Introduction to Mineral Economics

PROJECT FINANCING

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- Financial structure of project;
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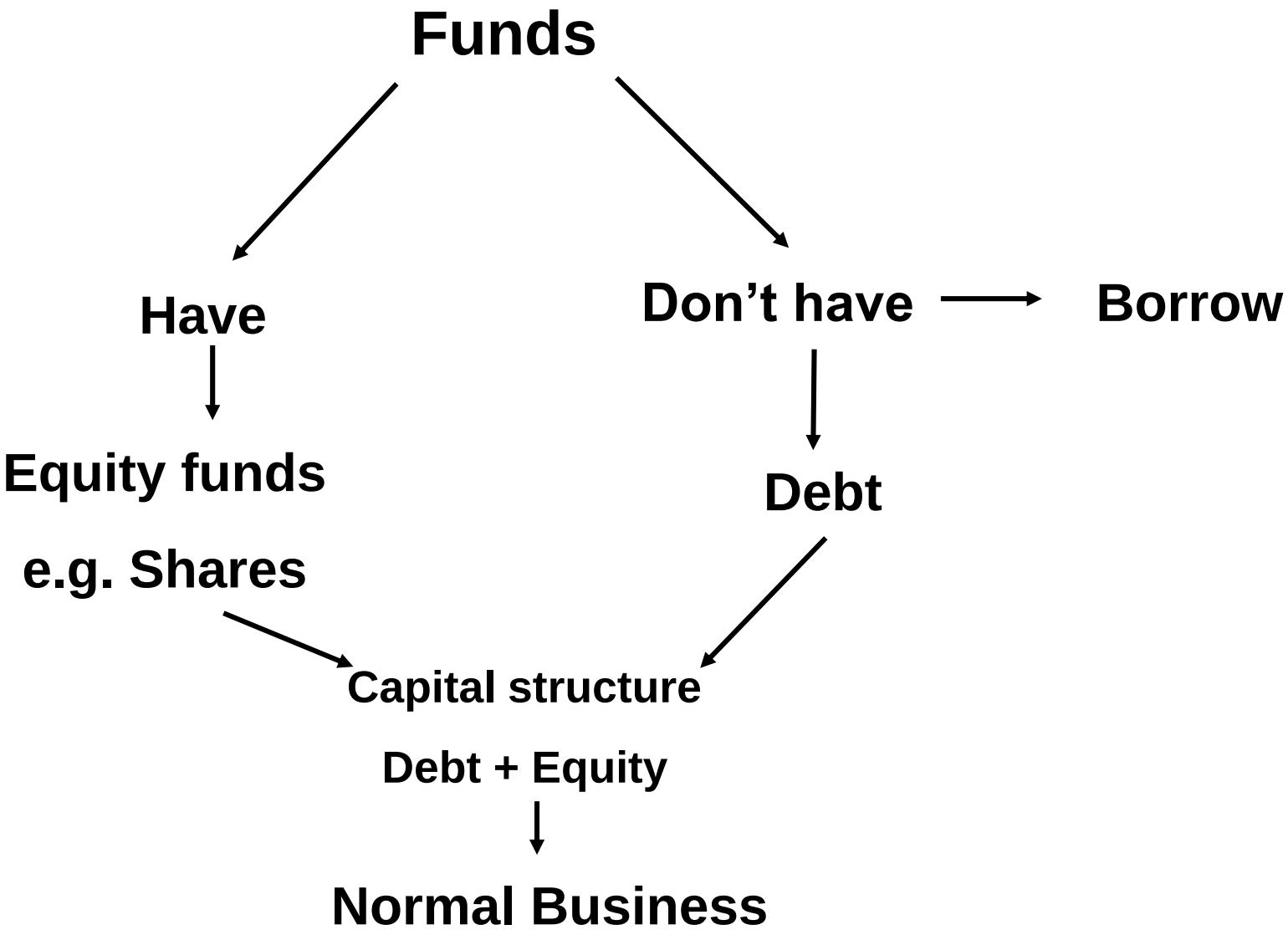
Introduction

- Project Financing comprises three areas:
  - Financial Modelling (finance sources);
  - Uncertainty and Sensitivity Analysis, and
  - Evaluation of Operational Alternatives.
- To be discussed are;
- 1. Techniques to be used to minimise the uncertainties and risks involved in the mining project;.
- 2. Possible sources and techniques available for financing mining projects;
- 3. Effects of different approaches on project feasibility and profitability;

Sources of finance

- All new mining industry projects require financing;
- In most cases, that finance will be required for several years i.e. before the project achieves payback;
- Determining the financial structure of a project is a very important part of the assessment of the economic viability of the project;
- Such financial analysis takes account of the feasibility study of the project;

Sources of finance



Equity Sources

- Equity can consist of;
  - new issues of shares;
  - receipts from asset sales;
  - retained earnings or any mixture of those;
- Retained earnings are portion of net income which are retained by the corporation rather than distributed to its owners as dividends;
- Equity can be raised from existing shareholders, institutions and the general public.

Debt Sources

- Debt is generally raised from banks or other financial institutions;
- Debt can consist of;
- **Corporate loans**
- **Securities** - a security is a negotiable instrument representing financial value. e.g.
- **1. Debentures** (certificate of agreement to pay the loan);
- **2. Bonds** (formal contract to repay borrowed money with interest at fixed intervals);

Cont …

- **3. Notes** (is a contract where one makes an unconditional promise in writing to pay a sum of money to the other);
- Securities can be issued to the general public, as convertible notes and preference shares;
- **Commodity loans** – these are loans that are arranged by specialist banks and equipment leases;

Financial structure of project

- The financial structure of the project is determined by;
- 1. Technical components of the project;
- 2. Economic environment;
- 3. Market constraints;
- 4. Tax regime; and
- 5. Financial environment;
- All these interact in the financial model leading to the determination of the financial structure;

Lender / Sponsor perspective

- Sponsors are concerned with the likely range of returns on investment.
- There is no limit on the amount of upside potential they can receive;
- Sponsors tend to concentrate more on that upside potential than on the risk of insolvency;
- The lender's perspective is totally different.

Cont …

- The best the lender can achieve is to receive interest and principal back on time and in full;
- There is no upside potential for the lender;
- Hence, the lender must assess the project to ensure that there is no, or very little, downside risk;
- Typically, lenders cannot afford to take any significant risk;

Cont …

- The sponsor's perspective usually leads to concentration in the feasibility study;
- This includes technical issues involved in converting a resource in the ground into saleable product at the lowest possible cost;
- Less attention may be paid to;
  - the market situation;
  - product prices;
  - political and environmental risks;
  - exchange rate risks;
  - management capability;

Cont …

- The sponsor is likely to make a mistake on the side of optimism;
- The lender cannot afford that luxury;
- Lenders must be concerned with downside possibilities, in order to establish certainty of repayment;

Cont …

- Since the sponsor's capital investment is more at risk than the lender's loan funds, the casual attitude of sponsors to project risk may appear surprising;
- However, for sponsors with a single project, most of the sponsor's capital may already be invested by the time exploration and feasibility study is completed;

Cont …

- The only hope for the sponsor to recover capital is to bring the project into production;
- Substantial companies will be as rigorous as any lender in determining the viability of project developments;
- Viewing the project from a lender's perspective is a good discipline to achieve that end;

Debt capacity assessment

- A lender will not be prepared to provide funds to a project where there is little safety;
- The lender would want to see cash flows amounting to some multiple of annual debt service;
- This is in order to provide an adequate degree of debt service coverage.
- Financial ratios are a basis for all kinds of medium and long term corporate lending;
- They include;
  - Debt cover ratio;
  - Loan life ratio; and
  - Reserve life cover;

Debt Cover Ratio

- It assesses the company's ability to service its debt from its annual cash flow;
- This is the net cash flow for the period divided by the principal plus interest due for payment in that period.
  - (Net cash flow / Total debt service)
- The specific debt coverage ratio required will vary depending upon the nature of the project;

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- Many lending institutions require a minimum debt coverage ratio value to procure a loan for income producing properties;
- Typically it is required to be in the range 1.5 to 2.0;
- However, lower or higher values may be sought, depending on the economic environment at that time;
- The presence of an adequate debt cover ratio will provide lenders with some comfort;

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- In addition to adequate debt coverage ratios, a lender will also need to take comfort in respect of ore reserves;
- Normally by ensuring that there is adequate details on ore reserves beyond the period of the loan repayment;
- Thus, a bank will not focus on the rate of return the project may generate;
- But it will focus on the debt coverage ratios afforded by the project;

Cont …

- The areas lenders would wish to see covered in a feasibility study are:
- **Ore reserves:**
  - basis of calculation of geological reserves;
  - details of derivation of mineable reserves;
- **Mine planning:**
  - based upon the mineable ore reserves;
  - a detailed schedule of anticipated production;
  - grades and tonnages (into the mill);
- **Metallurgical processing criteria:**
  - providing the basis for expected mill performance

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- Infrastructure requirements and details;
- Capital cost estimates for mine, mill and infrastructure;
- Operating cost estimates for mining, processing and overheads;
- Working capital requirements.

Loan Life Ratio (LLR)

- LLR is the cumulative value of net cash flow from time of calculation **until loan maturity** divided by the outstanding loan;
- The Loan Maturity is the date your loan principal must be repaid in full;
- In this calculations, the projected cash flows for the life of the loan is discounted to its NPV at the same interest rate as that assumed for the debt.
- A minimum LLR of 1.5 to 2 is usually required;

Reserve Life Cover Ratio

- This is the cumulative value of net cash flow from time of calculation until cash flow ceases divided by the outstanding loan;
- This is the period of exhaustion of economically recoverable reserves divided by the outstanding loan;
- A minimum RLC of 2.0 is usually required;
- In effect, this requires sufficient reserves to support mining;

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- Thus, the project sponsors must anticipate the needs of potential financiers;
- They must also carry out their own financing analysis;
- The first step is to plan the project carefully;
- Then testing the reliability of all the project parameters;
- Finally create a reliable, defensible technical / financial model;

Cont …

- Banks will almost certainly check the economic assumptions;
  - Commodity prices;
  - World and Namibian inflation rates;
  - Exchange rates, etc.;
- To be done with their own specialist advisers;
- They will use the values which they think are reasonable in their evaluations;
- On the basis of this model, the investment merits of the project can be assessed and a financing plan developed;

Cont …

- The financiers will consider a number of factors to reassure themselves of the project's viability;
- Once the financing plan has been agreed, the legal documentation will be extremely voluminous;
- All of this documentation has to be scrutinised carefully by the project sponsors;
- This is to ensure that nothing unacceptable is hidden in the fine print;

Risk Analysis

- **Reliability of resource estimate and reserves risks;**
- Ore reserves must be defined in terms of mineable tonnes and grade;
- Specified in terms of absolute value, variability and probability of occurrence;
- Thus, technical report should be accurate in terms of reserve estimation;

Cont …

- Sources of risk during resource estimations include;
  - Tonnage estimation;
  - Resource grade estimation (continuity of grade)
  - Assaying;
- Thus, to avoid risk during resource estimation ensure that;
  - Ore is defined clearly;
  - Geological interpretation is done correctly;
  - Resource is defined clearly;
  - Reserve is estimated clearly;
  - Mine planning is done correctly;

Cont …

- **Management capability risks**
- Lenders will generally favour a project in which management is in the hands of a team with a proven track record;
- A project which may be heavily dependent on one individual for its success is not generally attractive;
- The quality of management is difficult to define and is generally a subjective judgment of the lender;

Cont …

- **Marketing risks**
- Adequate market arrangements must be put in place for the sale of a sufficient amount of product;
- Product should be sold at sufficient price to ensure the project will remain viable;

Cont …

- **Completion risk**
- This is the risk that a project will not be brought into operation successfully;
- Completion, both in the physical and process sense, is a key milestone in most project loans;
- Lenders will generally not release a sponsor from project debt guarantees until a predefined completion stage is met;

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- **Environmental risks;**
- Is the project environmentally sensitive?
- Is there any organised opposition to the project? e.g. government or community;
- Are there foreseeable problems that could delay or threaten the project?
- Does the project sponsor have a favourable environmental record?
- Are local authorities supportive?

Cont …

- **Financial Risks**
- Does the company have the ability to:
  - back the completion guarantee?
  - fund cost overruns?
- Can the company repay from sources other than the project?

Cont …

- **Legal Risks**
- Does the project sponsor hold clear title to the property?
- Are legal agreements between the project sponsor(s) and other parties in good order?
- If it is a joint venture, there should be properly written joint venture agreement;
- Security;
- Political risks;
- Technological risks involved in the project;
- Foreign exchange risks;

Project finance

- Assuming the economic fundamentals of the project are sound, the sponsors have an array of financing alternatives including;
  - Corporate debt;
  - Equity;
- Project finance is money lent for the purpose of developing a specific project;
- The loan is secured against the assets and cash flows of the project;
- Repayment is from the cash flows of the project;

JOINT VENTURES (JV)

- A JV is an entity formed between two or more parties to undertake economic activity together;
- The parties agree to create a new entity by both contributing equity;
- They, then share in the revenues, expenses, and control of the enterprise;
- JV have many advantages during exploration, development and mining;

Advantages of JV

- These include the:
- 1. Sharing of risk;
- 2. Pooling of resources;
- 3. The pooling of expertise leads to technical efficiency in operations;
- 4. The ability to finance larger projects than a single participant could finance alone;
- 5. Share the financing burden;
- 6. Each participant has the right to take in kind and separately dispose of its share of product.

Disadvantages of JV

1. Share the risk but reduce share of profit.
2. Usually difficult to manage – may become very acrimonious (unfriendly).
3. Controlled by the J.V. Agreement, under contract law, not corporate law.
4. May require appeal to arbitration procedures to settle disputes.
5. J. V. Agreement must be carefully drafted.

The J. V. Agreement

- The J. V. Agreement sets out the contractual arrangements of the J. V.
- As such, it documents the;
  - roles of each partner;
  - responsibilities; and
  - obligations of each venturer.
- The management structures and decision-making processes will also be specified in detail in the agreement;
- The complexity of the governing law will depend on the nature of the J.V and the nature of the business they are involved in.

Proprietary interests

- Proprietary interest is a right in some property;
- Therefore, each participant in a J.V. will normally have a proprietary interest in each of the JV assets;
- Theoretically, a tenant in common could apply for partitioning of an asset;
- This could endanger the J.V.;
- Therefore, it is essential that the participants agree not to partition or seek to partition any of the jointly owned assets;

Transfer of interests

- J.V. agreement should address the question whether a venturer may transfer its interest in a partnership to a third party;
- There are variety of possible approaches to the transferability issues;
  - The agreement might simply prohibit all transfer;
  - The agreement might permit transfer only to related entities;
  - The agreement might permit transfer but only after other venturers consent to the transfer;

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