RISK MANAGEMENT AND FINANCING MINING PROJECTS

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Abstract: Development of mining projects involves heavy capital expenditure and mining is a high-risk business. Identifying of the main mining projects' risks is very important in their financing process. This paper deals with the relationship between the risks involved with mining projects and their financing scheme.

Keywords: mining project, risk, investors, equity, debt, orebody, political risk, banks, source of finance

1. MINING PROJECTS RISKS

Mining industry is different to other industries because of two main factors: every resource has a finite life and a mining company cannot decide on the location of its mine.

Development of most mining operations involves considerable capital expenditure. This capital can only be secured after a number of project risks (from ore reserve estimation through operating parameters to product end markets) have been confirmed or controlled. Although mining is a high-risk business, it can also lead to high rewards. This attracts a number of speculative operators to the industry.

On account of this, management is the most important area of risk to be assessed in mining projects.

Mining project risk categories:

- Management
- Political risk
- Ore reserves
- Production (technology)
- Construction

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- Commodity (price and market)
- Environmental impact

Without competent management, no mining project can be guaranteed to succeed. There is a need in mining industry for good managers at all levels of management.

Investors, private or corporate, require the comfort that a mining project can be operated and managed efficiently. The larger the project, and consequently the greater the capital costs, the more important becomes management's experience and qualification.

Considering the second category – political risk – we may say that in other industries, companies have a choice as to where they locate their operations, and are often encouraged by growing local markets as well as the availability of grants and low cost loans to locate their operations in emerging countries. Orebodies cannot be physically relocated and the mining industry does not have the option of locating to the most attractive political location. Major mining companies will not spend money where security of tenure can not be guaranteed.

Most people understand by "political risk" the expropriation or imposition of excessive taxes and conditions by a government. It can be extended to include the difficulties that mining companies now have in obtaining permission to develop projects in many developed countries. Governments can interfere in many different ways. Also, is important to know that in mining industry different size companies may accept different levels of risks.

Ore reserve definition is an area of technical risk, which is not a bankable activity bat it has to be financed by equity. For any project, at this moment risk is at its highest. Once exploration has delineated an ore reserve, lenders will require an independent audit of those reserves to ascertain that there is sufficient proved and probable ore to sustain the project over the life of a loan, and that adequate drilling or development has been done to confirm these reserves.

Usually, banks demand a 50% reserve tail, which means that if the proven and probable reserves indicate a mine life of 15 years, then project debt should be repaid within 10 years. 10 years seems to be a mining project finance maximum. In the same risk category as ore reserves comes geological uncertainty, rock stability and the area's hydrological conditions.

Next risk category in the list below is production – selection of the mining method and technology to be used for ore recovery. Banks are more comfortable with conventional, proven technology and may not lend against a process that has not been tested. The depth and grade of the orebody will dictate whether the mine is an open pit or an underground operation and whereas the former is relatively straight forward (taking into account strip ratios, pit slopes, bench heights, rock stability, water inflow and ore sampling), it is perfectly possible to choose the incorrect underground mining method, locate shafts in the wrong position, choose an inadequate mining extraction rate and order the wrong size underground equipment.

The depth and the grade of the orebody will determine the method of mining,

the mineralogy of the orebody will determine the ore recovery method. This can range in complexity from no more than a washing plant or crusher for coal and industrial minerals, to autoclaves, smelters and refineries for some complex metal ores. The lenders will be keen to establish and confirm what realistic recovery rates can be expected and will use conservative assumptions in their financial modeling.

In the same area of technical risk, is the reputation and past experience of the company constructing the mine. Project location and infrastructure are also important. No mining projects can get along without water and in many cases they require large volumes. Less obvious, but as important to costs, are the location of powerlines, railways, roads and ports. If the grade and size of the orebody is good enough, all these aspects can be accommodated in financial planning but ultimately they have a bearing on the economics of a project. For some bulk commodities and industrial minerals, the geographical location of the orebody relative to end markets may be critical.

Because banks are naturally cautious and the risks of developing mining projects are very high, the lenders to a specific project will require certain completion guarantees being met before the debt is allocated to the project rather than to the sponsor. Completion guarantees will cover all steps of the mining, milling and recovery process but the ultimate test will be the volume and grade of the final product compared to expected levels at the feasibility stage.

Each commodity has its own profile. There are aspects of the markets, supply and demand profiles and prices which the lenders will look at very closely. The future is very important because it may be 2-5 years from when the bank first lends money to a development project until the first production is sold. The lenders have to be comfortable that demand for the product will exceed supply on a world-wide industry basis not just for the specific project that they analyze. They will also have to look at the stages of development, and the relative cost curves of other projects now and into the future.

The bankers will try to find answers on other question like:

- There is a risk of new technology or substitution replacing the product to be mined.
- The market for the product is truly free or it is subject to a cartel (debt financing of commodities that do not trade freely is often impossible)
- The production form the project will make a significant contribution to the world market
- If there is no terminal market for the product, customers can or cannot be identified.

Bankers can find out if the project is low cost compared to the competitors. Alternatively, the bankers risk can be offset by hedging sales forward or by signing long-term contracts to cover operating and financing costs for the period of the loan.

The last category on the project risks is the one that has a great importance in recent years. The environmental aspects are becoming increasingly important. Not only are the regulatory authorities, particularly in the developed world but now almost universally, laying down strict guidelines about the environmental aspects of mining

and processing operations but so are the banks.

Mines may be shut down not only by market conditions or technical problems but also by the regulatory authorities for polluting the air, the water or the land. Bankers will expect to see allowances for these controls and possible reclamation costs, in financial models.

2. SOURCES OF FINANCE

Before last 50 years, the equity financing route was the only way to finance mining projects in countries where political risk was high. Mining projects often require huge capital expenditures and even the largest mining company could not invest in high-risk countries. Because of that, development of many major projects, like the Tenke Fungurume copper project in Congo and Udokan copper prospect and Sukhoi Log gold deposit in Russia, has been delayed.

Since 1945, the creation of multilateral development banks and agencies – World Bank, International Finance Corporation (IFC), European Bank for reconstruction and development as well as national import and export agencies, have filled a niche where commercial banks are not prepared to lend.

In political risks, insurance can be obtained for debt lending. World Bank and Multilateral Investment Guarantee Agency offer a degree of political risk insurance, usually when combined with loan advances. Also, there is some inbuilt insurance in loans from these multilateral development banks since the governments of the countries where projects are located will be very keen not t upset these important lenders.

Sources of finance for mining projects can be categorized under two headings: Equity and Debt.

Equity:

- Private
- Listed securities
- Joint ventures
- Debtquity

Debt:

- Commercial banks
- Project finance
- Multilateral development banks and agencies
- Equipment leasing
- Gold loans and hedging

The traditional way for financing mining projects is by equity raised from investors or mining finance houses. Equity funding is still an important mechanism for the mining projects and the only way to raise funds for grassroots exploration work. No bank will lend money for exploration when there is no guarantee of cash-flows or payback at the end of the day. Equity investors are prepared to gamble *particularly as many tax authorities will offset losses on such activity against gains made elsewhere(

and may even invest in unquoted securities at this high risk stage.

Equity financing means that investors receive a share in the company in exchange for a cash contribution. In the case of exploration companies, the investor is hoping that the value of his share will rise with exploration success. Investor demand for equity is cyclical, party in line with metal prices but also more locally through exploration success or political events.

Even when a project has passed the feasibility test and been shown to be robust enough to support some debt, bankers are unlikely to wear a debt:equity higher than 70:30. With the risk inherent in a mining project, that is surprising. If the banks are non satisfied that all risks have been covered, or the project is too small for commercial banks to be interested, the project will need 100% equity financing if it is proceed.

Debt carries an interest rate and it has to be repaid whereas equity investors do not expect a dividend to be paid on the share-holdings until the mine is well into production. In fact investors in gold mining companies today hardly expect any dividend at all. This means that, if you can rise equity after a higher initial cost (commissions can range from 0.5% to 10%), it is by far the cheapest form of finance.

2.1. Mining equities

The major mining equity markets are located in the English-speaking world where major mine discoveries were made earlier this century (Australia, Canada, the US and South Africa). There is now a "New Geography' to the world mining industry, with countries as Chile, Peru, Ghana, Kazakstan and Indonesia gaining in importance as mining centres.

Joint ventures, which have become an established feature of the mining industry in the past two decades, should also be included under the heading of Equity

In addition to some joint venture arrangements there are instruments such as High Yield and Going Public bonds, mezzanine finance and convertibles which bridge the gap between equity and debt.

2.2. Forms of debt

Debt can come in many different disguises but fundamentally involves a sum of money being lent which bears interest at a market rate and will have to be repaid at intervals over a certain period.

In the case of non-recourse project finance, a term which anyway is a misnomer, the interest rate could be 2-3% higher than commercial bank debt lent to a large company. Project financing is becoming increasingly acceptable in the mining industry, despite the risks involved. Borrowers have to be clear that it is never totally non-recourse because lenders will generally require a sponsor with a strong balance sheet.

The most notable lender to mining projects has been the International Finance Corp. (IFC) which is often seen as a lender of last resort. Also, a number of countries

have export credit agencies which tend to guarantee the debt of local banks in exchange for supplying locally-made equipment.

A number of countries have export credit agencies which tend to guarantee the debt of local banks in exchange for supplying locally-made equipment. Import agencies from countries without major natural resources (Japan or Germany) are keen to secure mineral and metal supplies.

Equipment leasing is also a form of finance for mining operations. The cost of mining equipment is only part, less than 20%, of the development cost of a mining project and leasing or support from national agencies will therefore only be part of the mining finance package.

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