The attractiveness of juniors in the mining industry

Master thesis

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After years of strongly increasing commodity prices, the mining industry must now deal with decreasing prices. This has its consequences for the companies in the industry. This research focuses on the junior mining companies. These companies are finding it increasingly difficult to find financing for their activities as a result of the cooling down of the industry and the financial crisis. These juniors make their money from selling their mineral deposit discoveries to larger mining companies. This paper will discuss, inter alia, their financial structure and the developments with regards to takeovers in the mining industry. The paper aims to answers how these juniors can become more interesting to larger mining companies that are looking to acquire projects with large potential. It turns out that the financial structure of the junior/project is important, as well as the quality of the asset, the political stability of the country in which the mine is located and to which stage the project has advanced.

Preface

This thesis has been written as part of the master's degree of the master Urban, Port and Transport Economics, offered at the Erasmus University Rotterdam.

The research for this thesis has been done at the Mining and Heavy Industry division of Royal HaskoningDHV, located in Rotterdam. The subject for this research has ensued from the cooperation of the author with this division of the company. The supervision by Royal HaskoningDHV was done by Berte Simons, Unit director Mining and Heavy Industry. The supervision by the Erasmus University Rotterdam was done by professor Bart Kuipers.

I would like to thank both supervisors for their assistance and constructive criticism. In particular, I want to thank Berte for introducing me to the mining experts I could interview and for making time in her busy schedule to discuss my progress. I would also like to thank my colleagues at Royal HaskoningDHV, for making me feel at home at the office, the interest they expressed in my thesis and their readiness to provide help when needed. Finally, I would like to thank my family and friends for their great support during the process of writing my thesis.

Vincent Leijh
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Executive summary

The mining industry is an interesting, yet complicated industry. Mining is very important for the production of all kinds of products. It is a capital intensive industry that requires large and long term investments. In addition to the initial capital required for construction and development of a mine, on-going capital has to be spent on the mine throughout the lifetime of its operations. The industry has undergone a lot of changes through the last decade, with the emergence of China and boom in commodity prices as the most important developments. RoyalHaskoningDHV acts as an advisor to primarily financiers and lenders for junior mining companies and wants to increase its services to these clients. Therefore the aim of this research is to answer the following question: *To what extent does the financial structure of a junior mining company affect its potential attractiveness of a takeover target by a major mining company?*

In order to answer this question, the research question was divided in four sub questions. The first focused on the companies of which the mining industry is comprised. Related to this, the life cycle of a mineral project is discussed. The second sub question addresses the types of finance available to the mining companies. It also looks at the risks related to mining projects. The third sub question discusses the relevance of the financial structure of mining companies in the case of a takeover. First it discusses the developments regarding the finance available to mining companies and later on the developments in mergers and acquisitions and the important factors for major mining companies when they are eyeing a takeover. The fourth and last sub question addresses the most important current trends in the mining industry, with a focus on the increasing presence and activity of Chinese companies. The sub questions were answered using information obtained through scientific papers, books specializing in the subjects of mining and finance, accountant reports, news reports about the mining industry and especially through interviews with experts from the different disciplines of the industry.

The answer to the research question shows that both the quality of the asset and the political situation in the country where the mine is located play an important role in determining whether to acquire a project, as well as the financial structure of the junior. Major mining companies look for projects in politically stable countries, where the mineral is easily extractable and can be mined on a large scale. They prefer projects that are still in the exploration stage, as at that moment there are no financing arrangements in place yet. The majors prefer to acquire a project where they can benefit from the entire amount of revenues.

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List of definitions/Glossary

Asymmetric information: one party has more or better access to information than another party. The party with more information can make a better informed decision than the other party.

Commodity price: The trading price determined by the market for a mineral.

Collateral: To secure the repayment of a loan, the borrower promises a certain asset to the lender. In this way, the lender is sure to get something back, even if the borrower defaults.

Debt: Debt means that one party owes an obligation to another party. The debtor has to repay the obligation, while also paying interest during the time it lends the money. This is however the only obligation of the borrower to the lender.

Dilution: The decrease of, for example, ownership of a company, due to a new issue of shares. As a result the amount of shareholders increases, which means that the power of the individual investor gets less.

Equity: With equity an investor gets a share of the ownership of the company in exchange for paying a compensation for the share. This implies that the investor has a vote in the decision-making of the firm and has a right to receive dividend from the firm he has a share of.

Market capitalization or market cap: Total value of the shares issued by a publicly traded company. It can be calculated by multiplying the amount of shares outstanding by the current share price.

Non-recourse debt: a loan that is secured by the pledge of collateral, however in case of bankruptcy of the borrower the lender can only get the collateral back.

Venture capital: Capital provided to start-up companies that are active in more risky businesses. In exchange for a large share in the company and an important say in the company's operations, a large amount of money is injected. Venture capital firms are specialized in helping a firm grow and bring not only capital, but also a lot of expertise and connections. They hope to ultimately benefit from the growth of the company in which they invested.

List of abbreviations

ASX: Australian Securities Exchange

BRIC countries: Brazil, Russia, India and China

CEO: Chief Executive Officer

E&Y: Ernst & Young

ICMM: International Council on Mining and Metals

IFC: International Finance Corporation

IPO: Initial Public Offering

JSE: Johannesburg Stock Exchange

LBO: Leveraged Buyout

LSE: London Stock Exchange

M&A: Mergers andacquisitions

OPEX: Operating expenses

PwC: PricewaterhouseCoopers

ROI: Return on Investment

SEO: Seasoned Equity Offering

SOE: State-owned enterprise

SWF: Sovereign wealth fund

TSX: Toronto Stock Exchange

Chapter 1: Introduction

1.1 Background information

When thinking about mining, most people in the Netherlands still envisage dirty, underground work, where individual mines are relatively small. Most of us relate to the coal mines in Limburg which brought great prosperity to the region, but the mines have been closed for some time now and prosperity is long gone.

Mining is a global industry, where the majority of production now takes place above the ground in large, bulk mined, open pits exploiting economies of scale, instead of underground. The industry consists of very large companies, with yearly profits of more than 10 billion dollars, but also of small companies consisting only of a few persons exploring for the next mineable deposit. Mining is also still important to countries where there are no mines active anymore, like the Netherlands. Half of all the goods imported into the Port of Rotterdam are extracted from the ground. So when the demand for minerals increases, the flow of goods to the Port of Rotterdam also grows. Mining is not only responsible for the production of well-known minerals like gold and iron-ore, but also less-known industrial minerals that are indispensable in the production of the newest, high-tech products.

The mining industry is a very interesting, but complicated industry. Mining is capital intensive and requires long term investments. In addition to the initial capital required for construction and development of a mine, on-going capital has to be spent on the mine throughout the life of its operations. Important in that respect is that production costs have been rising over recent years. (Ericsson, 2010;PwC, 2011) Mining companies, however, do not only have to deal with routine production issues and the vagaries of financial markets for investments to finance operations, but they also have to deal with the implications of commodity prices that change day to day. Obviously, mining companies don't react to the daily changes, but the medium- to long-term trends in commodity prices are important for planning their long-term operations. It is, however, very difficult to predict commodity prices, as they are largely influenced by global economic conditions.

Commodity prices boomed during 2005-2008 and recovered quickly after a drop resulting from the financial crisis, but recovered very quickly and increased again in 2010. Gold and silver prices even reached new record highs the last few years and were expected to rise even further. Although just to illustrate the unpredictability of commodity prices, the gold price has gone down with almost 20% since the beginning of 2013 despite those positive expectations. Like gold, most commodity prices are decreasing at the moment.

In the search for new mineral resources, junior companies play a very important role. Juniors focus on the exploration of minerals deposit and often do the initial mine developments.(ICMM, 2012) They want to bring a project to the feasibility stage and then try to sell on their project in order to make a profit. Despite present supply constraints, especially as the economies of Europe and the USA still recover from the financial crisis that has considerably slowed down global economic growth, the search for new mineral resources has reduced but remains of great importance. Exploring for new mineral resources doesn't guarantee success of discovery, so the financing of juniors bears substantial risks for the capital provider. As a result of the global financial crisis, access to capital has become much more difficult, especially for more risky investments like juniors (Cranstoun, 2010). To continue their activities in times of reduced commodity prices and relative unavailability of equity and loan capital in the financial markets, generating cash is essential for the juniors (E&Y, 2013). However, with the reduced availability of capital from investors and large miners wary to acquire new projects, this task has not become any easier.

1.2 Aim of the research

Royal HaskoningDHV acts primarily as an advisor to financiers in the mining industry, but also to many mining companies, including emerging producers – or junior resource companies. Royal HaskoningDHV intends to increase its services to clients in the mining industry and, in their objective to provide companies with solutions for the entire pit-to-port process, it is useful for Royal HaskoningDHV to have a clear overview of the mining industry and all factors that are influencing this industry.

In this regard, it is important to determine the general composition of the industry as well as providing an insight into the relevant financial markets, as large investments and high financial risks are rather common in this industry. In order to ensure continued improvement in their advisory services to these juniors, it is important for Royal HaskoningDHV to understand the commercial environments these companies operate in.

The aim of the research is to determine how mining companies, and especially junior companies, are financed and what makes a junior company an attractive target for takeover by a larger, more established company.

1.3 Research question

In order to address the aim of this research, the research question is defined as followed:

To what extent does the financial structure of a junior mining company affect its potential attractiveness of a takeover target by a major mining company?

To answer this research question more precisely, the following sub questions arise.

1. What types of companies comprise the mining industry?

2. What are the possible ways to finance the activities of mining companies?

3. Is the financial structure of a mining company relevant in the case of takeovers?

4. What trends can be determined in the mining industry?

1.4 Methodology

To answer these questions, both qualitative and quantitative methods are used. Scientific papers, books specializing in the subjects of mining and finance, accountant reports and news reports about the mining industry have provided the information for the literature study. Furthermore, data was obtained from Bloomberg. This was used to illustrate the market capitalization of selected mining companies.

In addition to these sources, interviews were conducted with executives in the mining and resources financing businesses. The purpose of the interviews was to get an insight into the mining industry from different disciplines in the industry. Interviews were conducted with mining experts from:

- independent mining consultancy Turgis
- mining financing advisory company Endeavour
- ING bank
- The director of Minconsult Limited, being a former employee of the investment department of major mining company Rio Tinto
- An executive director of a junior mining company, being also a former mining consultant and resource investment banker.

To obtain more (theoretical) information about the way financing works, an interview with professor Schauten from the Erasmus University Rotterdam was also held.

The interviews with professor Schauten and Jim Pooley were for exploratory research. Exploratory research is meant to forge an understanding of what the research subject is about. (Kuipers, 2012) Interviews are a good way to quickly get a lot of information about a subject. Interviewing people

also provides the interviewer with a large diversity of information. Another advantage of an interview is that the interviewer can make sure that the questions he has are answered and that in case of unclearness, the interviewer can ask for further explanation. When only using written sources, it is often much more difficult to get an answer to the exact question the interviewer has. (Verschuren & Doorewaard, 2000) Interviews also provide the author with information from inside the industry, instead of only relying on outside information. The use of interviews was favored above the use of a survey, as interviews allow the interviewer to go into more detail and react to the response of the respondent, while surveys take less time, but the answers to the survey also remain more general. As this research focuses mostly on describing the developments in the mining industry and its effects on the mining companies and their financing, the application of game theory is deemed not be useful. Game theory is used to explain the behavior of people, but that does not fit into the aim of this research.

After making lists of the possible types of finances available to companies, the types of debt and equity available and the possible sources of capital, these lists were checked during the meeting with professor Schauten, to see whether all relevant information was included. The interview was limited to this purpose and a brief refreshment of some economic terms.[1] The purpose of the interview with Jim Pooley was to learn more about the mining industry and its composition. After reading through (scientific) articles, reports and books about mining to get to know the mining industry a bit, this interview was to enlarge the knowledge of the author about the industry and check whether the information from the written sources was correctly understood. The knowledge obtained from the interview combined with the information gotten from the literature helped the author to have a clear overview of the industry.

Interviews can both have a certain level of pre-structuring as well as a certain openness of the questions. An interview with a low level of pre-structuring can also be called a “free interview.” In this case, the interviewer does have an idea about the subjects he would like to ask questions about, but he hasn’t prepared set questions. This leaves more room for an open conversation, as the interviewer does not have to focus on a list of questions and can just react to the answers of the respondent. The interviewer will ask questions that arise from the answers or that suddenly arise from his thoughts. Interviews with a high-level of pre-structuring usually follow a different pattern. The interviewer has a set list of questions prepared and therefore he wants an answer to these questions. While there might be some room for reacting to the answers, the interviewer will focus on getting his questions answered. Questions can be either open or closed. Usually when a question is

[1] Because of this, there is no transcript of the interview with professor Schauten.

open, the interviewer wants to leave room open for more explanation. Closed questions are often used for testing. (Verschuren & Doorewaard, 2000) The interview with Jim Pooley can be described as a “free interview”. While the author had some questions in mind he wanted to ask, the goal was to learn more about the mining industry and react to the comments of the respondent.

Figure 1. Schematic view on interview process.

With a better understanding of the industry, it became possible to dive deeper into the industry and start posing questions that are really specific to the mining industry. The focus of the interviews also shifted from exploratory research to more descriptive and explanatory research. The aim of the interviews became to learn more about the actual practices in the industry and what the effects were and are of different developments that occurred and are occurring in the mining industry. So this aim corresponds with descriptive and explanatory research. The interviews serve both as a

comparison to the contents of the written sources as well as a more detailed, deeper look into the industry.

A set list of questions was created for the next interviews. The original list of questions can be seen in appendix 1. For some of the interviews additional questions were created to check for comments made during previous interviews or to learn more about i.e. a certain development. These additional questions can be seen in the transcripts of the interviews, which can be found in appendix 2. The use of a set list of questions indicates that the level of pre-structuring for these interviews was much higher than for the previous ones. (Verschuren & Doorewaard, 2000) This was done because the interviews are not only important for the provision of additional information, but also to obtain views from the different elements of the industry. This is very helpful as it allows for comparisons of the opinions with one other and to check whether the respective comments are compatible. With the use of a standardized questionnaire, it becomes easier to compare the answers from the different respondents, as they all answer the exact same question. This is important, because when different sides of the industry give the same or a similar answer to a question, this indicates that this opinion is shared among the industry, thereby improving the reliability of the answer. The list of questions was ultimately used for the interviews with Andor Lips, Paul Mainwaring and Patrick Willis. Interviewing a bank, a mining financing advisory company and an independent mining consultancy company ensured that the financing in mining was covered from different perspectives. In order to answer the second and third sub question, it was important to interview experts in the financing of mining.

For an interview different types of questions can be used. The possible types of questions are situation questions, problem questions, implication questions and need-payoff questions. The set list of questions, created for these interviews, is comprised of situation questions, problem questions and implication questions. Situation questions focus on the background information of the industry, while the problem questions focus on the problems that the company might have or where the mining industry suffers from. The implication questions focus on the effects that these problems might have on the company or the industry.

For the interview with Coen Louwarts, a separate list of questions was used that was specifically aimed at the process of major mining companies looking to acquire junior mining companies. This was done in order to get an answer to the questions surrounding this subject. As a former employee of the investment department of Rio Tinto, he is an expert in this field. However, some of the questions showed overlap with previously used questions, in order to compare these aspects to the previous interviews. The interview with Willo Stear was again more of a “free interview”, there was

no real set list of questions used. With his long history in mining and large amount of experience at the different sides of the industry, he has knowledge about all aspects of the research. The purpose of that interview was partly to get an expert view on the activities of juniors, but also to again get a general overview of the mining industry. This allowed comparing his answers to the previous interviews and adding additional information where this was possible or needed.

All interviews were conducted either in person or by telephone. The interviews with professor Schauten and Andor Lips were in person, but the others were conducted by telephone. This was due to the location of most of the mining experts. As most mining experts live outside of the Netherlands, it was not possible to interview them in person. The interviews with Jim Pooley, Patrick Willis and Andor Lips were done jointly together. The other interviews were conducted by the author alone, as the second person was unavailable. A benefit of jointly interviewing is that one person can takes the notes, while the other can ask the questions.

With exception of the interview with Willo Stear, the answers to the questions were noted during the interviews and immediately summarized after the interview. After this, the interviewee received the transcript of the interview in order to determine if the author had understood everything correctly. If needed, adjustments were made to the transcript of the interviews. This method ensures that the interviewer correctly understands the respondent and that the respondent agrees with the way in which his answers are processed. This method also compensates for an important disadvantage of making notes during an interview. Making notes during an interview reduces the attention of the interviewer to the respondent, which might lead to missing important information. (Verschuren & Doorewaard, 2000) The interview with Willo Stear was recorded and the transcript was made from the recordings after the completion of the interview.

1.5 List of chapters

To answer the research questions, chapter two provides an introduction to the life cycle of a mineral project and to the different types of companies involved in the mining industry and defines the differences between a junior and a major mining company. Chapter three discusses the types of financial instruments available in the market and which are specific to the mining industry. Chapter 4 covers the types of financing generally used by different types of companies and which is most commonly used. In chapter 5, an attempt is made to determine trends in the mining industry.

After addressing the sub questions, it becomes clearer how the mining industry functions, making it possible to gain a better understanding of why certain developments are taking place in the mining industry – particularly during the last decade. The emergence of sovereign wealth funds and state-

owned enterprises are also discussed. Chapter six provides a conclusion and discussion within the context of the limitations to this research.

Chapter 2: What types of companies comprise the mining industry?

2.1 Introduction

The mining industry consists of different kinds of companies, which are in different stages of their development. Mining companies can be differentiated on the basis of their size which can be measured in terms of volumes (quantities) of production and, as most are public companies, also on their market capitalizations. Based on this differentiation, there are approximately 150 major companies(ICMM, 2012). The major companies own assets around the world. They have the largest mines, the largest asset bases and often the largest revenues. They have access to the largest portion of available capital and can take on the largest projects available. The three largest mining companies at present are BHP Billiton, Vale and Rio Tinto.

The next tier are the mid-sized companies. They often acquire the projects that the larger companies reject, but which are still economically viable to exploit under overhead cost structures which are lower than corporate majors. Most mid-tiers have grown, however, from developing their own assets or through acquisitions. Despite the fact that many of the world's biggest ore deposits have been discovered and put into operation by the major companies (because only those companies with large financial resources can afford to spend vast amounts on exploration and capital development programs) the exploration of mineral deposits and the initial development of mines is most often done by junior companies.

The business model of junior companies is to spend sufficient capital to discover and prove the economic viability of deposits and then on-sell these either for cash of in joint venture to larger companies which have the resources to bring them to account. However, they also try to turn the deposit into producing mines themselves, especially when the market expects such companies to be generating cash in order to be self-funding. These companies are very important, as they generally have the ability to make quick decisions (as opposed to large corporates), operate at relatively low costs in diverse geological and statutory environments and are often more innovative and flexible in their operational approach. Junior companies are an important component of the mining "feeding chain" (i.e. they provide the ore deposits for larger companies to "feed" on). [2]

Differences between the different types of mining companies are strongly related to the different stages of development in a company's life. This is evidenced by the Prospectors and Developers

[2] Interview Willo Stear, executive director of an Australian listed junior miner.

Association of Canada(PDAC), who state that: “mining companies are largely defined by the way in which they derive their revenues.” As already said, junior companies are more focused on exploration, while mid-sized and major companies focus on the exploitation of mines. This strategy is also driven by a difference in the types of investors in those companies. Investors in the major and mid-tier companies tend to be more risk averse than those investing in juniors. They want to see profitability and receive dividends. They are less concerned about capital growth (i.e. share price rises) than investors in junior companies. During times of rising commodity prices, junior explorers proliferate but, during economic downturns, cash is “king”, meaning that investors in junior companies want to see production cash flows and profitability – not cash burning with no income. During such downturns, junior explorers suffer for survival (with low market capitalizations), irrespective of how much mineral resource they have discovered which remains unexploited in the ground.

In order to better explain the differences in definition between companies in the mining industry, the different stages in the life of a mineral deposit from discovery to a producing mine will be discussed.

2.2 Stages in mining

In the life cycle of a mineral project, different stages can be distinguished. These stages are well defined and capital is raised and applied (with the relevant risk profiles) on the basis of whichever stage is applicable. The stages in the life cycle of a mineral project are:

1. Exploration
2. Feasibility
3. Development and construction
4. Operation and production
5. Closure and reclamation

2.2.1 Exploration

The first stage of development of a mining project is, of course, exploration. A company must determine, based on sound geological reasoning, where mineral resources might occur that could be economically viable for exploitation. To determine this, several steps are undertaken. The preliminary exploration, also called prospecting, includes analyzing all available exploration data on the region being targeted and conducting topographical, geological, geochemical and geophysical studies, where applicable. After initial prospecting, it may be possible to more specifically focus in on target areas, after which these areas will be analyzed more thoroughly in the field. Detailed drilling

(different types of drilling methods are adopted depending upon the geology and ground conditions), sampling, assaying and computer modeling are conducted in an attempt to determine the size, shape and mineral content of the deposit (mineral resource).

The results of these activities lead to a pre-feasibility study. This is a preliminary engineering and economic study which applies various technical and commercial mining assumptions to the mineral resource estimate to determine, within a 60% to 70% limit of accuracy, whether the mineral deposit can be mined profitably. At that point, it may be decided to continue drilling in order to provide greater detail to the understanding of the mineral deposit (i.e. its three-dimensional shape and the distribution of minerals in it). The costs of these activities (i.e. exploration and pre-feasibility studies) can range from $200,000 to more than $20 million per year for 3-10 years, depending upon the level of detail required. On average, two million dollars a year is spent.(Canadian Centre for Community Renewal, n.d.)

The exploration stage can take a very long time. To determine how long, there is a rule of thumb used in exploration which is called “the law of gambler’s ruin” – i.e. knowing when to stop spending money on hoping to find the “bonanza.” Before exploration takes place, the geologist must have an idea of the volume of ore needed in an ore body required to sustain a profitable mine of an appropriate size for a minimum life of operation. A simple financial model is prepared, taking all the assumptions on the hypothetical mine into consideration. This then determines the minimum size and quality of ore body needed for such a mine. The cost and time of discovering such an ore body is calculated – which gives the geologist an idea of when to stop spending, while in other cases it can only take a few years. The period for this stage is usually three to ten years. [3]

There are three stages of exploration:
-“Greenfield” or “grassroots” exploration: This is exploration in an area where minerals have not been found before, in a geological domain which may or may not contain known deposits elsewhere.
-“Brownfield” exploration: This is exploration for additional deposits in an area where minerals have been found before.
-On-mine-site mine exploration: This is exploration for additional minerals in the area where mining is already occurring. This includes searching for extensions of known deposits already being mined or for new ore bodies in the area a company is already active in.

[3] Interview Willo Stear

Understandably, not every exploration project is a success. “Approximately 1 of 10,000 grassroots exploration projects is successful, as only 1 of the 10,000 mineral showings eventually become a mine. Only 1 out of 200 projects that reach the advanced exploration stage ultimately makes it to the mine development stage.”(Canadian Centre for Community Renewal, n.d.), (Minerals & Petroleum Resources Directorate, 2007)

2.2.2 Feasibility

If a company decides after its pre-feasibility to continue exploration in an area, it enters the second stage of more detailed investigation of the mineral deposit. The company has to establish whether the mineral deposit can be profitably exploited. To determine this, the technical feasibility and commercial viability of a mineral resource has to be evaluated. If a company decides after its pre-feasibility to continue exploration in an area, it enters the second stage of more detailed investigation of the mineral deposit. To determine its viability, the technical feasibility and commercial viability of a mineral resource has to be evaluated in greater detail.

From the results of the advanced exploration and the more detailed study, a feasibility study is performed. This definitively determines whether the deposit can be economically viable exploited. In the feasibility study, technical and commercial estimates and assumptions must be calculated within more than 90% accuracy. This will define which of the mineral resources can be converted to mineable ore reserves in a mine plan. If the feasibility study is positive and its cash flow model displays a reasonable return on investment, it is used to raise capital for the project. It is then called a bankable feasibility study. (Canadian Centre for Community Renewal, n.d.)

A bankable feasibility study not only contains detailed geological and engineering analysis (including mine plans, production schedules and metallurgical processing blue-prints), but it also defines the commercial parameters which should be met to make the project a success. This allows financial institutions to make a better estimate of the relative risks and rewards when providing finance for project construction. The company will also submit its feasibility study and environmental impact studies to relevant government authorities in order to secure mining licenses. The time taken for feasibility studies to be completed ranges from less than three years to possibly ten years. This depends, inter alia, on the amount of detailed design needed, how soon the company can determine the right extraction method and how much existing infrastructure is in place. The costs per year on completing a bankable feasibility study can differ quite a lot, but on average they are around five million US dollars a year. (Minerals & Petroleum Resources Directorate, 2007)

2.2.3 Development and construction

When the company and its shareholders have decided after the feasibility study to continue the project, the next stage is development and construction. This stage generally requires the most capital. If the company does not have internal resources to fund the project itself, it will approach the market (to raise equity capital) or lending institutions (to secure loans). The firm has to make sure there is adequate capital to develop the mine (particularly in the event of delays in construction). During the construction and initial mine development phase, most of the infrastructure needed to start operations is built. This means that not only the mine itself, but also the processing plant and ancillary infrastructure need to be in place. During this stage, plans for the on-going rehabilitation and mine closure and reclamation are also prepared. This may reduce closure costs in the future.

The development and construction takes on average between two and five years. This stage is generally the most expensive in the life of a mineral project. The capital costs can differ a lot from one mine to another. The construction of mines that are close to developed infrastructure are often much cheaper to bring into production than mines that are located in remote places, as access to roads, power and water is much more difficult to secure in remote areas. “Costs for the construction can range from $100 million to $3 billion.” (Minerals & Petroleum Resources Directorate, 2007) In some cases the government can also take responsibility for the financing and construction of a part of the infrastructure. This is then regulated after collaboration between the company and the government in the country in which the company wants to mine.

2.2.4 Operation and production

After the construction of all mining facilities and all those years of preparation everything is finally ready for the mine to start producing. The mine is officially in business when it is extracting minerals to gain commercial benefit. Mining operations include hiring appropriately skilled people and training them, marketing the product and maintenance of the facilities. Besides the extraction of the ore/minerals, production also includes removal of waste and the shipment of the ore/minerals.

During the production stage, the company finally starts recovering its large investments. However, they still have large expenses to keep the operations going, the so called operating expenditures (OPEX). Examples of OPEX are wages, fuel costs and maintenance. OPEX not only comprises the expenses to maintain the day-to-day activities, they are also related to the depleting nature of mineral deposits. As mine’s become older, production usually becomes often more difficult and,

therefore, more costly, as ore has to be extracted from more remote sections of the deposit and/or at increasing depths, while the ore grade often also declines. OPEX is required to keep the output on the same level, as the output otherwise would decrease rather quickly.

Companies often only prove the existence of a certain amount of ore reserves in the initial stages of production to justify reasonably low capital expenditures. However, as the mine progresses, new ore reserves are discovered and brought into the mine plan, meaning expansions of the original mine life. For these expansions, no additional expenditures may be needed in some cases while, in others, large amounts of additional capital are needed. Innovations in mining technology during the life of the mine can mean that new technologies are implemented during the production life cycle. These can enhance extraction abilities and improve productivity, which counterbalances the increasing costs. (Crowson, 2011)

The life of a mine can range from a number of years to decades. The ore body and the ore grade are important in this respect. The ore grade is how much mineral is contained per unit of rock. The pay limit of an ore body is the grade at which the ore can be mined and processed without profit or loss. As the price of a mineral increases, or the cost of production decreases, the pay limit decreases and more of the lower grade ore can be economically mined. As a result, the ore reserve 'grows'. When the price of a mineral commodity being mined decreases, the situation is reversed and the ore reserve 'shrinks'. The average ore grade is very important, as the profit of a mine is heavily dependent on it and the price received per unit of commodity. Profitability can also be improved by the company's ability to maximise the value of its output by implementing processes improvements to increase metallurgical recoveries. A company can also earn more revenue if it succeeds in selling its product for high-value uses compared to common use. (Crowson, 2011)

Another important aspect during the mineral extraction is the by-products that may be contained in the ore. Metallic ores usually do not contain just one mineral, they can contain a lot of different elements and compounds. To distinguish them from the primary mineral being produced, they are called by-products. While a company may prefer to produce ores containing as much as possible of the primary metal, by-products can be an additional source of revenue to the company. When by-products have a high value, this raises the overall value of the deposits, provided that the by-products can be extracted cheaply. However, when by-products are toxic, this lowers the value of the deposit. It can even mean that removing them costs more than the benefit of the primary metal. By-products can further make things more complicated when their presence in the ore body varies

through the body. This can get complicated when maximizing profit means focussing more on the by-product and less on the primary metal. (Crowson, 2011)

There are two types of mining operations; surface (also called open-pit) and underground mining. With surface mining, the ore body is exposed at surface, or near to it, it is easily accessible and is amenable to open pit, bulk mining methods. As a result, the unit costs of surface mining are low and mass production is possible. Another advantage of surface mining is that bulk tonnage mechanization can be easily used, instead of low tonnage conventional mining using high cost human labour, which makes it a lot cheaper than underground mining. In underground mining, the ore is either located at depths beyond reach of viable open pitting or the ore body does not lend itself to bulk mining. As depths of mining increase, whether mechanization is being applied or not, the unit costs of production increase. Mining projects often start with surface mining but, at a certain point, they transition to underground mining. (Nelson, 2011; Canadian Centre for Community Renewal, n.d.)

2.2.5 Closure and reclamation

In time, the life of any mine comes to an end. This can be due to the fact the ore body has become depleted or that the costs of mining have become too high for the operations to remain profitable. Another reason can be that the price of the mineral may have dropped to a point where operations can´t be continued profitably, or if sustained industrial action (strikes) cripples the operations irreparably. The mine is then closed if there is no reasonable chance of economic conditions improving for the company. Such a decision is not taken lightly and issues such as the likelihood of the economic conditions being reversed in the foreseeable future are taken into account, especially if a bank that has provided debt wants the operations to continue in order to recover its investment or because the costs of closure are larger than the losses being incurred. (Crowson, 2011)

Cessation of operations does not mean that the company can leave immediately. In the arrangements they have with the government, the company must return the mining site to its rehabilitated state. Before the company can shut down the mine, they have to inform all interested and affected parties. After informing all parties and closing the mine, the company will start the decommissioning phase. This begins with removing equipment, dismantling infrastructure and closing and sealing all mine workings. After the decommissioning, environmental reclamation starts. During the reclamation phase, there is earth work and restoration to be done to e.g. replant the area and bring the mine site back to its natural state – as far as possible. Thereafter, the company has an obligation to continue monitoring the effects of the reclamation.

The duration of this last stage depends on the time it takes for the reclamation to be successful. The closure of a mine can take from two to ten years, or even more when the reclamation takes a long time. The costs of the closure are influenced by the size of the mine, they can range from a few $million for a small mine to more than $100 million for a large mine. The company has to make sure they it has enough resources to finance the closure, therefore closure and reclamation provision plans are made in the construction stage. Attention to on-going rehabilitation during the life of the mine helps reduce the time it takes to close the mine. (Laurence, 2011)(Canadian Centre for Community Renewal, n.d.)

2.3 Types of mining companies

The different stages in the life of a mineral project have now all been discussed. With this knowledge, it is necessary to distinguish the differences between the types of companies active in the mining industry. As already briefly mentioned in the introduction, the mining industry consists of junior exploration companies, junior mining companies, mid-tiers and majors. However, there is another category called unlisted juniors and artisanal miners which will be discussed in the remainder of this chapter.

2.3.1 Junior exploration companies

Some companies are totally focused on searching for new mineral deposits. These companies are called junior exploration companies. They risk venture capital in the hope of 'hitting the jackpot' with the discovery of a viable mineral deposit, knowing that their efforts may be unsuccessful. Once it has discovered a deposit/s, a junior exploration company usually sells all or portions of the deposits to other companies and uses these profits to continue exploring. So the business model of juniors is to explore and bring a project to the feasibility study and then try to sell it, while the larger companies focus on mining production and thus are more active in the development and construction, operation and production and closure and reclamation stages. For exploration companies the certainty that their property rights (tenure) are legally enforced and, therefore, guaranteed are very important, as these assure them that they can profit from the sale of the discoveries they make. Figure 2 shows the large value growth a project experiences from the discovery phase to the bankable feasibility study phase. This means that the equity holders of the junior explorer can make a lot of money by selling the project. As long as the company is able to sell its projects, the business model of exploring and bringing projects to the feasibility stage is a perfectly valid strategy. [4]

[4] Interview Willo Stear

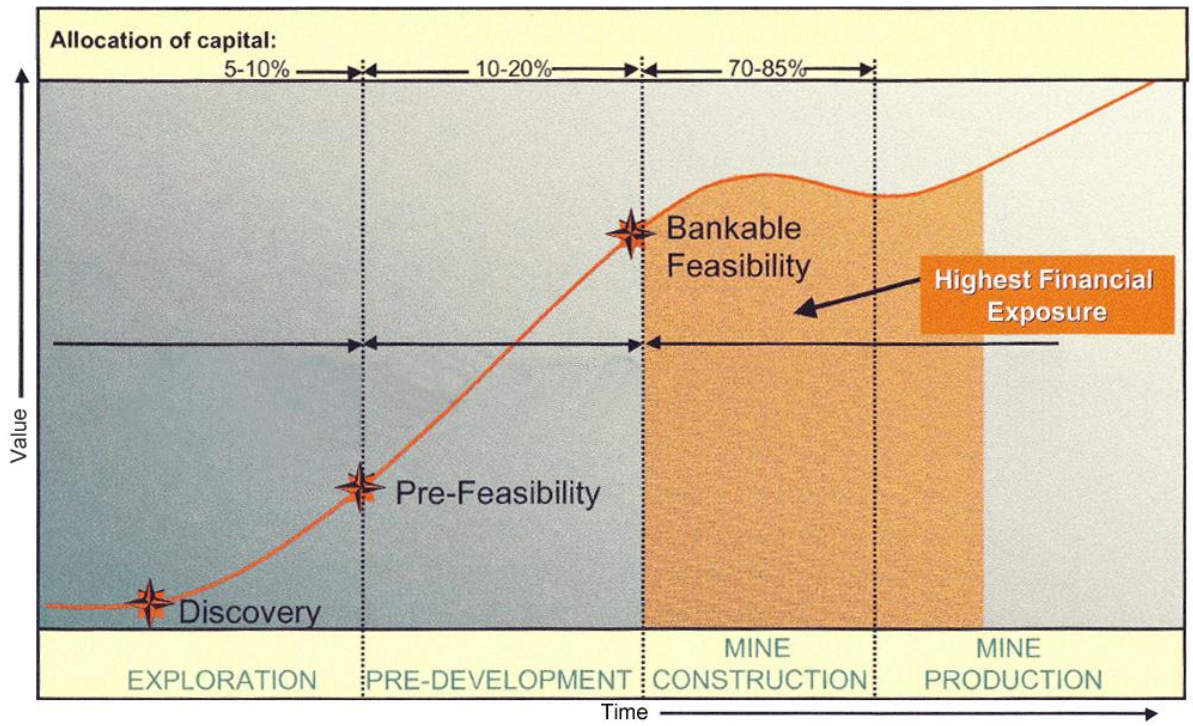

Figure 2: Mineral project value added curve. (Source: Stear, n.d.)

2.3.2 Junior mining companies

Junior mining companies (also referred to as 'emerging producers' are, just like junior explorers, focused on searching for new mineral deposits, but also putting them into production. Both junior mining companies and junior explorers are important components in the mineral deposit "feeding chain". These companies are mainly based in Canada (more than 1000), Australia and in somewhat smaller numbers in the USA and Europe (Moon, Whateley, & Evans, 2006). Junior miners are usually run by a small staff of experienced geologists and sometimes financiers. They are paid salaries and if they are the founders of the company, they also have shares in the company. Well-run juniors have skilled professionals in most disciplines, although far less in number than large companies. The number of juniors in Canada increased during the 80s, because major firms at the time were downsizing, which meant that a lot of experienced mining experts entered the market, many to begin their own companies. (MacDonald, 2002)

To start its activities a junior uses seed capital, which they raise from family and friends. However, when they need more money, they need to find other sources of finance. They raise equity capital from the market through a public listing during the exploration stage. Being listed at the stock exchange enables them to raise money from the public and makes it possible for the public to trade in the firms' shares. With the money raised from the market and from the venture capitalists, the

firm has obtained the money it needs to start its exploration program. When the exploration is successful and the junior has found a deposit, it can measure its dimensions with a relatively high degree of accuracy. If the geological studies have provided sufficient information, the company can start with its pre-feasibility study. The junior can use this study to raise more money, most possibly through another share issue. The company then can continue working towards the feasibility study. As this means that the company has defined a nice ore body, investors are getting more excited about the company. This means that the share price also is increasing rapidly. When the company has performed its bankable/definitive bankable feasibility study, it can use this study to attract finance to start building the mine.

When a financing deal is made, the company can start the construction of the mine. Especially for emerging producers, this is a stressful time. During the construction, the company only spends money and does not find anything new. Investors will start comparing the forecasts with the results in reality and judge the company based on that. Most companies have to deal with (little) problems during this stage, as there are almost always unexpected developments, mostly regarding the structure of the mine. When the company does not meet the expectations, it will be punished by its investors and see its share price drop. Only from the moment the expected full production is reached, investors are satisfied and the share price will rise again. At that moment, the most important risks for the miner disappear.

Getting the financing needed for the exploring and all its related activities is difficult for juniors. Exploring for mineral deposits is financially seen a risky business. The prospects for the exploration to be successful aren't very promising, as only 1 out of every 10,000 mineral deposits found eventually reaches the development stage. Because of the risks related to these activities, juniors aren't able to get their money from banks. They have to get capital from venture capitalists and/or from issuing shares at a stock exchange. These investors know that investing in these kinds of companies is more risky, but that in exchange the rewards can also be a lot higher compared to "safer" investments. Determining the value of a project of an explorer or junior is difficult as those companies don't have a cash flow or profit yet and investors only have limited access company info and no possibility to visit a mining site. (Perrott-Humphrey, 2011)

When the economy is booming and demand is high, there is a lot more interest for the exploration of mines and therefore money available for this purpose. Investors don't have to hold their money tight and venture capitalists are afraid to take more risk and even banks tend to become a bit less careful. But because of the financial crisis, nowadays there is much less money available for the exploration and junior companies. As a result a lot of them get into financial trouble, as they just don't get

enough money to keep on continuing their activities. This means that there is less exploration and therefore likely that less new mines are discovered, while it also means that more junior companies will go into default or that they have to postpone all activities in order to survive and wait for better economic times again.[5] More about the financing and the financiers of the activities of junior explorers and junior miners will be discussed in chapter 4, especially in section 4.2.2.

2.3.3 Mid-tier company

Mid-tier companies or intermediates have originated often out of juniors that have grown larger or from two juniors that have merged. They can have one very large mine, but more often they have a number of mines. These mines are in different stages of development, which means that they have a more diversified portfolio than stand-alone junior companies. They also have larger revenues streams than juniors, which gives them more cash reserves, which also allows them to re-invest in organic growth or buy small or mid-sized mines. Usually, their production is lower than that of majors and they have less cash and capital to spend than the major companies. This is not always a problem though. Majors prefer to operate the largest mines, but mid-tiers also operate large mines. The advantage with large mines is that they operate on economies of scale, meaning that unit operating costs are lower than smaller tonnage mines. (The pictures in appendix 5 give an indication of the size of those mines and the size of the trucks used in these mines) An advantage for mid—tiers compared to majors is that the mid-tiers often have lower overhead costs. This allows them to operate (somewhat smaller) mines that cannot be profitably operated by the majors.[6] Examples of mid-tiers in the copper space are Capstone Mining, Copper Mountain, Lundin and Nevsun and in the gold space Agnico Eagle, Eldorado and IAMGold.

During the boom in the mining industry, mid-tiers were very popular takeover targets for majors. The mid-tiers were taken over and merged into the major. As a result the amount of mid-tier companies decreased quite a lot. But when the global crisis started affecting the mining industry as well, it became clear that as a result of this buying spree, too few mid-tiers remained. Due to this, there has formed an even larger separation between majors and juniors. This development combined with the lack of finance available in the sector, especially for explorers and juniors and the aim of majors to repel projects deemed to be not profitable enough, has made it almost impossible for explorers and juniors to finance exploration. Mid-tiers can play an important part in this respect when demand starts recovering, as they could be the ones taking the projects deemed not financially viable enough

[5] Interview Jim Pooley, former CEO of Turgis.
[6] Interview Jim Pooley

by the majors, while providing the explorers and junior mining companies capital by taking over their discoveries. (ICMM, 2012), (Bonner, 2013)

2.3.4 Majors

The major companies are the largest companies in the mining sector. Some of the majors mine multiple minerals and are therefore diversified companies, while other majors focus on a single mineral. There are also both majors that are publicly-traded as well as majors that are state-owned. Those majors together have more than 2,5 million people employed globally.(ICMM, 2012) As the most important players in the market, majors have a lot of power. They can determine the size of the deposits interesting for them and what kind of lifespan they prefer. Majors prefer the large deposits where large economies of scale can be achieved and where mining can take place for over 20 years. A big advantage for majors is that they do not depend on one or two big mines, so they can decide to keep patience and hold a project in the pipeline or can temporary close a mine until the economic situation improves.[7]

During the boom in commodity prices in the first decade of the 21th century, majors had large cash flows and made billions of profit. As a result they had enormous amounts of money available to buy smaller companies and projects they liked during these years. This led to a lot of mergers and acquisitions by the majors, especially when metal prices peaked in 2007/2008.(Ericsson, 2010) Thanks to this consolidation the majors grew larger and larger quickly, which also meant that they become more global and more diversified. Due to this expansion, the dominance of those majors of the mining market increased swiftly. To indicate the growth of the majors, figure 3 shows the market capitalization of the majors in 2009 compared to 2001. The figure shows that the market capitalization of the majors has grown enormously, it multiplied several times. (Accenture, 2011) Fig. 3 shows how the share of the mine production controlled by the largest companies has increased.

The boom in commodity prices at the beginning of the 21th century was caused by the rapid development of the Chinese economy and the related growing demand for commodities. The mine industry had been lagging behind compared to other sectors during the internet bubble, as a result of declining demand as the developed economies didn't need more metals anymore. Mining was seen as expensive and environmentally unfriendly, which helped contribute to the bad situation in which the industry was at the beginning of the 21th century. As a result, there hadn't been large investments in mining for a long time. Another contributing aspect was the fall of the Soviet-Union. During the Soviet time there was a lot of demand for metals in the Soviet Union, but after the fall of

[7] Interview Jim Pooley

the Union, this demand collapsed. The industry, however, kept on producing and exported to other countries, especially to China, which meant that the increasing demand from China was met by the supply from the former Soviet states. But when the demand from China kept on surging, the supply from Russia couldn't keep up. Because of the bad situation in the mining world and the supply from the former Soviets states not sufficient, demand was higher than the supply, which led to the increase in commodity prices.(Ericsson, 2010), (Ericsson & Löf, 2011)

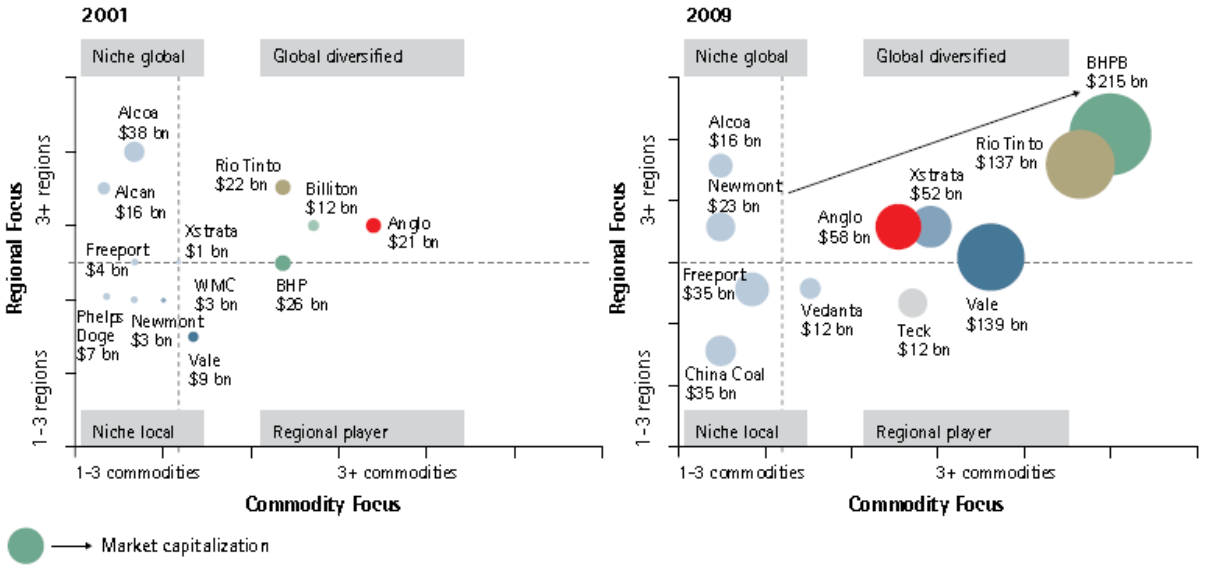

Figure 3: Development of regional focus and commodity focus (source: Accenture, 2011)

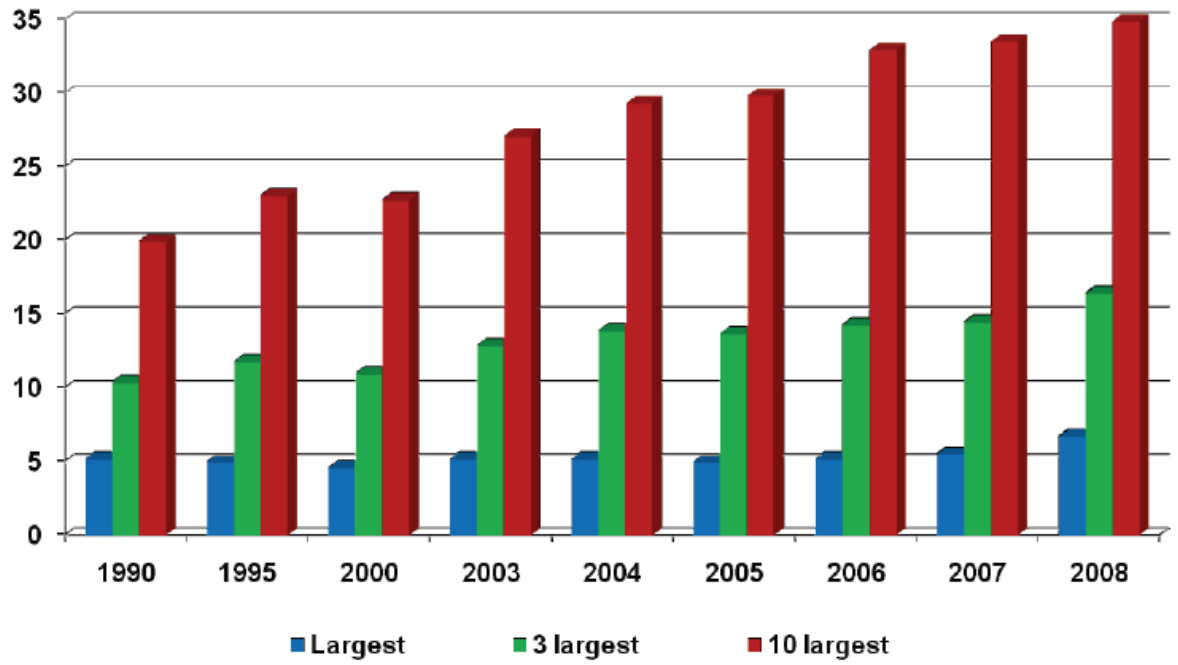

Figure 4: Share of the total value of mine production controlled by the largest companies (%) (Source: Ericsson, 2010)

After an initial downfall after the start of the global crisis, the mining industry and especially the majors recovered quickly to make huge profits again. However since 2012 profits are declining again, as the economic growth in rapidly developing and industrializing countries like China, Brazil and India slowed down a bit, which means that the demand for commodities declines. As a result, supply must be reduced. Majors therefore are increasingly focusing on their current projects and most important activities and are selling away the projects and assets that no longer are part of the core business of the company. They are limiting the risks in this way and want to get through this difficult economic situation as well as possible. (ICMM, 2012)

For a long time majors used to have their own exploration departments, but with the rise of the small companies specialized in exploring activities, majors nowadays have often limited their exploration activities to the areas in which they are already mining. The purpose of this exploration is to see if there are more mineral deposits in the area or the deposit already in use is larger than expected. However, to keep up to date with the findings of explorers and juniors, majors often have departments with specialists that focus on the findings of these companies, to determine whether something interesting to the majors is found. When a project is deemed interesting by the major, it can decide to take a share in the project in exchange for providing financing for further explanation and research. If the deposit can be economically mined, the major can agree to enlarge its share or they can decide to try to take over the junior.[8]

2.3.5 Unlisted junior explorers

There are also firms that aspire to start exploring for mineral deposits, these are usually unlisted junior explorers. But before they can start exploring, they first have to get access to capital. They get this by accessing venture capital and issuing shares at the stock market. These unlisted junior explorers are sometimes run by geologists, but there are also ones that are run by a group of people interested in mining. They are financially backed by venture capitalists and hire geologists instead of having them in their company. (MacDonald, 2002)

2.3.6 Artisanal miners

The mining market as discussed until now is the formal market, though there is also an informal component. This is artisanal and small-scale mining, much of which is illegal. Working in this sector, usually confined to emerging market or Third World countries, are indigenous people or very small enterprises using their own resources for mining and processing, often with relatively simple equipment. This work is understandably very unsafe and the working environment bad. However,

[8] Interview Jim Pooley

based on estimates by the World Bank, between the 80 million and 100 million people spread over 30 countries can live from the benefits of these operations. (ICMM, 2012)

Type of company	Approximate asset base(US Dollars)	Approximate number of companies	Short description
Major	$3 billion->$10 billion	150	Globally operating companies with the biggest mines in production
Mid-tier	$1 billion-$3 billion	350	Mid-sized companies, important for the exploitation of mines majors can't profitably exploit. Can grow into major or be an attractive takeover target.
Junior miner	$500 million-$1 billion	1500	Exploring for mineral deposits, often have only one mine in production
Junior explorer	$5 million-$500 million	2500	Focus on exploration of mineral deposits, sell interesting discoveries to larger companies
Unlisted junior explorers	Below $5 million	1500	Firms that want to start exploring for deposits, but have to get access to capital first

Table 1: Overview type of mining companies (Source: ICMM 2012, adapted by author)

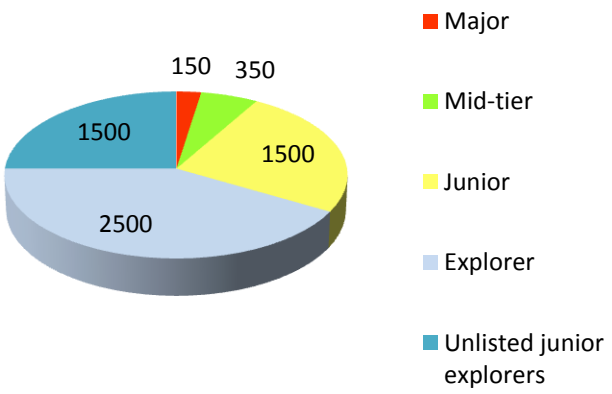

Figure 5: Number of companies per type of company (Source: ICMM 2012, adapted by author)

Chapter 3: What are the possible ways to finance the activities of mining companies?

3.1 Introduction

Chapter 2 described various types of companies in the mining industry and the stages in the lifecycle of a mine. This chapter will take a look at the possible ways to finance the activities of mining companies. Four types of financing will be discussed, all of which are used in a number of sectors including the mining industry. The financing of the activities of companies usually comprises of different parts, as both debt and equity are needed to finance a company. So after discussing those types of financing, the possible debt and equity components which can be used for these types of financing will be introduced. These components will be reviewed on a theoretical basis. Thereafter the focus will shift to the finance in mining. This section explains which components are most used in the financing of the mining industry. It is interesting to see whether there are really mine-specific financing components or that only the components discussed earlier are used.

An important question for banks pondering whether to invest in the mining industry is what the risks are of this investment. The mining industry is perceived as a rather risky industry and banks want to stay away from too precarious investments. An overview of the risks related to mining will be given, while also distinguishing the risks borne by the miners and the risks borne by the bank. Subsequently will be discussed how banks determine those risks and how the more stringent becoming requirements for banks influence their decisions.

3.2 Types of financing

Firms need money to develop their activities. There are several types of financing available to companies looking for money:

- Project Finance
- Corporate Finance
- Commodity Trade Finance
- Pre-export Finance

Those types of financing differ in a number of respects. The most important difference is the time frame usual to these types of financing. Other differences are the risks involved in the type of

finance, the moment financing is needed, the recourse of the debt and more. All four types of finance will be explained in further detail in the next sections. Thereafter the differences between the types are summarised.

3.2.1 Project Finance

In the case of project finance, seen from a legal perspective, a totally new company is formed. This company is financed partly with non-recourse debt, which is a loan that is secured by the pledge of collateral, however in case of bankruptcy of the borrower the lender can only get the collateral back. The other part of the finance comes from the equity from a small number of sponsors; there are often one to three sponsors. The project is set up with the intention of financing an investment in one single asset. Project finance projects are intended to be for a limited amount of time.

As a result of the formation of an entirely new company, extensive contracting is needed when using project finance. New contracts with for example partners have to be established and there have to be contracts for all parts of the company. This leads to contracts involving firms all the way through the project from input suppliers to output buyers. Another result of the formation of an independent company is that the cash flow of the project also remains independent, so the sponsoring firm can't access the cash flows of the projects and vice versa. With the cash flows of the project, the project pays its interests and loan repayments. (Gatti, 2012)

In project finance, generally the equity comes from a limited number of sponsors. Instead of financing a number of assets together, the sponsoring firm wants to finance this asset separately. The limited number of sponsors means that there are clearly less shareholders involved than in the case of public companies. The board of the company is formed out of directors from the firms that sponsor this project. The credit for the project is provided by a syndicate of banks and/or financial institutions. (Gatti, 2012) This means that as only a number of banks are involved, debt ownership is concentrated. This is in stark contrast with the dilution of debt ownership that a company getting money from the issue of bonds has, as bonds can be bought by a lot of different investors. In project finance it is usual to have very high debt levels. On average, project companies have a debt-to-total capitalisation rate of 70%, which is (more than) twice as high when compared to the average of public companies. (Esty, 2004)

Project finance was originally used for long-term projects in capital-intensive industries, like oil, gas and electricity that have a predictable revenue stream. In this case the project is not expected to have a huge return. Large amounts of capital are used to create something with a little more value. A sponsoring firm therefore needs a lot of projects with a significant positive return. The sponsoring

firm can only benefit if almost all of those projects have a positive return. However project finance can also lead to a high return for an investor, as the high leverage used in project finance improves the return. Debt is cheaper to acquire than equity, as debt lenders are looking for lower returns than equity providers. When a highly leveraged firm makes the same profit as a lower leveraged firm the return on equity of the former is higher, as the level of equity on which the profit is made is smaller. High leverage is also an advantage as interest can be deducted for tax, while dividends paid to shareholders can't be deducted. So the more debt, the more the firm can deduct. (Yescombe, 2002)

Other advantages that project finance offers to a firm are that it allows the firm to minimize costs that are related to market imperfections and reduce financing costs that occur when dealing with large capital investments. Market imperfections that lead to costs are e.g. incentive conflicts, asymmetric information[9] and taxes. Because of the fact that project finance makes communication lines a lot shorter, largely due to its extensive contracting, it can reduce agency conflicts. The contracting ensures a lot fewer conflicts between the parties. Project finance can therefore also reduce information costs, as the project suffers a lot less of asymmetric information. (Hillion, n.d.)[10]

When deliberating about using project finance for a project, it is important to understand the risks associated with the project. The risks in project finance are often quite high. By starting a, legally seen, new firm the risks of the project are separated from the rest of the company (also called ring-fenced), so the firm cannot be held responsible for anything outside of the project. This already lowers the risks for investors, but is not yet enough. It is important that the risks can be allocated in such a way that they are acceptable for all investors. This allocation is done by, for example, making agreements with companies specialised in insuring against political risk, like an export credit agency. This makes is possible to conduct capital-intensive projects that wouldn't be possible with corporate finance. Project finance allows the firm to manage risks more effectively and efficiently. Project finance also often has fewer issues with underinvestment, which can be quite costly otherwise. (Hillion, n.d.)[11]

3.2.2 Corporate Finance

With corporate finance, the first big difference when comparing it to project finance is that with corporate finance, the sponsoring firm invests in a lot of projects, and thus assets, simultaneously. As a result, the investments are represented on the balance sheet of the company. This means that the

[9] Asymmetric information means that one party has more or better access to information than another party. The party with more information can make a better informed decision than the other party.
[10] Presentation "Project Finance"
[11] Presentation "Project Finance"

project isn't isolated. The lenders of the project have the security of a large pool of cash flows and assets of the sponsor company itself. The sponsoring firms can benefit from the fact that the project remains on the balance sheet by making use of for example interest tax shields. (Gatti, 2012) As already stated before, corporate finance projects often have lower leverage ratios than project finance, as public companies on average have a leverage ratio of 30-35%. (Esty, 2004;Esty, 2003)

Compared to project finance, corporate finance has some advantages. It is easier and cheaper to finance an asset that is part of the balance sheet of the entire firm, than it is to form an independent project for this asset. Because of the backing of the entire firm, debt is also cheaper to get for corporate finance projects than for project finance. Another advantage for the firm is that for a corporate finance project less information has to be shared with the public, which is an advantage as firms tend to prefer not to give much information about projects to parties outside of the firm. For a corporate finance project it is also easier to get operating synergies, as it is much easier to make use of the resources and possibilities of the sponsoring firm.

When investing or dealing with assets, firms have to deal with costs that arise from the fact that markets are imperfect. Those costs are called deadweight costs. Those deadweight costs include according to Hillion (n.d.)[12]:

- agency costs and incentive conflicts
- asymmetric information costs
- financial distress costs
- transaction costs
- taxes

As the name says, those deadweight costs are costs to the firm. So firms want to reduce those costs as much as possible. Deadweight costs are dependent on the financing structure the firm uses. So deadweight costs are different using project finance compared to using corporate finance. According to Hillion, firms should choose to use project finance when deadweight costs are lower for using project finance than for using corporate finance.

3.2.3 Commodity trading financing

Commodity trading financing is a somewhat other type of finance, as it is solely used for the financing of goods flows. It finances a lot of goods flows, 100-500 at once. The aim of commodity trade financing is to provide short-term financing to companies like the mid-sized specialist product

[12] Presentation "Project Finance"

traders, but also to the major trading houses[13] that are operating globally. [14,15] The securities with trading commodity financing are the goods themselves. “Commodity trade finance can be seen as the grease of the global trading market of raw materials. Despite the fact that the financing is seen as low risk-low reward, the turnover in trading commodity financing is around 1.5tn a year.” (Blas & Makan, 2013) As the grease of the trading of raw materials, it is important for the business that there is enough credit available to keep everything running.

Historically, European banks have been major players in commodity trade financing. Especially French banks like BNP Paribas have a long history of providing financing to big trading houses like Glencore. Before the crisis approximately 80% of the commodity trade financing came from European banks. However the business was treated by the credit crunch, which meant that there was a lot less capital available. As the banks were hit by the crisis, they had to make sure their balance sheets were corrected. As a result, less money was available for commodity trading. The largest trade houses still could get financing, but the small and mid-sized companies were having a harder time still getting financing. This made it possible for banks in other parts of the world to increase their participation in this business. Banks from the US, Middle East and Asia started entering the market. While they did not totally make up for the amounts of money no longer provided by the (French) banks, they provided important credit to the business in a difficult time. Their entrance into this market has increased their interest and a lot of them are now looking to expand their share. As a result, although the European and especially French banks have increased their lending again in 2012, their market share in 2012 had decreased to around 50%. So for now they are still the biggest, but their dominant position has suffered a lot. However the European banks are not the only ones feeling the pressure of Asia, as especially Singapore also is offering a lot of incentives to trade houses to move from Suisse to Singapore. (Blas & Makan, 2013;Blas, 2012)

3.2.4 Pre-export financing

Pre-export financing is the financing for companies needing money when their production is about to begin or begun not too long ago. The pre-export financing provides financing to suppliers/exporters in advance, which they need to produce manufactured goods, commodities and agricultural products for export. “The pre-export financing can also be used to extend deferred payment terms to buyers,

[13] A trading house is an intermediary; it is specialized in facilitating transactions between manufacturers and buyers. They focus on export, import and third country trading. They add value for clients by making use of their large existing network and by expanding the market reachable for the product.
[14] Interview Andor Lips, Vice President of Structured Finance – metals and mining of ING Bank
[15] https://www.smbcgroup.com/americas/tf/commodity

if needed."[16] Usually pre-export financing are loans for a period of two to five years. They are most often used for the expansion of projects or the refinancing of debt. The loan is taken by the firm needing the money to be able to carry out the envisioned plans. Pre-export financing is important to firms in this stage, as it increases the firms' access to credit in the important phase of beginning production. The agreements for the loan are determined based on the reputation of the firm, its experience, expectations for the next years, possible risks, the performance until now and more. [17]

3.2.5 Summary

To summarize the differences between the four types of finance discussed, table 2 gives an overview of the most important differences between the four. Table 3 gives an overview of the advantages of project finance and corporate finance.

	Time	When is this finance used?	Recourse	Risks	Description
Project finance	Long-term (5->15 years), end time is set	Start of project	Non/limited recourse	High	Special entity formed for a new project investing in a single asset,
Corporate finance	Can be both long- and short term	Can be used at different times.	Full recourse	Low	Investment in multiple projects, all on the balance sheet of entire firm.
Trade commodity finance	Very short term	When credit is needed to keep trading running	Traded goods act as recourse	Low	Finance to specialist traders/ trade houses to grease global trade
Pre-export finance	2-5 years	Firms that are starting or have just started production	Limited recourse[18]	Depends on firm, based on performance & reputation	Loan to help firms refinance debt or expand.

Table 2: Overview of the four types of finance

[16] http://www.tradefinancemagazine.com/AboutUs/Stub/WhatIsTradeFinance.html
[17] Interview ING
[18] http://www.tfreview.com/awards/deals/tfr-deal-year-2004-ilyich-ukraine

Advantages project finance	Advantages CF/disadvantages PF
Small number of shareholders and lenders, so no dilution of shares.	Security of large pool of assets and cash flows of entire company
Lot of arrangements already made as a result of extensive contracting between involved parties. Also lower agency and information costs.	Extensive contracting needed for project finance is not needed for corporate finance, as there already are existing contracts with other parties.
Ability to have much higher leverage, which also improves return for investor.	Lower amount of leverage means lower risk for investor.
Project finance can be for a longer term than corporate finance and support deals with higher risks	Higher likelihood to make use of interest tax-shield
Ring-fenced, so creditor can't claim money from the firm outside of the project in case of default	Debt is cheaper accessible for CF than for PF thanks to security of assets.
	Less information sharing with the public is needed.

Table 3: Overview of the advantages of project finance and corporate finance

3.3 Equity and Debt financing

So four types of financing have now been discussed. But we do not know yet how these types of finance are composed. The options available to raise the funds to start a company are debt and equity. A firm has to think about how it wants to raise the funds needed. Should they go for a higher debt ratio or should they choose to have more equity? However the firm can't decide this alone, the market also plays a very important role in this. To understand why a firm might prefer debt or equity, it is important to know the differences between debt and equity. After learning the differences, we can go into more detail about both of them separately.

Having *equity* means that the investor gets a share of the ownership of the company. This implies that the investor has a vote in the decision-making of the firm and has a right to receive dividend from the firm he has a share of. The equity holder can benefit when the value of the firm increases, but he can also lose money when the value of the firm goes down. In case of default the shareholder loses his invested money, he doesn't get any compensation. *Debt* means that one party owes an obligation to another party. The debtor has to repay the obligation, while also paying interest during the time it lends the money. This is however the only obligation of the borrower to the lender. But in case of default of the debtor, the debt providers are the first to get their money back. Equity and

debt can both be publicly traded or privately. This will be discussed in more detail in the next sections.

So an important difference between debt and equity is that with debt the bondholder doesn't get a claim on future profits of the company like an equity holder gets. Another important difference is that with debt the lender only gets his money back including interest, while the equity holder is entitled to getting dividend and can influence the decisions of the company. However in case of a default of the firm the debt provider gets his money back, while the equity provider doesn't get anything. The debt provider also knows that even if the firm is just making a loss, they still get their interest paid, while the equity provider doesn't get dividend at that moment. Another advantage of debt is that it usually secured by assets[19], while the equity holder doesn't have any securities. Bond markets returns are also less volatile than the returns on the stock market, which also means that providing debt is also supposed to be less risky than providing equity. Because of the fact that debt is considered less risky than equity, the return on debt is lower than the return on equity. The average real return on equity is almost 5%, while that of debt is almost 4%. (McGrattan & Prescott, 2003) While debt providers are better protected in case of default, equity providers usually receive almost the entire benefit when the firm is doing well and making a lot of profit. [20]

When the central bank increases the interest rate, the capital providers also expect higher returns. When the central bank reduces the interest rate, the capital provider may lower their expected returns. So there are no strictly fixed returns, the returns are variable and dependent on the specific situation.

[19] There is a collateral which the debt provider can directly claim in case of default

[20] http://www.wbj.pl/blog/Corporate_Finance/post-209-why-equity-can-be-so-much-more-expensive-than-debt.htm

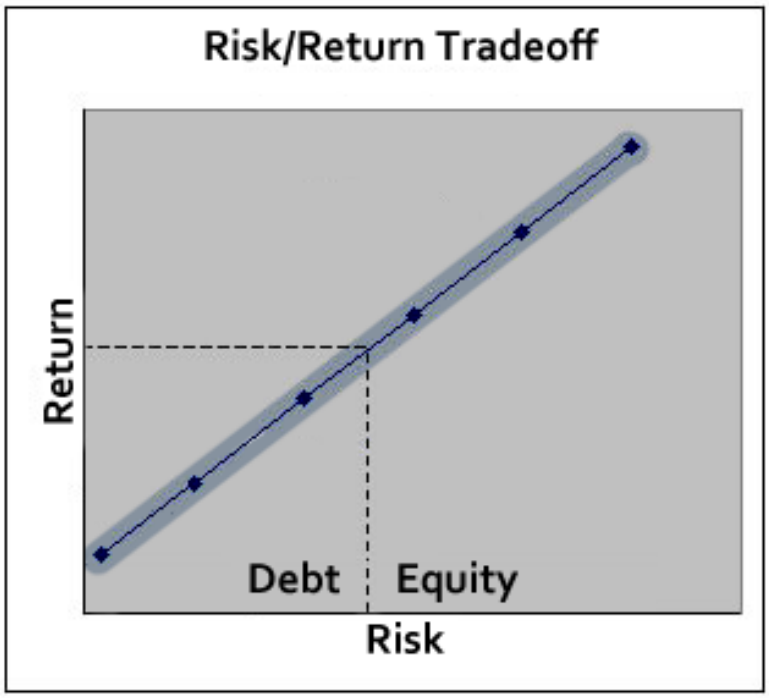

Figure 6: Risk/Return Tradeoff (Source: author)

Figure 6 shows the relationship between risks and expected returns. It illustrates that debt providers often ask for lower returns than equity providers. This is a result of the lower risks involved with providing debt. Now the next sections will discuss the different sources of equity and the possible types of debt available to firms in more detail.

3.3.1 Equity financing for private companies

Start-up companies obviously need capital to start any activities. The initial or "seed" capital is often provided by the entrepreneur and his family. However if the business wants to keep on growing, capital from outside is needed at a certain moment. In the early phases of business the entrepreneur usually focuses on equity, as this is better accessible in these early stages.[21] Equity providers might join because they see the potential of the firm and think they can benefit for its future growth. Most start-up companies take a loan in the early stages of their activities, but the amount of debt used in this stage isn't that big. Debt starts playing a more important role as the firm grows. In order to get finance, the firm has to provide the source of the capital with private equity. Private equity is having shares (might be equity as well as debt securities[22]) of a company that isn't listed on the stock

[21] Interview Willo Stear

[22] "Equity represents having an ownership interest held by shareholders in a corporation, such as a stock. A debt security is a type of security that represents money that is borrowed that must be repaid, with terms that

market. There are different people and firms that have private equity. The following groups can be distinguished and will be discussed:

- Angel investors
- Venture capital Firms
- Private equity firms
- Institutional investors
- Corporate investors.

Angel investors

An angel investor is an individual, who often has been successful in business, who buys equity in small private firms. They invest with their own personal funds in the company and often have some kind of connection to the entrepreneur of the firm in which they invest. Because they often invest a relatively large amount of capital, compared to the balance total, their share is also relatively large. Angels on average invest between the €10.000 and €100.000. [23] Because of their large share, they also have quite some influence on the decisions of the firm. Thanks to the connections the angel has from being in the business, he can provide the firm not only with his own experience, but also with new contacts and expertise. (Berk & DeMarzo, 2011)

Unfortunately, most people that just startup their first business, don't have a connection with someone who has enough money to be an angel investor. Those entrepreneurs, as well as entrepreneurs whose business needs even more money, have to try to get capital from another source, like a venture capital firm.

Venture capital Firms

A venture capital firm focuses on investing in beginning and growing firms, just like angel investors, but may prefer firms that are already a bit further in their development. Unlike angel investors, venture capital firms are often firms instead of individuals. The venture capital firm is often run by venture capitals, while institutional investors like pension funds are the limited partners. The limited partners provide the money for the venture capitalists. The limited partners can benefit from investing in the venture capital firms instead of investing in startup themselves, as the venture capital firms invest in diverse projects to offer diversification and as they offer their large knowledge

define the amount borrowed, interest rate and maturity/renewal date." Definition from http://www.investopedia.com/terms/s/security.asp

[23] http://www.thebusinessangel.org/difference-businessangel-venturecapital.html

and expertise in this subject. In exchange for this, the venture capitalists get an annual fee of the committed capital of the firm and a share in the return generated by the fund in a fee called carried interest. This carried interest might lie between the 20 and 30% of the profit. (Brealey, Myers, & Marcus, 2009)

Venture capital firms can offer capital investments of more than one million euros and is often on average much higher. Just like angel investors, venture capital firms demand controlling power in exchange for their investments. However, it might not be too bad for an entrepreneur to cede some power to the venture capital firm, as venture capitalists want to make profit on their investments and therefore play an important role in the growth of the business. And perhaps the most important benefit for the start-up company, the venture capital providers also bring a lot of knowledge and expertise to the company. (Manigart & Witmeur, n.d.)

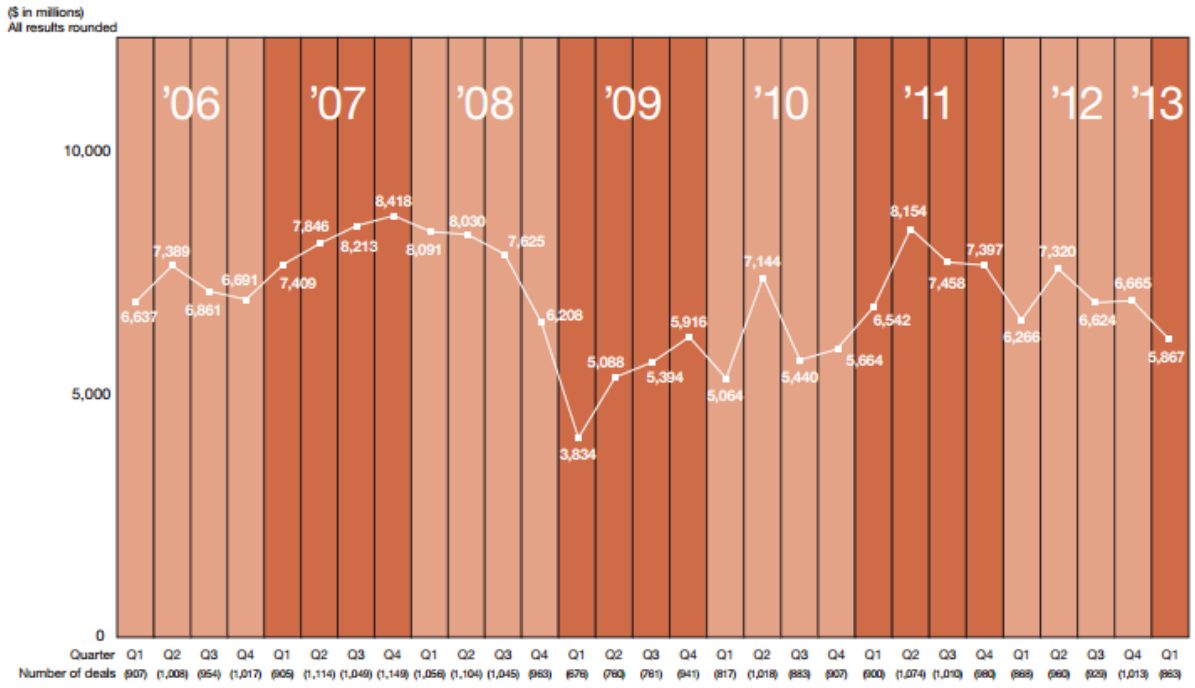

Figure 7: Venture capital investments in U.S.A. (Source: PwC, 2013a)

Private equity firms (Leveraged Buyout(LBO)

A private equity firms is just like a venture capital firm, however instead of focusing on startup companies they focus on the equity of existing privately held companies. The private equity firm makes investments in the private equity of an operating firm. They make these investments with specific investment strategies in order to maximize their return. Through these investments, they get

a controlling position in the firm. This gives them direct influence on the operations of the firm. The goal of the private equity firm is to create growth through long term investments.

Private equity firms often perform leveraged buyouts (LBO). A private equity firms performs a LBO by finding a publicly traded firm and then investing in the outstanding shares of this company. By buying all shares, they can make the firm private. For the financing of these investments private equity firms often use equity as well as a lot of debt. The goal of a LBO is to reorganize the firm. Some private equity firms then decide to sell the firm in different parts. In this way the private equity firms can recoup its investments and make profits. Because private equity firms are dealing with established companies, the average deal size in this market is a lot larger than that for venture capital firms.[24] (Berk & DeMarzo, 2011)

Institutional investors

Institutional investors are investors like pension funds, insurance companies, endowments and foundations that manage large amounts of money. They invest in a lot of different fields, so in private companies as well. As already stated in the part about venture capital firms, they can invest in private firms through venture capital firms or through private equity firms or directly themselves.

Corporate investors

There are also established companies that are interested in investing in young firms. Those companies often aren't just interested because of the financial return, but also or even more because of other benefits they could gain by such an investment. For example, the established firm might benefit from the use of technology that the young firm has. Another example is that the takeover target has an asset that the acquirer really wants to own. (Berk & DeMarzo, 2011)

Summary

Capital provider	Description
Angel investors	Wealthy individual(s) investing in a starting company often owned by an acquaintance. Provides capital, connections and his knowledge to the firm.
Venture capital firm	Run by venture capitalists, also invest in beginning/growing firms. Backed by the capital of limited partners, they have a lot more capital to invest than the

[24] http://www.bloomberg.com/video/bloomberg-u-how-a-leveraged-buyout-works-RjqwjbDYSXGI_N63hsUVrw.html

	angels. Venture capitalists are specialized in helping a firm grow and bring not only capital, but also a lot of expertise and connections.
Private equity firm	Buys private equity of an operating company. The PEF gets an operational role in the company. Through an investment strategy it wants to maximize its return. For their investments, they usually make use of large amounts of debt.
Institutional investors	Large investors, e.g. pension funds, that invest in private firms either directly or as a limited partner through venture capital firms of private equity firms.
Corporate investors	Established companies interested in investing in young firms in order to gain e.g. strategic advantages or access to certain new technologies.

Table 4: Overview of capital providers

3.3.2 Equity financing for public companies

IPO

IPO stands for Initial Public Offering.[25] When a firm needs more money, it can decide to enter the stock exchange. By entering the stock exchange, the firm is going public with its shares. The advantages of going public are that it offers firms better access to capital and greater liquidity. Through the public market, firms often can get much more capital than they can do as private company. (Brealey et al., 2009) Greater liquidity means that the firm has more capital available to invest. The decision to go public gives shareholders that e.g. provided venture capital the possibility to exit their investment or to diversify their portfolio, as to reduce their risk. It might also allow shareholders and the founders to convert their part in the company into cash at a later stage. The disadvantages of an IPO are that monitoring by investors becomes more difficult and that the firm has to provide much more financial and regulatory information to the public. The ability of investors to monitor the firm diminishes because of the dispersion of ownership. (Ritter & Welch, 2002)

SEO

If a firm that has its shares already publicly traded, needs more money as their retained earnings are e.g. not enough to start a large new project, they can decide to return to the equity market to offer

[25] When conducting an IPO, the firm can offer new shares to raise capital or they can offer existing shares from shareholders that want to exit the firm. The offering of new shares is called a primary offering, while the offering of existing shares is called a secondary offering.

new shares for sale. This offering is called a seasoned equity offering (SEO).[26] A SEO is just like an IPO, only the price of a share is already known, so the price setting process has already been done. There are two kinds of SEOs: a cash offer and a rights offer. A cash offer means that the firm offers new shares to all possible investors, while a rights offer means that the firm offers new shares only to the already existing shareholders. The rights offer is meant to protect the existing shareholders against underpricing, which occurs when shares are sold at a lower price during the SEO than the price they were valued at before the SEO. Share prices often go down when a firm announces a SEO, likely because investors think that the firm is overvalued or is having financial problems. They assume this, because of the likeliness that the company wants to protect its existing shareholders by trying to sell its shares at a price correctly valuing or overvaluing the firm. (Berk & DeMarzo, 2011)

Advantages issuing public equity	Disadvantages issuing public equity
Better access to capital and therefore to raise more money than possible as private firm	Dilution of ownership as a result of the increased amount of shareholders
Greater liquidity	Increase in financial and regulatory information that must be made public
Opportunity for earlier capital providers to sell their shares and benefit from their investment	Negative perception from shareholders regarding SEO

Table 5: The advantages and disadvantages of issuing equity publically

3.3.2 Debt Financing

A firm can also finance its activities by issuing debt instead of equity. Debt means that one party owes an obligation to another party. The debtor has to repay the obligation one day, while also paying interest during the time the debtor lends the money. This is the only obligation of the borrower, with debt the bondholder doesn't get a claim on future profits of the company like an equity holder gets. Issuing bonds does mean that the debt burden of the company increases, the company has to pay the contractual interest payments, these can't be suspended or reduced like dividends can. Debt can be publicly traded or privately. An advantage of private debt compared to public debt is that there are no costs for registration, but a disadvantage of private debt is that is more illiquid than public debt.[27]

[26] When conducting a SEO, a firm can offer primary and secondary shares. Primary shares are new shares issued by the firm, secondary shares are shares sold by existing shareholders.

[27] http://www.frbsf.org/education/activities/drecon/2005/0510.html

Public Debt

Both governments as well as corporations can issue debt by issuing bonds. They issue bonds in order to finance projects or activities. Bonds are a major source of capital for both governments and corporations. The bond represents a loan from the investor to the bond's issuer. Almost all bonds have a standard coupon payment structure. The investor gets yearly interest payments in exchange for providing the loan; this interest is called the bonds coupon. Bonds are issued for a set time and at the end of this period the bond matures. A bond can mature in one year, but can also mature in 30 or even more years. The investor gets his loan back when the bond matures. A bond that matures in the short-term is more predictable than one with a long term. This makes a long-term bond riskier than a short term. This is reflected in the return, long-term bonds usually have a higher coupon rate. ("Introduction to bonds," n.d.; Levinson, 2003)

Bonds issued by governments are usually seen as less risky as bonds issued by corporations. This is a result of the chance on the bond issuer going default; national governments almost never default, while corporations default much more often. Government bonds are usually seen as risk-free, especially from countries like the USA, Germany and the Netherlands. The government can use its tax revenues to pay its loans, but corporations have to earn the money themselves to pay back their loans. A company that has some consistent earnings potential will be able to offer debt securities to the public at a favourable coupon rate.

The risk and return of a bond is not only determined by the time until it matures. The perceived credit quality of a company and securitization of bonds are also important factors. Large companies that have a reputation of consistently achieving good earnings are perceived to have a good credit quality and therefore it is easier for them to issue debt at low rates and issue higher amounts of debt. The securitization of bonds influences the risk related to the bond. Bonds can be secured or unsecured. The difference is that secured debt means that there are specific assets that act as a collateral which the bondholder can directly claim in case of default, while with unsecured debt the investor might just lose his entire investment or has to wait to see if there remain assets that weren't already pledged as collateral for other assets in case the firm goes bankrupt. The bond can also be senior debt or subordinated debt. With senior debt, the debt provider gets his debt paid first, while with subordinated debt the provider gets paid after the senior debt has been paid. (Waring, 2012)

The quality of bonds is rated by rating agencies like Moody's and Standard & Poor's.[28] These agencies determine the quality of the bond based on the reputation of the company, its assets, the debt compared to both the company's worth as well as company income and market capitalization. Ratings go from AAA/Aaa(highest) to C/Ca(lowest). Bonds that are considered trustworthy and where the agencies give a positive advice to invest have a rating from AAA/Aaa to BBB-/Baa3. These bonds have an investment grade. The quality does decline as the rating becomes lower, so AAA rated bonds are the most secure. BBB- rated bonds are still good, but are more risky than AAA. Bonds that have a lower grade than BBB- are called junk bonds. The risks of investing in junk bonds are very high. (Waring, 2011)

A special form of bonds is convertible bonds. A convertible bond is a bond that can be converted into a predetermined amount of the company's equity. This can be done at certain mutually agreed times during the term of the bond. The bondholder has the power to decide at which of the possible moments he wants to convert the bond. Because of the fact that a convertible bonds has both debt and equity elements, the risks associated with it are higher than equity, but lower than debt. This means that its return is also a bit higher than for equity but a bit lower than for debt. Convertible bonds are interesting to the issuing firms because it can issue bonds a bit cheaper. Convertibles are interesting to investors, especially in volatile times, because it provides them with downside protection when it is kept as a bond, but also the potential to benefit from future growth when it is converted. (E&Y, 2013)

Private debt

There are two forms of private debt available to companies: term loans and private placements. A term loan is a bank loan that lasts for a set time. It is private debt as the loan cannot be traded publicly. The loan is often repaid in regular payments with interest spread over the set period. The interest rate of term loans is often variable. A term loan usually is for 1-10 years, but some loans are for a much longer period. A loan is often not financed by a single bank, but by a number of banks. This is a syndicate bank loan. In this case, the lead bank is responsible for the negotiation of the loan. When the negotiations are done, the lead bank sells part of the loan to smaller banks. Those banks aren't big enough to do negotiations, but they do have enough excess money to participate. It is also

[28] Moody's and S&P use different grades, but their ways of determining the quality are very similar. The AAA rating is used by S&P and the Aaa rating by Moody's.

possible that a number of banks is interested in providing the loan and that they have agreed that one of them will be the lead bank, responsible for the negotiations with the client. [29]

A well-known type of term loan is a bridge loan. A bridge loan is a short-term loan; it is usually for a short period of time, varying somewhere between two weeks and three years. As already implied by the name the loan acts as a bridge. It helps to bridge a certain period in which the firm needs some additional money. Examples are a firm needing some additional money until it performs its IPO or when it needs money to start construction while waiting for the finalization of the arrangements with its financiers.

A private placement is a bond issue sold through a private offering to a small group of people. An advantage of a private placement for a company is that it doesn't have to be registered, which means that it is cheaper and takes less time than a public bond issue. Instead of having to provide the whole prospectus including the indenture, a promissory note is often enough. The promissory note contains the most basic information about the deal, but also contains the promise to pay. Privately placed debt is a bit less regulated than public debt, which makes it possible to adapt the private placement to this specific situation. It is also possible to get a somewhat more direct relationship between the two parties. (Brealey et al., 2009) A private placement might also be used for equity finance, as the shares of a public company are then issued to selected people through a private offering.

3.4 Finance in mining

Now that the possible ways of financing and the different elements from which these kinds of finance can be formed have been discussed, the focus of the research can shift to the specific territory of the mining industry. Firstly, the principal financial institutions for loan finance will be discussed. After that it is time to talk about the types of financing that are used in the mining industry as some financing methods are specifically used in the mining industry. Those will be reviewed later on. After that the focus will be on something different that is also very important in (the financing of) mining, as the last part of this chapter will revolve around the risks related with financing mining projects and how these risks can be reduced. Risks are very important in mining as they often largely influence whether a project can be done economically viable or not. Both miners as well as banks/capital providers have to deal with risks. These risks are not entirely the same however, so the risks will be discussed separately for both parties. Banks play an important role in providing debt finance to the mining industry (Seymour, 2013), therefore it is also necessary to take a

[29] Interview ING

look at the stricter regulations imposed on banks and their possible effect on the presence of banks in mining.

To access public equity, mining companies can, like all other companies, list on a stock exchange. Around the world, there are four main stock exchanges where historically most financing for the global mining industry has come from. These are the stock exchanges of Toronto (TSX and TSX-V), Johannesburg (JSE), Sydney & Perth (ASX) and London (LSE). All locations have historical ties to mining. Most mining companies are listed in the country where they have originated, although the majors are often listed on more than one of those stock exchanges. The stock exchange of London has the largest market capitalization by mining companies, while the stock exchange of Toronto has the most mining companies listed. The TSX-V is considered the source in the mining industry for venture capital. It allows smaller mining companies, that aren't yet big enough to be allowed to enter the other stock exchanges, to have access to public capital. Interesting is the case of Brazil. The graphs show a large market cap for Brazil, but a low number of mining companies listed. The stock exchange in Brazil has such a large mining market cap because of the large market cap of Vale, one of the three largest mining companies. We also see that the stock exchange of Johannesburg in South-Africa in both mining market cap and mining companies listed has been passed by a number of other stock exchanges. To further illustrate the size of the largest mining companies, a graph on the development of BHP Billitons's market capitalization from 2008 until now can be seen in appendix 4.

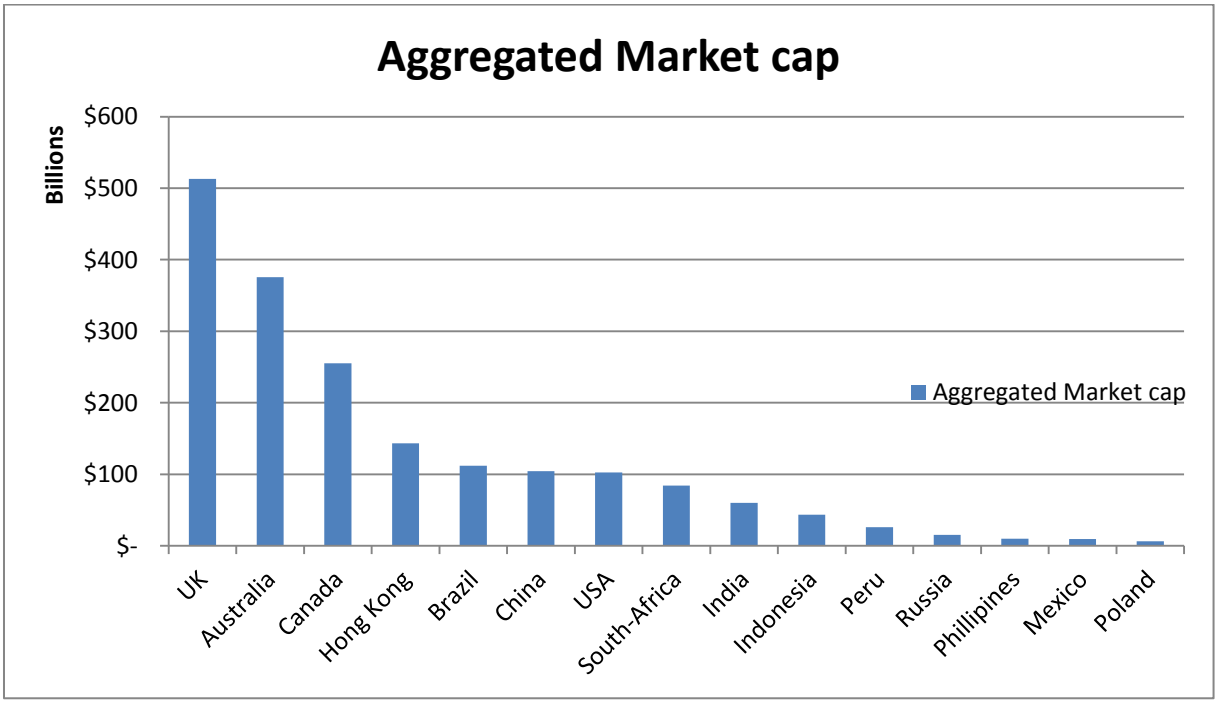

Figure 8: The largest aggregated mining market caps listed on 15 national stock exchanges (Source: Bloomberg)

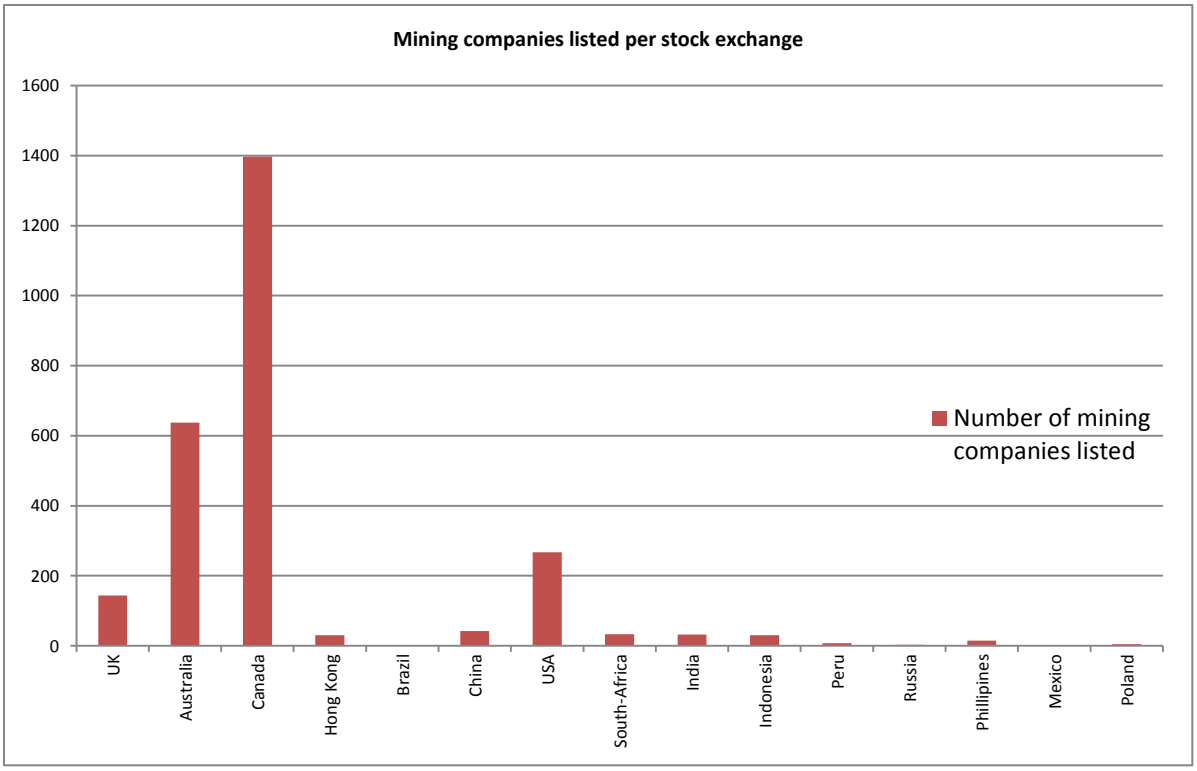

Figure 9: Number of mining companies listed on 15 national stock exchanges, based on aggregated market mining caps (Source: Bloomberg)

For mining companies that are looking for debt finance there are (mining) banks such as Standard Bank, Nedbank, RMB, Standard Chartered, Societe Generale, BNP Paribas, Unicredit, Barclays and ING who have strong track records in mining. They have been active in mining finance for a long time and therefore have a lot of experience. There are also multilateral institutions and development banks such as the International Finance Corporation, European Bank for Reconstruction and Development, Inter-American Development Bank and the African Development Bank. Those organisations focus on the development of the private sector in emerging markets by investing in companies that show they have promising plans.[30]

Banks are not the only ones active in providing debt to mining companies. Other sources for capital are the following:

- Export Credit Agencies can provide finance linked to the value of the imports from a certain country. e.g. Export Development Canada ("EDC").
- Royalty and Streaming Companies – Silver Wheaton, Royal Gold, Franco Nevada and Sandstorm.
- Investment funds specialised in mining such as Red Kite, Waterton Global.

[30] Interview Paul Mainwaring, Vice President at Endeavour Financial

- Equipment leasing companies such as Caterpillar, GE Finance, Komatsu, Atlas Copco
- Off takers – companies often willing to provide capital in exchange for the product off take. Examples such as smelter and refining companies and traders such as Glencore, Trafigura, Louis Dreyfus.

In the next sections, firstly the role of commercial bank financing will be addressed. This will be followed by a more detailed explanation and differentiation of royalty and streaming financing. Subsequently another mining specific way of financing will be discussed as flow-through shares will be explained. Flow-through shares are only used in Canada, where they are used to finance especially exploration activities. To conclude the sections about the types of financing used in mining, the pre-export finance and project finance for the mining industry specifically will be discussed.

3.4.1 Commercial banks

The goal of commercial banks is to make a profit. Banks like ING have departments that are called "specialized lending", this department has to earn the money to finance other parts of the bank and to make profit. The mining section is part of this department as well.[31] Banks want to make a profit from lending out money, but since the start of the crisis they don't want to take too much risk. As a result, banks reduced their presence in the high-risk mining industry, as it was deemed to be too risky. As the banks have restored their balance sheets, they started to increase their presence again. (Blas & Makan, 2013) They are however still a bit reluctant to invest in the mining industry, not only because of the risks, but also because of the lower metals prices. These decreasing prices have lowered profits, which also means that the risks for the banks are higher as profit margins have decreased.[32]

Partly due to the risks, some banks that are active in the mining industry prefer to only join the mining sector from the construction phase on. From this stage the risks are much lower and clearer than they are in the exploration phase. So they don't finance explorer companies, as these are financed through equity financing and venture capital as discussed in sections 2.3.1 and 2.3.2. Explorers are high risk-high reward, when the project is successful an investor can earn a lot of money, but when the project fails the investor has lost his money. Some banks that are more prepared to take risks however do invest a bit in juniors and explorers, in that case they usually use

[31] Interview ING
[32] Interview Patrick Willis, general manager mining Turgis

project finance. More risk-averse banks choose to only finance the majors, as the risks associated with this kind of company are a lot lower. In this case corporate finance is usually used. When a bank takes on more risk, it demands in exchange a higher interest rate and higher fee (% of total amount) for their loan than it would demand when taking on less risk.[33] When a major like BHP Billiton wants to get a loan, it can usually get a loan against an interest rate of less than 3% (Libor + 1%).[34]

Most of the time it is possible for banks to invest onshore, but to be paid back offshore. This is important to banks, as this makes it easier to get the money back to the banks home country. However some countries don't want the money to leave their country and make rules to prevent banks from returning money to their home country. This can deter banks from investing in projects from these countries.

3.4.2 Streaming company

A relatively new and interesting way in which mining activities nowadays are sometimes financed are through streaming companies. There are two types of streaming arrangements possible: royalty financing and metal-streaming financing. With royalty financing a royalty company or a financial institution provides a miner with capital, which it can use to, for example, to expand its operation of fund construction. In exchange for this capital the capital provider gets a share in the project's future revenue, but the miner doesn't have to repay the money or pay interest like with a loan. Royalty financing is mostly used for projects that are almost ready to start producing and where the level of production is estimated to be rather stable and for a long period. With metal-streaming financing a streaming company provides capital to a miner in exchange for the right to purchase a percentage of the production of the miner against a specified large discount price. The streaming company then can sell the mineral on the market for the market price, from which it can make large profits. Metal-streaming finance can be used for mine construction, but most often it is used for mines that are already being developed or where operations have started.

Streaming companies have become an interesting source of financing for especially juniors during the crisis, as other ways of financing became more and more unavailable to them.[35] Banks wanted to avoid risky investments, so the juniors became much too risky for them. And investors also became a lot more careful with their money, reducing their investments in the juniors. So juniors had to search

[33] Interview Patrick Willis
[34] Interview ING
[35] http://business.financialpost.com/2012/07/24/miners-forced-to-get-creative-as-traditional-financing-sources-dry-up/

for other sources of capital. One of which was streaming arrangements, where one advantage is that deals with streaming companies can be completed in a shorter time than loans by banks. Another reason that makes streaming companies interesting is that the capital provided is no debt, so there is more flexibility than with bank loans. It also doesn't have the negative effect of equity that by distributing shares over a lot of people dilutes the say of the company, as the capital provider doesn't become a shareholder. As a result, the capital provider doesn't have any control over the firm. So there have to be certain agreements between the miner and the streaming company.

One fast growing streaming company that started operations during the crisis, but still succeeded to get the financing needed to be able to finance other companies, is Sandstorm Gold. They raised capital by offering their stock in a public offering, where retail and institutional investors bought their shares. After they had closed their first deals, they could use the profits from the sale of the minerals to provide new capital to other projects.[36]

3.4.3 Flow-through shares

Flow-through shares are normal shares, but include an agreement for a tax transfer as well. They are only used in Canada. Flow-through shares are shares or the right to buy a share of the stock of a mining or an oil exploration or junior company. This flow-through share gives those companies the possibility to pass through their tax break on exploration to the holders of the flow-through shares. The individual pays an amount of money for the share, while the corporation promises to transfer some of its exploration expenditures to the individual. These commitments are included in an agreement. Exploration and junior companies don't have revenues when they are doing exploring activities. While large companies can use their exploration expenditures to lower their profit in order to lower their taxes, the exploration and junior companies lack this possibility as they don't have profits. But they are allowed by Canadian law to transfer these expenses to individuals, as is done through the flow-through shares. Those companies benefit from this possibility by raising money from selling those shares, which gives them another source of finance. It is especially helpful to firms that are having trouble to get finance from other sources. (Hasselback, 2007)

Advantages of flow-through shares to the mining industry are e.g. that it helped create public venture capital in addition to the already existing private venture capital, that it generates incremental spending which benefits local economies and that it represents facilitation by the government of private risk capital spending instead of having the government spending money

[36] http://www.startup30.com/blog/changing-the-financing-landscape-of-the-entire-mining-industry-nolan-watson-of-sandstorm-id2128.html

directly which would have much less effect. But perhaps the most important effect of the flow-through shares is that it has created a large innovation cluster in Canada. Canada has become the largest source of mining capital with its TSX and TSX-V stock exchanges, has a lot of high-skilled human capital and is home to a large amount of mining companies, especially juniors and explorers, which leads to an entrepreneurial spirit. (Sutin, 2012) [37]

3.4.4 Project finance in mining

Project finance in mining by a bank is generally meant to be long term. The loan can be for the duration of five or six years, but it can also be for more than fifteen years. Project finance is used for the financing of the construction of the project. A mining company has found a mineral deposit and is convinced that it can be mined economically. (The exploration phase is usually financed with venture capital and issuing shares, this will be discussed in more detail in chapter 4.) It then goes with his ideas to the bank and has to try to convince the bank of the great possibilities of the deposit found. As stated in chapter 2, the miner needs a lot of money for the construction of the mine. So to get the funding needed to start construction, he has to get money from the bank. As there are no cash flows yet, the miner promises to pay back the loan with future revenues. Because of the uncertainty of those revenues, more thorough analysis by the bank is needed, as the risks of this project are higher. The financing is ring-fenced; this means that in case of default of the project, while the miner can also have other projects, the bank cannot get money from those other projects.[38]

In order to convince the bank, the miner uses his bankable feasibility study. This study contains inter alia geological, engineering, social-environmental and financial analyses. This overview of analyses should give banks the possibility to estimate the possible risks and returns of the project. But the banks want to do their own research as well. They usually have their own in-house mining specialists, but a lot of banks also hire independent consultants when their own capacity isn't sufficient.[39] Those specialists perform the due diligence for the bank, to make sure that the bankable feasibility study of the miner is correct. They check whether all steps from the geology, the method of extraction, the way of processing and the way of getting the mineral on the market are done correctly and realistic.[40] They also judge the quality of the management team, as both banks and specialists emphasize the importance of the quality of the management team for the success of the mine.[41]

[37] Interview Willo Stear
[38] Interview ING
[39] Interview Patrick Willis and interview Paul Mainwaring
[40] Interview Patrick Willis
[41] Interview ING and interview Patrick Willis

In order to be able to judge a project, the bank or the independent consultants it hires, compare the risks of a project with the rules and regulations in place for projects for banks. Those rules and regulations are recorded in the equator principles. The equator principles are according to the site of the association "a risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making."[42] With this framework it is possible to compare projects to a generally agreed standard. To make a decision about the project, the gap-method is often used.[43] If the differences between the project and the equator principles are very small, so the gap between the found risks and the standardized risks, the decision will be very likely positive. When the gap is large, the decision or advice will probably be negative. In between, the bank might give the miner conditions with which it should comply in order to get the financing. If the miner doesn't comply with the conditions, the bank won't give the loan, not even a percentage of the desired loan.[44]

3.4.5 Pre-export financing in mining

For the mining industry banks prefer to provide miners with pre-export financing when production is already underway for some time. The most important questions for banks are whether the mine can keep on producing and if they have sufficient additional funds available to repay debt. An example of a pre-export finance is a $100 million loan provided by ING to a miner for three years, where the lender had to repay $50 million after the second years and the other $50 plus interest after the third year.[45] Banks prefer providing loans to mines operating with low costs. Low costs usually mean larger profit margin, which results in the firm being able to keep operating and make a profit when metal prices decline. And even when the metal prices decline because of decreasing demand, this means that the lower costs companies can continue operating while those with higher costs have to cease mining.[46]

3.4.6 Risks associated with mining projects for banks and miners

As already discussed, the mining industry is a quite risky industry. It is difficult to find a mineral deposit, it is also hard to determine the exact size of a deposit or metal prices may change a lot over

[42] http://www.equator-principles.com/index.php/about
[43] Interview Patrick Willis
[44] Interview ING
[45] Interview ING
[46] Interview ING

the lifecycle of a mine. These are just a few examples which illustrate the risks and uncertainties that are related to mining. And the risks can't be ignored, as they can make the difference between a very successful project and a big disaster. In this part of the chapter the risks associated with mining projects for both banks and miners will be discussed.

The risks of mining projects for mining companies are[47]

- Geology
- Can the deposit be economically viable mined?
- Social and environmental issues
- Political risks
- Infrastructure risks
- What is the current market for this commodity and what are the future expectations?
- Exchange rate risks

As a miner is searching for a mineral deposit, there is obviously the risk that he can't find anything in the region where he is searching. This risk can be called the geology risk, as geological research is done to determine where to search for a possible deposit. When the miner has found a deposit, he has to determine its size and whether it can be economically viable mined. This is of course instrumental in the decision to start construction there or continue exploring elsewhere. The answer to the question whether the deposit can be economically viable mined is also determined by other risks. Infrastructure risks, political risks and social and environmental issues are all important as well as the current and future outlook of the market for the commodity/commodities mined. Good infrastructure is important for a miner, as he must be able to get its minerals to its clients, so in most cases the mineral must be transported from the mine to a port. Infrastructure risks however are larger in less developed countries, like in Africa, where the quality of roads is lower or where there aren't even roads yet. Bad infrastructure might lead to higher costs, which threatens the economic viability of the project.

Dealing with social and environmental issues has become more and more important for mining companies. Mining has large effects on the environment and the surroundings of the mine and miners understand that the public opinion no longer will accept the old way of mining, so therefore they have to adapt their way of working. (Humphreys, 2001) Miners have to make sure that the local people agree with the mining activities, they need some sort of social license to mine, to make sure

[47] Interview Jim Pooley

that big riots like in South-Africa are prevented.[48] The surroundings have to agree with the mining, otherwise the project is doomed to fail or it isn't even worth it to start it. In their plans miners have to make clear to local people and government what the benefits of the mining project are for them and how the miner plans to keep the damage to the environment as limited as possible. If the government deems the plans not adequately enough, it might suspend the miners operations until it has changed its plans.[49] When the relation with the locals is good and stable, the social-environmental risks are not high. However if the relation is bad, this can become a threat to the operations like in South-Africa. This will increase the risks immediately.[50]

Another risk that is very important and that is strongly related to the social-environment risk is the political risk. Political risk is higher in countries where the political leadership is unstable, where there is uncertainty regarding the (environmental) regulations and the monitoring of those regulations, where there is corruption, where mining taxes might be implemented or increased or where the government wants to keep all profits in their own country, by forbidding offshore payments. Most mining companies prefer to stay away from regions where the perceived political and social-environmental risks are high. In Western countries like the Netherlands, the rules and the monitoring of those rules are clearly regulated, this means that social-environmental and political risks are lower than in countries where these regulations and its monitoring are not regulated. [51]

The Fraser Institute from Canada surveys mining companies annually about their opinion how "mineral endowments and public policy factors such as taxation and regulation affect exploration investments." (Wilson, McMahon and Cervantes, 2013) The European countries of Sweden, Finland and Norway have the highest scores, along with most of the regions in Canada. Among the countries included, the ones that score the lowest are Venezuela, Vietnam and Indonesia. Another country that scores low is Egypt, which is understandable because of the political turmoil over the last years. (Wilson, McMahon and Cervantes, 2013) When a mining project takes place in a country where the risks are higher, mining companies might decide to search for finance for a small part of their operations. When they have earned back this money, they try to get money to expand their project a bit more, after which they again first want to earn back the money, before expanding further. So the project is expanded in steps, in order to reduce the risks for the investors.[52]

[48] http://www.nytimes.com/2012/09/13/world/africa/south-african-labor-unrest-in-mining-deepens.html?_r=0
[49] http://www.miningweekly.com/article/chile-court-keeps-freeze-on-barricks-pascua-lama-mine-2013-07-15
[50] Interview Patrick Willis and interview Jim Pooley
[51] Interview ING
[52] Interview Jim Pooley

Exchange rates and metal prices are also risk factors. Lower metals prices mean lower profits and therefore higher risks. Prices are pronounced in US $, but the mining happens in a lot of countries that have another currency. So for the firm there is an exchange rate risk. When the currency of the country in which the firm mines gets stronger, the firms earns less. When the currency of the country in which the firm mines gets weaker, the firms earns more.[53]

As mentioned earlier, when banks are approached to invest in a mining project, they check whether the bankable feasibility study of the miner is correct and reliable. But there are also several risks they have to take into account when deciding whether to invest and what compensation would be reasonable in case of investing. Banks place the following risk criteria on possible mining projects:

- Project risk
- Completion risk
- Production risk
- Political risk
- Social-environmental risk
- Reputation of the bank
- Quality management team

The project risk is the general risk associated with the project, it is the always present risk for an investor that their might happen unexpected things or that things turn out a bit different than expected. Though this risk can be a lot lower for certain projects than for others. Unexpected things might happen especially in mining, because for example despite the technological improvements, it is still very hard to predict the exact size of a mineral deposit. In order to get a more generally agreed estimation of the size of mineral deposits, there are codes or mineral resource classification schemes used to unveil information about mineral properties. Mining firms that want to be listed on stock exchanges have to follow the rules and guidelines that are agreed in this code or mineral resource classification scheme. Examples of these codes are the NI 43-101 in Canada and the JORC code in Australia. They set rules for displaying public information about the mineral properties of mining firms. The implementation of these rules is done in order to prevent large stock frauds like the Bre-

[53] Interview Patrick Willis

X[54] Minerals ltd. firm and therewith protecting (possible) investors. The codes establish the requirements that the reports of the firm have to meet. The report has to be backed by a qualified person; this is defined as a mining engineer or geoscientist with more than five years of experience in exploring and accepted by a mining association. The report also has to include standardized feasibility studies and sample preparation and analysis. Feasibility studies must also be performed after the decision about which mining method and method of mineral processing to use is made. [55]

The completion risk is the risk for the bank that the construction of the mine might not be completed in the expected way, as it might be that the mine is not constructed in the desired time or according to the estimated budget. It is also possible that an accident happens or that there are troubles with the government. Delay or cost overruns lead to higher costs for the entire project. When the mine is completed, the completion risk is substituted by the production risk. The production risk is the risk that is related to the production. During production it is also possible that there is an accident or problems with the government or with the local people or that costs rise too high after a few years of production. Other risks during the production are risks like exchange rate risk and taxes. Banks usually don't have to deal with these risks. It is often contractually agreed between both parties that these risks are borne by the miner.[56] But when it is estimated that there might be serious exchange rate risks or changes in metal prices, specialists in predicting these areas for the long term are hired by banks or by other independent consultants like Turgis, to determine whether these changes might be important to the project and thus the possible investor.[57]

The political risk and the social-environmental risk are already discussed for the miner, but for banks these risks are also important. These risks influence the economic viability of the project and the chances that the project might fail. Banks have to make sure that they are not involved in projects that are harming the environment or that are socially unacceptable, as this is very bad for their reputation. And the reputation of the bank is the most important aspect there is for the bank. So banks want to prevent being involved with projects that can have a serious negative effect on their reputation. Especially because of the financial crisis, there is a lot more scepticism involved towards banks from the public. Therefore they have to act more carefully than before.[58]

[54] The firm said they found a large gold resource in Indonesia, which led to an enormous increase in the firms stock price. However it turned out that the firm falsified its findings by salting its samples with gold. This fraud cost a lot of investors a lot of money.
[55] http://internationalinvest.about.com/od/researchingglobalstocks/a/What-Is-A-Ni-43-101-Report.htm ; http://www.jorc.org/
[56] Interview ING
[57] Interview Patrick Willis
[58] Interview ING

As already briefly touched, the quality of the management team is one of the most, if not most important, aspects when determining the risk of a project. When the bank or consultants note that there is an experienced management team in place, that has already done a number of projects, they are already quite sure that the project has a very good chance to be successful. Good management can also be seen just from the state of the workplace, as a nice and tidy workplace also is a good sign. When the management team doesn't have experience, the bank or consultants are much more careful. Then they really want to make sure that the feasibility study is correct and that the management is properly supported. So the risks for a project with experienced management are much lower than those for a project with less experienced management. [59]

Risks for the miner	Risks for the bank
• Geology	• Project risk
• Can the deposit be economically viable mined?	• Completion risk
• Social and environmental issues	• Production risk
• Political risks	• Political risk
• Infrastructure risks	• Social-environmental risk
• What is the current market for this commodity and what are the future expectations?	• Reputation of the bank
• Exchange rate risks	• Quality management team

Table 6: Overview of risks for the miner vs. risks for the bank

3.4.7 Risk mitigation in mining

Risk mitigation is the reducing of the firms' possible exposure to risks. There are certain ways in which banks can make sure that these risks are reduced. It can, for example, be contractually agreed that the sponsors of the project bear the completion risk. When the construction of the project then is delayed or becomes more expensive than predicted, the sponsors have to compensate the difference. Another possibility is that an export credit agency bears the political risk. As a result of risk mitigation, the interest rate also can get lower, as the bank takes on a lower level of risk. [60]

[59] Interview ING and interview Patrick Willis
[60] Interview ING

During the interview with ING there was an example given of the Ambatovy[61] mine in Madagascar in which ING invests. The Ambatovy mine is a nickel mine that should produce 6% of the total world production of nickel, when it is fully operational. The construction started in 2007, should have been ready in 2010, but is at this moment still not finished. Costs were estimated at three billion, but they are now already increased to seven billion. The original financing was distributed as followed: 2.2 billion of debt and 0.8 billion of equity. Despite costs far exceeding estimated costs and severe delays, ING still has confidence in the project because of high level risk mitigation. This is because of the three sponsors involved that bear the completion risk and are still accounting for the rising costs and because of the two export credit agencies that bear the political risk. The high level risk mitigation makes it possible that for this project the interest rate is around 3%.

3.4.8 Stricter regulations for banks

The financial crisis in 2007 gave a clear signal that the capital requirements for banks weren't sufficient for harsh times, emphasized by the fall of the Lehman Brothers bank. As a result, regulations for banks both nationally and internationally are changing and are becoming stricter. One example is the new Basel III agreements, which include stricter capital requirements and stricter rules regarding the registering of credit risks. The purpose of these stricter regulations is that banks take fewer risks. If they still want to take high risks- high rewards opportunities, they have to make sure that there is enough capital available in exchange. As a result, banks try to balance their portfolios. In order to give banks the possibility to adapt to the new rules the agreements are being implemented stepwise. In this way they can gradually deal with the stricter regulations as they have quite an impact on the balance sheets of the bank and it is also to make sure that the banks aren't discouraged to keep on investing, as this would only prolong the economic crisis. Some banks like ING want to comply with these new rules as fast as possible, while others take until the deadline. The goal of ING is to get a competitive advantage by complying with these new regulations as fast as possible. Banks have to comply with these stricter rules in order to make sure they won't need government support again in the future, as the chance that they might encounter financial problems again is larger when not following the Basel III rules.[62]

[61] http://www.ambatovy.com/docs/wp-content/uploads/Best-Africa-Project-Finance-Deal.pdf
[62] Interview ING

Chapter 4: Is the financial structure of mining companies relevant in the case of takeovers?

4.1 Introduction

The previous chapters spoke about the types of companies in the mining industry and the possible ways of financing their activities available to them. This chapter discusses the financial structure of mining companies and especially those of juniors. Furthermore it talks about which debt and equity elements are used the most by mining companies. We will see the developments in the financing types used and will discuss why these developments happen. The return on their investment expected by investors will also be discussed. The focus will then shift to the M&A activity in the mining industry. The current situation is compared to the historical evolution of M&A, to see if the current situation is consistent with history. Afterwards the question is answered whether the financial structure of a mining company/junior is relevant in the case of takeovers.

4.2 Juniors

4.2.1 Effect of the crisis on financing available to juniors

In chapter two the different types of companies in the mining industry are discussed and there the financing of the activities is already briefly touched. Now it is time to get into more detail. As already stated in chapter two, the financing of the activities of explorers and juniors often comes from venture capitalists and from issuing shares on the equity markets.(ICMM, 2012) Before the financial crisis banks were also willing to finance a large part of the activities of juniors. So the juniors could get a (large) part of the needed capital from the banks. But with the crisis and the following credit crunch, banks turned away from all risky investments. This forced the explorers and juniors to search for alternative sources and therefore made it more difficult for juniors to find finance for their projects.

But with the recovery of the mining industry rather quickly after the start of the crisis and the continuing boom in commodity prices, the mining market kept on growing. Especially the majors continued searching for new assets in order to enlarge their supply for the future. This also meant that they kept buying and merging smaller companies into their own company or bought their assets. But the good times did not continue. The mining industry also has to deal with the effects of the financial crisis as the economic growth from China and the other BRIC countries also started to cool down. This has led to lower commodity prices. The confidence of investors is not only threatened by

these lower prices, as political problems related to resource nationalism and continuing bad economic news also have affected their confidence. (IntierraRMG, 2013) As a reaction to these problems the majors understood that they could not keep working in the same way with declining prices as they did when the prices were increasing. They are still very much in the process of focusing on output optimization instead of only increasing their output more and more. This change in focus means that they stop investing lots of money in M&A and do the opposite, they start divesting. The majors want to get rid of the projects with too high costs or that don't fit into their range of specializations. (Seymour, 2013)

While some banks have tentatively started returning to invest in juniors, most haven't returned for now or only focus on the majors, as these are far less risky than the juniors. Another reason that banks have not returned yet is because of the declining commodity prices. This has contracted profit margins, which again means higher risks.[63] The limited presence of banks, the low market confidence of investors and the changed strategy of majors have all contributed to the fact that explorers and juniors now have a lot of trouble finding finance for their activities. Especially the juniors that don't have a lot of cash in reserve or about to start production times or that have management teams with no experience in developing a project are encountering difficulties. (Seymour, 2013) These juniors really have to worry about being able to keep their activities running, because when they cannot find new capital they do not have money to continue exploring or even pay their employees and will have to delist from the stock exchange and cease operations.[64]

4.2.2 Financial structure of juniors

The next section focuses on the financial structure of juniors. What does the balance sheet of juniors look like? Sections 2.3.1 and 2.3.2 already discussed that in order to find the money needed to start exploring, juniors use venture capital and issue of equity. So we know that they start activities with equity financing. But how does the junior get this money? And how does the distribution of debt and equity change over time? These questions will be answered in the remainder of this section.

A junior arises when a group of geologists and/or mining engineers is convinced that they can find a mineral deposit in a certain geological area that they know well. If they are also convinced that this deposit is accessible, that they can acquire the property rights of this area, that they can acquire funding and that they can prove to the government that they have the needed knowledge, then they

[63] Interview Patrick Willis

[64] http://www.miningweekly.com/article/many-broke-exploration-companies-heading-for-delisting-neil-gardyne-2013-07-04

can decide to acquire the property rights to this area. When they have acquired these rights, they need capital to start their activities. They raise this seed capital from their own pockets, from family and friends. Then they have to get the company registered and listed to start activities. Companies want to get listed, as it enables them to raise money from the public and allow the public to trade the shares. [65]

As the company now is listed and has raised money from the issue of shares, it now has the capital to start the exploration program and do geological work, start drilling holes and making geological models. When the junior has found a deposit, it can measure its dimensions with a relatively high degree of accuracy. The company can then determine what the general mineral content is and how the mineral is distributed through the ore body. If the geological studies have provided sufficient information, the company can start with its pre-feasibility study. As stated in 2.2.2 this pre-feasibility has an accuracy of 60-70%, which means that the company has a rather good idea about the rate of return for the capital that is needed in time. With this study, the junior can go back to the public market again or go to other financing providers outside of the market, to banks or other funds and raise capital. However there won't be many institutions interested in providing finance at this moment, so the junior probably has to issue more shares. The company then can continue working towards the feasibility study. As this means that the company has defined a nice ore body, investors are getting more excited about the company and institutional funds are getting interested in the company as well. The share price also will increase rapidly at this stage.[66]

When the company has performed its bankable/definitive bankable feasibility study, which has an accuracy rate of more than 90% and is approved by independent experts, it can use this study to attract finance to start building the mine. There are inter alia mining finance advisory companies (like Endeavour Finance) that are specialised in helping juniors (and mid-tiers if needed) optimise their bankable feasibility study and bring them into contact with banks that might be interested in providing them with a loan.[67] As juniors only have one or two projects, they don't have the cash money or the operational cash flow to finance their projects. As a result they look for project finance.[68] Several institutions will take their own look at the companies' project and will distinguish their own risk criteria etc. Then those different institutions will offer different terms.

[65] Interview Willo Stear
[66] Interview Willo Stear
[67] These companies don't only bring them into contact with banks, they also help searching for off-takers, strategic partnerships and more.
[68] Interview Paul Mainwaring

The development timeline of mining projects makes it more difficult for miners to attract investors. A mining project needs large investments at the beginning for exploration, development and later on construction, but the rewards of these investments can only be achieved over the medium to long term. This is illustrated in figure 10, which shows the time it takes before the project value starts rising. The long investment period needed reduces the interest of investors in mining projects as most other possible investments take a much shorter period to produce a return. While the market would like to see returns in 3-5 years, the reality says that the time from the exploration phase to the production phase often takes ten years or more. (Seymour, 2013) The longer it takes for the investor to gain a profit, the more risk he takes. Finding finance is also more difficult for juniors because they don't have the contacts and the reputation that more experienced firms have. The lack of previous projects also makes it more difficult to judge a new project for investors. This is especially the case for smaller investors interested in investing during the exploration or development phase, as they have less knowledge than larger investors.

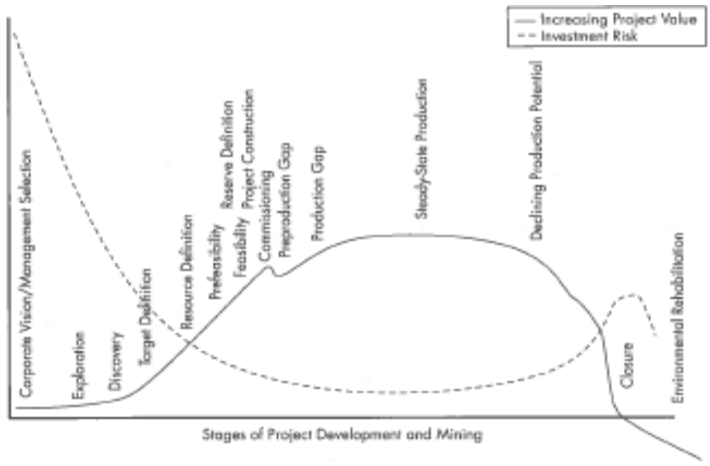

Figure 10: Value of mining project versus investment risk (Source: Perrott-Humphrey, 2011)

In order to find an agreement with a bank to provide project finance, the miner and the bank have to agree about the way the company will be financially structured. Imagine a miner that thinks he needs 600 million to finance the construction of the mine. He already knows that he won't get the entire amount of money from the bank, but he will prefer to get the largest proportion possible. If the bank likes the project, it starts talking about the amount of money that the bank will provide. A big part of the project will be financed with debt, but the bank expects from the junior that he also raises capital by issuing equity. From the interviews with banks, advisory companies and consultants it is understood that the debt-equity ratio that is mostly used at the moment is 60-70% debt and corresponding 30-40% equity. Using this ratio would mean that the hypothetical miner would get approximately 400 million and then would have to get approximately 200 million from equity

providers. Banks nowadays only accept a somewhat lower ratio than before, they want to provide projects with less gearing than in the past. Before the financial crisis the going rate for these projects was 70-80% debt, but to reduce the risks the banks have decreased the percentage of debt they are prepared to take. The commercial banks however often won't provide the entire amount of debt themselves. In the example of the Ambatovy mine in Madagscar, there was needed $2.1 billion of debt. Commercial banks provided $405 million, while for example the European Investment Bank and the African Development bank also lent respectively $300 and $150 million. Export credit agencies accounted for $955 million.[69] Interesting to note is that looking at the mining company with the largest market value, BHP Billiton, BHP has a gearing ratio of only 29%. So their assets have been financed with only 29% debt finance and the rest has come from equity. (BHP Billiton, 2013)

	Debt	Equity
Exploration	0%	100%
Development	70%	30%
Construction	68%	32%

Table 7: Debt and equity percentage during different stages of life cycle of mining project (Source: Interviews)

When a financing deal is made, the company can start the construction of the mine. Especially for emerging producers, this is a stressful time. During the construction, the company only spends money and does not find anything new. Investors will start comparing the forecasts with the results in reality and judge the company based on that. Differences between expectations and reality are the reason why share prices might drop as results show that the expected production is not yet reached just after starting production. (Perrott-Humphrey, 2011) Most companies have to deal with (little) problems during this stage, as there are almost always unexpected developments, mostly regarding the structure of the mine. Only from the moment the expected full production is reached, investors are satisfied and the share price will rise again. At that moment, the most important risks for the miner disappear.

Figure 11 illustrates that in every different phase in the life cycle of a mineral project there are different financiers. It also shows where the company is exposed to the highest financial exposure and where the largest capital investments are done.

[69] http://www.ambatovy.com/docs/wp-content/uploads/Best-Africa-Project-Finance-Deal.pdf

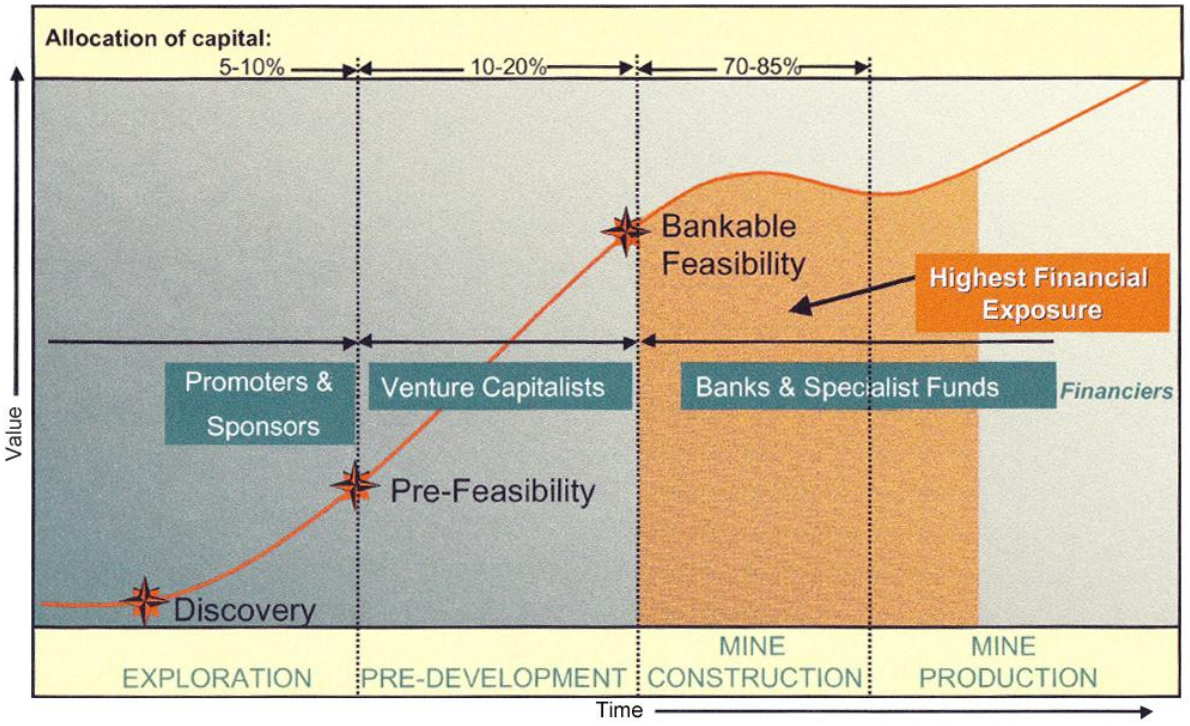

Figure 11. Mineral project value added curve. (Source: Stear, n.d.)

4.3 Availability of finance

4.3.1 Introduction

Until now, this chapter has briefly explained the developments in the mining industry and its effects on the juniors. In addition the financial structure of juniors has been described. This description helps to better understand the financing picture and why they are experiencing hard times at the moment. The next sections will first illustrate how the availability of finance to juniors and later on the rest of the mining industry has changed. Thereafter we give an explanation for these developments and come up with a possible solution for juniors looking for money.

4.3.2 Availability of finance to juniors

PricewaterhouseCoopers (PwC) has published yearly reports about the developments of junior miners over the last few years. They take the largest 100 miners listed at the TSX Venture Exchange, based on the size of the market capitalization of these companies at the 30th of June. From these reports the debt issued by these companies can be taken. This can be seen in table 8. The results show that the issued debt is quite volatile. In 2009 the juniors suffered from the start of the financial crisis and credit crunch. But they recovered strong in 2010, which is evidenced by the strong grow of issued debt. However new problems can be seen in 2011 and 2012, where the issued debt again has

dropped. The amount of debt issued declined with 37,7% in 2012 compared to 2010. To illustrate the increasing problems for the juniors in getting equity finance, the figures from PwC show that the 100 miners only raised US$1.55 billion of equity finance in 2012 compared to US$2.61 billion in 2011, a decrease of 41% compared to 2011.

	2009	2010	2011	2012
Total debt issued (*1000 $)	$157.118	$389.546	$254.235	$242.739
% change		147,93%	-34,74%	-4,52%

Table 8: Debt issued top 100 juniors TSX-V 2009-2012 (Data from PwC, 2010, 2011, 2012)[70]

The PwC reports not only show the total amount of equity raised, but also give an overview of the different types of equity used. This makes it possible to see which of the types of equity as discussed in chapter three are used and which are the most used at this moment. Table 9 shows that the bought deal was the most used type of equity finance in 2011 with 43%. This percentage dropped to 29% in 2012. A bought deal is a public offering where the investment bank buys the entire offering of its client. The bank buys the shares for a discount and then tries to sell the shares or the higher price in order to make a return.[71] The miner benefits from the security that he can sell all his shares.

Year	Bought deal	Private placement	Flow-through shares	Public offering	Other
2011	43%	39%	7%	5%	8%
2012	29%	44%	8%	3%	14%

Table 9: Equity financing of top 100 juniors TSX-V 2011 versus 2012 (Source: PwC, 2012)

The private placement is a widely used source of equity finance. This is illustrated by the fact that approximately two fifth of the total equity finance consists of private placement. In 2012 it even was the most used type of finance. Flow-through shares also prove to be an important source of finance to junior miners, as in 2012 8% of the equity finance came from flow-through shares. Other types of equity accounted for 14% of the issued equity by the top 100 TSX-V companies in 2012.

Getting equity financing from issuing shares through "normal" IPOs and SEOs has become more difficult. Over the last few years investors have become very shivery to buying shares from juniors. This reluctance has led to less interest in buying shares and the investors that still want to buy shares, don't want to pay much. As a result, the majority of IPOs that have been performed have led

[70] (conversion rate 1 CAD= 0,967973 US$)
[71] The bank takes the risk that they aren't able to sell all the shares or that the price of the shares becomes lower than expected.

to a strong dilution of the ownership of the firm. (Seymour, 2013) The focus here is on the amount of IPOs performed, the reasons for the reluctance of the investors to buy shares in IPOs will be discussed in more detail in section 4.3.4. Despite averaging only $4 million in proceeds from SEOs in 2012, even lower than the $6 million in 2011, there are still juniors performing SEOs. They want to raise any money, just to be able to stay alive. Other juniors perform IPOs in order to make themselves known to the public.(E&Y, 2013)

Table 10 clearly shows that after the start of the financial crisis the amount of IPOs fell very quickly. The years 2010 and 2011 revealed a tentative increase. However, despite the fact that it doesn't clearly show in the table, 2012 was a bad year for IPOs. In Q1-Q3 only 25 IPOs were performed, but a sudden uprising led to a lot of IPOs in Q4 of 2012. However this couldn't hide the fact the proceeds of the IPOs were decreasing.[72] The uprising in the amount of IPOs was also quickly squashed again, as there were no IPOs at the TSX-V in the first quarter of 2013.

	2007	2008	2009	2010	2011	2012	2013 Q1
Number of IPOs at TSX-V	116	39	29	47	46	44	0[73]

Table 10: Number of IPOs at TSX-V 2007-Q1 2013 (Source: based on information from PwC, 2012)

4.3.3 Development of finance available to all mining companies

From here on the focus will again broaden. After the focus on juniors in the previous section, we will now take a look at the most important debt and equity elements used as they can be observed in the mining industry in general. Are the developments that can be observed the same for the mining industry in general as we already saw for the juniors or are there clear differences? This section also examines whether we see the earlier described developments in the industry reflected in the numbers.

[72] http://www.ctvnews.ca/business/q4-delivers-surge-in-ipos-in-canada-but-overall-value-down-at-1-8b-1.1099901

[73] http://www.bnn.ca/News/2013/4/1/No-new-mining-IPOs-for-the-first-time-in-a-decade.aspx

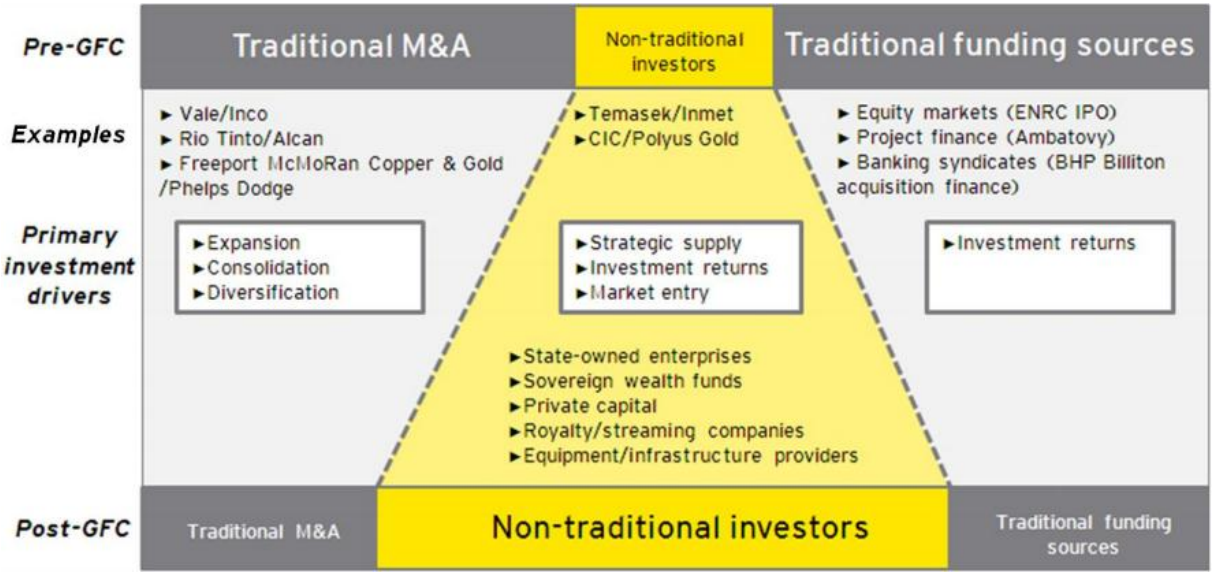

Figure 12: Growth of non-traditional investors' share of industry financing/M&A (Source: E&Y, 2013)

The figure above, obtained from a report of Ernst & Young (E&Y), illustrates the developments in the mining industry concerning the financing of mining activities and M&A. Although the figure is not entirely to scale, the figure clearly shows that the share of non-traditional investors has increased a lot during the global financial crisis (GFC). This increase has come at the expense of the traditional types of financing and M&A. The decreasing share of those traditional types has to do with the financial crisis and consequently the reluctance of investors to invest during these financial bad times. Another reason for these changes however is the entrance of sovereign wealth funds (SWFs) and state-owned enterprises (SOEs) to the mining market. They have enormous amounts of capital to invest and their primary goal is to secure the strategic (future) supply of materials for the country of their origin. In the next chapter both will be discussed in much more detail. This chapter will focus on the developments in the traditional finance and M&A and why their share has decreased.

As we already saw when talking about the financial structure of the juniors, the IPOs and SEOs are having a tough time. The proceeds from IPOs in the mining sector worldwide fell to 1.4 billion, a level even lower than the previous low point in 2009. The proceeds fell no less than 92% in comparison to 2011, when the proceeds were 17.4 billion. Firms performing SEOs also endured a disappointing year. The proceeds of SEOs fell from almost 50 billion in 2011 to 26 billion in 2012. This means that the proceeds in 2012 were just slightly more than one-third of the proceeds in 2009, when proceeds from SEOs peaked around 74 million. (E&Y, 2013)

The stock exchanges where the majority of IPOs were performed in 2012 were the TSX-V and ASX. The most information is available about the TSX and the TSX-V in Canada. Looking at the numbers of these stock exchanges (Table 11 and appendix 2), it is obvious that 2010 was a very successful years for IPOs. With respect to SEOs the proceeds were highest for 2009, but the amount of issues was also

highest in 2010. In 2011 and 2012 the numbers show that there are less IPOs and SEOs performed and that the proceeds also decrease. The percentage with which the proceeds decline is higher than that of the volume, which means that the average value of an SEO also becomes lower. While the proceeds in 2012 rose in comparison with 2011, this can be explained by the very successful IPO of Ivanplats which raised US$ 305 million.(E&Y, 2013) Without this IPO the proceeds were less than far below $100 million.

		2009	2010	2011	2012
IPOs	# IPOs	43	93	70	49
	% change compared to year before		116,28%	-24,73%	-30,00%
	Proceeds $m	$ 22,26	$ 1.269,98	$ 350,41	$ 378,48
	% change compared to year before		5604,35%	-72,41%	8,01%
SEOs	# Money raising issues	2179	2315	1921	1655
	% change compared to year before		6,24%	-17,02%	-13,85%
	Proceeds $m	$ 21.086,32	$ 15.910,57	$ 11.724,09	$ 9.581,96
	% change compared to year before		-24,55%	-26,31%	-18,27%
	Total proceeds	$ 21.108,59	$ 17.180,55	$ 12.074,50	$ 9.960,44
	% change compared to year before		-18,61%	-29,72%	-17,51%

Table 11: # IPOs and SEOs and their proceeds at the TSX and TSX-V from 2009-2012 (Source: Based on data Sprague & Patel, 2013, adapted by author)[74]

The capital raised from both bonds as convertible bonds increased in 2012 compared to 2011. The proceeds from bonds have shown a steady increase from 2007-2012, as they rose every year in this period. Using bonds to raise debt allows miners to find other sources for debt finance and become less dependent on banks. As a result of the financial crisis, interest rates are on historically low levels. This has increased investors interest in bonds. The average coupon rate for financially stable miners on 5-10 year US$ notes was 3.9%, down from 4.7% the year before. The coupon rate for less stable miners, like juniors, was around 9%. (E&Y, 2013) The major miners are rated as investment grade bonds and therefore they are popular with investors. This makes bonds a very good way to obtain finance for these majors. For juniors and mid-tiers, that have low investment grades, it was much more difficult to get finance. The proceeds from convertible bonds showed a tentative recovery in 2012 after a strong decline over the last few years. The convertible bond volume also increased, so

[74] (conversion rate 1 CAD= 0,967973 US$)

the average proceeds didn't increase. This might be explained by a focus on financing juniors, as convertible bonds are one of the remaining alternatives in order to find finance. Convertible bonds remain interesting to investors as they are protected in case of financial problems, but with the opportunity to benefit from future profits. (E&Y, 2013)

Capital raised from loans saw a significant decline in 2012 compared to 2011, as in 2012 106 billion was raised compared to 187 billion in 2011. As already discussed in chapter three, banks have to deal with stricter regulations as a result of the Basel III rules and therefore try to reduce the amount of high-risk assets they have. Most banks therefore focus more on the majors, which are much less risky than the juniors. So the majors still can get finance from the banks, while they also have access to the bond market. For most of the juniors and mid-tiers the situation is far worse, as banks only have interest in the best and least risky projects. This has made it difficult for a lot of juniors to get any bank finance. Interesting to note from the use of the raised capital is that more than 50% of the bank finance in 2012 is used for refinance and that only 5 billion dollars was raised for project finance. This further emphasizes the shift in providing project finance from traditionally banks to other sources like SWFs and development banks. Table 12 and figure 13 summarise the numbers as provided in this section.

	2007	2008	2009	2010	2011	2012
IPOs	21,400	12,406	2,997	17,948	17,449	1,338
SEOs	66,902	48,751	73,906	49,705	49,745	25,950
Convertible bonds	12,965	12,238	14,431	5,477	2,365	3,537
Bonds	36,358	38,146	61,016	72,502	93,904	112,539
Loans	110,787	171,691	62,420	183,875	187,059	105,981
Total	249,212	283,232	214,660	329,507	340,422	249,394

Table 12: Capital raising per asset class 2007-2012 (Source: Data from E&Y, 2013 adapted by the author)

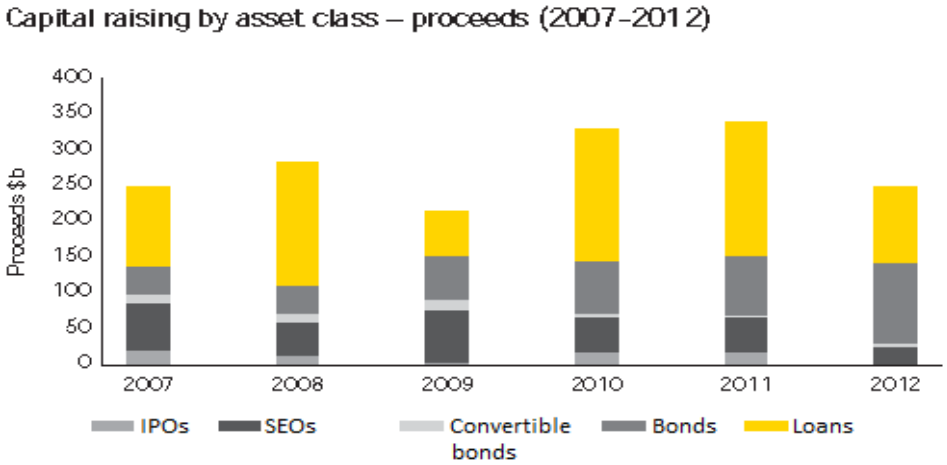

Figure 13: Capital raising per asset class 2007-2012 (Source: (E&Y, 2013)

4.3.4 Explanation of the effects of the crisis on the availability of finance

Sections 4.3.2 and 4.3.3 showed the developments of the availability of finance over the last few years. The market has gone through a very successful period, but is now enduring a difficult period. These developments have their consequences for the finance needed by the miner and the finance available in the industry. The mentioned sectors showed that the sources of debt are changing and that it has become difficult to raise equity. This last development makes it more difficult to find the needed finance for exploring. This section will discuss why we see these developments and what the possible effects are of declining exploration budgets on exploration activities.

Debt finance is still available as the gap left by the banks is filled by other parties. Banks have reduced their investments to decrease the risks they take, but inter alia SOEs and SWFs see that there are still a lot of opportunities to take. This has kept the competitiveness of the debt market high, as all debt providers are looking for the high growth opportunities. Another reason why the debt market is doing better than the equity market is the difference in the risks involved with equity and debt financing. Because of the higher risks involved with equity finance, investors are much faster scared away from investing than with the less risky providing of debt.

Equity financing also suffers from low returns, which is largely a result of the financial crisis and economic downturn. The combination of low returns and high risks has discouraged investors from investing in equity financing. They are shying away of the high risk, which is typical for mining and especially the juniors. The lowered interest of investors in equity and the descending returns also lower the valuation of the company by its shareholders, as the demand for the shares fall. The market capitalization for the big mining stock exchanges has reduced in the last one and a half year, as can be seen in table 13. The fall in equity financing is further illustrated in figure 14. The aggregated value of equity financing for all mining companies dropped from more than $55 billion in 2010 and 2011 to less than $3 billion in 2012, while the volume of deals also sharply declined. At the TSX-V and AIM[75] exchanges, important for juniors looking for finance, in 2012 less than $500 million in equity finance was raised. A drop of more than $5 billion compared to the years before.

[75] AIM is part of the London Stock Exchange and offers an international market to smaller growing companies.

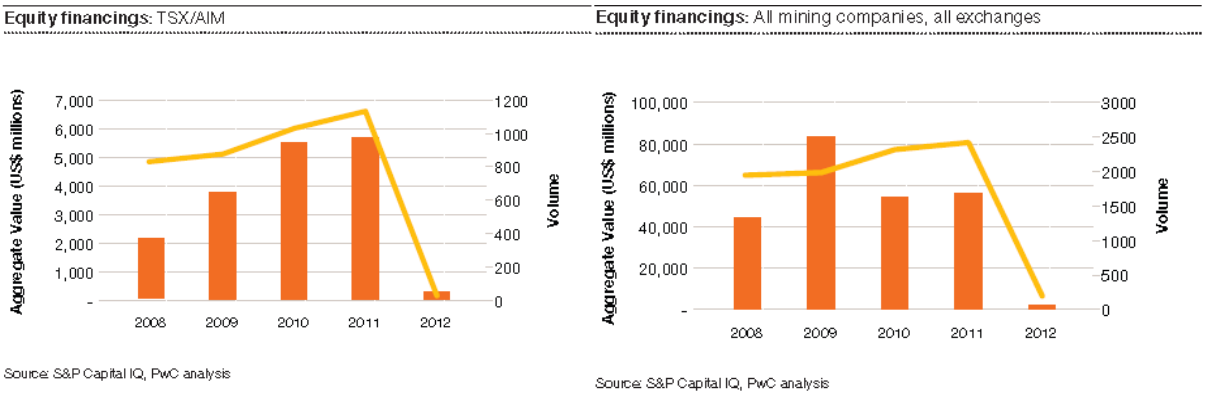

Figure 14: Development of equity financings from 2008-2012 (Source: Mullowney, Hogan, & Nyholt, 2013)

	LSE		TSX&TSX-V		ASX		JSE		HKSE	
	1-1-'12	15-8-'13	1-1-'12	15-8-'13	1-1-'12	15-8-'13	1-1-'12	15-8-'13	1-1-'12	15-8-'13
Mining companies listed	143	144	1376	1397	649	637	36	33	41	30
Aggregated market cap miners(US$)	601	513	283	255	440	375	94	84	98	143

Table 13: Market capitalization and number of mining companies listed at 5 large mining stock exchanges (Sources: (Tarleton, 2012) and data obtained from Bloomberg)

Section 4.3.2 showed that bonds are a very popular way of debt finance. The bonds that are especially popular are the ones that have an investment grade rating from the credit agencies. The popularity from those corporate bonds with an investment grade can be explained from the fact that it offers investors the best risk-return ratio at the moment. They are probably more attractive than government bonds at this moment because interest rates on bonds of investment grade countries are near historically low rates(see figure 15 for the USA as an example), while for the junk grade countries the risks are really high. Countries like Spain and Italy have ratings only just above junk status and have to deal with really high interest rates, which are not sustainable on the long term.[76] Bonds issued by mining majors like BHP Billiton and Vale have investment grade ratings, so these companies are still very popular among investors. This is evidenced by the ability of the six largest mining companies to raise a record amount of debt in 2012. (E&Y, 2013)

[76] http://nos.nl/artikel/401729-hogere-rente-voor-spaanse-schuld.html

Figure 15: Yield on 10 year US government bonds 1980-2013 (Source: http://www.tradingeconomics.com/united-states/government-bond-yield)

4.3.5 Effect on exploration

The reduced availability of finance for juniors and explorers is likely to influence the exploration done in the mining industry as juniors and explorers perform the majority of exploration. Due to the financial problems, fewer companies can perform exploration projects, which might lower the amount of mineral deposits found. Exploration is needed to be able to secure future supply in order to meet future demand. As a result too little exploration might lead to supply problems and less economic growth in the future. Lenders acknowledge this and they don't foresee problems with the capital available for the long-term, however they feel that the current situation is more like a cleansing than a crisis. They feel that there has been too much capital available for the juniors and explorers, which has decreased the discipline and effectiveness of their operations. They now start demanding more results from the juniors. Some lenders hope that as a result of the current situation the amount of juniors will decrease a bit, either through consolidation or the default of bad performing juniors. (Seymour, 2013)

The major miners mostly focus their exploration activities on expanding their already operating mines and searching near these already operating mines. As a reaction to the decreasing demand and decreasing commodity prices that have led to falling profits, they are cutting back their exploration costs as well. Exploration budgets had increased a lot during the boom of the commodity prices, as the majors didn't want to miss a good asset. They are now reducing exploration costs rather quickly as these costs don't lead to short-term profits and as it is fairly easy to reduce these costs as the committed costs aren't very high. However they admit that they have to continue with exploration in order to ensure that future supply won't be affected. They especially acknowledge the

fact that because of the current financial situation less exploration is performed by juniors and explorers, which means that these won't be able to replace the exploration not done by the majors. The head of global exploration of Rio Tinto however believes that even with the decreased exploration budget they can still find new promising deposits. According to him, by improving planning and prioritisation, costs can be reduced, as they can earlier decide whether they should continue with a project or should stop it and focus on others. (Reuters, 2013)

4.3.6 Possible solution: Strategic M&As?

We have seen that it is difficult for juniors to get equity finance, as investors think they are too risky. A possible way for juniors to find finance is a strategic M&A. A lot of juniors think they possess an asset that can be mined profitable. However only the best and most attractive projects might still find equity finance, others are having a tough time finding (enough) equity finance. A possible solution for those juniors is to merge with another junior. The best option then would be to merge with a junior that still has a strong financial basis and cash reserves available, even if that junior doesn't have an asset. If the other junior also does have asset(s), it is especially interesting if both juniors have assets in the same country. Another possibility might be that the merged company holds onto the asset that thinks has the most potential and sell the other assets, which also improves the cash position of the company. Merging is interesting for both juniors, as they can combine their strengths and strengthen their weaknesses. Together they also might make a better chance to acquire more equity finance. (Seymour, 2013, Mullowney et al., 2013)

Another way to find finance is to convince major miners, but also financial investors like SWFs, investment funds, family offices and private equity firms to take a share in the company. These financial investors have a lot of money and might look to invest now in small companies in order to get large returns in a later stadium, when in case the firms is successful they can sell their shares for a much higher price. (E&Y, 2013) These investors usually prefer to get their returns in no more than five years, but they might be attracted by the fact that the shares can obtained for a much lower price than before. Valuations have dropped a lot over the last year, which lowers the costs of acquisition for those investors. (Seymour, 2013)

4.4 Return on investment

Investors usually don't invest their money just for the fun, they want to make a nice return on their investment. But what is the return that investors generally expect when investing in a mining company? Theory states that investors expect a high return when investing in a long-term, large scale

mine in an unstable developing country where large (infrastructure) investments are needed. The return expected will be lower when this same investment is made into a shorter life mine in a developed country with almost no infrastructure investments needed. Furthermore major (diversified) mining companies like BHP Billiton, Vale and Rio Tinto can raise finance cheaper much than a junior without any experience and reputation (Crowson, 2011))

The question about the height of the return that investors generally expect is based on the answers obtained during the interviews with banks, advisory companies specialised in mining and mining consultants. The interviewees all gave matching answers about what returns are expected in mining. According to one of them project finance loans are currently being priced at between 4-7% above LIBOR depending on the project and commodity. In countries where there is political instability the risks are higher, which means that the percentage above LIBOR will increase and thus the expected return will increase. Often lending institutions not only make money from lending the money, the majority makes additional money from fees, hedging or the off take of minerals. This together brings the typically expected return on capital around 12/13%.[77]

However from the interviews it became clear that the expected returns can differ quite a lot. The expected returns for majors like BHP Billiton and Rio Tinto are much different than those for a junior wanting to start his first mine. The expected return for the majors is even usually lower than the aforementioned 12%, as the risks in investing in this type of companies are much lower than investing in smaller mining companies. This lower risk is inter alia a result of the large amount of assets they have, the cash reserves they have, the scale of the projects they proved they can handle and their reputation.

From lending to more juniors companies (much) higher returns than 12% are expected. The expected return for more experienced juniors, for example with a management team that has previously started a successful mining company, and mid-tiers more often ranges in the 13-18% range. The more experience the miner has and the less risks involved with the project, the greater the chance that the expected return is close to 12%. Because of their larger asset base and stronger reputation the expected return mid-tiers will frequently be close to 12%, while for the juniors it will more often be higher. Juniors that aspire to start operating their first mine have to deal with even higher expected returns. For these juniors, depending on the project and the commodity, the

[77] Interview Paul Mainwaring

expected return might be around 20%, but for the most risky ones the expected return might be close to 30%. [78]

As stated earlier, it might be that a bank has a specialised lending part that has to earn the money to pay the other activities of the bank and to make profits. To earn enough money, the bank has to reach a certain return. This return can for example be between 14-20%.[79] The bank however can't take too much risk, so it has to balance the risks it takes. Only investing in the majors might not be enough to reach the desired rate of return. In order to reach the desired rate of return, the bank can for example decide to provide project finance to a junior. The risks will almost certainly be a bit higher, but the return if the project is successful will be higher as well. So if the bank can find a project that has a lot of potential and where the risks for the bank are not very high, they can finance this project in order to get the desired higher return.

4.5 Mergers and acquisitions

The next sections will be about mergers and acquisitions (M&A). Firstly we'll take a short look at M&A in the history of mining. Secondly the M&A activity during the boom in commodity prices will be discussed. Thirdly the current situation in M&A will be discussed. Are there differences between M&A activity during the last decade and the patterns of M&A activity in history? If so, why are there differences? Afterwards another interesting question will be answered. This question is: what is the role of banks in M&A? This is an interesting question because of the important role banks play in financing mining.

4.5.1 The history of M&A in mining

When looking at the history of M&A in mining, a certain pattern can be seen. The peaks in M&A used to happen during downturns in the economic cycle and/or during downturns in the commodity cycle. This can be explained by the fact that as a result of the difficult times the industry is enduring in those moments, the firms will be struggling to keep their profits at the same level. This is especially difficult for the smaller firms. The larger firms, that have stronger balance sheets and more assets, have more reserves and are better equipped to deal with such a downturn. The smaller firms will get into trouble faster, which might mean that they have to sell assets or close mines in order to survive. Because of their problems and need for money, they are in a weak negotiating position compared to the large firms. The larger firms benefit from the problems of the smaller firms by buying assets or acquiring the smaller firm for a lower price. The smaller firm craves for money, so they will accept

[78] Interview Jim Pooley
[79] Interview ING

the offer of the larger firm much faster than they would do when the financial situation was better. The larger firms can benefit from these M&A by being able to cut costs and undertake consolidation/capacity closures. (Perrott-Humphrey, 2011)

4.5.2 M&A during the supercycle

M&A activity showed a development during the boom in commodity prices that was totally contrary to the development of M&A in the history. Especially from 2005-2008 and after a short slowdown in 2008-2009 again in 2010, there was a very large amount of M&A activity in a time when commodity prices where reaching historical highs. (Ericsson, 2012) Especially the major miners were very active in M&A at that time. As a result of the increasing commodity prices they earned a lot of money very quickly. The larger firms that also are better financed benefitted especially. Their cash reserves increased very fast. This allowed them to acquire and merge a lot of juniors and mid-tiers into the company. These acquisitions enlarged the asset base and brought the possibility to also make use of the cash flows of the acquired companies. (Humphreys, 2012) The large firms invested heavily as they were afraid that they had a shortage of new high-quality assets to fuel their future growth in supply and had large amounts of cash burning in their pockets. They also invested heavily in their own mines and in the evaluation of new mines. As the exploration for new mineral deposits is largely done by juniors, the focus of the large companies on juniors and explorers with interesting assets increased. The majors often tried to acquire (a share of) these assets, further enlarging their asset base and future supply.[80]

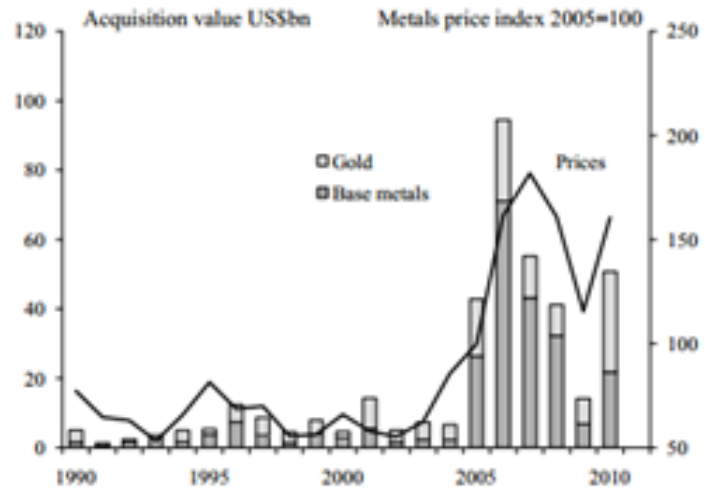

Figure 16: M&A in mining and metals 1990-2010 (source: Humphreys, 2012)

[80] http://www.miningweekly.com/article/bhp-billiton-to-buy-canadian-potash-junior-2010-01-28

Before the boom of the commodity prices, the mining industry was enduring a tough period. The industry suffered from weak and declining real terms prices. As a result there was little reason for companies to invest in new capacity. So companies cut back on their project development and only had a small number of projects waiting. The share prices of mining companies even were decreasing, while shares in other sectors were increasing fast during the ICT boom in the 90s. So mining companies were focussing on cutting costs and working efficiently and had neither the money nor the appetite nor reason to be very active in M&A. (Humphreys, 2012) So this explains why we see different patterns in M&A activity during these periods compared to history.

4.5.3 Current M&A in mining

But what do we see at this moment, during the slow down after the boom? In 2012 M&A activity and deal value declined quite a bit. This development has continued in 2013. The first half of 2013 showed a drop in the number of M&A deals by 31% compared to the first half of 2012. Compared to the first half of 2011, the number of M&A deals in the first half of 2013 has dropped with 53%. The deal value also has dropped. Deal value in the first half of 2013 was 70%[81] lower than in the first half of 2012. (Bouw, Mullowney, Hogan, & Nyholt, 2013) The uncertainty about the development of the industry by miners and investors has played an important role in slowing down the M&A activity. Because of the uncertainty, the volatility in the market and the constrained amount of finance available valuating firms and assets has become much more difficult. Share prices and therefore the value of companies also have decreased a lot. As a result, the value of firms is much lower than only one or two years ago. Because the value of firms was much higher only so short time ago, owners aren't prepared to sell their firms against those lower valuations. Especially because they also often think that the future potential of their assets is undervalued at the moment. (E&Y, 2013)

Another reason for the decline in M&A activity is caused by the changed attitude of investors and miners. Investors have changed their expectations from the miner, they expect that the mining companies stop misallocating capital and start spending their budget responsibly. They want to see larger dividends and other ways of greater rewards, while the miner takes less risky decisions. Almost all majors have had to lower the value of large acquisitions over the last few years, as the value had been estimated too positive. Investors of course aren't happy with these write-downs, it has caused them to lose confidence in the miners. Therefore it is understandable that with the uncertainty in the market the investors dissuade the miners to do large mergers or acquisitions at the moment.

[81] Excluding the large M&A deal between Glencore and Xstrata from the numbers of the first half of 2012, deal value in the first half of 2013 was still 21% lower than in the first half of 2012.(Bouw et al., 2013)

The loss of investor's confidence was already mentioned at the beginning of this chapter. Research by IntierraRMG (2013) found that investor's confidence was shaken by the declining commodity prices, continuing bad economic news and political problems related to resource nationalism. A PwC report (2013) about the confidence crisis in the mining industry investors found some of the same reasons and a few others for wavering investor's confidence. Besides the aforementioned reasons, the investors also don't believe that the miners can control costs nor will be able to really be disciplined with the capital they have and therefore questioning whether the returns will improve. They also aren't sure that the miners won't resort to their former self of spending too much when commodity prices rise again or that the prices still might collapse. (PwC, 2013b) However the investors seem to be a bit too harsh for the sector as there are still some positives. Although the commodity prices have declined, they haven't crashed. The long-term outlook for the demand also is quite positive and volumes and dividend yields are up.

Partly due to the changing demands of investors, miners are shifting their focus from "growth for growth's sake" to "capital optimization." (PwC, 2012) As already discussed, they are looking to divest in assets and projects that don't belong to their core activities. Only if they think there is a chance they really can't let go the major might decide to acquire an asset, like Rio Tinto did with the acquisition of the share of BHP Billiton in the largest titanium dioxide producer.[82] BHP decided that this commodity didn't fit into their plans anymore and sold it. Another interesting development is that a lot of the largest majors have changed their CEOs over the last few years, as five of the ten largest miners have new CEOs. These CEOs were the ones very active in M&A, but now the focus has shifted and CEOs with a lot of mining experience, operational know-how and that are specialised in cutting costs and increasing efficiency have replaced them. Miners substitute their CEOs also to clearly show their changed preferences to their investors. (Mullowney et al., 2013)(PwC, 2013b)

However it is important that although the M&A activity did decrease, there was still a lot of activity. There were two types of M&A that were especially popular: low risk M&A and strategic M&A. "Low risk M&A focused on domestic consolidation for synergies and pooled resources, in response to cost inflation and fund raising difficulties. Quite often, low risk M&A transactions were pursued to achieve synergies in shared facilities, infrastructure, blasting etc." (E&Y, 2013) Low risk M&A was also done to acquire greater control in companies where the investor already had a stake. The majority of strategic M&A was done by SWFs and SOEs. They choose to acquire assets in exchange for security of supply via offtake. Other strategic M&A done was the acquisition by larger miners of stakes in

[82] http://www.trefis.com/stock/rio/articles/142968/rio-tinto-gains-control-of-bhp-billitons-stake-in-richards-bay-minerals/2012-09-11

encouraging assets of explorers and juniors. This was an indication of the shift from full takeovers to only acquiring minority stakes in order to secure future growth options. The larger miner invests strategically in the junior like a corporate investor hoping for future growth. This M&A is extremely important for juniors, as it provides them with money and also might attract other investors. (E&Y, 2013)

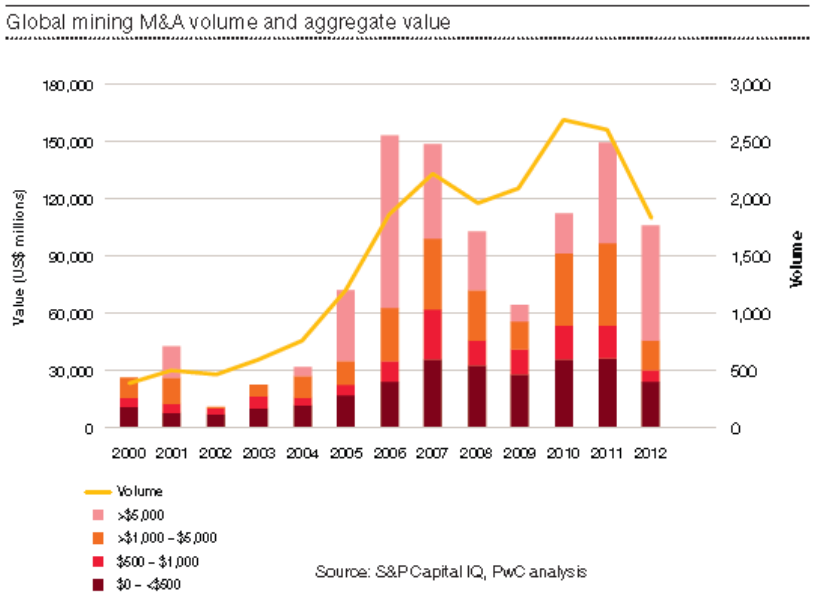

Figure 17: Global mining M&A volume (Source: Mullowney et al., 2013)

4.5.4 Banks stimulating M&A?

Chapter 3 discussed the importance of banks in financing the mining sector. This chapter has shown that the role of banks has decreased a bit, but also that they are still important. Because of this importance an interesting question is whether banks try to stimulate M&A. The answer to this question comes from the interviews. According to the interviews, it isn't really obvious whether the banks stimulate M&A. Financial advisors often play a larger role in stimulating this. However investment banks like Goldman Sachs, which can act as a financial advisor, have large M&A departments. This might mean that if possible they are more inclined to give the advice to do M&A. These investment banks make a lot of money by participating and helping in the process of merging with or acquiring a company.[83] According to the interviewees the biggest role in M&A though is for the CEO of a miner and his goals and expectations of shareholders for him. If he is expected to focus on growing the firm larger, M&A gets much more likely. If the investors expect the firm to be more prudent, M&A gets less likely.[84]

[83] http://www.ft.com/intl/cms/s/0/c1be6d4e-07d8-11e2-8354-00144feabdc0.html#axzz2chICuIwR
[84] Interview Patrick Willis and interview Paul Mainwaring

4.6 Do juniors that are takeover targets have a special financial structure?

The developments in financing available and in M&A showed that juniors that have a large amount of cash reserves are popular and interesting M&A targets at the moment. Especially other juniors that have found interesting mineral deposits, but have trouble getting finance, are eyeing these cash rich juniors. As discussed, together they are better equipped to survive this difficult time for juniors, whilst their future potential also improves. But what about the juniors looking to be acquired or looking to sell their project to a major? Is it important for them in order to be a possible takeover target to have a special financial structure? In addressing this question it is important to acknowledge that the financial structure is not the only aspect that is taken into consideration by the mining company. Important factors that the mining company takes into consideration are:

- Is it a good deposit, or has it other merits (access, potential area player etc..)
- Is the mineral easily accessible and can it be extracted on a large scale?
- Is the country where the mine is located in politically stable?
- Is the land really owned by the acquiring target or are there historic claims to the ground?

It is also possible to take the first together and talk about the quality of the company's assets/project. The quality of the assets is determined by inter alia the resource/reserve, the jurisdiction and its cost profile. While the importance of the quality of the asset is easy to understand, the importance of the land-owner might need some more explanation. Over time, the ownership of a certain area might have changed hands numerous times. Because these agreements might be very old, it sometimes happens that the current owner of the ground is unclear about these agreements. It is important for the acquirer to know about these agreements, as they don't want unpleasant surprises in the future. If there is a profitable mine in operation, former land-owners may want a piece of the revenues of the mine such as royalties, production share etc. (if they have a right to it) The acquiring company wants to make sure they are aware of any future claims or that they will have to pay royalties to another party. [85]

As mentioned in 2.3.4 the majors also have large exploration departments. Besides from looking themselves for deposits, they focus on judging the quality of the projects of juniors. Juniors come to the major with some mining samples and try to convince them of the potential of their project. The exploration department often has a deciding role to select projects which are interesting to the major. As the mining company tries to answer the questions about the factors taken into consideration, they can decide which opportunities they want to keep on pursuing and which not.

[85] Interview Coen Louwarts, Director at Minconsult Limited and former employee of the major mining company Rio Tinto

Majors prefer to acquire projects that haven't advanced very far. They prefer to acquire projects that are still in the exploration phase or before the pre-feasibility study. Apart from the fact that early entry ensures the major can drive the development, this preference ensues from the fact that exploring is often financed with equity finance. This means that most of the time the acquiring target hasn't made a lot of arrangements with other parties, the company only has to take care of its shareholders.

As the project has advanced further, it often happens that the acquiring target already has made financing agreements such as streaming or hedging, in order to finance exploration and (pre-) feasibility studies. The majors find this less interesting, as they prefer as little dilution as possible. Although it is sometimes possible to buy-out these arrangements, the hedging/streaming company likely wants to get a compensation that is comparable to the money they expected to earn from this arrangement. If the acquirer decides not to buy out the hedging/streaming company, it has to pay for all the costs associated with the construction of the mine etcetera, while they don't get all the revenues of the mine. It is understandable that the acquiring company prefers a project without these arrangements if possible.[86]

Another reason why majors are looking to acquire a project or company rather at the beginning of the project is that the value of the project goes up as it advances, so it becomes more expensive to acquire. A project that has already advanced to the feasibility study will likely be worth more than a project still in its exploration phase, for example because of the certainty of the success. The ideal situation for majors is when they already see the potential of a project, while others don't see this yet. In this way they can benefit the most from the value addition of the project.[87] Majors prefer juniors that have a project with large potential and that are low cost and large scale. The overhead costs that majors have, make smaller mines undesirable. Juniors also often can work cheaper than majors. Majors have to perform studies more detailed and at greater length, which makes those studies more expensive than when performed by a junior.[88]

Despite the fact that projects financed with project finance from banks are often already more advanced, these kinds of projects might still appeal to majors.[89] The interest rate of the finance and the hedging arrangements play an important in this respect. Often project finance lenders require price protection built into the financial structure of a project finance transaction in order to mitigate the risk of the falls in the commodity price. This is beneficial to the lender, but it often reduces the

[86] Interview Coen Louwarts
[87] Interview Willo Stear
[88] Interview Coen Louwarts
[89] Interview Coen Louwarts

"upside" to the target and acquirer and might make the target less attractive (as the target has less exposure to rising commodity prices).[90]

So these are all things that are taken into consideration by mining companies looking to acquire a junior or project. But how important is the financial structure of the acquiring target? The acquirer of course looks at the financial structure of its target. The debt-equity ratio is deemed less important by the majors. The structure, whether there are already future commitments like streaming or hedging arrangements, are more important to the major. The amount of debt is less important to the majors, because they are able to obtain cheaper financing which can replace existing debt and reduce some of the risk in a particular takeover target. As discussed in 4.3.4 majors can get debt finance at a cheaper rate than the juniors because of their investment grade. [91] For mid-tiers looking to acquire projects the amount of debt might be more important, as they usually don't have an investment grade. This means that they can refinance less easy, so they will be inclined to have a preference for projects with a lower amount of debt.

Mining companies looking for an acquisition can also be attracted due to the presence of organizations like the World Bank or the IFC. These organizations usually have a stronger influence than the mining companies themselves. This means that they can help reduce the risks involved with mining in politically more unstable countries. The reduction of risks can make the project attractive to mining companies.

When an acquiring company is rather sure about the quality of its acquisition target, they often decide to buy the project or juniors. However they can also decide to agree to a joint-venture. The two companies then, for example, decide that the company acquiring a share in the project can increase its share by financing the (pre-)feasibility study (earn-in rights). Joint ventures are usually agreed for in projects and not for the entire junior.[92]

[90] Interview Paul Mainwaring
[91] Interview Paul Mainwaring and interview Coen Louwarts
[92] Interview Coen Louwarts

Chapter 5: What trends can be determined in the mining industry?

5.1 Introduction

This chapter describes the trends that can be determined in the mining industry. As we saw over the last chapters, the mining industry has been through a lot of changes over the years and these developments continue until the present day. These developments understandably affect the industry. As some of the most important trends are already discussed in previous chapters, this chapter won't discuss all trends in detail again. Firstly, a summarisation of the most important trends in the mining industry at the moment will be given. Those trends will be briefly discussed. Secondly the focus will be on the trend deemed most interesting to this research. This trend is the increasing activity of SWFs and SOEs in the mining industry. This development is important for the mining industry and especially interesting in the financial focus of this research. We will see if this development has occurred before in history or if it is a completely new development.

5.2 Current trends in mining

This section will review the current developments in the mining industry. As the industry has experienced a lot of changes over the last decade, especially as a result of the boom in commodity prices and its sudden cooling down the last years. These developments have also sparked other developments. The purpose of this section is to summarize the most important trends as they can be identified at the moment and give a short explanation of the trends.

The developments in the mining industry that will be discussed are:

- Increasing level of investment in new, politically more risky countries
- Increase in resource nationalism
- Increasing production costs
- Cost overruns and bad forecasts
- Use open-pit mining versus underground mining
- Lack of human resources
- Increasing activity and presence of SWFs and SOEs

The last development mentioned, the increasing activity and presence of SWFs and SOEs, is deemed by the author to be to the most important and interesting in the financial focus of this research.

Therefore this development will be discussed in detail in the next section, as firstly the others will be shortly reviewed.

5.2.1 Investing in new, politically more risky countries

The mining industry has seen its center of gravity shift multiple times over history. Europe was in 1850 the place where most of the world's mining was done. But after 1900 the US surpassed Europe as the focal point of mining. However after the Second World War, the dominance of the US started declining as well. Since that time, mining has slowly moved from developed countries to developing countries. (ICMM, 2012) During this period, most mines were located south of the Equator. Nowadays there is less of a real center, as mining has become even more global and as there are no real dominant regions. (Ericsson, 2010) This shift has been a result of the depletion of mines in Europe and the US, the technological advancement and the development of large sea carriers that have made it possible to transport the metals and resources around the globe. (Randolph, 2011)

Large investments have been done in exploration in Latin America and Africa. For a very long term miners have been avoiding the most risky countries, although these countries might offer easy accessible, high-quality mineral deposits. This can be explained by the long investment period in addition to the risk-averseness of investors and the challenges related to operating a mine in these countries. (ICMM, 2012; Randolph, 2011) The examples of the Ambatovy mine in Madagascar and the Oyu Tolgoi mine owned by Rio Tinto in Mongolia however show that in their continued, almost desperate, search for new mines, miners have started entering those risky countries as well during the boom in commodity prices. Both countries are deemed risky by miners as is evidenced by a mining survey for 2012-2013.(Wilson et al., 2013) The problems Rio Tinto is experiencing in its cooperation with the government in this project underline the risks of investing in such a country.[93] [94]

5.2.2 Increase in resource nationalism

The subject of resource nationalism was already briefly touched in chapter 4. It was mentioned that the increase in resource nationalism worries investors. Resource nationalism is the tendency of people or governments to try to control the natural resources inside their borders. By holding control of the resources the government wants to take the strategic and economics benefits of the resources. So when the government doesn't own the resource, they can still decide to implement or raise taxes in order to benefit from the presence of the resource. Not only developing countries

[93] http://www.miningweekly.com/article/export-income-dispute-holds-up-rios-oyu-tolgoi---mongolia-2013-07-04
[94] http://online.wsj.com/article/SB10001424127887323639704579014201657311552.html

make themselves guilty of resource nationalism, developed countries also tend to do this. Australia for example implemented a new tax in order to benefit more from the revenues of mining. Resource nationalism threatens the forecasting possibilities of miners, as e.g. the sudden implementation of a tax, which the miner couldn't predict, might reduce the profits of a project or increase the risks associated to the project. So it makes it more difficult for miners to make a correct feasibility study or it might reduce profit. (Deloitte, 2013; PwC, 2013b) The problems of Rio Tinto in Mongolia also are a result of resource nationalism of the Mongolian government that is looking to increase its share in mining profits.

5.2.3 Increasing production costs

Another disconcerting development for miners is the fact that production costs have been increasing the last years. (Ericsson, 2010; PwC, 2011) During the boom, the increase of the production costs was offset by the faster increasing commodity prices. But while the commodity prices have gone down, the production costs have continued to rise. Part of this is the result of resource nationalism, as miners have to pay more tax or have to comply with stricter rules. Governments also expect more and more from mining companies that they will take care of the local community in which their mining takes place and that they increase their social commitments. This increased responsibility may lead to delays in the start-up of mines and can increase the production costs, up to $100 dollar per ounce.[95] In chapter 2.2.2 it was already mentioned that an increasing number of mines are located in more remote places. Mineral deposits are not only found in more remote places, but also deeper into the ground and with more complex ore structures. This makes it more expensive to extract the mineral. In remote places there is often no or little infrastructure available, which means that larger infrastructure investments are needed. The limited availability of water or energy in remote places also raises input costs and therefore production costs. Production costs are also increasing due to worker demands for higher loans. (Deloitte, 2013; Ericsson, 2010)

5.2.4 Cost overruns and bad forecasting

Chapter 4.5.3 talks about the loss of investor's confidence due to the continual exceedance of budgets by mining companies. Partly due to the increasing production costs discussed above, a lot of mining companies haven't been able to perform their activities within the budgets set. So there are some valid reasons for these cost overruns, however the mining companies themselves are to blame for this problem as well. "Factors that also contribute to poor project performance include insufficient governance systems, poorly developed risk and control mechanisms and inadequate

[95] Interview Willo Stear

project scoping processes." (Deloitte, 2013) The high frequency of cost overruns is a worrisome development for mining companies, as this scares investors away. Investors are already very cautiously about investing at the moment and the cost overruns won't make the mining companies more attractive to them.

Another reason why the results of projects often turn out to be different from the expectations is misestimating the structure of the ore-body. If for example the ore body is contrary to the expectations not continuous or the structure is different than expected, the extraction might be much more expensive than originally forecasted. Incorrect estimations might lead to an increase in costs and might even result in unsustainable costs. While giving a correct estimation is very difficult, mining companies also tend to cut corners with the drilling and sample testing, as this often are the most expensive and time consuming parts of the feasibility study. (Randolph, 2011) It is difficult to forecast the results of a mine because of the unknown development of mineral prices and the fact that mining companies have to predict these prices ten years from now. As seen during the boom in commodity prices, the prices are strongly related to the demand for minerals. Demand is strongly tied to global economic growth and therefore very difficult to predict on the long-term.

5.2.5 Use open-pit mining versus underground mining

The majority of production from mining used to come from underground mining. During the 20th century developed countries mostly used underground mining techniques. With the shift to developing countries, more open-pit mining was used, but in 1990 still 90% of mine production came from underground mining. The shift to open-pit mining then took place really quickly, as in 2000 suddenly 85% of the production came from open-pit mines. (Randolph, 2011) The large open-pit mines allow economies of scale as e.g. much larger trucks and other equipment can be used. However despite the fact that the majority of production still comes from open-pit mining(ICMM, 2012), it seems that the percentage of production from open-pit mining is decreasing again. Open-pit mines have major consequences for the area in which the mining takes place. Not only when the mine is operating, but also after its closure as there remains a large hole in the scenery. (Randolph, 2011)This can lead inter alia to problems with the hole filling with water, that then gets poisoned by the metals still in the ground and causes the death of a lot of birds and other animals that drink this water.

5.2.6 Lack of human resources

A looming threat to the mining industry is the lack of skilled people available. Because of the

slowdown of the industry it is less of a problem at the moment, but when the mining industry starts to recover, it is very likely that it will become a problem once again. (Deloitte, 2013; Ericsson, 2010) With the growing production and the increasingly complex mines, skilled people are very important in order to operate a successful mine or mining company. But while demand increases, supply decreases as, especially in developed countries, fewer students choose to study geology, mining engineering and earth sciences. (Randolph, 2011) Less people pursue a career in mining because of the remote locations where they would have to work and live and the unattractiveness of the industry. It is also very difficult to just move skilled people from developing countries to developed countries or vice versa, because there are often large differences in the mining culture. In order to cope with the lack of skilled people, mining companies are attempting to make the industry more attractive to people. They do this by promoting the benefits of working in the mining industry and by inventing new arrangements like fly-in/fly-out operations, that allow people more often to travel home(Deloitte, 2013; ICMM, 2012; Randolph, 2011)

5.3 The emergence of Sovereign Wealth Funds and State-owned Enterprises

5.3.1 What are Sovereign Wealth Funds and State-owned Enterprises?

In this research the increasing activity by sovereign wealth funds and state-owned enterprises has already been mentioned several times. In section 4.3.3 it was already mentioned that non-traditional investors like SWFs and SOEs have taken a large share in the financing of mining activities and M&A. Section 4.5.3 talked about the fact that the majority of strategic M&A was performed by SWFs and SOEs. “They use strategic M&A to acquire assets in exchange for security of supply via offtake.”(E&Y, 2013) SWFs however aren’t new, they have existed for more than 60 years already. The term “sovereign wealth fund” was only given to government-owned funds that invested in part or in whole outside their home country in 2005 though. (Truman, 2010) Their size however does show the large growth they have experienced in a rather short period of time. In 1990 all SWFs together only held approximately $500 billion, but in 2007 this amount had already risen to $3 trillion. (Johnson, 2007) Nowadays it is already nearing $6 trillion.[96]

So what is a SWF? There is no real set definition in use, but in a report published by the OECD (2008) they are described as followed; “SWFs are pools of assets owned and managed directly or indirectly by governments to achieve national objectives. Funds for the these SWFs can come from foreign exchange reserves, sale of (scarce) resources like oil or minerals, but also from taxes or other government revenues. With these funds, a SWF can have different objectives. “Possible objectives

[96] http://www.swfinstitute.org/fund-rankings/

are *(i)* to diversify assets; *(ii)* to get a better return on reserves; *(iii)* to provide for pensions in the future; *(iv)* to provide for future generations when natural resources run out; *(v)* price stabilisation schemes; *(vi)* to promote industrialisation; and *(vii)* to promote strategic and political objectives. " (Blundell-Wignall, Hu, & Yermo, 2008) SWFs don't necessarily have to focus on one of those objectives, they can aim for more than one.

A SOE is, as the name already says, state-owned. It is an enterprise created by the government with the purpose to perform commercial activities on behalf of the government. Another special characteristic of SOEs is that they have a distinctive legal form. SOEs often have a natural monopoly, as the government for example has made them the responsible party for providing infrastructure, strategic goods, natural resources and energy, broadcasting etc. However the differences between SOEs and SWFs are often not very clear. While one might say that their relationship to their owner and the owner's funding source might differ or that SWFs are entirely differently organized than SOEs, in reality it turns out that the functions of both parties tends to converge. Characteristics attributed by some to SWFs, can also be seen at some SOEs and vice versa. So while on paper the differences between SOEs and SWFs seem clear, they turn out not to be so distinct in reality. (Backer, 2009)

5.3.2 The history of state ownership in mining

The mining industry is not unfamiliar with state-owned enterprises, as over time lots of governments have deemed control over metal supply to be very important for both political as well as economic reasons. Either privately owned or state-owned, governments have been trying to regulate and control mining for a long time already. A well-known example of state-owned mining production in history is that of the Soviet Union. The government nationalised the mining sector and made it one of its top priorities. With the expansion of the Soviet Union with other Eastern European countries after the Second World War, the share of production by state-owned companies further increased. During the 1970s, the Soviet Union produced 20-25% of the world total for most metals. Their production was equal to their demand, as production was controlled by the government. State ownership of mining companies was not exclusive to the Soviet Union though, as after the Second World War there were also some state-owned companies in the Western World. (Ericsson & Löf, 2011)

From the late 1960s until mid-1980s a lot of mining companies were nationalized. With the decolonisation, the former colonies saw the mining industry as a possible money generator,

especially because of the high commodity prices at that moment. Probably with the same idea state ownership increased in the developed countries as well.(Ericsson, 2010) Not until the end of the 1980s this development came to an end. The Soviet Union collapsed and in the Western World private ownership began increasing again as a changing political climate stimulated the "free market" and private sector initiatives. Another reason for increasing privatisation was the ineffectiveness and poor management of the state-owned companies in many developing countries. "State control of total global mine production had varied over the years and from metal to metal between 40–60 percent until the collapse of the Soviet Union." (Ericsson & Löf, 2011) With the decline of the industry as discussed in 2.3.4, developing countries were hungry for investments and started to privatize the mining industry. At the end of the 1990s, the privatisation of most mining companies was finished.

5.3.3 The rise of the activity of SWFs and SOEs in mining

After the collapse of the Soviet Union and the privatization of the mining industry in the countries of the former Soviet Union, only 22 percent of the total value of all metal production came from state-owned companies. This percentage however started growing again from 2005 on as a result of the increasing Chinese mine production. (Ericsson & Löf, 2011) The large economic growth of China has led to a fast growing demand for metals from the country. In reaction to its own increasing demand and the booming commodity prices, the Chinese government decided that China should secure more sources of (future) supply and own more mineral deposits in overseas areas. They want to make China less dependable on the world market. At present they have to pay the prices as dictated by the world market. They would prefer to have sufficient supply on their own to prevent suffering from very volatile prices.

This is where the Chinese SOEs and SWFs come into play. The Chinese government has large dollar surpluses from the large trade surpluses they have had over the last decade. "They help the SOEs and SWFs through government-to-government soft loans, infrastructure development and access to the resources for the SOE and SWF." (Randolph, 2011) The SWFs and SOEs can use these funds, inter alia, to create wealth for the country but also to secure the strategic supply of materials. With these funds, the SOEs and SWFs strategically invest in mining companies and projects. The SWF China Investment Corporation (CIC), for example, bought a stake in a rare earths development project in Inner Mongolia and in commodity trading firm Noble Group. This last acquisition allows CIC to get more deeply into commodity trading, which gives China more trading expertise.[97] [98] CIC has also

[97] http://mineweb.co.za/mineweb/content/en/mineweb-mining-finance-investment-old?oid=89607&sn=Detail

acquired stakes in South-African Shanduka Group, an investment holding with interests in coal mining. While they emphasize the possible financial benefits from these acquisitions, there is a clear strategy behind them to further secure supply.[99] Chinese SWFs and SOEs are especially active in increasing their assets in Africa. They buy themselves into the mines, in a controlling position to ensure that the production goes to China. Not only Chinese, but also Russian SWFs and SOEs are investing in the mining industry in Africa. Especially for Russian SOEs it is sometimes unclear where the funds come from.[100]

As we saw in 4.3.4 the SWFs and SOEs have benefitted from the financial problems in especially the Western World by stepping in the gap left by banks. SWFs and SOEs were looking for higher returns than the disappointing returns they got on their bonds. They found a possibility for getting these higher returns in lending money to companies needing capital.[101] Even with banks cautiously returning to providing finance to the mining industry, the SWFs and SOEs are still increasing their share. E&Y reported that the share of deal value by "non-traditional" acquirers like SWFs and SOEs has grown to 31% of total deal value, compared with just 21% in 2011. (E&Y, 2013) SWFs and SOEs are attractive to companies looking for money, because they have more flexibility in trying to find the best financial structure possible. Because of the (stricter) risk profile banks have to deal with, they are very restricted in the way they can offer finance. The banks have to make sure that they don't take large risks, even if the returns might be very high. SWFs and SOEs are more flexible and therefore can better adapt the financing structure to each individual client. Especially in more difficult times like this, this is a big advantage for these companies. The terms of the agreements that the SWFs has with the junior they invest in are different for every project and also depend on the SWF investing.[102]

SWFs have interest in financing juniors as this can help secure future supply and because they expect good returns on these investments. What makes those juniors most interesting to the SWFs (and other private investors like private equity firms) is that the value of those juniors is much lower than it was only a few years ago. Another advantage for the SWFs is that they have the money to invest, while major mining companies are looking to divest instead of investing. As a result, the SWFs can decide which projects are most attractive and acquire these rather cheap. (Bouw et al., 2013) They focus on juniors that are already somewhat more advanced in the project, but which are dealing with

[98] http://www.mineweb.com/mineweb/content/en/mineweb-political-economy?oid=91200&sn=Detail
[99] http://www.economonitor.com/blog/2013/04/china-sovereign-wealth-funds-shifting-strategy/
[100] Interview Willo Stear
[101] http://uk.reuters.com/article/2012/10/25/uk-wealth-funds-idUKLNE89O02R20121025
[102] Interview Willo Stear

a financial blip in the road and therefore can't progress to the next stage. The SWFs are willing to provide these companies finance, but expect higher premiums in return. The juniors need the money to continue their activities and think the investment is worth it to pay these premiums. The SWFs like to see their investment being paid back as soon as possible and always have an exit strategy to get a massive premium. They make their money on the premium on the money they can earn on the shortest period possible, by providing that money. They do not only get their money back, but also make sure that they have enough equity to benefit from the growth of the company. [103]

Mining companies and especially juniors are loath to go to the bank. The banks discredited themselves during the banking crisis in 2008. In the aftermath of the crisis, banks were calling back debt. They also did this from mining companies that were not able to pay back this debt faster than arranged. Many banks got ownership from these projects and sold them cheaply to other miners. Banks are therefore seen as your very best friend when everything goes right, but your very worst friend when it goes bad.[104]

The increasing power and activity of SWFs and SOEs has made some developed countries worrying a bit. Especially the large investments those funds can do, while the developed countries are suffering from the financial crisis, might indicate a shift in power from the developed countries to more power for the BRIC countries. Especially for the mining industry it means that the historical powers have to adapt to the new situation. The developed countries have long relied on cheap minerals from developing countries, but now they have to deal with the large demand of China and thus the decrease of supply security. This means that there is more competition and that the developed countries have to cooperate with the BRIC countries to make sure that everyone has access to minerals.(Ericsson, 2010)

[103] Interview Willo Stear
[104] Interview Willo Stear

Chapter 6: Conclusion

The aim of this paper was to answer the following research question: "*To what extent does the financial structure of a junior mining company affect its potential attractiveness of a takeover target by a major mining company?"* But before answering the research question, the sub questions will be answered first.

1. What types of companies comprise the mining industry?

The mining industry is comprised by junior explorers, junior miners, mid-tiers and majors. Their activities are strongly related to the focus of their business model. The life cycle of a mineral project consists of five stages. The first stage is exploration, the second stage is feasibility, the third stage is development and construction, the fourth stage is operation and production and the fifth and last stage is closure and reclamation. The junior companies focus on the first two stages, although some junior miners might decide to start operating their own mine. The mid-tiers and majors focus mostly on the last three stages. Their business model revolves around mining production, while that of the juniors is focused on exploring and bringing projects to the feasibility stage to sell them then.

2. What are the possible ways to finance the activities of mining companies?

There are several types of finance available to a company in order to finance its activities. These types of finance are corporate finance, project finance, commodity trading finance and pre-export finance. These types of finance can be composed of both debt and equity elements. Both debt and equity have their advantages and disadvantages. Debt is considered less risky than equity, as usually a debt provider is protected against a default of the company it lends to, while the equity provider is not. However, when a company experiences a large growth, the equity provider benefits much more than the debt provider. Well-known types of debt are bonds, term loans and private placements.

Start-up companies can get capital from angel investors and venture capitalists in exchange for shares of the company. When the company has grown larger, they can go on the public market. By listing on a stock exchange, their shares can be publically traded. Mining companies have historically listed on the stock exchanges in London, Toronto, Sydney & Perth and Johannesburg. Start-up companies mostly register on the TSX-V in Toronto. This stock exchange is, inter alia, aimed on junior explorers and junior miners. Canada is especially interesting to the companies focusing on exploration thanks to the flow-through shares. This allows them to relay their tax benefits related to exploration to investors. Besides the mentioned types of finance, an emerging way to finance mining

activities are streaming arrangements. The streaming company then provides the mining company with finance in exchange for a share in the miners' revenues or a share of the production of the mine.

Mining is considered as a precarious industry to invest in, as there are a lot of risks involved with mining projects. There are risks for the mining company as well as for the financier. Important risks for both parties are, for example, the political risk and the social-environmental risk. For a financier like a bank, another important risk is that the reputation of the bank might be affected. All these risks are important in the decision to finance a project or the decision whether to continue the project.

3. Is the financial structure of a mining company relevant in the case of takeovers?

The development of a mineral project from exploration to production is characterized by the fact that during every stage the type of financier is different. During the exploration stage, the seed capital comes from family and friends and later on when the project has advanced to the pre-feasibility study from the public issue of equity and venture capitalists. While the junior explorer will try to sell the project when it has advanced to the feasibility stage, the junior mining company will look to get finance to start the construction of the mine. This finance will come from institutions like banks and other capital providing specialist funds. The financial crisis however has made it much more difficult for juniors to find the funding needed to bear the costs needed to perform exploration, to do geological studies or to do a (pre-feasibility) study. Banks have become much more prudent and have turned away from the high-risk mining industry. Therefore juniors are having a tough time and exploration activities are lapsing. Majors are having fewer difficulties in getting finance, but also have to cut costs as their investors are looking for short-term profits and are no longer prepared to wait for long-term profits. The impairments that all mining companies had to perform on previously acquired projects also has decreased the appetite of investors for M&A, which has combined with the decreasing availability of capital to a large drop in M&A activity.

When majors are looking to acquire a project the quality of the assets is of course of great importance. They want to be sure that the mineral is easily extractable and on a large scale. They also want to make sure that the political situation is stable and that the land is really owned by the acquiring target. The major then prefers to acquire a company/project as early as possible, so preferably still in the exploration stage, as during this phase the junior usually only uses equity financing and therefore has not made all sorts of financial arrangements. Majors are less keen on these arrangements, they prefer less dilution. It is often possible for majors to ransom these arrangements or buy out the streaming company, but these companies often want to see a

compensation that is similar to the amount of money they expected to earn from the arrangement. When an acquiring company is rather sure about the quality and potential of its acquisition target, they often decide to buy the project or juniors. When they are less sure of the future success, but are intrigued by the potential, they usually agree to a joint venture.

The debt-equity ratio is of less importance to the major. The major rates the structure, whether there are already future commitments like streaming or hedging arrangements, as more important. The amount of debt that the acquiring target has is less important to the majors, as they are likely able to obtain financing at cheaper rates than the junior companies. This cheaper finance can replace existing debt and reduce some of the risk in a particular takeover target.

4. What trends can be determined in the mining industry?

The mining industry has has been through a lot of changes over the last decades and these developments haven't stopped. Current developments are, inter alia, increasing production costs, increasing resource nationalism, a lack of skilled labour and the increasing activity of SWFs and SOEs. Mining companies have to deal with increasing production costs, while the commodity prices are decreasing. The production costs are increasing, among other things, due to the increasing resource nationalism. More and more countries are looking to earn a larger share of the revenues of the mining industry. They also expect the mining companies to take better care about the local community in the area they are mining in, which also increases costs. Another treat for the industry is the lack of skilled labour. The industry suffers from its dirty image and the remoteness of mining locations, which scares students away from the industry.

The increasing activity of SWFs and SOEs is probably the most important to the mining industry. SWFs and SOEs from amongst others Russia, China, Norway and the Middle East are entering the mining industry. They are backed by large funds, although it is not always clear, especially for the Chinese and Russian funds, where these funds come from. The Chinese SWFs and SOEs are especially increasingly active in the industry in order to ensure the future supply of China. In 2012 non-traditional investors like SWFs and SOEs already accounted for 31% of the total deal value of M&A. Their growing presence in the industry means that the developed countries, that have historically dominated the industry and have long benefited from cheap minerals from (former) colonies, have to adapt to more competition.

So now it is possible to answer the research question. When looking to acquire a junior mining company, the attractiveness of the target to the major mining company is influenced by its financial structure. Before acquiring a company or project, the major mining company first checks the quality

of the asset, the ownership of the land and the political stability. The major company prefers to acquire projects that are still in the exploration phase, as this usually means that they are fairly cheap to acquire and that the financing is restricted to equity, which indicates that there are no financial arrangements made with streaming/hedging companies yet. Major mining companies prefer juniors financed solely with equity, as this means that they only have to deal with shareholders. Just like the mining company, the objective of shareholders is that the project becomes successful, while debt providers just want to earn their investment back as soon as possible and do not care about the success of the project. The absence of financing arrangements means that the mining company can benefit from the sale of the mine's entire output. The mining company obviously wants to earn as much money as possible and does not like having to give away part of the mine's output to another company. The major mining company also looks to acquire the project as cheaply as possible, as this means that they can earn back their investments faster, which delights the shareholders of the major mining company.

However, this doesn´t mean that majors are not interested anymore when the project is more advanced. As long as there are no hedging/streaming arrangements made that are disturbing to the major, they still might be interested. The debt-equity ratio is of less importance to the major, they are a much safer investment than the juniors and therefore can refinance debt at a cheaper rate. But when the major mining company wants to acquire a junior, it will choose a junior still in the exploration phase and only financed with equity, that has a project with large potential and where large scale mining is possible and whose project is in a politically stable country. When a major has interest in two similar financed projects, it will choose the one in the most politically stable country, as the risks related to that project are less.

Limitations

A limitation to this research is the restricted availability to the public of financial information in the mining industry. While the major mining companies have to be rather open about their financial results, information about junior miners and explorers is much harder to obtain. The research has to rely sometimes on the public information available. This means, for example, that it is not always possible to compare financial developments over the timeframe actually preferred. As a result of writing this thesis during the holiday period, a limitation was that sometimes people were not available to interview. However, it proved possible to find other people to interview. Another limitation is that the author was not able to obtain the correct market capitalizations for selected mining companies over the last decade. It would have been nice to see the development of these market capitalizations over time.

Reflection

Looking back at the used methods, there is still a firm believe that the research has been conducted in the best way. The choice to obtain more knowledge through interviews, led to getting a lot of information that could not be gotten from other sources. With regards to the interviews, however, there is a point of improvement. It would have been better if all interviews were recorded, as it is very helpful to be able to listen to the respondents' answers multiple times. Making notes during the interview and immediately summarize them, allows the interviewer to remember the most important remarks, but he might sometimes miss parts of the underlying explanation.

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Appendix 1: Original list of questions for interviews

1. How do banks make a decision on the type of investment?
    a. Why is it different for Major, mid-tier and junior miners?
    b. Why would banks invest I junior miners and why not?
    c. At what moment is it interesting for a bank to get into the market?
    d. How does a bank finance majors? And is this just a "normal" loan or are there other financing methods used?
    e. Does it matter in which way a junior is financed in the case of a possible takeover?

2. When getting involved with a mining project, does the bank prefer project or corporate finance?

<u>How do banks determine and manage their risks</u>

1. What return on investment is expected by the bank? What is the minimum return on investment the bank expects?
2. What are the risk-criteria a bank places on the different mineral-rich countries into which capital is being invested in mining projects?
3. Can the bank force the mine to keep on operating while the miner makes a loss, but the bank is still getting its money back?

<u>Strategy</u>

1. Does the bank stimulate/encourage M&A in the mining industry?
2. Is it interesting for a bank to work like a streaming company? (Providing financial support in exchange for getting a share of the commodity stream? In exchange for an upfront payment, a streaming company receives "commodity streams" which allow them to purchase a specified percentage of the mine's production, at a fixed cash cost, for the life of the mine.)

<u>Research/ Documentation for financing</u>

1. What background information do banks need and why?
2. How important is a bankable feasibility study important for a bank to determine whether they should invest or not?
3. Does the bank have their own in-house mining specialists or are they reliant upon independent consultants for fatal flaw analyses, due diligences, etc.?

a. And if not why do they invest in mining companies? And how do they manage their risks?

Should a mining company make use of real option pricing when presenting their plans to a bank? Or does the bank accept Discounted Cash Flows and NPV analysis?

Trends in the market

1. What do you expect for the mining industry in the future? And what is the role of banks in the future? Will the role of banks keep on diminishing like it has or will banks start playing a bigger role again when the global economy has recovered?
2. Do you believe that implementing an exploration tax credit policy, such as a flow-through shares scheme, would encourage investment and start-up capital required by juniors for mining projects?

Appendix 2: Interviews

Interview Jim Pooley (13-6-2013)

Based on what are mining companies distinguished?

Mining companies can be distinguished in a number of ways. They can differ in their size, in their value, their asset base, the profits they make and their level of production.

Does the difference between companies also mean that there are different ways of finance?

Junior explorers and miners don't have a cash flow yet. This means that they have to get finance in order to perform their exploration activities. They get finance from venture capitalists and from the IPO of their shares. The majority of juniors is not looking to exploit the mine, they are just exploring for economically viable deposits, which they ultimately can sell to larger mining companies. However, there also juniors, namely junior miners, that are attempting to bring a mineral project into production or already have a project in production. When they find a mineral deposit of a mineral other than they are focussing on, they likely will sell this deposit to use the profits of this sale to pay their exploration activities.

Juniors solely use equity finance, as they don't have access to debt. Debt investors find their activities much too risky. Is it much too risky to have the entire project as collateral, because when the project turns out to be a failure, the investor has lost its entire investment.

Mid-tiers usually own a number of mines, although they might also own just one very large one. They have cash in their pockets, but their pockets are less full than those of the major miners. Especially with new, large projects, they can issue equity rather easily.

Major companies are the largest mining companies. They have the most assets, the highest profits and the largest revenues. They have large cash flows, which means that they have large amounts of cash available. As a result, they can be rather patient with projects and put them on hold or delay them a bit, as they are not depending on only one project.

What is the effect of the crisis on juniors?

Before the crisis, the junior had easy access to finance. Some of them sometimes even managed to get debt finance. However, this all changed as a result of the crisis. After the crisis, juniors are having a tough time getting finance. Junior miners that already are producing are trying to finance their activities through their cash flows, but this has become more difficult by the decreasing commodity

prices. Junior explorers have to rely on the equity finance, but the appetite of investors has largely decreased.

As a reaction companies that are active in more precarious countries, attempt to expand their operations step-by-step. They try to get project finance for part of the project and when they have earned this back, they look for finance in order to expand their operations further. They might do this several times, just because they aren't able to find the finance for the entire project at once.

What is the expected ROR for juniors?

Junior miner that has no other mines in production and no previous experience, the expected rate of return might be 25-30%. But when a junior miner already has one or several mines in production, the ROR will drop to 13-18%.

Are majors investing in projects and/or juniors?

Majors are only interested in the largest projects. They want to operate the mines with the longest life and where they can operate on large scale. Projects with smaller mineral deposits found are usually sold to mid-tiers and other junior miners, as they are able to viably exploit these mines. The overhead costs of majors are too high to viably operate these mines. The major companies used to have their own large exploration departments. Nowadays these exploration departments are focused on the possible expansion of their own mines. As a consequence of the emergence of junior in the 1980s, the majors have reduced their own exploration activities outside of their own mines. The exploration department however now focuses on determining which projects performed by juniors might be interesting acquiring targets and which aren't. When they are interested they might acquire the project or take a share in it. Majors might take a share in the project in exchange for providing finance and they might increase their share in exchange for providing the capital needed to perform (pre-)feasibility studies.

What are the important financial institutions/sources of finance in mining?

-Banks
-Pension funds
-IMF
-Stock exchanges
-private financiers
-bonds issues

The largest stock exchanges in mining are the stock exchanges of London, Toronto, Sydney and Perth. For junior companies the TSX-V in Toronto and the AIM in London are the most important sources of public capital.

The risks of mining projects for mining companies are

- Geology
- Can the deposit be economically viable mined?
- Social and environmental issues
- Political risks
- Infrastructure risks
- What is the current market for this commodity and what are the future expectations?
- Exchange rate risks

Social license to mine is very important, the government and local community must approve the mining projects, otherwise the project is likely doomed to fail. This is showed by the problems in Africa, where there are labour strikes etc.

Interview Patrick Willis (3-7-2013)

What are the activities of Turgis?

Turgis does the due diligences for financial sector (banks, shareholders) interested in investing in a mining company. Specialized in the technical side, they make sure for their client that the bankable feasibility study of the mining company is correct. They check whether all steps from geology, extraction, processing and getting the mineral on the market are done correctly. They also judge the quality of the management team, as this is important for the success of the mine.

1. How do banks make a decision on the type of investment?
    a. Why is it different for Major, mid-tier and junior miners?
    b. Why would banks invest I junior miners and why not?
    c. At what moment is it interesting for a bank to get into the market?
    d. How does a bank finance majors? And is this just a "normal" loan or are there other financing methods used?
    e. Does it matter in which way a junior is financed in the case of a possible takeover?

Banks want to make a profit from lending out money, so they don't want to take too much risk. Because of that, they only join the mining sector from the construction phase on. From this stage the risks are much lower and clearer than they are in the exploration phase. So they don't finance explorer companies, they are often financed with private equity (e.g. own money owner) or venture capital. Explorers are high risk-high reward, when you're successful you can earn a lot of money, but when you fail you lost your money.
Banks stopped investing in the mining industry at the beginning of the global crisis, because mining was deemed too risky. Nowadays, banks aren't very active in financing mining, but that's more because of the lower metals prices. This has lowered profits, which means higher risks.

2. When getting involved with a mining project, does the bank prefer project or corporate finance?

That depends; some banks are more prepared to take some risks. They might even invest a bit in juniors and explorers, so in that case it is usually project finance. Other banks are more risk-averse and only finance majors, so in that case it is corporate finance. The banks that take on more risk demand higher interest rates and higher fees (10% of total amount) in exchange for their loan than the risk-averse banks demand from the majors.

How do banks determine and manage their risks

1.. What are the risk-criteria a bank places on the different mineral-rich countries into which capital is being invested in mining projects?

The most important risk associated with the construction of the mine is the question whether the mine can be built in the desired time and according to the budget estimated. Even with the technical improvements, this remains difficult. Things can always be a little different than expected, as for example the mineral is more concentrated than expected. The exact size of the mineral deposit in the ground is the most difficult to accurately predict. To define how to estimate this, there are codes recorded at the stock exchange. (For example N 43-101 in Canada) Other risk factors are the quality of the management team and the social environmental situation (You have to get it right, when in a stable environment, risks not that high. But when this situation is not good or relation with locals is bad, this can become a threat to the operations and increases the risk) in the region where there is mined. Banks also have the obligation to invest in projects that aren't too social-environmentally unfriendly.

Exchange rates and metal prices are also risk factors. Lower metals prices mean lower profits and therefore higher risks. Prices are pronounced in US $, but the mining happens in a lot of countries that have another currency. So for the firm there is an exchange rate risk. When the currency of the country in which the firm mines gets stronger, the firms earns less. When the currency of the country in which the firm mines gets weaker, the firms earns more. When it is estimated that there might be serious exchange rate risks or changes in metal prices, specialists in predicting these areas for the long term are hired by banks or by Turgis.

To decide whether the risks are too big to invest or that they don't hinder investing, Turgis uses the gap-method. They look at the regulations and rules that are in place for banks (equator principle?) and compare them to the risks of the project. If the gap between those two is not too large, Turgis gives a positive recommendation. If the risks are a bit larger than desirable, the bank can come with conditions. If the firm wants to get the loan, they have to fulfill these conditions. If they don't comply with these conditions, they don't get the loan. The bank usually gives 100% of the loan or nothing, they don't give partial loans. Loans are however usually not given in total at once, to keep control and be able to check the operations, the loan is provided in parts.

2. Can the bank force the mine to keep on operating while the miner makes a loss, but the bank is still getting its money back?

When a miner can't pay the bank its money, the bank can ask a firm like Turgis to try and see whether they can help getting the mine operating again, while also improving the economic performance.

3. How do risks influence ROIC and what other things can influence ROI?

When risks increase, firms also want to have a higher ROIC.

4. When the bank loans the miner money, does it stay involved until the closure of the mine or only until it has gotten its loan back?

Banks prefer to immediately leave the project when they have their money back. Loans are therefore also not very long, most loans are no longer than 5 years. The ROI is less important than just getting the money back.

Strategy

1. Does the bank stimulate/encourage M&A in the mining industry?

Banks themselves usually don't stimulate M&A, financial advisors however do. They can make a lot of money with these activities, which explains this.

Research/ Documentation for financing

1. What background information do banks need and why?
2. How important is a bankable feasibility study important for a bank to determine whether they should invest or not?

Very important, Turgis does the due diligences for financial sector (banks, shareholders) interested in investing in a mining company. Specialized in the technical side, they make sure for their client that the bankable feasibility study of the mining company is correct. They check whether all steps from geology, extraction, processing and getting the mineral on the market are done correctly. They also judge the quality of the management team, as this is important for the success of the mine.

1. Does the bank have their own in-house mining specialists or are they reliant upon independent consultants for fatal flaw analyses, due diligences, etc.?
    b. And if not why do they invest in mining companies? And how do they manage their risks?

Banks have in-house mining specialists, however because of limited capacity, they often hire independent consultants as well to help them make decisions.

Should a mining company make use of real option pricing when presenting their plans to a bank? Or does the bank accept Discounted Cash Flows and NPV analysis?

Turgis usually makes use of IRR, DCF and NPV. Banks themselves might use real option pricing.

Trends in the market

1. What do you expect for the mining industry in the future? And what is the role of banks in the future? Will the role of banks keep on diminishing like it has or will banks start playing a bigger role again when the global economy has recovered?

The next 18 months probably there will be more M&A, especially top-down. Majors might buy out mid-tiers, mid-tiers juniors and juniors explorers. Expectations at this moment are that metal prices will only start rising again in 2017, so there is and will be a lot of cost cutting the next years. (costs weren't deemed important during the supercycle, which explains them rising quickly) Turgis now often gets the question if they can help cutting costs. Mine constructors are especially having a bad time at the moment, as understandably mining construction has slowed down a lot.

There are a lot of Sovereign Wealth firms (SWF's) entering the market, the majority coming from the Middle East, Norway and China. China dominates the market, is responsible for approximately 60% of all mining financing at the moment. This dominance is the result of the large economic growth China has seen over the last decade. Firms from China sometimes finance juniors, use streaming arrangements to finance companies in exchange for commodity streams or buy whole miners. 60% of Turgis activities are for Chinese clients. Influence of China also can be seen in London, where one of the biggest banks, Standard Bank, is owned by Chinese.

India also gets more and more active, like China they focus on Africa. From India there come more MNC's, where from China most companies are supported by the government.

Metal prices:
The price of diamond, potash and tungsten are doing good, while prices for iron ore are quite stable as well. Other metals are doing much worse.
Three most valuable ores:
1. Iron ore 2. Copper 3. Gold

Interview Andor Lips (4-7-2013)

1. How do banks make a decision on the type of investment?
    a. Why is it different for Major, mid teer and junior miners?
    b. Why would banks invest I junior miners and why not?
    c. At what moment is it interesting for a bank to get into the market?

    d. How does a bank finance majors? And is this just a "normal" loan or are there other financing methods used?

    e. Does it matter in which way a junior is financed in the case of a possible takeover?

Difficult to really get a good connection with clients, as projects that go well grow further and can get other finance. Other possible clients are the ones with projects that don't look promising, so the bank isn't interested in those. So the projects in between are the ones in which the banks are interested.
A major mining company like BHP has such a good reputation and amount of assets, they can lend 1 billion for an interest rate <1%+LIBOR.
ING keeps debt and equity strictly separated. Other banks do this less strict.

2. When getting involved with a mining project, does the bank prefer project or corporate finance?

ING is active in both types. ING is a large trading bank, that's also the way in which they've grown this large. They distinguish three types of financing.
1. Trading commodity finance 2. Pre export financing 3. Project financing

1. Trading commodity finance are short-term loans. They are used to finance large amounts of goods streams. (100-500 goederenstromen) The security with this kind of financing is the goods themselves.
2. The pre export financing are loans for 2-5 years. (Example: 3 years loan of 100 million, where the lender has to repay 50 million after 2 years and the rest including interest after the third year) These loans are usually used for expansion or the refinancing of debt. The loan is taken by the owner of a mine. The loan is based on the performance of the miner until now, while the reputation of the miner is also of importance. So these loans are often provided to mines already active for quite some

time. Biggest questions are whether the mine can keep on producing and if they have sufficient additional funds to repay debt.

Im most countries, it is possible for banks to invest onshore, but to be paid offshore. So the bank can get its money to its home country rather easily. Banks prefer providing loans to mines operating with low costs. Low costs usually mean larger profit margin, which results in the firm being able to keep operating and make a profit when metal prices decline. And even when the metal prices decline because of decreasing demand, this means that the lower costs companies can continue operating while those with higher costs have to cease mining.

The banks normally don't have to deal with taxes and exchange rates risks, as it is contractually agreed that the firm is responsible for these kinds of things.

3. The project finance is for the long term. (possible 5/6 years ->15 years) Project finance is used for the financing of the building of the project. There are no cash flows yet, so the lending company promises to pay back the loan with future revenues. Because of the uncertainty of those revenues, more thorough analysis is needed, as the risks are higher. The most important risks for the bank are the project risk and the completion risk. There are of course the risks associated with the projects, whether the mineral deposit is as promising as expected etc. The completion risk is the risk associated with the question whether the project will be completed etc.

The financing is ring-fenced; this means that in case of default of the project, while the miner also has other projects, the bank cannot get money from those other projects.

Sometimes the bank can try to lower the credit risks, they can do this by selling a part of the loan to another bank.

ING good in specialised lending→can get good revenues/profits out of this→Focus on projects for which they can keep the risks on a good level and where they are able to diversify the risks.

<u>How do banks determine and manage their risks</u>

1. What return on investment is expected by the bank? What is the minimum return on investment the bank expects?
2. What are the risk-criteria a bank places on the different mineral-rich countries into which capital is being invested in mining projects?
3. Can the bank force the mine to keep on operating while the miner makes a loss, but the bank is still getting its money back?
4. How do risks influence ROIC and what other things can influence ROI?

5. When the bank loans the miner money, does it stay involved until the closure of the mine or only until it has gotten its loan back?
6. When a miner has returned its loan, but needs another one, do they get a new loan with lower interest? Or do they use a credit?

Example given of the Amatori mine in Madagascar:
Nickel mine should produce 6% of the total world production of nickel.
Construction started in 2007, should have been ready in 2010, but is at this moment still not finished. Costs were estimated at three billion, now already at seven. Financing was 2.2 billion debt and 0.8 billion equity. Despite costs far exceeding estimated costs and severe delays, ING still has confidence in the project because of high level risk mitigation. This is because of the three sponsors involved that bear the completion risk and are still accounting for the rising costs and because of the two export credit agencies that bear the political risk. For this project the interest rate is around 3%.

D/E ratio is usually 2/3 debt and 1/3 equity. This is the case for ING, but that's normal in the financial sector. Risks are inter alia project risk, completion risk, production risk, political risk and social environmental risk. For banks their reputation is the most important, so there is also reputation risk involved. Also lot of influential NGO's located in Netherlands. (As a result of the crisis, there is a lot of bank bashing) When risks are covered well in contracts and are therefore less high for the bank, the bank doesn't earn that much. The interest rate than is set around the 3%. The interest rate however can for example change with a 0,5%, when the mine goes from construction to the production stage, because of the fact that the risks might change. Interest rate usually lies between 2-5% for projects for which the bank provides lending.
Social environmental risks can differ quite a lot between countries. In the Netherlands there are regulations and good control to make sure that companies take the social environment into account when working. Therefore low social environmental risks, but in other countries no/less regulations and control, so there the social environmental risks are higher.

Mining is a part of the specialised lending part of ING. The specialised lending department has to earn the money from which the other activities of the bank are paid and to make profits. To earn enough money, the ROI is between 14-20%.

<u>Research/ Documentation for financing</u>

1. What background information do banks need and why?

2. How important is a bankable feasibility study important for a bank to determine whether they should invest or not?
3. Does the bank have their own in-house mining specialists or are they reliant upon independent consultants for fatal flaw analyses, due diligences, etc.?
    a. And if not why do they invest in mining companies? And how do they manage their risks?

Should a mining company make use of real option pricing when presenting their plans to a bank? Or does the bank accept Discounted Cash Flows and NPV analysis?

The choice of method isn't the most important. The bank looks at the results of the calculation and whether the fundamentals on which the estimation is based are sound. If the calculation is positive and the fundamentals sound this is good news. However, the management team is also of great importance. When there is an experienced and successful management team, the bank already can determine whether to invest or not. The tidiness of the workplace is also very important, as this also says a lot about the project.

<u>Trends in the market</u>

1. What do you expect for the mining industry in the future? And what is the role of banks in the future? Will the role of banks keep on diminishing like it has or will banks start playing a bigger role again when the global economy has recovered?

2. Do you believe that implementing an exploration tax credit policy, such as a flow-through shares scheme, would encourage investment and start-up capital required by juniors for mining projects?

Future for banks in mining:

Regulations for banks are both nationally and internationally changing and becoming stricter. (E.g. Basel 3) The purpose of these stricter regulations is that banks take fewer risks. If they still want to take high risks- high rewards opportunities, they have to make sure that there is enough capital available in exchange. As a result, banks try to balance their portfolios. Stricter regulations come in steps, some banks like ING want to comply with these new rules as fast as possible, while others take until the deadline. Goal of ING is to get competitive advantage by doing this. Banks have to comply in order to make sure they won't need government support again in the future.

Interview Paul Mainwaring(24-7-2013)

1. How do banks make a decision on the type of investment?
    a. Why is it different for Major, mid-tier and junior miners?
    b. Why would banks invest in junior miners and why not?
    c. At what moment is it interesting for a bank to get into the market?

    d. How does a bank finance majors? And is this just a "normal" loan or are there other financing methods used?
2. When getting involved with a mining project, does the bank prefer project or corporate finance or do they use pre-export finance or commodity trade finance?
3. If they use pre-export finance, when do they use this? When productions starts or when operations are underway for a few years?
4. What is a bridge loan?
5. Do you agree that for project finance it is normal that the finance consists of 2/3 debt and 1/3 equity?

Endeavour is a financing advisory company, they work for juniors and mid-tiers.
They present the plans of their clients to banks in order to help them getting finance, but also other parties that can not only provide financing, but also offtakers, strategic partnerships etc.
Debt financing is the most important part, but offtakers and partners etc also important.
Also know the four mentioned types of finance.
Endeavour most often asked by clients after pre-feasibility study in order to help them get financing.
Juniors often have 1 or 2 projects. So for the juniors Endeavour helps them get project finance.
Mid-tiers are more into production, so they are searching for money to expand their operations or to refinance them. They often have more projects. So for mid-tiers Endeavour helps them get pre-export finance/corporate finance.

D/E ratio: Banks want to provide projects with less gearing than before.
Before debt could be **70-80%** of the project, but now it is **60-70%**

Bridge loan:
I.e. miner needs two years to finish construction and wants to start to follow his time scheme, but not all due diligence is ready. But the miner needs money to keep on building. So he wants a bridge loan to bridge the time needed until due diligence is ready. In exchange for loan, the loan provider

gets higher interest, also options/warrants/shares for loan provider. Loan is used until company has developed further and is able to refinance/repay.

How do banks determine and manage their risks

1. When the bank loans the miner money, does it stay involved until the closure of the mine or only until it has gotten its loan back?
2. When a miner has returned its loan, but needs another one, do they get a new loan with lower interest? Or do they use a credit?
3. Endeavour also using risk mitigation?

That depends per project. When a project is successful and the cooperation between bank and lender is good, banks usually stay involved. But when the project isn't performing well or when the lender can't be trusted or can't repay, banks leave as soon as they have their money.
Endeavour sees that risk mitigation is mostly used for countries that haven't received a lot of FDI until now or that are politically unstable. So most often the risks that are mitigated are the political risks. Other risk mitigation that is often used is hedging, this is done by the miner to deal with fluctuating commodity prices.

Strategy

1. Does the bank stimulate/encourage M&A in the mining industry?
2. Is it interesting for a bank to work like a streaming company?

Not really that obvious. Investment banks like Goldman Sachs have large M&A departments, which might mean that if possible they are more inclined to give the advice to do M&A. Biggest role however is for the CEO of a miner and his goals and expectations of shareholders for him. If he is expected to focus on growing the firm larger, M&A gets much more likely. Nowadays lots of firms are undervalued, but partly due to the lack of financial resources, CEOs seem to be nervous to do M&A, as they are very careful. Also focusing on optimization.

Research/ Documentation for financing

1. What background information do banks need and why?
2. How important is a bankable feasibility study important for a bank to determine whether they should invest or not?

Endeavour steps in after pre-feasibility, but prefer to step in before feasibility study as they then can better help the client in determining the value of the deposit and the financing possibilities. Endeavour wants to make sure that the feasibility study is bankable. Banks base their decision largely on the basis of the bankable feasibility study. So it is important that this is trustable and reliable.
Industry is rather conservative in its valuation analysis, 90-95% of the feasibility studies use DCF.
Management team is also important. Juniors should not only have geologists, there also should be mining and construction engineers that know how to construct and run a mine.

Trends in the market

1. What do you expect for the mining industry in the future? And what is the role of banks in the future? Will the role of banks keep on diminishing like it has or will banks start playing a bigger role again when the global economy has recovered?

E&Y expects to see this role decline, while ING acknowledges the stricter rules, but does not expect this to reduce the role banks play.

2. Do you believe that implementing an exploration tax credit policy, such as a flow-through shares scheme, would encourage investment and start-up capital required by juniors for mining projects?

Mining market is a cyclical one, so there will be ups and downs. Some banks may leave, but the majority will come back again. The alternative ways of financing that we now see will remain in place and will have a larger share than before the crisis, but the banks will remain the most important source of (debt) finance.

The flow-through shares help starting companies to raise money. It is a big success in Canada. It also makes it more interesting for retail investors, the “normal” people, to buy shares, because they know they will have benefits from it. In England almost all finance comes from institutional investors and other traditional sources, there is not a lot from retail investors. AIM in London is also less successful than TSX-V. Partly due to flow-through shares, but also as a result of the difference in mining education and interest in mining and also the difference in the importance of mining to the country’s economy.

Interview Coen Louwarts (5-9-2013)

What can you say about the current situation of the major mining companies?

They focus on cost consolidation, because they have committed too large amounts of cash to projects the last few years. During the boom the major mining companies often bought projects from juniors, often also in more risky countries. In the past, shareholders were focused on long-term profits, as they kept in mind the long payback period mining takes. However, nowadays investors don't have the same patience anymore, they want to see profit on the short-term. They demand to get receive dividends and want to see the results from the boom period now instead of waiting any longer.

What are important questions for a major pondering about buying a junior?

1. Is the mineral easily extractable and on large scale?

2. Is the country politically stable?

3. Is the land really owned by the acquiring target or are there historic claims to the ground? Over time, the ownership of a certain area might have changed hands. Because these agreements might be very old, it sometimes happens that the current owner of the ground is unclear about these agreements. It is important for the acquirer to know about these agreements, as they don't want unpleasant surprises in the future. If there is a profitable mine in operation, former land-owners may want a piece of the revenues of the mine such as royalties, production share etc. (if they have a right to it) The acquiring company wants to make sure they are aware of any future claims or that they will have to pay royalties to another party.

When is a major the most interesting to a major?

5-10 years ago, juniors had easy access to equity, but nowadays much more difficult.

In theory, majors rate juniors with a lot of equity as the most easy takeover target, as there are no other commitments attached to these takeovers. During the exploration phase the junior usually only uses equity financing and therefore hasn't made all sorts of financial arrangements. Because of the fact that majors prefer as less as previously made arrangements as possible, this is the most interesting phase to them.

What about when the project has reached the feasibility stage?

If a project has advanced further, it more often is the case that there are already made streaming/hedging arrangements. Majors are less keen on these arrangements, they prefer less dilution. It is often possible for majors to ransom these arrangements or buy out the streaming company, but these companies often want to see a compensation that is similar to the amount of money they expected to earn from the arrangement. Take the example of a streaming company getting 10% of the production in exchange for providing finance; When the majors comes in to acquire the project after this arrangement has been made, they didn't benefit themselves from the arrangement with the streaming company, but the major does have to pay for all the costs related to the construction of the mine. However, the major won't get the entire revenues of the production, as they have to cede 10% of the production to the streaming company. Understandably, the major doesn't really like this.

Are project financed projects interesting to a major?

Project Finance financed by banks usually means that the project has advanced to the feasibility stage. So the situation is rather similar to that for other projects that have reached this stage. As long as the hedge and the interest rate aren't too high, the major might be interested in acquiring the project.

Projects where organisations like the IFC and/or the World Bank are involved can be interesting to the majors. This is especially the case for projects in countries where the political risk of doing business is higher. The aforementioned organisations have more power and influence than normal companies, which mean that they can use this influence to lower the risks of a project. When the risks are lower, that project obviously becomes more interesting to companies looking to acquire a project.

Why does a major sometimes acquire the entire project and other times agrees to a JV?

When an acquiring company is rather sure about the quality and potential of its acquisition target, they often decide to buy the project or juniors. However they can also decide to agree to a joint-venture. They usually do this when the potential has them interested, but they are less sure about the certainty of reaching that potential. The two companies then, for example, decide that the company acquiring a share in the project can increase its share by financing the (pre-)feasibility study (earn-in rights). Joint ventures are usually agreed for in projects and not for the entire junior.

How important is the debt-equity ratio of a takeover target to a major?

The debt-equity ratio is deemed less important by the majors. The structure, whether there are already future commitments like streaming or hedging arrangements, are more important to the major. The amount of debt is less important to the majors, because they are almost always able to obtain cheaper financing than the junior companies. This cheaper finance can replace existing debt and reduce some of the risk in a particular takeover target.

Is the feasibility study done by the junior important in the judgement of the major about acquiring a project?

Another reason why majors are looking to acquire a project or company rather at the beginning of the project is that the value of the project goes up as it advances, so it becomes more expensive to acquire. A project that has already advanced to the feasibility study will likely be worth more than a project still in its exploration phase, for example because of the certainty of the success. The ideal situation for majors is when they already see the potential of a project, while others don't see this yet.

Majors prefer juniors that have a project with large potential and that are low cost and large scale. The overhead costs that majors have, make smaller mines undesirable. Juniors also often can work cheaper than majors. Majors have to perform studies more detailed and at greater length, which makes those studies more expensive than when performed by a junior.

Which activities are performed by the exploration departments of majors?

Exploration departments of majors focus on reviewing the projects of juniors. Juniors often come to the majors to present their project and drilling samples and try to convince the majors of the potential of their project and to convince them to buy their company/project. The exploration department has to decide which projects are indeed interesting to the major and which aren't. When the mining industry is booming, majors perform a lot of exploration activities themselves, but when the industry is suffering, exploration budgets are usually among the first cost cutting moves.

Why do majors have low gearing ratios?

The reason majors often have low gearing is that they have large cash flows. But the majors also attempt to keep their debt-equity ratio at a certain level. They like to have a lot of equity. They especially issue a lot of equity when they want to perform a takeover. For example, Rio Tinto issued a lot of equity to finance the takeover of Alcan.

Interview Willo Stear (11-9-2013)

How does a junior start his business?

Mining sector comprises of junior, mid-tier and major companies.

Definition of junior emerged from Canada, late 70s, early 80s. Emergence of companies really focused on exploration. Stock-exchanges like that of Vancouver provided them with money. There were credible people, but also shady characters. That was people not looking to use that money for mining. Canada was capital for this, because the government provided tax-incentives. Their goal was to get public money into exploration. There was a minerals boom and the government wanted to benefit from it. A lot of money from Europe went to Canada. After a while these activities moved to more reputable exchanges of Toronto and in Australia to Perth and Sydney. The London stock exchange followed with the newly created bourse, AIM. Primary objective of these SE is to obtain capital for exploration.

I am a geologist with a few professional colleagues. We believe that we can find a mineral in a certain geological area that we know well, that we can get the rights to, that is accessible, we have the funding and we prove to the government that we have the needed knowledge. Then we need capital. We may raise seed capital from our own pockets, from family and friends. Get the company registered and listed to start activities. Companies want to get listed, as it enables to raise money from the public and allow the public to trade the shares. Investors are investing with risk looking for a successful investment, so speculators and risk-takers are active in this market. Market caters for certain type of capital.

So now the company has the rights, it is listed, it floated some shares and has a pool of investment capital. It can then start the exploration program and do geological work, start drilling holes and making geological models. When ultimately a deposit is found, its dimensions can be measured with a relatively high degree of accuracy. The company can then determine what the general mineral content is and how the mineral is distributed through the ore body. At this moment we can call it a desk-top study or if we have sufficient information, we can start a pre-feasibility study. Accuracy of 60-70%, sufficient technical, engineering and financial estimations in a model, to get a rather good idea about the rate of return for the capital that needs to be injected in the hypothetical mine in time. Then the company can go back to the market again or go to other financing providers outside of the market, to banks or other funds and raise whatever capital. May feel like not issuing more equity for the moment and looking for funding through debt. Few institutions will be interested, so most companies will still have to raise money through the issue of more shares, diluting the existing

shareholders. The company wants to raise enough money to be able to make the full feasibility study. The market is right now pretty excited, as you have already defined a pretty nice ore body. Share price has increased significantly, might have even rocketed. At this moment the company is clearly on the radar of investment companies. After being financed by venture capital originally, this is the time where the firm starts getting interest from institutional funds.

Then you do the feasibility study, leads to a >90% accuracy to 95%. Because they have to be that accurate, they are very expensive. Independent organization involved with bankable feasibility study (also called definitive feasibility study). Various independent experts on different fields sign off on this study and finally one independent experts says that the study is good enough to be 95% accurate. On that basis you have a mine in the making and you use the feasibility study to finance it. Companies usually don't issue more equity at this moment, might look for both debt and equity, but most likely is looking for project finance. Then institutions will take a look at it and distinguish their own risk criteria etc. You will get offered different terms by different institutions.

Now have feasibility study and the finance, everybody is happy and the construction of mine can begin. You are spending money and not finding anything new, so your share price is languishing. Depending on the time the construction takes, this is a delicate time. You start building the mine and you have to start up the initial production. Everybody starts to compare the expectations from the prospectus to what happens in reality and you are judged based on that. This is a critical stage and there are always (little) problems. Company vulnerable to mistakes, to not meeting the expectations and the market starts punishing the company. Share price dips between the feasibility study and achieving the expected, forecasted full production, so as a junior producer that is what I would like to do. Business model, however, might dictate that we don't want to get into full production and ramp it up to where we get max value and then sell it to someone else. We are not in the business of mining production, but in exploring and taking project to feasibility. This is a valid business model and this is the feeding chain. The junior in the 70s and 80s didn't even take them these projects to the feasibility stage. Larger companies did do their own exploration, but often acquiring a project from someone else is cheaper, easier etc. than doing it yourself. Corporate where able to buy into junior company successes rather cheaply, but the junior companies themselves made a massive premium on their share price. That is the typical model of a project of a junior. There are different financiers in every stage. Theoretically the risks are terminated when production has begun.

There is a lot of discussion about the accounting of costs. A lot of companies only disclosed their operational costs. For example 500, selling mineral for 1500→ profit of 1000. But that was not the reality, as there are also overhead costs. Total costs then might be 1200, making profit only 300.

More and more companies are disclosing their all-out costs now. Investors have to be able to compare companies appropriately. They must be able to compare apples to apples. Environmental issues are becoming more important, also increasing costs. Smelters are moving from the developed countries to the developing countries, where environmental standards are lower. Geographical distribution is important. Environmental issues are big issue in developed world, but advantages are the stable and the clear regulations etc. In developing countries those standards are lower. But as a listed company, you have to work in these countries according to the rules of your own country. The market in which you are listed, expects from you to follow that geographical jurisdiction. Mining laws in these countries are not transparent and not stable. There is also more corruption, more demanding out of the community. In Africa countries want to profit more from mining, they are demanding more and more share in the companies' success. (Resource nationalism) → which leads to a changing playing field in developing countries. Resource nationalism increases especially in booming periods. In developed countries only possible that new tax is implemented.

In developing countries more and more governments want that indigenous people have to get part of the ownership of the company. It is also expected that company takes on more responsibility towards the local community. The government transfers its own responsibilities towards the miners. This increased social commitment might increase costs by $100 dollars per ounce. So these costs are important to investors as well.

Corporates wants to come in at the moment where they can do their own feasibility study, to see if they can operate the mine profitably. They start knocking the juniors forecasts down in the hope of paying less. Everyone has a different cost profile. Commodity prices also have cycles. These cycles usually don't coincide. Therefore larger companies became multi commodity miners, to deal better and base their strategies with these cycles. Even going into forestry and banking. Into banking to ensure that they could get rates others couldn't. Ultimately they became too diversified, which prompted unbundling. Financing activities were pushed off and the focus went bank to mining.

Companies from different countries all have certain areas/countries where they have the best knowledge about, where the culture is the most similar. So most companies are active in this region, although bigger companies are able to be active in more regions, while for smaller companies that other culture is often too diverse to be able to successful there. Business focus is very important, the business should not become too diversified. Even being big, doesn't mean that diversification will be successful.

What is the role of SWFs and SOEs in mining?

There is a lot of cash around in the mining industry, especially in private hands which are setting up their own private equity funds. Also a lot of financing is coming from the Chinese, dressed up in different ways. Chinese SWFs and SOEs are looking to increase their supply. Their activities in Africa are increasing; they are buying into the mines themselves, in a controlling position to ensure that the production goes to China. Where the Western countries were the most important for a very long, the role of China now has become much more important. Chinese are visibly everywhere, Russia is also very active. The financial origin of Russian money often very unclear. SWFs invest in what they would regard as successful juniors with a great growth potential. They do this, because they are looking for quick capital growth. So they invest in juniors that just don't have enough cash to take the project to the next stage, although nothing is wrong with their project. The SWFs want high premiums, but it might be worth it for the juniors. The SWFs provides the capital to bring it to the next stage and add enormous value to the junior company. The SWF will always have an exit strategy to get a massive premium. They make their money on the premium on the money they can earn on the shortest period possible, by providing that money. They will get their money back, guaranteed, and will make sure that they have enough equity to benefit from the growth of the company. The SWFs use all kinds of provisions. The arrangements differ for every SWFs, they all have their own special trick. They always like to retain a certain part of equity in the company, also after getting their return back.

During the exploration phase, the junior only has equity, no one will provide the company with debt.

Terms for project finance vary for every finance provider and from project to project. There are always different possibilities to structure a finance deal. There is often no plain vanilla structure. Private equity firms often offer certain "menu's" and the mining company and the private equity firms discuss about what they like and what they don't like about the proposals. Banks can't do this; they are restricted to risk profiles that they have to obey. Private equity firms can be much more flexible. Big is not always best. Private equity firms are increasingly interesting to juniors, while banks focus more on the majors. Banks also discredited themselves during the banking crisis in 2008, mining companies are loath to go to the banks. Banks are your very best friend when everything goes right, but your very worst friend when it goes bad. In the aftermath of the crisis, banks were calling back debt. They also did this from mining companies that were not able to pay back this debt faster than arranged. Many banks got ownership from these projects and sold them cheaply to other miners. Banks have now realised that, that they lose their competitive edge to these other funds and that they have to lower their risk profile, to get back to the juniors. But they are having a tough time in winning their position back.

Appendix 3: IPOs and SEOs on TSX and TSX-V

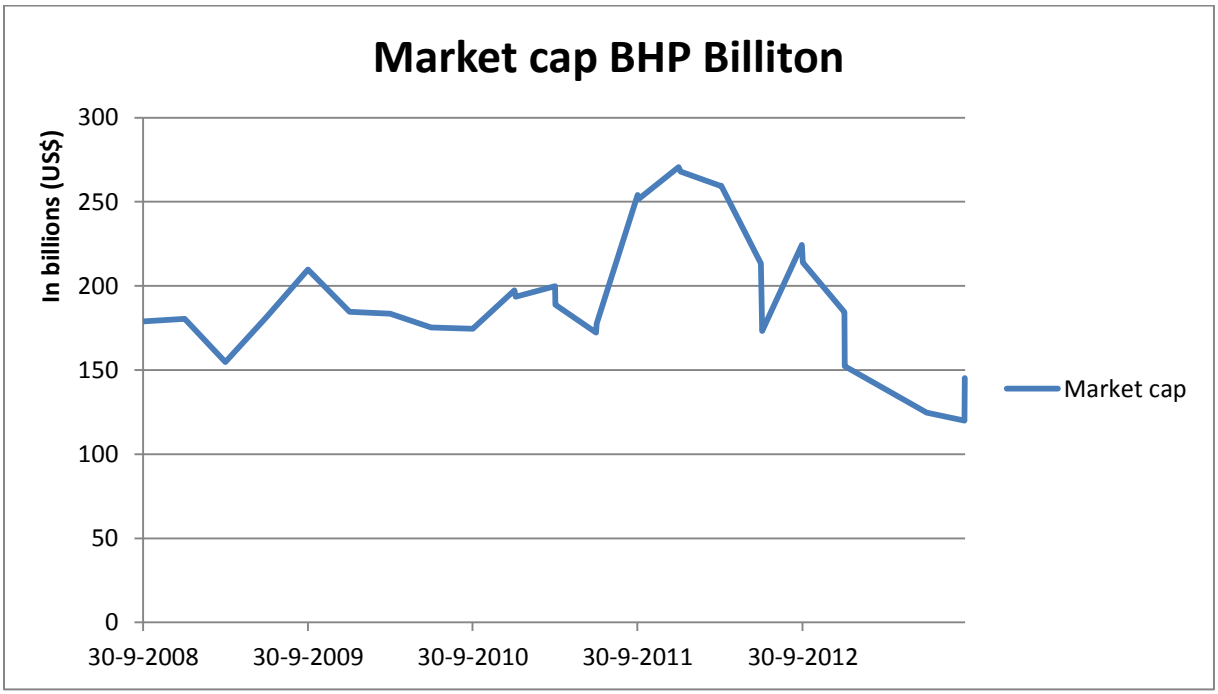
Fundraising on TSX & TSXV, 2009 to 2013

Source: EY analysis of TSX & TSXV market statistics

	Mining					All TSX & TSXV			Mining as % of all TSX & TSXV
	New issues		Further issues[2]		Total issues	New issues	Further issues	Total issues	Total proceeds
	No. of IPOs[1]	Proceeds $m	No. of money raising issues	Proceeds $m	Proceeds $m	Proceeds $m	Proceeds $m	Proceeds $m	%
Q2 2013	6	5	284	1,065	1,070	1,537	9,291	10,828	10
Q1 2013	0	0	415	1,157	1,157	938	8,898	9,836	12
Q4 2012	19	347	492	2,658	3,005	2,508	12,326	14,834	20
Q3 2012	6	9	357	2,984	2,993	344	13,430	13,774	22
Q2 2012	10	11	331	1,125	1,136	1,050	9,778	10,828	10
Q1 2012	14	23	475	3,132	3,155	506	16,581	17,087	18
Q4 2011	11	30	410	1,934	1,964	1,041	10,236	11,276	17
Q3 2011	23	107	366	2,160	2,268	1,315	9,027	10,342	22
Q2 2011	20	107	467	2,696	2,803	2,887	12,221	15,107	19
Q1 2011	16	119	678	5,322	5,440	1,656	12,702	14,358	38
Q4 2010	35	661	860	7,249	7,910	4,616	15,714	20,330	39
Q3 2010	18	67	420	1,985	2,052	1,615	6,488	8,103	25
Q2 2010	17	491	499	4,059	4,550	2,977	11,567	14,545	31
Q1 2010	23	93	536	3,144	3,237	1,826	9,178	11,003	29
Q4 2009	13	11	760	3,336	3,347	1,850	16,209	18,059	19
Q3 2009	11	4	589	9,556	9,560	1,617	18,342	19,960	48
Q2 2009	7	3	457	4,280	4,283	1,102	13,390	14,492	30
Q1 2009	12	4	373	4,612	4,616	288	12,088	12,376	37
2012	49	391	1,655	9,899	10,290	4,408	52,115	56,523	18
2011	70	362	1,921	12,112	12,474	6,899	44,185	51,084	24
2010	93	1,312	2,315	16,437	17,749	11,034	42,947	53,981	33
2009	43	23	2,179	21,784	21,806	4,858	60,029	64,887	34

[1]Initial public offering (IPO) - TSX & TSXV as primary exchanges of listing.
[2]Funds raised from follow-on issue of shares and private placements.

Appendix 4: Development market cap of BHP Billiton



Appendix 5: Pictures of mining

(Source: Royal HaskoningDHV, 2013)