze, and store data from the hydrocarbon industry.

It is discouraging that even the best-conceived institutional blueprint cannot turn Nigeria's oil sector into Norway's (or even Angola's!) in one fell swoop. However, recognizing the context dependence of oil reform will help countries make reform choices that are realistic and that yield measurable and sustainable progress rather than a dispiriting trail of dashed hopes.

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