Capturing Resource Rents

by Analysing the True Economic Value of the Resource
and
Factoring Sustainability & Energy Security Concerns –

The Case of Trinidad and Tobago

Accounting for the Petrodollar

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What are Rents?

- Conventional Definition:

- Economic Rents are excess that a factor of production is paid over the amount to keep in its current employment – excess profits





What are rents in Oil and Gas Sector?

- Difference between price of resource and cost of getting resource to the market
- Market Price minus all costs of production
- All costs of production: exploration, development, operating, capital, transportation, allowance for normal rate of return (normal profit)

Rents:

- Rents = Price – all costs
- Rents or excess profits should be collected by government or resource owner (people of Trinidad and Tobago) through oil and gas taxation regime





Efficient rent capture:

- Resource owner needs to know:

- Correct net price
- Hotelling Principle: $P_t = P(0)e^{rt}$
- But is the market price the correct price for oil and gas?
- Costs – difficult to know for certain, companies are guarded over costs

Is the market price the correct value for a small open economy?

- Energy is essential for modern living, it is therefore a valuable component of production, here and abroad.
- Global price does not reflect local scarcity
- Allows for greater value added in the economy.
- If we use resource today we don't have it for use later on
- Must consider our own energy security and
- Sustainable Development Objectives.

Must ask the following questions:

- What to de we leave for posterity?
- What is our underlying development strategy?
- What is our national philosophy for future generations?
- How do we balance current generation requirements with future generation wants?

To satisfy objectives:

- We need to:
- For an exporter (producer) like us we need to get highest value for resource
- Just as an importer (consumer) would like to get resource at lowest value.
- Need to be compensated for not having resource for use later on: User costs
- Resource enables domestic economic activity and provides **foreign exchange earnings**

Economic Value: LNG as an example

- **Not market price, but economic value**

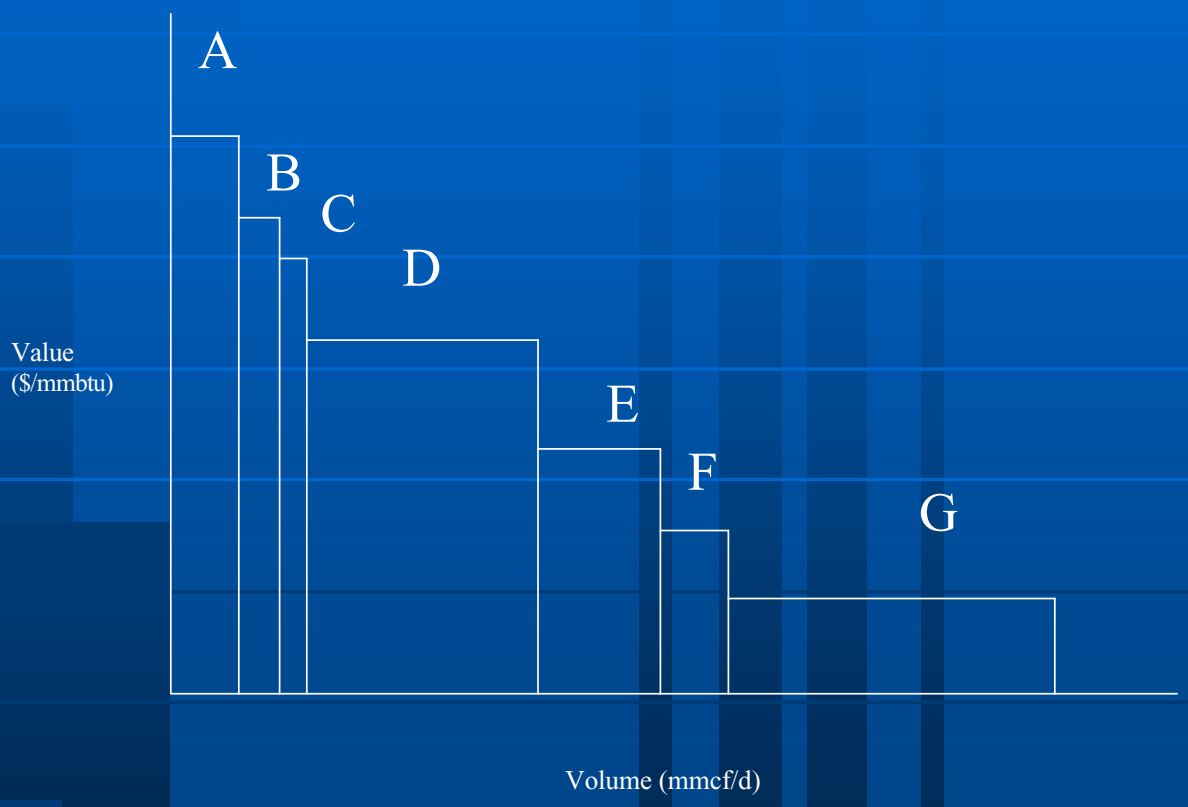
- **What is the value added from use of LNG?**





Demand for Natural Gas

A Peak Power
B Household Distribution
C Methanol
D Fuel Oil
E Fertilizer
F Steel
G LNG



Source: Julius D. and A Masheyeki, The Economics of Natural Gas: Pricing , Planning and Policy OUP, 1990.

Price Comparisons US$ per million BTU

US$/million Btu

	1999	2000	2001	2002	2003	2004
LNG Japan cif	3.1	4.7	4.6	4.3	4.8	5.2
Henry Hub USA	2.3	4.2	4.1	3.3	5.6	5.9
Electricity domestic US	24.0	24.0	25.2	24.9		
Electricity Industrial US	12.9	13.5	14.7	14.1		

Using Economic Value as price:

- Economic Value and not financial value is true resource price
- Example: Total value (not net value)
- LNG shipments to USA (2004)
- Using US electricity prices as proxy shadow price (2002) and Henry Hub price (2004):
- Henry Hub: US$2.8 billion
- Industrial Electricity: US$6.7 billion
- Residential Electricity: US$11.8 billion

We must also consider User Costs for Posterity (conventional approach)

- Concept of Marginal User Costs (MUC)
- MUC is concerned with the price of the backstop technology
- i.e. Price of energy when resource is no longer available

But there are additional considerations for a small exporting economy

- Sustainability – future generations
- Energy Security – adequacy of supply to meet requirements
- Opportunity Cost – not having inexpensive domestic energy for future economic activity
- We therefore need a domestic energy policy – strategy 'til 2050 – depends on where we see our economy – what will our energy needs be then?

Additional Considerations for small exporting economy:

- Therefore our user costs calculation needs to be modified to reflect our circumstance:

- MUC = also needs to include:
- SC Sustainability constraint
- ES Energy Security
- OC – Opportunity Cost

Example of User Costs from LNG 1, but only with **conventional calculation**

Category	Total Present Value US$ (at 10%)
Investment Costs	706 million
Operating Costs	357 million
Cost of Gas	1.9 billion
Revenue Projections	8.8 billion
Gas Consumed cf	3.5 trillion
LNG produced cf (this includes loss of approx 11%)	3.1 trillion

This gives a net back value of gas of US$ 1.39 mmbtu for the project

- **Government Revenue**

- **Given Central Bank estimates of government revenue from the project at US$6 billion (which includes NGC's share in project) and assuming a 10% discount rate this gives a present value of US$2.3 billion**

This gives a net back value of gas to the government of US$ 0.65 mmbtu





- Calculations show that:
- MUC with LNG is US$1.25mmbtu
- MUC without LNG is US$ 0.64 mmbtu
- Therefore the user cost attributable to LNG is US$ 0.61 mmbtu

User Costs with different scenarios US$/mmbtu

Scenario	User Cost with LNG US$	User cost without LNG US$	User Cost attributable to LNG US$
1	0.63	0.092	0.538
2	1.25	0.64	0.61
3	0.87	0.52	0.35

User Costs example

- Only shows conventional user Costs (US$.061/mmbtu),
- If Government revenues are: US$.065/mmbtu then this signifies inadequate rent capture and inadequate user cost capture
- We need to also capture other components of user cost for a small open economy
- If calculated, then user costs should be saved or invested for the future.

Rents and User Costs

- User cost is a proportion of rents, therefore rent capture must be efficient and calculated on economic basis

- If all components (PB, ES, SC, OC) are calculated, then user costs should be saved or invested for the future e.g.:
- Heritage fund
- ES component invested in alternative energy and research (carbon neutral)

Conclusions

- Value resource at economic value not market price.
- User Cost for small open petroleum economy is different from conventional
- We need to calculate and capture these values through royalty and taxation regime.
- Fair trade LNG.

Conclusions

- This is only the beginning of defining a new methodology.
- Further research required.
- Taxation mechanisms must account for all components of user cost.

The End