Fiscal and tax terms and economic evaluation methods for oil and gas projects in Abu Dhabi

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Abstract. The Middle East is the region with the lowest oil and gas production cost in the world and has always been the key area for investment by oil companies. With the large-scale bidding after the Iraq War, the number of bidding blocks provided annually in the Middle East has been greatly reduced, and the number of bidding blocks provided by the UAE government is relatively large. After the expiration of the existing contracts in 2014, the UAE government started block bidding and auction on a large scale, and offered favorable contract terms. The assets with great investment values attracted international oil giants. In this paper, based on the survey of bidding contracts of Abu Dhabi in recent years, fiscal and tax terms, demand markets, prices and costs to be focused on have been sorted out, an economic evaluation model for bidding blocks in Abu Dhabi has been established, and evaluation conclusions have been drawn through financial analysis and uncertainty analysis. Finally, the applicability of the economic evaluation analysis method and evaluation procedure has been verified through examples, so as to provide reference and enlightenment for international oil companies to participate in the new round of bidding of the UAE in the future.

1. Introduction
The United Arab Emirates (UAE) currently has abundant oil and natural gas resources. It has a proven oil reserve of 13.34 billion tons, accounting for 9.5% of the world's total oil reserves, ranking 6th in the world. Its natural gas reserves are 214.4 trillion cubic feet, ranking 5th in the world. In particular, Abu Dhabi's oil and gas resources account for 85% of the UAE's total. Its oil industry was mainly developed and established by western oil companies such as those in the United States, Britain and France, and later its oil was gradually nationalized through shareholding. Its operation is led by Abu Dhabi National Oil Company, with the participation of major international oil companies. More than 20 companies including Shell, BP, CFP, ExxonMobil, CONOCO, TOTAL, Oil Company, PARTEX and JODCO are its shareholders[1]. The UAE's oil production is increasing year by year. Compared with other Middle Eastern resource countries, the oil and gas were discovered relatively late, with a low recovery rate and great potential. It has become the focus of attention among the international oil companies.

From January 1, 2014, the 75 year contracts of the joint venture company expired one after another. The Abu Dhabi government launched a new round of contract bidding. With the progress of the bidding, it overturned the status of major participants of western oil companies in Abu Dhabi's oil industry and created an important opportunity for Asian oil companies to invest in UAE's oil and gas. Certain contract terms have changed in succession [2]. This paper will analyze the contents of Abu Dhabi's foreign cooperation oil contract, to help foreign investors better understand the contents of the contract and the implementation status.
2. Current situation of oil industry in UAE and relevant regulations

The main body of Abu Dhabi's domestic oil industry is Abu Dhabi National Oil Company (ADNOC), which was established in 1971. Its three subsidiaries—ADCO, ADMA and ZADCO account for more than 96% of the country's total oil production [3].

There is no subversive risk in controlling the ownership of oil and gas resources in Abu Dhabi. There has been no nationalization in history, and the government's future economic development will remain open to the outside world, allowing foreign oil companies to participate in its oil and gas exploration activities, which can effectively reduce the financing burden of oil development projects and promote the popularization of new technologies. There is little chance that the development situation of the oil and gas industry will change in the future. The country's overall investment environment is stable and there are no key risk factors [3].

Thanks to Abu Dhabi's long-term cooperation with international oil companies, the company has a high management level and appropriate technical policies. A comprehensive consideration has been given to pressure maintenance, water cut control, oil production rate, development mode and optimization of development well types. The pressure of the main layer is currently maintained at a high level, the water cut is generally low, and the development platform is stable. The operation cost is low. The total cost per barrel (OPEX) is USD 3-4 for onshore oil fields and USD 5-10 for offshore oil fields [4].

No emirate in the UAE has formulated a unified oil law. All legal and fiscal frameworks require foreign oil companies to negotiate directly with the emirate government on a concession basis[3]. Moreover, each emirate has formulated specific laws in the oil and gas industry to apply certain basic standards, mainly involving oil company income tax, state participation and environmental protection.

In particular, Abu Dhabi's Income Tax Law (1965) outlined the income tax applicable to activities related to crude oil, natural gas and petrochemical products. Act No. 4 (1976) established the government's exclusive right to the reserves of associated gas and non-associated gas that have been discovered or will be discovered in the country. Act No. 8 (1978) stipulated the protection policy for oil resources in oil operations and established a set of guidelines and procedures on environmental management and protection.

3. Brief analysis of Abu Dhabi's contract terms

The basic structure of the mining tax contract currently adopted in Abu Dhabi is shown in the chart (see Figure 1).

According to the mining tax contract income distribution flow chart currently adopted in Abu Dhabi as well as the contract flow chart released during the current bidding of Abu Dhabi, it can be seen that the government income is mainly divided into four parts: mining tax, income tax, profit surtax and windfall tax. In the entire oil sales chain, the government has obtained the vast majority of income. The contractor's income includes investment tax concession, Asset Leader Fee and net profit after deducting production costs and taxes payable [5]. The contractor's income is calculated on the basis of the government sales price. The mining tax and income tax are calculated on the basis of the posted price of crude oil. The government sales price is usually fixed at 93% of the posted price of crude oil.

3.1. Crude oil price

The prices of crude oil involved in Abu Dhabi's oil and gas cooperation contracts are all based on government sales prices, i.e. the UAE's most important benchmark oil price (Murban API 40°). Its oil products are better, and the API is around 40 degrees, which is better than Brent. Both Murban and Brent oil prices have premiums and discounts. The government will regularly announce the government sales prices for four types of crude oil. There is a slight discount to Brent oil price. According to the linear regression of historical data, we can get the following relational expression:

$$Das\ Blend\ Price = 1.0158 \times Brent\ Price - 1.1948.$$  
Given the Brent oil price of USD 70/barrel, the Das Blend oil price is USD 69.91/barrel [6].
3.2. Taxable price
Abu Dhabi has stipulated two taxable prices. The total actual sales income of the contractor is calculated on the basis of the government sales price (GSP). The taxable income for mining tax and income tax is calculated on the basis of the posted price of crude oil, which is the government sales price (GSP) divided by 0.93. The GSP prices are to be published by ADNOC on its website on a monthly basis. The windfall tax triggers the oil price to be calculated on the basis of the government sales price (GSP).

3.3. Mining tax
The crude oil/condensate oil rate is 12.5% (up to a maximum of 20%); the natural gas rate is 0%.

3.4. Taxable income
It is the balance after deducting the mining tax, tax deductible cost and depreciation and depletion, where other income of the project is part of taxable profit. Taxable profit = sales income + other income - mining tax – tax deductible cost depreciation and depletion

Tax deductible cost includes: operating cost, sales cost, management committee cost, and abandoned funds.

Non-tax deductible cost includes: unpaid cost, financial cost, office cost, marketing cost for oil extraction, and equity funds (support funds and scientific research funds).

3.5. Basic income tax
Income tax rate: 55%, up to 90% (mining tax and income tax rates are considered as fixed tax rates, not escalation). Tax loss carried forward: up to 5 years.

Depreciation: Tangible assets are depreciated using the straight-line method over 10 years. Investment in exploration and development shall be capitalized.

USD/barrel: If the average GSP is USD 90/barrel in the first 60 months, the floor price is USD 85/barrel and the ceiling price is USD 165/barrel.
3.6. Surtax
The floor price and ceiling price of crude oil: Both profit surtax and windfall tax involve the floor price and ceiling price regulations of crude oil. Both the floor price and the ceiling price of crude oil are government sales price (GSP). The floor price starts at USD 80/barrel and the ceiling price starts at USD 160/barrel. The floor price is adjusted every three years based on the average price of GSP in the first 60 months and the current floor price (which is the sum of the current floor price of GSP and the average price of GSP in the first 60 months/2). The ceiling price is kept at the floor price +USD 80/barrel and adjusted synchronously. For example, if the original floor price is 80 USD in 2018.

Profit surtax: When the average annual GSP exceeds the floor price, the contractor shall pay the profit surtax; when the average annual GSP does not exceed the ceiling price, the tax rate shall be calculated at the fixed coefficient of 0.0125, ranging from 0% to 1%; when the average annual GSP exceeds the ceiling price, the profit surtax rate shall be 1%.

Windfall tax: When the oil price exceeds a certain limit (e.g., USD 95), 90% of the profit above the oil price will go to the government and 10% to the contractor. In some contracts, a trigger oil price (e.g., USD 95) for the windfall tax can rise by 5% every five years and will not rise again when the oil price reaches the growth ceiling (e.g., USD 110). The trigger oil price for the windfall tax is the quoted price of crude oil.

3.7. Compensation for investment tax
Tax credits for investment: In the contract, tax credits are provided for the annual investment of the contractor to encourage investment. The contractor's tax credits for the next year are calculated on the basis of the investment amount, oil price and the fixed coefficient agreed in the contract, and the amount is on the order of hundreds of millions of dollars per year.

3.8. Compensation for asset leader fee
Based on the quality of oilfield assets and the difficulty of development, a proper coefficient is stipulated in advance in the contract to compensate the income of the asset leader and encourage investors to choose assets with great difficulty of development. In indirect contracts, tax credits are provided for the annual investment of the contractor to encourage investment. The contractor's tax credits for the next year are calculated on the basis of the quality of oilfield assets and the difficulty of development, investment amount, oil price and fixed coefficient, etc. [7].

Compensation for Asset Leader Fee = Compensation for Investment Tax × Fixed Coefficient × Difficulty Coefficient

Compensation for asset leader fee can be used to offset the taxes in the next tax period. If the taxes in the next tax period are not enough for offset, the balance can be carried forward to the second tax period in the future for offset until it is fully offset.

3.9. Participation fee into depreciation
In the latest contract amendment, participation fee is allowed to be depreciated over 10 years to offset income tax. The improvement of the clause in the contract has obvious influence on the project income.

4. Economic benefit analysis of new contract
After the expiration of the old contract (with a term of 75 years), Abu Dhabi government began to use the new contract. Generally speaking, the new contract remained unchanged in most terms, but it introduced windfall tax, cancelled constant returns of USD 1/barrel, raised income tax, and increased tax incentives to promote international oil companies to use advanced technology and improve the development level in the project (see Table 1).

The new contract makes the government obtain a larger proportion of the project income, and the introduction of windfall tax further reduces the profit margin of international oil companies. It is estimated that after the oil price exceeds USD 120, international oil companies will no longer obtain
the income from the increase in oil price. The cancellation of constant returns increases the risks borne by international oil companies. With the cliff-like drop in oil prices in early 2020, the contract income has been seriously affected.

| Table 1. Comparison of main terms between new and old contracts. |
|----------------------|----------------------|----------------------|
| Contract terms       | Old contract         | New contract         |
| Participation fee    | No                    | Yes                  |
| Mining tax           | 20%                   | 20%                  |
| Income tax           | 85%                   | 88%                  |
| Windfall tax         | No                    | Yes                  |
| Constant returns     | USD 1/barrel          | No                   |
| Tax incentives for asset leader | No | Based on block value and investment |

Due to the harsh terms of the new contract, in the bidding process of ADNOC in 2013, most companies failed to win the bid because the bidding price was too far from the expectation of Abu Dhabi government. However, Total won the bid at a high price of USD 2.22 billion, acquired 10% of the interest, and served as an Asset Leader of Bu Hasa and SE Asset Groups. According to the requirements of Abu Dhabi government, if other bidders wished to acquire the remaining interests of the project, they need to make investments to acquire corresponding interests on the basis of this transaction, i.e. USD 222 million for every one percent interest. The subsequent bidding did not proceed smoothly, so ADNOC had to improve financial and taxation clauses so that the contract income met the investors' expectations. Finally, the income tax rate was reduced from 88% to 87%, and the acquisition investment can be amortized over 10 years to offset the income tax. Tax incentives for investment increased from USD 1.5 billion to USD 2.5 billion [8]. In the end, BP, INPEX, GS Energy, CNPC and other companies won the bid. Among them, CNPC (China), GS Energy (South Korea), INPEX (Japan) and other Asian companies became new contractors, while Exxon and Shell, the original contractors, terminated the contract.

The crude oil sales revenue of the project mainly consists of the following five parts: cost and expenses, capital expenditure, mining tax, income tax and net profit. Taking an Abu Dhabi oil company's development proposal as an example, the project's oil field exploitation cost (operating cost & capital expenditure) accounts for 11.3%, government income (mining tax & income tax) accounts for 85%, and investor income accounts for 3.7% [9]. The government controls most of the oil revenue (see Figure 2).
5. Uncertainty analysis
The basic data used in economic appraisal, such as investment, operating cost, production volume, sales price, and some fiscal and tax indexes, are forecast data, with certain degree of uncertainty and risks. In order to provide a more comprehensive basis for making decisions on investment in oil and gas development projects, sensitivity analysis is required, i.e. to analyze the impact of uncertainty factors on the economic appraisal indexes of the project, so as to estimate the potential economic risks of the project. The typical method is single factor sensitivity analysis, in which the range of variation of the subject single factor is set to ±20% ~ ±30%, and then the analysis chart is made, to calculate the sensitivity coefficient and the critical values of parameters [10].

The internal rate of return (IRR) for the contractor is most sensitive to the output. For every 10% increase or decrease in output, the contractor's IRR increases or decreases by 1.2%. The sensitivity of IRR to oil price is second only to output. For every 10% increase or decrease in oil price, IRR varies by about 0.9%. Due to the high income tax rate, IRR is less sensitive to investment and operating cost. For every 10% increase in investment or operating cost, the contractor's IRR decreases by about 0.4%. For every 1% increase or decrease in income tax rate, the contractor's IRR changes by about 1.5% (see Table 2, see Figure 3).

| Range variations | Oil price (%) | Output (%) | Investment (%) | Operating Cost (%) | Participation fee (%) |
|------------------|---------------|------------|----------------|--------------------|----------------------|
| 70%              | 6.1%          | 5.3%       | 11.0%          | 10.5%              | 70%                  |
| 80%              | 7.6%          | 6.7%       | 10.5%          | 10.3%              | 80%                  |
| 90%              | 8.8%          | 8.4%       | 10.2%          | 10.1%              | 90%                  |
| 100%             | 9.8%          | 9.8%       | 10.0%          | 9.9%               | 100%                 |
| 110%             | 10.9%         | 11.5%      | 9.5%           | 9.7%               | 110%                 |
| 120%             | 12.0%         | 12.9%      | 9.1%           | 9.3%               | 120%                 |
| 130%             | 13.0%         | 14.3%      | 8.7%           | 9.2%               | 130%                 |

Table 2. IRR sensitivity analysis.

Figure 3. IRR Sensitivity analysis charts.
6. Conclusions
Abu Dhabi is abundant in resources and is inviting bids for a large number of blocks. After the expiration of the old contract, the original contractor's willingness to invest declined, creating opportunities for Asian international oil companies. The resource country has a good investment environment, stable political society and sound and orderly laws and regulations. In order to attract investment, Abu Dhabi government has improved many contract terms and international investors can realize reasonable returns.

The project, to some extent, can resist the risks of stable production and sustained low oil prices in the later stage. As the income tax rate of the project is very high, Abu Dhabi government mainly relies on mining tax and income tax to control economic benefits of the contractor. Therefore, the project has certain risk resistance against investment cost fluctuation and oil price drop. For a relatively conservative proposal with a shorter stable production period, the economic benefits can still be guaranteed with a sustained oil price of USD 50.

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