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Philosophy of the Biddable Variable: Why the Bidder's Work Program is Important

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EXECUTIVE SUMMARY

This issue brief proposes a framework for awarding bids in a public tender for exploration blocks. The context for the proposal is Mexico's energy reform of 2013–2014. For the first time since 1958, a new oil regime has been put in place that allows for competition in the award of an exploration block. Said differently, the new oil regime allows for the award of a block to an oil company other than Pemex.

My basic argument is that alongside the potential revenue benefits of an award, the state should give equal attention to the collateral and cascading effects of a bidder's proposed work program. As a heuristic exercise, I offer an imaginary scoring in a public tender of seven bids for an exploration block (Table 1). Before turning to that table, however, consideration should be given to the public policy framework in which such a scoring system would make sense.

Rightly understood, the requirement to balance revenue concerns with other economic benefits of a nonmonetary character should be exercised with a wide appreciation of the potential multiplier effects of oil reform. In contrast, the application of a rent-seeking bidding criterion will damage the interests of the state and discourage top-tier oil companies from participating in public tenders.

MEXICO'S DUAL CHALLENGE

Mexico's challenge is twofold as it reforms the oil sector: to devise policies that signal an unmistakable break with the country's Pemex-centric national narrative and to break with the long tradition of awarding contracts by reference to their nominal, lowest price.

The Hydrocarbon Revenue Act of 2014, promulgated on August 11 along with numerous other laws, requires that the Finance Ministry determine the unique variable "of an economic character" by which a petroleum block is to be awarded in public tenders.

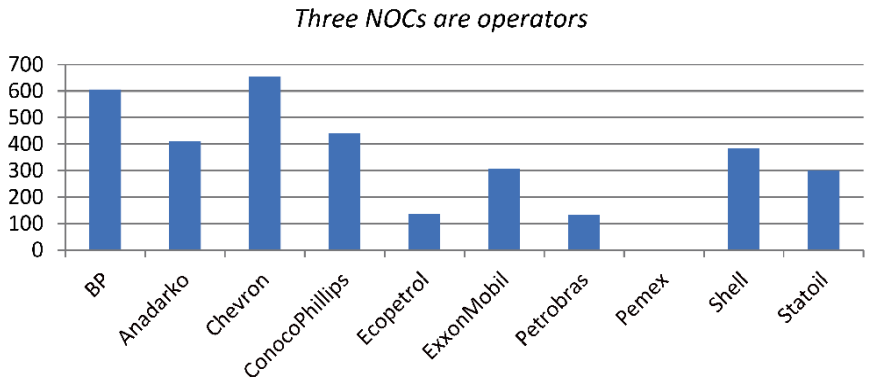
Because of Mexico's Pemex-centric past, many observers believe that the robustness of the energy reform will be demonstrated unequivocally only when the first public tender is won by a top-tier oil company on a stand-alone basis—that is, without the involvement of Pemex or any of its domestic or offshore affiliates. Associations with Pemex are also desired, but not as a substitute for a stand-alone award.

What an International Oil Company Wants from the Host Government

An international oil company (IOC) will want the sense of being welcomed by society, i.e., that public opinion supports its role in the

The state wins only with new data, but the operator wins only with a commercial discovery.

FIGURE 1 — LEASES IN U.S. GOM OF SELECTED COMPANIES



SOURCE Bureau of Ocean Energy Management

development of the resource base. From the government, the company wants certainty about the terms of the contract and about the fiscal terms. It also wants predictability in relation to permits and public oversight. Finally, an IOC has a voracious appetite for subsurface data. The better the data, the better the economic offer, proposed work plan and comfort level with the proposed investment.

Judging by the responses of IOCs from around the world—upwards of 300 leaseholders and 5,500 leases—the U.S. Gulf of Mexico meets those tests. There are two national oil companies from South America, Petrobras and Ecopetrol, which have leases; Pemex's first least is still in the undefined future (Figure 1).

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What Does the Government Want from an IOC?

From the government's point of view, the overhead cost of conducting and awarding a public tender for an exploration block may be profitable even if no commercial oil reservoir is discovered—the host country gets jobs, national content, and data at the expense of the oil company. There is also the prestige of having a top-tier oil company investing in one's country.

What the government should expect from an oil company depends on the nature of the opportunity that is offered. In a mature province such as Mexico's Burgos Basin, the government wants incremental gas production with a fairly high share of the total economic value of production. This perspective changes progressively with risk and the scale of the investment, as we will see in a moment.

Cooperation and Competition: Regulators should promote both cooperation and competition. It is said that there are no secrets in the oil industry, a paradoxical claim in view of the high level of secrecy that guards the industry's operations and data. The idea behind "no secrets" is more subtle. In a big, high-risk venture, oil companies typically form a consortium that is structured by a Joint Operating Agreement (JOA), drawing on the expertise that each brings to the project. They may hire an oilfield service company or engineering firm to find a solution to a challenge presented by a reservoir (for example, a down hole tool that could withstand annular pressure of 40,000 psi). If a tool or solution is created from that research, it will soon be available industrywide.

Oil companies cooperate in these several ways, and in so doing, they demonstrate a joint commitment to the completion of the proposed work. But the same companies also compete for blocks. Another dimension of cooperation is technology transfer and training: everyone has a common stake in having the highest standard of safety in the training of personnel.

Better Subsurface Cartography: The state should seek to expand its warehouse of subsurface data. A basic fact of the upstream oil industry is that oil companies are cartographers, not of present-day shorelines, islands and reefs, but of those that existed in a past that spans some 50 million years. Data on those features and ancient life forms provides information not only about the possible presence of hydrocarbons, but also of the presence of other resources, such as freshwater aquifers and geothermal beds.

The state has a vested interest in having as much subsurface data as it can get. Through the drilling of many wells, a regional understanding of the geology emerges. Data from one well, then another, then a third might lead a geologist to imagine an ancient

shoreline along which organic matter has turned into hydrocarbons. Each well offers a piece of a jigsaw puzzle. A popular saying among exploration geologists is "There are no unsuccessful wells."

A MULTI-PARAMETRIC APPROACH TO A BIDDABLE ECONOMIC VARIABLE

The general idea of this approach is that the award of a block in a public tender should be based on a "unique economic variable" that is the sum, or global score, of the work program/investment and the fiscal terms, or fiscals, each optimally weighted, as discussed below.

Work Program

The work program of a bidder is his obligated investment, defined in specific activities and schedules. The importance of the work program from the perspective of the state varies. Where the block that is the object of a public tender is in a mature basin—where wells, infrastructure, services, and knowledge of the subsurface are abundant—the importance of one additional work program is less than would be the case in a deep water area where there have been no commercial discoveries.

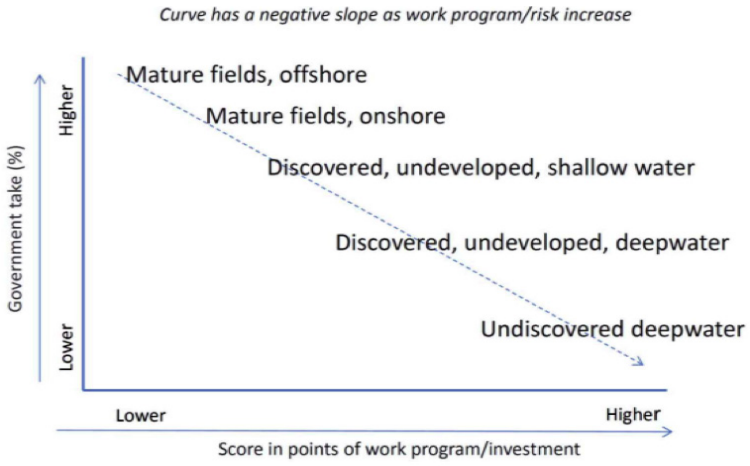
This consideration suggests that the fiscal obligations of the bidder should vary according to the state of knowledge and social envelope of the block to be auctioned. The state should fine tune its claim on profit oil to reflect the full range of its expectations regarding the exploration and development of a petroleum block (Figure 2).[1]

The final score on the work program of a bidder should reflect not only the technical merits of the proposal, which can be scored quantitatively with relative ease (number of wells, for example), but also other dimensions that perhaps are best scored on a five-point scale.[2] Examples of these dimensions include a number of "likelihoods," such as:

- Optimal efficiency in reservoir extraction
- Financial resources to undertake the project
- Availability of top-tier oilfield service companies as contractors
- Management commitment to see the project through to completion.

The goal here is to weigh the components of a work program according to a system of points.[3] Each component is given a weight, expressed in points (Equation 1). Some elements in the work program to be scored are likely to have been included in the qualification stage as a minimum requirement; scoring them again can help identify the best work program.

FIGURE 2 — FISCAL TERMS IN THE MEXICAN OPPORTUNITY SPACE



SOURCE MEI; May 27, 2014

Fiscal Terms

As mentioned, Mexico's Hydrocarbon Revenue Act of 2014 requires that the Finance Ministry determine the sole economic criterion for the award of a public tender of a petroleum block. That variable need not be a single value; on the contrary, as Pemex demonstrated in its bid round in Chicontepec in 2013, the biddable variable may contain distinct elements, and the winner is the bidder with the highest composite score. It is this approach, developed in Mexico by Pemex (and used widely internationally), that the Finance Ministry should apply to public tenders in which oil companies are to receive defined commercial rights to production.

The value of oil production is always shared with the state. Conventional wisdom divides oil production into "cost oil" and "profit oil." The first is oil needed to pay the operator's expenses incurred in exploration and production. Some of these are operational expenses, such as salaries and drilling fluids, while others are capital expenses that can be amortized on a long-term schedule.

Having decided, by the terms of the public tender, on the period of amortization, the question for the authorities in the Finance Ministry is the sharing of the profit oil, either in physical barrels or as a percentage of the marketed value. In all cases, the state gains more from contracts that award physical barrels, as operators are additionally required, for practical reasons, to build logistical infrastructure.

Other fiscal terms could be devised—for example, a sliding scale by which profit oil would be shared with the operator on a 50/50 basis[4] at a given price, but with an escalation scale. For each $10 increase, bidders could offer to increase the state's share of profit oil by a certain percentage. This concept could be included as a biddable component in a composite variable (Table 1).

EQUATION 1 — THE WORK PROGRAM IS SCORED BY POINTS

$$Work\ Program\ Score = \sum_{i=1}^{n} Component_i \times Points_i$$

TABLE 1 — GLOBAL SCORE REFLECTS THE IMPORTANCE GIVEN TO THE WORK PROGRAM

A 50/50 weighting might be given in a greenfield, deepwater block
Column F represents a multi-parametric bidding variable

	Work program/investment			Fiscal Proposal				Global
Pre-Q Bidder	Tech. Eval	Raw score	Adj. score Wt = .5 A	% of profit oil B	Other fiscals C	Total points D=B+C	Adj. score Wt = .5 E	Score F=A+E
1	Yes	245	122.5	55	32	87	43.5	166.0
2	Yes	215	107.5	62	35	97	48.5	156.0
3	Yes	200	100.0	74	23	97	48.5	148.5
4	Yes	185	92.5	58	16	74	37.0	129.5
5	Yes	150	75.0	76	30	106	53.0	128.0
6	Yes	129	64.5	53	25	78	39.0	103.5
7	Yes	122	61.0	85	38	123	61.5	122.5
8	No	†						
9	No	†						
10	No	†						

Winner has highest Global Score

† Note: 120.0 was the minimum score

Data: Heuristic
Chart: MEI

SOURCE Global Financial Development Report 2013 and China Financial Sector Assessment Program Report 2011

CONCLUSIONS

Working out a practical method of scoring bids is no easy task. However, the effort to achieve such a method in Mexico's case is amply justified as a counterweight to the traditional approach to public tenders in which "lowest price" is the preferred award criterion.

The conclusion is that the unique economic variable that a finance ministry should support is the one in which the sum of the weight of the work program and the weight of the fiscal basket = 1.00. Moreover, those weights should be applied to the aggregate scores that each bidder receives in respect to his work program and economic proposal (Equation 2).

In this way, by incentivizing the bidder to make a serious commitment to the exploration and development of a petroleum block the state receives collateral benefits independently of the commercial success of the block. For his part, the operator of that block is additionally motivated by the knowledge that the state recognizes the importance of his investment beyond consideration of the revenue benefits that it would receive with a commercial discovery. Further, the operator will know that the state will recognize and reward his efforts to seek enhanced solutions that improve the recovery factor of the reservoir.

It is expected that a workable scoring system will be the outcome of trial and error. The benefit of the doubt in awarding contracts should be given to the option that offers more data.[5] Mexico needs a bid round quarterly—then monthly. There is a lot of catching up for Mexico to have 25, then 50

EQUATION 2 — LOGIC OF THE BIDDABLE VARIABLE

$$Biddable\ economic\ variable = \sum_{i=1}^{n}(Work\ Component_i \times Weight_{i)+}\ (Fiscal\ terms_i \times Weight_i)$$

and then 100 lease operators generating and publishing subsurface data, building infrastructure, creating jobs, and producing increasing volumes of oil and gas.[6]

ENDNOTES

1. The surface risk in Mexico at the local level, including political activism and narco-violence, makes the offshore play more attractive at present, despite the requirement for additional investments.

2. A five-point scoring system: 5=superior, 4=above average, 3=average, 2=below average, 1=unacceptable.

3. The point system utilized in Colombia may be taken as a frame of reference. See www.anh.gov.co.

4. The basis of 50/50 is for discussion only (and to simplify the arithmetic), and is not meant to be prescriptive.

5. The juxtaposition of blocks and areas that were allotted on August 13 to Pemex and future contractors will enhance the collection of data and the creation of area-wide supply chains.

6. Substantially increased natural gas production could motivate the government to take the long overdue measures to establish a natural gas pricing hub inside Mexican territory (the current hub is at Henry Hub in Louisiana).

AUTHOR

George Baker, Ph.D., is the editor and publisher of Mexico Energy Intelligence (MEI), a subscription-based newsletter and documentation service based in Houston since 1996. He is also the director of Energia.com, a Web portal that features interviews and public interest documents as well as MEI reports. As an analyst and management consultant, Baker has been following developments in Mexico's energy sector for more than 30 years.

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