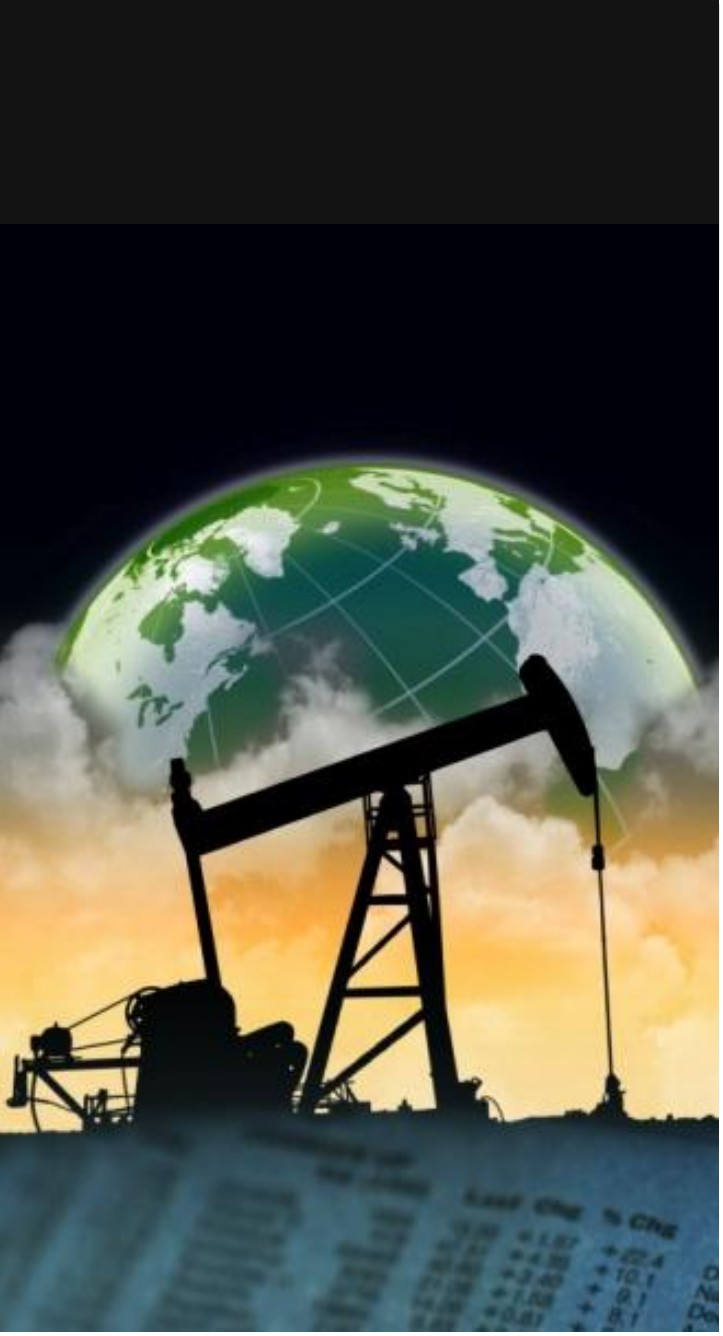

Discussion Slides: Alaska Senate Resource Committee

February 17-18, 2012

Tony Reinsch
Senior Director, Upstream & Gas
PFC Energy

Janak Mayer
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The Art of Taxation

"The art of taxation consists in so plucking the goose as to get the most feathers with the least hissing."

Jean Baptiste Colbert - Economist and Minister of Finance under King Louis XIV of France, 1619

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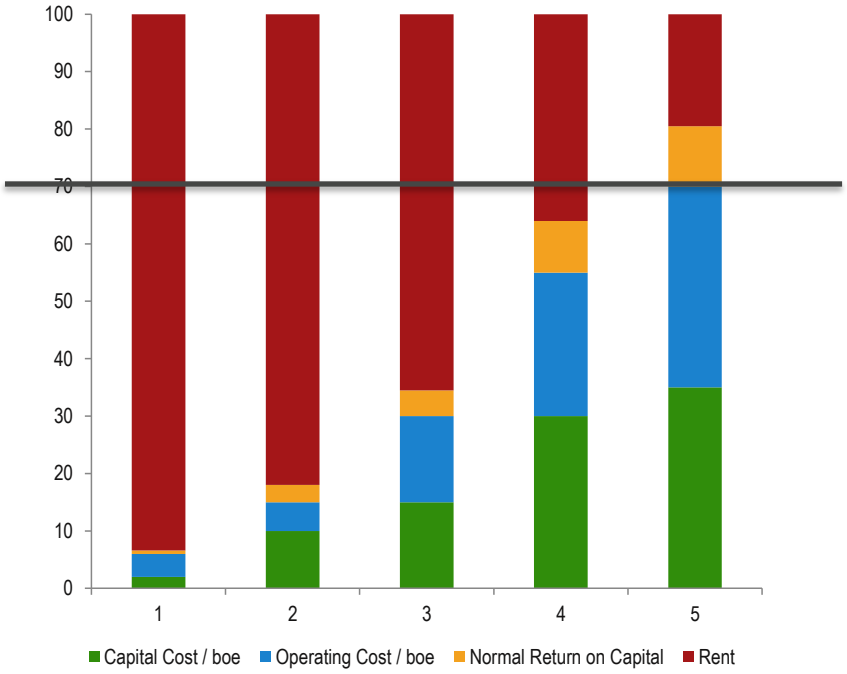
…or, in more contemporary terms

- The art of taxation consists in maximizing revenues, subject to two important constraints
  - **Efficiency:** Not distorting investment choices, or preventing marginal investments that would otherwise have been made from occurring
  - **Competitiveness:** Ensuring that in the real world, which is characterized by limited capital with competing uses

Efficiency: Conclusions on a Fixed Percentage Royalty

- The fixed royalty is **inefficient** because it distorts investment, making previously marginal projects uneconomic at a given price
- It is highly **regressive** with regard to both price and cost, because Relative Government Take falls as prices rise, and as costs fall
- This also increases **sovereign risk** – since when prices rise, governments will be tempted to set a new rate, even though investments have been made on the basis of the current one
- It has only one major strength – it is very **simple to administer**, requiring knowledge of only 2 variables - production and price



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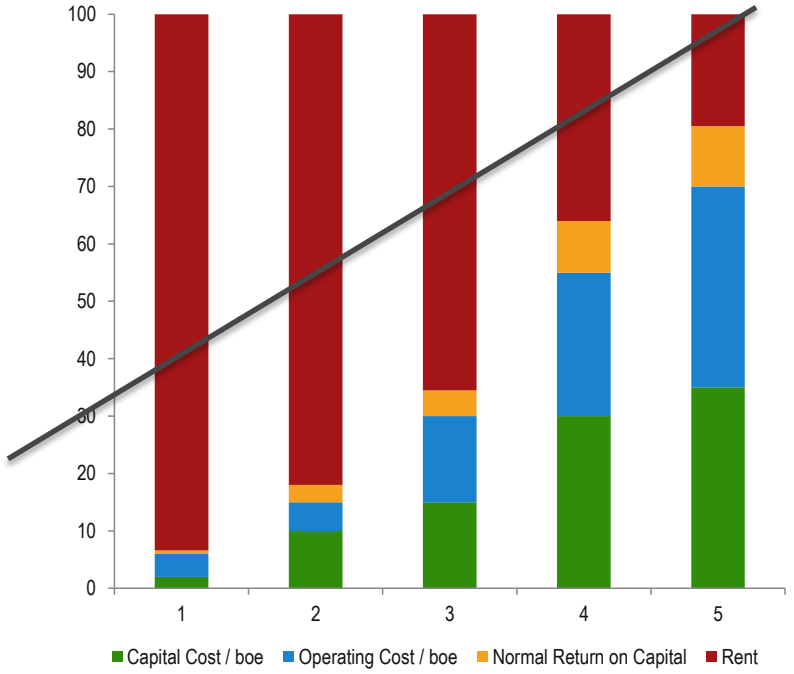
Efficiency: Targeting Economic Rent

- What we would like to do instead is to tax the red bars – the Economic Rent – directly
- That way, we could *pluck more feathers*, with less *hissing*
- What are the different ways, over time, that governments have attempted to do this?



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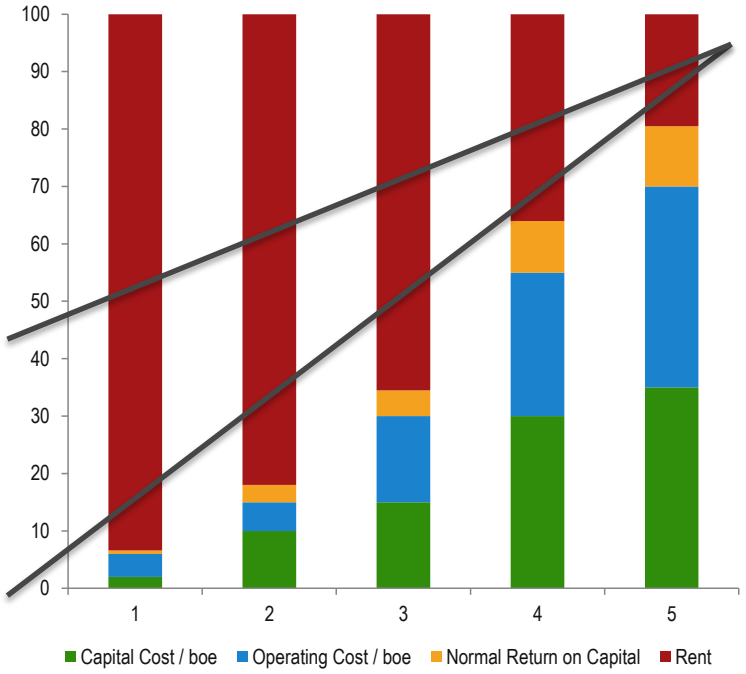
Progressivity

- Progressivity may be used for a range of different purposes in a fiscal regime
  - In some cases, used to counterbalance the inherent regressivity of other elements of the regime
  - In other cases, a deliberate policy to not only a steady share of the rents, but to capture ever more as economics improve
- Implemented properly (ie taxing only economic rents), both of these approaches can be efficient – ie non-distorting of relative investment opportunities at the margin
- Regimes that use both high levels of relative government take, in addition to high progressivity to capture most or all of the upside of high price environments are will not necessarily, however, be competitive



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Different Implementations of Progressivity: Production Levels

- One of the earliest and still commonest metrics used to progressively increase rates of government take for projects that produce more economic rent has been the use of sliding scales for the split of profit oil or the setting of a royalty, based on levels of production, as is the case in Vietnam's PSC fiscal system
- Brazil similarly applies a production-level-based windfall profits tax in its tax-royalty system
- Such systems are almost always bracketed, so the higher rate applies only to production above a given threshold
- Production-based progressivity uses production levels as a proxy for profitability – and it is an imperfect proxy at best
  - The Vietnam example here attempts to improve here by setting different tiers, based on project cost
  - British Columbia, Canada uses a combination of Price and Production Quantity in its progressive Royalty rate

Vietnam Fiscal Terms			Pre-2010	Post-2010 with Incentives	Post-2010 without Incentives	Deepwater/ Frontier
Oil Royalty		mb/d				
	<=	20.00	8%	7%	10%	6%
	>20 <=	50.00	10%	9%	12%	8%
	>50 <=	75.00	10%	11%	14%	8%
	>75 <=	100.00	15%	13%	19%	10%
	>100 <=	150.00	20%	18%	24%	15%
	>150		25%	23%	29%	20%
Gas Royalty		mmcf/d				
	<=	176.55	0%	1%	2%	0%
	>176.55 <=	350.00	5%	3%	5%	3%
	>350		25%	6%	10%	6%
Cost Oil Limit			35%	35%	35%	50%
Cost Gas Limit			60%	60%	60%	70%
Profit Oil Split to Gov.		mb/d				
	<=	75.00	50%	50%	50%	50%
	>75 <=	100.00	55%	55%	55%	55%
	>100 <=	150.00	60%	60%	60%	60%
	>150		70%	70%	70%	70%
Profit Gas Split			50%	50%	50%	50%
Corporate Tax Rate		32%				

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Different Implementations of Progressivity: Price

- A number of regimes are progressive explicitly on price
- This approach is particularly common in setting “windfall profits” taxes
- China and Venezuela both use a price-progressive windfall profits tax to capture progressive shares of economic rent in high price environments
- Such systems are almost always bracketed, taxing only profits resulting from the higher price bracket at the higher rate
- Alaska’s ACES system is an exception to this rule

Thresholds for Venezuela’s Windfall Profits Tax

Oil Price	Rate
< $40	0%
$ 40 - $70	20%
$ 70 - $90	80%
$ 90 - $100	90%
> $100	95%

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Different Implementations of Progressivity: Cost Recovery

- A more sophisticated approach to targeting economic rent more directly is for a regime to be progressive using the extent to which a project has recovered its costs as a metric by which to set the tax or profit sharing rate
- Malaysia's current PSC model, introduced in 1997, uses "R-Factor", the ratio of cumulative revenues to cumulative costs, to set its profit split and its cost limit
- Once a project has recovered its costs, profit share to the IOC is progressively reduced

Malaysia Fiscal Terms						
Oil Royalty	10%					
	R Factor					
1997 PSC Parameters	R<=1.0	R<=1.4	R<=2.0	R<=2.5	R<=3.0	R>3
Cost Oil/Gas Limit	70%	60%	50%	30%	30%	30%
Unutilized Cost Oil/Gas Split (below TH	0%	80%	70%	60%	50%	40%
Unutilized Cost Oil/Gas Split (above TH	0%	40%	40%	40%	40%	20%
Profit Oil/Gas Split (below THV)	80%	70%	60%	50%	40%	30%
Profit Oil/Gas Split (above THV)	40%	30%	30%	30%	30%	10%
Threshold Value (THV) - Oil	30	mmbbls				
Threshold Value (THV) - Gas	0.75	tcf				

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Different Implementations of Progressivity: Rates of Return

- Similarly, some regimes seek to target "super-profits" more directly by linking progressivity to the Internal Rate of Return (IRR) that a project has accomplished by any point in time
  - Angola's PSC regime uses IRR to set the profit oil split
    - Onshore and Shallow Water

IRR	Contractor's Share
< 20%	60%
20 – 25%	50%
25 – 30%	40%
> 30%	30%

    - Deepwater

IRR	Contractor's Share
< 15%	80%
15 – 25%	60%
25 – 30%	40%
> 30%	20%

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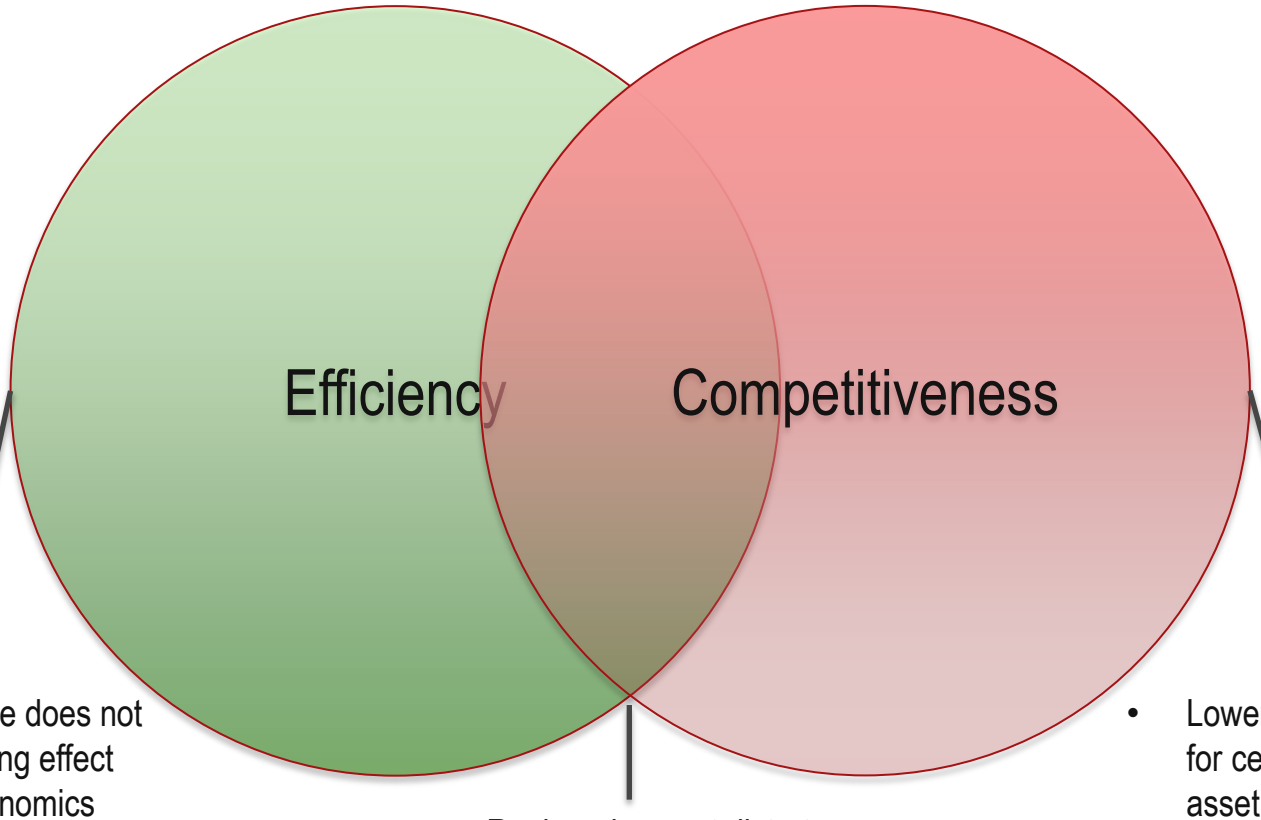
Different Implementations of Progressivity: Taxing Rent Directly

- Many of these regimes are highly complex, and use highly imperfect proxies for targeting economic rent
- Australia's Petroleum Resource Rent Tax, by contrast, is unusual in being both very simple in design, and in seeking to tax economic rent directly
- The tax seeks to replicate the economics of a 40% direct participation by the state, by taxing net cashflow at a rate of 40%
- All losses, however, are carried forward indefinitely, and maintain present value since they are inflated each year by a rate similar to the corporate cost of capital
- The ultimate economics are as if government is paying a 40% share of the cost of development, and taking a 40% share of the resulting cashflow
- With no royalty, and no other taxes in the system other than Corporate Income Tax, this is one of the simplest fiscal designs anywhere, but also one of the most efficient – because it taxes rent directly

Finding the Intersection



- Efficient regime does not have a distorting effect on project economics
- But rates are too high, and other jurisdictions are more successful in attracting capital as a result

- Regime does not distort investment
- Rates are internationally competitive, given fundamental attractiveness of the opportunity

- Lower rates may mean for certain projects or asset types, the regime is highly internationally competitive
- But distorting structure means certain otherwise marginal projects are unviable

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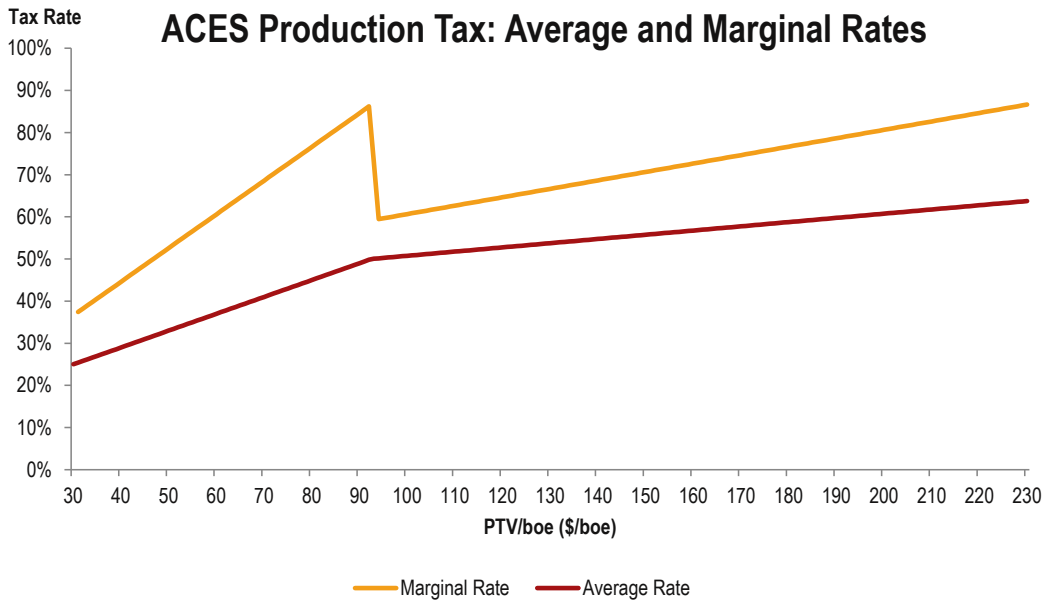
Average vs Marginal Rates



- It is average or effective rates, not marginal rates that drive project economics at a given price level
- Marginal rates remain, however, a useful metric for understanding key aspects of a regime
- The **difference between marginal and average** rates enable us to understand **how progressive a regime** is on a comparative basis
- Marginal rates represent the combination of high average rates with high progressivity
- In a profit-based system, high marginal rates may create perverse incentives with regard to cost control, encouraging “gold-plating”

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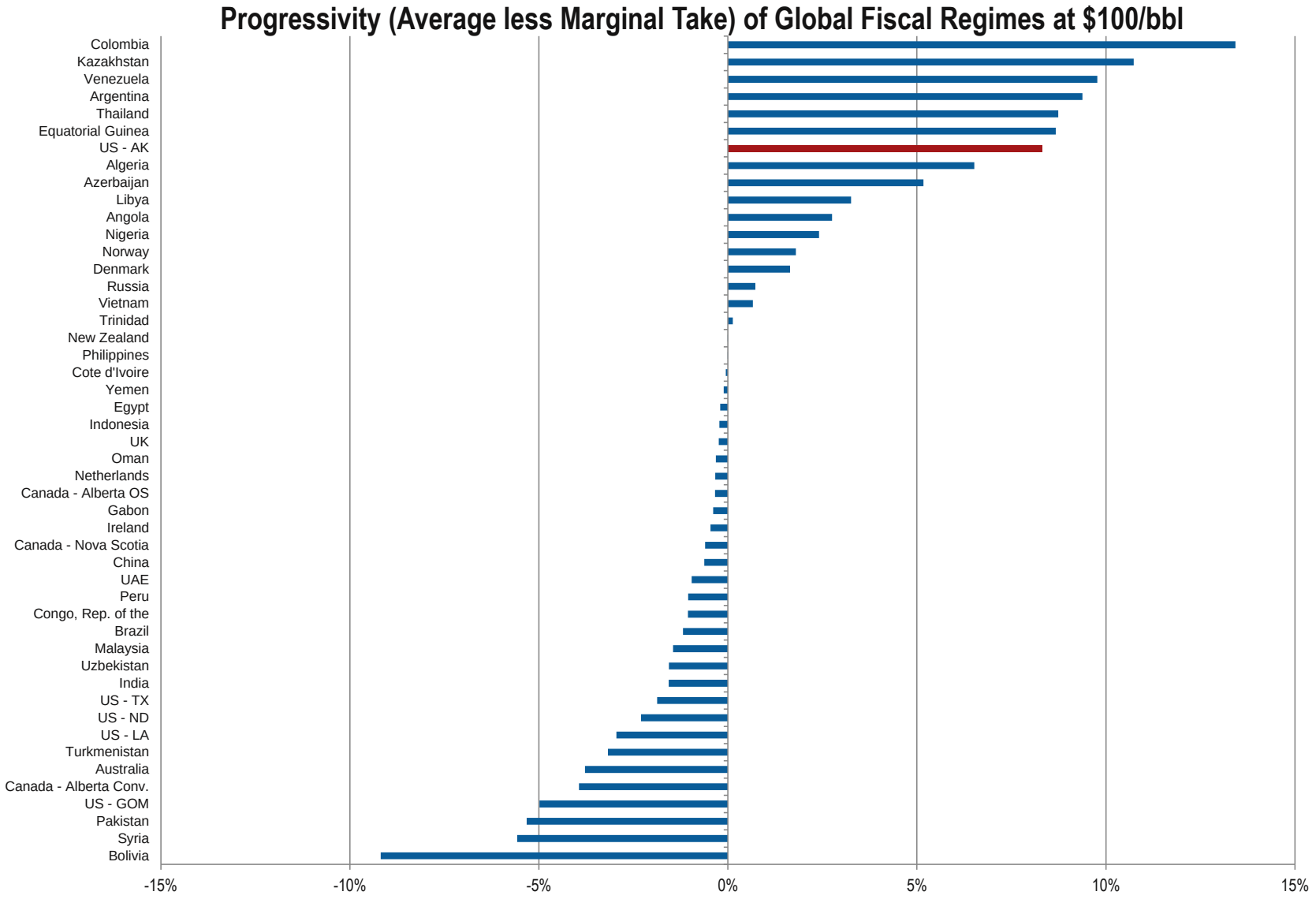
Benchmarking Progressivity for a Range of Global Regimes



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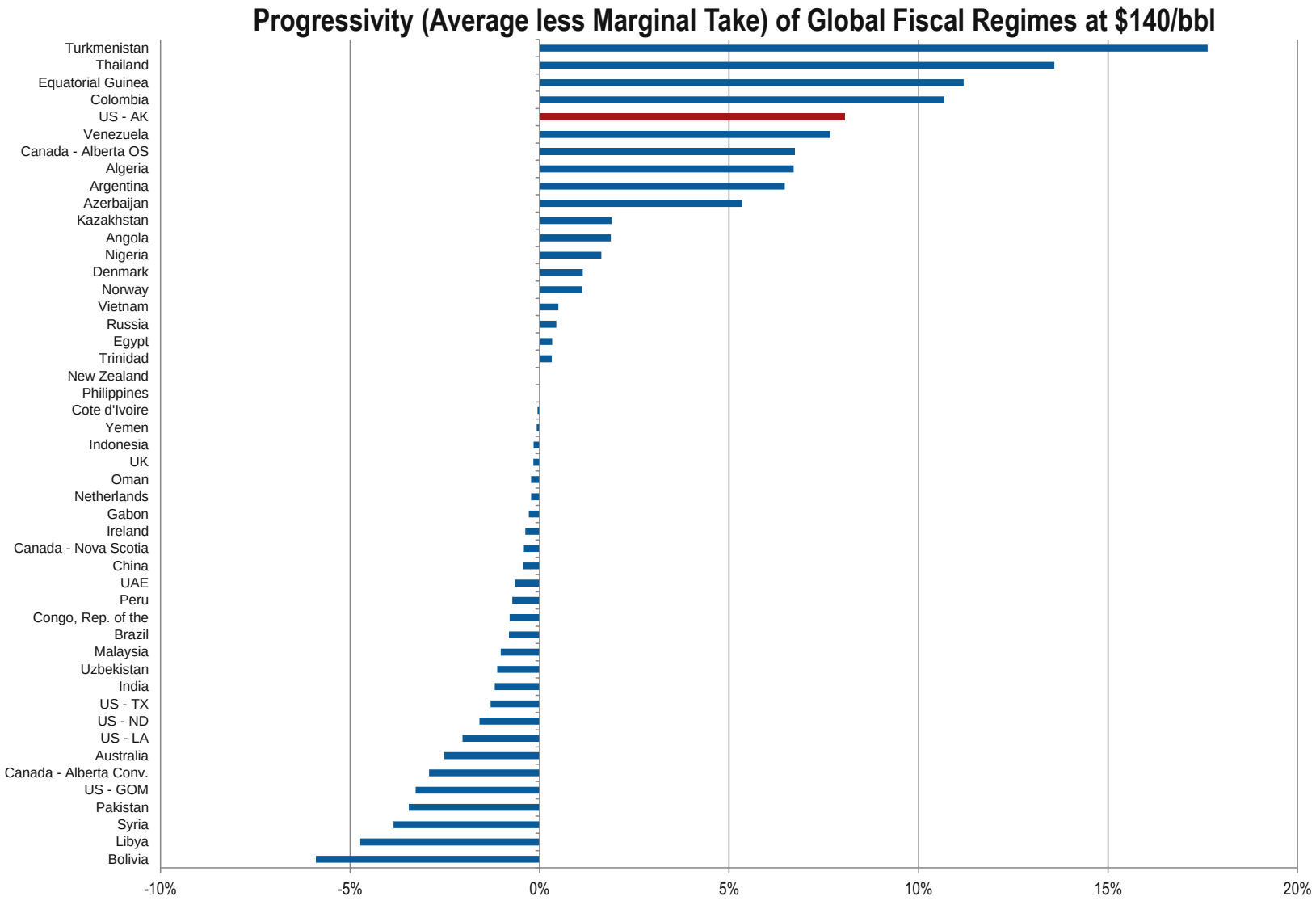
Benchmarking Progressivity for a Range of Global Regimes



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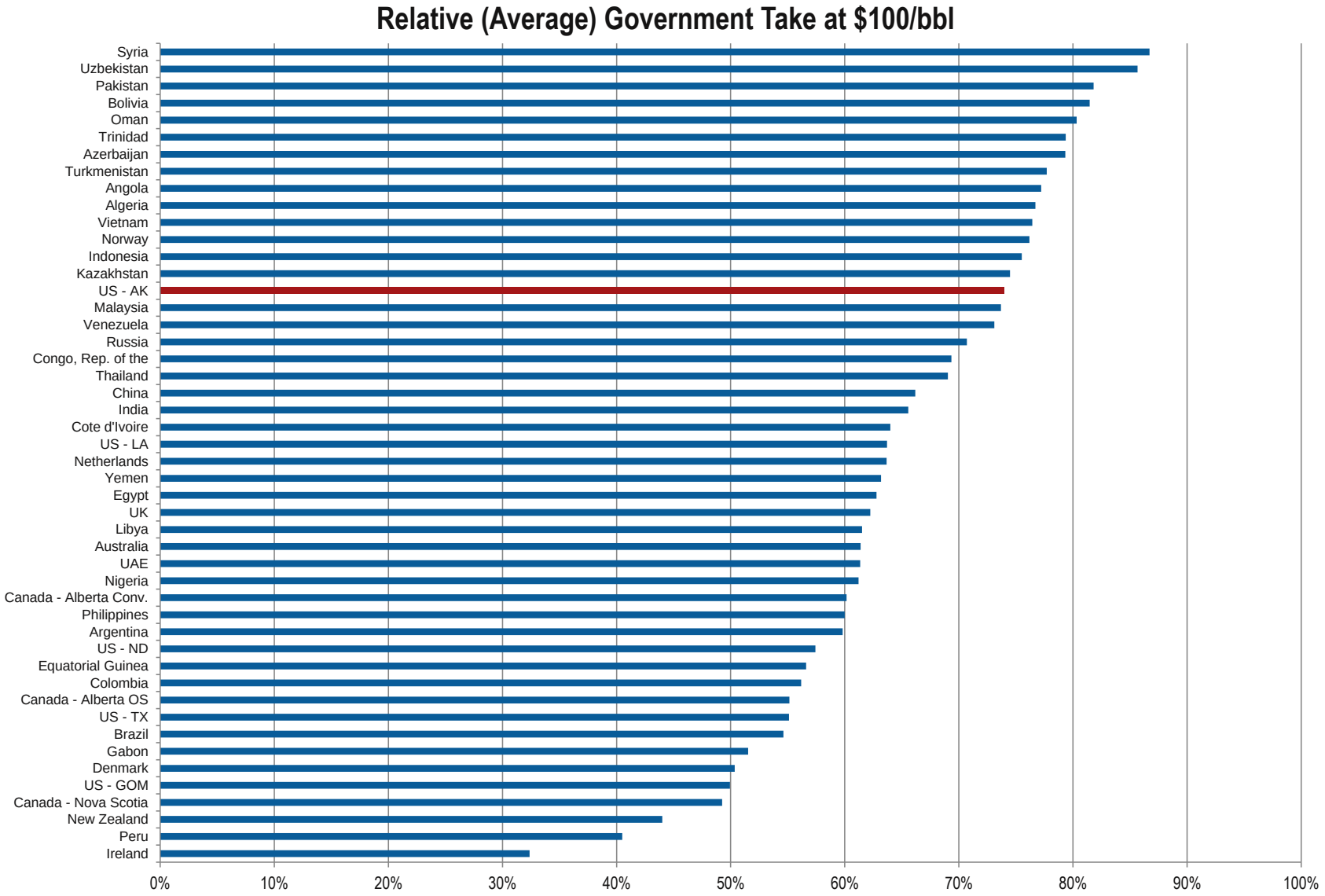
Regime Competitiveness: Relative Government Take



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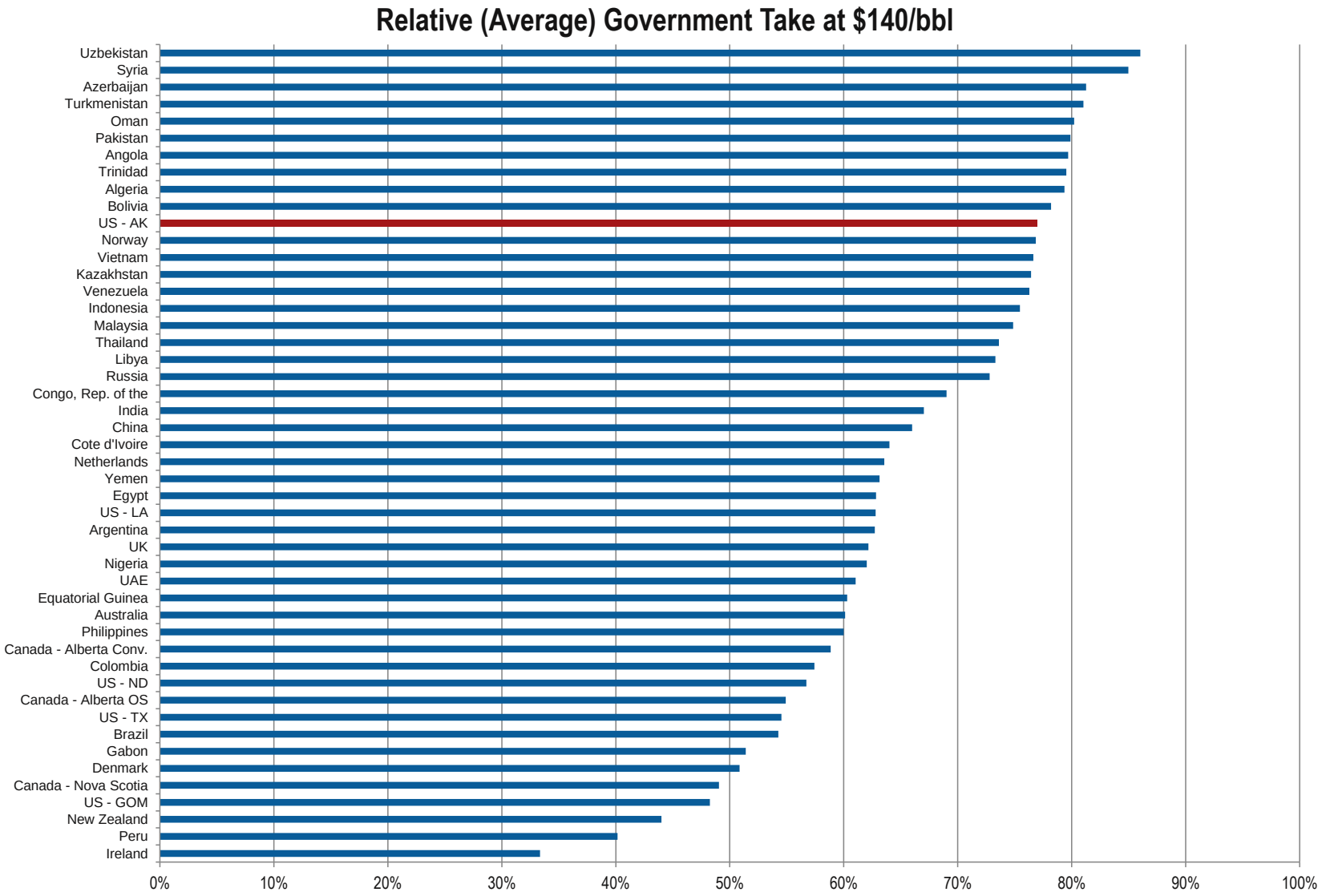
Regime Competitiveness: Relative Government Take



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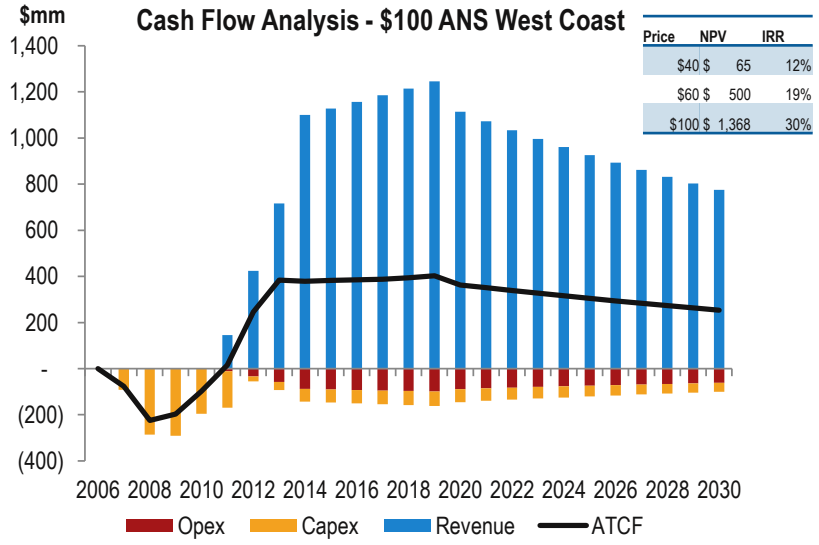
PPT As Originally Proposed



Price	Royalty	Production Tax	Property Tax	State CIT	Total State Take	Federal CIT	Total GT
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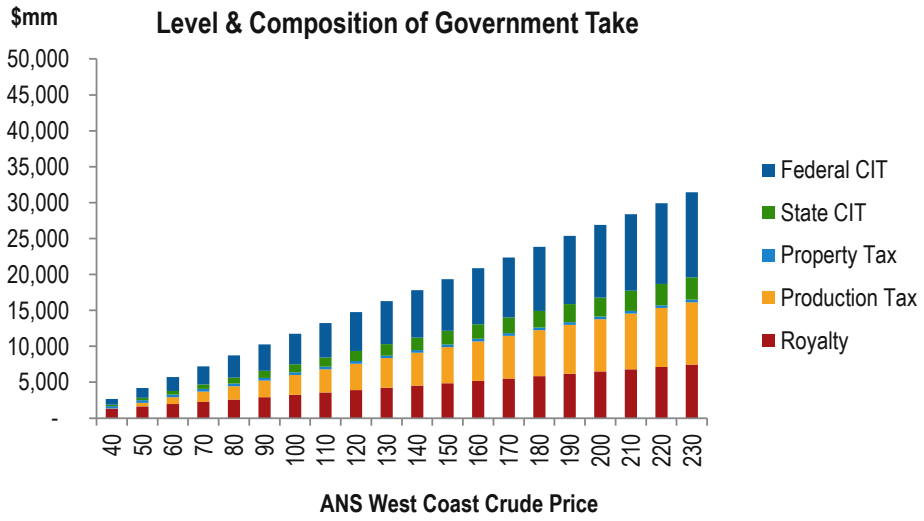
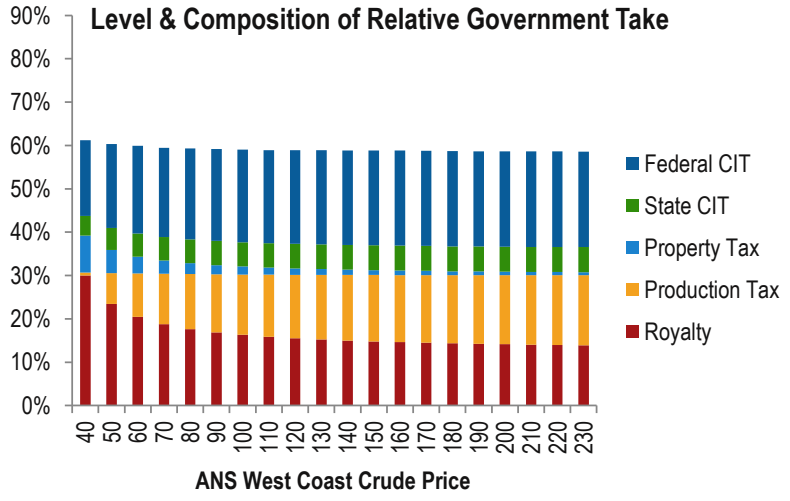
50	23%	7%	5%	5%	41%	19%	60%
60	20%	10%	4%	5%	40%	20%	60%
70	19%	12%	3%	5%	39%	21%	59%
80	18%	13%	3%	5%	38%	21%	59%
90	17%	13%	2%	6%	38%	21%	59%
100	16%	14%	2%	6%	38%	21%	59%
110	16%	14%	2%	6%	37%	21%	59%
120	16%	15%	1%	6%	37%	22%	59%
130	15%	15%	1%	6%	37%	22%	59%
140	15%	15%	1%	6%	37%	22%	59%
150	15%	15%	1%	6%	37%	22%	59%
160	15%	15%	1%	6%	37%	22%	59%
170	14%	16%	1%	6%	37%	22%	59%
180	14%	16%	1%	6%	37%	22%	59%
190	14%	16%	1%	6%	37%	22%	59%
200	14%	16%	1%	6%	37%	22%	59%
210	14%	16%	1%	6%	37%	22%	59%
220	14%	16%	1%	6%	37%	22%	59%
230	14%	16%	1%	6%	37%	22%	59%





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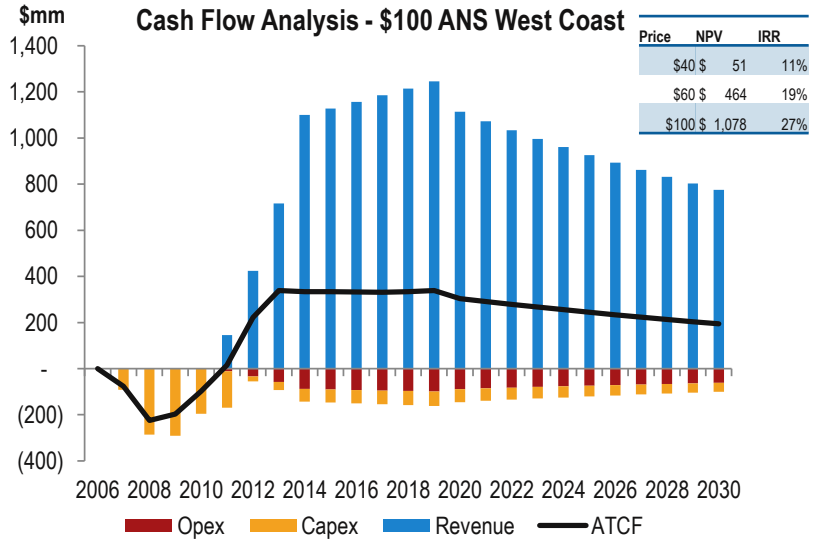
PPT As Enacted



Price	Royalty	Production Tax	Property Tax	State CIT	Total State Take	Federal CIT	Total GT
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50	23%	9%	5%	5%	43%	19%	62%
60	20%	14%	4%	5%	43%	19%	62%
70	19%	18%	3%	5%	45%	19%	63%
80	18%	22%	3%	5%	47%	18%	65%
90	17%	25%	2%	5%	49%	18%	66%
100	16%	28%	2%	4%	51%	17%	68%
110	16%	32%	2%	4%	53%	16%	69%
120	16%	34%	1%	4%	55%	15%	71%
130	15%	36%	1%	4%	57%	15%	72%
140	15%	38%	1%	4%	58%	15%	73%
150	15%	39%	1%	4%	59%	14%	73%
160	15%	40%	1%	4%	60%	14%	74%
170	14%	41%	1%	4%	60%	14%	74%
180	14%	42%	1%	4%	61%	14%	74%
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200	14%	42%	1%	4%	61%	14%	74%
210	14%	42%	1%	4%	61%	14%	74%
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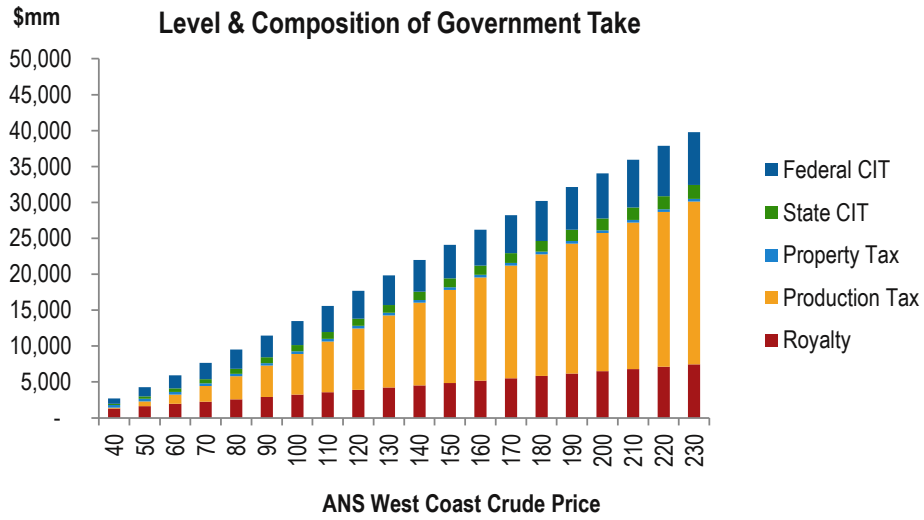

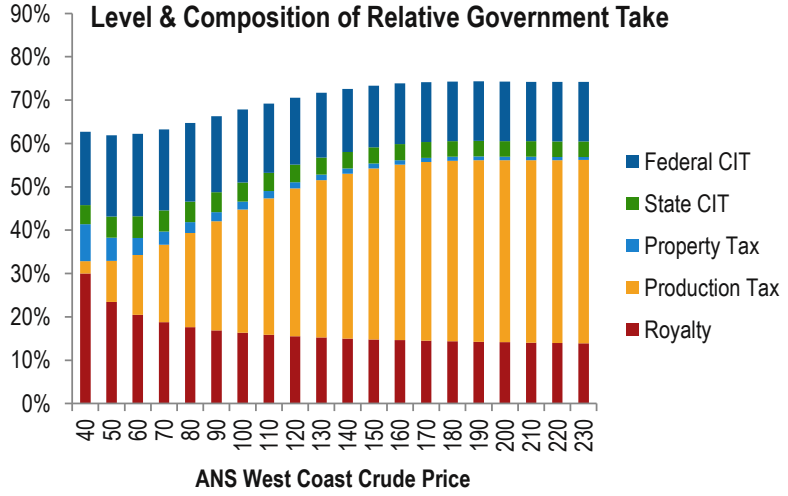

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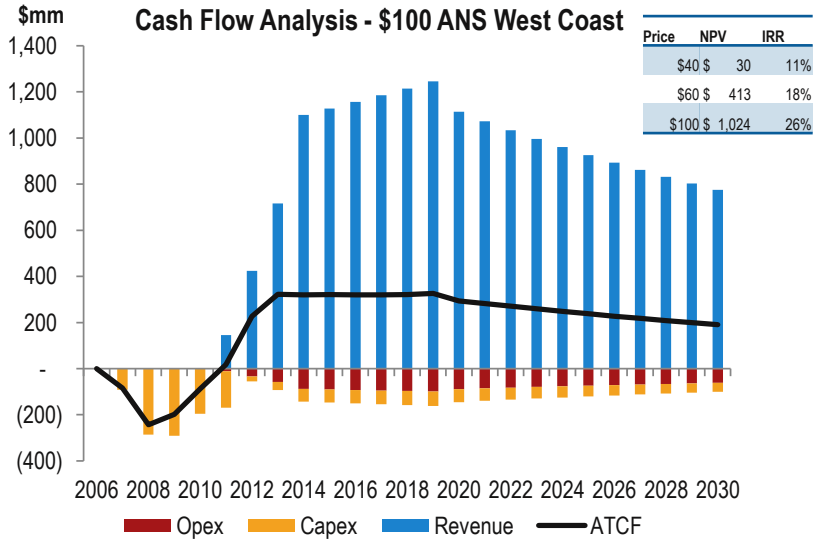
ACES As Proposed



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80	18%	24%	3%	5%	49%	17%	66%
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200	14%	42%	1%	4%	61%	14%	74%
210	14%	42%	1%	4%	61%	14%	74%
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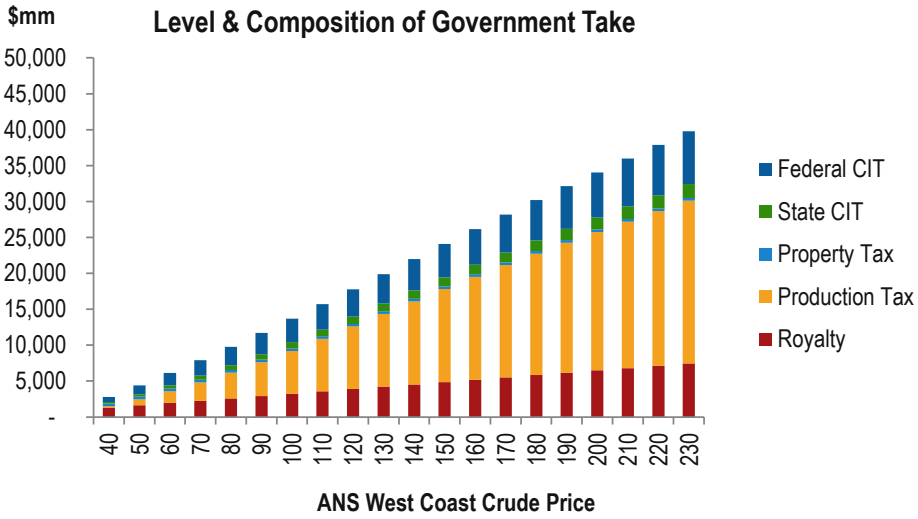

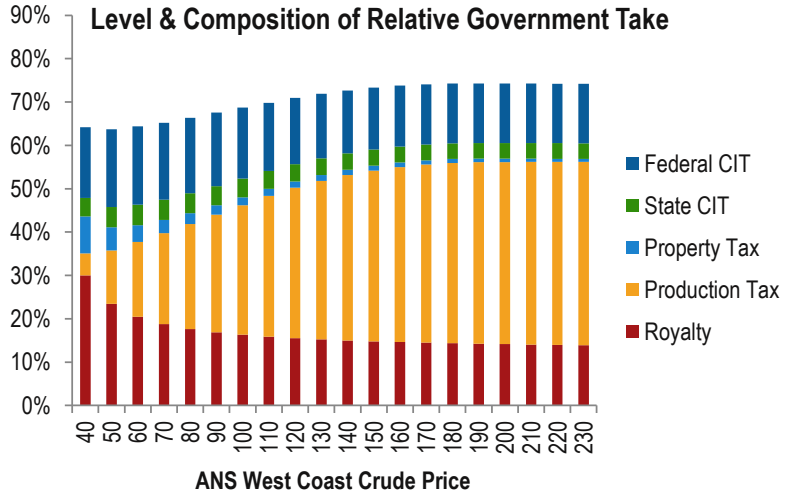

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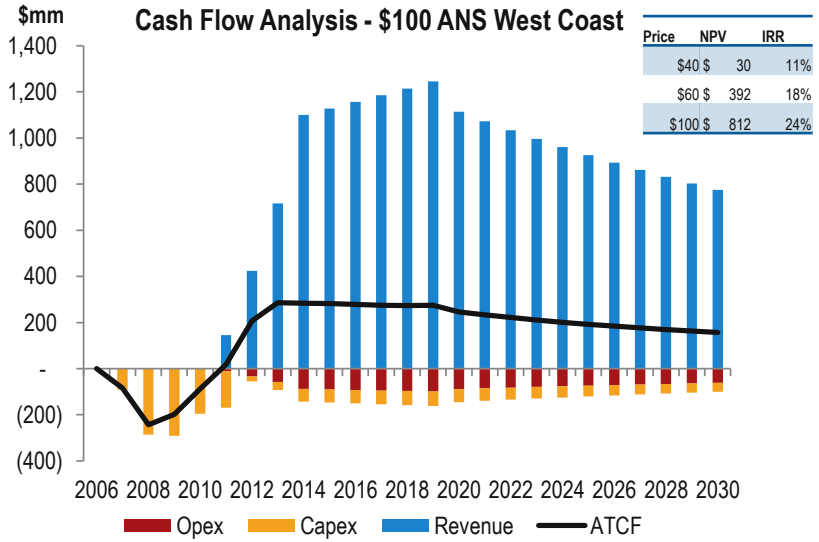
ACES As Enacted



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100	16%	39%	2%	4%	60%	14%	74%
110	16%	41%	2%	3%	62%	13%	75%
120	16%	43%	1%	3%	63%	13%	76%
130	15%	45%	1%	3%	64%	12%	77%
140	15%	46%	1%	3%	65%	12%	77%
150	15%	47%	1%	3%	66%	12%	78%
160	15%	49%	1%	3%	67%	11%	79%
170	14%	50%	1%	3%	68%	11%	79%
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200	14%	53%	1%	3%	71%	10%	81%
210	14%	55%	1%	3%	72%	10%	82%
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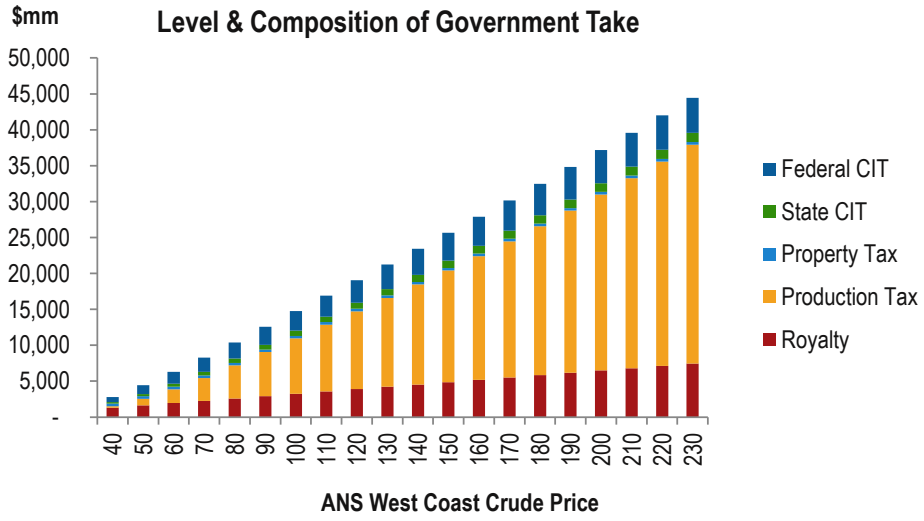

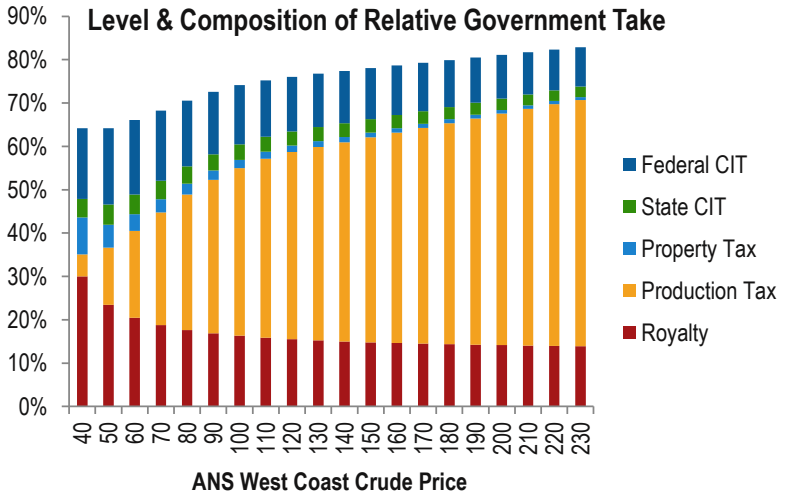

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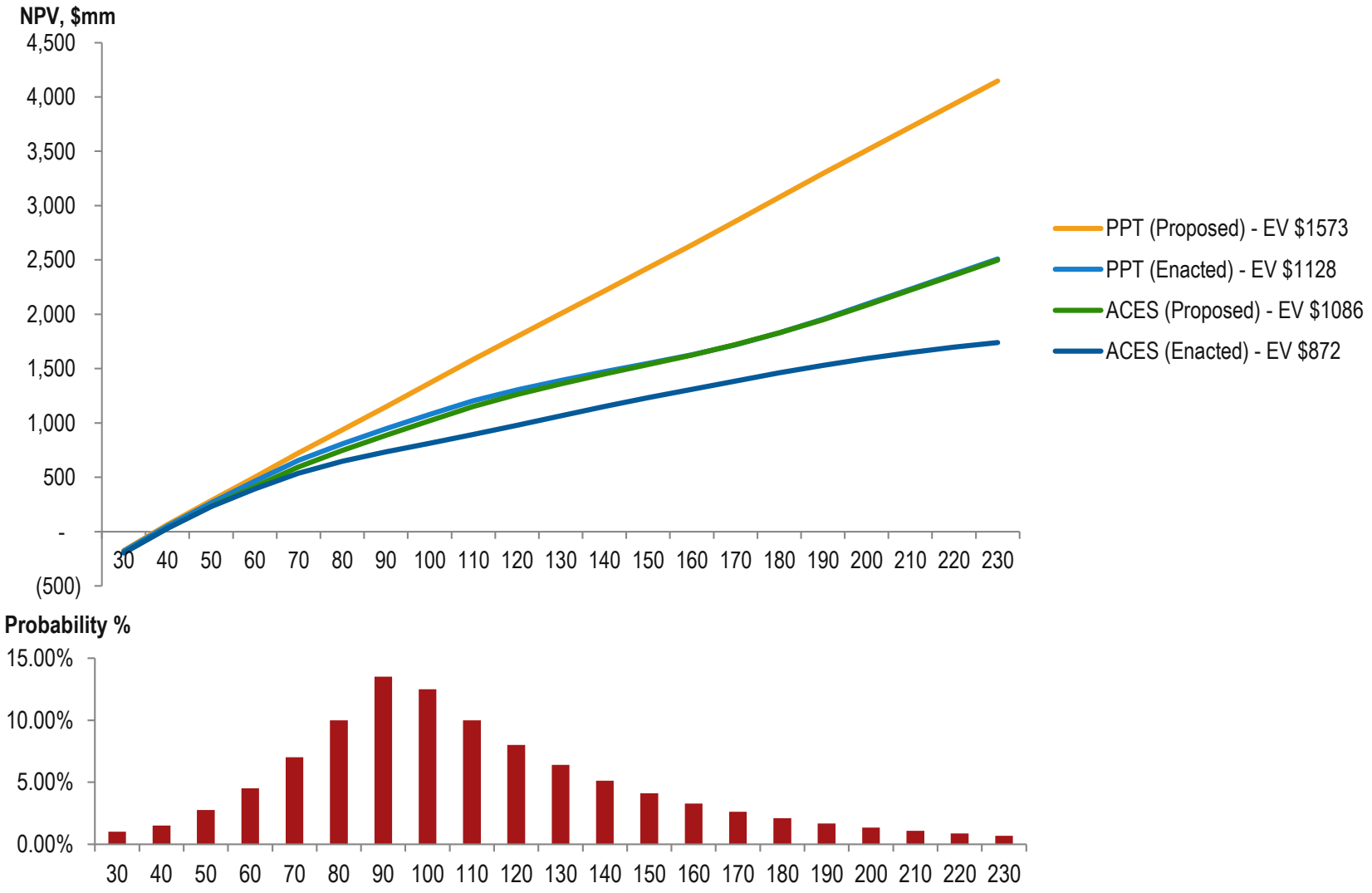
Limitations on Price Upside: A Probabilistic Approach



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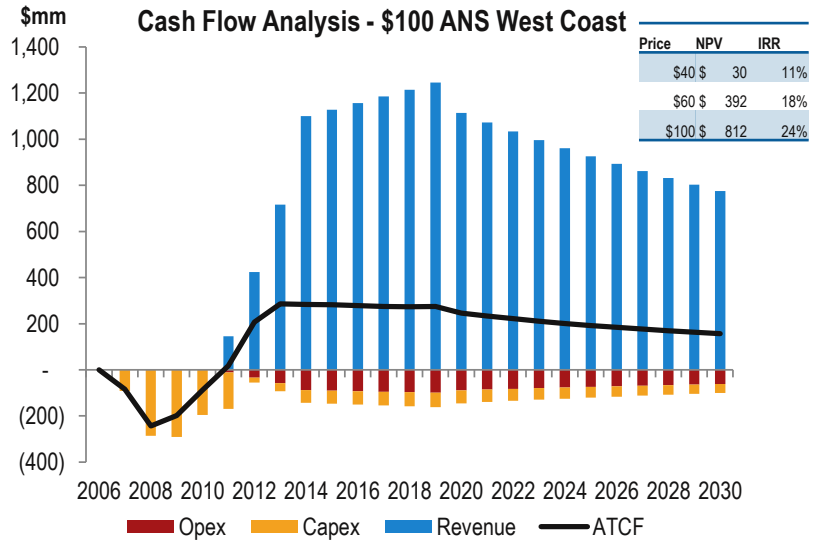
ACES – Capped at Maximum of 70%



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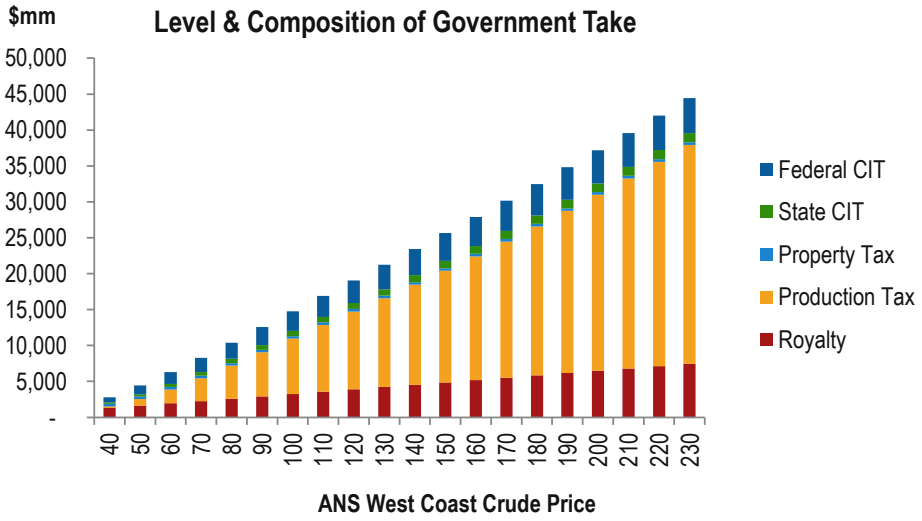
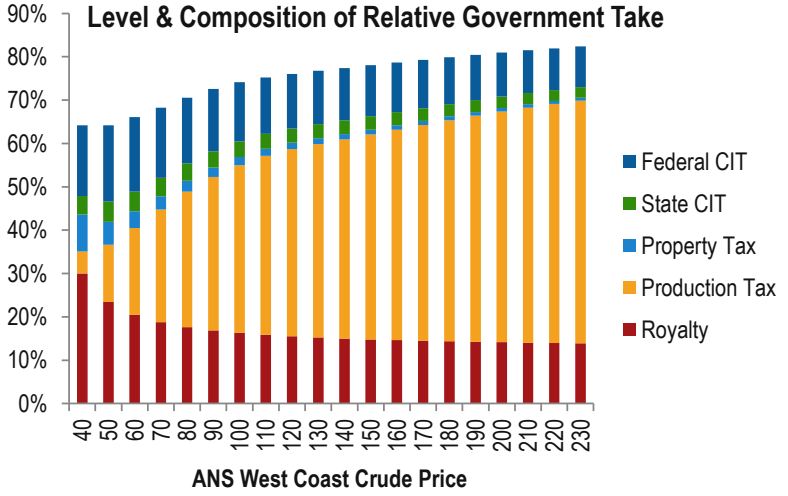
90	17%	35%	2%	4%	58%	14%	73%
100	16%	39%	2%	4%	60%	14%	74%
110	16%	41%	2%	3%	62%	13%	75%
120	16%	43%	1%	3%	63%	13%	76%
130	15%	45%	1%	3%	64%	12%	77%
140	15%	46%	1%	3%	65%	12%	77%
150	15%	47%	1%	3%	66%	12%	78%
160	15%	49%	1%	3%	67%	11%	79%
170	14%	50%	1%	3%	68%	11%	79%
180	14%	51%	1%	3%	69%	11%	80%
190	14%	52%	1%	3%	70%	10%	80%
200	14%	53%	1%	3%	71%	10%	81%
210	14%	54%	1%	3%	72%	10%	81%
220	14%	55%	1%	3%	72%	10%	82%
230	14%	56%	1%	2%	73%	9%	82%





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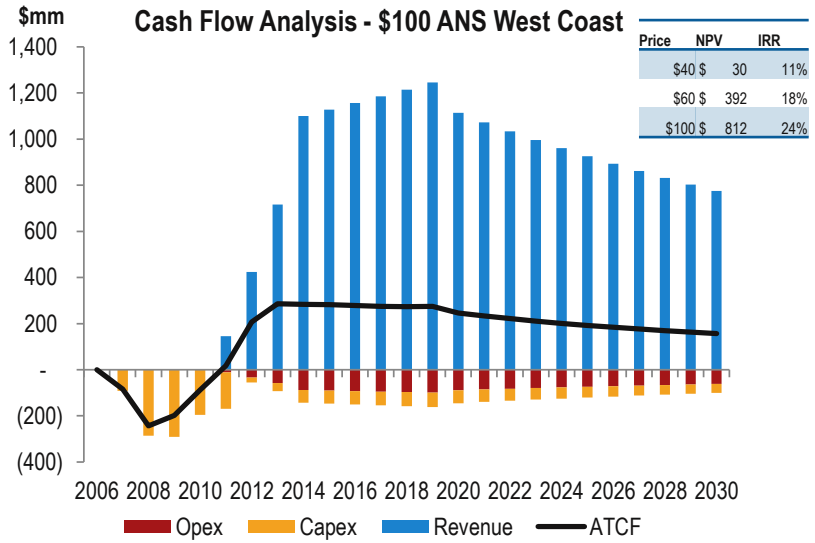
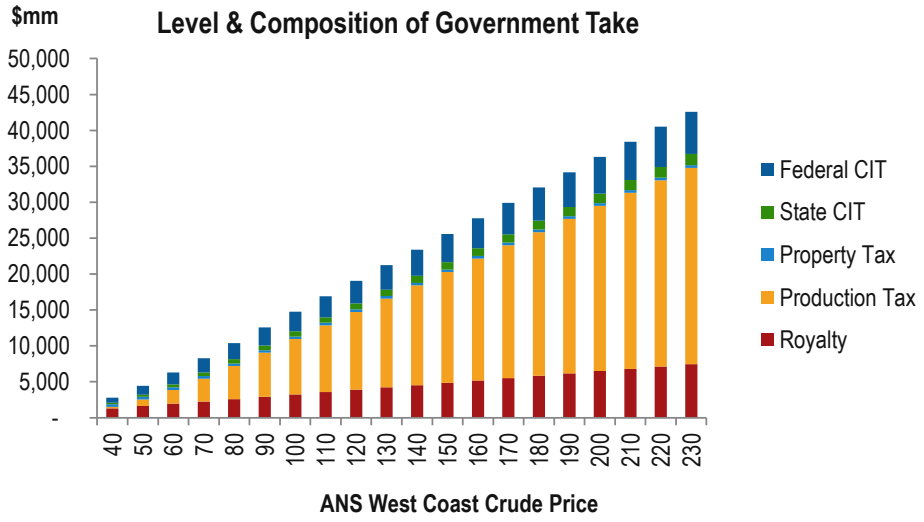
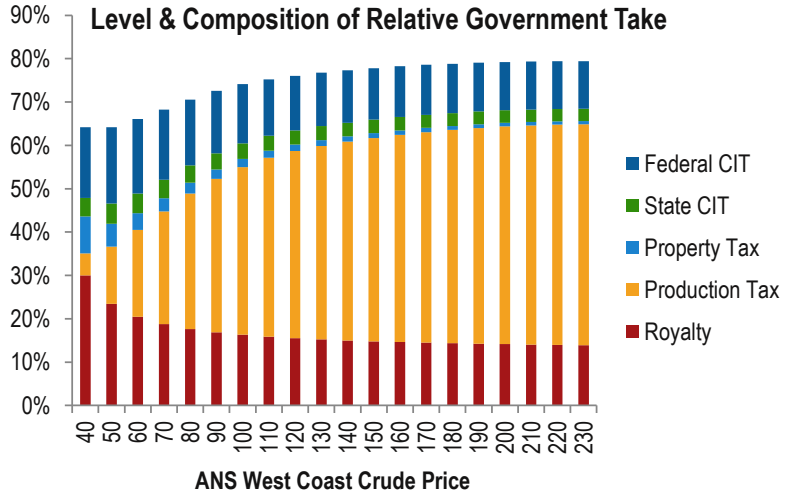
ACES – Capped at Maximum of 60%



Price	Royalty	Production Tax	Property Tax	State CIT	Total State Take	Federal CIT	Total GT
40	30%	5%	9%	4%	48%	16%	64%
50	23%	13%	5%	5%	47%	18%	64%
60	20%	20%	4%	5%	49%	17%	66%
70	19%	26%	3%	4%	52%	16%	68%
80	18%	31%	3%	4%	55%	15%	71%
90	17%	35%	2%	4%	58%	14%	73%
100	16%	39%	2%	4%	60%	14%	74%
110	16%	41%	2%	3%	62%	13%	75%
120	16%	43%	1%	3%	63%	13%	76%
130	15%	45%	1%	3%	64%	12%	77%
140	15%	46%	1%	3%	65%	12%	77%
150	15%	47%	1%	3%	66%	12%	78%
160	15%	48%	1%	3%	67%	12%	78%
170	14%	49%	1%	3%	67%	12%	79%
180	14%	49%	1%	3%	67%	11%	79%
190	14%	50%	1%	3%	68%	11%	79%
200	14%	50%	1%	3%	68%	11%	79%
210	14%	51%	1%	3%	68%	11%	79%
220	14%	51%	1%	3%	68%	11%	79%
230	14%	51%	1%	3%	68%	11%	79%





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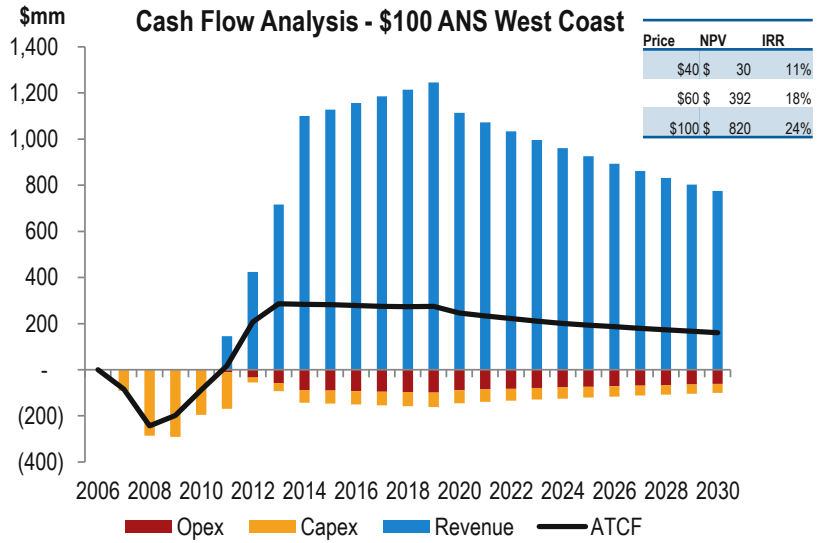
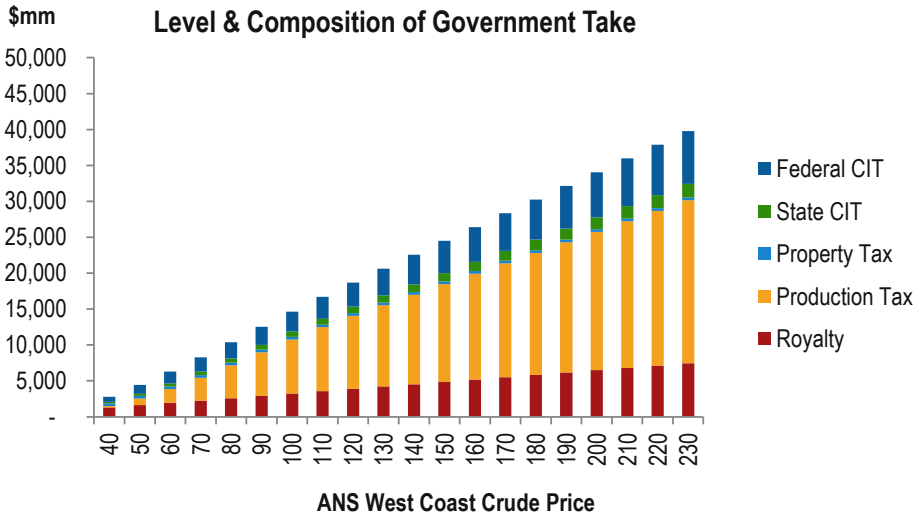
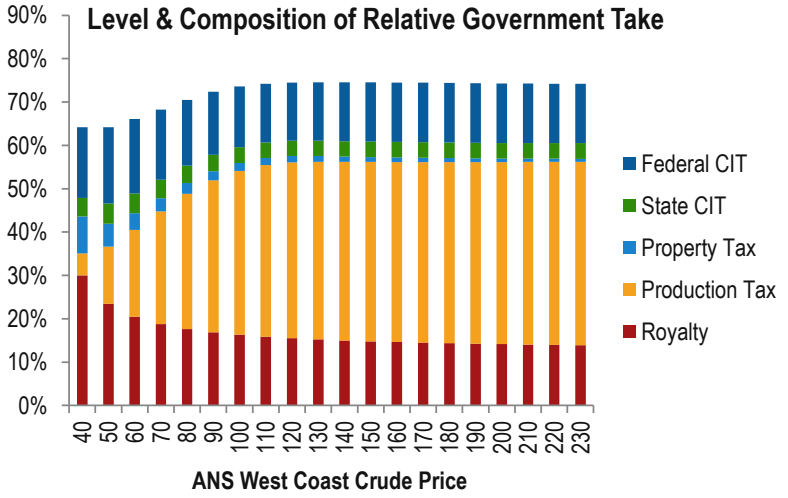
ACES – Capped at Maximum of 50%



Price	NPV	IRR
$40	$ 30	11%
$60	$ 392	18%
$100	$ 820	24%

Price	Royalty	Production Tax	Property Tax	State CIT	Total State Take	Federal CIT	Total GT
40	30%	5%	9%	4%	48%	16%	64%
50	23%	13%	5%	5%	47%	18%	64%
60	20%	20%	4%	5%	49%	17%	66%
70	19%	26%	3%	4%	52%	16%	68%
80	18%	31%	3%	4%	55%	15%	71%
90	17%	35%	2%	4%	58%	15%	72%
100	16%	38%	2%	4%	60%	14%	74%
110	16%	40%	2%	4%	61%	14%	74%
120	16%	41%	1%	4%	61%	13%	74%
130	15%	41%	1%	4%	61%	13%	75%
140	15%	41%	1%	4%	61%	14%	75%
150	15%	41%	1%	4%	61%	14%	75%
160	15%	42%	1%	4%	61%	14%	75%
170	14%	42%	1%	4%	61%	14%	74%
180	14%	42%	1%	4%	61%	14%	74%
190	14%	42%	1%	4%	61%	14%	74%
200	14%	42%	1%	4%	61%	14%	74%
210	14%	42%	1%	4%	61%	14%	74%
220	14%	42%	1%	4%	61%	14%	74%
230	14%	42%	1%	4%	61%	14%	74%





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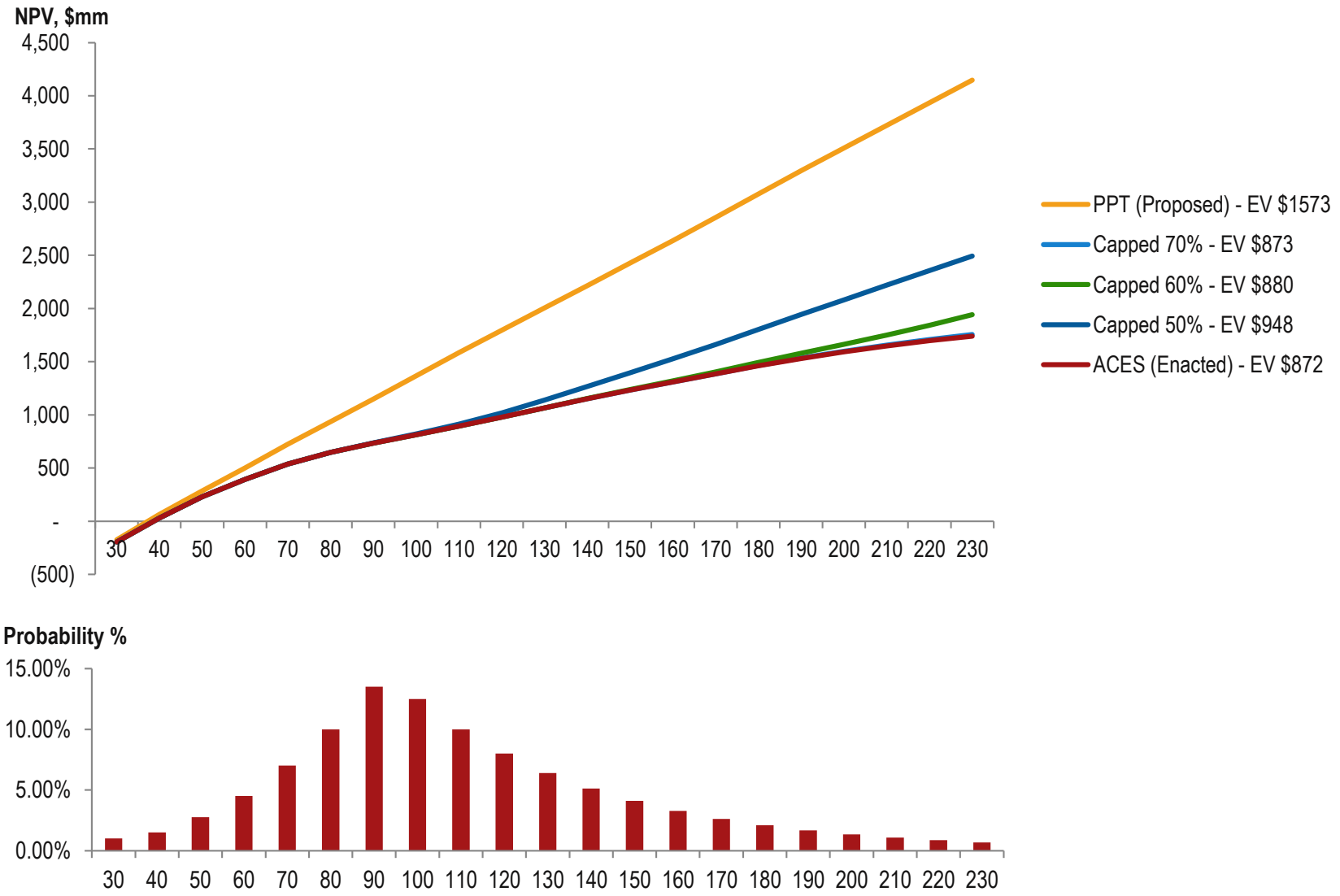
Limitations on Price Upside: A Probabilistic Approach



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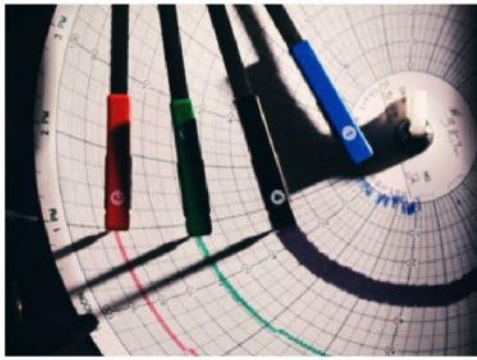

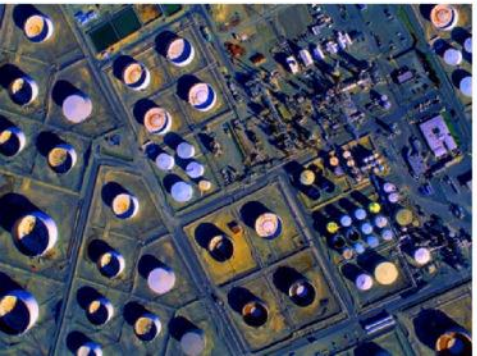

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