Brazil Libra Field PSA terms from a national fiscal perspective

September 9, 2013
Pedro van Meurs
Marcelo de A. Sampaio

Executive Summary

The proposed PSC terms for the Libra field are now available. A detailed analysis was made of these terms from a national fiscal perspective. The proposed PSC has two interesting features: (1) a sliding scale profit oil bid table and (2) an unusually high bonus.

Profit Oil Table

The overall concept of the proposed profit oil table makes sense from a national point of view. The profitability of the Libra field improves with higher oil prices and well productivities. It is reasonable to increase the government share based on these variables.

However, the table is based on "jumps" from one level of well productivity to the next. Under low prices and low well productivities the jumps are significant. This will induce producers under certain circumstances to drill more wells than necessary.

The analysis of the bid table illustrates that government assumes too much risk under low well productivities and receives somewhat less than possible under high oil prices. Based on a minimum bid the profit oil share varies from 15% to 45.56%. The table could have ranged from 25% to 47%.

Unusually High Bonus

The unusually high bonus of 15 billion Reais is highly detrimental from the point of view of long term government revenue optimization. Based on a 10 billion barrel Libra field, the government adds less than 1% to the government take with the bonus. Yet, the rate of return drops by about 8%. In order to make the project economic with such a large bonus, the government take has to be low at about 70% (assuming exported oil and not including Petrobras income in the government participation). The low government take creates high fiscal risk to investors once the bonus is paid.

Without the bonus the government could have increased the profit oil share considerably and earn a government take of about 75%. This means the government could have received at a price of $ 100/bbl about $ 41 billion more in total revenues. Using the Special Participation with no cost oil limit and higher profit rates the government could have increased government revenues further with an additional $ 14 billion, for a total of $ 55 billion.

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Introduction

Brazil has now provided the details of the production sharing terms that would be applicable to the Libra field. The Libra field will be the first contract area to be offered for bids. The details are contained in the Model Production Sharing Agreement and in the bid documentation document provided by ANP.

Based on this information it is now possible to make a detailed economic analysis of these terms. In this document the fiscal terms will be evaluated from a national economic perspective.

The main fiscal issues are related to the level and structure of the government revenues.

Brazil introduces with the Libra terms new features from an international perspective. The sliding scale table based on price and well productivity is a new concept for profit oil sliding scales in production sharing agreements. Also the very large size of the signature bonus is unusual.

Libra Field and Economic Assumptions

Estimates of the total field size range from a minimum of 4 billion barrels to a maximum of 15 billion barrels. The cumulative production of the field, in case of favorable expectations for the field, is being constrained by the maximum duration of the contract of 35 years. It is assumed that the typical cumulative production under the contract could range from 5 billion barrels to 12.5 billion. For fiscal testing purposes a worst case scenario of 2 billion barrels is also included.

The level of well productivity is not yet known. However, taking the Lula field as a guide, it can be assumed that along with the producing wells, a large number of water injection wells will be required. The total number of wells is assumed to range from 130 wells for the 2 billion case to 360 for the 12.5 billion case. It is assumed that half the wells are producers and the other half injectors. The total capital and operating costs per barrel for the four cases is assumed to range from $ 24 per barrel for the 2 billion case to $ 13 per barrel for the 12.5 billion case.

The economic analysis is being done in US $ cash flows. Currently the Reais is experiencing stronger inflation than the US $. Therefore, if the economic analysis would have been done in Raeis, the profitability in real terms would have been slightly less and the government take slightly more.

The main purpose of this document is to obtain insight in the fiscal matters. Therefore, the analysis is simplified by assuming that the Libra field only produces oil.

Fiscal Terms

In order to simplify the analysis, it is assumed that all oil will be exported. This means that the ICMS, PIS and COFINS will not apply to such exports. The producer would have to make arrangements to benefit from the various credits.

A signature bonus is specified of 15 billion Reais. This amount was converted to US $ using the current exchange rate. It is assumed that the bonus is depreciated for corporate income tax purposes following the unit of production system. The bonus is not recoverable for production sharing purposes.

The low rentals that are applicable were included. Rentals are recoverable for production sharing purposes.

A fixed royalty of 15% calculated on gross production is established in the contract.

It is assumed for the production sharing calculation that the profit oil is determined based on the total oil, less the royalty and less the cost oil. The cost limit is 50% and after two years from the start of production this limit is reduced to 30%. However, if costs cannot be recovered on this basis the 50% cost recovery is extended.

The profit oil was based on the table based on oil price and well productivity as provided for in the bid document. The minimum bid of 41.65% was assumed for the base case.

It is assumed that corporate income tax, unrecovered credits for ICMS, PIS and COFINS, and the 1% to be dedicated for research would not be recoverable for production sharing. It was assumed that some credits would not be recovered.

The contractor would pay the corporate income tax of 34% on the cost oil and profit oil income of the contractor. It was assumed that the contractor would be able to expense geophysical and dry holes expenses. Successful exploration wells, development wells and facilities were assumed to be depreciated at 10% from the date of their active use.

In determining the government take the government ownership in Petrobras is not taken into account, since this company is a partially private company.

Fiscal stability

There are no provisions in the contract for fiscal stability other than for the royalty and the production sharing. It is therefore assumed that in the future the other fiscal components can be changed by government.

Profit Oil Bid Table

The profit oil table proposes to increase the profit oil share for government in case of higher prices and in case of more productive wells. The minimum bid profit oil is 41.65% for the case between $ 100 and $ 120 per barrel, and 10,000 and 12,000 bopd per well. There are fixed levels of profit oil depending on price and well productivity. For low prices and low well productivities a fixed percentage is subtracted from the bid percentage. The lowest percentage is for a price of less than $ 60 per barrel and a well productivity of less than 4000 bopd. In this case 26.65% is subtracted from the bid level. In other words under these conditions the profit oil becomes 15%. For high prices and high well productivities a fixed percentage is added to the bid percentage. For prices over $ 160 per barrel and well productivities over 24,000 bopd 3.91% is being added. So the profit oil becomes 45.56%.

In principle, the table proposed by ANP in the bid document makes sense. It is likely that the main variables that will determine the profitability of the various fields will be indeed the well productivity and the oil price. So a table that is progressive on price and well productivity is in the national interest.

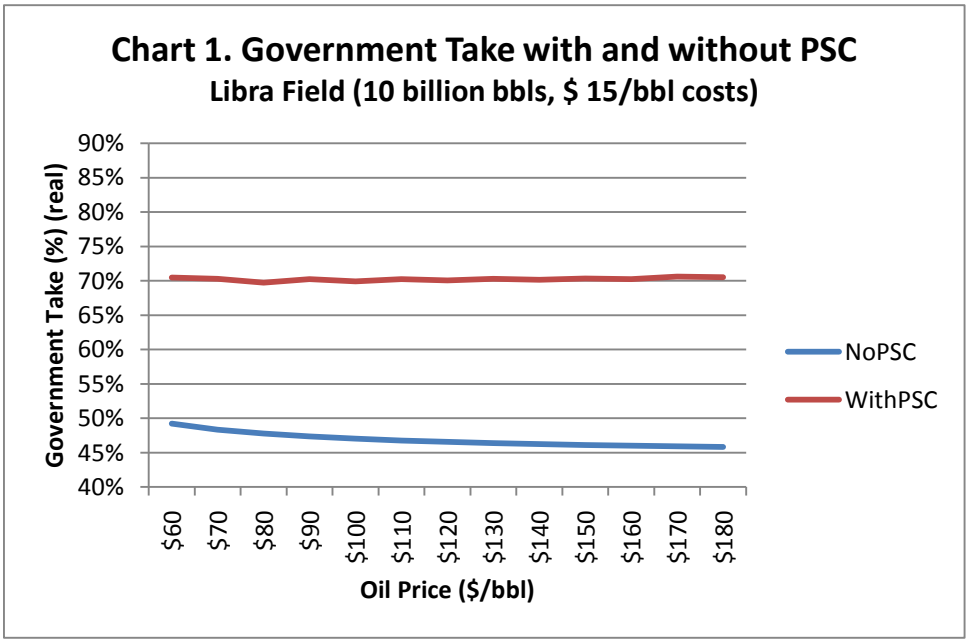
However, the fixed percentages in the table "jump". For instance, if the price is less than $ 60 per barrel and the well productivity is 3950 bopd the profit oil share is 15%. However, if the well productivity is 4050 bopd the profit oil share is 25.8%. Such large jumps will influence the development programs and will encourage the drilling of more wells than is necessary. It would have been better if ANP had opted for mathematical functions, for instance, similar to the functions used for the conventional Alberta royalties.

Level and structure of the government take

It is of interest to analyze the structure of the government take in more general terms,

Price scales. For wells between 10,000 and 12000 bopd the profit oil share is 37.39% for a price of less than $ 60 per barrel and is 43.95% if the oil price is higher than $ 160 per barrel. From an international perspective the difference between the top and the bottom rate is modest.

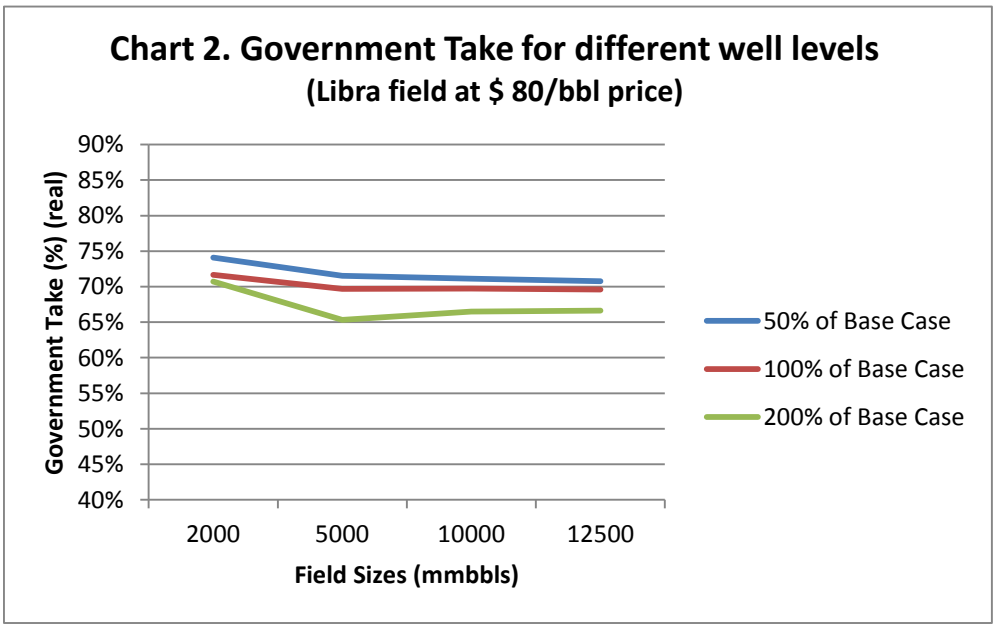
Chart 1 illustrates the government take assuming that Libra is a 10 billion barrel discovery at $ 15 per barrel costs. The chart illustrates the fiscal terms with and without the PSC. The chart indicates how the price progressive profit oil counter-balances the regressive features of the other fiscal provisions in the PSC Model (royalty, corporate income tax, etc). The end result is that the total government take to Brazil is essentially flat at about 70% for the entire price range.



In designing price progressive scales it is important not to make scales too progressive, otherwise the operator will not have an incentive to seek the highest possible prices. The Brazil scale avoids this pitfall. Nevertheless, the scale could have been somewhat stronger. Instead of adding 3.91% to the bid level for high prices and well productivities, one could have added 5.35%. This would have made the maximum profit oil 47% (based on the minimum bid of 41.65%) and would have created slightly more price progressivity.

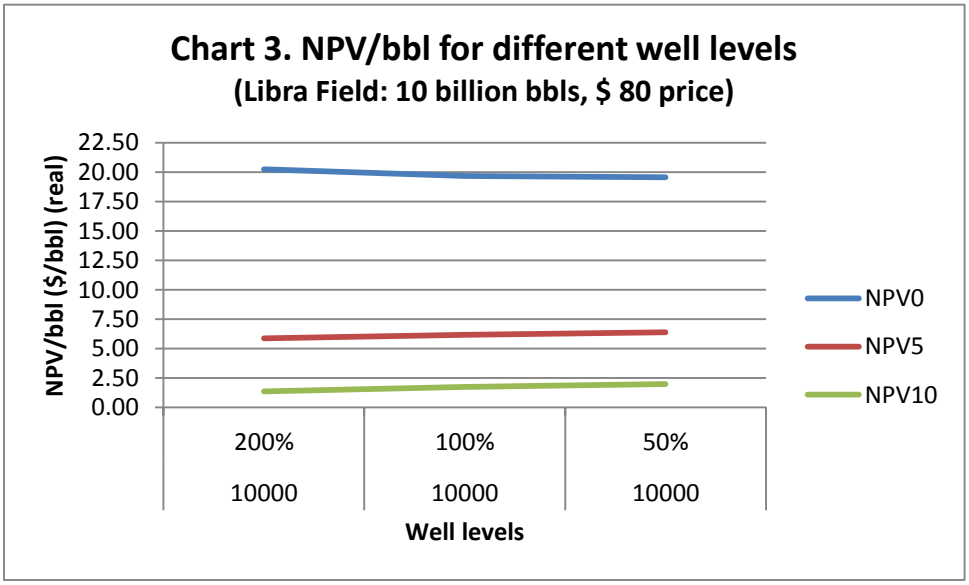
Daily Well Production Scales. The daily well productivity scales is only based on the wells that are producers. The profit oil scale ranges from less than 4000 bopd to over 24000 bopd. The bid is based on a well productivity of between 10000 and 120000 bopd. In order to test the impact of well productivity, the Libra field assumptions provided above were tested at 50% of the number of wells and 200%.

The government take under these conditions for the various fields is illustrated in Chart 2. Based on this rather wide range of well productivities the government take would range somewhere from a low of about 65% to a high slightly over 72% for the three large field cases.



The difference between the 50% case and the 200% of well assumption case is rather strong.

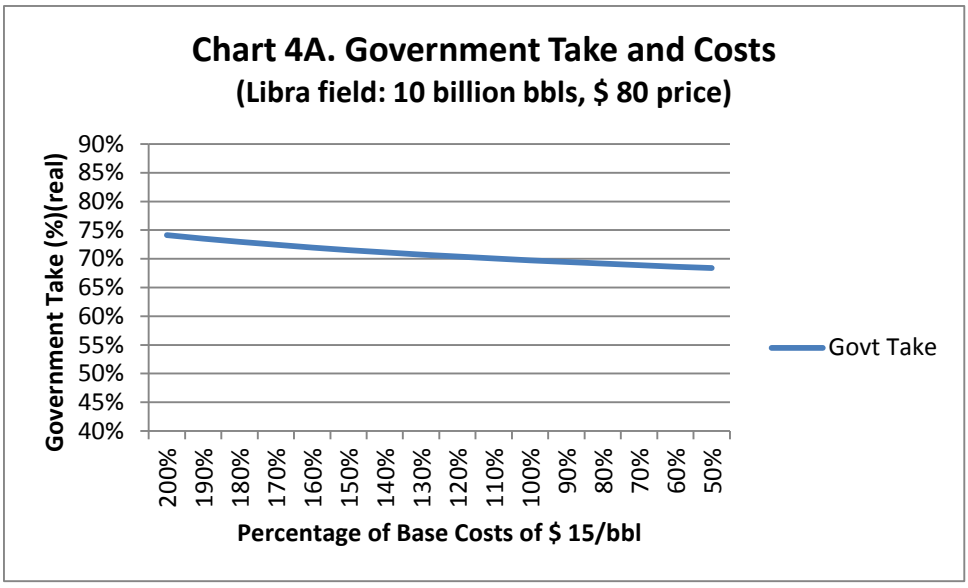
Chart 3 illustrates the Net Present Value per barrel at discount rates of 0%, 5% and 10%.

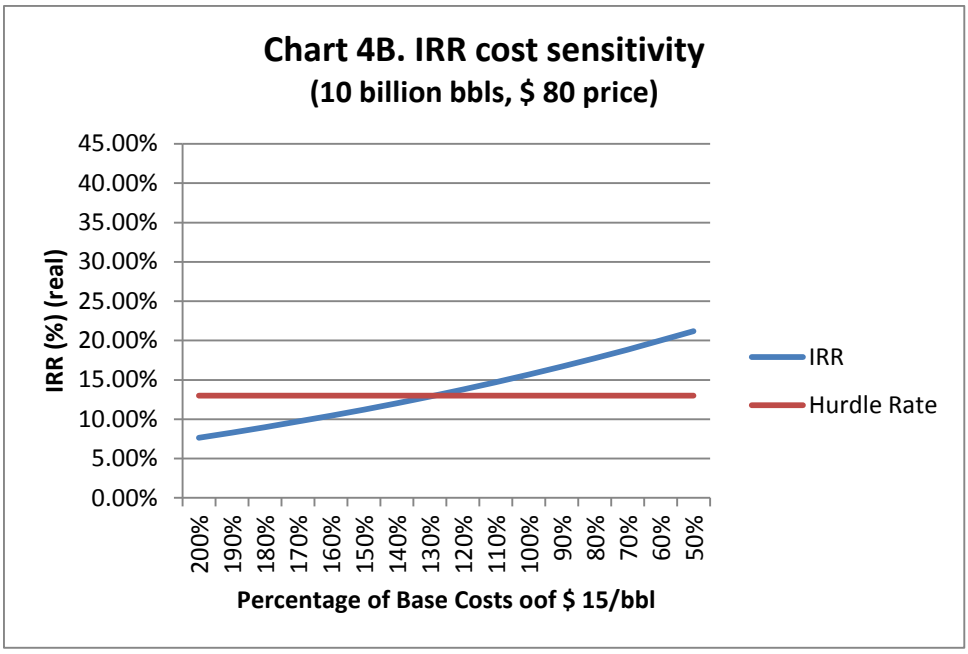


The chart illustrates how despite the higher costs associated with 200% of the number of wells, the oil companies actually end up with slightly more cash per barrel (NPV0/bbl) under relatively low prices. On a discounted basis the NPV only improves slightly.

The chart illustrates how the Government of Brazil absorbs most of the well productivity risk. This is not in the interest of government. Most of the well productivity risk should be with the oil companies. The profit oil table is therefore overly generous under low well productivities and low prices. The lowest level of profit oil should have been 25% instead of 15% (based on the minimum bid of 41.65%).

Cost sensitivity. Chart 4A illustrates how the government take reduces from 74% to 68% if costs reduce from 200% to 50% of Base Costs ($ 15/bbl) for the 10 billion barrel field assuming no change in number of wells or well productivities. This means under the proposed system oil companies have a strong incentive to be efficient. This general concept is in the interest of Brazil. However, this also means that under higher costs than the Base Costs assumed in this analysis, the project, taking into account the upfront bonus, rapidly becomes uneconomic. This is illustrated in Chart 4B, which indicates that the Libra field at 130% of the assumed Base Costs become problematic from an investor point of view.



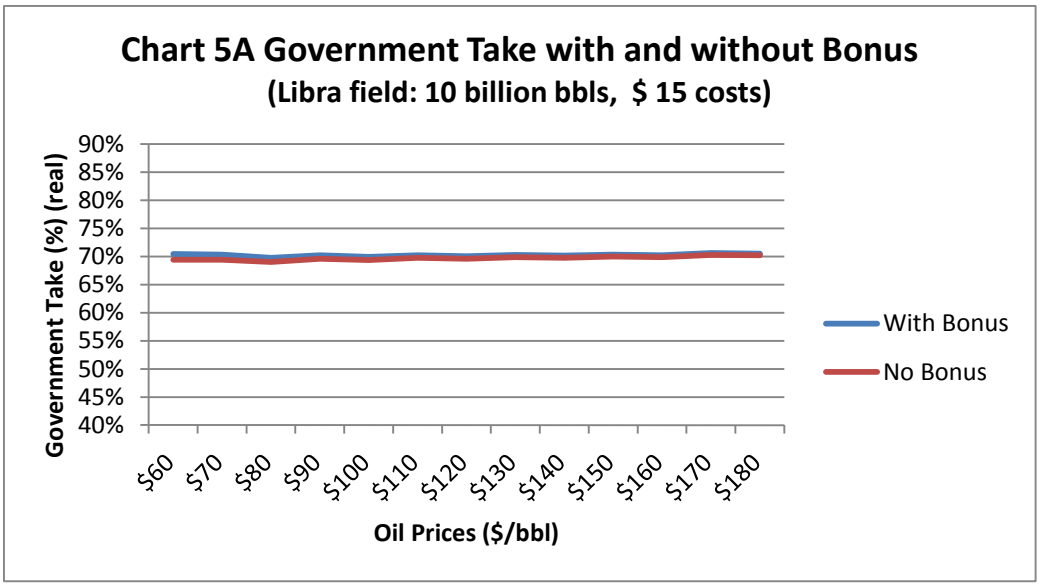


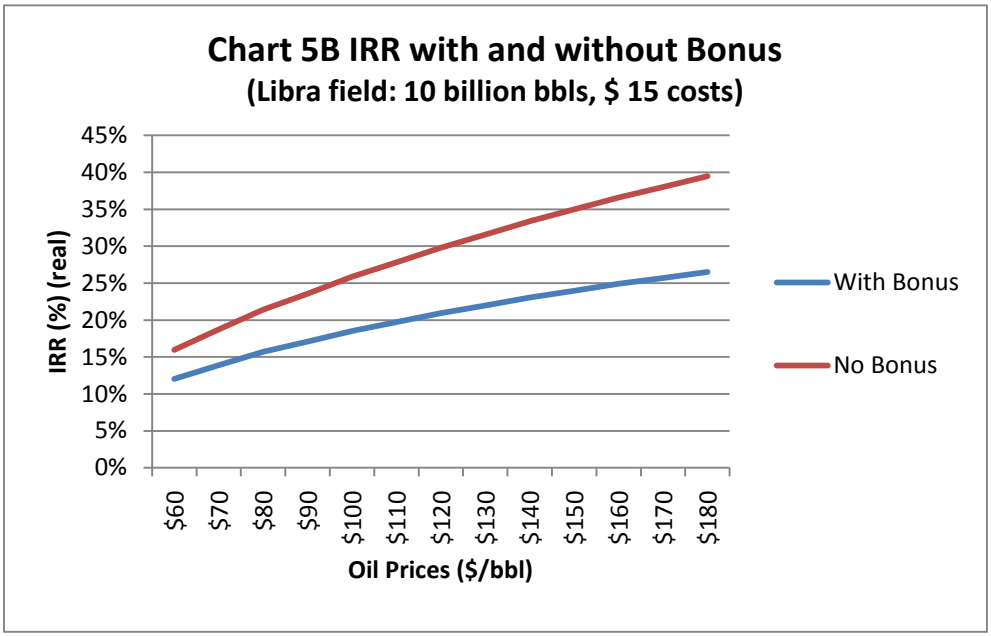
Unusual Signature Bonus

Brazil has opted to make the signature bonus a very large component of the fiscal terms. The bonus to be paid is 15 billion Reais, or about US $ 6.2 billion.

Obviously, a very large bonus is a welcome income addition for the current government. However, from the perspective of the maximization of resource wealth for Brazil it is extremely inefficient.

This is illustrated with charts 5A and 5B. These charts show the increase in government take that is obtained with the corresponding loss of rate of return. As can be seen in chart 5A the increase in government take is less than 1% under low prices and less than 0.5% under high prices. Yet, the reduction in IRR as a result of the bonus is very large as can be seen in chart 5B. The loss in IRR as a result of the bonus is as much as 4% under low prices and 13% under high prices. This significantly reduces the international competitiveness of the Brazilian terms for a very small gain in government take. The “Money Now” policy is therefore extremely costly for Brazil.





Alternative # 1 – No Bonus and Higher Minimum Bid. An alternative to the very high bonus would be to have no bonus and simply increase the minimum bid for profit oil from 41.65% to 51.65%. Chart 6A illustrates how this would result in a much higher government take of about 75%. Yet, under this alternative the IRR to the investors would still have been significantly higher, as is illustrated in Chart 6B. Chart 6C illustrates how the NPV discounted at 10% (NPV10) per barrel would also be very similar up to $ 110 per barrel. Over this level the NPV10/bbl would be slightly less for the Higher Minimum Bid. This alternative is in general a profitable alternative. The Money Now policy results therefore in a loss of 5% government take.

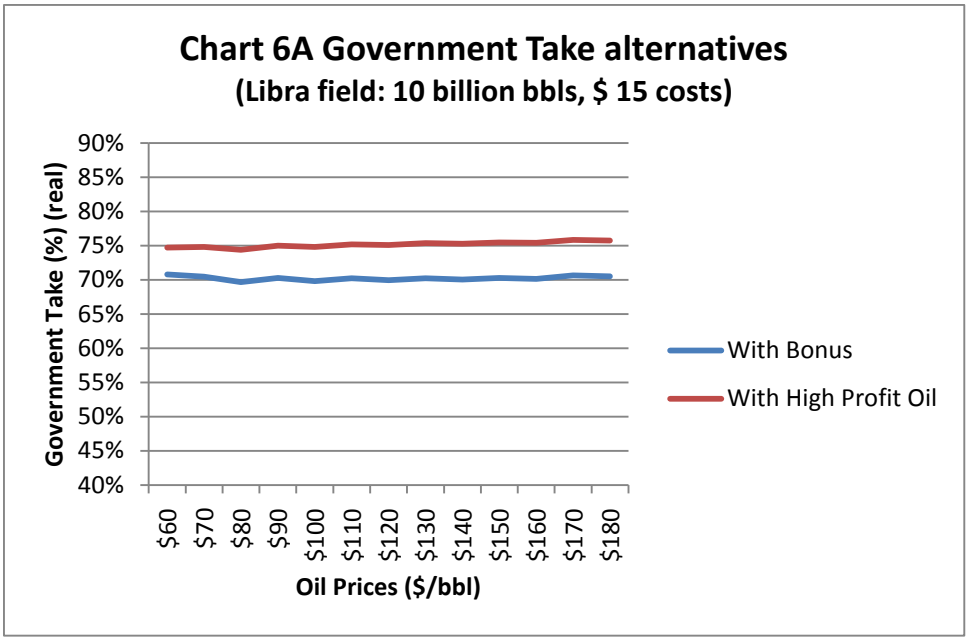


Chart 6A Government Take alternatives
(Libra field: 10 billion bbls, $ 15 costs)
Government Take (%) (real)
90%
85%
80%
75%
70%
65%
60%
55%
50%
45%
40%
$60
$70
$80
$90
$100
$110
$120
$130
$140
$150
$160
$170
$180
Oil Prices ($/bbl)
With Bonus
With High Profit Oil

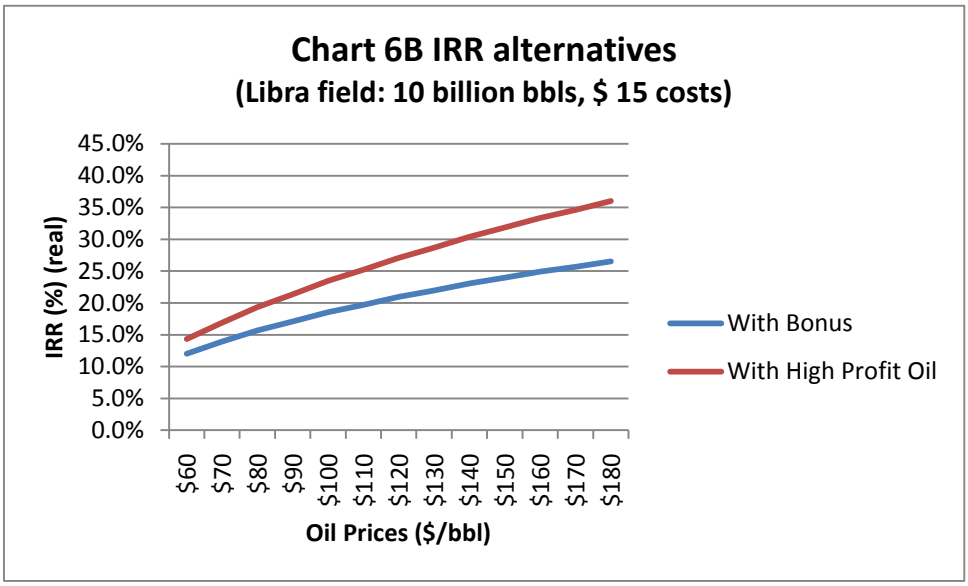
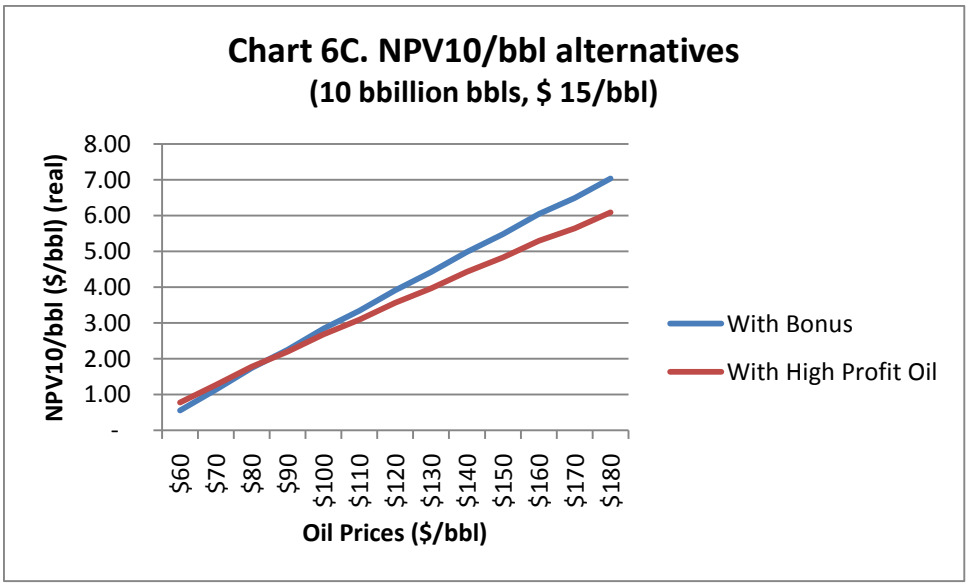


Chart 6B IRR alternatives
(Libra field: 10 billion bbls, $ 15 costs)
IRR (%) (real)
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
$60
$70
$80
$90
$100
$110
$120
$130
$140
$150
$160
$170
$180
Oil Prices ($/bbl)
With Bonus
With High Profit Oil



The losses in government revenues are enormous. The High Profit Oil strategy would at $ 100 per barrel have resulted in about $ 41 billion more government revenues over the contract period. The High Bonus strategy is therefore equal to borrowing at a very high interest rate for no reason. The government could have borrowed the same $ 6.2 billion at a much lower interest rate upon the signing of the Libra contract.

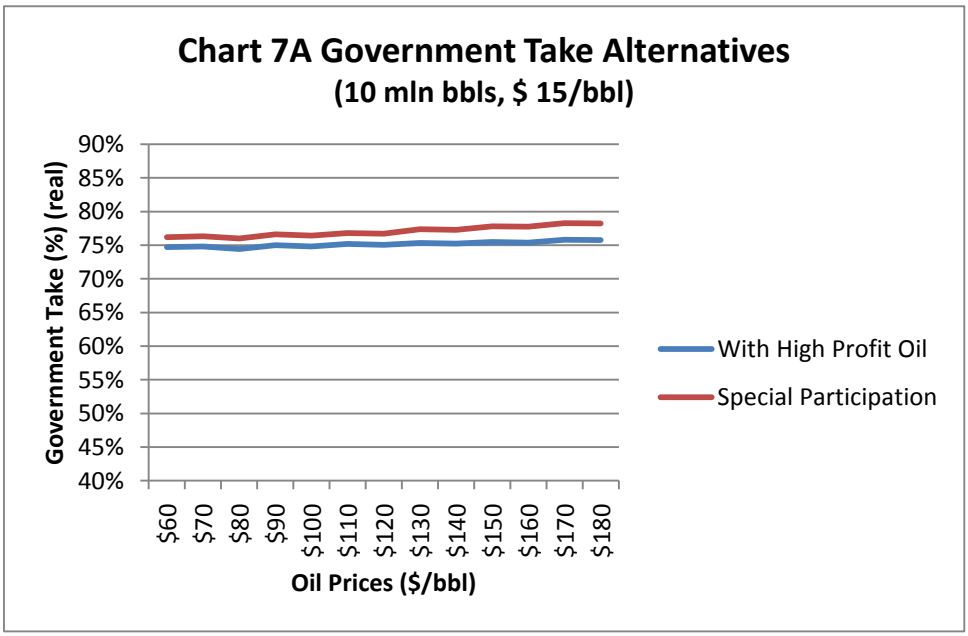
For investors the most important danger of the High Bonus strategy, is that the bonus will be sunk cost as soon as it is paid. Once the bonus has been paid the remaining government take will be low compared to other international fiscal regimes. The contract does not offer fiscal stability of taxes. Therefore, the likelihood that future governments will increase taxes on Pre-Salt oil is high. This will make companies cautious in offering high bids.

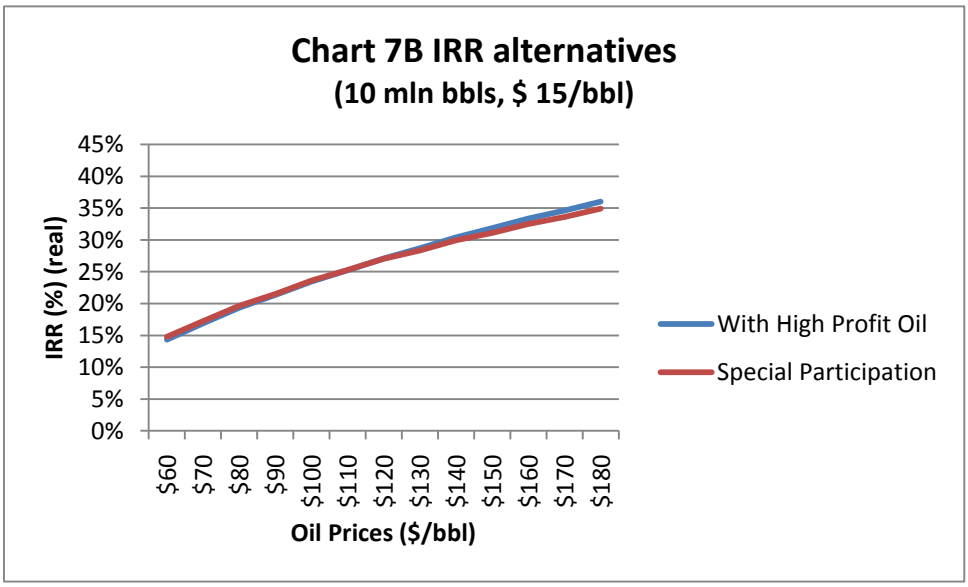
Alternative # 2 – No Bonus and Special Participation. An alternative to the PSC concept would have been to simply maintain the Special Participation concept. The advantage of this concept is that it would have resulted in considerably more bookable reserves and would have therefore resulted in higher bids. In addition slightly different table could have been used as described above. Also the Special Participation does not have cost limits and this would have meant a much faster recovery of the investment. This in turn would have justified a higher minimum bid of 54.65%, with a minimum profit oil of 38% and a maximum profit oil of 60%.

This would have resulted in a government take of about 76.5% or 1.5% more than the PSC concept. At $ 100 per barrel this means an additional loss of about $ 14 billion.

Chart 7B illustrates how the IRR would be the same for the two options. Chart 7C illustrates how the NPV10/bbl would be slightly less. This seems amply justified taking into account the lower fiscal risk and the additional reserves that will be bookable.

The Money Now PSC strategy therefore results in a total loss of over $ 55 billlion for the Libra field compared to the Special Participation strategy.





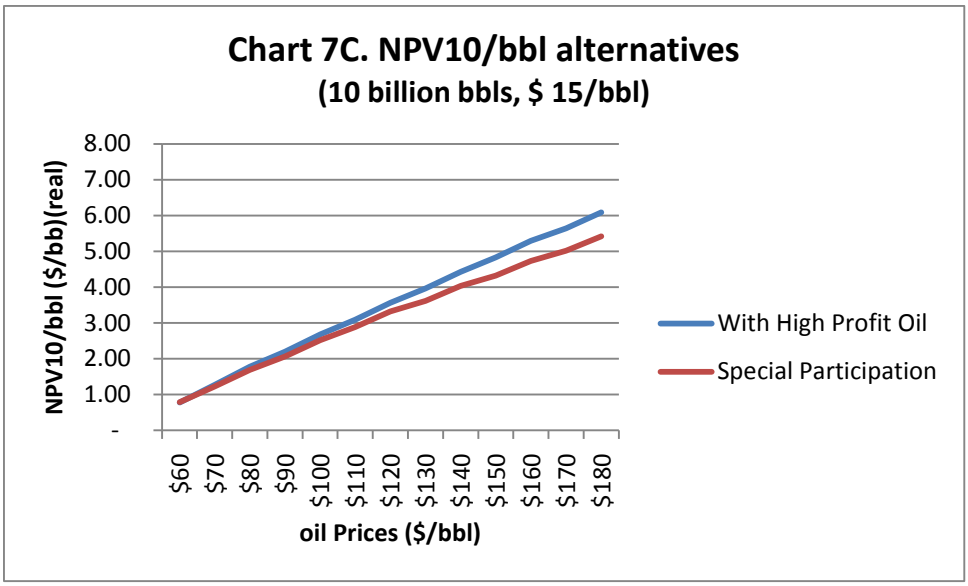
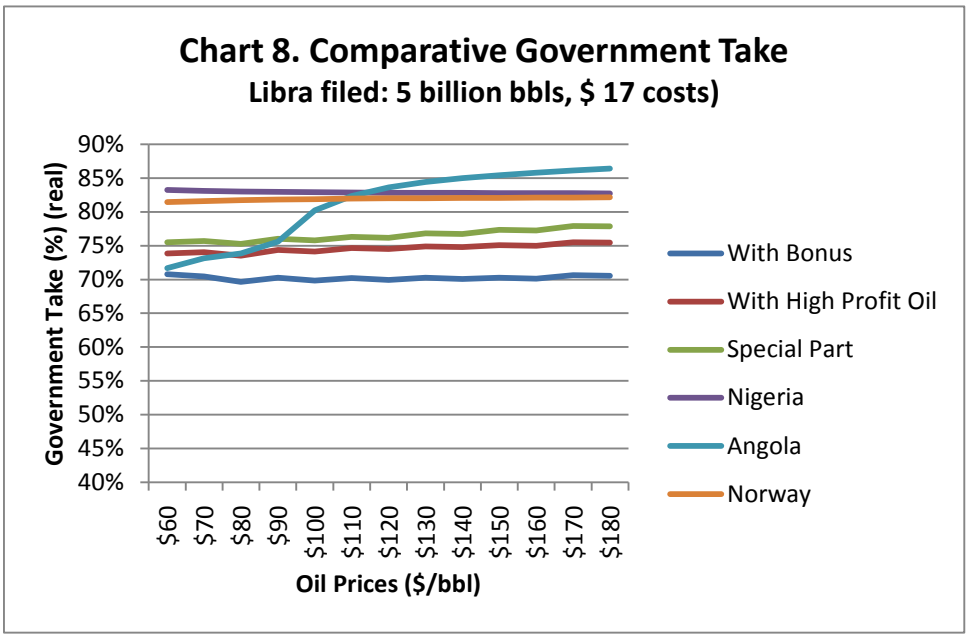
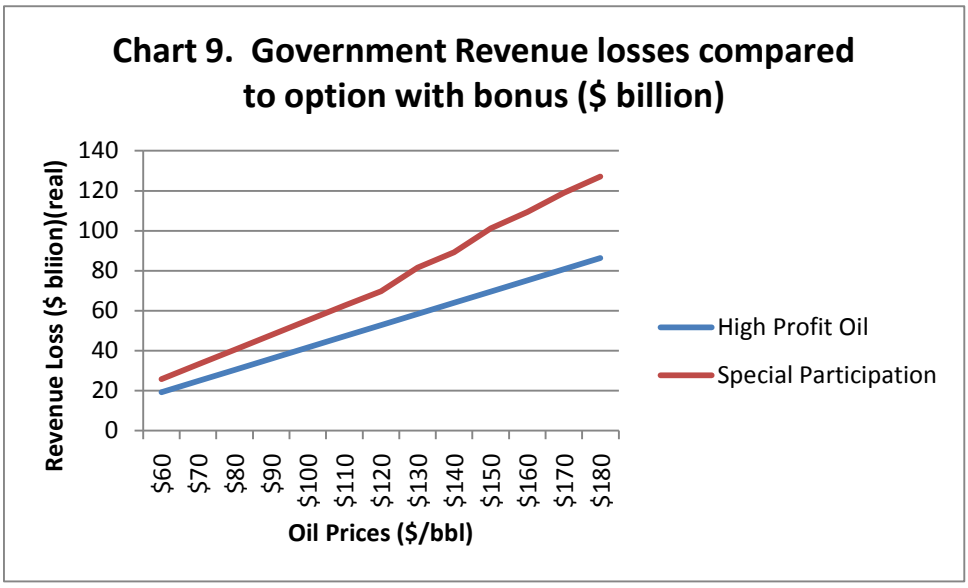


Chart 8 illustrates how the High Bonus PSC contract compares very unfavorably with large field terms for other exporting countries. Even the Special Participation strategy would have resulted in a lower government take than in competing countries. However, the government take would have been more comparable and competitive. The Special Participation strategy would have therefore resulted in less fiscal risk.



The loss of government revenues as a result of the Money Now policy is illustrated in Chart 9. Under high oil prices the loss exceeds $ 100 billion.



Note: During the course on Advanced PSCs organized by CWC in Rio de Janeiro, September 23-27, 2013, the Libra contract will be an important topic. Parties interested in this course can contact Van Meurs Corporation, 1 – 242 – 324-4438, info@vanmeurs.org.