INTERNATIONAL PETROLEUM FISCAL SYSTEM ANALYSIS

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Authors Note

For the past 20 years, in the normal course of my work, I have collected information on petroleum fiscal systems and contract terms around the world. I have made every attempt to verify this information and to maintain the accuracy of my database. Those involved in this sector of the industry know this is a daunting task. I make no representations beyond the fact that this information is simply the best information I have available. The exception of course is that confidential information is excluded.

Every effort has been made to ensure the accuracy of the information in this report. However, neither Daniel Johnston nor Daniel Johnston & Co., Inc. can be held responsible for the consequences of any errors or omissions.

Country/System Listing

Introduction

This report represents a collection of information that spans two decades. However, confidential information has been carefully excluded. While much of this information is obscure and difficult to gather, this report contains only information available in the public domain.

The objective is to provide a practical and useful database for those involved in contract negotiations and fiscal system design.

Variation on Two Themes

There are two main families of fiscal system: “concessionary” systems, more commonly known these days as royalty/tax (R/T) systems and “contractual based” systems, which include both production sharing contracts (PSC) as well as risk service agreements (S/A). There are, however, some risk service agreements that appear to have more of the characteristics of a royalty/tax system. The distinguishing characteristic of each is where, when and if ownership of the hydrocarbons transfers to the oil company. Numerous variations and twists are found under *both* the royalty/tax (*concessionary)* and *contractual* themes. The taxonomy of petroleum fiscal systems is outlined in Figure 1.

Production Sharing Contract Flow Diagram

One Barrel of Oil

"Single Accounting Period"

Gross Revenues
$20.00

Contractor Share				**Gvt. Share**
		Royalty 10%	→	**$2.00**
		$18.00		
$10.00	←	**C/R** 50% Limit		
		$8.00 **Profit Oil**		
$3.20	←	**Profit Oil Split** 40/60%	→	**$4.80**
($0.00)	→	**Tax Rate** 30%	→	**$0.00**
$3.20				
$13.20		Division of Gross Revenues		**$6.80**
		Effective Royalty Rate		**34%** $6.80/$20.00
66% $13.20/$20.00		Access to Gross Revenues		

Figure 4

Table 3

Example PSC Cash Flow Projection

Field X 100 MMBBLS

Year	Annual Oil Production (MBBLS)	Oil Price ($/BBL)	Gross Revenues ($M)	Royalty 10% ($M)	Net Revenue ($M)	Capital Costs ($M)	Op. Costs ($M)	Deprec-iation ($M)	C/R C/F ($M)	Cost Recovery ($M)
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
1	0	$20.00				30,000				0
2	0	$20.00				40,000				0
3	578	$20.00	11,560	1,156	10,404	100,000	3,156	34,000		5,780
4	6,100	$20.00	122,000	12,200	109,800	60,000	16,200	46,000	31,376	61,000
5	9,420	$20.00	188,400	18,840	169,560	70,000	22,840	60,000	32,576	94,200
6	12,400	$20.00	248,000	24,800	223,200		28,800	60,000	21,216	110,016
7	10,850	$20.00	217,000	21,700	195,300		25,700	60,000		85,700
8	9,494	$20.00	189,880	18,988	170,892		22,988	26,000		48,988
9	8,307	$20.00	166,140	16,614	149,526		20,614	14,000		34,614
10	7,269	$20.00	145,380	14,538	130,842		18,538			18,538
11	6,360	$20.00	127,200	12,720	114,480		16,720			16,720
12	5,565	$20.00	111,300	11,130	100,170		15,130			15,130
13	4,869	$20.00	97,380	9,738	87,642		13,738			13,738
14	4,261	$20.00	85,220	8,522	76,698		12,522			12,522
15	3,728	$20.00	74,560	7,456	67,104		11,456			11,456
16	3,262	$20.00	65,240	6,524	58,716		10,524			10,524
17	2,854	$20.00	57,080	5,708	51,372		9,708			9,708
18	2,498	$20.00	49,960	4,996	44,964		8,996			8,996
19	2,185	$20.00	43,700	4,370	39,330		7,370			7,370
20										
	100,000		**2,000,000**	**200,000**	**1,800,000**	**300,000**	**265,000**	**300,000**		**565,000**

Year	Total Profit Oil ($M)	Gvt. Share ($M)	Company Share ($M)	Bonus ($M)	TLCF ($M)	Taxable Income ($M)	Income Tax 30% ($M)	Contractor Cash Flow	
								Undiscounted	**12.5% DCF**
	K	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**
1	0	0		5,000	0	(5,000)		(35,000)	(32,998)
2	0	0			5,000	(5,000)		(40,000)	(33,522)
3	4,624	2,774	1,850	5,000	(34,506)		(95,526)	(71,161)	
4	48,800	29,280	19,520		34,526	(16,206)		4,320	2,861
5	75,360	45,216	30,144		16,206	25,298	7,589	23,915	14,076
6	113,184	67,910	45,274			66,490	19,947	106,543	55,742
7	109,600	65,760	43,840			43,840	13,152	90,688	42,175
8	121,904	73,142	48,762			48,762	14,628	60,133	24,858
9	114,912	68,947	45,965			45,965	13,789	46,175	16,967
10	112,304	67,382	44,922			44,922	13,476	31,445	10,271
11	97,760	58,656	39,104			39,104	11,731	27,373	7,947
12	85,040	51,024	34,016			34,016	10,205	23,811	6,145
13	73,904	44,342	29,562			29,562	8,868	20,693	4,747
14	64,176	38,506	25,670			25,670	7,701	17,969	3,664
15	55,648	33,389	22,259			22,259	6,678	15,581	2,824
16	48,192	28,915	19,277			19,277	5,783	13,494	2,174
17	41,664	24,998	16,666			16,666	5,000	11,666	1,671
18	35,968	21,581	14,387			14,387	4,316	10,071	1,282
19	31,960	19,176	12,784			12,784	3,835	8,949	1,013
20									
Total	**1,235,000**	**741,000**	**494,000**				**146,700**	**342,300**	**60,736**

Gvt. Take vs Project Profitability

Example PSC with:
10% Royalty
50% C/R Limit
60% Gvt. P/O Share
30% Income Tax

The regressive effect here is due to both the royalty and the C/R limit.

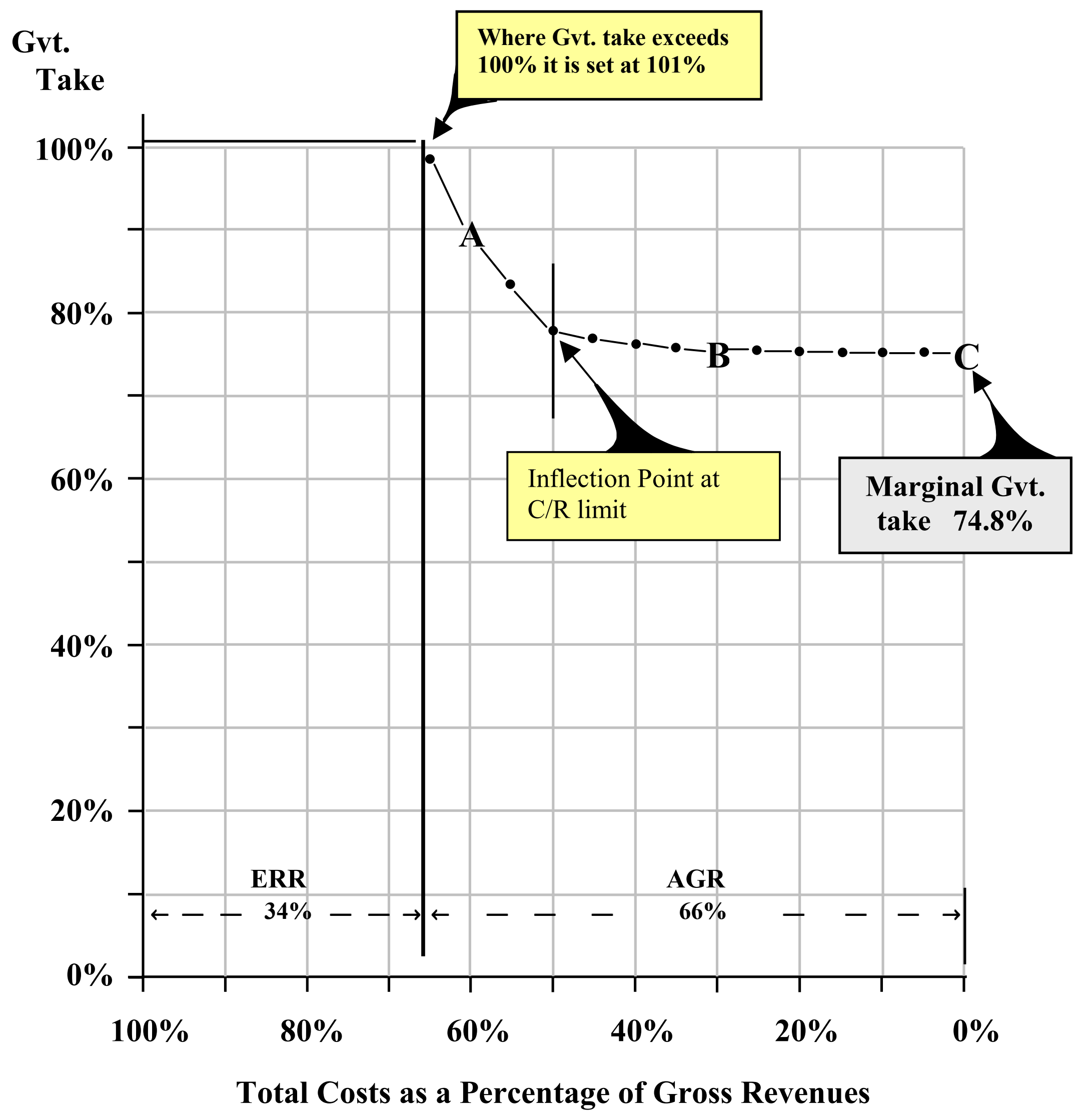

Figure 5

Typical Contract Conditions

Area	Block sizes range from extremely small for development/EOR projects to very large blocks for exploration. Typical exploration block sizes are on the order of 250,000 acres (1,000 km^2) to over a million acres (>4,000 km^2).
Duration	Exploration: Typically 3 phases totaling 6–8 years Production: 20–30 years, (typically at least 25 years)
Relinquishment	Exploration 25% after 1st phase, 25% of "original" area after 2nd phase This is most common but there is wide variation.
Exploration Obligations	Includes seismic data acquisition and drilling. Sometimes contract requirements can be very aggressive in terms of money and timing─depends on the situation. All blocks are different.
Royalty	World average is around 7%. Most systems either have a royalty or an effective royalty (ERR) due to the effect of a C/R limit.
Profit Oil Split	Most profit oil splits (approximately 55–60%) are based upon a production-based sliding scale. Others (around 20–25%) are based upon an "R" factor or ROR system.
C/R Limit	Average 65%. Typically PSCs have a limit and most are based on gross revenues. Some (perhaps around 20%) are based on net production or net revenues (net of royalty). Over 20% have no limit (*i.e.*, 100%). Approximately half of the worlds PSCs have no depreciation for C/R purposes (but almost all do for tax calculation purposes).
Taxation	World average Corporate Income Tax (CIT) is probably between 30–35% or so. However, many PSCs have taxes paid "in lieu"─"for and on behalf of the contractor" out of National Oil Company share of profit oil.
Depreciation	World average is 5-year Straight Line Decline (SLD) for capital costs. Usually depreciation begins "when placed in service" or "when production begins."
Ringfencing	Most countries (55%) erect a "ringfence" or a modified ringfence (13%) around the contract area and do not allow costs from one block to be recovered from another, nor do they allow costs to "cross the fence" for tax calculation purposes.
Gvt. Participation	Approximately half of the countries with the option to participate do not reimburse "past costs."