Petroleum Technology Development Journal

Effects of Fiscal Terms and Contractual Agreements on Government Take in Nigerian Oil Industry

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Published in:
Petroleum Technology Development Journal (ISSN 1595-9104)
An International Journal

January 2009 - Vol. 1

Abstract

The paper investigates he effects of fiscal terms on true government take under joint petroleum ventures and production sharing contracts. It them develops a generalized cash flow model and used it to evaluate government revenues under different fiscal terms and contractual agreements. The analyses reveals that government take is reduced in joint ventures with divestment of equity if other fiscal terms remain unchanged.

Introduction

Revenue from oil Exploration and Production (E&P) projects contribute significantly to government revenues and the Gross Domestic Product (GDP) in most OPEC-member countries. When product prices and production levels fall, revenue that accrues to the government falls too. Government Take is now commonly used as a tool by potential investors when comparing international E&P oil and gas projects[1]. Smith[2] defined the true government take as the revenue to government over the life of a project as a percentage of the total profit that a private company would have received had there been no government regulations. Government take, which normally varies from 45 -87%, can also be expressed as a percentage of the "full-cycle" project net cash flow, discounted at the minimum required return on capital.

Fiscal systems shape government's policies and compliment various agreements, memoranda of understanding and regulations. Details will normally cover pre-production and post-production payments in form of bonuses, rentals, royalties, production sharing arrangements, carried interest provisions, corporate income taxes, and special taxes.[3] Omoregie[4] noted that fiscal terms vary from country to country and while some countries operate single fiscal systems, in others, a variety of fiscal systems are applied. The fiscal terms adopted in each country delimit and define the economic rent to government and the investors' profits.

Petroleum Fiscal Systems in Nigeria

Fiscal terms in the Nigerian petroleum industry are regulated by legislation. There are two distinct fiscal packages currently, with contracts entered into between the government/NNPC and the companies: the Tax/Royalty/MOU system and the Production Sharing Contract. The main law, which is the Petroleum Profits Tax (PPT) Act and its amendments, is complemented by four different Petroleum Arrangements: Joint Operating Agreement (JOA), Production Sharing Contract (PSC), Service Contract (SC), and Memorandum of Understanding (MOU)[5].

The Tax/Royalty/MOU system applies to the joint ventures which currently covers more than 90 percent of Nigeria's current production and a substantial percentage of undeveloped oil reserves[6].

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[1] Rapp, W. J., Litvak, B. L., Kokolis, G. P., and Wang, B., "Utilizing Discounted Government Take Analysis for International Oil and Gas E&P Fiscal Regimes" Presentation at 1999 SPE Hydrocarbon Economics and Evaluation Symposium held in Dallas, Texas, 20-23 March 1999.

[2] Smith, D. E.; "True Government Take (TGT): A Measurement of Fiscal Terms", SPE 16308 1987 1-3

[3] Chukwu, P.O. and Ikoku, C.U., "A Comparative Evaluation of Evolving Nigerian Petroleum Development Policies" Presentation at the SPE Hydrocarbon Economics and Evaluation Symposium held in Dallas, Texas, April 11-12, 1991

[4] Omoregie, Y., "Fiscal Regimes," Presented at the Nigerian Extractive Industries Transparency Initiative (NEITI) Civil Society Capacity Building Workshop, Presidential Hotel, Port Harcourt, Rivers State. July, 2005. 1-8

[5] http://www.napims.com, accessed February 7, 2007

[6] The International Bank for Reconstruction and Development/World Bank "Taxation and State Participation in Nigeria's Oil and Gas Sector", Joint UNDP/World Bank Energy Sector Management Assistance Programme, Washington. August 2004. 31-38

The PSC arrangement governs the understanding between the NNPC and all participants in the new inland deep and ultra deep-water acreages. The contractor bears all costs of exploration and production without such costs being reimbursable if no find is made in the acreage and cost is recoverable with crude oil in the event of commercial find, with provisions made for tax oil, cost oil and profit oil.

Description of some of the features of the fiscal terms is as follows:

Royalties: In Nigeria royalties are paid based on volume. For onshore fields, a royalty of 20% is attracted. However for offshore fields, royalty decreases as the water depth increases starting with 18.5% to 0% for water depth greater than 1000metres.

Bonuses: Nigerian bonus payments are a main pre-production payment, and are a feature of the production sharing and service contracts. The amounts have steadily increased from $1m in the 1990's to $210m paid by Shell Nigeria ultra deep.

Taxes: Petroleum profit tax is payable under the joint ventures and production sharing contracts. Under JVs, a tax rate of 85% is exerted while the tax rate is 50% under PSCs.

Profit Sharing: The distinguishing feature of a PSC is the profit split. Under this contract all payments are expressed in terms of percentages of production. The balance of the production after cost recovery is shared between the contractor and the National oil company in accordance with agreed percentages.

Tables 1 and 2 give the summary of the current fiscal terms in the Nigerian Oil industry.

Table 1: Summary of Tax/Royalty/MOU in Nigerian Oil Industry[6]

Petroleum Profit Tax (PPT)	85 %
Depreciation	Five- year Straight Line
Deductions	Operating Expenditure Capital Expenditure Investment allowance (5-30%)
Consolidation	All E&P Expenditures in joint venture area
Royalty	20% onshore 0-18.5% offshore
MOU	Guaranteed after tax margin of $2.3 or $2.5/bbl

Table 2: Summary of Production Sharing Contracts in Nigerian Oil Industry[6]

Signature Bonus	$0.5–1.00 MM/block
Bid Bonuses	$10-30 MM/block
Royalty Oil	0-16.67% (subject to water depth)
Cost Recovery	100% after Royalty
Depreciation	5 Year Straight Line
Profit Oil (Government Share)	Niger Delta: 60% (<30 MBD) to 65% (>50MBD) Frontier: 20% (<350MMB) to 60% (>2BBl)
Petroleum profit tax (PPT)	50%
Consolidation	Ringfence for PSC; All E&P for PPT

The government take based on the current fiscal terms in Nigeria compares favourably with what obtains in similar OPEC countries such as Angola, Algeria, Indonesia and Venezuela.

Cash Flow Modelling

A simple but generalized cash flow model for calculating true government take can be formulated. The variables in the model are tax, royalty, equity share (for joint ventures) and profit oil share (for PSCs). The gross revenue, total expenses and cost oil are also parameters to be considered.

Under the assumptions stated below, the generalized cash flow model for petroleum E & P ventures can be expressed as:

$$GTT = GR * [X + (1 - X) * (C * Y + (1 - C) * (S + Z * (1 - S)))] \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

This model is applicable to both JVAs and PSCs. Details of the development of this model are presented in the Appendix.

Assumptions

The following assumptions have been made:

- Operating Expenditure, Capital Expenditure, Signature Bonus and Depreciation are categorized as deductions.
- Deductions make up 10% of Gross Revenue.
- Pre-production costs have been recovered.

Results and Discussion

The model presented in equation 1 has not included discount factor in the government take as was done by others like Iledare[7]. However, it is simple enough for use for the purpose of evaluating true government take in joint ventures and production sharing contracts. Fig.1 to Fig.7 give the results of the analysis carried out using equation (1) as applied to JVs and PSCs under different fiscal arrangements.

Fig.1 shows that government take increases with increasing equity share (working interest) under JVs regardless of the royalty rate. There is an increase in government take by about 3% for every

10% increase in government equity holding. The effect of royalty on government take becomes apparent with decreasing equity share for which government take increases with increasing royalty. It can also be seen that if the government divests its share a take of about 70% is still guaranteed. This observation agrees with those of Pedro and Andrew[7],[8].

Fig.2 shows that government take increases with increasing equity share (working interest) under JVs regardless of the tax rate. In this case, the government take is quite sensitive to the tax rate. Government take increases with increasing tax rate. At a tax rate of 50%, government take increases by 5% for every 10% increase in government equity holding while at a tax rate of 80%, government take increases by 3.2% for every 10% increase in government equity holding.

Fig.3 shows that government take increases with increasing profit oil share under PSCs. The government take also increases with increasing royalty. There is an increase in government take by about 4% for every 10% increase in government equity holding. The trend is quite similar for different royalty rates.

Fig.4 shows that government take increases with increasing profit oil share under PSCs regardless of the tax exerted. In this case, the government take is quite sensitive to the tax rate (as for JVAs). Government take increases with increasing tax rate. At 50% tax, government take increases by 4% for every 10% increase in profit oil share while at 80% tax, government take increases by 1.6% for every 10% increase in profit oil share.

Fig.5 shows the effect of tax on government take in a situation where the government decides to divest its interests in existing JVs. The maximum take obtainable is a function of the expenses incurred. In this case, the maximum government take is 90%. The government take obtainable when the government divests its interests is less than is obtainable from the existing JVs (as shown in Fig. 1).

Fig.6 shows the effect of expenses on government take in JVs. The government take decreases with increasing expenses as a percentage of the net revenue. There is a decrease in government take by about 2% for every 10% increase in expenses.

Fig.7 shows the effect of cost oil on government take in PSCs. The government take decreases with increasing cost oil percentage. There is a decrease in government take by about 7.5% for every 10% increase in cost oil.

Conclusion

From purely economic considerations, JVs yield higher government take than PSCs under current fiscal terms and arrangements. Government take is more sensitive to tax rates than to royalties under both JVAs and PSCs. Government take decreases with increasing expenses in JVAs. Similarly, it decreases with increasing cost oil percentage in PSCs. However, Government take under PSCs is more sensitive to cost oil (expenses) compared to JVs. A lower but sizeable Government Take (up to

[7] Iledare, O. I., "Analyzing the Impact of Petroleum Fiscal Arrangements and Contract Terms on Petroleum E&P Economics and the Host Government Take" Presentation at the 2004 SPE Nigeria Annual Technical Conference and Exhibition held in Abuja, Nigeria, 2-4 August 2004.

[8] Pedro, V. M., and Andrew, S. "Government Takes Decline as Nations Diversify Terms in Investment" Oil & Gas Journal, May 26, 1997.

83%) can be obtained by divesting some government's interests but retaining the current tax/royalty rates.

Acknowledgment

This paper was supported through research grant from the Shell Petroleum Development Company to the Shell Chair in Petroleum Engineering, University of Ibadan.

Abbreviations

CPX = Capital expenditure as defined by legislation ($)
C = Expenses/Cost Recovery as a percentage of net revenue
CSBT = Company share before tax ($)
CT = Company take
CTX = Company tax
EXP = Expenses
GE = Government Expenses
GR = Gross revenue
GS = Government share
GTT = Government Take
NR = Net revenue
OPX = Operating expenses as defined by legislation
OOX = other costs, such as environmental fees, abandonment costs, etc.
PR = Profits ($)
RY = Royalty ($)
S = Government Profit Oil Share
X = Royalty
Y = Government Equity Share
Z = Tax

Appendix: Cash Flow Model Development

$$RY = X * GR \quad \text{……..…….(A1)}$$

$$NR = GR - RY \quad \text{……...…….…….…..(A2)}$$

$$EXP = C * NR \quad \text{……...……(A3)}$$

$$GE = Y * EXP \quad \text{…….……...……...(A4)}$$

$$PR = NR - EXP \quad \text{……..……..(A5)}$$

$$CSBT = (1-S) * PR \quad \text{.....…….…...(A6)}$$

$$GS = S * PR \quad \text{...……...……...…..(A7)}$$

$$CTX = Z * CSBT \quad \text{……..……(A8)}$$

Combining Eqs. (1), (4), (7) and (8) gives the government take (*GTT*)

$$GTT = GS + RY + CTX + GE \quad \text{……...…..(A9)}$$

Eqn. (8) can be expressed in terms of *GE*. Thus, the generalized model is given thus:

$$GTT = GR * [X + (1-X) * (C * Y + (1-C) * (S + Z * (1-S)))] \quad \text{…….……(A10)}$$

For JV, Y = S
Thus,

$$GTT = [X + Y + Z - X * Y - X * Z - Y * Z + X * Y * Z] * GR + C * [X * Z + Y * Z - Z - X * Y * Z] * GR \quad \text{...……(A11)}$$

And for PSC, Y = 0
Thus,

$$GTT = [X + S + Z - X * S - X * Z - S * Z + X * S * Z] * GR - C * [S + Z - X * S - X * Z - S * Z + X * S * Z] * GR \quad \text{•••……(A12)}$$

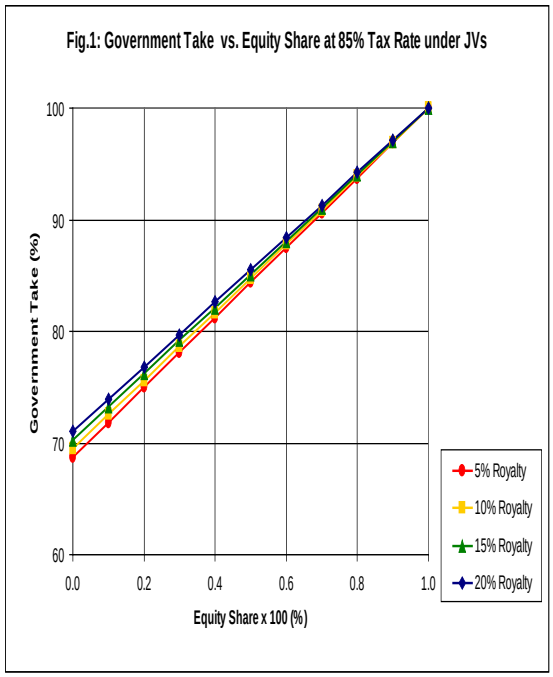
Fig.1: Government Take vs. Equity Share at 85% Tax Rate under JVs
Government Take (%)
Equity Share x 100 (%)
5% Royalty
10% Royalty
15% Royalty
20% Royalty

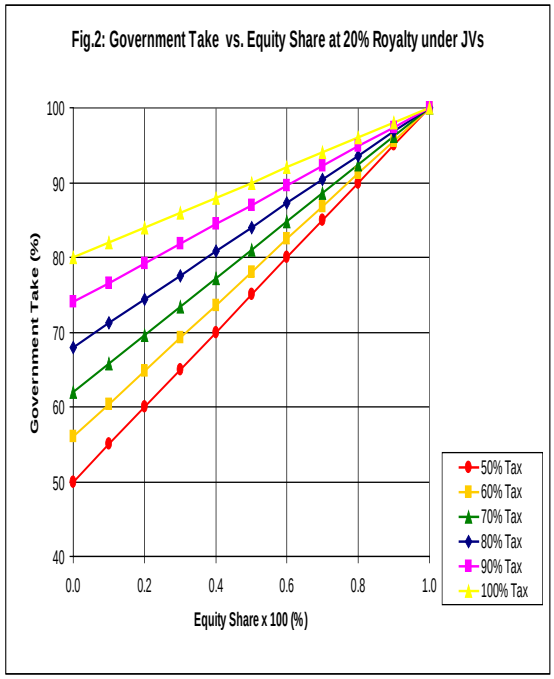
Fig.2: Government Take vs. Equity Share at 20% Royalty under JVs
Government Take (%)
Equity Share x 100 (%)
50% Tax
60% Tax
70% Tax
80% Tax
90% Tax
100% Tax

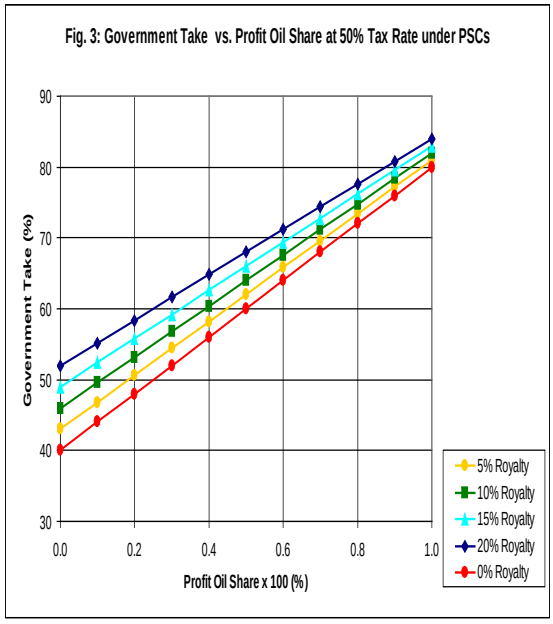
Fig. 3: Government Take vs. Profit Oil Share at 50% Tax Rate under PSCs
Government Take (%)
Profit Oil Share x 100 (%)
5% Royalty
10% Royalty
15% Royalty
20% Royalty
0% Royalty

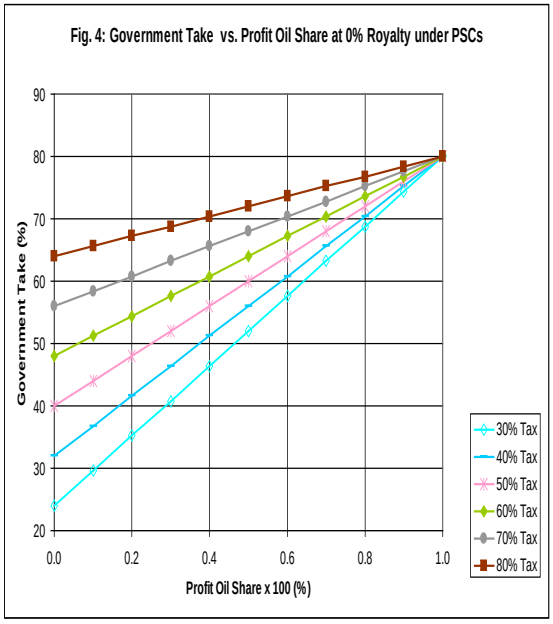
Fig. 4: Government Take vs. Profit Oil Share at 0% Royalty under PSCs
Government Take (%)
Profit Oil Share x 100 (%)
30% Tax
40% Tax
50% Tax
60% Tax
70% Tax
80% Tax

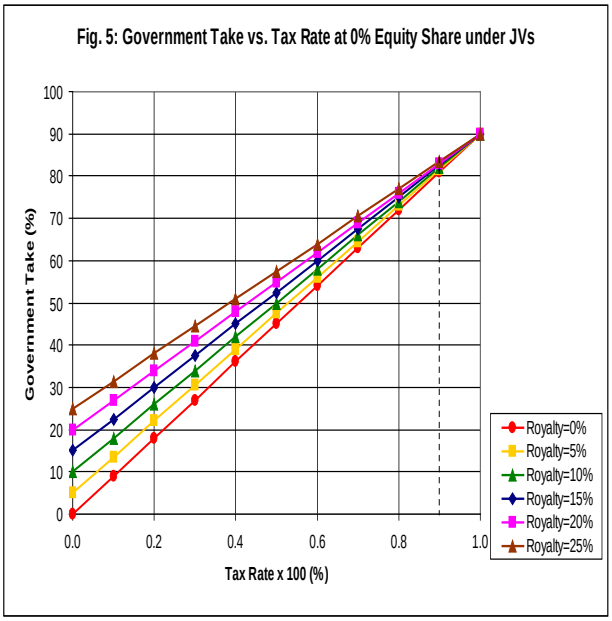
Fig. 5: Government Take vs. Tax Rate at 0% Equity Share under JVs
Government Take (%)
Tax Rate x 100 (%)
Royalty=0%
Royalty=5%
Royalty=10%
Royalty=15%
Royalty=20%
Royalty=25%

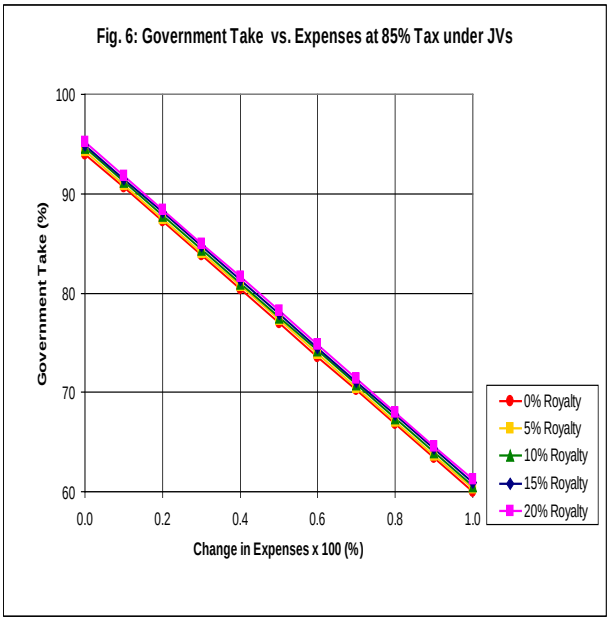
Fig. 6: Government Take vs. Expenses at 85% Tax under JVs
Government Take (%)
Change in Expenses x 100 (%)
0% Royalty
5% Royalty
10% Royalty
15% Royalty
20% Royalty

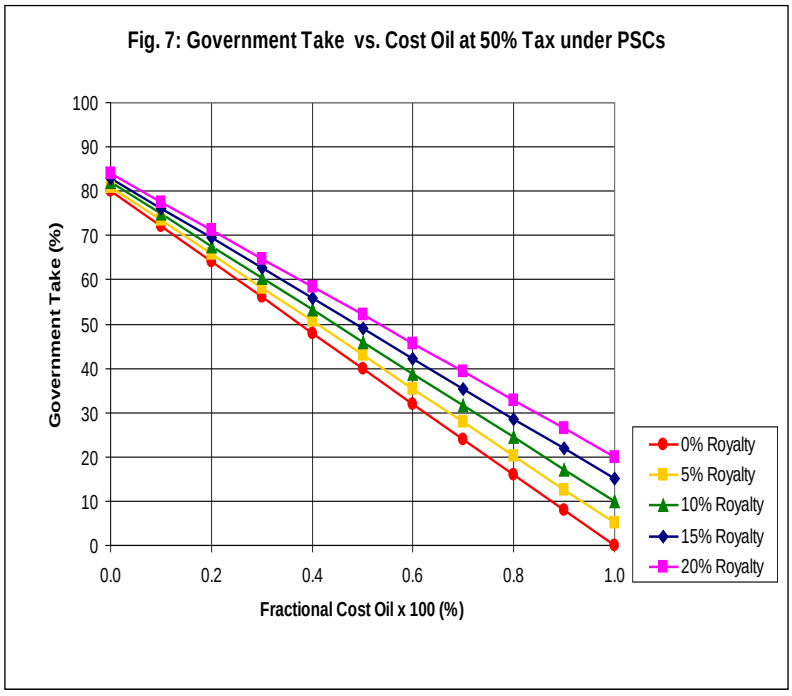
Fig. 7: Government Take vs. Cost Oil at 50% Tax under PSCs
Government Take (%)
Fractional Cost Oil x 100 (%)
0% Royalty
5% Royalty
10% Royalty
15% Royalty
20% Royalty