

The Problem with Bonus Bids vs. Royalties

The Toronto based C.D. Howe Institute has recommended that governments should reduce their reliance on royalties and increase their reliance on bonus bids as a way to better capture the economic rent associated with oil and gas production. ¹

The institute's study observes that "because government revenues from resource extraction rely on both up-front auctions (bonus bids) and royalties upon production, any increase in the latter should naturally reduce government revenues from the former" – increased royalties implies decreased bonus bids. The converse is also true - increased bonuses implies decreased royalties.

Theoretically, a bonus bid with no royalties or taxes would be the ultimate example of a fiscal system that captures the economic rent with the least administrative cost and with no risk to government. ² Why is it then that no government, indeed no resource owner, follows this model?

For governments, the issue is one of risk sharing – where does government want to be along the fiscal continuum from pure risk aversion (bonus bids) to minimal risk sharing (ad valorem royalties, to risk sharing through a share of profits, and finally to full risk sharing as is the case equity participation?

It is interesting to note that a survey of over 500 fiscal systems around the world representing 250 jurisdictions and 156 countries, shows that no resource owner relies either solely or mostly on bonus bids.

The essential question is: if bonus bids increase, will royalties fall by the same amount, by less, or by more?

¹ Colin Busby, Benjamin Dachis, Bev Dahlby, C.D. Howe Institute, Rethinking Royalty Rates, No. 333, September 2011.
https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed//commentary_333.pdf

² The neoclassical economics assumption for this to be true is that markets are perfect, which in turn assumes that market participants – including both resource owners and producers – possess perfect knowledge. Of course if this were true there would by definition be no economic rent.

The Institute observes that a \$1 increase in royalties will result in more than a \$1 decrease in bonus bids. This is because the effect of an ad valorem royalty is to cause production to be cut off before it would otherwise. In the theoretical model this makes perfect sense. Indeed, the practical application of expected monetary value analysis to economic decision-making (the procedure that investors use to determine how much they are willing to bid) also yields this result – ad valorem royalties lower production and thereby lower the overall project value. Since the amount bid for a project is based on its expected value, the bonus bid would also be lower.

Many jurisdictions attempt to correct for the premature cut-off effects of pure ad valorem royalties with sliding scales based on price and/or production rate. An important exception is the United States. U.S. jurisdictions acknowledge the theoretical argument but say that in the real world a minimum fixed royalty percentage that is sufficiently above zero (most jurisdiction set this at 12.50%) has the effect of forcing producers to innovate and cut costs.

To achieve its result, the institute also assumes that investors are indifferent with respect to risk! This is again not a reasonable real-world assumption, particularly for the oil and gas industry.³

When risk is considered, the institute does acknowledge that an increase in bonus bids in fact leads to the need for an even greater royalty decrease. Stated differently – by relying on bonus bids, the resource owner actually receives less. So why then does the institute call for greater reliance on bonuses as a policy to increase benefits for governments? So far it seems that the institute does not accept that oil and gas investors are risk averse or prefer money earlier rather than later.

A more constructive approach is to accept that risk is important – any other assumption in this regard is simply not consistent with industry practice. Applying the same approach and methodology as that followed by investors when determining the amount to be bid, the analysis below demonstrates the folly of relying on bonus bids.⁴

³ The institute recognizes this assumption in footnote 13 of its report, stating that: “... Second, to the extent that firms are risk averse, their bids will be less than the expected abnormal profit. In other words, with bidding by risk-averse firms, a royalty increase may be “undercompensated,” meaning that a \$1.00 increase in royalty revenues might reduce the bonus bid by less than a \$1.00”.

⁴ This approach is the expected monetary value (EMV) analysis already identified. This is the same as conventional cash flow analysis with appropriate adjustments for non-time related risk and for the time-value of money.

Assume that risk is unchanged between the two cases – so it can be ignored – and that the time value of money for the investor is represented by a real discount rate of 10% - a common industry benchmark. For a given royalty rate, what bonus bid would be required to keep the investor NPV unchanged? Stated differently, how much would bonus bids have to decrease for a given increase in royalties? The results are presented in the table below.

The table first reports Case 1 for a representative project before fiscal terms are applied, showing a 55% ROR and a NPV10 of \$7,633 thousand (K). Case 2a next shows the results with normal corporate income tax. Case 2b adds a 12% royalty.

Case 2c shows the bonus required to keep the investor NPV10 at the same level as it would be with the 12% royalty. This bid would be \$1,437 K, implying that royalty revenue is worth 2.00 times more than revenue from bonuses (K \$2,880 vs. K \$1437).

Because government shares in the costs by allowing the deduction of both bonus bids and royalties in determining taxable income, when the full tax impacts are considered, the royalty preference decreases to 1.19 times before discounting for the government's time-preference for money and to 1.15 times after discounting.

Comparison of Bonus Bids vs. Royalty						
	Real \$ Values					
	Investor		Government			Disc.at 2%
			Disc.at 0%		Total	
	ROR	NPV10	Bonus or Royalty	CIT		Total
Representative Project						
Case 1: No Government	55.12%	7,633.58	na	na	na	na
Case 2a: CIT @ 25%	43.45%	5,407.16	0	4145.46	4,145.46	3549.46
Case 2b: Royalty @ 12%	35.43%	4,152.49	2,880.00	3,425.74	6,305.74	5431.54
Case 2c: Bonus @ \$1,437k	29.12%	4,151.15	1,437.00	3,840.97	5,277.97	4719.74
Case 2d: Bonus @ \$1,150k	31.39%	4,402.80	1,150.00	3,901.78	5,051.78	4486.01
Marginal Project						
Case 3a: Bonus @ \$1,437k	10.12%	15.77	1,437.00	808.30	2,245.30	2135.76
Case 3b: Royalty @ 34.50%	10.14%	10.06	2,760.01	424.49	3,184.50	2801.75
\$Royalty per \$Bonus						
Representative Project						
No Bonus Risk			2.00	0.89	1.19	1.15
20% Bonus Risk			2.50	0.88	1.25	1.21
Marginal Project						
			1.92	0.53	1.42	1.31

Source: Rodgers Oil & Gas Consulting, Oct., 2013

The before-tax royalty preference value increases to 2.50 when we apply a risk premium of 20% that reduces the bonus to \$1,150.00 k. The after tax discounted value is 1.21, showing that for every dollar that bonuses are reduced, royalties could be increased by 1.21 dollars.

Experience shows that a 20% risk premium is likely conservative. Increased risk and longer lead time projects (e.g., oil sands) would show even greater resource undervaluation from bonuses.

Looking at a marginal investment prospect (ROR approx. 10%) shows the after tax preference for royalty over bonuses increases to 1.31. This is based on the bid assumption of \$1,437 K before the volume of recoverable reserves is known. If, after the bid, the reserves turn out to be sufficiently low so as to cause the project to be marginal, the investor would have been better off offering to increase its royalty rate from 12% to 34%, and pay only a nominal bonus bid.

Even if bonus bids could capture the economic rent it should be recognized that up front fiscal levies add risk – cost – and costs, by definition, reduce economic rent. Thus, a reliance on bonus bids, and on up-front fiscal levies generally, creates a situation where there is less rent to capture – everybody loses. Greater reliance on bonus bids reduces both the size of the pie available for sharing and the share that governments can expect to capture.

Quantitative analysis based on industry practice and established investment criteria shows that governments would be better off – realize higher revenues without diminishing investment – with a greater reliance on royalties than on bonus bids.

Summary:

The quantitative evidence supports the view of industry experts, that:

- (a) the more up-front the fiscal levy, the more onerous it is on investment decisions; and,**
- (b) rather than being a sign of a good fiscal system, consistently high bonuses is more likely a sign of insufficient royalties or poor fiscal design.**