

Mining Project Costs and Financing

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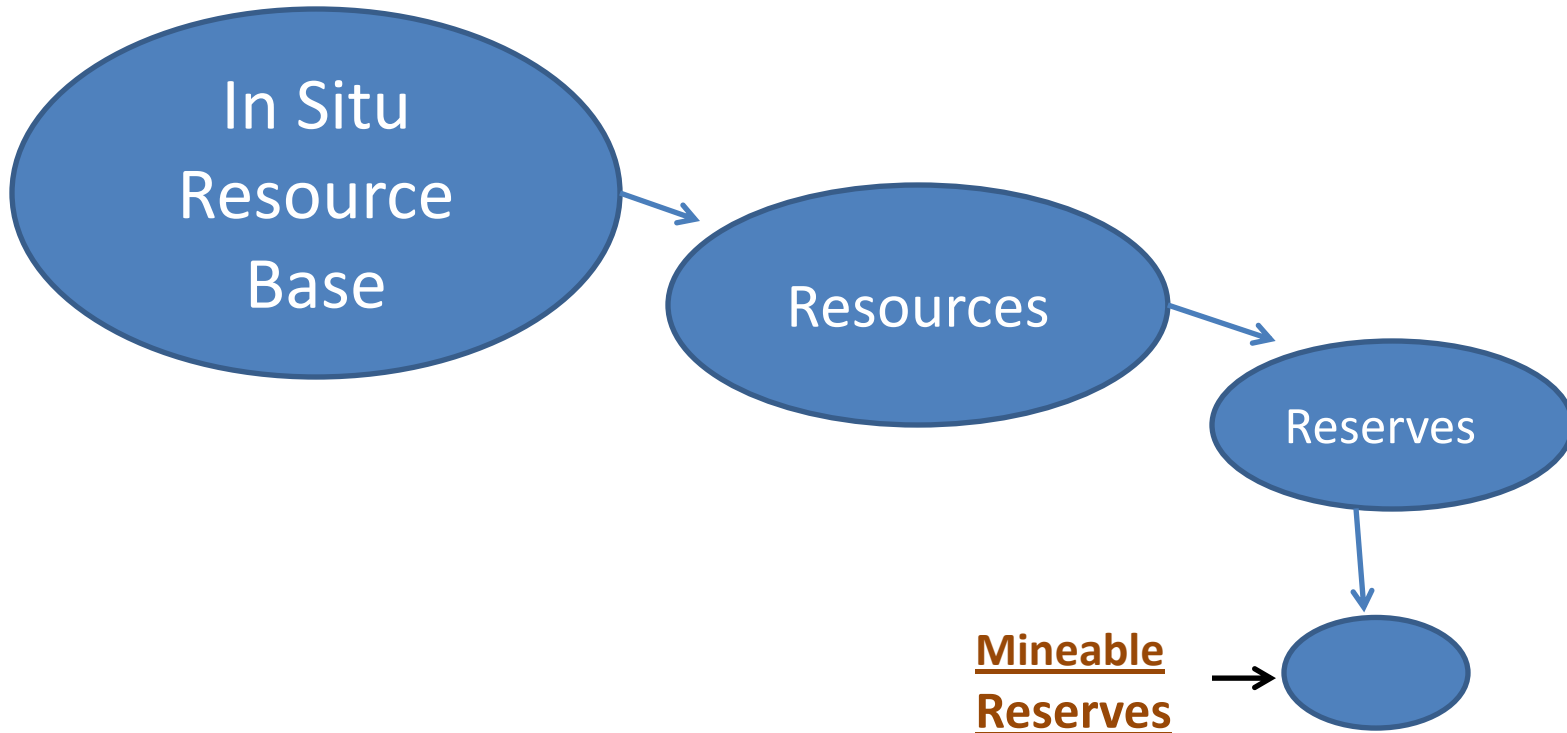
Mineral Economist



Why is Mining Different from Other Projects ?

- Lengthy exploration period with no revenue
- High capital requirement during development
- Specialized equipment
- Cyclical revenues – variable commodity prices
- Large environmental/social /infrastructure cost
- Large costs at the end of project- Reclamation
- Major foreign exchange earner for the country
- Major contributor to economy and employment

Mining Resources and Reserves



Mill Recovery → 85%

Smelter Recovery → 98%

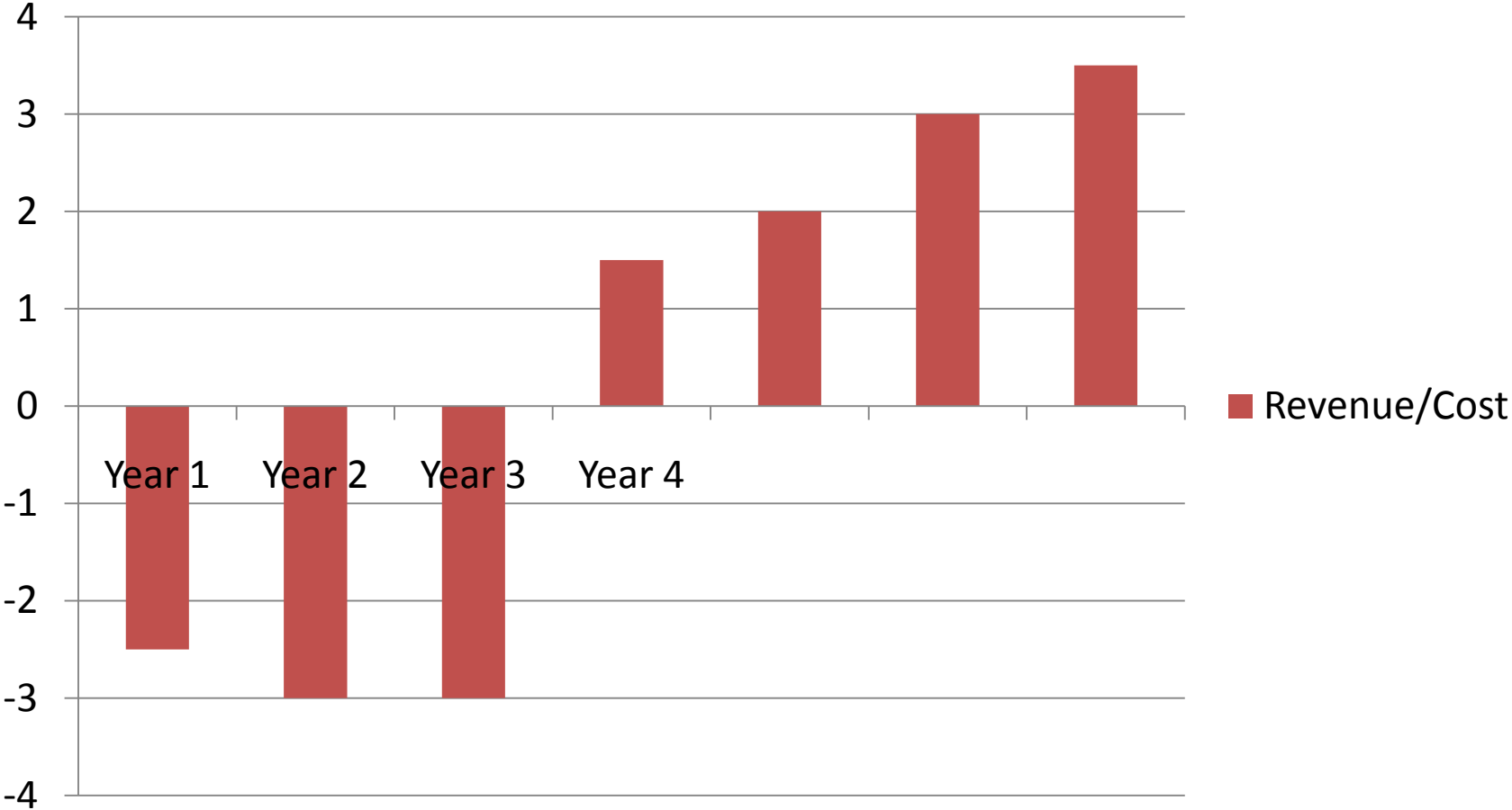
Definition of Costs

- **Variable Cost** – cost of producing goods and services that changes with units of production, e.g. labor cost, raw materials
- **Fixed Cost** – cost of producing goods and services that remains fixed for production capacity
- **Sunk Cost** – costs which have already been incurred and become irrelevant for incremental analysis
- **Opportunity Cost (alternative cost)** – cost associated with forgoing or bypassing the investment project or decisions/consumption
- **Cost of Capital** – amount or charge that must be paid for borrowing or issuing capital equity.

Mining Project Costs

- Mine exploration
- Mine development
- Environmental, social and Infrastructure
- Mine and mill equipment
- Depreciation
- Royalties and Taxes
- Interest payment - cost of capital
- Reclamation/Closing Cost

Mining Project Costs and Revenues



Project Financing- Cost of Capital

- Capital is a “Scarce Resource” – has a cost
 - Sources of Financing:
 - Equity (Share)
 - Debt
 - Government Budget
 - The fact it is handed out “free” by the Ministry of Finance should not distort the investment decision.
 - Capital has competing needs

Risk: Uncertainty

Macro Economics Factors

- Inflation (example : oil price fluctuations)
- Business cycle (global recession)
- New Technology

Shifts in Customers Needs and Substitution

Sensitivity Analysis

- Range of values
- Probability distribution
- Impact of a particular item

Price of Gold

All Data Gold Price in USD/oz

Last Close: 1856.40

High: 1889.70 Low: 63.90 ▲1791.25 2749.42%

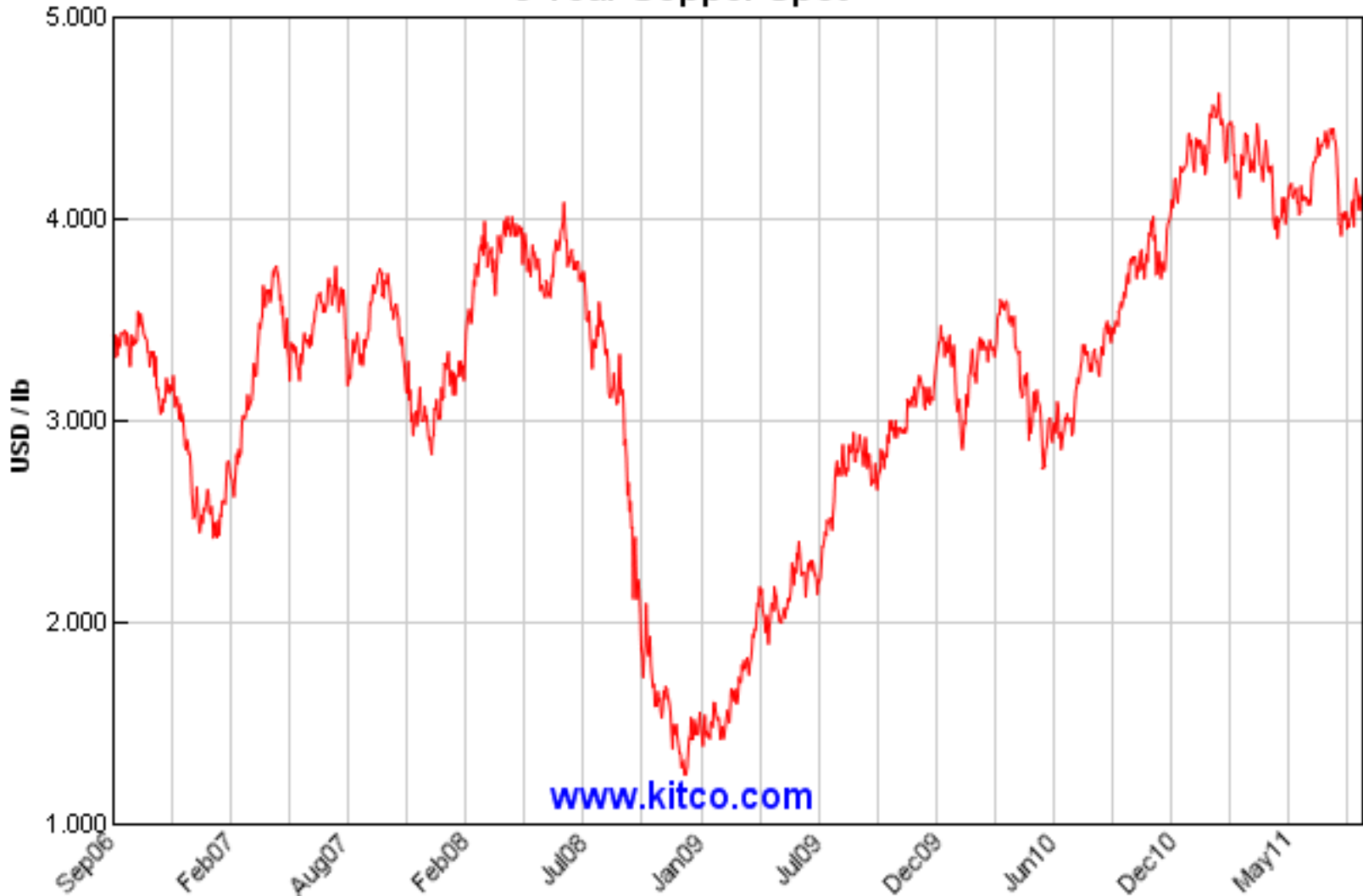


goldprice.org

Friday, September 09, 2011

Price of Copper

5 Year Copper Spot



Income Statement

Revenues

- Operating costs

- Royalties

= **EBIDT (Earnings Before Interest, Depreciation and Tax)**

- Interest

- Depreciation

= **Profit before tax**

- Income tax

= **Net Income (Profit after Tax)**

Cash Flow Statement

Net Income (Profit after Tax)

+ Depreciation

- Equipment Cost

- Acquisition Cost

- Dividend Paid

- Bond Paid

+ Additional Common Stock issued

=Cash Flow

Government Proceeds

Total Government Proceeds:

Royalties + Income Tax + Import Duties +
Dividends

Government Share of the Earning:

- a) Total Government Proceeds/EBIDT
- b) Total Government Proceeds/Profit after Tax

Tax Payments will be influenced by:

CASE A - Depreciation rules

CASE B - Capital structure of the project

CASE C - Product price

CASE D - Capital cost of the project

Gold Model Results and Sensitivity Analysis

(Million USD unless noted otherwise)	BASE	CASE A	CASE B	CASE C	CASE D
Gold price US\$/oz	1200	1200	1200	1600	1200
Debt %	0%	0%	50%	0%	0%
Depreciation	10%	20%	10%	10%	10%
Capital Cost (yrs 1-3)	250	250	250	250	375
Cum Taxes paid (yrs 1-10)	137.5	91.7	132.1	236.3	104
Cum taxes/cum EBIDT	23%	16%	22%	27%	18%
Cum taxes/cum Profit	54%	61%	54%	51%	58%

Time Value of Money

- Time is money
- Reasons for Discount factor (interest rate):
 - Cost of money- share holders, bond holders
 - Risk
 - Human Behavior – Postponement of Pleasure
 - Inflation
- Future Value (FV) = $A \cdot (1+r)^n$, where A= amount, and r=rate (discount factor)
- Present Value (PV) = $FV_n / (1+r)^n$

Net Present Value (NPV)

- The Net present value (“NPV”) criterion measures all economic consequences, including the economic consequences of time, by converting the cash flow amounts of all future periods (the “current value”) to equivalent amounts at a single point in time (“the present value”) and summing the discounted cash flow values to determine net loss or gain.

Interpretation: NPV measures the amount by which a project’s benefits exceed all costs

The discount rate converts current value amounts to present value amounts . This is the rate needed to raise the funds.

Gold Model Results and Sensitivity Analysis Using Time Value of Money

(million US dollar unless noted otherwise)	BASE	CASE A	CASE B	CASE C	CASE D
Gold price US\$/oz	1200	1200	1200	1600	1200
Debt %	0%	0%	50%	0%	0%De
Depreciation	10%	20%	10%	10%	10%
Capital Cost (yrs 1-3)	250	250	250	250	375
PV Taxes paid (yrs 1-10)	84	55	81	145	65
PV taxes/PV EBIDT	23%	15%	23%	27%	18%
PV taxes/PV Profit	53%	63%	54%	51%	59%



Thank You

For your Attention